



DG III

Industry



# PANORAMA of EU INDUSTRY

# 97

*The key to European industry*

## **VOLUME 2**

*An extensive  
review  
of the situation  
and  
outlook  
of the  
manufacturing and  
service industries  
in the  
European Union*

**European Commission**



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EUROPEAN COMMISSION

A great deal of additional information on the European Union is available on the Internet.  
It can be accessed through the Europa server (<http://europa.eu.int>)

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 1997

Volume 2: ISBN 92-827-9307-9

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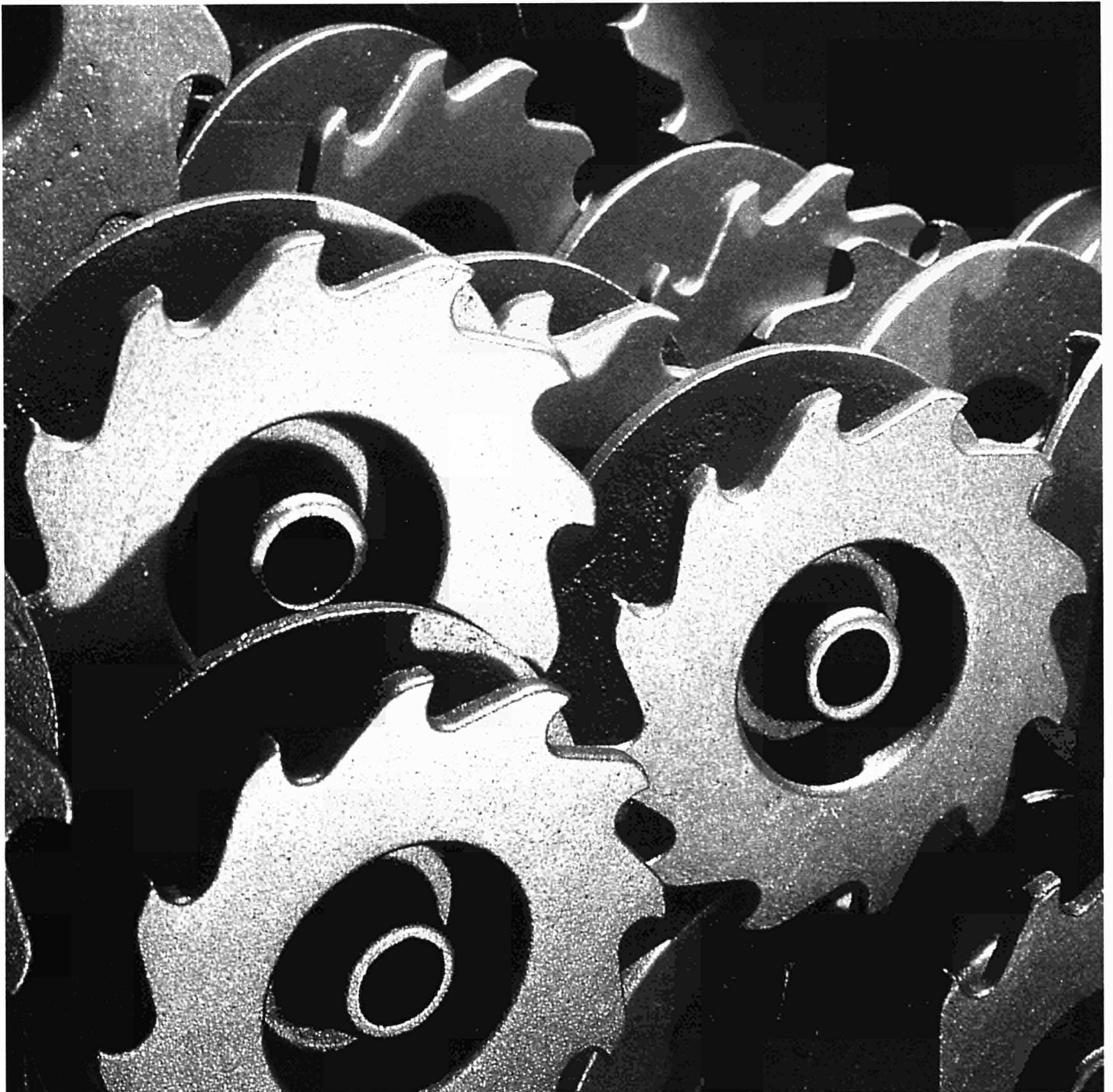
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## Overview

### NACE (Revision 1) 28

Like many other industries, the metal products industry has been hit by the economic downturn in the early 1990s. From 1994 on, major downstream industries such as the automotive and the mechanical engineering industries, have registered growth which has led to a growing EU demand for metal products in 1994 and 1995. Apparent consumption increased by 4.7% and by an estimated 10.2% in 1995. Fierce international competition, however, urge EU manufacturers to rationalise their production processes and improve their quality. To an increasing extent, technical know-how and high product quality constitute the core of the EU competitive power. Although the industry is still highly fragmented, consisting of many small companies, the rationalisation process has resulted in a higher concentration of supply. For the coming years moderate growth rates for production and consumption are expected.

### INDUSTRY PROFILE

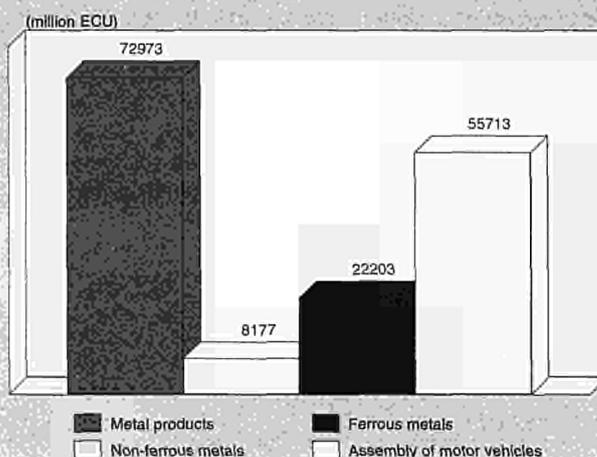
#### Description of the sector

According to the NACE Rev.1 classification division 28 covers the fabricated metal products, except machinery and equipment. In comparison with the old NACE '70 classification the scope of this chapter has changed in that foundries are now considered basic metals.

The metal products industry can be subdivided in the following sectors:

- Structural metal products (Group 28.1) which covers prefabricated buildings of metal, bridges and bridge sections of iron and steel, towers and lattice masts of iron and steel, etc.
- Tanks, reservoirs and containers of metal, central heating radiators and boilers. Boilers and metal containers were covered by NACE 315 in the old NACE '70 classification. In the new NACE classification (Rev.1), however, the industry has been split up and spread out over the Groups 28.2 and 28.3;
- Steam generators, except for nuclear reactors and parts thereof (28.3);
- Forging (Group 28.4) includes drop forging, closed die forging, pressing and stamping, and powder metallurgy;
- Treatment and coating of metals services and general mechanical engineering services (Group 28.5) includes the manufacture of articles on turning machines such as lathes, screws, bolts, nuts, springs (except furniture and watch springs) and chains (except articulated link chains); the sintering, treatment and coating of metals; and general mechanical engineering on a subcontract basis;
- Cutlery, tools and general hardware (Group 28.6) This group includes the manufacture of hand tools and agricultural tools; of kitchen and tableware; of general hardware like locks and hinges;
- Other fabricated metal products (Group 28.7) include the manufacture of heavy and light metal packaging products; of wire products and fasteners; of domestic and kitchen heating appliances; of metal furniture (including safes); of

**Figure 1: Metal products**  
Value added in comparison with related industries, 1994



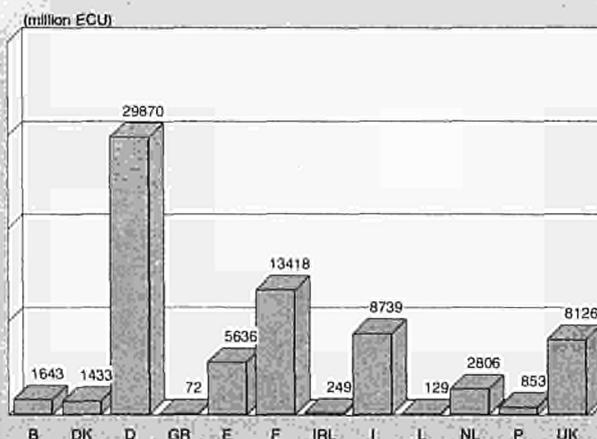
Source: DEBA GEIE

domestic articles of base metal; of small arms and ammunition thereof; etc.

The figures and data in this monograph refer to the former NACE '70 classification. Data concerning foundries should be excluded if the new NACE Rev.1 classification is followed. The exclusion of foundries, however, will not always be possible.

If foundries are excluded, the total EU production of metal products is estimated at 173.7 billion ECU. With 43%, the groups 28.6 and 28.7 together account for the largest share of total production. The shares of the other sectors are much smaller, the largest being the share of the manufacture of structural metal products (18%), followed by treatment and coating of metals (17%), boilermaking (12%) and forging (10%). In 1994, more than 40% of total value added of the EU metal products industry originated from Germany. Other

**Figure 2: Metal products**  
Value added by Member State, 1994



Source: DEBA GEIE



**Table 1: Metal products**  
**Main indicators in current prices (1)**

(billion ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	112.6	159.6	172.6	179.9	179.2	165.2	172.9	190.5	209.5	222.0	235.0	251.0
Production	121.1	165.6	178.4	184.7	183.8	170.7	178.4	196.5	216.1	229.0	242.0	258.0
Extra-EU exports	13.4	13.1	13.3	13.7	14.0	15.3	17.0	18.8	17.8	19.0	20.0	21.0
Trade balance	8.5	6.0	5.8	4.8	4.6	5.4	5.5	6.0	6.6	7.0	7.0	7.0
Employment (thousands)	2060.0	2143.9	2220.2	2211.3	2141.5	1972.8	1936.2	1964.1	2132.5	2160.0	2190.0	2210.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Metal products**  
**Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Boilermaking	18 494.5	1 9810.8	1 762.3
Forging; drop forging, closed die-forging, pressing	15 251.3	15 506.2	682.4
Structural metal products	28 062.3	29 285.4	2 414.0

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Metal products**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	4.8	-0.9	2.2	5.2
Production	4.8	-0.9	2.2	4.9
Extra-EU exports	0.6	3.7	2.0	17.5
Extra-EU imports	-2.2	7.1	1.8	32.7

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Metal products**  
**External trade in current prices**

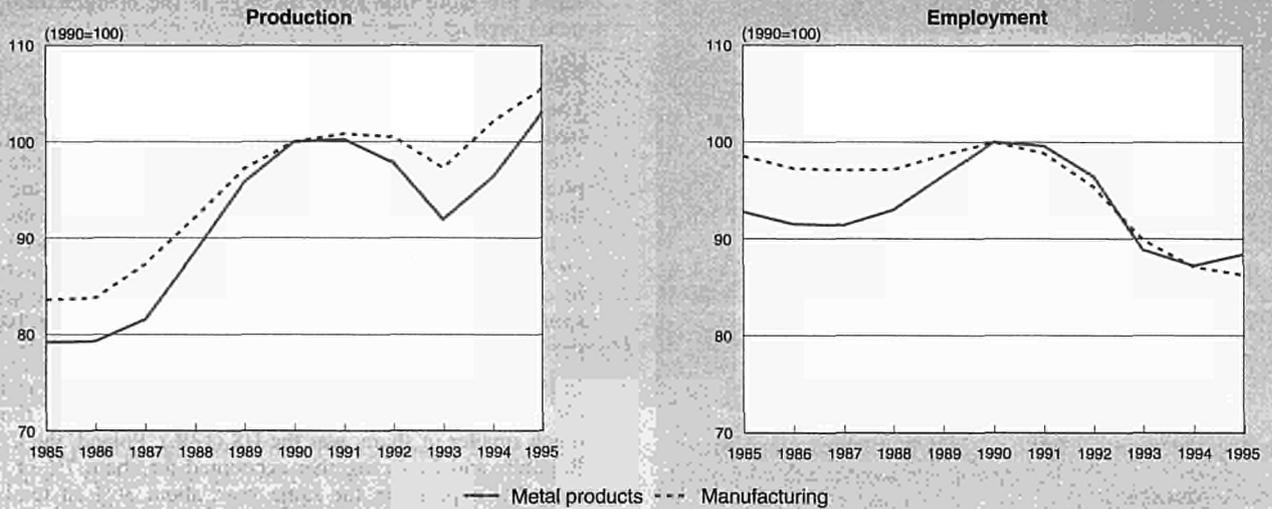
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	13 392	11 739	11 321	11 502	13 139	13 350	13 734	14 040	15 284	17 030	18 798	17 819
Extra-EU imports	4 935	4 642	5 089	6 013	7 116	7 595	8 907	9 393	9 850	11 534	12 871	11 181
Trade balance	8 458	7 096	6 232	5 488	6 023	5 755	4 827	4 647	5 433	5 496	5 981	6 638
Ratio exports / imports	3	2.5	2.2	1.9	1.8	1.8	1.5	1.5	1.6	1.5	1.5	1.6
Terms of trade index	178	151	130.	108	105	100	87	85	89.	96	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Metal products**  
**Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

major producing countries are France (18%), Italy (12%) and the United Kingdom (12%).

**Recent trends**

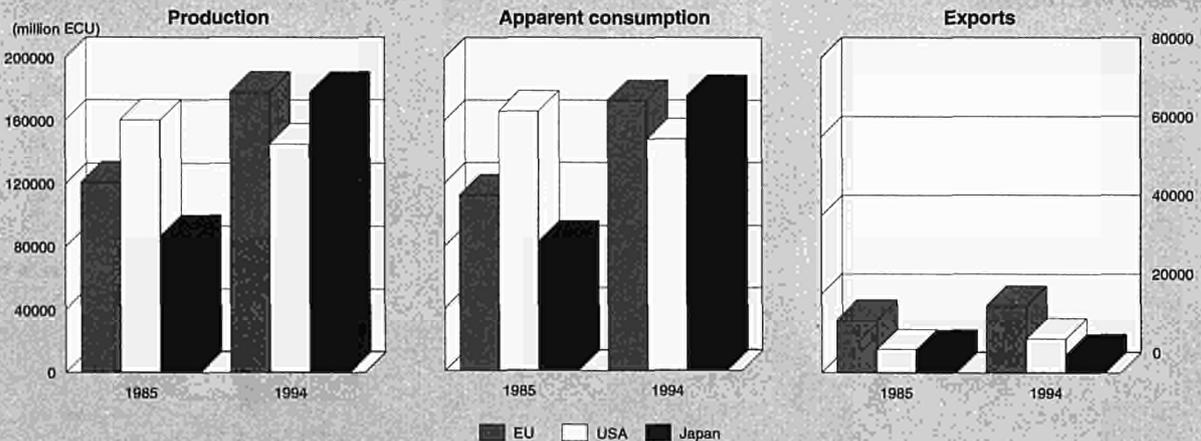
During the 1984-1991 period the metal products industry demonstrated a growing trend in production and consumption. In 1992 and 1993, however, the industry was confronted with a recession which brought about decreases in production and consumption. Some downstream industries such as the building and construction sector were severely hit by the recession, which resulted in weak demand for metal products. In order to prevent EU production from declining as much as consumption, the EU industry increased its extra-EU exports. In 1994, production and consumption started to increase again. The short and medium term for production and consumption are expected to see continued growth, as is the level of extra-EU exports.

The trade surplus has decreased during the years between 1985 and 1992 as extra-EU imports grew faster than extra-EU

exports. However, starting in 1993, the increase in extra-EU exports was greater than that of the extra-EU imports which resulted in an increasing trade balance. In 1994, the trade surplus grew by only 1.1% compared to the year 1993. 1995 should, however, see growth of around 7%. The same trend in growth should continue for the next couple of years, after which it will stabilise.

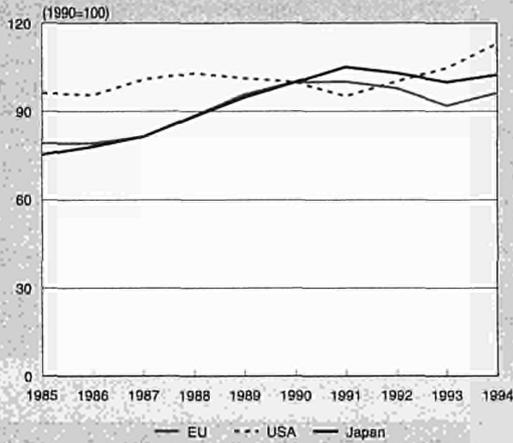
During the 1984-1987 period, employment in the metal products industry declined slightly. This period was followed by a three years rise in employment, but from 1991 to 1994 the industry was faced again with a continuously declining workforce. This decrease is not only due to cyclical movements but is also caused by the rationalisation of production within the industry. Employment figures are forecast to rebound in the short and medium term. Overall labour productivity in the metal products industry has increased at an annual average of 2% during the 1985-1993 period, with 1994 demonstrating a 5% increase. These developments imply that production

**Figure 4: Metal products**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Metal products**  
International comparison of production in constant prices



Source: DEBA GEIE

growth can still be achieved with a declining number of employees.

### International comparison

Between 1991 and 1993, both EU and Japan production (in constant prices) has declined. While US production started to recover in 1992, EU and Japanese production only started to grow again in 1994. The American metal products industry has performed best during the 1991-1994 period with an average annual growth rate around 6%. During the 1985-1994 period, the Japanese production (in constant prices) saw the best average annual growth with a rate of 3.5%.

In 1994, Japanese production in current prices was almost as high as EU production. The Japanese workforce, however, is only half of the EU workforce; 967 470 against 1 936 191. From 1985 to 1994, production in the US declined by almost 10% resulting in the loss of the leading position in the global market. When comparing the value added per employee, the EU appears to have the lowest value equalling 37 689 ECU per employee in 1994. The corresponding figures for the US and Japan were 55 640 ECU and 80 936 ECU, respectively.

Germany is the largest EU manufacturer of metal products with a value added equalling 29.9 billion ECU. With respective values of 74.1 and 78.3 billion ECU, however, the USA and Japan are more than twice as large in the manufacturing of metal products.

### Foreign trade

The EU is a net exporter of metal products, although the trade surplus has been continuously decreasing during the 1984-1992 period. From 1993 on, however, the EU trade surplus has started to grow again, which is caused by the fact that the growth of extra-EU exports in absolute terms has been higher than the growth of extra-EU imports. During the 1992-1994 period, however, the annual percentage increase of extra-EU exports has been slightly lower than the corresponding increase of extra-EU imports; 10.1% versus 10.8% per annum.

In 1994, more than 30% of total extra-EU exports were destined for the EFTA countries. Another major destination, though much smaller in share, was the US (13%). Poland, the Czech Republic and Japan together accounted for about 7% of total extra-EU exports. In the same year, about 36% of total EU exports originated from the EFTA countries and the US (12%). Far Eastern countries like Japan, China and Taiwan accounted for approximately 20% of total extra-EU imports.

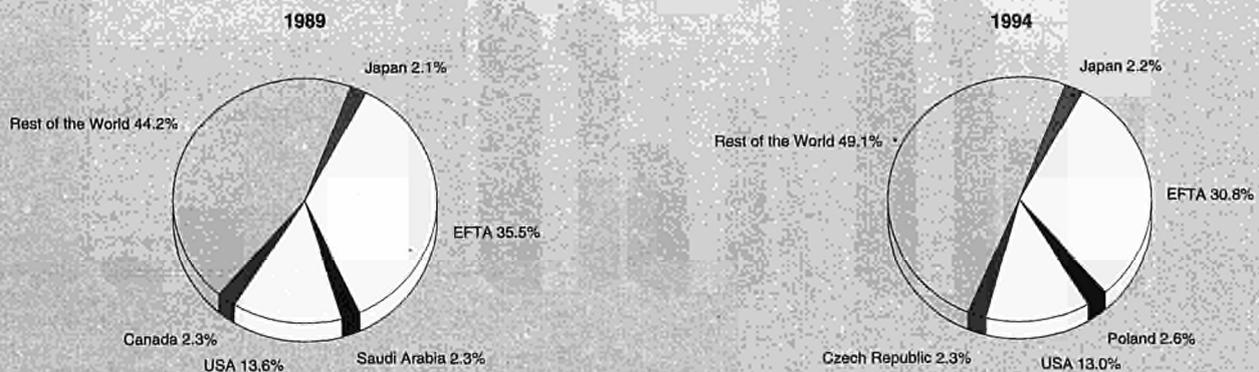
The trend in trade is to export high value added products and import low value added items. During the period 1985-1994, the import/consumption ratio has increased significantly. While this ratio was only 4.4% in 1985, the corresponding 1994 value increased to 6.7%. In 1994 the overall export/production ratio was still lower than the 1985 figure, although the ratio has been increasing since 1990. In 1994, 9.5% of total EU production of metal products was exported to non-EU countries, while the corresponding ratio for 1985 was 11.1%. The increase of the ratio since 1990 from 7.5% to 9.5% is an indication of improving international competitiveness.

## MARKET FORCES

### Demand

The industry manufactures metal products for a wide range of industries. Important customer industries are the automotive sector, the construction industry, mechanical engineering, energy industries, chemical industries, iron and steel industries, household appliances, electronics, transport industries, and agricultural and horticultural industries. Due a downturn in these downstream markets, demand for metal products was

**Figure 6: Metal products**  
Destination of EU exports



Source: Eurostat

**Table 5: Metal products**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	85.4	86.7	89.3	95.3	99.2	100.0	100.7	101.5	103.4	110.5
Unit labour costs index (3)	90.6	93.8	95.0	93.0	95.0	100.0	106.7	111.0	112.6	107.6
Total unit costs index (4)	87.3	88.8	89.5	92.0	97.5	100.0	103.9	106.9	106.2	104.2
Gross operating rate (%) (5)	9.0	9.6	9.9	10.8	10.3	10.4	9.9	9.2	8.3	9.6

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

also weak in 1992 and 1993. From 1994 on, major downstream industries, such as the automotive and the mechanical engineering industries, have registered growth which has led to a higher consumption of metal products in 1994. Apparent consumption increased by 4.7% and by an estimated 10.2% in 1995. Also for the coming years the industry's perspective is positive.

The relative importance of the downstream industries varies between the different subsectors and the relative importance of these subsectors for the different Member States. For example, major client industries of the boilermaking industry in France and Germany are chemical industries, while in Italy and the United Kingdom harbour and shipping industries are major clients.

As the product processes in the client industries are continuously being technologically improved (e.g. automation and robotisation), demand for standard metal products is increasing. The market has been subject to significant changes in demand, including shifts in the relative importance of the major clients. Some of these changes are heavily influenced by environmental developments. With respect to the manufacture of boilers, for instance, demand from the nuclear power industry collapsed, while attention for co-generation or the

simultaneous production of power and thermal energy from a common fuel source has grown.

Changes in demand, however, are not only induced by environmental pressures. Another significant factor influencing demand is the industry's sensitivity to the general economic development. Postponement of investments in downstream industries affects the position of the metal products industry. Enterprises specialising in metal products for heavy industry are particularly vulnerable to these swings.

### Supply and competition

Due to weak demand in most downstream industries and the world-wide overcapacity, prices have come under pressure. Furthermore competition from the former Eastern European countries, where labour costs are relatively low, has intensified. Especially in mass markets with standard products price competition is fierce. Prices of metal products are somewhat higher but still competitive if compared with the prices of alternative materials such as plastic parts, stamping, roll-formed metal and composite components.

The core of the EU industry competitive power is sophisticated, high quality, specially designed products. The competitiveness of the EU industry can be further improved if to an increasing extent efforts of manufacturers are directed towards R&D.

**Figure 7: Metal products**  
**Origin of EU imports**



Source: Eurostat

**Table 6: Metal products  
Breakdown by size of enterprise, 1992 (1)**

(%)	Number of enterprises (units)	Share of number of enterprises	Share of employment	Share of turnover
Less than 20 employees	255189	90.4	33.8	28.6
20-99 employees	22938	8.1	27.9	26.1
100 or more employees	4141	1.5	38.3	45.3

(1) Estimates for EUR15.  
Source: Eurostat Enterprises in Europe

The increased demand for higher efficiency in downstream industries and the growing environmental concern will stimulate manufacturers to direct more efforts to R&D, which in turn will lead to increasing know-how and comparative advantages in the longer run.

There is an ongoing tendency towards concentration in the client industries. Together with the growing market power of the client industries, the mutual dependency of the supplier and client industries is increasing.

### Production process

The weak downstream markets accompanied by a lower capacity utilisation have caused a stabilisation of labour productivity in the early 1990s. The resulting decline in employment could not prevent an increase of unit labour costs. Over the 1990-1993 period these costs rose by 14.7% against a stabilisation of the labour productivity index. As a result, the profitability of the industry has increasingly been put under pressure.

The production processes in the industry are being technically improved in two different ways: rationalisation and specialisation in quality products. Not only technical criteria are decisive in international competition. Products must also be competitive from the cost angle. Besides the technological advancement of EU products and the high quality and service level, the EU competitiveness has accordingly been improved by cost reductions. These reductions lead to an increasing efficiency of EU production, which is reflected in an increasing labour productivity and a smaller growth of unit labour costs. From 1990 to 1994 labour productivity increased by 10.5%, which is higher than the corresponding rate for unit labour costs (7.6%). In absolute terms, labour productivity (produc-

tion divided by employment) has increased from 58 786 ECU in 1985 to 100 046 ECU in 1995, representing an average annual growth of 5.5%.

The increase of labour costs during the early 1990s have given rise to a trend for mergers as larger minimum plant sizes are required to cope with the necessary investments. Further specialisation is encouraged by the environmental requirements. For example, companies that formerly galvanised their products themselves now leave this to specialised plants. By servicing a number of companies the unit cost can be reduced.

## INDUSTRY STRUCTURE

### Companies

In 1992 the EU metal products industry consisted of more than 282 000 manufacturers, of which 90% employed less than 20 employees and only 1.5% employed 100 or more employees. Presently, the majority of the metal products manufacturers is still small or medium sized. The 1.5% of large enterprises accounted for 45% of total turnover and about 38% of total employment, while the small firms constituted about 29% of total turnover and employed 34% of the total industry's workforce.

In the top ten European metal products companies, France claims four out of the top five companies with Pechiney (1), Marine-Wendel (3), CGIP (4) and Carnaudmetalbox (5). In 1994, Pechiney had by far the highest turnover and lowest profits in Europe with 10 755 and -570.6 million ECU, respectively. Some other companies which make up the European top ten are Germany's Deutsche Babcock (2), Schmalbach-

**Table 7: Metal products  
Production in constant prices and employment by Member State (1)**

	Production (million ECU)		Employment (thousands)	
	1985	1994	1985	1994
Belgique/België	3146	3844	43.8	43.9
Danmark	2121	2882	27.4	N/A
Deutschland	48615	61406	651.5	655.2
Ellada	725	662	17.1	12.0
España	11348	14283	222.1	170.0
France	27594	31977	394.9	357.7
Ireland	475	757	7.6	8.6
Italia	20737	28255	244.8	233.7
Luxembourg	140	332	1.9	2.6
Nederland	5150	7134	59.6	70.6
Portugal	984	1694	45.3	52.9
United Kingdom	20261	18718	343.9	300.6

(1) Some country data has been estimated.  
Source: DEBA GEIE

**Table 8: Metal products**  
**The 15 largest companies in Europe, 1994**

(million ECU)	Country	Turnover	Net profit	Employment (thousands)
Pechiney	F	10754.8	-570.6	58.2
Deutsche Babcock	D	4245.1	18.2	36.2
Marine - Wendel	F	4035.9	93.3	32.5
CGIP	F	3954.5	174.5	31.1
Carnaudmetalbox	F	3784.0	165.3	30.3
Caradon	GBR	2564.9	168.3	26.0
Schmalbach-Lubeca	D	2020.3	33.8	12.9
Royal Packaging Industries Van Leer	NL	1835.3	37.2	16.1
Rheinmetall Berlin	D	1682.9	-4.7	14.5
Buderus	D	1556.3	42.3	10.5
Celsius	S	1497.8	83.2	17.1
Hunter Douglas	NL	1474.0	41.7	11.5
Industrivarden	S	1388.7	136.7	9.6
Glynwed International	GBR	1322.4	57.3	11.0
Delta	GBR	1158.7	53.1	13.6

Source: DABLE

Lubeca (7), Rheinmetall Berlin (9) and Buderus (10); Great Britain's Caradon (6); and the Netherlands's Royal Packaging Industry (8).

### Strategies

Due to the overcapacity in the industry which emerged during the economic recession of the early 1990s, manufacturers of metal products were forced to reconsider their activities. This reconsideration has resulted in a rationalisation process characterised by cost reduction, merger activity and an emphasis on niche marketing among some manufacturers, concentrating either on high volume work or on specialised low volume products. Furthermore, the industry still is increasing the R&D efforts. These growing R&D efforts directed towards innovation and the design of complete tailor-made and more environmentally friendly solutions, provides the EU industry a competitive advantage against the intensifying global competition from Far Eastern and Eastern European countries.

Rationalisation of production processes and the establishment of production capacity in low wage countries have enabled

manufacturers to lower production cost. Quality improvement and after-sales service are particularly important in high income Western industrialised countries. In a recessive economy in which consumers tend to concentrate on prices, rationalisation is increasingly being used as a strategic tool in order to remain competitive. Due to this rationalisation process, merger and acquisition activities, joint ventures and co operation agreements between firms have become increasingly common. In light metal packaging, for instance, food, beverage and aerosol can production is now largely concentrated in the hands of the five main European manufacturers, which include Pechiney (F), CarnaudMetalbox (F-UK), VIAG-Continental Can Europe (D), Crown Cork CIE (USA) and PLM (S).

Future growth may also come from the penetration into new geographical markets which could lead to considerable growing export markets. The opening up of the markets in Eastern Europe and China to Western companies has had a positive influence on the EU manufacturers of metal products.

### REGIONAL DISTRIBUTION

The industry has local and regional as well as global aspects. Manufacturers who are operating on a small scale, and who depend on demand from downstream industries, tend to be located in the area where these industries are concentrated. Because of the small scale of many of the firms, long distance transport is generally not viable. Furthermore, in order to lower transportation costs, most metal parts industries are located near their clients, e.g. near the major industrial centres. At the same time, however, the large firms in the industry, for example, in the hand tools industry, have a global orientation.

### ENVIRONMENT

The EU Working Party on the Definition of Waste has endorsed a proposal stating that if a material may be used by a third party after a transformation, it can be considered a product. Industry groups in Europe, however, are still concerned that the EU's regulation for implementing the Basel Convention will hinder the trade of scrap metal and other materials.

In the development of technology the metal products industry also pays a lot of attention to environmental issues such as a reduction of emissions. Most of the small and medium sized

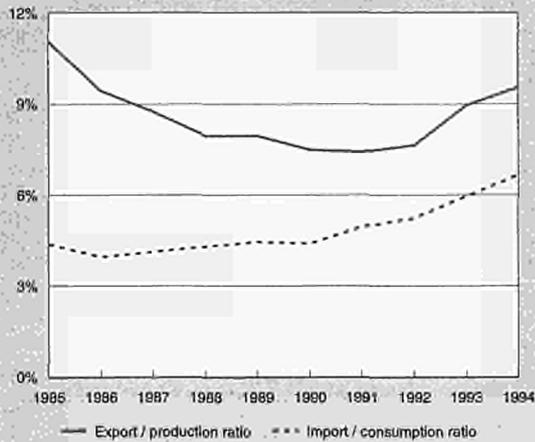
**Table 9: Metal products**  
**Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.7	0.7
Danmark	0.9	1.0
Deutschland	1.2	1.2
Ellada	0.7	0.6
España	1.1	1.0
France	1.0	1.0
Ireland	0.4	0.4
Italia	1.0	1.0
Luxembourg	0.5	0.9
Nederland	0.7	0.9
Portugal	0.7	0.9
United Kingdom	0.9	0.7

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

**Figure 8: Metal products  
Trade intensities**



Source: DEBA GEIE, Eurostat F1

enterprises use third party firms to recycle metals out of the waste disposal. Regarding Intra-EU competition, a coherent approach in ecological issues is necessary, otherwise distortions in competitive power will arise. The EU has become more active in this area via the carbon tax proposal and, more generally, its fifth action programme on the environment.

Some environmental issues especially apply to the downstream industries and therefore indirectly affect the upstream metal products market. In their attempt to meet the needs of their clients, manufacturers of metal products also put efforts in product innovations concerning safety and environmental issues.

The EU Directive on Packaging and Packaging Waste (94/62/EC) adopted on 14 December 1994 applies to the light and heavy packaging industries. It sets out a clear reference frame which should lead to harmonisation of member states laws. It should thus check the proliferation of national initiatives which risk to have a negative impact upon both the environment and trade. The directive's objectives are to reduce the total volume of packaging put onto the market, to increase *recyclable packaging and to promote environmentally friendly recycling of all types of packaging*. It also establishes essential requirements for packaging and sets targets for the recovery and recycling for the next five years, starting from its implementation by member states as from 30 June 1996.

## REGULATIONS

Standardisation is important to this industry. The German DIN quality standard and ISO standards are used to indicate the quality. Most companies in the metal products sector support the initiative to make ISO 9000 standards compulsory not only for EU manufacturers, but also for importers.

In anticipation of the EU Directive 89/392, which has attained a definite character in 1995, and also in response to customer requirements for a safer working environment, the industry has already put much effort in R&D for the improvement of safety conditions of equipment in the recent past. This directive defines essential requirements concerning machine safety, health provisions for people and environment. Machines complying with the EU regulations will obtain the CE mark.

Furthermore, the EU energy policy will have a major impact on the upstream industries of the energy sector like the metal

products industry. The debate on the introduction of a carbon tax in the EU is an issue which deals with the EU energy policy. In the long run such a tax might affect total energy consumption and could, therefore, lower demand for metal products. At the same time, however, the metal products industry could also benefit from a growth in demand for more efficient processing techniques in downstream markets.

The EU Directive on VOC (Volatile Organic Compounds) emissions which is currently being elaborated will have an impact on some subsectors, such as metal packaging. The proposed directive aims at limiting the release of organic solvents used in the coating of light metal packaging. Solutions consist in either the application of air cleaning plant, such as after burners, or in using practically 100 % solvent free coating systems. In a near future more complete process oriented systems will be developed resulting in reduced usage of raw materials and energy.

## OUTLOOK

The industry seems to have recovered from the economic recession in the early 1990s. In a world-wide perspective, the EU has retained and will further strengthen its competitiveness. Especially, through large R&D efforts directed towards the refinement and cost-effectiveness of existing functions in combination with the delivery of high quality and environmentally products, a further competitive advantage will be created.

The industry, however, will remain dependent on the general economic development as the performance of the major downstream industries of the metal products industry has a cyclical character. The expected moderate economic growth and, at the same time, the implementation of structural measures (rationalisation and quality improvement) will have a favourable impact on the industry's competitiveness and performance. Therefore, in the short and medium term EU production and consumption of the metal products industry as a whole are expected to grow.

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# Constructional steelwork

## NACE (Revision 1) 28.1

*With an annual production ranging between 6 to 7 million tonnes of steelwork, the European constructional steelwork industry represents one of the basic industrial activities within the EU. Its output is over 8 billion ECU per year and a direct employment of 200 000 people highlights the prominent role the steelwork industry plays in the EU economy.*

### INDUSTRY PROFILE

#### Description of the sector

Following the new NACE Revision 1 classification, the constructional steelwork industry is grouped as 28.1 category, thus included under NACE class 28: manufacture of fabricated metal products, except machinery and equipment.

Constructional steelwork is the backbone of the EU's building industry. It provides the supporting framework for many of EU's major structures: massive suspension bridges and the more traditional road and rail bridges, power stations and transmission towers, high rise office blocks and countless industrial, commercial and agricultural buildings, not forgetting many prestigious and historic structures, the Eiffel Tower, for example. These structures are mainly built from hot and cold rolled steel sections and steel plate, supplied by steel producers throughout the EU.

While in the past, especially steelworks for industrial buildings, was produced by the main steel industry itself, nowadays steelworks is mostly produced by a specialised independent steelwork industry.

With a production of about 6 to 7 million tonnes per year, the EU constructional steelwork industry falls between the USA (accounting for 5 to 6 million tonnes per year) and Japan (accounting for 7 to 10 million tonnes per year).

As emphasised by the European Construction Industry Federation (FIEC), past present and future trends in the steelwork industry largely depend from the activity of the construction sector and its cyclical nature. After the recessionary pressures in 1991 and 1993, in 1994, the construction industry peaked up again.

Production for the EU steel industry peaked in 1990, reaching a level of nearly 7 million tonnes or more, including the former East Germany. Concerning the individual EU Member States: the UK steelwork production peaked in 1989 with 1 323 000 tonnes; Germany and Nederland peaked in 1992 and the others EU Member States reached maximum production level in 1990 and 1991.

After a severe decline, the lowest level of steel production was recorded in 1993, 5 928 000 tonnes, some 15% lower than in 1990. Except in the UK, all EU steel production slowed down in 1994. Italy was unable to reverse the downward trend and has continued to decline since 1990. Over the 1990-1994 period, among the EU Member States, Finland recorded the largest drop in production (40%). During the 1993-1994 recession, on the other hand, the UK lost 33% of the overall 1989 production.

Exports is expected to increase by 10% in 1995. Main trade partners are Germany, Italy and Switzerland. Due to the economic importance of its constructional steelwork sector, Austria will significantly contribute to the EU market for the industry.

#### Recent Trends

##### Austria

In Austria, the economic prospect for 1995 is positive: in the 1994-1995 period the economy grew by 2.8%, compared to the 2.7% figure recorded in the 1993-1994 period. Inflation rate in 1995 was of 2.7%, compared with the 3.0% figure recorded in 1994.

Construction industry production increased by 4.1% over the 1993-1994 period and by 2.4% over the 1994-1995 period, after a decline over the 1992-1993 period. The constructional steelwork industry, though, did not follow the trends in the construction industry, except for 1994, when steelwork production peaked up at 79 000 tonnes.

The main market is the industrial building sector which consumes between 35 to 40 thousand tonnes per year, a market share of 20% of total constructional steelwork consumption.

Prospects for the future are an overall positive growth, boosted by the construction of new infrastructures, bridges, and the "new railways" and power stations.

##### Belgium/Luxembourg

After a significant drop of 22% registered in the 1991-1992 period, in 1993 the Belgian constructional steelwork industry showed signs of recovery. During the first quarter of 1994 competition amongst constructors rises, mainly due to depressed market conditions. The project price remained extremely low but the cost of steel sections continued to increase. The collapse of project prices had a negative effect on the financial results of steel constructors, profitability in this sector fell below the inflation rate.

Due to its size and to the economic importance of its constructional steelwork industry, Luxembourg do not have a significant impact on the overall performance of the Belgium/Luxembourg constructional steelwork industry.

##### Denmark

The production of the Danish constructional steelwork industry peaked up in 1990 and then declined for three consecutive years. After the upturn started during the 1993-1994 period, the industry performed remarkably.

Following forecast, the production level for 1996 could reach or even exceed the level recorded in 1990.

The power generating sector is very active in Denmark, with a demand in tonnes of 19 000 in 1990, 12 000 in 1993 and around 18 000 in 1995 and 1996. Two new power stations have been built, along with the extension of an existing plant and the building of smaller combined heat and power stations. The amount required for high voltage pylons and towers is decreasing, largely because of environmental protection reasons. The amount required for windmills, however, is expected to increase as significant advances have been made in windmill building technology. Steelwork production growth for the agricultural sector remains insignificant because of the uncertainty about how the Government will react to environmental issues and provide subsidies. Production was 10 000 tonnes per year for 1989-1990. It fell to 6 000 tonnes in 1994 and only a small recovery is expected for 1995 and 1996.

Exports of steelwork have grown steadily from 1992 and are expected to continue following a similar trend as Denmark profits from the EU membership and the opening of East Europe. Exports of 27 000 tonnes forecast for 1996, will exceed the level of 19 000 tonnes recorded in 1991.

##### Finland

Construction output grew faster than GNP in the 1988 to 1990 period, thus was likely to fall faster than economic activity as a whole in the four year period from 1991 to 1994. In 1993, construction's volume (90 000 tonnes), was 40%

**Table 1: Structural metal products**  
**Production of constructional steelwork by country**

(thousand tonnes)	1990	1991	1992	1993	1994	1995 (1)	1996 (1)
Belgique/België, Luxembourg	359	385	300	304	308	310	315
Danmark	105	97	92	78	88	98	106
Deutschland	1 215	1 621	1 706	1 637	1 698	1 730	1 764
España	1 269	1 184	1 014	860	900	905	910
France	751	697	641	550	544	556	567
Italia	1 200	1 120	920	801	790	725	725
Nederland	516	561	583	504	533	535	540
Österreich	81	72	69	77	79	70	70
Suomi/Finland	150	125	95	90	95	105	115
Sverige	83	78	72	67	61	62	65
United Kingdom	1 132	903	833	858	937	1 019	1 052
Total	6 861	6 843	6 325	5 826	6 033	6 115	6 229
Norway	42	40	39	40	44	47	47
Switzerland	81	82	76	60	55	60	60

(1) Forecasts.

Source: National sources

**Table 2: Structural metal products**  
**Constructional steelwork use in industrial buildings by country**

(thousand tonnes)	1990	1991	1992	1993	1994	1995 (1)	1996 (1)
Belgique/België, Luxembourg	230	265	205	208	215	205	208
Danmark	24	22	21	18	20	24	26
Deutschland	445	619	668	636	654	650	665
España (2)	511	477	408	346	360	370	370
France	446	393	330	306	300	308	313
Italia (2)	401	380	277	225	210	205	215
Nederland (2)	89	104	114	98	95	99	100
Österreich	42	37	35	38	43	35	35
Suomi/Finland	50	44	25	20	25	30	35
Sverige	40	34	30	29	33	34	35
United Kingdom	620	425	398	423	475	537	564
Total	2 898	2 800	2 511	2 347	2 430	2 497	2 566
Switzerland	48	49	43	28	32	35	35

(1) Forecasts.

(2) Estimates for 1990 to 1994.

Source: National sources

**Table 3: Structural metal products**  
**Constructional steelwork use in bridges and hydraulic structures by country**

(thousand tonnes)	1990	1991	1992	1993	1994	1995 (1)	1996 (1)
Belgique/België, Luxembourg (2)	13	16	18	14	15	12	10
Danmark	12	10	10	8	9	8	9
Deutschland	38	47	61	69	65	70	73
España (3)	22	21	18	15	20	18	20
France	40	33	34	36	36	36	41
Italia (3)	15	20	15	15	25	20	20
Nederland (3)	34	24	27	29	56	40	40
Österreich	4	6	5	11	9	8	8
Suomi/Finland	20	21	20	18	18	20	23
Sverige	9	11	14	11	10	24	12
United Kingdom	47	47	49	51	59	56	52
Total	254	256	271	277	322	312	308
Norway	4	5	10	10	5	7	5
Switzerland	4	4	5	4	4	4	4

(1) Forecasts.

(2) Including exports.

(3) Estimates for 1990 to 1994.

Source: National sources

**Table 4: Structural metal products**  
**Constructional steelwork use in non-residential buildings by country (1)**

(thousand tonnes)	1990	1991	1992	1993	1994	1995 (2)	1996 (2)
Belgique/België, Luxembourg	16	19	15	15	16	16	17
Danmark	9	9	7	5	6	6	7
Deutschland	485	621	648	646	645	650	660
España (3)	610	569	487	414	432	420	440
France	150	162	160	126	128	131	133
Italia (3)	660	588	490	450	430	410	410
Nederland (3)	328	360	365	319	323	328	335
Österreich	12	11	10	11	10	10	10
Suomi/Finland	37	33	25	17	17	20	22
Sverige	29	27	22	22	14	15	16
United Kingdom	371	317	253	254	270	286	304
Total	2 707	2 716	2 482	2 279	2 048	2 292	2 354
Norway	25	23	21	21	23	26	26
Switzerland	19	16	20	16	10	11	11

(1) Includes offices, shops, leisure, public administration, health, education, etc.

(2) Forecasts.

(2) Estimates for 1990 to 1994.

Source: National sources

lower than the level of 1990, the most pronounced decline among the EU/EFTA countries.

A 5% growth in production of constructional steelwork in 1994 and the expected rises of 10% in 1995 and 1996, shows the recovery of the industry.

Exports have always been of great importance to the Finnish constructional steel industry. At the end of the 1980s exports accounted for about 30-40% of total production in tonnage terms, but in 1991 exports level drop to 20%, largely because of the fall in demand for Finnish steelwork in Russia and the Baltic States. Recently exports is growing substantially: in 1995 reaching a total of 30 000 tonnes, amounting to 35% of total constructional steelwork production.

Around 40% of this was exported to Russia, 30% to Sweden and Norway, about 15% to other EU Member States and 15% outside the EU.

Even if it is not significant in terms of tonnage, the proportion of market share in the multi-storey building sector has now reached 15% of total constructional steelwork production.

#### France

The constructional steelwork industry in France consists of more than 450 companies, with a turnover of 1.9 billion ECU in 1992 and employment of about 17 000 people.

Constructional steelwork production increased by 33% from 1987 reaching in 1990 a maximum of 750 000 tonnes, its highest level over the whole 1990-1994 period. Since then production declined over four consecutive years and in 1994 stood at 544 000 tonnes. In 1994 and 1995, the economy began to grow again and steel consumption is expected to be around 556 000 tonnes in 1995, with a further increase in 1996 leading to a total of 570 000 tonnes.

Export is included in these figures and it is encouraging to note that even during recessions, exports were strong and exhibited signs of real growth. Export could well reach 50 000 tonnes in 1996, compared with 36 700 tonnes in 1990.

The main sector is the industrial buildings sector. Between 1990 and 1994, production of constructional steelwork for use in industrial buildings and complexes fell by more than one third, from 445 000 tonnes to 300 000 tonnes. The policy of low interest rates applied in France, as elsewhere in the EU, is likely to assist the recovery of the industry.

The second important sector is the non-residential buildings sector, but the market reached maturity during the 1980s and real recovery will only be possible when substantial proportions of empty office space will be occupied.

The market for bridges and hydraulic structures remains buoyant: production in 1996 is expected to exceed the peak of 1990, with 41 000 tonnes.

The quantity of steelwork used in agricultural buildings, after a decline of 10% in 1992, will be maintained at a constant 40 000 tonnes per year.

The only sector expected to show a decline in demand for steelwork is towers, with a drop of about 50% since 1990.

Despite comprehensive energy programmes initiated by Electricite de France (EDF), the number of towers could well be reduced as plans are being drawn for the burying of low and medium voltage lines underground.

The steel market share of single storey buildings and in agricultural buildings, 83% and 64% respectively, is a significant achievement. In housing, which is dominated by concrete and masonry, the penetration of steel is still minimal.

#### Germany

West and East Germany constructional steelwork industries develop very differently.

West Germany's structural steel industry continued to enjoy favourable trends, with production peaking at 1 395 000 tonnes in 1992.

The down turn started at the end of 1992: production fell by 9% over 1992-1993, 1.6% over 1993-1994 and 0.8% over 1994-1995.

After the political, social and economic unification of Germany, East Germany's constructional steel industry has been restructured, profiting from funds provided by Treuhand, and is now developing new markets in Western Europe, benefiting from relatively low wages and low costs in East Europe and the Russian Federation. Germany now forecasts a performance for 1996 of 1 764 000 tonnes of steelwork, compared with 170 600 tonnes in 1992.

All sectors are participating in this development and most notably the bridge and hydraulic structures sector reports high levels of activity, as they expand and improve the existing infrastructure in the old East. This market expects a dramatic

increase in production up to 73 000 tonnes in 1996, against the previous peak of 47 000 tonnes in 1991.

Compared with other EU Member States, Germany's steel market share is not very high and this creates the potential for future growth.

### *Italy*

Contrary to what has happened in other EU Member States, the total construction sector did not recover after 1993 and the constructional steelwork market followed similar trends.

Demand peaked in 1990, reaching a level of 1 200 000 tonnes, but dropped considerably since then, showing no improvement for 1996. Considering the 725 000 tonnes expected for 1996, the cumulative loss over the five years from 1990 to 1995 will amount to 40%.

Besides the recession common to all the EU Member States, reasons for this marked decline, could be related to changes in the way public sector tenders are managed in Italy.

The consumption of constructional steelwork in the non-residential sector, which covers offices, shops, leisure, health, and education buildings, is considerable compared with other EU Member States. A lack of visibility in this sector affects the performance of the whole construction industry, which currently employs 20 000 workers and has a turnover of 1.6 billion ECU.

### *The Netherlands*

The Netherlands have the highest steelwork production per capita in the EU.

The Dutch steelwork industry accounts for a large share of the construction market, 28% of multi-storey buildings, 80% of warehouses and 40% of bridges. Its penetration of the agricultural market is similarly strong, greenhouses form the largest proportion of projects in this field.

Dutch exports are important to the industry and the relationship Netherlands has with Germany is a vital ingredient in their mutual success. The evolution of steelwork design has been a joint venture between the two countries and Germany is a major export market for Dutch steelwork.

Demand for steelwork peaked in 1992 and began to decline the following year. Since then there has been a gradual improvement in the market and 540 000 tonnes are expected to be produced in 1996.

General prospects for 1995 and 1996 are good, due to expected substantial growth in investments in the industry. However, the volume of new buildings will increase only slightly, with continuing downward pressure on price. The market for office buildings is currently being negatively affected by high volumes of unused floorspace. The main increase in building activity has been recorded in the dwelling sector.

Interestingly, the large civil engineering sector is forecast to grow; production is expected to be around 40 000 tonnes for 1995 and 1996, lower than in 1994 but notably higher than in the years from 1990 to 1993. Growth areas are bridges, road structures and hydraulic mechanisms.

### *Norway*

The economic situation in Norway at the end of 1995 was fairly good, better than had been forecast. Total GDP rises in 1995 to around 4.8%, exceeding market expectations of 3.8%. The fall of interest rates strengthened the industry and made investments more profitable. The unemployment rate has decreased to 5.1%, one of the lowest in the EU.

However growth in the economy is expected to slowdown in 1996.

The steel construction industry in Norway reflects the general climate. A marked increase in demand for constructional steel-

work has been recorded from 1992 to 1995, 39 000 tonnes rising to 47 000 tonnes. The steel industry has made progress in recent years in penetrating the construction market. The bridge market is particularly good, with several active new bridges projects and the recently completed Nordorlan Bridge being a notable success.

### *Spain*

The Spanish market of constructional steelwork products is amongst the largest in the EU. Production increased by almost 25% between 1988 and 1990, more than in the construction industry as a whole, falling by 20% in the two years to 1992. A further 15% fall was experienced in 1993. Since 1994, the construction industry benefited from sustained economic growth, the devaluation of the Peseta and a reduction in interest rate. Price competitiveness of steelwork compared with other materials boost the recovery in 1990.

Spanish constructional steelwork has a low penetration rate in several sectors, such as bridges 10%, multi-storey buildings 30% and agriculture 15%.

Even though population is 40% higher in Italy than in Spain, compared with the Italian market, the Spanish market share in the total EU constructional steelwork industry is higher. By 1996 total production for the industry is expected to reach about 910 000 tonnes in Spain, whereas in Italy the total will be of 725 000 tonnes.

### *Sweden*

After a decline of nearly 40% between 1989 and 1993, the steelwork industry began to recover. The lowest production level was recorded in 1994, as 61 000 tonnes. By 1996 production is expected to reach 65 000 tonnes in 1996.

For the industrial buildings sector the forecast for steelwork production level in 1996 is estimated to be 10% below the peak recorded in the years 1989/1990.

The non-residential building sector is expected to perform well but at levels far below the maximum enjoyed in the 1980s. Demand for steelwork is believed to be around 16 000 tonnes for 1996, compared with 29 000 tonnes for the period 1989 to 1990.

Consumption in the residential buildings sector stood at 2 200 tonnes in 1991, 2 700 tonnes in 1993 and is expected to fall to 1 000 tonnes for 1995. This is disappointing as considerable effort was attached to the promotion of steelwork in the residential market and it has had no noticeable effect.

The high market share of steel, 50% in multi-storey buildings and 80% in single-storey factories and warehouses provides a strong foundation for further expansion in this sector.

The present situation for bridges and hydraulic structures looks much more encouraging. The market share for steel is about 50% and tonnage has increased from 9 000 tonnes in 1990 to an average of around 15 000 tonnes per year from 1994 to 1996, including 14 000 tonnes for the Hoga Kusten Bridge. Prospects for bridges for the rest of the decade appear to be very positive. The Swedish Government recently approved a ten year investment programme for the road and railways network, amounting to approximately 11 billion ECU and not including projects such as the Oresund Link between Sweden and Denmark, valued at about 4.5 billion ECU.

### *Switzerland*

Like other EU Member States, in the early 1990s, Switzerland had to manage an inflation rate which was unsuitable for its economy and was forced to implement restrictive measures to bring this rate down to 2% or lower.

The stagnation in the construction market had a negative effect on steel construction industry and the placement of new orders

fell continuously from 1991 to its lowest level in 1994, a reduction from 87 000 tonnes to 55 000 tonnes.

The evolution of production in Switzerland is similar to that of Sweden. A fall in demand for industrial buildings of 40%, over the 1989-1990 led to a drop in constructional steelwork use in industrial building, amounting to 48 000 tonnes in 1990. By 1996 consumption of steelwork in industrial building is expected to reach 35 000 tonnes, 12% lower than the level reached in 1990. The significant slowdown in demand for non-residential buildings is expected to continue throughout 1996.

Tonnage in bridge and hydraulic structures have not been affected by the monetary policies of the 1990s

The Swiss market remains active and it offers many opportunities for future growth.

#### *United Kingdom*

The UK experienced a strong decline in steelwork construction but it was the first major economy to recover from the 1993-1994 recessionary period. Production in the steelwork sector fell from 1 323 000 tonnes in 1989 to 823 000 tonnes in 1992, since then the economy has begun to grow again.

The industrial buildings sector is expected to perform very well over the 1992-1996 period, with demand for constructional steelwork rising significantly, from 398 000 tonnes in 1992 to 564 000 tonnes expected for 1996. Steelwork producers are confident that this figure will continue to increase as the availability of floorspace is diminishing and the market is currently very active. Steel has a very high market share in this sector, which remains quite profitable despite pressures on price.

In the non-residential building sector the lowest level was reached in 1993 with 254 000 tonnes. The expected demand for 1996 is 304 000 tonnes. Public sector offices, health and education buildings experienced their worst year in 1991 but have recovered gradually since, though not reaching the pinnacle of production achieved between 1984 and 1988.

In the commercial sector, the office market remains quite depressed, mainly in the London area, which was the hub of activity in relation to steel framed buildings in the late 1980s. The amount of available floorspace is beginning to decrease and some new large office projects are now under construction. The prospects for 1996 are encouraging, demand is expected to reach 88 000 tonnes for office buildings, which amounts to one third of the level recorded in 1989.

The bridge market performs well and the penetration of steel is about 40%, showing a strong growth compared with the 20% market share of only two years ago.

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## OUTLOOK

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Reacting to recessionary period and increasing competition, steelwork companies have increased efficiency and productivity through major restructuring and providing "just in time" deliveries to satisfy customer requirements. This allowed many producers to gain a greater share of their own domestic and total EU and international markets.

Growth in demand for industrial buildings, the largest outlet for this sector, is expected to be not strong enough to sustain constructional steelwork industry development.

The market for other residential buildings is still active and might improve in 1996. Bridge production, hydraulic structures and other public projects are all expected to decrease in volume in 1996 and then improve as demand for steel structures to support the high speed railway system increases.

Poor domestic conditions have forced some companies to look further and develop export markets, including parts of the Far East, where the construction climate is more favourable. Lander of the former GDR being one example of a company focusing on non-domestic business.

Written by: ECCS

The industry is represented at the EU level by: European Convention for Constructional Steelwork (ECCS). Address: Avenue des Ombrages 32/36, Bte 20, B-1200 Brussels; tel: (32 2) 762 0429; fax: (32 2) 762 0935.

# Boilers and metal containers

Nace (Revision 1) 28.21, 28.22 and part of 28.3

The economic recession has resulted in a weak intra-EU demand for boilers and metal containers. At the same time the EU industry is experiencing increased competition from non EU countries. In response, the EU manufacturers have started to diversify into related segments and have increased their R&D efforts in order to meet the increasing customers' requirements for more efficient and more environmentally friendly production processes. Increasing concerns about energy conservation and efficiency are expected to lead to greater use of cogeneration systems in the coming years by the major downstream industries. The same concerns will affect the market of domestic heating equipment. In this market, the use of solar power for heating water in combination with gas heating is expected to increase. In the course of 1995, growth of demand from major downstream industries has slowed down. Nevertheless, moderate growth rates for the boilermaking industry are expected in the coming years.

## INDUSTRY PROFILE

### Description of the sector

In the old NACE 1970 classification, the production of boilers and metal containers was covered by class 315. In the new NACE classification (Rev.1), however, the industry has been split up and spread out over the following classes of industry:

- 28.21 Tanks, reservoirs and containers of metal;
- 28.22 Central heating radiators and boilers;
- 28.30 Steam generators, except for nuclear reactors and parts thereof.

According to this definition the industry also includes the manufacture of domestic radiators, which is an important difference between the old and new classification.

The products of this industry can be thus be divided into the following categories: steam generators and boilers; fitting for steam generators and boilers; water tanks, containers and cisterns; distillation; refining and similar equipment; pipework; central heating radiators; miscellaneous activities, including installation, repair and maintenance services.

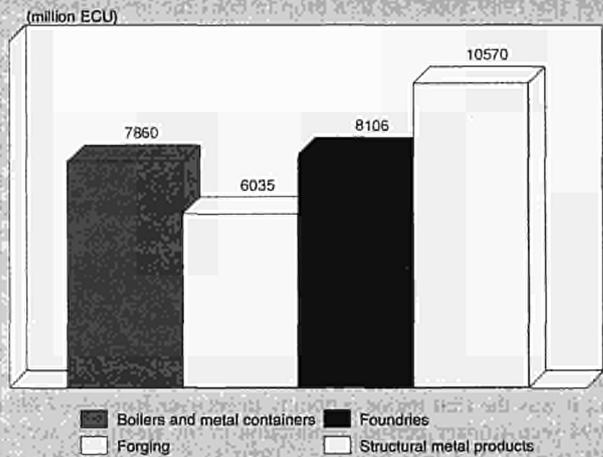
The EU production of boilers and metal containers is concentrated in Germany, France, the United Kingdom and Italy. These four countries together account for nearly 88% of total EU production of boilers and metal containers. Germany is the largest producer with a total production value of 7.4 billion ECU, directly followed by France with a production of nearly 7.2 billion ECU.

Compared with other related industries, the manufacture of boilers and metal containers is relatively small in terms of value added. The industry's size is compatible with the size of the manufacturing industry of machine tools.

### Recent trends

From 1985 until 1991 the EU production of boilers and metal containers has been steadily increasing with an average annual growth rate of 4.5%. Due to the economic recession and the resulting weak demand from downstream markets, production dropped during the 1991-1994 period. In 1995, production started to increase again (+6.1%), especially induced by a growing EU demand (+5.7%). As a consequence, total pro-

Figure 1: Boilers and metal containers  
Value added in comparison with related industries, 1994



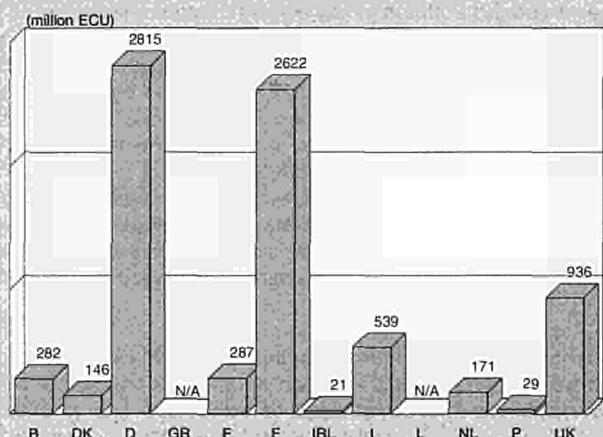
Source: DEBA GEIE

duction reach an all time high level of more than 21 billion ECU. With the membership of Austria, Sweden and Finland the EU production will further increase to 23.5 billion ECU. Austria and Sweden are especially important manufacturers of boilers and metal containers. Although only a small part of the EU production is exported, the export rate is rising. From 1988 to 1995, extra-EU exports doubled thereby pushing up the export rate from 6% to 9%.

### International comparison

In 1995, the EU was the leading manufacturer of boilers and metal containers. With a production totalling 21 billion ECU, the Union was far ahead of the USA and Japan with estimated production figures of 8.1 and 5.8 billion ECU respectively. Compared with 1985, the EU has recorded a production growth of 35% against a decline in US production and a doubling in Japanese production.

Figure 2: Boilers and metal containers  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Boilers and metal containers**  
Main indicators in current prices (1)

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	14 463	16 668	18 525	19 685	19 214	18 169	18 494	19 809	22 170	23 300	24 380	25 660
Production	15 563	17 630	19 482	20 549	20 236	19 438	19 811	21 026	23 524	24 710	25 850	27 180
Extra-EU exports	1 298	1 201	1 230	1 252	1 426	1 660	1 762	1 719	1 753	1 840	1 930	2 010
Trade balance	1 100	962	957	864	1 022	1 269	1 316	1 216	1 353	1 410	1 470	1 520
Employment (thousands)	240	214	223	225	220	202	195	199	216	220	220	220

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Boilers and metal containers**  
Average real annual growth rates (1)

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	1.9	-1.7	0.3	1.6
Production	1.4	-1.4	0.2	2.2
Extra-EU exports	-3.8	5.7	0.3	10.4
Extra-EU imports	5.6	7.8	6.6	7.0

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Boilers and metal containers**  
External trade in current prices

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	1 298.2	1 205.2	1 120.3	956.9	1 200.7	1 230.2	1 252.4	1 426.5	1 659.9	1 762.3	1 718.7	1 753.3
Extra-EU imports	197.9	183.9	212.0	182.9	238.6	273.7	388.4	404.1	391.1	446.0	502.5	399.9
Trade balance	1 100.3	1 021.3	908.2	774.0	962.1	956.5	864.0	1 022.3	1 268.7	1 316.3	1 216.2	1 353.4
Ratio exports / imports	6.6	6.6	5.3	5.2	5.0	4.5	3.2	3.5	4.2	4.0	3.4	4.4
Terms of trade index	91.9	96.8	95.5	108.1	104.4	100.0	99.5	101.9	105.4	95.1	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15

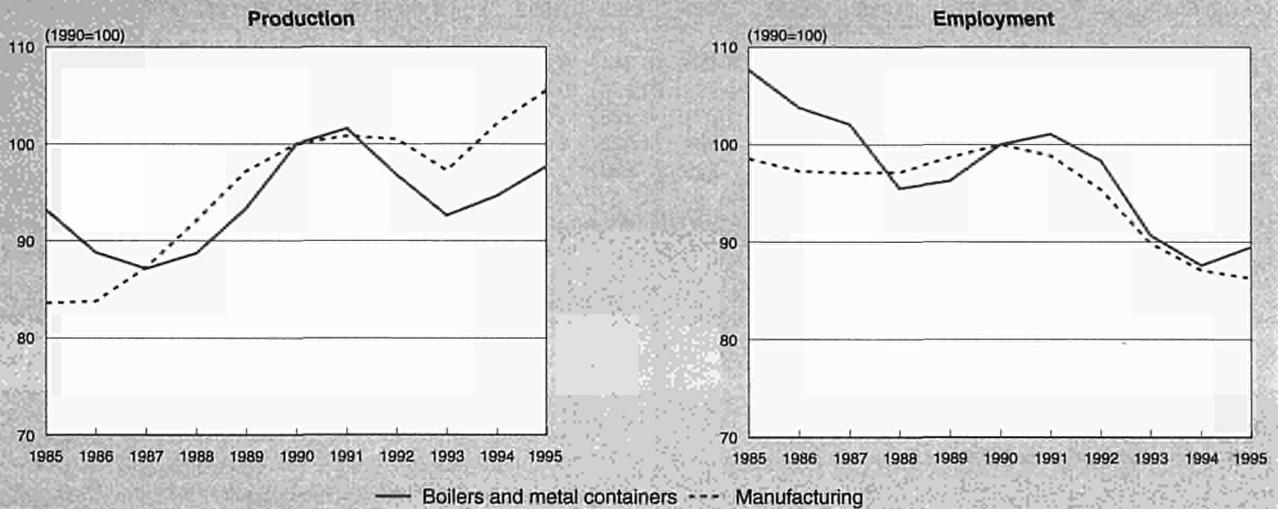
Source: Eurostat

**Table 4: Boilers and metal containers**  
Production in constant prices and employment by Member State

	Production (million ECU) 1985	1994	Employment (thousands) 1985	1994
Belgique/België	291	525	4 554	6 830
Danmark	141	401	2 369	N/A
Deutschland	5 899	5 766	64 371	56 105
Ellada	22	15	631	401
España	665	691	12 986	8 108
France	6 237	6 343	76 751	64 544
Ireland	36	71	718	946
Italia	1 330	1 861	18 480	16 061
Luxembourg	5	12	58	76
Nederland	287	426	3 707	5 134
Portugal	78	59	4 476	1 741
United Kingdom	3 166	2 270	50 620	31 911

Source: DEBA GEIE

**Figure 3: Boilers and metal containers**  
**Production and employment compared to EU total manufacturing industry**



(1) Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

With a production value of 7 455 million ECU, Germany is the second largest single producing country in the world just behind the USA. Besides the new EU Member Austria, Switzerland is also a major manufacturer of boilers and metal containers. In the recent past former East European countries such as Poland and Czech Republic have become important suppliers of boilers and metal containers.

**Foreign trade**

Despite the fact that the exports and imports are of relatively minor importance for boilers and metal containers, trade is however gaining some more importance. Export rates and import penetration have been growing since 1991; and extra-EU exports in absolute terms have doubled over the 1988-1995 period.

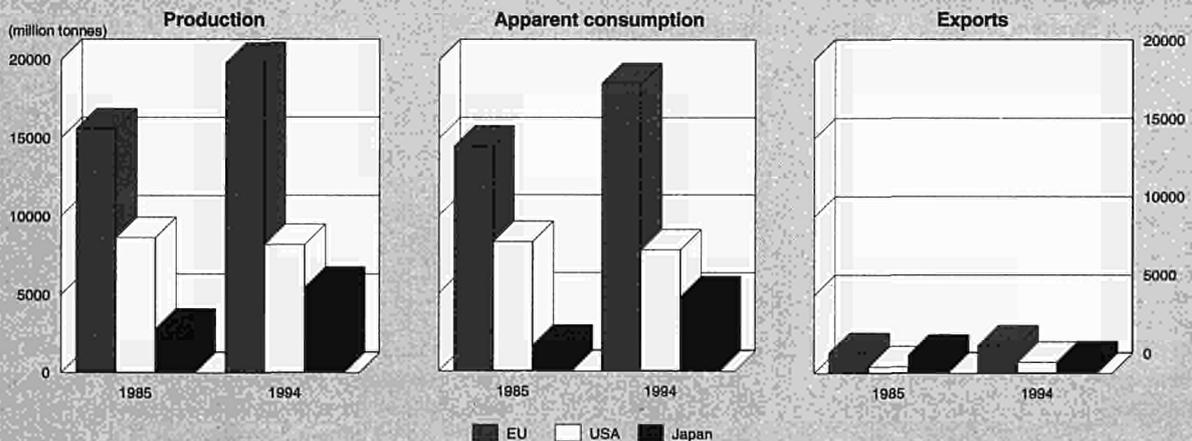
In 1994, major destinations of extra-EU exports were the USA, Austria and Switzerland. Other important destinations were leading developing countries in North Africa and South America and newly industrialised countries in the Far East.

Although exports to EFTA countries increased in absolute terms since 1989 (12.7%), their share in the total extra-EU exports has declined. Extra-EU exports increasingly find their destination in Eastern European countries, such as Poland, the Czech Republic and Russia. These countries constituted around 11% of total extra-EU exports in 1994.

With the entry of Austria, Sweden and Finland to the EU, extra-EU trade figures will slightly change. These countries used to be important export destinations for EU boilers and metal containers, although Austria and Sweden are also major manufacturers of these products. As a result, extra-EU exports have slightly increased in 1995, i.e. from 1 922 to 1 961 million ECU. Austria and Sweden accounted for 23% of total extra-EU imports in 1994. Since these imports have vanished, total extra-EU imports dropped from 446 (EU-12) to 355 million ECU (EU-15) in 1995.

The latter development has caused a shift in the market shares of non-EU suppliers of boilers and metal containers. In absolute and relative terms imports from East European countries

**Figure 4: Boilers and metal containers**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



have become more important. Poland and the Czech Republic, for instance, together accounted for 19% of total extra-EU imports in 1994. Switzerland and the USA, however, remain the largest non-EU suppliers of boilers and metal containers with respective shares of 12.9% and 15.2% in the same year.

## MARKET FORCES

### Demand

The boilermaking industry supplies equipment to many branches of other industries. It produces a variety of capital investments goods for the following purposes (in decreasing order of importance): the production of thermal and electrical power; the oil and gas industry; the chemical, petrochemical and pharmaceutical industries; the food and drink industry; the construction industry; the iron and steel and metalworking industries; the paper industry; various other industries including automobiles, textiles, mechanical engineering, cement, rubber and electronics. Radiators and central heating equipment are sold to both industrial (construction) as well as consumer markets.

The importance of customer industries varies by Member States. In France major downstream industries are energy, chemical industry, the food and drink industry, building and construction, and oil and gas; they account for 70% of the sector's output. Major client industries in Germany are the chemical, automotive, engine construction and energy industries. In the United Kingdom, oil, energy, harbour and shipping, iron and steel are primary outlets, while in Italy, energy, automobile, harbour and shipping and ventilation industries are major clients. The market has been subject to significant changes, including shifts in the relative importance of the main clients. Some of these changes in demand of most downstream industries are heavily influenced by environmental developments. For instance, demand for the nuclear power industry collapsed due to sharp cutbacks in investments resulting from negative publicity about the nuclear risks. As concern about global warming and future energy supplies intensify, some downstream industries are demanding more from fossil fuel driven energy systems. This has resulted in a growing attention for co-generation or the simultaneous production of power and thermal energy, usually steam, from a common fuel source. The combination of heat and electricity produces an 80-90% greater output than if generated separately. Some major chemical companies saw co-generation as an opportunity to save on investment in new boilers. Also, demand of power producers have changed, increasingly using combustion turbines techniques for the construction of combined cycle plants

instead of the more expensive boiler fired steam plants of equal capacity.

Changes in demand, however, are not only induced by environmental pressures. Large cyclical and structural swings are significant features of the market for boilers and metal containers. Energy prices have a substantial impact on industry demand for boilers and in energy saving equipment (heat exchangers), since they affect investment decisions. The relatively low oil prices since the end of 1985 were an important determinant of recent demand trends. Another significant factor influencing demand is the industry's sensitivity to the general economic development. Postponement of investments in downstream industries affects the position of the boilermaking industry. Enterprises specialising in large boilers for heavy industry, such as power stations, are particularly vulnerable to these swings.

Between downstream industries and countries large differences exist, which have different impacts on demand. The chemical industry, one of the major investors of all process plant industries, have experienced high growth rates in 1994 and also in 1995, although prospects for 1996 are somewhat less optimistic. The electricity generation and supply industry is the most significant investor in the EU process industries. In Germany, for instance, this latter sector accounted for 26% of total process industry investment in 1994. Market demand for boilers from this industry has been stimulated by the heavy new and replacement projects in the Eastern regions of the country. In other countries, such as France, the absence of heavy replacement projects has a negative influence on demand for boilers and related equipment. Demand from the iron and steel industry has declined since the early 1990s, which is mainly due to the considerable overcapacity that characterises the EU iron and steel industry.

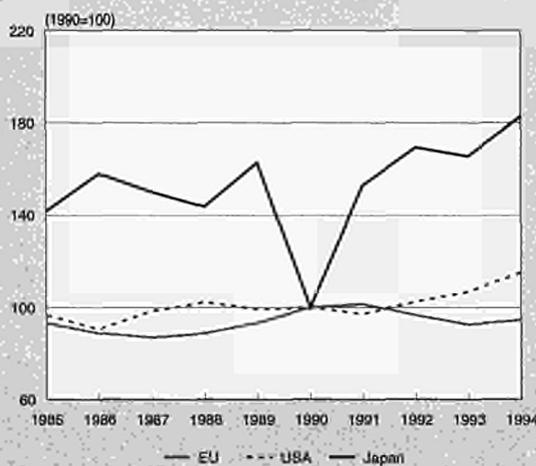
Demand from East European countries has grown in recent years, which is especially reflected in rising exports to Poland and the Czech Republic. Demand from these countries mainly stem from investments made by heat production plants, in order to deliver non-polluting heat more efficiently. This trend has resulted in a growing demand for fluid and pressurised bed boilers, combined cycle gas turbines or gas engines. The desulphurization and modernisation of old boilers should lead to further environmental improvements in the East European countries. A growing number of large industrial plants in these countries have built their own energy centres to provide heat and electricity for their industrial processes. It is expected that even with strong competition from gas and electric heating, central heat production by these companies will increase. This is due to the fact that this method is more efficient and is less polluting compared to individual heating. In the future, an increasing share of heat will be produced by cogeneration technologies, using modern coal burning boilers, gas turbines and gas engines.

Demand for central heating equipment and radiators depend to a large extent on construction activity. Also, the trend towards a higher energy efficiency in some countries is subsidised, and has a stimulating impact on replacement demand for this equipment. In some countries, such as the Netherlands and Germany, however, the replacement market has already reached its peak level in 1994 and 1995. For the coming years a slowdown of growth rates in this specific market is expected.

### Supply and competition

Most downstream markets of the manufacturers of this equipment and other investment goods have a high degree of capital asset utilisation. This is the major reason why these manufacturers are concentrated in countries with an emphasis on the production of investment goods: Germany, France, Italy and the United Kingdom

**Figure 5: Boilers and metal containers**  
International comparison of production in constant prices



Source: DEBA GEIE

**Table 5: Boilers and metal containers**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	86.6	85.5	85.4	92.9	97.0	100.0	100.5	98.5	102.1	108.0
Unit labour costs index (3)	89.1	94.4	97.9	95.3	95.6	100.0	106.9	113.5	115.0	110.4
Total unit costs index (4)	85.3	87.8	90.8	91.9	97.6	100.0	104.6	109.0	109.3	108.1
Gross operating rate (%) (5)	7.6	6.7	5.4	7.4	6.2	7.1	6.3	5.9	5.2	6.1

(1) Some country data has been estimated.  
 (2) Based on index of production / index of employment.  
 (3) Based on index of labour costs / index of production.  
 (4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.  
 (5) Based on (value added - labour costs) / turnover.  
 Source: DEBA GEIE, Eurostat

Except for the United Kingdom, these countries were able to increase the production of boilers and metal containers throughout the 1980s, but have been suffering from weak downstream markets since 1991. In 1994 and 1995, however, production in constant prices has started to recover in Germany, France and Italy from the economic recession. In the United Kingdom, however, the structural decline in the industry's output continued in these years.

The competitiveness of the EU industry can be further improved if to an increasing extent, efforts of manufacturers are directed towards Research and Development (R&D) and towards complete tailor-made solutions. Induced by the growing environmental concern and the ever increasing demands for a higher efficiency in the downstream industries, the manufacturers of boilers and metal containers are increasingly stimulated to direct more and more efforts to R&D. This will lead to increasing technological know-how and to comparative advantages in the longer run.

The EU competitiveness not only depends on a high level of technological knowledge, but also on other product and service features such as high quality, product innovation, reliability and flexibility which means adaptability to the needs of the market. Due to the high demands of European downstream industries, the European manufacturers have been stimulated to give high priority to these features which has resulted in a technological lead compared with the rest of the world.

Also in the market for domestic and office heating equipment R&D efforts are increasing due to the saturation of market demand and the increasing competition. In this market, R&D

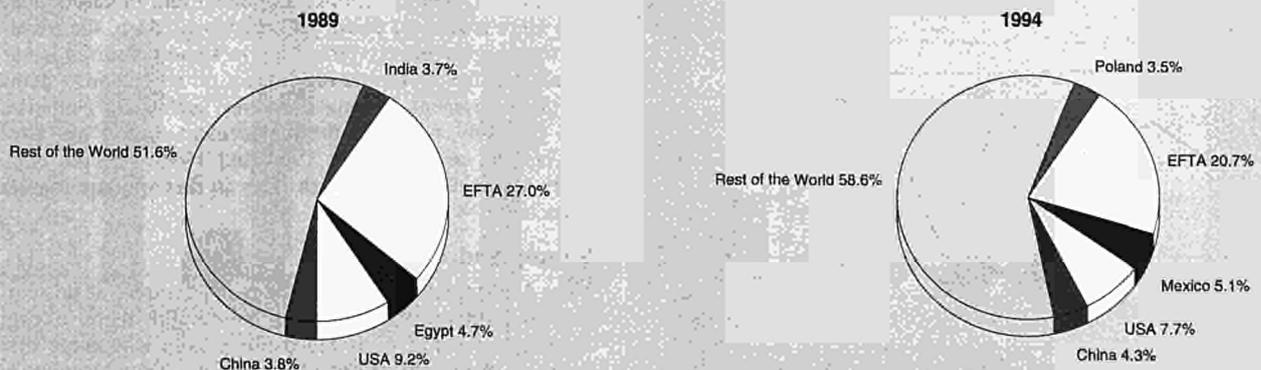
efforts are especially directed towards energy saving and environmental friendly processes. A recent development in R&D has been the development of a new catalytic heating system that needs no flame for burning. The condensing boiler uses a mixture of natural gas and up to 50% hydrogen produced by solar power. When led through a porous ceramic fibre body coated with catalytic active materials, the fuel/air mixture releases heat that is led to a heat exchanger. Heat is recovered also from exhausts which contain less nitrogen oxide than exhausts from conventional burning.

In most European member countries the major downstream market, the electrical generating industry, a process of privatisation and concentration is occurring. As a consequence, growing attention will be paid to cost savings in this client industry and the negotiating power of the few clients will increase. Both developments may lead to lower margins on boilers and related products.

**Production process**

Beside the technological advanced EU products and the on average high quality and service level, the EU competitiveness has also been improved by cost reductions. These reductions are reflected in a declining employment, and a parallel growth of the industry's output level. As a consequence, labour productivity (production divided by employment) has increased from 64 923 ECU in 1985 to 105 497 ECU in 1995, an average annual growth of 5%. The figure for 1995 is more or less the same as the corresponding figure for the USA, but substantially lower than Japan's labour productivity. Although, the Japanese production is still at a relatively low

**Figure 6: Boilers and metal containers**  
**Destination of EU exports**



Source: Eurostat

level, the country has been able to double the productivity rate in 10 years time.

Looking at the trade figures, the competitiveness of the EU industry does not seem to have been seriously affected by these developments. Although the extra-EU imports are still of minor importance in absolute terms, the penetration rate has been demonstrating a clearly increasing figure since 1988. In contrast, the doubling of extra-EU exports from 1988 to 1995 reflect an improving competitiveness of the EU industry. The competitiveness of the industry can only be maintained if production costs are being controlled.

## INDUSTRY STRUCTURE

### Companies

In boiler manufacturing for industrial markets three types of firms can be distinguished: system integrators; product specialists; and activity specialists.

System integrators are the smallest, but most powerful group. They are usually medium sized firms or divisions of large diversified industrial groups installing systems. They focus on three activities: design and engineering, manufacturing and on-site installation. System integrators also offer a wide range of maintenance services. System integrators further concentrate their activities on design, contracting and on-site installation. Much of the intermediate assembly work is contracted out to small local firms.

Product specialists supply equipment such as vessels, boilers and heat exchangers. Owing to the low unit costs of production they have a good international competitive position for specific products. The enterprises, however, tend to be domestically oriented. The firms are normally medium sized enterprises. Raw material input represent over a third of total turnover. The value added content is less than for system integrators.

Activity specialists are firms which manufacture particularly specialised items, mostly from the blueprints of the client. This is the most common type of firm within the boilermaking industry. They are sub-contractors of the system integrators and operate on a small scale. Their high specialisation tends to hinder export activity.

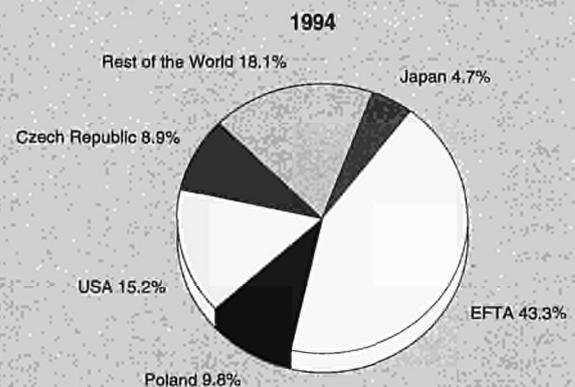
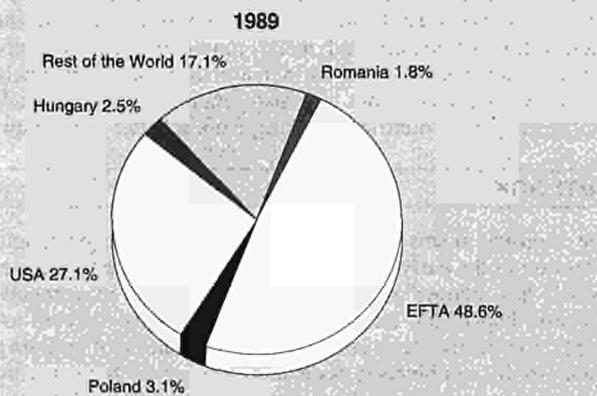
Enterprises in this sector have regional or national rather than an international orientation. They can generally be found near the centres of heavy industry. The largest companies tend to

be located in the countries which dominate the Single Market, although only one of the ten largest EU firms is located in Germany (Deutsche Babcock). In Germany, there are many medium sized enterprises and Babcock is an exception. If all activities of the enterprise in Germany, the United Kingdom and France are taken together, Babcock is the largest EU firm. Other large firms in the boilers and metal containers industry include CLN (I), Degremont (F), Sabroe Refrigeration (DK), Alstom (F), Industria Cantieri Metallurgici (I), Dexion International (UK), which is a subsidiary of Interlake (USA), Ponticelli (F), Aalborg (DK), Cockerill Sambre (B) and Stork (NL). Some of these firms are active in East Europe and the Far East. Babcock, for instance, will participate in the construction of a co-generation power plant project in China and will supply four advanced boilers. In the market for domestic heating equipment, some recent acquisitions have occurred. The French company Sanier Duvall, for instance, has bought a share in the Italian firm Hermann di Pontenure; while Atag (D) has acquired a 67% stake in LZE (NL), which is a supplier of solar power systems.

### Strategies

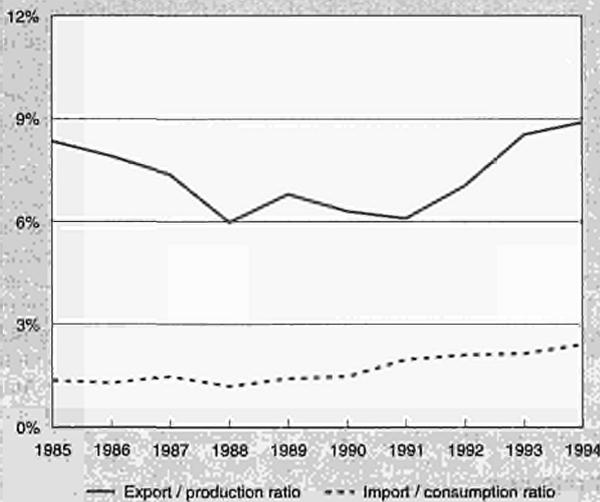
Due to the overcapacity in the industry, which emerged during the economic recession of the early 1990s, manufacturers of boilers for heavy industry were forced to reconsider their activities. This reconsideration has resulted in a rationalisation process characterised by cost reduction, merger activity and a diversification into related markets: mechanical engineering, electricity and civil engineering. The cost reductions have led to a declining employment; from 223 759 in 1990 to 195 214 people in 1994. Furthermore, the industry has increased and continues to increase its R&D efforts. These growing R&D efforts are directed towards innovation and the design of complete tailor-made and more environmentally friendly solutions, and provide the EU industry an competitive advantage against the intensifying global competition from Far East as well as from East European countries. Future growth will not only come from the diversification into related markets. Also the penetration into new geographical markets could lead to considerable growing export markets. The opening up of the markets in East Europe and China to Western companies has a positive influence on the EU manufacturers of boilers and metal containers. Strong demand for energy efficient technology and equipment for power plants and other heavy industries - not only in East Europe but also to an

**Figure 7: Boilers and metal containers  
Origin of EU Imports**



Source: Eurostat

**Figure 8: Boilers and metal containers  
Trade Intensities**



Source: DEBA GEIE, Eurostat

increasing extent in China - will further stimulate EU production.

## ENVIRONMENT

The industry itself does not seriously threaten the environment. Environmental issues especially apply to the downstream industries. Client industries, however, are becoming more and more aware of safety and environmental issues also induced by developments in the industry's regulatory environment. In their attempt to meet the needs of their clients, manufacturers of boilers and metal containers also put efforts in product innovations concerning both safety and environmental issues. For instance, in response to the environmental problem concerning the danger of leakage of tanks for underground storage of chemicals and oil products. Much research has been done in the field of corrosion containment and substitute raw materials for tanks. In the USA, about 90% of all new tanks for oil stocking are made of plastic. The discovery that metal tanks corrode not only from outside but from inside as well, stimulated the use of plastic tanks. Installation of underground plastic tanks is very different from metal tanks, and demands a completely different organisation of the work. For instance,

**Table 6: Boilers and metal containers  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.5	0.8
Danmark	0.5	1.3
Deutschland	1.0	1.1
Ellada	0.1	0.1
España	0.5	0.5
France	1.8	1.7
Ireland	0.2	0.3
Italia	0.5	0.6
Luxembourg	N/A	N/A
Nederland	0.3	0.5
Portugal	0.4	0.3
United Kingdom	1.1	0.8

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

the use of a special glue allows only a limited amount of time to connect the pipework.

The market for environmental products such as for cleaning industrial waste water or air pollution is becoming increasingly important. This creates opportunities for the boilermaking industry. Enterprises are likely to have a competitive edge in countries where environmental regulation is already very strict (e.g. Germany and the Netherlands).

## REGULATIONS

In 1995 the EU Directive 89/392 has attained a definite character. This Directive defines essential requirements concerning machine safety, health provisions for people and environment. Provisions relate to the design, the materials used, the way in which machine operations should be illuminated, machine operations itself, safety against mechanical risks, the application of screens and other safeguarding components, maintenance and machine indications and identifications. Machines complying with the EU regulations will obtain the CE mark. Machine safety is of relevance to boilers and metal containers itself or incorporated in other investment goods. In anticipation of this EU Directive, but also in response to customer requirements for a safer working environment the industry has already put much effort in R&D for the improvement of safety conditions of equipment in the recent past. In new technology development the industry also pays a lot of attention to environmental issues such as a reduction of emissions.

Already in 1987 a directive on simple pressure vessels (87/404/EEC) was adopted. It relates to unfired vessels of a simple geometry which contain air or nitrogen. These vessels are mainly used as air receivers or braking cylinders. Simple pressure vessels have to fulfil several demands regarding safety in order to receive the CE mark. The directive does not apply to pressure vessels for nuclear installations, to pressure vessels for the propulsion of ships and aeroplanes or to fire extinguishers.

The recent liberalisation of the public procurement in power plant markets is expected to generate significant changes in electrical power equipment supplier firms. More generally, EU energy policy will have a major impact on the upstream industries of the energy sector. But harmonisation of the laws of Member States concerning pressure equipment is still required to establish an internal market for boilers. A proposal for a directive on this subject has been made.

Another issue which deals with the EU energy policy is the debate on the introduction of a carbon tax in the EU. Such a tax might affect total energy consumption leading to lower demand for boilers and metal containers in the long run. It might also lead to a growing demand for more efficient processing techniques in downstream markets. This latter development is expected to have a positive influence for the manufacture of boilers and metal containers. The industry will not only benefit from an increase in demand for newly innovative equipment, but will also retain a comparative advantage to other countries resulting from a better know-how.

## OUTLOOK

The industry seems to have recovered from the economic recession in the early 1990s. From a world-wide perspective, the EU has retained and will further strengthen its competitiveness. Especially, through large R&D efforts directed towards the refinement and cost effectiveness of existing functions in combination with the delivery of high quality and environmentally products further competitive advantage will be created.

Increasing concerns over energy conservation and efficiency are expected to lead to greater use of cogeneration systems

in the coming years by the major downstream industries. The same concerns will affect the market of domestic heating equipment. In this market, the use of solar power for heating water in combination with gas heating is expected to increase.

In the course of 1995 it has become evident that the demand from major downstream industries is stagnating. Especially, the German industry is poorly performing. Nevertheless, moderate growth rates for the boilermaking industry are expected in the coming years

**Written by: Netherlands Economic Institute**

**The industry is represented at the European level by:**

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# Forging

## NACE (Revision 1) 28.4

The European forging industry is a typical subcontracting industry largely structured around medium-sized firms. Its principal customers are the transport equipment industry and the mechanical engineering industry. With a production volume of around 3.0 million tonnes in 1994, the forges of the EU surpassed those of both the United States and Japan. In the following report the forges in the Netherlands, Ireland, Denmark, Greece and Portugal have been excluded, as these countries do not have any significant forging capacity. Similarly, no account has been taken of the Swedish and Czech forging industries, which are also members of Euroforge.

### INDUSTRY PROFILE

#### Description of the sector

The majority of forges are subcontracting businesses. In addition to their own products (e.g. propeller shafts, clamping systems for the construction industry and pipeline fittings), they offer products manufactured in most instances to customers' drawings on the open market.

The following product groups are included under the heading of forged parts: hammer forgings; drop forgings, including hot extrusions and upset forgings; flanges and pipeline fittings; and cold extrusions. Hammer forges are in some instances production departments of larger undertakings (e.g. steel works). Drop forges and manufacturers of extrusions, flanges and pipeline fittings are mostly medium-sized firms. Only where very large quantities of regularly used items are involved do some motor vehicle manufacturers and component and system producers, for example, manufacture individual forgings in their own factories.

The majority of forgings are semi-finished products which, in some areas at least, require further processing such as heat treatment, surface treatment or machining. Where special forming processes are used, components ready for installation can also be produced.

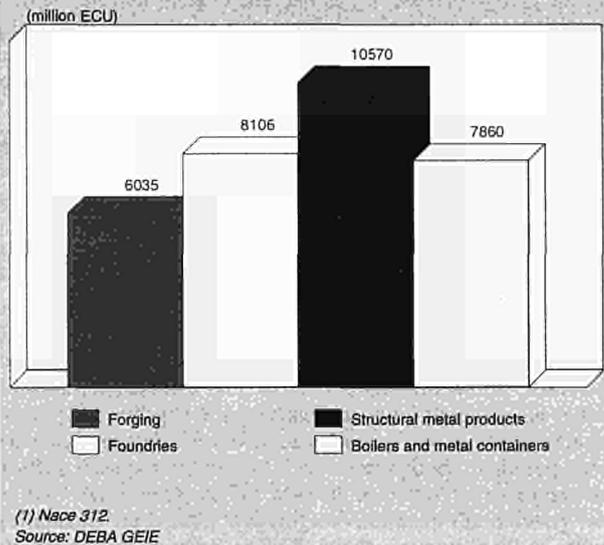
Forgings are produced with or without heating of the blank (generally cut from rectangular or round bars or shaped pieces from thick sheets) by shape-imparting tools which are brought together. While hammer forgings are produced with simple flat or round tools and have machining allowances of several millimetres, the aim of the other product groups (drop forgings, flanges, pipeline fittings, and extrusions) is to get as close as possible to the final form of the work-piece by a correspondingly high expenditure on tooling. Functional surfaces and forged components ready for installation can be produced in many instances by a combination of different manufacturing processes.

A very wide range of steels as well as non-ferrous metals (e.g. Al, Mg, Cu, Ms and Ni alloys) can be shaped by forging. The differences in the ductility of the various materials determine the nature of the manufacturing process and also limit the shape and precision that can be achieved.

The desired properties of the products (e.g. strength, structure and workability) are achieved either through the process itself (e.g. heat treatment from forging heat and work hardening) or in subsequent processes (e.g. annealing, tempering and strengthening by abrasive blasting).

The forging industry manufactures high-quality products which offer considerable advantages for customers, particularly in respect of weight saving, resistance to fracture, long life, consistently high quality and suitability for recycling.

Figure 1: Forging (1)  
Value added in comparison with related industries, 1994



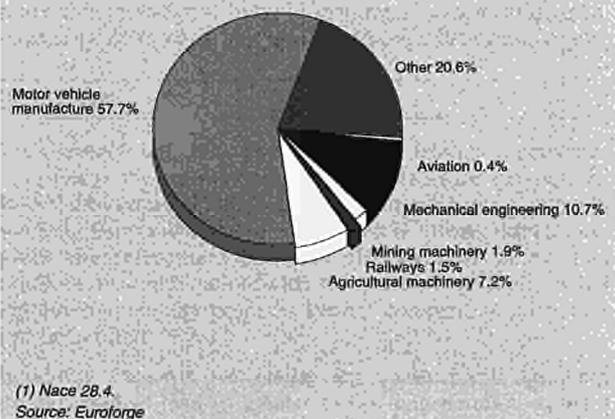
### MARKET FORCES

#### Demand

European forges produced about 3.0 million tonnes of steel forgings in 1994. 67% of this total was accounted for by drop forgings. Between 1990 and 1993 the volume of production in the drop forges of the EU fell by some 24%. Production in the customer sectors of interest to forging (i.e. the transport equipment and mechanical engineering industries) also fell by almost the same proportion.

At the end of 1993, and particularly during 1994, the production of forgings increased again markedly, thanks to the revival of the EU economy. Comparing 1994 with 1993, forging output rose by 18%. For 1995, following the previous trend, a growth in production of about 13% compared with the previous year was recorded. Economic prospects for 1996 are assessed in various ways by the individual member associations of Comité de Liaison des Industries Européennes de l'Estampage et de la Forge (Euroforge), but overall pro-

Figure 2: Forging  
Sales by end market, 1994 (1)



**Table 1: Steel forging**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1996 (2)
Apparent consumption	1 368	1 661	1 555	1 485	1 246	1 451	1 670	1 680
Production	1 618	1 831	1 722	1 612	1 389	1 632	1 839	1 850
Net exports	250	170	171	127	143	181	169	170
Employment (thousands)	56	54	51	46	39	38	N/A	N/A

(1) Part of Nace 28.4; Germany, Belgium, Spain, Italy, France and the United Kingdom.

(2) Euroforge forecasts.

Source: Euroforge

**Table 2: Forging**  
**External trade in current prices (1)**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)
Extra-EU exports	478.2	351.5	345.3	439.0	542.5	531.3	531.4	545.3	594.2	682.4	735.7	731.1
Extra-EU imports	186.0	160.3	136.6	194.4	260.0	309.3	337.0	404.8	383.1	427.6	472.6	374.1
Trade balance	292.2	191.2	208.7	244.6	282.5	222.0	194.4	140.6	211.1	254.9	263.1	357.0
Ratio exports / imports	2.6	2.2	2.5	2.3	2.1	1.7	1.6	1.3	1.6	1.6	1.6	2.0
Terms of trade index	99.9	95.3	99.7	97.7	101.4	100.0	95.6	98.7	99.5	97.9	N/A	N/A

(1) Nace 28.4; forging, drop forging, closed die-forging, pressing and stamping.

(2) Eurostat estimates.

(3) Eurostat estimates for EUR15.

Source: Eurostat

duction in the European drop-forging industry is expected to be maintained at the currently satisfactory level or to rise slightly.

## INDUSTRY STRUCTURE

### Companies

The greater part of the European drop-forging industry is structured around medium-sized companies. The following comments may be made regarding the importance of forges in the individual countries.

In Germany, which accounts for 48.5% of EU output, there are some 150 forging companies. 75% of these enterprises are located in North Rhine-Westphalia, 12% in Baden-Württemberg, and the remaining 13% are divided equally between the other West German and the East German Federal *Länder*. The forging companies have the following size structure: 13 forges have over 400 employees, 18 have between 200 and 400, 54 between 50 and 200, and 65 forges employ fewer than 50 people. The large companies include Thyssen Umformtechnik, Gerlach-Werke and Carl Dan. Peddinghaus.

In Italy, which accounts for 21% of EU output, most companies are located in the north, notably in Piedmont, around Turin, in Lombardy, in the Como, Varese and Brescia regions, in Venezia and in Emilia Romana. The major companies are Teksid, a subsidiary of Fiat (90% of its output is destined for the motor vehicle industry), Fils, Casartelli and ACSA Steel. In Lombardy 10% of the companies account for 50% of total output.

In the United Kingdom, which accounts for 11% of EU output, most of the manufacturers of small forgings are located in the Midlands and in the Birmingham area. Large forgings are mostly produced in the Sheffield area of South Yorkshire. The largest firm is the forge at British Steel Forgings, which accounts for about 40% of UK production. Other important forges are John Stokes & Sons Ltd. and Clydesdale Forge Company.

In France, which accounts for 11% of EU output, there are 72 companies engaged in drop forging. The regional distribution of forging companies is as follows: 25 in the Ardennes, 6 in the Loire area, 14 in Eastern France and 27 in the other

**Table 3: Forging**  
**Breakdown by major product line, 1994 (1)**

	Production (thousand tonnes)	Sales (million ECU)
Open die forging	507	1 041
Drop forgings, of which:	2 032	3 714
Drop forging industry	1 632	2 945
In-house forging	400	769
Flanges	283	640
Extrusions	230	622
Total	3 052	6 017

(1) Nace 28.4.

Source: Euroforge

**Table 4: Forging (1)**  
**Value added by Member State, 1994**

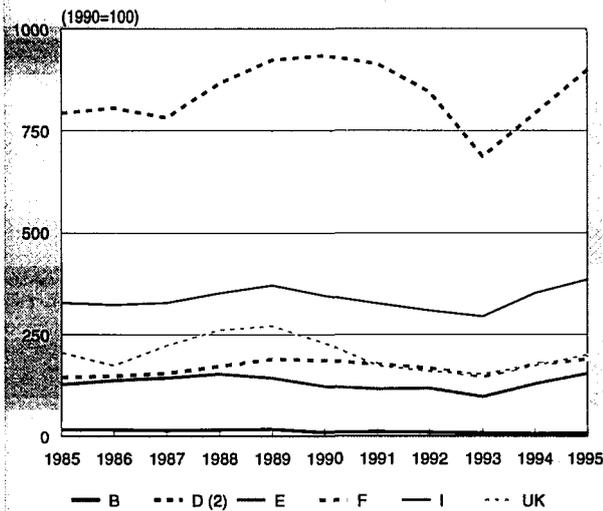
(million ECU)	
B	14.1
D	1 580.5
E	176.5
F	408.2
I	404.6
UK	359.8

(1) Part of Nace 28.4.

Source: Euroforge



**Figure 3: Steel forging  
Production by country (1)**



(1) Part of Nace 28.4.  
(2) Including former East Germany from 1991.  
1995 are Euroforge forecasts.  
Source: Euroforge

regions. Three groups, with 85% of the output, dominate the sector: Ascoforge, Setforge and SIFCOR.

In Spain, which accounts for 8% of EU output, 37 companies are working in the drop-forging sector. Most of them (about 30) are located in the Basque country, while the remainder are to be found in Catalonia, Aragón, Madrid and Galicia. Eight companies employ over 150 people, 5 between 100 and 150, 9 between 50 and 100, while the remainder have fewer than 50 employees. Major companies include COM-FORSA, ULMA-FORJA, FORJANOR/VILLALBA and G.S.B.-Forja.

In Belgium, which accounts for 0.5% of EU output, 8 companies are working in the forging sector. Steel drop forgings are produced by 4 companies. 2 forges have specialised exclusively in forgings in non-ferrous metals. 2 firms are engaged in hammer forging only.

### Strategies

The intense competitive pressure, brought about by excess capacity, price discounts demanded by customers and substitution, forced the forging industry at an early stage to develop strategies to ensure the competitiveness of its products, even in an enlarged market. These include the following: intensification of export activities combined with specialisation and concentration on particular market segments; reduction of the multiplicity of products, with optimisation of products using modern computer methods (e.g. CAD/CAM/CAQ and FEM); increased productivity through rationalisation of production with the aid of linked or automated machines; development of new materials with the aim of reducing the cost of raw materials or simplifying further processing (e.g. heat treatment, workability); manufacture of more accurately shaped work-pieces in order to reduce the cost of finishing work; increasing the value added (e.g. finish-machining work-pieces or assembling modules); and raising and assuring the level of quality through the application of modern quality assurance methods (e.g. FMEA and SPC) adapted to the forging industry.

An important role in achieving these aims is played by co-operative work above the company level, which is co-ordinated by the sector's trade associations. This is an essential measure, ensuring continued existence for the forging industry, which is structured predominantly around medium-sized firms. An individual company's financial resources would not be suf-

ficient to fund several sizeable projects at the same time. Examples of such projects are CAD/CAM/CAE and quality assurance and benchmarking projects for the drop-forging industry, as well as numerous activities of a business management nature.

With the increase of "just in time" deliveries, proximity to the customer has become an important aspect in a buyer's choice of supplier. This will intensify the trend for forging companies to set up branches or enter into co-operative arrangements, even abroad.

In some subsectors of the forging industry there is competition from substitutes. To a certain extent castings, sintered parts, composite materials and sheet metal structures, for example, as well as combinations of these, are seen as alternatives. The choice of product ultimately depends on a number of factors and on the purpose to which it is to be applied. Reliability, safety, weight, service life, environmental compatibility and price are all important criteria for decision-making.

### ENVIRONMENT

A substantial proportion of investments in recent years in the forging industry has been devoted to environmental protection measures, with the emphasis on measures necessitated by legislation to provide protection against noise, to save energy (e.g. by equipping furnaces with recuperators), to replace the expensive compressed-air drive on hammers with electro-hydraulic systems and to use waste heat in the forging process. Expenditure on environmentally-friendly waste disposal has also increased considerably.

One important advantage of forged products is the ease with which the forging materials can be recycled. This is one of the reasons why it has been possible to reduce substitution by plastics parts, which had been on the increase a few years ago.

### OUTLOOK

The dependence of forges on their main customers will continue in the future. The trend towards larger corporate units and thus towards concentration will also continue and increase. Questions of location will have to be discussed to an increasing extent, as customers for forged components are opening production plants outside the EU. The measures taken by the forging industry to safeguard its competitiveness in the market will ensure that forged products will continue to make up an important part of industrial production in the future.

Risks facing the forging industry include dependence on the economic development of the principal customer industries and increasing competition from East Europe and third countries. Opportunities for the forging industry include innovative product development, high quality standards, flexibility and service.

Written by: Euroforge

The industry is represented at EU level by: Comité de Liaison des Industries Européennes de l'Estampage et de la Forge (Euroforge).

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# Hand tools

## NACE (Revision 1) 28.62

Hand tools and tools driven by hand are increasingly being replaced by electrically driven tools. Germany is by far the largest producer of hand tools in the EU, followed by the United Kingdom and France. In 1994, industry recovered from the production declines in 1992 and 1993 due to the economic recession. This recovery is mainly induced by a growing EU-demand, despite the cannibalising impact of low-priced power driven tools. EU production will continue to grow which is also induced by growing exports to Eastern Europe. Demand from these countries for the high quality EU hand tools is expected to rise.

### INDUSTRY PROFILE

#### Description of the sector

Compared with the old NACE 1970 classification, this chapter on hand tools has been extended with subcategory 28.62.10 Hand tools of a kind used in agriculture, horticulture or forestry. The latter category corresponds with the former NACE 316.12, while hand tools used to resort under NACE 316.11. This chapter is written according to the new classification. The statistical data in this chapter, however, only applies to hand tools and not to the subcategory 28.62.10.

The industry as a whole comprises of the following principal segments: hand tools, hand saws and hand gardening tools. The sector manufactures products including axes, screwdrivers, saws, files, rasps, pliers, shears, steel rakes, spades and shovels, spanners, tools for drilling, taps and dies, hammers, planes, chisels, etc.

Hand tools and tools driven by hand are increasingly being replaced by electrically driven tools. Although both types of tools may, in some cases, perform the same function, they are different products and produced by different manufacturers. Electrically driven and other power tools are also considered a separate category in the new NACE-classification. Powered hand tools fall under subcategory 29.40.5.

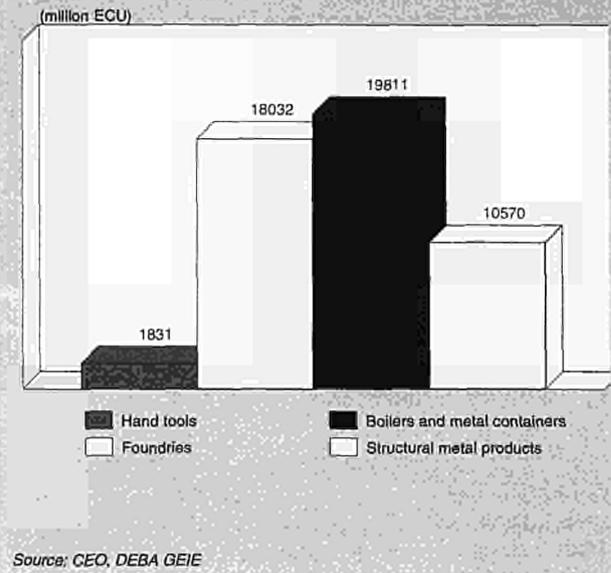
With a production value in 1995 of 851 million ECU, Germany is by far the largest producer of hand tools in the EU. Germany is followed by the United Kingdom and France with production values of 450 (estimated) and 437 million ECU respectively. These countries are also the major consumer markets of hand tools.

#### Recent trends

Over the period 1990-1993 production of hand tools has continuously decline. This was partly due to the economic recession and to the increasing competition from power driven electrical tools. Production dropped by 10% during this period compared to an annual production increase of 9.1% from 1985 to 1990.

In 1994, however, the decline in production came to an end. For 6 EU-Member countries together, production grew by 6.5% in this year, and by 13% in 1995. This production increase is mainly induced by an increase of EU demand of 8.2% in 1994 and 10% in 1995 against a 9% decline in 1993. Also extra-EU exports have contributed to the rising production. The exports recorded an increase of 6.6% in 1994 against 1993. Extra-EU imports, however, have grown 10.1% in 1994 thereby exceeding the value of extra-EU exports; 912 million ECU versus 890 million ECU. As a result, the EU-trade balance has dropped from a surplus of 7 million ECU in 1993 to a deficit of 23 million ECU in 1994. The extra-EU exports, however, remain very important for the EU-manufacturers of hand tools which is reflected in a relatively high export rate

Figure 1: Hand tools  
Production in comparison with related industries, 1994

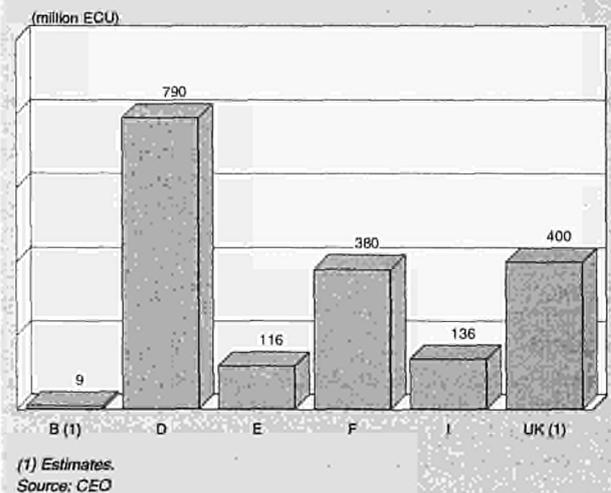


(48.6%). (Recent figures show that this trend has continued, exports in 1995 increased by 15% and imports increased by 23% in 1995).

Besides Spain, all Member States revealed a production growth in 1994. Belgium and the United Kingdom recorded the highest growth rates with 28% and 13% respectively, followed by France with 10% and Germany at a distance with a moderate production increase of 4.2%. After two consecutive years of severe production losses, Italian manufacturers of hand tools were able to increase their production by 6% in 1994. After a production decline of 15.2% in 1993, Spain recorded another production loss of nearly 10% in 1994.

Apparent consumption of hand tools shows a similar development pattern as production, although the average growth from 1985 to 1990 (8.9%) has been higher than the production growth during this period (4.8%). From 1990-1993 consumption recorded a similar drop as production. Also the recovery in production in 1994 is induced by a growing demand for hand tools.

Figure 2: Hand tools  
Production by Member State



**Table 1: Hand tools**  
**Main indicators in current prices (1)**

(million ECU)	1988	1989	1990	1991	1992	1993	1994	1995
Apparent consumption	1 574	1 674	1 855	1 864	1 758	1 630	1 723	1 998
Production	1 676	1 809	1 974	1 913	1 843	1 720	1 831	2 065
Extra-EU exports	662	764	742	737	749	765	829	953
Trade balance	102	135	119	49	85	90	108	67

(1) Belgium, Germany, Spain, France, Italy and United Kingdom.  
Source: CEO, Eurostat

**Table 2: Hand tools**  
**External trade in current prices**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	708	818	799	799	806	824	890
Extra-EU imports	659	729	724	809	820	821	895
Trade balance	49	89	75	-10	-14	2	-5
Ratio exports/imports	1.07	1.12	1.10	0.99	0.98	1.00	0.99

Source: Eurostat

### International comparison

The EU is the world leader in the production of hand tools. The international competition, however, is intensifying which is indicated by an increasing penetration rate. From 1985 to 1994 this rate has increased from 0.38 to 0.56. The rise of the penetration rate reflect increased competition, in particular from China and Taiwan. These low-wage countries have tried to penetrate the EU-market through the supply of low-priced tools.

From 1985 to 1993, extra-EU exports have grown by only 0.7% annually, while extra-EU imports have increased by more than 8%. The relatively low growth rate of exports during this period is also an indication of a weakening competitive position in the world market. The increase in extra-EU exports in 1993 and 1994 have stimulated EU-production and could be a sign of an improving competitive strength.

### Foreign trade

Despite low growth rates until 1993, Extra-EU exports command a large share of EU-production. Over the 1985-1994 period, the export rate only slightly decreased, falling from 50.7% in 1985 to 48.5% in 1993. In 1994, the high increase in Extra-EU exports has resulted in a slightly higher export rate (48.6%).

The greater part of the EU exports of tools were destined for the EFTA countries and the USA in 1994. Eastern European countries, however, are becoming increasingly important as an export destination. In 1994, the EFTA countries, the USA and Japan were the major suppliers of hand tools in the EU. Other countries among which include China and Eastern Europe, however, have increased their shares as well.

## MARKET FORCES

### Demand

According to the different classes covered by this chapter a broad distinction in demand can be made between hand tools and hand gardening tools. Sales of hand gardening tools, however, commands only a fraction of total hand tool sales.

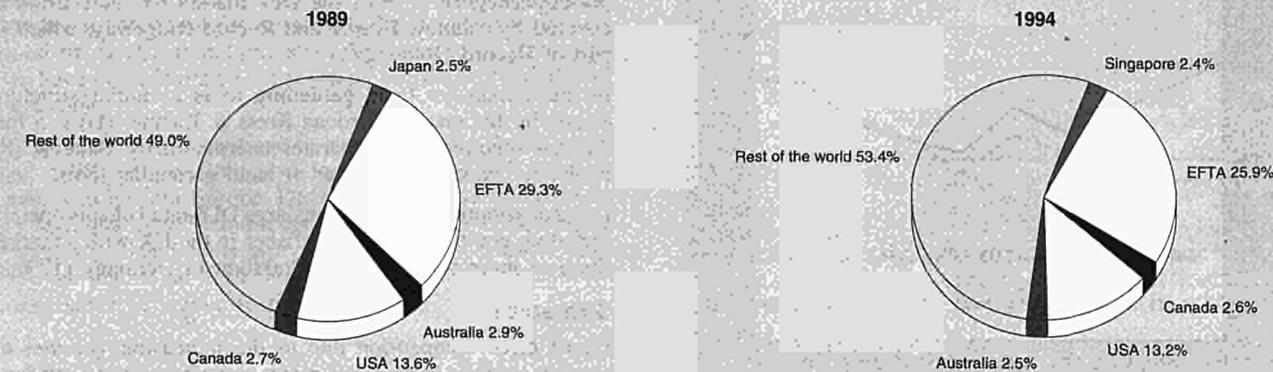
Hand tool manufacturers operate both on the industrial and private market. Although different by Member State and type of tool, industrial demand is much more important than private demand. Demand for hand tools for industrial use depends on the propensity to invest in the downstream industries. In the case of saws and tools for joinery machines and metal saws, demand depends almost entirely on investments made by industries such as furniture manufacturers, sawmills, and mechanical engineering firms. For the building and construction industry anchor bolts, masonry drills and power tools are most relevant. The propensity to invest depends on the activity level and the strength of the downstream industries, which largely depends on the general economic climate.

Private demand is especially important to the DIY sector. With rising home ownership levels, the DIY sector boomed in the 1980s. As people became more confident about tackling DIY jobs, they tended to buy higher quality tools. Poor economic conditions in 1990-1993 largely explain the declining consumption of hand tools both for industrial and private use in the EU. Unlike the 'traditional' hand tools, industrial demand for high-quality hand tools increased due to the explosive growth of office automation equipment.

The rising Extra-EU exports can be partly explained by a rising demand in Eastern Europe from both industrial and private (DIY) demand. This rising demand from these countries is due to two major factors. First, the activities of civil contractors are growing and competition is increasing, spurring local construction firms to replace old, obsolete and ineffective tools. Second, many individuals interested in new single-family dwellings or improvements in their apartments cannot afford professional builders and do the majority of the work themselves, creating and extending the do-it-yourself (DIY) market. EU-manufacturers of hand tools have gained considerable market shares in the Eastern European countries. Although EU-products are often higher-priced than locally manufactured hand tools, the latter tools cannot compete with the higher quality products from the EU.

Within the EU, large differences exist in demand for hand tools, which are also reflected in the production of hand tools. These differences are especially due to the level of DIY activity,

**Figure 3: Hand tools  
Destination of EU exports**



Source: Eurostat

which vary among the Member countries. In Italy and other Southern European countries DIY activity is less common than in, for instance, Germany and the Netherlands. There are numerous reasons behind this. Only a small proportion of all housing is made up of detached family houses, which require repair or refurbishment more often. These, in comparison to apartments or flats which, apart from being on average much smaller, need this type of work less often. There are, however, factors which could stimulate the DIY market in Southern Europe. First, the number of people owning their own accommodations is increasing. Second, houses in concrete blocks age more quickly than those made of brick or stone. Finally, the number of households is growing in these countries, mainly because more single people decide to live independently.

**Supply and competition**

The industry continues to be characterised by a large number of medium-sized companies which represent insignificant market shares individually. This, is contrasted with the market for electrical power tools where supply is much more concentrated.

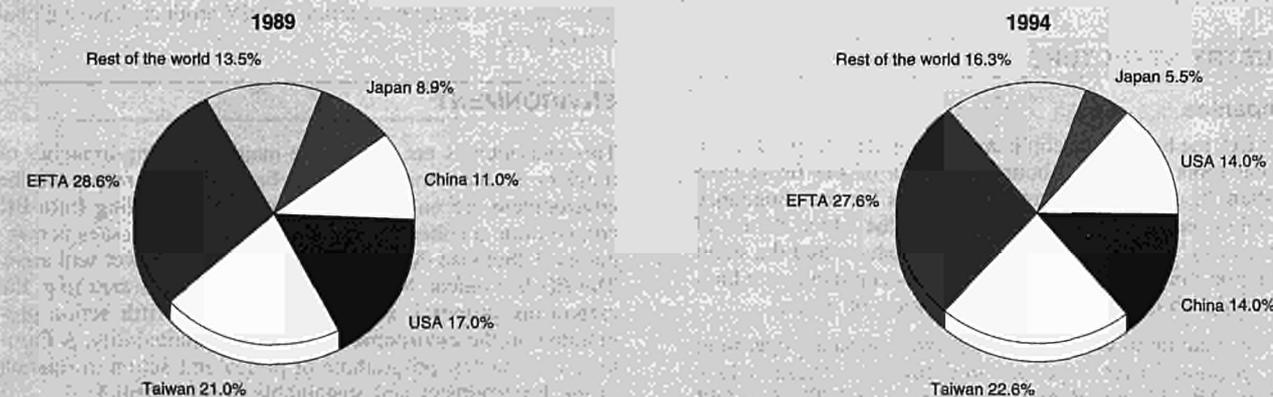
Depending on the size and maturity of the market, three types of EU countries can be distinguished: 'leaders', 'developing' and 'small'. The leading countries, which are large and de-

veloped, include France, Germany, Italy and the United Kingdom. Although imports are important, these countries are major producers of hand tools. They account together for some 70% of the EU market. Several intensively used distribution channels, exist in these countries. They have a long tradition of tooling and DIY activities.

The second group, consists of Greece, Ireland, Portugal and Spain. They account for an estimated 15% of the market. Greece has the least developed market. Moreover Greece depends virtually entirely on imports for its supply of hand tools. Besides some simple, mostly agricultural hand tools, no hand tools are manufactured in Greece. The remaining countries rely overwhelmingly on imports, as their production covers only a restricted number of segments of the hand tool market. This applies particularly to Ireland and Portugal. Further, modern distribution networks from the leader countries are establishing themselves in the 'developing' countries.

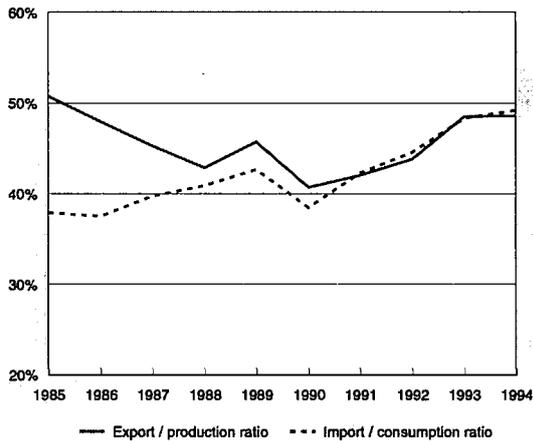
The small EU countries - Belgium, Denmark, Luxembourg and the Netherlands - hold the remaining 15% of the market. They have distribution channels comparable to those in the leading countries. Like the 'developing' countries, they rely largely on imports since the size of their markets does not justify a complete domestic product range.

**Figure 4: Hand tools  
Origin of EU imports**



Source: Eurostat

**Figure 5: Hand tools  
Trade Intensities (1)**



(1) Belgium, Germany, Spain, France, Italy and United Kingdom.  
Source: CEO, Eurostat

The booming DIY-market of the 1980s has resulted in an increased supply of tools through large DIY-retail chains in most EU-countries. In the leading countries some 50% to 60% of all sales of hand tools through retail trade are accounted for by DIY superstores/multiples. These stores are characterised by wide product ranges, accessible presentation and competitive offers. Another 15-20% or so of sales goes through independent DIY stores, while specialist hardware stores account for a further 20%.

In the early 1990s, a stagnation in the DIY market has led to alterations in the distribution system. Due to stagnation and a continuous flow of low priced products from East Asia and East Europe, competition has become particularly fierce in this market segment, putting prices under continuing pressure. This latter development is especially threatening for the independent and specialist DIY stores. Since 1994, the DIY market has started to recover recording rising sales in all distribution channels.

### Production process

In 1985-1993 labour cost increased at an average rate of some 5% per annum; by Member States this rate varied from 2.5% (Netherlands) to over 7% (Italy and the United Kingdom). The continuous rise in cost together with a recessive market at the beginning of the 1990s encouraged manufacturers to rationalise their production processes. At the same time growing supplies of cheap hand tools from East Asia and East Europe urged EU producers to change their product-mix, and to switch to manufacturing of products with a high value added content.

## INDUSTRY STRUCTURE

### Companies

In the EU, the bulk of the companies engaged in the production of hand tools is small. About two thirds of the firms have less than 20 employees. Principal reasons for the abundance of small-sized companies are the low value added nature of the products, the wide diversity of the products and the small production runs per item. Moreover, many companies are family-owned, which can limit the acquisition of capital.

The few medium to large, sometimes internationally operating firms, account for the larger part of production. These include Sandvik AB (S) and Bahco (S), Stanley (UK/F), FACOM (F), Rotherberger (D) and Hilti (CH). The Swedish manufacturers Sandvik and Bahco have several production facilities in the EU. This applies also to the US-based Stanley Works,

which in the United Kingdom is known as Stanley Tools. In the leading countries major manufacturers often have a large market share. For instance, 50% of the UK DIY market for screwdrivers is supplied by Stanley and Draper (an importer/packager); 75% of the DIY market for hand drills is covered by Stanley, Draper and Record Ridgeway, which is part of Record Holdings.

In the market for hand gardening tools a similar structure exists. In this market Gardena Kress & Kastner (D) is a traditional supplier which operates internationally. Sandvik (S) is also an important supplier of hand gardening tools.

In the distribution of tools some large DIY-retail chains operate including companies like Kingfisher in the UK with a market share of more than 30% and Praktiker in Germany (19%).

### Strategies

Fierce price competition due to the increasing volumes of cheaper imports have urged many manufacturers to improve their productivity and to reconsider their product-mix. In the early 1990s, the strategy review has also resulted in cost reductions, while at the same time expanding product mixes. This rationalisation of production processes has enabled manufacturers to lower production costs by shifting production capacity to countries with low levels of (labour) cost.

The further decline in demand within the EU has encouraged the EU manufacturers to look for new markets and new production opportunities. Such new markets have been found in Eastern Europe. Most manufacturers, however, are too small to establish new production facilities in these low-wage countries. Some longer internationally operating hand tool manufacturers have chosen to invest in Eastern Europe. Stanley Works (USA), for instance, has set up a joint venture with the Polish Fabryka Narzedi Kuznia near Krakow.

With the upgrading of the product-mix after-sales, services have become increasingly important. Quality improvement and after-sales service are particularly important in high-income West European countries. They are of greater importance in a booming rather than in a recessive economy; in a recession the customers tend to concentrate on price. Growth among market leaders in these largely satiated markets will be through acquisition of smaller rivals rather than through greenfield investments.

## REGIONAL DISTRIBUTION

The sector has local and regional as well as global aspects. Manufacturers who are operating on a small scale, and who depend on the demand from downstream industries like mechanical engineering, tend to be located in the area where these industries are concentrated. For instance, in Germany and Spain manufacturers are contracted geographically. At the same time, however, the big firms in the industry and those engaged in the production of DIY products have a global orientation.

## ENVIRONMENT

This subsector is not one of the major polluting branches of industry, so the remarks that can be made with respect to the environment are only general in nature. Regarding Intra-EU competition, a coherent approach in ecological issues is mandatory. Otherwise distortions in competitive power will arise. The EU has indeed become more active in this area (e.g. the carbon tax proposal, and more general, its fifth action programme on the environment 'Towards sustainability, A European Community programme of policy and action in relation to the Environment and sustainable development').

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## OUTLOOK

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The market for hand tools and hand gardening tools is not expected to grow significantly in the coming years. The economic recovery resulting in higher disposable incomes, and continuing trend towards lower price level, will stimulate demand for electrical and rechargeable power tools. This trend will have a cannibalising impact on the market for "traditional" hand tools.

EU-production will continue to grow following the expected rise in EU-demand, but also induced by the still growing exports to Eastern Europe. Demand from these countries for the high quality EU-hand tools is expected to rise. EU-manufacturers of hand tools will further increase sales in other than the traditional hand tools market segments. Written by: Netherlands Economic Institute

Written by: ERECO

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# Light metal packaging

## NACE (Revision 1) 28.72

After having enjoyed moderate but regular growth over the past 10 years, the light metal packaging industry seems to have gone through a consolidation phase during the last five years. Substantial production cost savings and significant productivity increases have been achieved, due to technological advances on the one hand and severe restructuring on the other. The sector as a whole is characterised by a high degree of competitiveness, given that a broad range of alternative processing and packaging options currently exist or are being developed. The impact of environmental regulations and recycling is particularly important in this sector.

### INDUSTRY PROFILE

#### Description of the sector

In comparison with the old NACE 1970 classification no significant difference has been found in the new classification, except that the former code has been changed from NACE 316.42 to the new group code 28.72.

Light metal packaging encompasses all packaging made out of metal sheet (either tinsplate or aluminium) with a thickness not exceeding 0.49 mm and whose capacity is below 40 litres. By contrast, the term of heavy metal packaging is applied to packaging manufactured from cold-rolled steel sheet with a surface thickness equal to or greater than 0.5 mm and used in the manufacture of casks, cans and drums with a capacity going from 30 litres to 220 litres.

Light and heavy metal packaging have some very distinct features such as the different raw materials they are made from, the applied manufacturing technologies and above all, their markets. Within the light metal packaging, further distinctions apply to specific product groups:

- beverage or drinks cans, to contain carbonated drinks;
- hermetically sealed packaging for foodstuffs, particularly food and pet food cans;

- various types of light multi-purpose packaging, referred to as "general-use" containers such as oil cans, removable-lid cans for paints and varnishes, cans for cleaning agents, for dried foodstuffs, decorative cans and metal containers for specific industrial applications (e.g. electric battery cases);

- aerosol cans containing a liquid and propellant, used primarily by the cosmetics, pharmaceutical and cleaning agents industries;

- lids and caps, including crown corks, screw-on caps and lids used on glass bottles and jars.

#### Recent trends

In 1994 the production of light metal packaging sector in the EU amounted to 7.04 billion ECU. Although this represents an increase of 3.3% compared to the previous year, the output still remains below that of 1991. This illustrates a process of consolidation since 1990, which is due to the recession occurred during the considered period. However, the latest progress recorded may hint towards a (much hoped for) upturn.

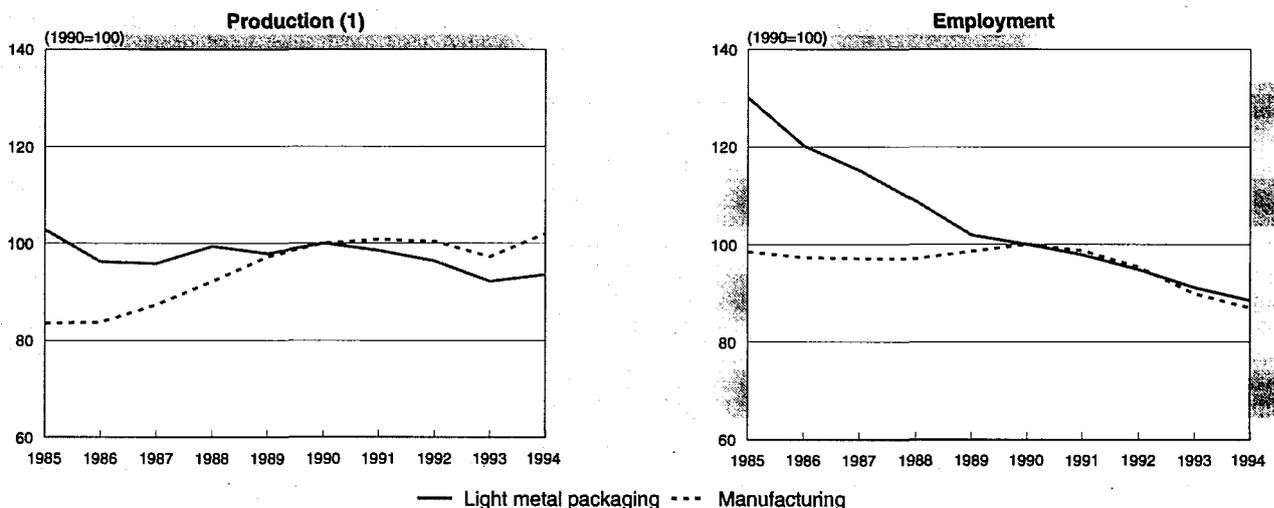
Industry estimates indicate that light metal packaging currently accounts for around 16% of the European packaging market as a whole, ranking it third in terms of packaging industry materials. By way of comparison, paper and board account for 30% of the packaging industry's current requirements, with plastic packaging accounting for a further 30%. The shares for glass, heavy metal and wood are 7%, 4%, and 4% respectively. Of all rigid packaging 20% are made out of steel.

A combination of sectoral restructuring such as take-overs and mergers, as well as productivity-boosting measures have since 1981 resulted in a steady fall in employment which amounted to the low level of 46200. Productivity more than doubled during the same period.

#### Foreign trade

For technical and economical reasons the metal packaging sector is not traditionally characterised by major long-distance international trade. Extra-EU exports progressed by 68 million ECU representing a strong growth rate of 12.6%. This is partially due to increased trade with Central European countries, which in turn is affected by the inclusion of Austria in the

**Figure 1: Light metal packaging**  
Production and employment compared to EU total manufacturing industry



1994 are Eurostat estimates.  
(1) SEFEL production data in current prices deflated by using Nace 3160.  
Source: SEFEL, DEBA GEIE, Eurostat

**Table 1: Light metal packaging**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1994 (2)
Apparent consumption	5 884	6 580	6 809	6 781	6 465	6 662	N/A
Production	6 144	6 912	7 100	7 119	6 814	7 042	7 152
Extra-EU exports	369	522	519	519	542	604	N/A
Trade balance	260	332	291	338	349	380	N/A
Employment (thousands)	67.9	52.2	51.1	49.5	47.6	46.2	47.3

(1) Excluding Portugal.

(2) EUR15 except Portugal and Sweden.

Source: SEFEL, Eurostat

**Table 2: Light metal packaging**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	-0.6	-1.3	-0.1	3.1
Production (2)	-0.5	-1.2	-0.8	3.4
Extra-EU exports	4.0	0.8	2.5	10.2
Extra-EU imports	10.2	0.3	5.7	13.0

(1) Some country data for apparent consumption and production have been estimated.

(2) Using the deflator of Nace 3160.

Source: SEFEL, Eurostat

**Table 3: Light metal packaging**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	368.8	328.0	320.4	391.4	489.8	522.2	518.9	519.0	542.4	604.1
Extra-EU imports	109.3	108.5	111.9	176.7	175.6	190.4	227.4	180.8	193.6	224.1
Trade balance	259.5	219.5	208.5	214.6	314.2	331.7	291.5	338.2	348.8	380.0
Ratio exports / imports	3.4	3.0	2.9	2.2	2.8	2.7	2.3	2.9	2.8	2.7
Terms of trade index (1)	92.2	96.5	98.6	98.4	97.6	100.0	99.2	100.6	97.6	96.4

(1) Nace 3160.

Source: Eurostat

**Table 4: Light metal packaging**  
**Production by country (1)**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België, Luxembourg	343	344	349	312	320	334	348	354	332	310
Danmark	236	235	232	185	197	200	218	210	219	220
Deutschland (2)	1 102	1 178	1 164	1 196	1 260	1 426	1 462	1 388	1 408	1 469
Ellada	180	166	165	184	179	167	174	214	200	210
España	398	430	459	473	566	597	649	629	561	590
France	1 036	987	957	977	1 018	1 049	1 080	1 073	1 147	1 188
Italia	648	598	655	866	986	1 043	991	1 131	904	933
Nederland	494	405	408	408	396	424	450	448	458	451
Österreich (3)	N/A	N/A	N/A	78	87	108	110	85	78	72
Portugal	113	103	103	104	N/A	N/A	N/A	N/A	N/A	N/A
Suomi/Finland (3)	N/A	N/A	N/A	47	48	45	40	33	30	38
United Kingdom, Ireland	1 594	1 429	1 408	1 616	1 639	1 672	1 728	1 672	1 585	1 670

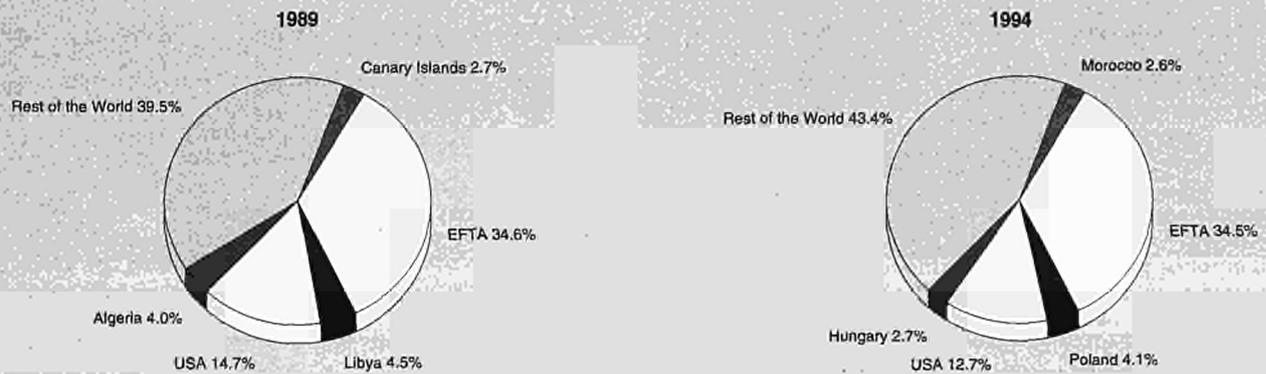
(1) Production is estimated using total sales (national sales & exports).

(2) From 1990, including former East Germany.

(3) Estimates.

Source: SEFEL, Eurostat

**Figure 2: Light metal packaging  
Destination of EU exports**



Source: Eurostat

EU. In 1994, Austria exported 65% of its production primarily into these countries.

The trade balance thus rose by 10.7%, or by 37.4 million ECU, in 1994. Nevertheless, extra-EU imports continued to grow faster than exports, at the strong growth rate of 16%. They currently represent 3.3% of the market demand compared to 2.7% in 1990.

However, extra-EU exports accelerated from 542.4 million ECU in 1993 to 610.3 million ECU in 1994, representing an increase of 12.6% compared to a growth rate of 4.5% in 1993.

## MARKET FORCES

### Demand

Although originally developed for food products, light metal packaging has developed an increasingly important role in everyday life, thanks to its unique properties compared with other forms of packaging. Food conditioned in metal packaging can be stored for long periods without any loss in nutritional value or any risk of corrosion or contamination. The primary advantage of this longevity is that products can be more readily transported and stored.

Efforts are being stepped up to enhance the quality of printing and design (stackability, easy open ends) aimed at upgrading the image of metal packaging, and they should positively influence demands. Metal packaging is quite successfully withstanding the pressures arising from packaging waste issues.

Whereas real growth (i.e. expressed in constant prices) within the sector decreased annually by 0.5% on average between 1985 and 1990, production slumped by 1.2% on average over the past 4 years. Hopefully, as production rose by 3.4% (in constant prices) in 1994, this trend may be reversed in the future, as the economy picks up and private consumption accelerates.

There are no indication showing that the slowdown in growth may be the direct consequence of substituting metal containers by another material.

As data are expressed in ECU terms, the depreciation of several currencies has adversely affected them. This is particularly the case in Spain, Italy, and the United Kingdom.

Of the main can type groups, the drinks cans recorded the strongest growth. Output increased by 10% in 1994 and by an average of 3.3% in ECU terms since 1990. In volume terms, progress should be more significant. General-use con-

tainers and closures fell slightly in the same period, whilst aerosol output increased moderately.

In 1994 food cans represented 37% of total production; drinks cans 26%; general-use containers 18%; closures 11% and aerosol cans 7%.

With an estimated number of 8.1 billion cans, the UK is the largest consumer of drinks conditioned in metal packaging in Europe. Germany ranks second. The Western European market for beverage cans was estimated at around 27.7 billion units in 1994.

If food can sales tend to consolidate overall, the pet food segment keeps growing. Research reveals that because of (wrongly) held opinions on the nutritional value of canned food, and because of a greater appeal of frozen food, consumers tend to prefer the latter.

Overall, developments in the light metal packaging sector are strongly influenced by a number of external factors, e.g.:

- changes in individual consumer preferences and patterns (including a trend towards individual portion packaging in the food industry and more sophisticated methods of preservation) which have prompted an increase in demand for packaging for sophisticated canned food, pre-cooked dishes and aerosols;
- stiffer competition from new types of packaging (such as compound plastics on impregnated board, ultra-lightweight glass and flexible packaging) and new preservation technology (e.g. deep-freezing or freeze-drying);
- psychological aversion to certain types of packaging and product presentation, particularly where long-life foodstuffs or beverages are concerned;
- environmental legislation and the unpredictable reaction of the conditioning industry as to the packaging materials which they will favour in the future.

### Production process

Tinplate, blackplate and aluminium are the three main raw materials used in the manufacture of light metal packaging.

Tinplate is cold-rolled steel sheet less than 0.5 mm thick and coated on both sides with a thin (3g/m<sup>2</sup>) film of tin. It is used principally in the light metal packaging industry. Some 95% of annual tinplate production (which is to say, approximately 11 million tonnes world-wide) is used by this sector. Among the various properties, which make it especially useful for the light metal packaging industry, are high mechanical strength, susceptibility to decoration (it accepts print readily),

and the fact that a vast range of products can be packaged using this material - notably food, chemical and pharmaceutical products.

Blackplate, usually referred to as tin-free steel, is a steel substrate coated with a chrome oxide compound. Although the technical properties of blackplate are inferior to those of tinfoil, it has been widely used in recent years to manufacture products with less exacting specifications. Typical examples include can bases and lids, bottle caps, and so on. The principal factor in its favour is that it is approximately 10% less expensive than tinfoil.

Aluminium is the third most popular base material for light metal packaging. Currently, around 18% of world aluminium production is earmarked for the packaging sector. Major uses include trays and dishes, small food cans for fish and meat, flexible tubing, can lids, beverage and aerosol cans. Use of aluminium for light metal packaging varies significantly by region. Aluminium accounts for 95% of the can packaging for drinks market in the USA (with tinfoil accounting for a modest 5%), about 40% in the United Kingdom but only 15% in Germany.

Consumption of tinfoil accounts for 51% in the conditioning of food and drinks, whilst blackplate and aluminium account for 40% and 9% respectively. Consumption in 1994 of tinfoil and blackplate totalled 3.54 million tonnes and 599 000 tonnes for aluminium representing a 19% increase for the last material.

Changes in the relative cost of tinfoil and aluminium largely dictate the use of both materials in the metal packaging sector.

Several elements point towards increased competition between steel and aluminium stock for can making.

A key element is the higher price volatility of aluminium. A successfully co-ordinated effort to reduce aluminium stocks resulted in a hefty, though temporary, price increase of 40% for aluminium sheet in 1994. At the time of reporting, price pressures seem to have temporarily abated.

The overall price increases for tinfoil remained relatively moderate. Yet, in countries whose currencies depreciated considerably above average tinfoil price increased in 1994 and 1995.

These price fluctuations have made several can makers switch from aluminium to steel sheet, especially in the field of drinks cans. Aerosol can users predict a swing towards steel bodies in the future.

Besides, the European steel sheet producers have declared their intentions to gain market share on the back of technical improvements and already claim to have made progress.

Further light weighting of drinks cans from 25 to around 18 gr. (a reduction of 25%) will soon be a reality. Extensive market testing of an "Ecotop-lid" (based on a push instead of a pull action to open) for drinks cans points towards a possible breakthrough of the all steel drinks can. Full scale "Ecotop" production plants are now operational in the United Kingdom and Germany with a total combined capacity of 370 million lids a year.

However, as steel producers have also taken each opportunity to raise prices on the back of the aluminium price increases, they may attract in the medium term competition from alternative materials such as PET. This may become a more interesting proposition as manufacturing costs for these containers may come down in the short run.

Packaging manufacturers, particularly in the food and drinks sectors, rarely limit themselves to a single technology or to one single type of packaging material. Each world-wide leading group uses a broad range of materials and has confirmed their interest in plastics, e.g. by a series of take-overs of specialist producers. Hence they are, in addition to their customers, a determinant factor in the development of the materials that will be used in the future.

## INDUSTRY STRUCTURE

### Companies

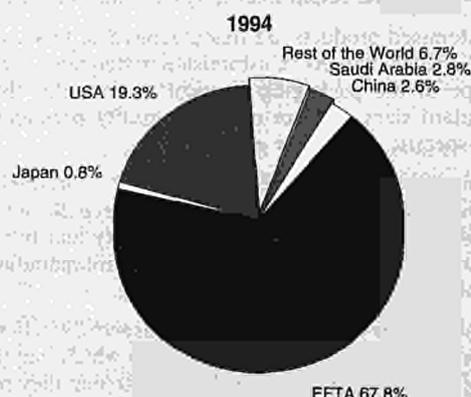
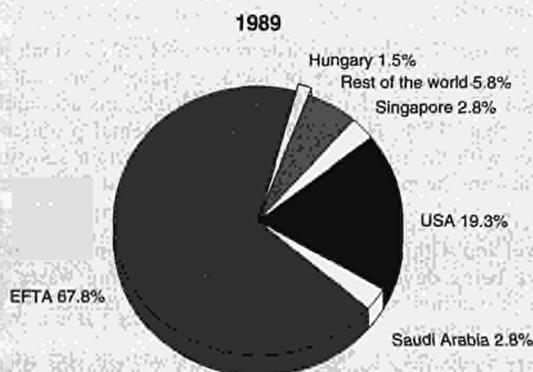
All EU member states are involved in the light metal packaging sector to varying degrees. The four largest producers are the United Kingdom, Germany, France and Italy. They jointly account for 73.5% of total EU output, which currently equals two-thirds of US output.

The light metal packaging sector is relatively concentrated within the EU. Its structure is based on two categories of companies: large groups that manufacture predominantly highly standardised products and small to medium-sized firms specialised in customised products.

Standardised products (i.e. those mass-produced on highly-automated production lines) are manufactured by an ever decreasing number of large companies. This is particularly true with respect to standardised food, drinks and aerosol cans.

Among the factors which impact on the degree of concentration within the sector, it is worth to put forward the capital in-

**Figure 3: Light metal packaging  
Origin of EU imports**



**Table 5: Light metal packaging industry structure, 1994**

	Number of manufacturers	Employment	Tin plate (thousands tonnes)	Consumption Aluminium (thousands tonnes)
EU (1)	296	47285	3548	599
Belgique/België, Luxembourg	8	1 723	168	0
Danmark	9	1 525	87	6
Deutschland	52	9 943	725	283
Ellada	15	2 000	90	24
España	72	5 692	393	25
France	36	8 032	588	31
Italia	46	4 620	605	46
Nederland	10	2 788	195	3
Österreich (2)	10	883	38	9
Suomi/Finland (2)	1	182	10	0
United Kingdom, Ireland	37	9 897	649	172

(1) Excluding Portugal and Sweden.

(2) Estimates.

Source: SEFEL

vestment implicit in large-scale production. A modern beverage can production line requires an initial outlay of up to 40 million ECU. Thus, only major manufacturers have the requisite financial strength to make such investments.

There is also the need of having access to advanced technologies. The trend towards mergers at the level of major industry clients such as food processing groups and brewers has also affected the structure of the light metal packaging sector. Finally, in addition to economies of scale, implicit in mass-production, the increase of market share has also become a strong motivation for take-overs.

### Strategies

Merger and acquisition activities, joint ventures and co-operation agreements between firms are becoming increasingly common. As a result, food, beverage and aerosol can production, for example, is now largely concentrated in the hands of the five main European manufacturers, which include Pechiney (F), CarnaudMetalbox (FR-UK), VIAG-Continental Can Europe (DE), Crown Cork CIE (USA) and PLM (SE).

The trend towards concentration was recently highlighted by the take-over of CarnaudMetalbox by Crown Cork and Seal CIE of the USA to create an entity with some 8 billion ECU world-wide turnover.

If these larger groups are to remain profitable they will be forced to rationalise and to branch out into new markets as it is already the case for several of them. Take-overs and/or joint ventures in Central European countries, the former Soviet Union and the Asian Pacific region are almost daily news.

Customised products are manufactured in less quantities and for smaller markets. Customisation frequently relates to the shape of the packaging (conical or irregular shapes), non-standard sizes (outsize or mini-capacity packages), or product-specific decorative effects.

Typically, such customised packaging is produced by small or medium-sized firms employing between 20 and 200 people. General-use cans, where product variety and limited volume require optimal production flexibility, are manufactured principally by companies in this category.

In addition to the above-mentioned aspects, smaller companies benefit from another important trump which may justify their long-term presence, provided of course that they remain competitive and play the market skilfully. Indeed, they consider themselves to be operating in a market segment where flexibility and quick reaction at very short notice becomes more

important than price. As a matter of fact, larger organisations are not always as efficiently organised as one may tend to believe. Their presence is also likely to guarantee healthy competition in the sector.

### REGIONAL DISTRIBUTION

The geographical spread of companies in the sector is largely determined by the nature of the products they manufacture.

Metal packaging offers the benefits of a comparatively low unit value combined with large volume. As packaging requires significant space in transporting small unit values, large-scale exporting or long-distance delivery is not lucrative. Thus, the maximum radius within which a firm can deliver its products on a competitive basis (i.e. taking into account transportation costs) is approximately 300 kilometres. This explains why firms are widely dispersed throughout every region of the EU. It is also for this reason that food can manufacturers are typically located in predominantly farming regions, while general line can manufacturers are situated in industrial areas. A wider market network is achieved, resulting from the tendency of large multinational groups of manufacturers to buy up local producers and to rationalise their respective product ranges.

### ENVIRONMENT

In volume terms, all types of packaging account for nearly one-third of the 100 million tonnes of waste generated by EU households.

However, metal packaging waste represents only a small part of it. By weight, all types of metal containers account for less than 2% of household waste, with drink cans accounting for less than 0.5%. Nevertheless, environmental problems - together with the increasing pressure from certain substitute material - are the major challenge for the sector at the moment.

Legislation is becoming increasingly complex, both at the EU level and within most member states. Environmental policies are being developed, focusing on packaging waste and on the prevention and reduction of pollution created by the packaging industry.

The EU Directive on Packaging and Packaging Waste (94/62/EC) adopted on 14 December 1994 was welcomed by the packaging industry, as it sets out a clear reference frame which should lead towards harmonisation of member states laws. It should thus check the proliferation of national in-

initiatives which risk to have a negative impact upon both the environment and trade.

Its effectiveness has already been demonstrated, indeed, by the European Commission. It has formally complained to the Federal German Government about the existing Packaging Ordinance, which is contravening the EU rules relating to the free movement of goods. The Ordinance foresees, indeed, that a 72% minimum average of drinks should be in refillable packaging which is discriminatory.

The directive's objectives are to reduce the total volume of packaging put onto the market, to increase recyclable packaging and to promote environmentally-friendly recycling of all types of packaging. It also establishes essential requirements for packaging and sets following targets for the recovery and recycling for the next five years, starting from its implementation by member states as from 30 June 1996:

- 50-65% recovery;
- 25-45% recycling;
- minimum of 15% per material recycled.

These targets are likely to be revised after this period.

Industry now faces the challenge to establish a workable system for the monitoring of packaging waste management and for a fair and consistent implementation that does not impose unequal distribution of responsibility. Essential hereby is that targets will be met and that the system will remain workable in the long term. It should prevent barriers to trade being erected by member states. Amongst others, a system for material identification and databases will have to be elaborated. CEN has also been given a new mandate to elaborate new sets of packaging standards.

It will be of crucial importance that member states will set up fact-based legislation when implementing the directive. In this context, ERRA (the European Recovery and Recycling Association) has, amongst others, undertaken valuable work by launching and monitoring recycling systems. This has provided concrete data which have inspired several recycling schemes as they were set up in member states.

It is interesting to note how, in the USA, packaging waste management relies on market forces as well as on national, state and industries goals, whereas in Europe the path of legally mandating recycling rates for specific materials has been followed. Relying on market forces implies that recycling focuses on the most effective cost items.

The recovery rate of metal packaging waste in the EU member countries is already relatively high - around 20-30% on average - but it should increase substantially over time. There are also grounds for optimism when one considers the situation in certain non-EU countries. In the USA, for example, more than 60% of beverage cans are now recovered and recycled. In order to improve the present recycling rates, 22 international mass-market manufacturing and user firms, including several producers of light metal packaging, have decided to pool their efforts within the framework of an umbrella group known as the European Recovery and Recycling Association (ERRA) to develop and promote ecologically-sound and commercially cost-effective solutions to the problem of waste processing.

The metal packaging industry seems well-placed to comply with EU legislative requirements, because it represents a packaging process which is ecologically sound and able of reducing waste to a minimum. The advantages of the directive for the light metal packaging industry include:

- the raw materials used are in big supply and will remain so for the foreseeable future;
- in the case of tinsplate in particular, process, recycling and transport-related energy consumption is modest by comparison with other materials;

- elimination of downstream consumer waste is relatively simple to achieve given that the packaging material can be selectively recovered and recycled without difficulty.

Steel substrate-based packaging has a salient advantage in that it can be separated and recovered by magnetic means. This also means that steel packaging materials can be recovered even from non-separated domestic waste or after incineration.

As a non-magnetic material, aluminium does not offer this advantage. On the other hand, its high residual value constitutes a major incentive to selective recovery and recycling, an operation that requires only one-twentieth of the energy required for primary smelting.

After recovery, both aluminium and steel are readily reprocessed by raw materials producers in smelters or furnaces to derive new products which exhibit no quality loss.

As pointed out, the EU is also working on another policy aimed at reducing industrial pollution. An EU Directive on VOC (Volatile Organic Compounds) emissions is currently being elaborated which creates agitation. The packaging industry is closely involved in discussions with the EU authorities.

The proposed directive aims at limiting the release of organic solvents used in the coating of light metal packaging. The emission limit set is 50 mg C/m<sup>3</sup> emitted air. Solutions consist in either the application of air cleaning plant, such as after burners, or in using practically 100% solvent free coating systems. In a near future more complete process-oriented systems will be developed resulting in reduced usage of raw materials and energy. Implementation by the industry will no doubt contribute positively towards it. It will allow it to gain a better ecological image, at the condition to be it at a hefty price.

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## OUTLOOK

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Preliminary data indicate that the light metal packaging industry appears having made further progress in 1995 as the economy accelerated.

Beverage can manufacturers already reported market growth for both carbonated soft drinks and beer. The hot summer contributed positively to this development. General-use can manufacturers reported weaker sales in the second half of 1995 as their customers decided to reduce stocks.

In the medium term growth is expected to improve for several reasons.

Central European countries as well as the CIS countries have become important targets and should make up for weaker demand from customers in the European Union. Yet, in the longer term these countries will be increasingly supplied from within as plants are being re-equipped and new ones built in these.

New trends in metal packaging aimed at improving the image of the metal can and to counter competition from alternative materials are emerging.

Research on new coatings may result in conventional coating methods being replaced by the "laminated plastic foil" technology which could transform the industry when applied on a large scale. In addition to eliminating chemical processes, the technology may change and enhance the physical aspects of metal cans.

Although PET containers have become very popular in conditioning soft drinks, they focus more on the larger volume segment of the market and have been replacing glass and plastic more than metal packaging. The successful introduction of several types of shaped cans has pushed can makers to believe that the business is entering a new dawn of designed potentiality. Coca Cola has already undertake some tests of

marketing in Germany with shaped beverage cans whose body mimic the traditional coke bottle. Beverage can manufacturers are optimistic about the future of the drinks cans.

Steel plate manufacturers indicate that recent achievement in qualitative improvements, combined with a more aggressive marketing campaign, will result in increased demand for packaging steel.

Competition between materials is likely to increase if, according to some sources, the price of aluminium sheet is set to raise by as much as 40% in the next 5 years. The European steelplate producers have launched an aggressive marketing campaign in 1995 supported by an hefty budget. They are determined to gain market share through a stabilisation of steelplate prices, amongst others, in the next decade.

Overall, experts do not consider technological or economic considerations as the main problem to overcome in the metal can making business. Rather the can image still needs to be enhanced since in the current economic climate convenience and economics alone are not sufficient to lure the younger generation into more extensively using metal cans.

In addition to these specific market developments, there will be significant progress in the course of the next few years in terms of product quality and production line yields. These forecasts are based on a variety of factors, including the development of new materials, the progressive ability to reduce the thickness and quantity of metal substrate as the quality of protective coatings improves, the use of laser welds, the rationalisation of production through the application of stricter standards, the introduction of more sophisticated printing techniques which enable packaging to play a more effective role in product promotion, and steady increases in productivity.

Overall, the tendency towards increased concentration noted in the metal packaging sector, both within the EC and worldwide, seems ready to continue in the years ahead.

Written by SEFEL

The industry is represented at the EU level by: European Secretariat of Manufactures of Light Metal Packaging (SEFEL). Address: Rue des Drapiers 21, B-1050 Brussels; tel: (32 2) 510 2311; fax (32 2) 510 2301.

# Steel drums

## NACE (Revision 1) 28.71

Steel drums are high safety packaging which are commonly used for the transport of dangerous goods. Any combination with heavy metal in their designation can lead to regrettable confusions which are detrimental for the sector. During its evolution and particularly during recent years, the steel drum has had to adapt to changes in legislation, covering both its performance and its suitability for re-use and recycling.

### INDUSTRY PROFILE

#### Description of the sector

Drums are industrial packaging made from high quality cold rolled steel sheet, having a thickness equal to or greater than 0.5 mm, according to guidelines agreed with steel mills.

Steel drums are available with capacities ranging from 18 to 250 litres, either with removable head (open head) or non-removable head (tight-head).

European Standards are in preparation within the CEN/TC 261 (Packaging), SC 2 (Primary Packaging), WG 4 (Drums) for commonly used steel drums with capacities of 20 to 60 litres and 210, 216.5 and 230 litres.

#### Recent trends

The upward business trend reported last year for 1994 continued during the first half of 1995, but a slackening of demand occurred after the summer holiday period, with the result that both the number of steel drums produced in 1995, and the corresponding gross steel tonnage used, stabilised at the 1994 levels of some 40 million large drums and roughly 820 000 tonnes of cold rolled steel.

Market conditions were favourable enough to partly recover some heavy cost hikes in previous years, and the total value turnover of the sector consequently increased from approximately 750 million ECU in 1994 to 800 million ECU in 1995.

The development of the production of large steel drums, with capacities ranging from 185 to 250 litres, is shown in Figure 1 for the past five years, separately for open and tight head drums.

### MARKET FORCES

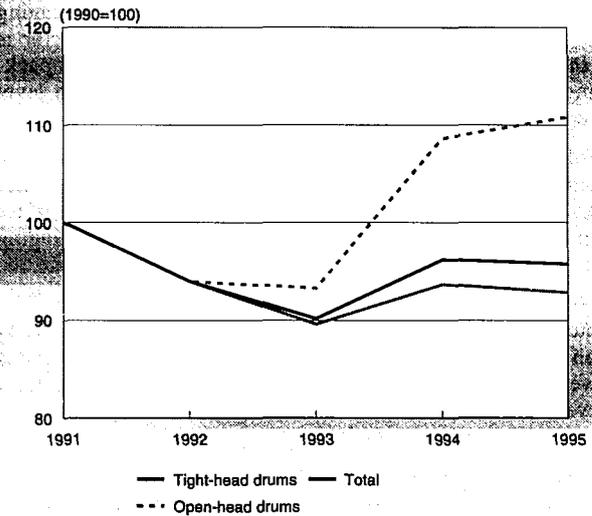
#### Demand

Steel drums obviously encounter competition of substitute packages, but because of their strength, safety, and ease of handling and uniformity, they are a favourite packaging in many sectors, particularly in the lubricating, chemical and allied industries, for transporting and storing liquids in tight head drums and powders, and pastes and solids in open head drums.

Due to their volume and freight costs, empty steel drums are not supplied for filling at distances over 300 to 400 kilometres. They are generally manufactured at strategically located production units, with easy access to fillers' plants.

After filling, steel drums are used to carry liquid or solid products throughout Europe and the rest of the world as they are universally acceptable, with a multitude of UN pass certificates, and meet all major forms of transport authority requirements.

Figure 1: Steel drums  
Development of EFTA production (1)



(1) Excluding Iceland, Ireland and Sweden.

Source: SEFA

### Impact of the Single Market

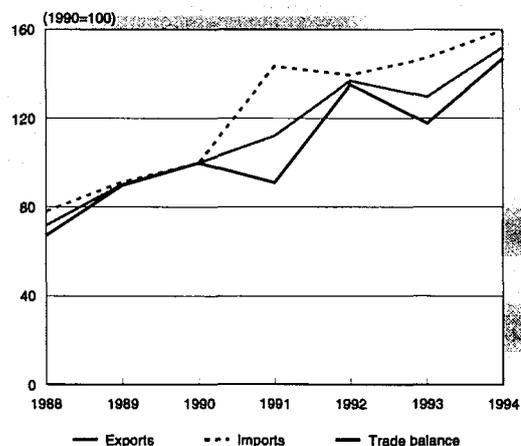
The creation of the single market should not have major consequences for this sector, as far as the free movement of goods is concerned, in view of the fact that empty steel drums do not travel over long distances and are produced regionally throughout Europe.

However, to eliminate the distortion of competition due to exchange rate fluctuations and, more seriously, the relocation of fillers' plants in lower labour cost countries, necessitating a corresponding relocation of steel drum production lines, the introduction of a single European currency and the harmonisation of social legislation's would obviously contribute to a more healthy business climate.

### ENVIRONMENT

Further to the EU Directive on Packaging and Packaging Waste, the European Committee for Standardisation has received Mandate M/200 from DG XI of the EU Commission

Figure 2: Steel drums  
Extra-EU trade



Source: Eurostat

for standardisation and a study related to packaging and packaging waste within the CEN/TC 261 (Packaging), SC 4 (Packaging and the Environment).

As the steel drum is far superior to any alternative packaging due to its suitability for re-use and recycling, this sector is all in favour of measures concerning the management of packaging and packaging waste in order to provide a high level of environmental protection.

It follows that the sector is actively participating in the work programme of CEN/TC 261/SC 4 for the preparation of standards to prevent waste packaging, and to promote the reuse of packaging and recovery, including recycling of packaging waste.

To be noted that for this sector, considerations regarding the protection of the environment cannot be limited to the European continent, in view of the fact that filled steel drums travel all over the world and that, after emptying at destination, they should be suitable for reuse and recovery on any continent.

To achieve this aim, it is necessary to also set up dimensional standards at the international ISO level and agree on worldwide definitions of emptiness or cleanliness requirements for used steel drums. Also to this end, the European sector has established formal links with steel drum industries in Africa, and the Middle-East, Asia-Oceania and the Americas, representing a total production of some 150 million large steel drums every year.

In this connection, the sector is obviously also interested by the work programme of ISO TC/207 for the development of the new ISO 14000 series of environmental management system standards.

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## OUTLOOK

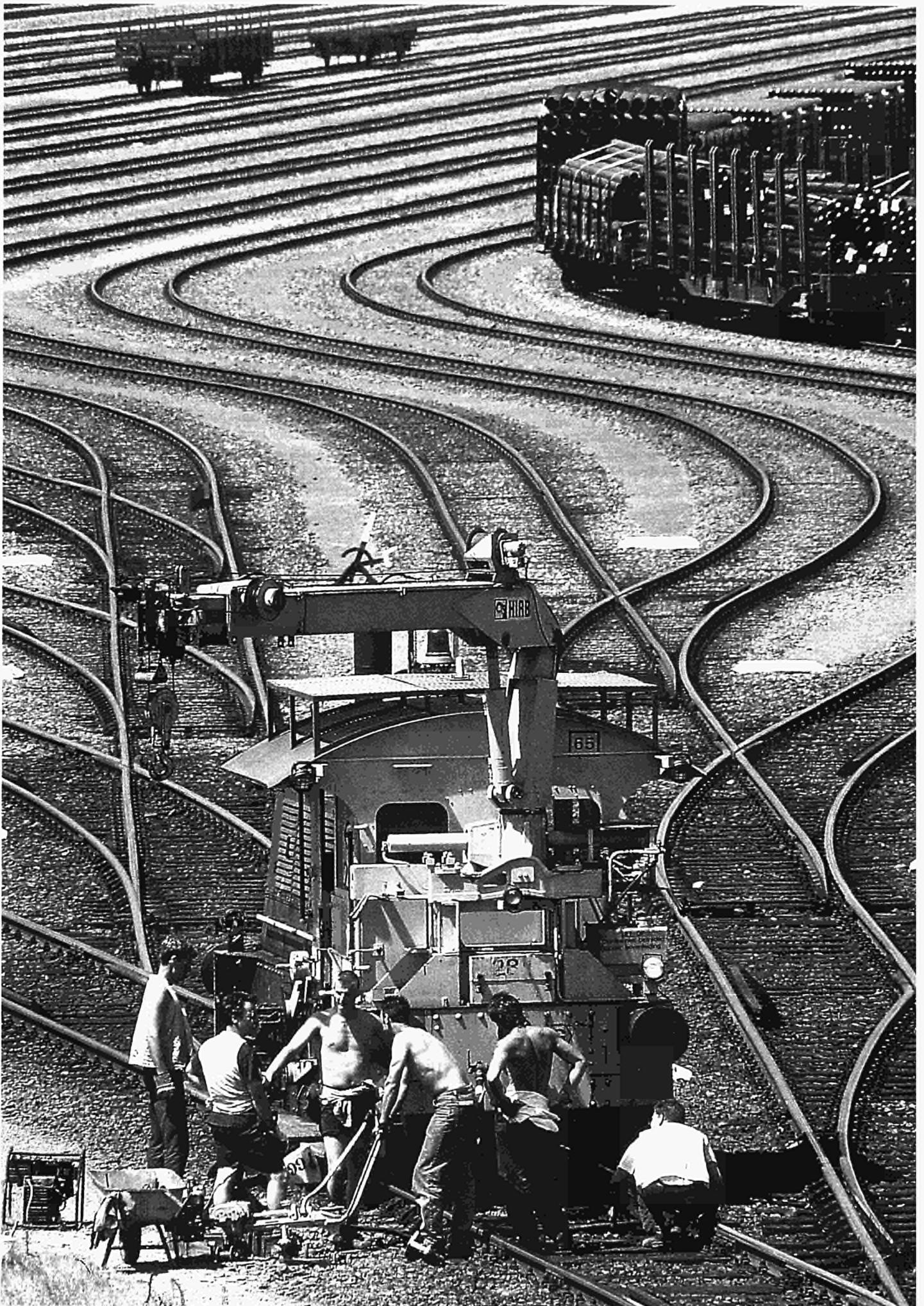
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The sector is confident for the future of the steel drum, because it is a mature product which is now being made on fast production lines, from material with consistent thickness, available from many sources, and it has no re-use or recovery problems.

Written by: SEFA

The industry is represented at the EU level by: European Association of New Steel Drum Manufacturers (SEFA). Address: Boulevard du Souverain 53/17, B-1160 Brussels; tel: (32 2) 673 2447; fax: (32 2) 673 0083.





## Overview

### NACE (Revision 1) 29

The machinery and equipment industry group is clearly dominated by capital goods or components for such goods. Its development is therefore decisively characterised by the cyclical fluctuations in propensity to invest. Its trend is positively influenced by the continuing spread of the computer-aided machine generation, by a growing need for environmental technology and by the steadily growing services content of the products which it offers. As a supplier of advanced production technology, the manufacture of machinery, which forms the core of this industry, occupies a key position in the EU economy. Productivity and product quality in all other branches depend on its ability to perform, and this applies particularly to industry. From this angle, the manufacture of machinery is a cross-section technology which sets the pace for the overall competitiveness of EU industry. Although machine manufacturers in the EU have hitherto succeeded in maintaining their lead at an international level, they have to react, in the field of standard products and machine components, to the growing price pressure from East Europe and the newly industrialised countries of East Asia. This also applies, with particular force, to the domestic appliances sector, which is included under machinery and equipment. These products are always standardised and usually not particularly complex. Only exceptionally, therefore, are producers able to take advantage of their technological lead in order to escape the keen price competition.

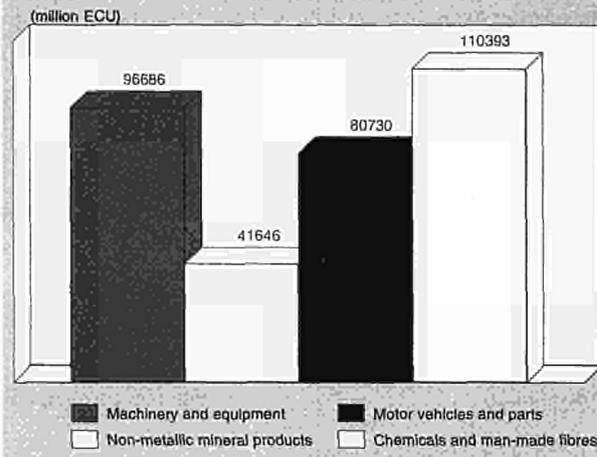
### INDUSTRY PROFILE

#### Description of the sector

The new EU nomenclature, NACE Revision 1, in its Division 29, embraces "Weapons" (29.6) and "Domestic appliances" (29.7), in addition, to "Manufacture of machinery" (29.1 to 29.5) in the "Machinery and equipment" category. For reasons of confidentiality, no complete figures are shown for weapons in most countries, and these data therefore cannot be included in this survey. Its presentation is therefore concentrated on machines and domestic appliances. In the past, the manufacture of machinery constituted Group 32 of NACE 1970, while domestic appliances consisted of two sub-categories: the non-electrical appliances of the old item 3161 and the electrical appliances contained in item 3450 Machines and domestic appliances, which, overall, on the basis of their statistical weighting, are in a ratio of 9:1. Thus, according to NACE Revision 1, "Machinery and equipment" is dominated by the data from the manufacture of machinery. As, however, the production of domestic appliances has quite different features, the two fields can be lumped together only to a limited extent. This means that they have to be considered separately in some contexts.

Manufacture of machinery, as a supplier of means of production for all sectors of the economy, performs a key function, since it provides its customers with the technical preconditions for efficient manufacturing. This calls for a broad product range extending from miniaturised precision components, such as special needle bearings, to complete manufacturing plants, such as a foundry and rolling-mill plant. All the products of the manufacture of machinery are of technologically high quality, although, with a few exceptions, they cannot be said to belong to the most advanced technological categories. Many

Figure 1: Machinery and equipment Value added in comparison with related industries, 1994

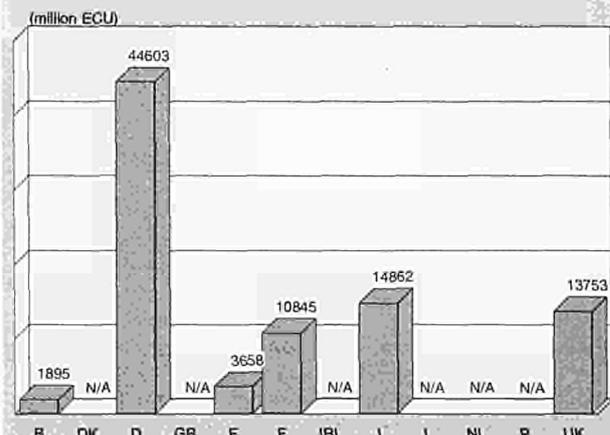


Source: DEBA GEIE

machines were invented a hundred or even two hundred years ago: the cylinder printing machine, for instance, in 1812. The manufacture of machinery is therefore often referred to as "old" technology. This entirely overlooks the fact that the product "machine" has developed continuously in order to meet the changing requirements of customers. A modern rotary machine for newspaper printing is a case in point. It can nowadays be assumed that the length of the normal innovation cycle in the manufacture of machinery is four to five years.

The manufacture of machinery keeps up with this rapid pace of innovation by the successful combination of mechanical techniques and microelectronics, the use of optics and sensor technology and the utilisation of new materials. The central position among the products on offer is nowadays occupied no longer by the stand-alone machine but by the integrated machine system employing the most up-to-date information technology. In order to operate these systems, the customer

Figure 2: Machinery and equipment Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Machinery and equipment  
Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	141 320	217 141	221 396	215 964	190 244	198 728	206 809	235 071	250 620	266 190	282 900
Production	179 225	253 492	256 350	252 587	236 500	248 204	260 259	290 397	309 950	329 670	350 870
Extra-EU exports	58 237	69 991	70 488	71 856	79 831	87 178	93 644	91 531	98 440	106 070	113 740
Trade balance	37 906	36 351	34 953	36 623	46 256	49 476	53 449	55 326	59 330	63 480	67 970
Employment (thousands)	2 605	2 702	2 655	2 534	2 346	2 215	2 186	2 394	2 420	2 450	2 460

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DFI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Machinery and equipment  
Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Machinery for mechanical power	75 559	92 621	35 053
Agricultural machinery	11 220	13 014	3 206
Machine tools	15 315	18 340	6 390
Textile machinery	4 326	8 545	5 490
Domestic appliances	27 925	29 894	5 009
Other machinery and equipment	64 385	85 791	32 031

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Machinery and equipment  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	3.7	-3.5	0.4	2.7
Production	3.2	-2.4	0.7	4.6
Extra-EU exports	0.3	0.1	0.2	-1.4
Extra-EU imports	0.6	-4.4	-1.6	-18.1

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Machinery and equipment  
External trade in current prices**

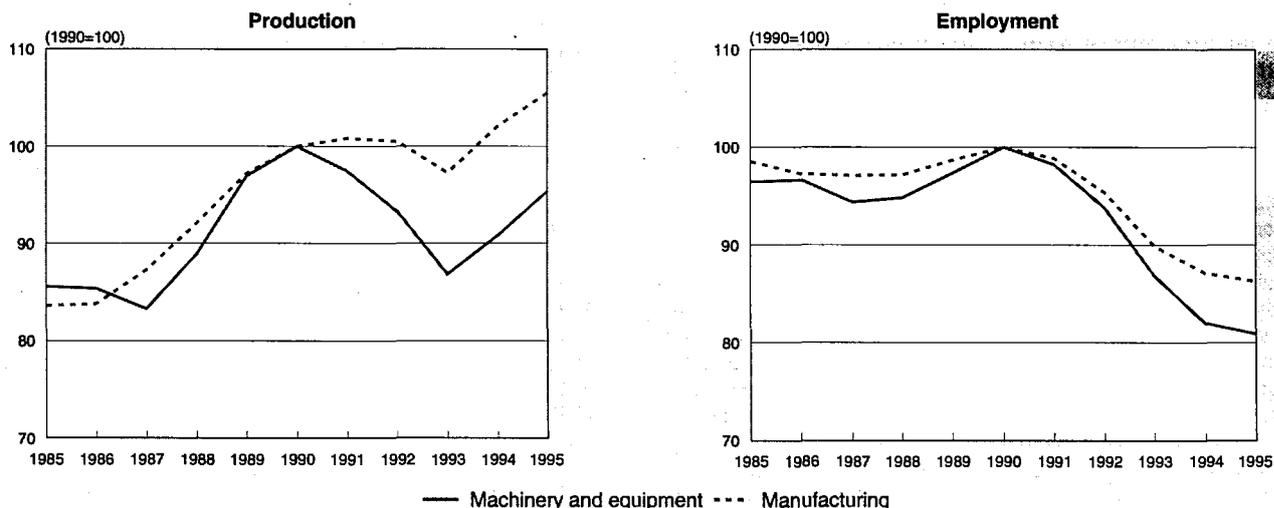
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	58 237	57 617	55 487	59 230	67 735	69 991	70 488	71 856	79 831	87 178	93 644	91 531
Extra-EU imports	20 332	20 880	22 424	26 530	31 193	33 640	35 535	35 234	33 575	37 702	40 194	36 205
Trade balance	37 906	36 737	33 062	32 701	36 542	36 351	34 953	36 623	46 256	49 476	53 449	55 326
Ratio exports / imports	2.9	2.8	2.5	2.2	2.2	2.1	2.0	2.0	2.4	2.3	2.3	2.5
Terms of trade index	84.2	89.0	92.3	93.4	90.1	100.0	104.2	107.1	100.6	98.0	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Machinery and equipment**  
**Production and employment compared to EU total manufacturing Industry**



1995 are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

needs more and more services such as consultancy, training, maintenance and special software. Most machine manufacturers therefore also offer these product-related services, which already account for between ten and fifteen per cent of the total sales of the manufacture of machinery sector. Many of the customers' production tasks require a tailor-made solution. For the manufacture of machinery this means that series production of standardised products is often not possible. This necessitates a high degree of specialisation on the part of producers, which in turn encourages extensive international division of labour, while at the same time offering good business opportunities for small and medium-sized firms.

Domestic appliances, like machines, are predominantly made of metal, and this results in similar production processes. They are consumer durables, which are primarily sought by private households. In terms of economic categories, therefore, their purchase is classified under consumption and not under investment. As a rule the operations which the purchaser expects his domestic appliance to perform are not as complex or as technologically demanding as those typical of the products of the manufacture of machinery, nor do they call for such a variety of special solutions. Domestic appliances are therefore as a rule standard products which can be made in large series or even mass-produced and for the purchase of which price is the decisive criterion. This had led, in the domestic appliances industry, to a great concentration among a relatively small number of major companies, whereas the picture presented by the manufacture of machinery is characterised by small and medium-sized enterprises.

The manufacture of machinery and equipment is one of the largest industrial branches in the EU: it contributes about 9% to the total industrial production of the 15-Member EU. Its centre of gravity is definitely in Germany, which accounted for about 38% of the output of the enlarged EU in 1995. The other major producing countries for machinery and equipment are Italy, with a share of 17%, and Great Britain and France with 11% each. Then, far behind, come Sweden, Spain and the Netherlands. As a result of the enlargement by the accession of Finland, Austria and Sweden, the EU's output of machinery and equipment was increased by over one-tenth.

#### Recent trends

The machinery and equipment sector regularly has to contend with sharper cyclical fluctuations than most other branches

of industry. That is due to its high degree of dependence on the investment activity of enterprises, which reacts very sensitively to developments in the economy as a whole. This applies particularly to equipment investment in industry, into which most products of the manufacture of machinery flow, either directly or indirectly. This interconnection is also the key to the development of the sector in recent years. In the domestic appliances segment, which is close to the consumer, the repercussions of cyclical movements are not quite so marked, although, here too, they influence the trend.

The vigorous investment boom of 1988 to 1990 was followed, from 1991 to 1993, by a marked falling off in investment, in the course of which demand for machines was down sharply. Production then had to be cut back so severely that a large proportion of the growth achieved during the upswing was lost. The recession was particularly deep for suppliers of components and manufacturers of machine tools, rubber and plastics machines and printing machines. In order to survive the drop in production, firms had to make drastic job cuts. Some 320 000 jobs were therefore lost between 1990 and 1993 in the EU's machinery manufacturing sector alone. While manufacturers of domestic appliances had to reduce their production only minimally in those years, the rationalisation pressure resulting from the international price war was so great in this sector that many jobs were lost there, too. Thus, in the critical years 1990 to 1993, job cuts in the machinery and equipment sector altogether numbered nearly 360 000. This figure does not include the cuts in East Germany, where the structural adjustment led to the loss of even more jobs during the same period.

Investment activity recovered outside Europe as early as 1993, and this enabled the EU machinery manufacturing industry, in particular, to expand its exports to non-EU countries, although this only partly offset the losses in sales within the EU. Finally, from the beginning of 1994 onwards, demand also stabilised in the member countries and the rest of West Europe, with the result that total new orders for machinery and equipment now began to rise. In the initial phase it was chiefly component manufacturers that benefited in the EU market from substantial stockbuilding by its customers, but soon the stimuli also began to come from investment in equipment. While consumption still lagged somewhat behind this upsurge, domestic appliances benefited from an increase in house-building, which had expanded chiefly in Germany. Thus,

EU output of machinery and equipment already increased in real terms by nearly 5% in 1994. Redundancies did not level off, however, until the end of the year, some 130 000 further jobs having been lost during 1994.

In this first year of recovery production in some cases had difficulty in keeping up with the rapid rise in demand. It became evident that the job cuts had in fact been excessive in many firms. These bottlenecks were initial problems in the transition from the extremely deep recession to the upswing, which were solved in 1995. Production now kept up with the rapid rise in new orders. In the first half of 1995 demand for machinery and equipment increased again strongly both within the EU and in third-country markets. In the second half of the year, however, the propensity to invest and also to consume fell off surprisingly sharply in most member countries, and orders from the EU began to decline. This weakening of demand was due to several factors. First, the Maastricht criteria, which forced governments to adopt austerity policies, slowed down economic activity. Second, the foreign exchange turmoil in the spring led to repercussions which, on the whole, had adverse effects on the countries whose currencies appreciated, which more than offset the favourable effects on the soft currency countries. The boost which had been imparted by the stock cycle therefore petered out without triggering the expansion investments which usually take place in this phase of the upswing. At the same time the growth in demand for machinery from third countries slowed appreciably, primarily because of the easier trend in the US.

Thanks to the accumulated order books, the machinery and equipment construction sector was able to maintain a high level of production until the end of 1995 despite the unexpected weakening of demand. Utilisation of capacities was therefore still good in December in most cases. Overall, EU production of machinery and equipment appears to have risen again in real terms by about 5% in 1995. This figure also takes account, for the first time, of the new EU members, among which Sweden and Finland actually achieved double-digit growth rates, while Austria was close to the EU average. In 1995, the overall level of job losses was only slight. Whereas in most countries workers were in fact cautiously being taken on again for the first time, enterprises in Germany reacted to an excessively high wage agreement by further job cuts.

#### International comparison

The three major markets for machinery and equipment, the EU, the US and Japan, account for similar volumes. However,

the asynchronous course of the business cycle in recent years has led to a shift in favour of the US. While the upswing there had already brought about a strong increase in demand from 1992 onwards, the EU did not recover from its deep recession until 1994, and Japan did not succeed in turning the corner until 1995. After having been enlarged by the addition of Sweden, Finland and Austria, the EU has kept closer in line again with the US from 1995 onwards. Owing to the different cyclical movement, the US trade surplus melted away further, whereas it increased again in the EU, and more markedly still in Japan.

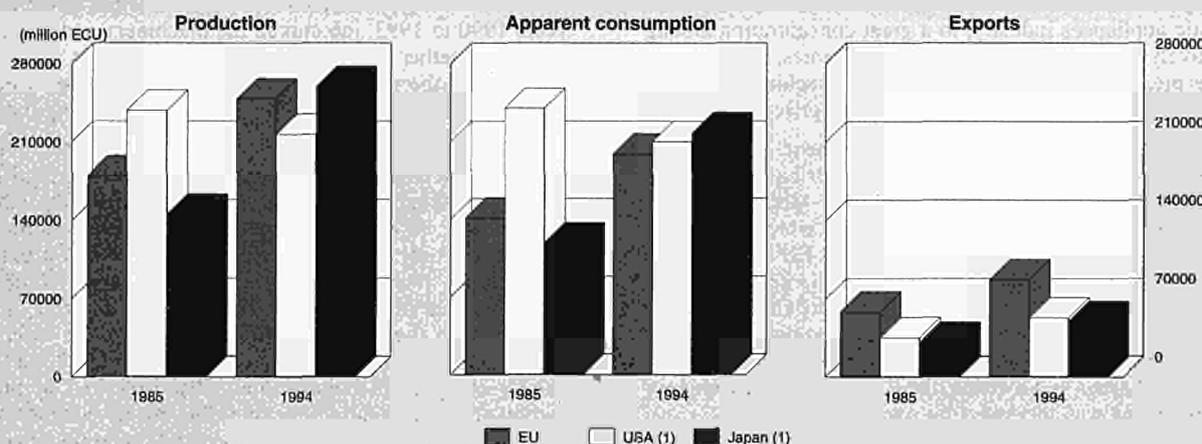
The development of machinery production adjusted to eliminate price changes, also reflecting this different cyclical course. Furthermore, it shows that, since the early 1990s, the US machine industry not only has a clear cyclical lead over its competitors in the EU and Japan but has also had to overcome only a comparatively shallow recession. Whereas it suffered a total decline in production of 7% in 1990 and 1991, the cumulative fall in the EU in the years 1991 to 1993 amounted to nearly 14%, and that in Japan in the years 1992 to 1993 was nearly 16%. In 1995 machine output rose again simultaneously in all three production centres for the first time since 1989, and the Japanese machinery manufacturing sector, too, has now bottomed out.

#### Foreign trade

In the first half of the 1990s the EU countries' surplus in foreign trade in machinery and equipment, and the export-import ratio in relation to third countries, which had previously shown a downward trend for a decade, rose again appreciably. This was primarily due to the divergent cyclical movement within and outside West Europe, and the shift must therefore not be interpreted as an improvement in the competitiveness of EU manufacturers. While exports to third countries started to pick up again as early as 1992, imports from third countries shrank in 1992 and 1993. In 1994 and 1995, imports, too, again rose strongly, but at the same time exports also expanded rapidly. About 35% of EU production of machinery and equipment was exported to non-EU countries in 1994, which was a much higher percentage than the export ratios of Japan and the US, which were 20% and 15% respectively. From 1995 onwards this ratio declined for the EU by about 4%, because the expansion led to a shift from external to internal trade.

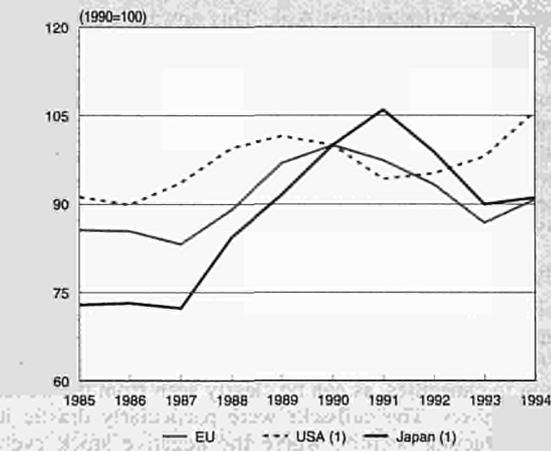
The development of EU exports of machinery and equipment to third countries mainly depends on the growth in investment in the individual regions of the world. For instance, in recent

**Figure 4: Machinery and equipment**  
International comparison of main indicators in current prices



(1) Excluding non-electric domestic appliances.  
Source: DEBA GEIE, Eurostat

**Figure 5: Machinery and equipment**  
**International comparison of production in constant prices**



(1) Excluding non-electric domestic appliances.  
 Source: DEBA GEIE

years the US, where an investment boom started in 1992, has become even more prominent as a market. This situation has remained unaffected by the tendency towards under-valuation of the dollar, which has offered competitive advantages to domestic tenderers. The countries of East Asia, too, have become much more important. The EU machinery manufacturing industry has made special selling efforts in this region in recent years, because it had realised that its position in this, the fastest-expanding machinery market in the world, was not good enough. It was assisted in this connection by the massive appreciation of the yen, which reduced the competitiveness of the Japanese industry which dominates this market. About 5% of the EU's third-country exports went to China alone in 1994, while over 8% was accounted for by the "small tigers" of Hong-Kong, Singapore, South Korea and Taiwan combined. Lastly, there has also been a strong recovery in exports to Latin America, although its share is still considerably smaller than it was in the early 1980s.

The share of EU imports from third countries in supplying the EU's market with machinery and equipment reached a new record level of 19% in 1994. The EFTA countries improved their position as suppliers, with a market share of 8%. More than half of this was accounted for by Sweden, Finland and Austria. Therefore, with their accession to the EU, its import

ratio has been substantially reduced from 1995 onwards. The US and Japan maintained their market shares in 1994. Lastly, there was relatively strong growth in supplies of machines from the East European countries in transition and from the newly industrialised Asian countries, although their shares, at about 1% in each case, are still modest.

About a third of supplies of machinery and equipment to the market is provided by trade in machines among the member countries. This share in trade is probably somewhat larger still, because there are considerable reporting gaps in the data on internal trade recorded since 1993 with INTRASTAT. On the procurement side they are so great that the figures here are completely unusable. This is confirmed by a comparison of the values shown for internal imports and internal exports. Whereas up until 1992 imports were in each case just over 1% higher, which is mainly attributable to differences in reporting, on either a c.i.f. or an f.o.b. basis, in 1993 and 1994 they amounted to only 88% to 89% of exports, which, in turn, are also still too low.

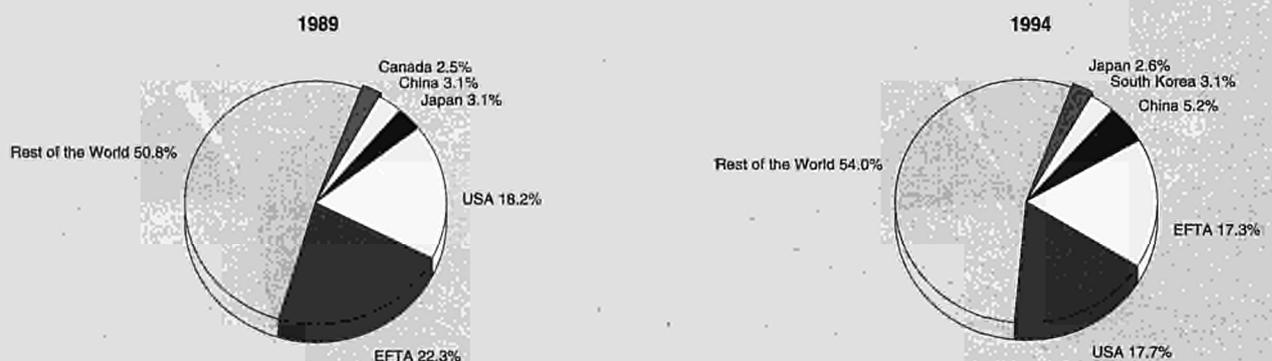
## MARKET FORCES

### Demand

Well over half of the products manufactured by the machinery manufacturing industry are finished capital goods. The remainder, in turn, predominantly consists of preliminary supplies for capital goods. This category includes not only parts such as drive units, but also, for instance, an enormous diesel engine which is built into a ship, or an industrial furnace for a complete cement factory. Only a few of these preliminary supplies end up in consumer durables, such as, for instance, the roller bearing in a domestic washing machine. Production of domestic appliances, on the other hand, can almost completely be classified as consumer durables.

A more difficult matter than this overall characterisation is the quantification of the degree of dependence of this branch of industry on demand from individual economic sectors, because statistics on this subject are inadequate. For the machinery manufacturing subsector, an estimate of the breakdown of domestic sales among customer branches, which can serve as a guide, can be made for Germany on the basis of the input-output tables of the Federal Statistical Office and the investment account of the Ifo Institute. According to these figures, 70% of machinery manufacturing products go to the manufacturing industry and 4% each to mining, energy and water supply, agriculture and forestry and the building sector. The services sector takes nearly 14%, its share having risen

**Figure 6: Machinery and equipment**  
**Destination of EU exports**



Source: Eurostat

sharply during the past few years. Within the manufacturing industry, because it is so closely interwoven with the sectors providing preliminary supplies, that industry itself is its own biggest customer, followed by the automobile and electrical engineering industries. In the services sector the main customer is trade, which uses many machines in its logistics. Although there are no corresponding figures for domestic appliances, it can be assumed that over 90% of sales go to private households.

Owing to its one-sided dependence on investment activity, the manufacture of machinery is repeatedly subject to pronounced cyclical fluctuations in demand. This is because enterprises react sensitively, in their investment decisions, to actual or expected changes in utilisation of capacities, earnings, financing costs or general underlying conditions. These conditions develop in parallel for large areas of the economy, leading to cumulative processes. The resultant fluctuations in investment activity, which are particularly pronounced in the case of investment in equipment, affect the cyclical ups and downs of the economy as a whole. Therefore, inevitably, the machinery manufacturing sector is time and again in the centre of the expansion or recession. Procurements of consumer durables by private households, on which sales of domestic appliances depend, also vary with the business cycle, albeit to a lesser extent than the investment activity of industry.

The 1991 to 1993 recession had left considerable pent-up demand for machinery and equipment in the EU, and this lends support to the revival of demand which started in 1994. Furthermore, the spread of computer-aided systems technology has much further to go, and machine manufacturers are constantly offering new innovations. This opens up many possibilities for customers to increase their productivity and hence their competitiveness. Investment in expansion has not yet, however, played any great role during the last two years.

There has also been a great improvement in opportunities for sales in the countries of East Europe in transition. Here there is an immense requirement for modernisation, which is also becoming increasingly possible to finance in the course of a successful restructuring operation. The integration of these countries in the international division of labour with the West is giving an additional boost to demand for machines, because the product qualities required can be achieved only with modern machines. In addition, the growing inward investments of West European firms in the countries in transition are also involving the supply of capital goods.

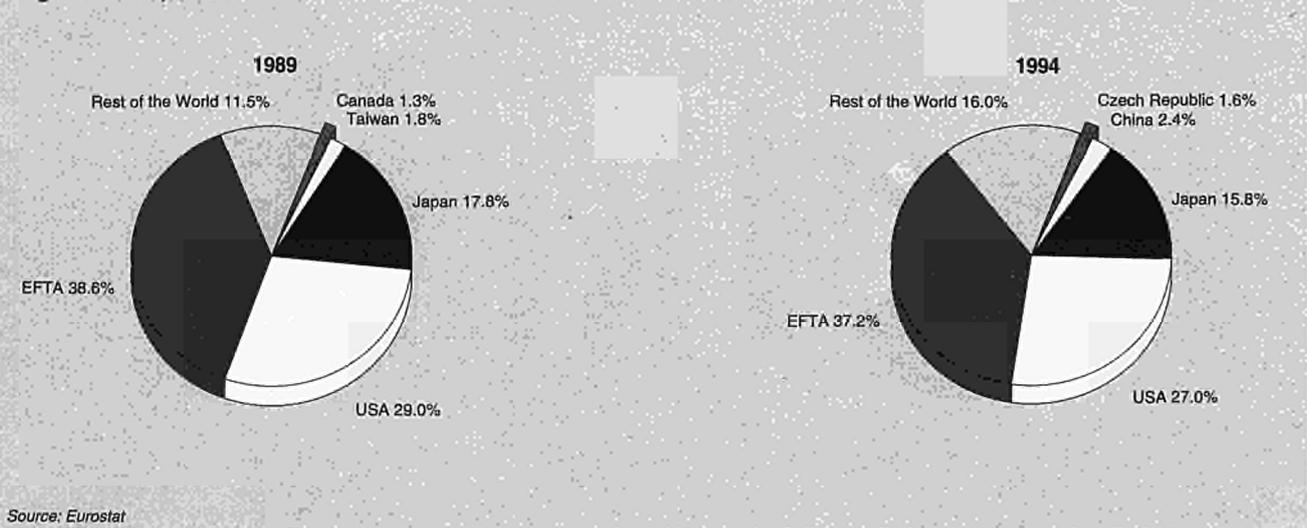
Outside Europe, demand for machinery and equipment was already growing strongly from 1993 onwards. The highest growth rates were recorded in the newly industrialised and developing countries of East Asia. This upward trend is continuing. Prospects also remain positive in Latin America. In the US, although the investment boom is running out of steam, there are not yet any immediate recessionary fears. As Japan, too, with the aid of the correction in the exchange rate for the yen, is finally able to put its recession behind it, demand is growing in 1996 in all the world's major markets. Overall, however, the pace of growth is no longer quite as rapid as in 1995.

### Supply and competition

The fall in production which the machinery and equipment construction industry had to cope with in the EU in 1992 and 1993 was unusually sharp. This led to a considerable reduction in capacities, as can be clearly seen from the trends in staff numbers. The cutbacks were particularly drastic in the subcontracting sectors, where the negative stock cycle had further accentuated the downward trend, and in the manufacture of machine tools, where the cyclical restraint in investment in the motor industry and the manufacture of machinery coincided with the structural reductions in demand in the armaments industry. In these fields the unexpectedly sharp revival in demand ran up against initial production bottlenecks as early as 1994 such as normally occur only in boom periods. Furthermore, there were difficulties with regard to supplies of special steels, cast iron parts and electronic components. These, too, are signs of a particularly deep recession, following which it is difficult for many firms to step up production to high levels quickly. In the course of 1995, however, these initial problems were overcome. In that year, although capacities in the machine industry in the EU were well utilised, there were no longer any major bottlenecks.

The marked fluctuations in the production of machinery and equipment also have repercussions on the development of the productivity of labour and unit labour costs. In a recession the decline in capacity utilisation also inevitably weakens the labour productivity achieved, which sometimes even becomes negative. It is consequently no longer possible to compensate for the increasing burden of labour costs, which rises even during the downward phase. With the start of the upswing and the concomitant rise in capacity utilisation, the picture changes. Now high productivity gains are achieved, and these are also contributed to by the organisational measures introduced to cut costs at the low point of the recession. This occurred in 1994 and 1995, so that manufacturers in most

**Figure 7: Machinery and equipment  
Origin of EU Imports**



**Table 5: Machinery and equipment**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	88.8	88.3	88.2	93.8	99.6	100.0	99.2	99.5	100.0	110.8
Unit labour costs index (3)	85.1	91.0	95.6	94.4	94.5	100.0	108.6	114.6	117.9	110.2
Total unit costs index (4)	82.4	87.2	88.7	91.3	95.6	100.0	104.4	107.8	109.2	107.3
Gross operating rate (%) (5)	9.2	8.3	8.7	9.5	9.7	8.9	7.9	7.3	6.6	8.3

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

EU countries, with only a moderate increase in labour costs, were able to record a considerable reduction in their unit labour costs. A major exception to this trend is represented by the German machinery and equipment construction industry, which was unable in 1995 fully to compensate, by productivity rises, for a large collectively agreed wage increase. During the recession many machine manufacturers in the EU had suffered losses. The favourable development of unit labour costs now offered the opportunity of achieving a sustained increase in earnings. This was more difficult, however, for manufacturers in the countries whose currencies had appreciated, because these were in many cases forced to make price concessions owing to the deterioration in their price competitiveness.

Manufacturers of machinery and equipment in the EU still have a high degree of international competitiveness. Their comparatively slow progress in the early 1990s merely reflects the prejudicial effect of the different selling possibilities in the individual regions of the world. Their competitiveness is chiefly based on advanced technology, high quality and the ability to solve their customers' special production problems. On the other hand, they are under constant price pressure, which until a few years ago came mainly from Japanese competitors, but has since increasingly stemmed from newly industrialised countries in East Asia and countries in transition in East Europe. This applies particularly to manufacturers of standard machines, components and domestic appliances. However, the customer, when buying machines, is often looking for an ideal solution to his special manufacturing problem, which can be offered only by custom-made production. In this case he does not assign absolute priority to the price. Therefore, price elasticity of demand for machines is also considerably lower than in the case of domestic appliances and most other industrial products.

The competitiveness of EU manufacturers depends decisively on the extent to which they succeed in defending their high degree of technological competence. A glance at the patent statistics gives cause for some optimism in this respect. Out of the patent applications for products of the manufacture of machinery filed world-wide in at least two countries between 1988 and 1992, 49% were accounted for by manufacturers in the enlarged EU, 23% by US manufacturers and 19% by those in Japan. Domestic appliances, however, are faring much worse. By confining the scope to patents applied for in at least two countries, the Ifo Institute, which makes this assessment, selects the inventions which the applicant considers to be so important that he does not apply for them only in his own country. Patents cannot, of course, be equated with successful innovations, but they are a good basis. Patent numbers are therefore a useful indicator for technological competitiveness. In no other important branch of industry do they

indicate such a good position for EU manufacturers as in the manufacture of machinery.

Machinery and equipment construction combines in its products high-quality mechanical engineering with new technologies such as microelectronics, information technology, optics and sensor and laser technology. It also uses new materials. This results in a continuous innovation process which constantly offers manufacturers the possibility of gains in competitiveness. At the same time, a proven technology becomes more and more efficient. The current trend thus leads away from the "stand-alone" machine towards machine systems, for the use of which the customer increasingly also needs services such as consultancy, training, software or maintenance. Most machine manufacturers provide such service in-house, because they see here a potential for further enhancement of their image. For this they need particularly highly skilled staff, which is amply available in the EU, but not to competitors in most third countries.

An incalculable advantage for EU producers of machinery and equipment is their inclusion in an efficient industrial cluster. This not only assures them of good possibilities of recourse to high-quality preliminary supplies and services but also offers them particularly close ties with customers. It favours permanent innovation in the field of special machines, which presupposes close co-operation with the investor. Against this background, EU machinery manufacturing has developed a wide product range such as does not exist either in the US or in Japan.

The international division of labour also presents the EU machinery and equipment construction industry with new challenges: The possibilities of relocation have improved, particularly where research and development can be carried out separately from production. This chiefly applies in this industry to sectors making standard products which can be produced in large series, such as domestic appliances. On the other hand, fragmentation and relocation of production is more difficult in the customer-led sector of the manufacture of machinery, where learning effects in production have direct repercussions on research and development. Here again, the EU countries enjoy the advantage which their location offers owing to their highly skilled labour forces. Low transport costs do, however, mean that they can obtain supplies from less expensive locations and as a result out-sourcing (i.e. reducing the still extraordinarily high value added ratio in the machinery manufacturing industry in comparison with other industries) is a constant option.

For producers of machinery and equipment in the EU, the opening up of East Europe has led to a great advance in the possibilities of the international division of labour, because the less expensive production sites are now close at hand. Furthermore, some of the countries in transition, above all

the Czech Republic, have a long machinery manufacturing tradition. A breakdown of the imports from these countries, which have risen appreciably in recent years, shows that the products in question are not only simple domestic appliances but also standardised components and machine parts. Obviously the EU manufacturers are making sure they obtain low-cost supplies. In practice, however, it often turns out that the cost advantages offered by these countries are far from being as great as might be expected from the huge wage differences: the advantages are substantially reduced by considerably lower productivity together with high communication and quality control costs.

Below the line the new division of labour is having favourable effects for machinery and equipment construction not only in East Europe but also in dealings with newly industrialised countries overseas, because there is not only additional supply pressure from these countries but also growing demand for modern means of production which they are not able to manufacture themselves with the requisite degree of variety and state-of-the-art technology. Additional potential for exports from the EU is therefore developing in these countries.

### Production process

The greater part of the machinery and equipment output is produced individually or in small series, because that is the only way in which the customers' many and varied requirements can be met. Modular systems are, however, used as far as possible in order to exploit, at least in the case of components, the cost advantages of economies of scale. Most machinery and equipment is characterised by a considerable design effort, great complexity and extreme precision in production. In order to cope with this production requirement, manufacturers need to have not only a high proportion of engineering staff but also a body of specialised skilled workers. The machinery and equipment manufacturing sector has an above-average degree of variety in its product range, and within the EU its labour costs correspond to some 30% of the value of its output. It is thus a labour-intensive industry.

Among the input supplies procured by this branch of industry, constituting nearly 60% of the value of its output, those obtained from within this branch predominate. Second come those from the electrical engineering industry, which, owing to the increasing prominence of microelectronics, are tending to increase. In both cases the components in question are of high quality. The most important basic material for the manufacture of machinery and equipment is steel, although a large proportion of this is procured in processed form, for instance as cast iron or forgings.

In its production process the machinery and equipment construction industry makes systematic use of computerisation, starting with design and work preparation and continuing in production, where flexible manufacturing systems are a prominent feature. These methods shorten the overall processing time for an order, while at the same time permitting more flexible compliance with the individual wishes of customers and constant quality assurance.

## INDUSTRY STRUCTURE

### Companies

In 1992 the machinery manufacturing industry in the EU was made up of some 142 000 firms. These included, however, over 122 000 firms with fewer than 20 employees, engaged mainly in repair work or production of parts. Thus, only just under 20 000 firms had at least 20 employees, a level which in the manufacture of machinery is regarded as the lower limit for the industrial manufacturing of complex engineering products. In this category, again, the majority consisted of very small units, so that there were only 4 454 companies

with at least 100 employees. Among these, in turn, there were only about 800 companies with a workforce of at least 500.

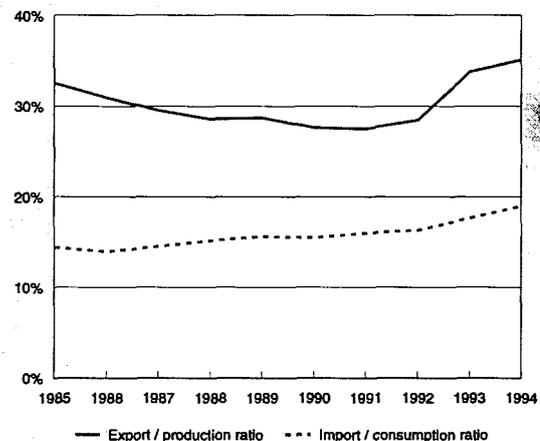
It can thus be seen that the manufacture of machinery in the EU is characterised by small and medium-sized enterprises. This is not due to chance but is the result of the production function performed. The product "machine" only exceptionally lends itself to production in large series, so that there is no incentive to working in large units which would enable costs to be reduced. On the contrary, the extreme specialisation demanded by the market can often be much more readily achieved in small firms. Therefore the relatively few large companies in the machinery manufacturing sector also operate predominantly in fields where standard solutions offer economies of scale or the building of complete large plants calls for high capacity both in terms of manpower and in financial resources. The dominance of small and medium-sized enterprises also, in the manufacture of machinery, favours constant structural adjustment, not least because it offers less scope for structure-perpetuating subsidies.

Experience has also shown that, in the manufacture of machinery, small and medium-sized enterprises can cope more flexibly than large units with the enormous cyclical fluctuations in demand which repeatedly occur in this industry. On the other hand, they suffer as a rule from disadvantages in financing, research and marketing (particularly in distant markets). These problems can sometimes be dealt with by co-operation arrangements. In terms of how they see themselves, this course proves difficult for many medium-sized machine manufacturers; recent years have nevertheless witnessed the emergence of a clear trend towards greater co-operation.

The machinery manufacturing groups shown in the Table 7 include some which can be assigned to this industry only on account of their main activity, since they make not only machinery manufacturing products but also goods belonging to other branches of industry, ranging from steel production to telecommunications. The significance of these groups' shares in the industry's sales is therefore limited. In all concentration surveys, machinery manufacturing is constantly found to be one of the least concentrated industry groups.

The situation as regards domestic appliances is quite different. While there are no corresponding figures concerning corporate structure, this sector is unquestionably highly concentrated (i.e. there is a predominance of large manufacturers). These appliances are so standardised that they can be made in large numbers in order to reduce batch production costs. Price competition is consequently also extraordinarily keen in this sector.

**Figure 8: Machinery and equipment Trade intensities**



Source: DEBA GEIE, Eurostat

These factors make it difficult for small firms to hold their own in the market.

### Strategies

During the recession many manufacturers of machinery and equipment tried to bring about a lasting strengthening of their competitiveness. To this end they systematically exploited all possible methods of reducing costs. This includes cutting down on administration and also the development of lower-cost products, the rationalisation of the flow of materials and increased recourse to group working. Although this restructuring is not yet complete, it has already led to a distinct lowering of costs.

During the last few years the industry has also increasingly procured partially fabricated supplies from low-wage countries. The countries in transition in East Europe offer a welcome opportunity for this. While it naturally takes place at the expense of EU suppliers or reduces the value added proportion for manufacturers of machinery and equipment, this ultimately strengthens the industry's competitiveness, enabling it to produce at lower cost. Furthermore, there is in return the possibility of selling complete machines in the subcontracting countries. These last two factors help, in the long run, to safeguard jobs in the EU machinery manufacturing industry.

Despite all rationalisation efforts, however, many manufacturers regard product innovation as the best possible way of preserving their competitiveness. This is characteristic of an industry in which the improvement of known products is an evolutionary process. Experience has shown that the machinery and equipment manufacturing industry actually takes advantage of periods of flagging demand to step up innovation, and it therefore keeps its research and development efforts at a high level even during a recession. It is thus not surprising that the management in most small and medium-sized firms is still technically oriented. On the other hand, the marketing approach is often still underdeveloped. Only recently has the industry begun to pay greater attention to customers' needs. From this angle, the enhancement of products by additional performance capability is being increasingly resorted to as a strategic opportunity.

As in other industries, there is a world-wide globalisation trend in the machinery and equipment sector, although many small firms in the industry are hardly in a position to follow it. The larger manufacturers, however, are endeavouring to increase their presence in North America and East Asia by means of production sites of their own. In addition there are more and more successful co-operation arrangements whereby small firms jointly organise the servicing of their machines on site.

### REGIONAL DISTRIBUTION

In all EU countries there are regional concentrations in the production of machinery and equipment. These more often than not coincide with the historically developed industrial core areas, because machinery manufacturers have traditionally endeavoured to keep close to their main customers. Their ability to perform the necessary production functions has developed through on-site collaboration and dialogue with the customer industries. In Germany these centres of activity are in Baden-Württemberg and North-Rhine Westphalia, in Italy in Lombardy and Emilia-Romagna, in the United Kingdom in the Southeast and Midlands regions, in France in the Ile de France and the Paris basin, and in Spain in the Noreste region. The new EU Member States also have such production centres. In Austria they are the Oberösterreich, Steiermark, Niederösterreich and Vienna regions, in Finland they are Häme and Nylans, and in Sweden Stockholm, Malmöhus and also Göteborg and Bohus. In view of present-day transport and communication facilities and also of the international orientation of most machinery manufacturers, many arguments in favour of these regional production concentrations nowadays

no longer apply, although they still remain as relics of the historical development.

### ENVIRONMENT

The production of machinery and equipment does not as a rule cause any great harm to the environment. The noise pollution produced in metal processing used to be a problem, but it has been substantially reduced with modern machine tools. The environmentally acceptable disposal of combined coolants and lubricants such as are used in the operation of machine tools is a problem that can be solved. Other kinds of pollution are produced by some surface treatment processes, such as galvanisation. These processes, however, are usually carried out these days as commission processing by specialists subject to strict environmental protection rules. Overall, the environmental protection costs entailed by the production process are comparatively low.

In the future manufacturers of machinery, like other producers, will provide the assurance, by an "EU environmental audit", that they have installed an environment management system in their production. Certification in connection with this audit has already started. In the context of their European umbrella association ORGALIME (Liaison Group of the European Mechanical, Electrical, Electronic and Metalworking Industries), the national manufacturers' associations set up an Environmental Committee a few years ago, whose aims include finding an EU solution for the problem of "electronic scrap".

On the other hand, the machinery and equipment manufacturing industry is one of the main suppliers of environmental technology. First, it offers the technical concepts for follow-up environmental protection of soil, air and water. Second, however, it already takes account, in designing its products, of the requirements of environmentally acceptable operation. This principle of integrated environmental protection meets the demand for avoidance of pollution. With the increasing awareness of environmental problems, together with the further harmonisation of EU provisions, the need for environmental technology will increase further. This will boost demand for the industry's products and stimulate innovation.

In the case of domestic appliances, environmental acceptability is playing an ever greater role. The most important task in this connection is the replacement of CFCs in refrigerators. Furthermore, efficiency with regard to electricity and water consumption is becoming more and more important. This requirement is not only being met by customers but is also to some extent being promoted by EU Directives. Such requirements also often offer EU manufacturers the possibility of gaining a lead over competitors in low-wage countries.

### REGULATIONS

The "EC Machinery Directive", which has been in force since 1 January 1995, ensures that, within the European internal market, machinery manufacturing products meet uniform basic safety and health requirements. The Directive applies to nearly all powered machines and operating machines for commercial, industrial and private use. By means of the "CE" mark, the manufacturer certifies that his product complies with the Directive. Furthermore, on behalf of the EU Commission, the European standardisation organisations are compiling standards which meet the Machinery Directive. Thus a manufacturer, if he applies these standards, can assume that his products are in accordance with the Directive.

The "EC Electromagnetic Compatibility Directive" has been in force since the beginning of 1996. Here, too, the manufacturer must certify by the "CE" mark that his product complies with this provision. Although most machines and equipment items are not electrical or electronic systems within the meaning of this Directive, they often contain components



# Machinery for mechanical power

NACE (Revision 1) 29.1  
(excluding. class 29.12)

The economic recovery which started in 1994 has resulted in an upturn of demand from the major downstream markets, a trend which continued in 1995. During the last two years production of mechanical power equipment increased by more than 16% per annum. The greater part of this production growth can be attributed to an improving EU demand, and by the fact that EU industry has been able to increase its share in the EU market. In the course of 1995, however, it has become evident that the production growth seen in 1994 and 1995 will slow down in 1996. Demand from major downstream industries is stagnating. Especially, the German industry is poorly performing. Nevertheless, moderate growth rates for the mechanical power equipment industry are expected from 1997 on.

## INDUSTRY PROFILE

### Description of the sector

In comparison with former editions of Panorama of EU industry, this chapter has been extended following the new NACE classification. Group 29.1 is a combination of the 'old' NACE groups 326 (transmission equipment for motive power) and the subgroups 328.1 (internal combustion engines except those for road vehicles and aircraft); 328.2 (heat-turbines); and 328.3 (pumps and compressors). The latter market segment, which is now categorised under 29.12, will be described in a separate chapter of this edition and is therefore not covered in this chapter.

The machinery for the production and use of mechanical power, subject of this chapter, will cover the following product groups:

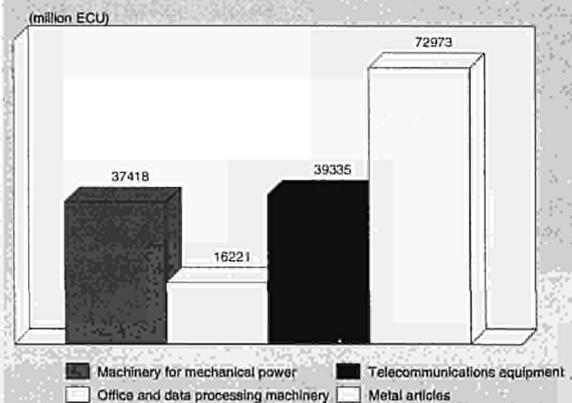
- manufacture of engines and turbines except aircraft, vehicle and cycle engines (Class 29.11);
- manufacture of taps and valves (Class 29.13);
- manufacture of bearings, gears, gearing and driving elements (Class 29.14).

These three product categories will be described in this chapter. The data in this chapter, however, do not completely correspond with these categories as they refer to the 'old' NACE group 326.

The manufacture of mechanical power machinery and equipment includes the manufacture of gears, gear assemblies (gear-boxes, variable speed gears, industrial gear-boxes, high-speed gears and differentials), transmission chains (including bicycle chains), other transmission equipment, bearings and valves. Not included is mechanical power equipment manufactured for the automotive industry nor hydraulic or pneumatic transmission equipment. Some of the companies in the industry deliver to both the automotive industry and other manufacturing industries, or offer a wide product range thereby covering other products than mechanical power equipment, gears, valves and bearings.

In comparison with related industries, the industry is of considerable size with a value added for the EU-12, equalling 6.8 billion ECU in 1995. Germany constitutes somewhat more than half of this total value added, followed by Italy (17%), France (11%) and the United Kingdom (10%).

Figure 1: Machinery for mechanical power  
Value added in comparison with related industries, 1994



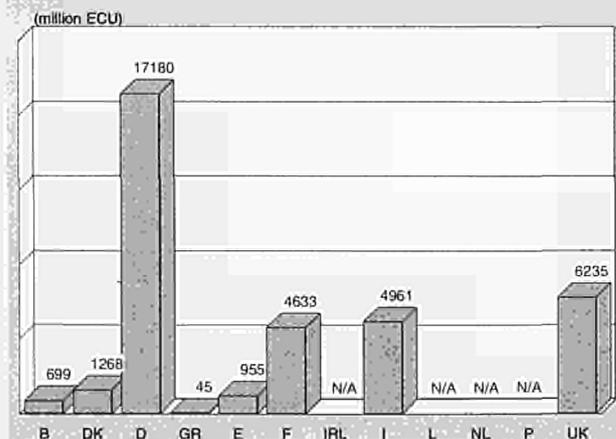
Source: DEBA GEIE

### Recent trends

Over the 1985-1990 period the industry recorded a production growth of more than 40%, or 7% on average per annum. In the early 1990s, however, production started to decline, thereby demonstrating the cyclical character of demand for mechanical power equipment. The economic recovery, which started in 1994, has resulted in an upturn of demand from the downstream markets, a trend which continued in 1995. During the last two years production increased by more than 16% per annum. The greater part of this production growth can be attributed to an improving EU demand and only to a small extent to rising extra-EU exports. The production increase in recent years has not resulted in a growth of the industry's employment. Total employment continued to decline in 1994 and 1995, though at a slower pace than in the 1980s and early 1990s.

The new membership of Sweden, Austria and Finland will result in a production figure for the EU-15 which is 900 million ECU higher than the same figure for the 12 EU Member Countries. Sweden and to a less extent Austria are the major manufacturing countries. These countries together used to ac-

Figure 2: Machinery for mechanical power  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Machinery for mechanical power  
Main indicators in current prices (1)**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (2)
Apparent consumption	52 949	54 865	53 861	59 339	69 933	75 930	78 342	78 466	70 853	75 559	79 640
Production	65 385	66 902	64 712	70 735	82 276	88 245	91 169	91 395	87 035	92 621	97 653
Extra-EU exports	21 882	21 118	20 372	22 550	25 859	27 376	28 674	29 274	32 128	35 053	36 189
Trade balance	12 437	12 038	10 850	11 396	12 343	12 315	12 827	12 929	16 182	17 062	18 012
Employment (thousands)	954.0	966.8	929.2	930.0	967.2	991.9	993.7	956.1	885.5	837.3	828.3

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

Source: DEBA GEIE, Eurostat

**Table 2: Machinery for mechanical power  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	4.0	-2.1	1.3	5.0
Production	2.0	-1.0	0.7	5.6
Extra-EU exports	-0.6	0.6	0.0	6.0
Extra-EU imports	6.9	-3.1	2.3	3.4

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Machinery for mechanical power  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	21 882	21 118	20 372	22 550	25 859	27 376	28 674	29 274	32 128	35 053	36 189	34 288
Extra-EU imports	9 445	9 081	9 521	11 154	13 516	15 061	15 847	16 345	15 947	17 991	18 177	17 034
Trade balance	12 437	12 038	10 850	11 396	12 343	12 315	12 827	12 929	16 182	17 062	18 012	17 254
Ratio exports / imports	2.3	2.3	2.1	2.0	1.9	1.8	1.8	1.8	2.0	1.9	2.0	2.0
Terms of trade index	88.7	94.1	97.3	99.2	95.5	100.0	101.2	103.6	97.8	92.2	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Machinery for mechanical power  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	94.0	91.5	89.1	93.7	99.6	100.0	99.1	99.9	101.7	113.6
Unit labour costs index (3)	82.0	89.3	95.0	95.1	95.8	100.0	108.9	113.8	116.2	108.0
Total unit costs index (4)	81.6	86.5	87.8	91.0	95.2	100.0	105.6	108.5	110.4	108.9
Gross operating rate (%) (5)	9.9	8.1	9.1	9.9	10.9	9.5	7.9	8.0	7.0	9.5

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

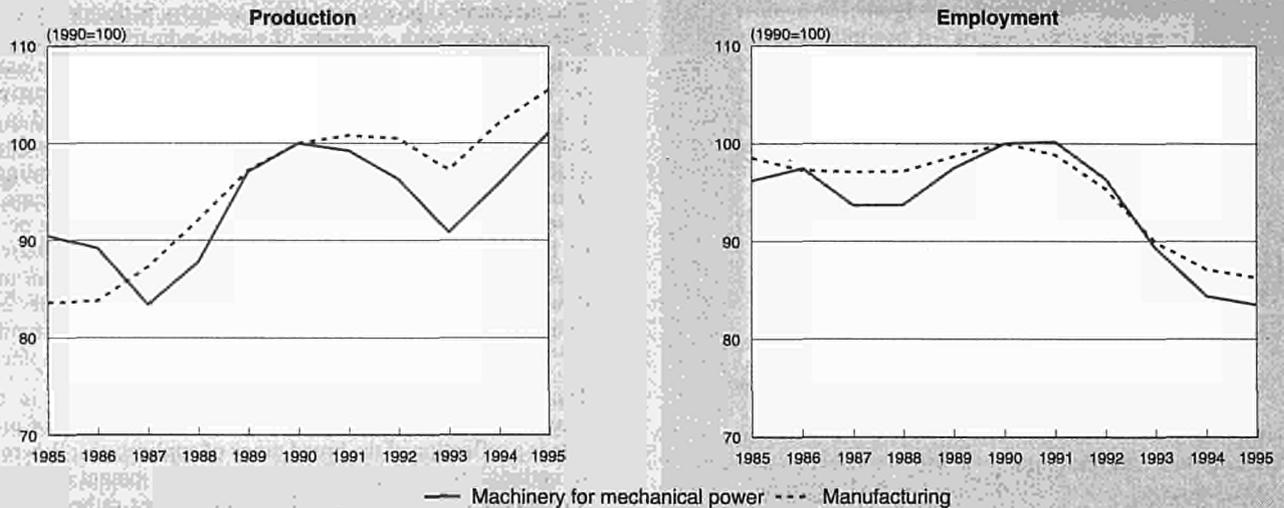
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Machinery for mechanical power**  
**Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

count for 13% of total extra-EU imports. The three countries together employed around 6 500 people in 1995.

**International comparison**

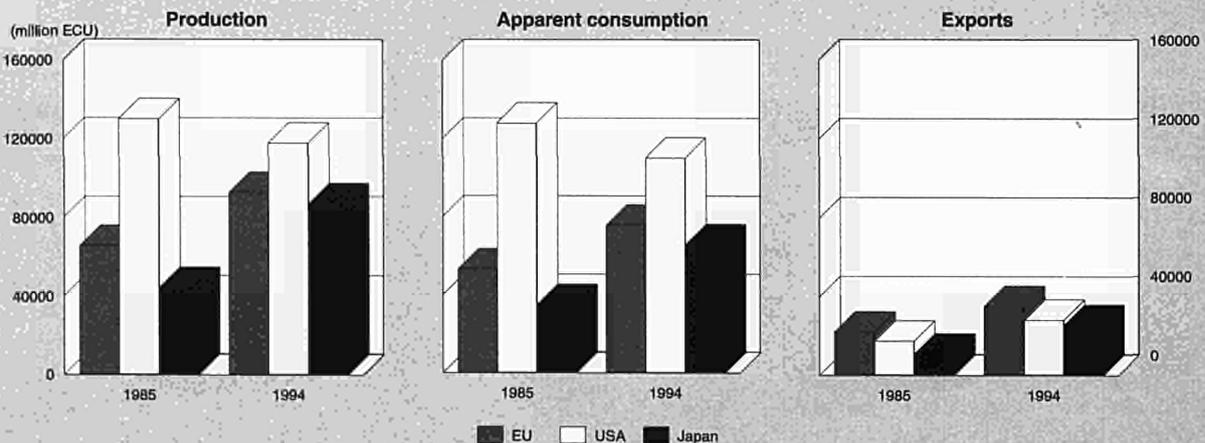
After a relatively high annual growth (6.6%) during the 1985-1993 period, Japanese production growth continued at a slightly lower pace in 1994 and 1995. While Japan recorded a production growth of 5.7% in this period, the EU production growth reached 16.5% per annum, which is a remarkable recovery after the poor industrial performance of the early 1990s. These different production growth rates, however, are influenced by changes in exchange rates. Especially, the Japanese production figure has been influenced by the fluctuations in the exchange rate of the yen against the ECU. The declining trend in US production has stopped and turned into a small growth in 1993. Also in 1994, the country was able to record production growth (+5.3%).

**Foreign trade**

Although the production increase in recent years was mainly caused by a recovery of EU demand, EU manufacturers of mechanical power machinery and equipment still depend on exports. In 1994, the export rate equalled 31% dropping to 27% in 1995. Germany is the largest exporter commanding 57% of total extra-EU exports. Roughly 60% of the German production is exported. This dependence on exports of the German industry is even greater, when indirect exports are taken into account. These include mechanical power elements incorporated in the products of customer firms which are exported by them. An export rate of 50-60% in the downstream markets results in an overall export-dependence of more than 80% of total production. The German trade surplus equalled more than 2 billion ECU in 1994. Also other large manufacturing countries such Italy and France demonstrate a trade surplus.

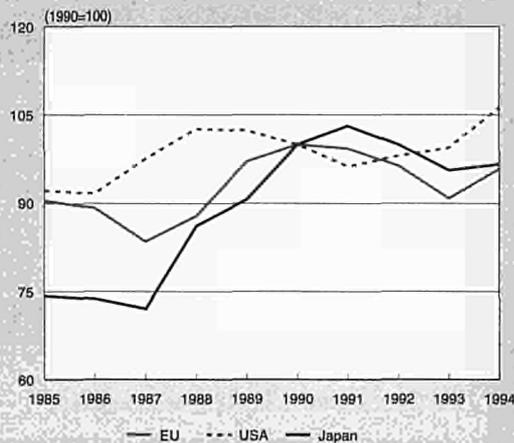
The EU as a whole is also a net exporter of mechanical power equipment. Moreover, the trade surplus increased on average

**Figure 4: Machinery for mechanical power**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Machinery for mechanical power**  
International comparison of production in constant prices



Source: DEBA GEIE

by 5.6% per year between 1985 and 1989. In 1990, however, the trade surplus declined, but increased again since 1991. Through the entry of the three new EU Member countries Austria, Finland and Sweden, the EU trade figures will change. Especially Sweden and Austria used to be important trade partners of the EU.

The USA remains the most important trade partner of the EU. In 1994, this country accounted for 18.8% of total extra-EU exports and an estimated share of the extra-EU-15 exports of 27.2% in 1995. Japan is only of marginal importance to the EU exports of mechanical power equipment.

The USA still play a major role in the EU imports of mechanical power equipment, but Japan is important too. These two countries together accounted for 54% of total EU imports in 1994 against 57% in 1989. The decline is particularly due to the fall in the share of the USA, which has lost their leading position as non-EU supplier to Japan. The latter country increased sales on the EU market by almost 12% from 1989 to 1994.

## MARKET FORCES

### Demand

The mechanical power equipment industry is decidedly a supplier industry with a variety of client industries. Demand for transmission equipment, therefore, depends to a large extent on investments in capital goods made by these downstream industries. The economic downturn which has emerged in the early 1990s has resulted in disappointing growth rates on the global downstream markets. Profits dropped accordingly, which together with high capital costs did not encourage investments in capital goods. This downturn came after a period of booming investments in the second half of the 1980s by most client industries. In 1994, however, demand from most downstream industries has recovered; a trend which has continued in 1995. This recovery has been the major stimulus for the production growth of mechanical power equipment.

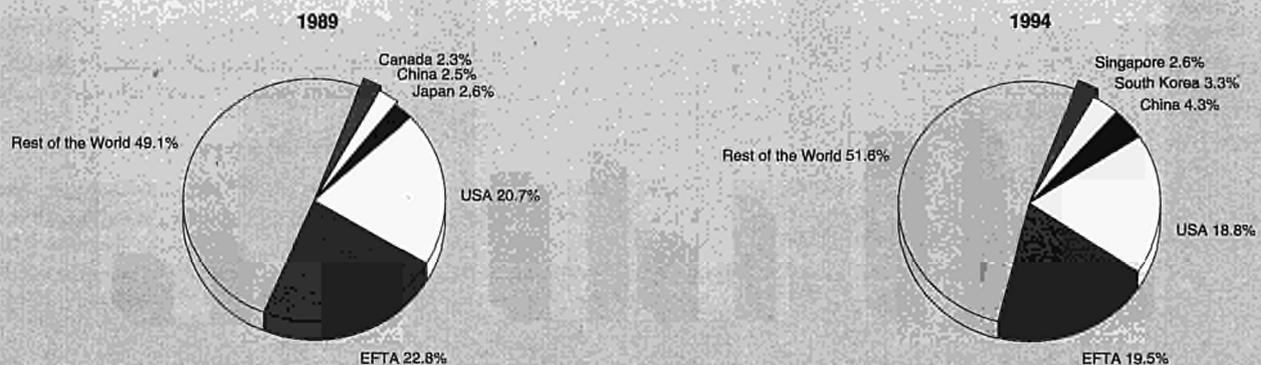
The customers of the industry are chiefly involved in mechanical and electrical engineering. The great variety of products is a reflection of the broad range of applications. Wherever something turns or moves, transmission equipment is at work. The product range of the industry comprises rather classical machine elements, such as bearings, cranks and chains. Electronics and miniaturisation are becoming increasingly important. This may give rise to increased demand for competing transmission techniques like electrical, hydraulic and pneumatic means of transmission. If, and then to what extent substitution is threatening the manufacture of mechanical power equipment, depends - among other factors - on the possible applications of other technique-based machinery and equipment. The increasing use and combination of different techniques by the manufacturers of transmission equipment makes it difficult to specify possible substitution effects.

### Supply and competition

The enterprises in the industry offer a wide range of products. In most cases, manufacturers of mechanical power equipment also supply other investment goods. Most downstream markets have a high degree of capital asset utilisation. This is the major reason why these manufacturers are concentrated in countries with an emphasis on the production of investment goods: Germany, France, Italy and the United Kingdom. Since 1993, all these countries have recorded production growth.

The economic recession of the early 1990s and the intensifying competition from low cost standard components from Far Eastern and East European countries has forced the EU industry to rationalise production. This has resulted in a dramatic de-

**Figure 6: Machinery for mechanical power**  
Destination of EU exports



Source: Eurostat

cline of the industry's employment; from 1990 until 1995 employment dropped by nearly 30%. In this period the EU productivity rate increased by 56%.

The EU competitiveness not only depends on a high level of technological knowledge, but also on other product and service features such as high quality, product innovation, reliability and flexibility which means adaptability to the needs of the market. Due to the high demands of European downstream industries, the European manufacturers have been stimulated to give high priority to these features, which has resulted in a technological lead throughout the world.

According to the trade figures, the competitiveness of the EU industry seems to have improved in recent years. From 1990 until 1994 the export rate increased from 24.9% to 31.1%, since the overcapacity in the EU due to stagnating demand forced the manufacturers to look for foreign non-EU markets. In 1995, production increase is especially led by a rise of EU demand. Although extra-EU exports also recorded a small growth in this year, the export rate dropped to 27%. More importantly, however, is the fact that the import penetration rate has dropped in 1995 after a continuous increase in the early 1990s. For 1995, the import penetration rate is estimated at 18.1% against 21.3% in 1994.

### Production process

A wide range of products is covered by this industry, varying from relatively simple mass-manufactured standard products such as valves (although numerous varieties exist) to engines, turbines, bearings, speed changes, industrial high speed drives and gears which are less standardised. The quality of the technical solutions that these products offer is extremely important. On this account, great importance is attached in this industry to research and development (R&D). In Germany this importance is acknowledged which, besides the R&D-efforts of individual firms, has resulted in joint research projects. As a result of these joint research projects technological developments have been obtained in the fields of: materials (properties, application and heat treatment); stress and durability of components; safer designs; production process (more geometrical shaping of components thereby achieving higher utilisation of materials); etc. The appliance of this research to mechanical power equipment results in better performing, more cost-effective, more environmentally friendly, less noisy, energy-saving products. These developments help to secure market and technological leadership.

## INDUSTRY STRUCTURE

### Companies

Apart from a few large companies, the industry's structure is mainly characterised by smaller and medium-sized enterprises. In Germany for instance, about 80% of the firms employ less than 500 people. The product spectrum has a wide range but is well diversified. In addition to some specialised companies with a narrow product range, there are companies which offer multi-products and which are broadly diversified.

The enterprises often do not operate plants in other countries than the mother country. Only a few EU enterprises are present in several Member Countries. German companies such as FAG Kugelfischer and ZF Friedrichshafen are two large companies active in more Member countries. On the market for speed changes, industrial high speed drives and gears, the A.F. Flen-der Aktiengesellschaft (a subsidiary of Babcock) is an important manufacturer.

With the entry of Sweden in the EU, the Swedish enterprise SKF has become one of the most important EU manufacturers of this industry. SKF is the world's leading manufacturer of rolling bearings. SKF already had a strong foothold in the EU-12 with production facilities in the major EU countries. Japanese production is still mainly concentrated in Japan and other Asian countries, but Japanese-owned production plants within the EU become more important. Japanese exports, however, account for a growing share in the EU demand.

### Strategies

The rationalisation process within the industry, which started in the end of the 1980s and early 1990s is still continuing. This process is characterised by costs reductions and merger activity on the one hand, but also by concentrating on the core business by companies on the other hand.

SKF is still trying to penetrate into new markets and to increase market shares through joint ventures, investments and acquisitions. Together with the German group Schaeffler KG (INA), SKF has set up a joint venture in Italy for the production of waterpump bearings. The Swedish firm will further invest in a new factory of roller bearings in the USA with the objective to increase its presence in the US car industry. FAG Kugelfisher (D), in contrast, has sold its 50% stake in Helmut Elges (D) which produces ball-and-socket joints, since the company is

**Figure 7: Machinery for mechanical power  
Origin of EU imports**



Source: Eurostat

**Table 5: Machinery for mechanical power  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.8	0.6
Danmark	1.7	1.5
Deutschland	1.4	1.3
Ellada	0.2	0.2
España	0.3	0.3
France	0.7	0.8
Ireland	N/A	N/A
Italia	0.9	1.1
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	0.3	N/A
United Kingdom	1.2	1.1

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

concentrating on its core businesses of ball bearings, sewing machines and conveyors.

In order to remain competitive the strategy of most manufacturers is to constantly improve adaptation of specific problem solutions to the respective application paying a lot of attention to quality, reliability and flexibility, and at the same time reducing design and production costs. This means consistent expenditure on R&D and constant adaptation to customer requirements in domestic markets, but also in foreign markets outside the EU.

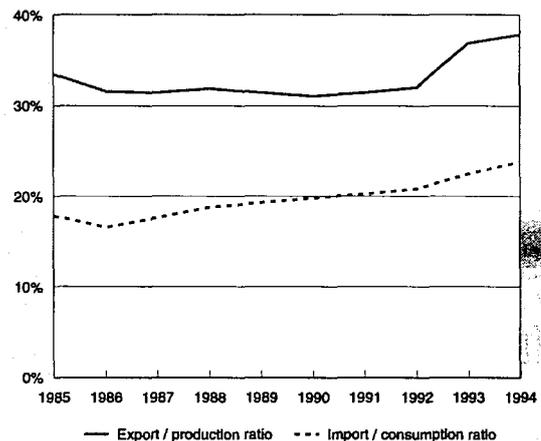
## ENVIRONMENT

The industry does not seriously threaten the environment. The hardening and galvanising stages of the production process could cause serious harm to the environment, but measures have already been taken to prevent this. Client industries, however, are becoming more and more aware of safety and environmental issues also induced by developments in the industry's regulatory environment. In their attempt to meet their customers' requirements, manufacturers of transmission equipment also put high efforts in product innovations concerning both issues. As far as products in mechanical power transmission are concerned, noise might be a problem. However, noise levels have been largely reduced as a result of improvements in production techniques.

## REGULATIONS

In 1995 the EU Directive 89/392 has attained a definite character. This Directive defines essential requirements concerning machine safety, health provisions for people and environment. Provisions relate to the design, the materials used, the way in which machine operations should be illuminated, machine operations itself, safety against mechanical risks, the application of screens and other safeguarding components, maintenance and machine indications and identifications. Machines complying with the EU regulations will obtain the CE mark. Machine safety is of relevance to mechanical power equipment itself or incorporated in other investment goods. Products being labelled with this mark will have free access to the markets of all EU countries. Although the validity of this mark is limited to the EU market, it can also become beneficial for EU manufacturers with respect to their extra-EU export markets. While technology and know-how is becoming increasingly important to survive, the strict EU regulations inspire the manufacturers to innovate. Maybe not as much in the developing countries, but certainly in the Western economies

**Figure 8: Machinery for mechanical power  
Trade Intensities**



Source: DEBA GEIE, Eurostat

the CE-mark will stand for safe and environmentally friendly machinery and equipment.

In anticipation of this EU Directive, but also in response to customer requirements for a safer working environment, the industry has put much effort in R&D for the improvement of safety conditions of equipment in the recent past. In new technology development, the industry also pays a lot of attention to environmental issues such as a reduction of the production of noise and other emissions.

Other Directives, which at least partly apply to mechanical power equipment or to the capital goods and production processes in downstream markets in which this equipment is incorporated, are the Low tension Directive and the Directive for Electromagnetic Compatibility (89/336). The latter Directive tries to prevent the electromagnetic susceptibility of machinery and to stimulate the electromagnetic immunity of machinery. Manufacturing of machinery following this Directive implies the incorporation of the relevant measures in the development stage.

## OUTLOOK

The industry seems to have recovered from the economic recession in the early 1990s. In the course of 1995, however, it has become evident that the production growth in 1994 and 1995 will slowdown in 1996. Demand from major downstream industries is stagnating. Nevertheless, moderate growth rates for the mechanical power equipment industry are expected from 1997 on.

In a world-wide perspective, the EU has retained and will further strengthen its competitiveness. Especially, through large R&D-efforts directed towards the refinement and cost-effectiveness of existing functions, in combination with the delivery of high-quality products, further competitive advantage will be created against non-EU manufacturers. In the meanwhile, the rationalisation process within the EU industry will continue resulting in further cost reductions, merger and acquisition activities. Accordingly, total industry's employment will continue to decline.

Written by: ERECO (NEI)

The industry is represented at the EU level by: European Committee of Associations of Manufacturers of Gears and Transmission Parts (EUROTRANS). Address: Rue Louis Blanc 39/41, F-92400 Courbevoie; Tel: (33 1) 47 17 63 69; fax: (33 1) 47 17 63 70; Federation of European Bearing Manufacturers Associations (FEBMA) Address: Lyonerstrasse 18, Postfach 710864, D-60498 Frankfurt; Tel: (49 69) 660 31516; fax: (49 69) 660 31459.

# Liquid pumps

## NACE (Revision 1) 29.12

In 1994 EU industrial pump production in real terms continued to decline for the fourth successive year. Measured in constant 1990 prices output in 1994 was 96.6% of the record 4 944 million ECU achieved in 1990. Fortunately, extra-EU exports of pumps grew and this offset the decline in demand in the EU. Demand has continued to decline overall in line with reduced sales and the continued drive to increase productivity in all aspects of pump manufacturing.

### INDUSTRY PROFILE

#### Description of the sector

This NACE includes the manufacture of compressors, vacuum pumps, pumps for liquids and hydraulic and pneumatic fluid power equipment. For compressors and vacuum pumps, however, there is limited statistical data. Consequently, the description of the sector will mainly cover industrial liquids. This definition of pumps does not include pumps for aircraft or automotive applications, nor does it cover hydraulic fluid power pumps.

Industrial pumps can be divided into the following categories: hand pumps; reciprocating pumps; rotary displacement pumps; centrifugal pumps; other pumps (not elsewhere specified); and parts for pumps. As the description implies, industrial pumps for liquids (PRODCOM series SC. 29121) have a use in every activity associated with industrial production. The following is a summary of activities under that description: oil and gas production, oil pipelines, hydrocarbon processing industries (HIP), chemical processing industries (CPI), food and drink, pharmaceuticals, power generation (conventional and nuclear), iron and steel and non ferrous metals, pulp and paper, marine and offshore, mineral mining and quarrying, water and sewerage, construction, building services, domestic household and other industries. Within each of these categories there are sub sectors, each of which creates a unique demand for pumps.

As a result there are many manufacturers supplying general and specialist types of pumps to meet a large and varied demand for their products. A feature of the pump industry is that there is a comparatively limited number of large full product line companies and many small and medium sized manufacturers.

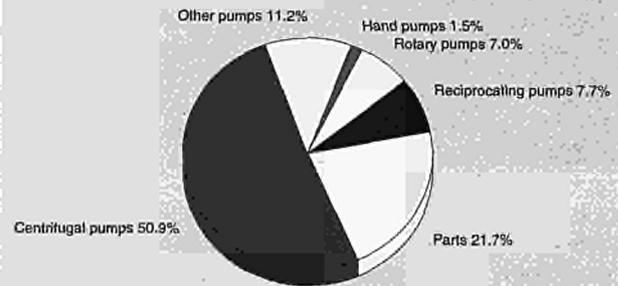
The smaller companies though not exclusively, are often specialised concerns serving particular market sectors. Although the average size of pump companies is small, their contribution to regional economies is high in value added. For this reason the loss of a pump company can have a significant impact on a local economy.

#### Recent trends

World trade in pumps declined in real terms from 1981-87 largely because of the collapse in demand from the oil rich developing countries. From 1987 to 1991 overall trade revived strongly and the average rate of growth reached 8.9%. This increasing demand created good opportunities for exporters from the main pump producing regions, mainly the EU, North America and Japan.

Since the onset of recession in 1991 growth rates in the world trade in industrial pumps have slipped below the levels mentioned above. The effect has been to cause pump companies in the EU to review their strategies as cost pressures have mounted in enterprises working below capacity. The sluggish nature of economic recovery in recent years has compelled

Figure 1: Production by major product line, 1994  
Production by major product line, 1994



Source: Europump

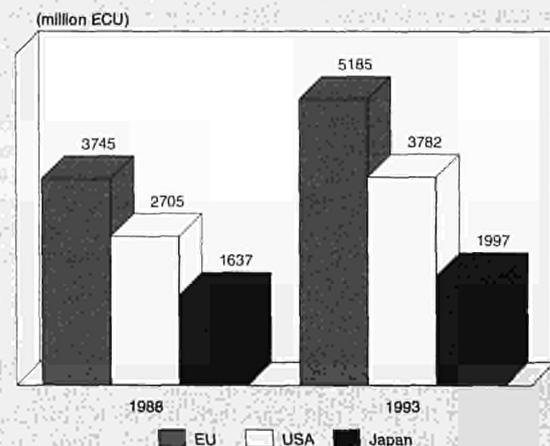
companies to cut back operations in order to bring resources into line with demand.

For three years (1991, 1992 and 1993) the production of pumps in the EU stagnated in terms of output measured in current prices. All countries except Denmark, and more recently the Netherlands, experienced similar downturns in activity. Measured in constant prices (base year 1985) the slump in output was even more marked. 1994 was a year of modest recovery and output in constant prices recovered, albeit to a level still 3% to 4% below the peak year of 1990.

#### International comparison

Little is published on output of industrial pumps in countries outside the OECD. Verifiable information on the pump industries in Russia and China is hard to obtain. India's industry is well documented in terms of number of companies and products available. However, it is difficult to strike estimates on the value of output in convertible currency terms, even when they are made in terms of purchasing power parity.

Figure 2: Liquid pumps  
International comparison of production in current prices



Source: Europump

**Table 1: Liquid pumps**  
**Main indicators in current prices (1)**

(million ECU)	1988	1989	1990	1991	1992	1993	1994	1994 (2)
Apparent consumption	2 293	2 905	3 413	3 658	3 597	3 628	3 806	N/A
Production (3)	3 745	4 258	4 944	5 162	5 107	5 185	5 467	5 916
Extra-EU exports	1 163	1 267	1 436	1 421	1 483	1 629	1 724	N/A
Trade balance	712	752	863	808	842	945	993	N/A
Employment (thousands)	N/A	N/A	N/A	N/A	N/A	62.2	60.8	64.8

(1) Excluding Greece, Ireland, Italy, Luxembourg and Portugal. Excluding Denmark in 1988 and 1989.

(2) EUR15. Eurostat estimate for production.

(3) Including Italy.

**Table 2: Liquid pumps**  
**Breakdown of production by major product line and Member State, 1994**

(%)	Hand pumps	Reciprocating pumps	Rotary pumps	Centrifugal pumps	Other pumps	Total original equipment	Parts	Share in EU production
Total (1)	1.5	7.7	7.0	50.9	11.2	78.3	21.7	100.0
Belgique/België	0.0	3.6	10.1	86.3	0.0	100.0	0.0	1.0
Danmark	0.0	0.9	3.5	52.9	1.8	59.0	41.0	6.3
Deutschland	3.5	12.7	7.0	53.3	4.3	80.8	19.2	38.4
España	0.0	0.4	1.7	75.0	6.4	83.5	16.5	2.0
France	0.5	4.1	8.8	58.7	7.5	79.6	20.4	11.4
Italia	0.0	8.0	8.8	68.3	0.0	85.1	14.9	11.3
Nederland	0.0	0.0	0.0	38.1	36.3	74.4	25.6	3.6
Österreich	0.0	32.8	0.0	38.0	2.3	73.2	26.8	1.2
Suomi/Finland	0.0	0.0	0.0	66.8	7.5	74.3	25.7	1.5
Sverige (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.9
United Kingdom	0.4	3.1	8.5	27.1	35.1	74.2	25.8	18.4

(1) Excluding Sweden.

(2) Eurostat estimate.

Source: Europump, Eurostat

Each of the EU countries reporting output to the PRODCOM statistical series possess pump manufacturing sectors which compare favourably with their main competitors in terms of technical competence.

The EU is the largest industrial pump manufacturing economic entity in the world, with the USA second and Japan third.

OECD countries not mentioned above include Australia, New Zealand, Turkey and Mexico. Australia's pump industry has been well established for many years and is well documented in official statistics. However, it is not yet a significant exporter in world markets except in the area of slurry pumps.

World output lies between 10-12 billion USD. The lower estimate can be substantiated by aggregating the output of data from OECD pump manufacturing sources. Fixing the upper limit cannot be done with certitude because figures from Brazil, Russia, China, India or Mexico are unreliable. An alternative route is to derive estimates by aggregating world industrial project activity and making assumptions about the pump content of each project by defined sector (see "INDUSTRIAL PROFILE" below). This method has been developed by European Industrial Forecasting (EIF), a London based economic consultancy with specialist knowledge of engineering markets world-wide. EIF's estimate is 12.0 billion USD.

### Foreign trade

The EU is the world's largest exporter of industrial pumps and enjoys a positive net balance in trade with the rest of the world. Over the past eight years there has been a marginal deterioration in the ratio of exports to imports, from 2.6 to 2.4. As a large advanced economic group of states, the EU

is an attractive market for exporters in the USA, Japan and developing economies.

The developing countries have lower cost bases to exploit, especially in standard pumps. The penetration rate in the EU market lies in the range of 16% to 17%.

Net exports in current prices have continued to grow since 1990. The leading EU exporter is Germany, followed by the United Kingdom and France.

## MARKET FORCES

### Demand

Industrial pumps for liquids serve a wide range of markets in economies at different stages of development. They are essential for the delivery of basic necessities in developing economies such as the improvement of hygiene through the supply of potable water. Pumps are indispensable for the efficient conduct of advanced economies. Large scale chemical processes, food processing and protection of the environment are all dependent on the availability, proper application and safe maintenance of industrial pumps. Where regulations govern the operation of modern industrial plants only pumps conforming to internationally recognised standards may be used. These standards may be ANSI (American National Standards Institute), DIN (Deutsches Institut für Normung), API (American Petroleum Institute) or ISO. Manufacturers with products meeting different technical standards in global markets have an advantage over those suppliers with, for example, only one competence related to their home base.

The concept of a technical standard should not be confused with the use of the term standard to refer to a pump which

**Table 3: Liquid pumps  
Pump demand by main market**

(billion US\$)	Demand, 1992/94	Average annual growth rate 1992/94-2000
Western Europe	3 626.2	1.9
Eastern Europe	655.7	4.7
Africa and the Middle East, of which:	1 009.8	1.2
Oil rich countries	751.9	0.6
Other countries	257.8	3.0
Far East, of which:	3 315.9	3.8
China	532.5	5.7
Japan	1 563.0	2.5
India	241.1	4.3
Pacific Rim	735.9	4.9
Other, including Australia	243.4	2.6
North and South America	3 447.5	1.8
USA and Canada	2 755.1	2.1
Other	692.4	1.0
Total	12055.1	2.5

Source: European Industrial Forecasting Ltd.

can be classified as a commodity item. These are sold on price alone and cannot substitute for a pump designed to one of the standards above and intended for a special process application (e.g. chemical process pumps).

Whereas a commodity product may be priced at a few hundred ECU, a pump of similar configuration but conforming to one of the high specifications above will be priced at thousands of ECU.

Manufacturers offering new products to the different international technical standards are consequently better placed to take advantage of market opportunities world-wide.

Developing countries cannot afford to ignore high technical specifications to economise on the cost of capital projects. Without an indigenous pump industry to supply the correct pump they will have to import high cost items. There is an incentive for a country to offer inducements to international companies to invest in local pump production. The manufacturer with the right technology will prove to be the successful candidate. Local operations will then most probably proceed

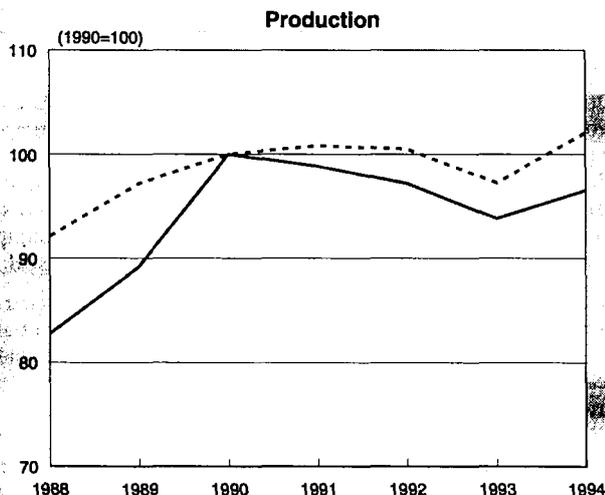
on the basis of assembly of imported components in the first instance.

The recession in the first half of the 1990s has been a major factor in directing manufacturers' attention to growth opportunities in the Far East. Generally, multinational pump companies are best placed to react to these market dynamics.

Such pressures stimulate not only development of new products but also the means of bringing them to the market promptly. Pump manufacturing companies are applying concepts such as concurrent engineering in which design, marketing and manufacturing work closely together at the original concept stage. Computer Aided Design (CAD) and Finite Element Analysis are typical tools available to pump manufacturers to realise such objectives.

Estimates of demand for industrial pumps is a complex process. Trends have to be established in all geographical markets for all the end use sectors listed in INDUSTRY PROFILE above. Research and analysis on the scale necessary for such a review has been carried out by European Industrial Forecasting. The review shows that Europe (East and West) provides 35% of world demand for industrial pumps, and the Far East and Pacific Rim 27%. The EU supplies over 50% of pumps for world markets sourced on OECD production. As the Far East is expanding at significantly faster rates than the EU or the American Markets, EU producers have to commit themselves increasingly to non-EU outlets.

**Figure 3: Liquid pumps  
Production compared to EU total manufacturing industry**



Source: Europump, Eurostat

### Supply and competition

Pump suppliers are not a homogeneous body of manufacturers with common interests in the market place. At one extreme are manufacturers supplying major capital items of equipment to the power generation, oil and gas production, hydrocarbon and chemical processing industries. These suppliers' products have to be capable of producing high heads and flows and working at temperatures and pressures at the limits of technology. Special engineering expertise is required to manufacture and market these products.

At the other extreme are manufacturers of domestic circulators and heating and ventilating equipment. A domestic circulator will absorb less than 1 kw of power compared to the 20 000 kw required by the largest boiler feed pumps. The EU pump manufacturing industry covers both these extremes of pump size and is responsible for providing world class technology in both cases.

**Table 4: Liquid pumps  
Production in current prices by Member State**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
EUR12 (1)	3 744.6	4 257.7	4 943.9	5 162.0	5 107.2	5 185.4	5 467.0
EUR15 (1)	4 158.5	4 751.2	5 446.1	5 643.5	5 561.0	5 593.5	5 915.8
Belgique/België	51.7	58.7	75.3	61.4	62.7	71.0	60.4
Danmark	N/A	N/A	282.6	295.7	305.5	329.3	371.4
Deutschland	1 532.7	1 696.5	1 937.8	2 099.1	2 044.1	2 213.2	2 274.1
España	70.0	90.0	99.8	81.5	130.9	124.7	116.8
France	571.6	611.1	644.6	672.7	664.4	659.1	675.1
Italia	739.6	600.5	667.6	696.6	668.2	612.1	667.6
Nederland	111.7	129.3	127.2	139.1	156.9	162.9	210.4
Österreich	83.3	92.8	91.7	74.8	72.0	69.7	73.1
Suomi/Finland	90.5	114.9	116.2	97.4	84.1	90.6	88.5
Sverige (2)	240.2	285.9	294.4	309.3	297.7	247.9	287.1
United Kingdom	667.3	1 071.6	1 109.2	1 115.9	1 074.5	1 013.1	1 091.3

(1) Excluding Greece, Ireland, Luxembourg and Portugal. Excluding Denmark in 1988 and 1989. Eurostat estimate for 1994.

(2) Eurostat estimate for 1994.

Source: Europump, Eurostat

Deregulation and privatisation are elements in the market place changing the ways in which buyers and sellers of pumps come together. Privatised utilities in power and water which may be multinational companies themselves are not bound to follow tradition and source pumps from national suppliers. International contractors for projects on behalf of utilities have the freedom to secure materials from the most convenient source. The contractor inviting bids from the best qualified technically and financially secure pump supplier opens up the market to the most competitive source.

Trends by industrial sector In total capital investment are volatile. Consequently most pump manufacturers accept that markets will alternate between depression and boom over time (although some, such as deep coal mining in West Europe, may go into terminal decline). Company strategy is generally to have major competence in five or six major market sectors to provide a stable order input. Properly managed spares, repair and overhaul programmes will provide input from sectors even when new equipment orders are depressed. In most international pump manufacturing companies, margins on spares and overhaul are considerably greater than on original equipment.

Marketing strength is a key element in the pursuit of such pump business. As marketing costs are considerable, increasing numbers of suppliers are seeking alliances with other pump manufacturers with complementary interests.

## INDUSTRY STRUCTURE

### Companies

The pump manufacturing industry in the EU has a small number of large companies and a large number of small and medium sized enterprises. World-wide the top ten suppliers are KSB (D), ITT (USA), IDP (USA), Goulds (USA), Ebara (Japan), Grundfos (DK), Weir (UK), Sulzer (CH), BWIP (USA) and Durco (USA). These firms are selected on the basis of sales figures, related to manufacturer of own product industrial pumps, published in filed company annual report and accounts. All are multi national, have manufacturing subsidiaries in more than one location and world-wide sales representation under direct company control. The top ten account for at least 50% of pump output recorded by the EU, the USA and Japanese industries in official statistics. In terms of numbers the top ten are atypical because the industry is composed largely of small and medium sized companies in each EU member state.

Only a limited number of the majors listed can claim to be full product line companies. Rarely do even the majors have equal representation across all pump technologies. The skills required to maintain "state of the art" competence in each class of pump are considerable. Each supplier of the various classes of displacement pump listed has to support itself in a highly competitive market place and offer pumps which progressively use less power, last longer between overhauls, run quietly and do not pollute the environment. Therefore, given their small size, companies tend to remain within their specialities.

Because of the intense specialisation required in many sectors and the desire of customers to deal with suppliers willing and able to appreciate their specific needs, there are ample opportunities for the small- to medium-sized enterprise (SME) category to prosper. SME companies have equal access with the larger companies to new developments and market opportunities. There are a number of EU programmes to support R&D programmes at the SME level.

Rationalisation of the pump industry in the EU has proceeded generally without any interference from national governments. Most mergers have been arranged between companies rather than being the subject of open market operations on the stock market. The number of publicly quoted companies is small; the lending companies are often operating subsidiaries of parents with wider interests than just the pump industry.

## ENVIRONMENT

Driven by environmental protection legislation designers are working to eliminate noxious and toxic emissions from pumping operations. This objective can be pursued by employing either technologically advanced mechanical seal systems or special devices such as magnetic couplings or canned motors. The latter solutions can contribute towards the seal-less pump concept which actually dispenses with the mechanical seal.

Leading pump manufacturers serving the chemical, hydrocarbon and nuclear processing industries with a high potential for dangerous emissions will offer both mechanical seal and seal-less units. Development of more efficient competitively priced pumps in these high technology applications means that there is intense rivalry between manufacturers in these sectors. The price of failure to keep up with pump technology to protect the environment soon leads to removal from bid lists to tender for projects.

**Table 5: Liquid pumps**  
**External trade in current prices (1)**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	1 162.8	1 267.0	1 435.7	1 420.9	1 483.5	1 629.0	1 723.7
Extra-EU imports	450.6	515.0	572.9	613.0	641.4	684.0	730.4
Trade balance	712.3	752.0	862.8	807.9	842.1	945.0	993.3
Ratio exports/imports	2.6	2.5	2.5	2.3	2.3	2.4	2.4

(1) Excluding Greece, Ireland, Italy, Luxembourg and Portugal. Excluding Denmark in 1988 and 1989.

Source: Europump

## REGULATIONS

The regulatory framework introduced by the EU authorities in recent years is designed to provide for the elimination of technical barriers to the construction of a single European Market. This is to be achieved by the introduction of minimum or essential technical requirements for products sold into the single market, the identification of a legal entity responsible for the product, the means of demonstrating conformity to the essential requirements and the cross recognition by member states of conformity demonstrations.

The requirements are set out in Directives (EU) and Regulations (Member States). They are known simply as "Rules". If a pump product conforms to all the relevant Rules it can be given a CE mark and thus be sold into any part of the EU market without further testing or assessment. These regulations encourage pump manufacturers to review their products critically and to consider innovations necessary to offer machines which have neither the potential to harm operators nor operational side effects which damage the environment or use energy wastefully. Such features enhance the sales prospects of EU manufactured pumps in non-EU territories. Specific matters are dealt with to ensure that pumps are safe and without risk to health. These include guards, avoidance of hazards from machinery failure, protection from equipment and material at high and low temperatures, location and marking of controls, stability, lighting, maintenance operations and warning and markings.

## OUTLOOK

Over the next five years demand for industrial pumps will be strongest in the Far East and Pacific Rim countries. Pump manufacturers in the EU will have to direct their marketing efforts in this area if they intend to maintain their present strong position in world markets.

Even though pump output in the EU in 1994 was an improvement on 1991, 1992 and 1993, in real terms production was no higher than that achieved in 1992. Companies will therefore have to consider putting resources into markets outside the EU if they wish to fully use present capacity. Any retrenchment will mean reduced employment opportunities.

Improvements in productivity available in all branches of pump manufacturing such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM) and Computer Integrated Manufacturing (CIM) have generally ruled out increases in employment even if traditional growth rates in the EU are regained. All jobs will require increasingly higher levels of general education and training on the job to ensure that the necessary levels of skills are available for the EU pump industry to remain competitive on world markets.

Written by: EUROPUMP

The industry is represented at EU level by: European Committee of Pump Manufacturers (EUROPUMP). Address: c/o Fabrimetal, Rue des Drapiers 21, B-1050, Brussels, Belgium; tel: (32 2) 510 25 17; fax: (32 2) 510 23 01.

# Other general purpose machinery

## NACE (Revision 1) 29.2

The other general purpose machinery sector covers capital goods with applications in a wide variety of downstream industries. Demand for these products is highly dependent on the investment decisions of these client industries. The cyclical nature of the general purpose machinery industry is reflected in the recessionary period that started in the early 1990s and in the following recovery of 1994, enhanced by positive trends in demand and extra-EU exports. However uncertainties in the general economic prospects might lead to a postponement of necessary investments by the major downstream industries.

### INDUSTRY PROFILE

#### Description of the sector

Group 29.2 of the new NACE classification (Rev.1) covers the manufacture of other general purpose machinery. Other general purpose machinery include a wide variety of machinery and equipment, which used to be covered by different subsections of the former NACE 70-classification. The products can be divided into the following subsectors:

- Furnaces and furnace burners (Class 29.21);
- Lifting and handling equipment (Class 29.22);
- Non-domestic cooling and ventilation equipment (Class 29.23);
- Other general purpose machinery n.e.c. (Class 29.24).

The latter subsection includes the manufacture of packaging and chemical machinery, two mechanical engineering industries which used to be described separately in former Panorama editions.

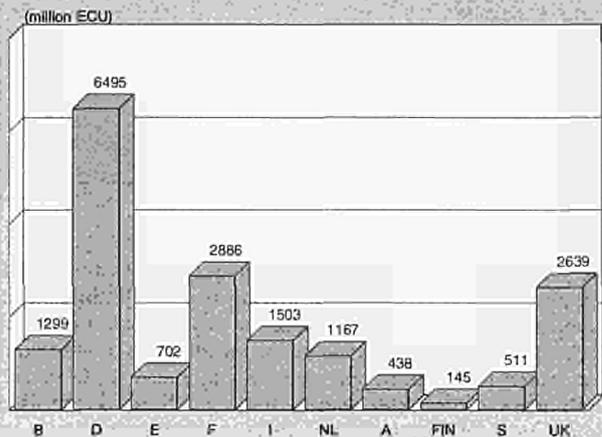
The EU production of other general purpose machinery is largely concentrated in Germany. The total production for this country is estimated at nearly 20 billion ECU, of which lifting and handling equipment constitutes the highest share with a production value of 7.3 billion ECU, followed by the production of non-domestic cooling and ventilation equipment (5.7 billion ECU). In 1994, the German production of chemical machinery and packaging machinery reached 3.3 and 2.9 billion respectively, followed by a relatively low production value for industrial furnaces (650 million ECU).

Also in France, lifting and handling equipment accounted for the highest share of total production of other general purpose machinery with a total production value of 3.4 billion ECU. In the United Kingdom, the production of non-domestic cooling and ventilation equipment is the largest subsector, reaching a value of 5.5 billion ECU in 1994, followed by the machinery for lifting and handling with a production value of 2 987 million ECU. Italy is the second largest EU-manufacturer of packaging machinery with a production of 1 671 million ECU. The latter production value is higher than the corresponding value for lifting and handling machinery (1 428 million ECU).

#### Recent trends

In most EU countries, production of other general purpose machinery declined during the recession in the early 1990s. In volume, German production of other general machinery and equipment decreased 13% during the 1990-1994 period. Increasing prices could only prevent a decline in production value in some subsectors. The German production value of

Figure 1: Chemical machinery  
Investment in the chemical industry by Member State, 1994



Source: CEFIC

lifting and handling machinery slightly decreased by an average rate of 0.6% per annum. Also the production of furnaces and non-domestic cooling and ventilation equipment declined. The production of chemical and packaging machinery, in contrast, increased by 6.5% and 2.8%, respectively. Italy's production showed a growing turnover in national currency. This growth, however, is partly due to the 20% depreciation of the Italian Lira during the 1991-1994 period. In volume, Italian production could only record a substantial growth in 1994. Production trends in France and the UK showed different patterns. In both countries turnover dropped between 1990 and 1992. The UK production started to recover with relatively high growth rates in 1993 and 1994. The French production, in contrast, could only record a small growth in 1994. As a result, UK production increased by an average rate of 2.2% per annum during the 1990-1994 period, while the production in France has still not reached the 1990 production level.

Almost all EU companies have been affected by the recession and the stagnating growth rates. Due to the maturing demand within the EU, exports have become increasingly important for EU manufacturers of other general purpose machinery. During the 1990-1993 period, in particular, extra-EU exports of chemical and packaging machinery increased considerably, by 23.5% and 32.9%, respectively. In 1994, this growth continued for these sectors, while extra-EU imports declined. As a result, the trade surplus for this specific machinery increased drastically. The EU is also a net exporter of machinery for lifting and handling. The export dependency of this sector is also high, but growth rates of extra-EU exports have been much lower during the economic recession in comparison with the chemical and packaging machinery sectors.

Client industries are becoming more and more aware of safety and environmental issues induced by developments in the industry's regulatory environment. In their attempt to meet their customers' requirements, manufacturers of other general purpose machinery have put high efforts in product innovations concerning both safety and environmental issues.

#### International comparison

The world's general purpose machinery industry is largely concentrated in the developed countries. Major producers like the EU, the USA and Japan apply different definitions of the industry. Therefore, comparisons cannot always be made. The



**Table 1: Machinery for lifting and handling  
Production in current prices**

(million ECU)	1989	Total			1989	FEM Members		
		1991	1993	1994		1991	1993	1994
EUR15 (1)	16 408	18 853	17 030	17 479	11 766	12 146	10 497	11 909
Belgique/België (2)	83	120	150	153	53	72	100	102
Danmark	N/A	N/A	N/A	113	N/A	N/A	N/A	76
Deutschland	5 543	7 426	7 228	7 292	4 105	4 951	4 648	4 688
España (2)	238	232	177	174	192	179	138	136
France	2 847	3 599	3 243	3 404	1 993	2 610	2 338	2 629
Italia	2 268	2 348	1 386	1 428	1 782	1 674	995	1 065
Luxembourg	29	33	31	29	29	33	31	29

(1) Excluding Denmark, Greece, Ireland and Austria, FEM estimate for 1994

(2) FEM estimate for 1994

Source: FEM

**Table 2: Machinery for lifting and handling  
Number of employees and number of companies, FEM members**

(thousands)	1989	Employment			1989	Number of companies (units)		
		1991	1993	1994		1991	1993	1994
EUR15 (1)	127.5	138.7	118.3	128.3	1 100.0	1 162.0	1 218.0	1 353.0
Belgique/België (2)	0.6	0.9	3.0	3.0	12.0	12.0	40.0	40.0
Danmark	N/A	N/A	N/A	0.9	N/A	N/A	N/A	6.0
Deutschland	52.0	65.0	50.0	48.0	250.0	280.0	280.0	280.0
España (3)	2.8	2.5	2.1	2.1	80.0	69.0	58.0	58.0
France	28.0	28.5	29.6	35.0	400.0	420.0	453.0	550.0
Ireland	N/A	N/A	N/A	N/A	1.0	1.0	1.0	1.0
Italia	13.3	12.3	8.1	8.7	105.0	130.0	115.0	135.0
Luxembourg	0.3	0.3	0.3	0.3	2.0	2.0	2.0	2.0
Nederland (3)	3.6	4.1	3.5	3.5	29.0	29.0	26.0	27.0
Portugal (4)	1.2	1.2	1.2	1.6	25.0	25.0	25.0	24.0
Suomi/Finland	3.8	3.6	2.0	2.2	18.0	21.0	17.0	20.0
Sverige	6.0	6.3	5.0	5.0	41.0	26.0	41.0	41.0
United Kingdom (5)	16.0	14.0	13.5	18.9	137.0	147.0	160.0	175.0
Switzerland	6.6	6.3	6.0	5.9	47.0	48.0	44.0	39.0
Czech Republic (2)	N/A	N/A	3.0	3.0	N/A	22.0	15.0	15.0

(1) Excluding Denmark, Greece, Ireland and Austria.

(2) FEM estimate for 1994.

(3) FEM estimate for 1994 for number of employees.

(4) FEM estimate for 1993 for number of employees.

(5) FEM estimates for employment.

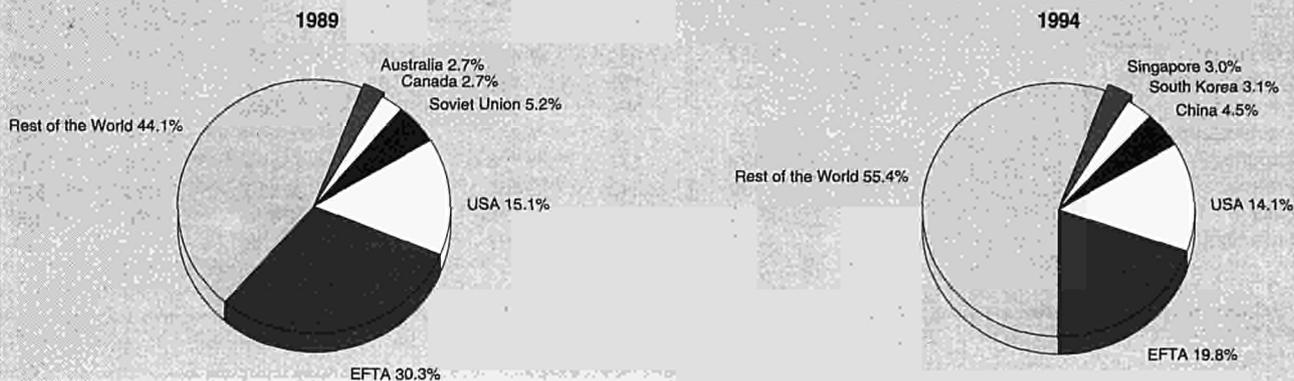
Source: FEM

**Table 3: Machinery for lifting and handling  
External trade in current prices**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	2 186	2 452	2 668	2 651	2 668	2 800	3 147
Extra-EU imports	1 115	1 349	1 442	1 587	1 559	1 291	1 391
Trade balance	1 071	1 102	1 227	1 064	1 109	1 509	1 756
Ratio exports / imports	2	2	2	2	2	2	2

Source: Eurostat

**Figure 3: Machinery for lifting and handling  
Origin of EU imports**



Source: Eurostat

EU is the world's major producer of lifting and handling equipment. In 1994, the EU production amounted to nearly 17.5 billion ECU, while the 1993 production levels in the USA and Japan reached only 13 billion ECU and 8.3 billion ECU, respectively.

The EU is also the largest manufacturer of packaging machinery. In 1994, the German and Italian production together amounted to 4 553 million ECU. Japan and the USA followed with total production values of 3 470 and 2 773 million ECU, respectively. Due to the weight of the European chemical, and other more general processing industries, EU production of chemical machinery is also higher than the Japanese production.

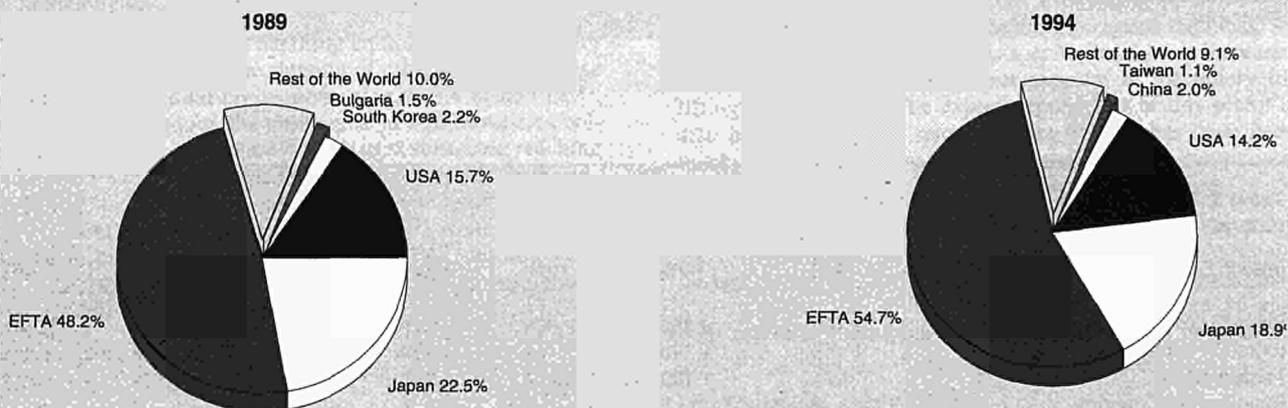
In the manufacturing of non-domestic cooling and ventilation equipment, the EU and US production are of equal size with estimated production values of 16 billion ECU. Japan follows at a distance with an estimated production value of 12.5 billion ECU.

### Foreign trade

The EU is a net exporter of general purpose machinery. Three subsectors: packaging machinery, chemical machinery and machinery for lifting and handling together recorded a trade surplus of 5 146 million ECU in 1994. Over the 1988-1994 period the trade surplus for these three sectors increased by more than 73%. The rapid growth of extra-EU exports contributed to this development, while extra-EU imports remained relatively low. Germany and Italy are the major EU-exporters. Both countries together account for a share of 50-60% of total extra-EU exports.

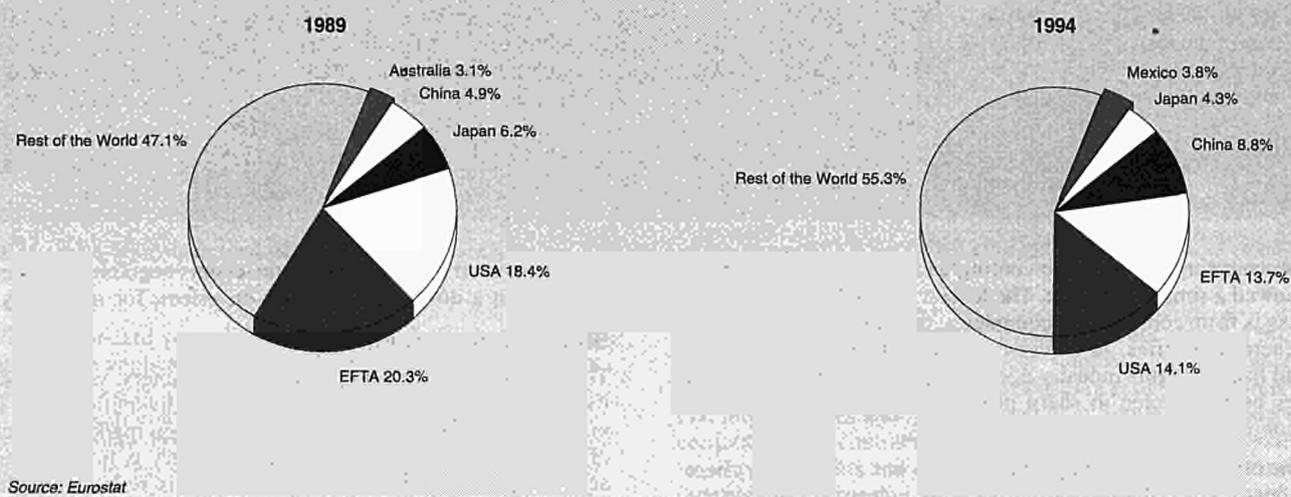
The destinations of extra-EU exports are widespread. Chemical machinery produced in the EU is exported to almost 160 countries. The major user, by far, is the USA, accounting for exports valued at 119 million ECU in 1994, about 14% of total extra-EU exports; up by 1.4 percentage point from 1989. Although the USA is the major destination for EU packaging machinery, the industry has a wider range of important destinations. After the USA (14.1%), China (8.8%), Switzerland

**Figure 2: Machinery for lifting and handling  
Destination of EU exports**



Source: Eurostat

**Figure 4: Packaging machinery  
Destination of EU exports**



(4.5%) and Mexico (3.8%) are important markets. The market structure of extra-EU exports of machinery for lifting and handling shows similar patterns. The USA has the highest market share (15.8%), followed by Switzerland and China with respective shares of 5.6% and 4.5% in 1994.

Remarkable are the rising exports to East Europe. Especially Poland, the Czech Republic, Hungary and Russia have all become important export destinations. These four countries together accounted for 9% of total extra-EU exports.

Major non-EU suppliers of general purpose machinery are the USA, Japan, and the EFTA countries Sweden and Switzerland. Shares of extra-EU imports from these countries differ according to the various types of machinery. The USA, for instance, is the major non-EU supplier of chemical machinery with a share of 35% in 1994, followed by Japan with a share of 14% in 1994. Japan, on the other hand, is the leading foreign supplier of machinery for lifting and handling with a share of 22% in 1994, closely followed by Sweden (20%), the USA (17%) and Switzerland (11%). In turn, Switzerland is the largest supplier of packaging machinery in the EU with a share of nearly 30% in 1994. The USA and Sweden follow with 25.8% and 18.3% shares respectively in 1994.

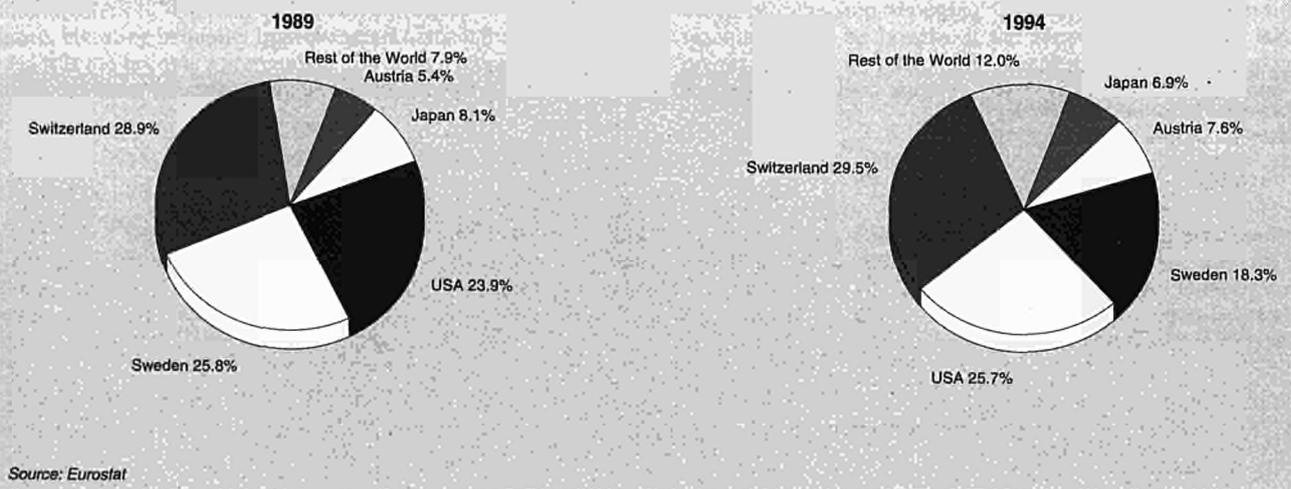
## MARKET FORCES

### Demand

The other general purpose machinery sector covers capital goods, which find their applications in a wide variety of downstream industries. Demand for these products is highly dependent on the investment decisions of these client industries. The variety of downstream markets, their respective dependence on the EU economic performance, and the existence of autonomic investment components, determine the cyclical character of the manufacturing of a certain type of general purpose machinery.

With respect to the manufacture of machinery for lifting and handling, client industries differ by type of machinery. Manufacturing industries (consumer and capital goods), construction, transport and warehousing are of particular interest to the manufacturers of lifting and handling equipment. As materials handling and logistics are the most effective ways to gain flexibility, to improve the time to market and to cut operating costs, this sector is less affected from investment cutbacks in client industries. Still, production decreased nearly 10% from 1991 to 1993.

**Figure 5: Packaging machinery  
Origin of EU imports**



**Table 4: Machinery for lifting and handling**  
External trade in current prices, 1994

(million ECU)	B/L	DK	D	GR	E	F	IRL	I	NL	P	UK
Extra-EU exports	60.4	102.1	1 286.5	4.7	133.5	324.2	44.4	428.4	214.5	2.5	546.1
Extra-EU imports	95.5	54.4	428.3	8.2	65.3	154.0	13.2	75.5	209.2	10.3	277.5
Trade balance	-35.0	47.7	858.3	-3.6	68.1	170.2	31.2	352.9	5.3	-7.8	268.6
Ratio exports / imports	0.6	1.9	3.0	0.6	2.0	2.1	3.4	5.7	1.0	0.2	2.0

Source: Eurostat

Demand for non-domestic cooling and ventilation equipment showed a similar structure. The largest demand for these products is from construction companies, cooling warehouses, and general industries. In contrast with the machinery for lifting and handling, this industry does have a cyclical pattern which has been reflected in sharp production decreases during the economic recession of the early 1990s.

The chemical plant equipment industry has a variety of client industries, all of which are processing industries. Among the customers are: the chemical industry, the petrochemical industry, the pharmaceutical industry, the biochemical industry, food processing industry, water purification utilities, oil and gas exploration and production companies, refineries, power generation plants, environmental application companies, engineering contracting companies and government institutions. Most client industries follow cyclical business patterns: they are susceptible to fluctuations in the business cycle. The chemical machinery sector strongly relies on investments in the chemical industries.

Demand for packaging machinery mainly comes from the food, beverage and tobacco industries. This industry accounts for an estimated 60-70% of total demand, followed by the pharmaceuticals, chemicals and related industries. These downstream industries each have their own specific needs. The fact that these industries meet primary consumer needs causes demand for packaging machinery to be less cyclical than demand for other machinery and equipment.

This latter fact is also the reason why, in particular, demand for packaging and chemical machinery from East Europe and the Far East is rising. The main problem in these countries remains the lack of capital. Due to the primary character of the major downstream industries, however, demand for these types of machinery is stimulated.

Intensified competition and changing consumer demand as well as the creation of the Internal Market has encouraged the process of concentration in most downstream industries. Especially in the processing industries, this concentration proc-

ess has resulted in an increase in the clients negotiating power, resulting in a downward pressure on prices, for machinery.

### Supply and competition

The EU industry for general purpose machinery, which finds its application in processing industries, is diversified. This is mainly due to the wide range of downstream markets, which often require specific solutions. The industry is further characterised by its global operations, which is reflected in the relatively high export rates. The global orientation not only applies to large firms, but also to small companies. Reasons behind this are the highly internationalised major downstream markets such as chemical and related markets, as well as the existence of large multinationals. Manufacturers of general purpose machinery have coped with the need of the major processing industries for modern, flexible equipment by introducing more capital-intensive and research-intensive production machinery. New technologies are providing new opportunities for cost reductions, larger-scale production, a higher degree of flexibility and the development of new products. Competition in machinery for the processing industries is based on quality (assurance) and customised production, enabled by automated and highly flexible production processes. Customers are willing to pay more for high quality products when efficiency improvements by these products offer higher returns on investment. Globalisation in these markets has encouraged the growth of technology transfer, necessary for the large producers to carry out their own research and take out patents, which can be commercialised. The high degree of concentration in downstream industries such as in the food industry, might result in price cuts and lower margins in the long run. The machinery industry itself, however, is responding with a similar trend towards more concentration and globalisation.

In the market for lifting and handling machinery as a whole, numerous specialised companies are operating. Competition intensity varies between market segments though. World-wide competition is probably strongest in the market for forklift trucks, which is dominated by a few international companies

**Table 5: Packaging machinery**  
Main indicators by country, 1994 (1)

(million ECU)	D (2)	F	E	I	NL	UK	JPN (3)	USA
Apparent consumption	1 060	397	262	443	124	545	3 354	2 833
Production	2 884	276	240	1 668	197	412	3 436	2 774
Total exports	2 204	259	114	1 407	179	251	218	609
Trade balance	1 823	-121	-22	1 225	73	-133	82	-59
Employment (thousands)	27	3	3	13	2	15	18	26

(1) Some country data have been estimated.

(2) Including palletizers, metal can and metal tube manufacturing machines.

(3) Fiscal year 1994 (April 1994 through March 1995).

Source: COPAMA, NEI

**Table 6: Packaging machinery**  
**International comparison of production in current prices**

(million ECU)	1987	1988	1989	1990	1991	1992	1993	1994
Deutschland	1 620	1 750	2 020	2 330	2 650	2 790	2 733	2 884
France	N/A	N/A	N/A	N/A	N/A	N/A	N/A	276
Italia	1 184	1 250	1 330	1 425	N/A	1 592	1 580	1 668
United Kingdom	N/A	412						
USA	1 770	1 830	2 110	2 060	N/A	2 146	2 708	2 774
Japan	1 330	1 730	1 980	2 135	N/A	2 895	3 237	3 436

Source: VDMA, JETRO, PMMI, UCIMA, COPAMA, Ifo Institute

offering standard products in all sizes and shapes for every conceivable application. The world-wide market for elevators and escalators is also dominated by a few large companies. Two European companies, Schindler and Kone, together account for more than 50% of the world market. In storage equipment, racks, shelves and warehousing, quite a number of companies are active, whereas there are some 100 manufacturers of mobile and loader cranes in Europe. Customisation as well as environmental, ergonomic and safety considerations increasingly have become the driving forces behind technological and product development in this sector. Most of the general purpose machinery is sold directly to end users by manufacturers. Small companies are more likely to use the services of an agent than the larger ones which have their own distribution network. As the market becomes more sophisticated, direct sales are becoming more prevalent at the expense of the distribution by agents.

#### Production process

Following the increasing demand for sophisticated machinery in order to meet the clients' requirements with regard to flexibility, environment and safety, the general purpose machinery industry focuses on product innovation to upgrade the quality of their supplies. As a result, many European manufacturers have invested heavily in research and development in recent years, which has resulted in better performing, more cost-effective, more environmentally friendly, less noisy, energy-saving products. CAD/CAM systems are used to design and manufacture machines. The computerisation and the application of advanced electronics have become a basic feature in the manufacture new machinery, not only to improve the efficiency of the machine itself, but also for machine safety, pollution control, precision in operations.

Quality control has been a major concern of some downstream industries and their machinery suppliers. Certification under the ISO 9000 series of quality-assurance standards permits manufacturers to maintain their competitiveness world-wide. Hence, investing in quality improvements to meet these quality standards has become a prerequisite. By design these standards are not product specific. They are to be used as a model for

developing a quality system that focuses on documented procedures. When implemented, these standards often complement industry-specific product standards in assuring customers that the processes and systems used by a suppliers are indeed consistent with contractual requirements for quality. In order to serve different customers in a competitive market, manufacturers often comply with national standards.

The growing value of extra-EU exports indicates that the technological leadership enhances the competitiveness of the EU industry. However, these rising exports are also the result of the rationalisation process which the machinery industry has undergone. This process was characterised by cost reductions, resulting in declining numbers of employees. The competitiveness of the industry can only be maintained in the long run if production costs are controlled.

#### INDUSTRY STRUCTURE

##### Companies

In the wide range of machinery markets, many small and medium-sized companies are operating. In most market segments, however, larger globally operating companies and multinationals can also be recognised.

The lifting and handling sector consists of many small companies and a few large groups. The total number of companies is estimated at some 1 500. European suppliers like Linde/Still (D), Lansing (UK), Jungheinrich (D), Lancer-Boss (UK), and Manitou (F) compete with leading suppliers from Japan, such as Toyota and Komatsu, and Hyster and Clark, from the USA. An important non-EU supplier is Valmet (Scandinavia), which accounts for 60% of the world market for straddle carriers. Swedish Tetra Pak used to be one of the largest manufacturers of packaging machinery. In 1991, Tetra Pak (packaging group) took over Alfa-Laval (manufacturer of food and other industrial equipment), thereby creating the possibility of 'one-stop shopping' as packaging and processing machinery can be bought at the same address. Other large manufacturers of packaging machinery are among others Krones (D), which focuses only on the beverage industry,

**Table 7: Packaging machinery**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	1 635	1 724	1 600	1 729	1 911	2 093	2 258	2 468	2 782	3 227
Extra-EU imports	389	377	417	462	540	620	639	595	602	706
Trade balance	1 246	1 347	1 183	1 267	1 370	1 473	1 620	1 873	2 180	2 521
Ratio exports / imports	4	5	4	4	4	3	4	4	5	5

Source: Eurostat



and Bosch (D), Van Leer (NL) and FIG (CH), which offer a wide range of products for several downstream industries.

Major EU players in the manufacture of non-domestic cooling and ventilation equipment are among others Deutsche Babcock, Linde and Balcke-Durr (D), Elfi (I) and Tetra Laval (S).

### Strategies

The rationalisation process within the general purpose machinery industry, which started in the end of the 1980s and early 1990s is still continuing. This process is characterised by cost reductions and merger and acquisition activity. For larger international companies, acquisitions are a useful instrument to get a foothold in a new geographical market or to diversify into another market segment. For small and medium size firms, co-operation, through strategic alliances or mergers, is becoming increasingly important as this leads to joint R&D efforts and increasing competitiveness.

In order to remain competitive, the strategy of most manufacturers of machinery for the processing industries is to constantly improve adaptation of specific problem solutions to the respective application paying a lot of attention to quality, reliability and flexibility, and at the same time reducing design and production costs. This means consistent expenditure on R&D and constant adaptation to customer requirements in domestic markets but also in foreign markets outside the EU. The reduction of production costs has resulted in a declining number of employees in most segments of the industry for general purpose machinery.

Most of the manufacturers of lifting and handling machinery tend to be highly specialised, because, with the exception of few large companies, they are too small to cover all market segments. Specialisation permits them to incorporate current and future trends in technology and customer needs in the market concerned; they can respond in a quick and adequate way to the ever changing technology and consumer focus, and R&D can be directed to envisaged future developments.

### ENVIRONMENT

Unlike some major downstream industries, such as the chemical industry, the general purpose machinery industry does not seriously threaten the environment. Moreover, by increasingly applying new production techniques, such as for example CAD/CAM, energy consumption and waste is reduced as much as possible. New production techniques have further also a favourable impact on the ergonomic condition, for example through noise reduction. Finally, technological progress has also induced changes in the products themselves. Advanced machinery is equipped with controlling equipment, whereas new materials, which can be recycled, are used as composites and components of the machinery.

Environmental issues especially apply to the downstream industries. Client industries, however, are becoming more and more aware of safety and environmental issues also induced by developments in the industry's regulatory environment. This growing importance of ecological issues is especially reflected in measures penalising packaging waste. Other environmental areas which receive a growing attention are noise and vibrations.

As a result, demand is growing for environmentally friendly packaging and recyclable packaging materials. Also demand from the client industries for energy efficient and less polluting machinery and equipment is increasing. The client industries want their production processes to be as clean as possible, not only as a result of consumer demands, but also to anticipate restrictive national and European regulations. Therefore R&D is focusing to an increasing extent on these environmental issues.

For fuel-powered equipment, such as industrial trucks for outdoor use in the lifting and handling machinery industry, restrictions on pollution from exhaust fumes have become increasingly important; industries are trying to improve on energy efficiency and exhaust pollutants. For electrically operated trucks, new concepts such as fuel cells and high energy content batteries will provide for a technological push and a reduction of combustion-powered units. European companies spend as much as 5% of their turnover on research in this field.

### REGULATIONS

The Machinery Directive is relevant to the machinery sector as a whole. This Directive has come into force on 1 January, 1995. This Directive sets out safety requirements for all machinery, and hygiene requirements for machinery used to make or pack food. Compliance with the standards set in the Machinery Directive entitles manufacturers to carry the so-called CE mark (Conformité Européenne). Currently Member States apply different technical and quality standards with respect to safety and hygiene, implying an obstacle to free intra-EU trade. Hence the commercial value of the CE mark is that it will bring about free trade among the Member States. Once carrying the CE mark a product is entitled to enter the market of any Member State; individual countries cannot refuse the product to their market.

The central issue of the new regulation - self-certification by the industry itself - will give the final responsibility to the various industries to set their specific standards. CEN - the European Normalisation Institute - has the final task to provide detailed European standards. Control on the use of the new standards has been given to the national governments. The European industry would like to see the CEN standards adopted by the International Standards Organisation (ISO) in order to avoid unfair competition in non-EU markets.

Further mention should be made of the Packaging and Packaging Waste Directive. This Directive is also aimed at protecting the Single Market principle; it should prevent the occurrence of differing national regulations. For example, the German Packaging Ordinance is said to constitute a barrier to free trade within the EU. Within the framework of the Packaging and Packaging Waste Directive, the EU Council of Ministers agreed upon the upper and lower limits for recovery and recycling waste. Enforcement of the development and production of new packaging materials encourages demand for new and innovated machinery.

Other directives, which at least partly apply to general purpose machinery or to the production processes in downstream markets in which this machinery is incorporated, are the Low tension Directive and the Directive for Electromagnetic Compatibility (89/336). The latter Directive tries to prevent the electromagnetic susceptibility of machinery and to stimulate the electromagnetic immunity of machinery. Manufacturing of machinery following this Directive implies the incorporation of the relevant measures in the development stage.

### OUTLOOK

In 1994, the recession in some major downstream markets in the EU came to an end. This development has resulted in a higher production of machinery and equipment, a trend which continued in 1995. In the course of 1995, however, it has become evident that the continuation of economic growth in the coming years is less certain, which might lead to a postponement of necessary investments by the major downstream industries.

The economic recession of the early 1990s and the resulting weak demand has stimulated EU manufacturers of general purpose machinery to focus on extra-EU exports. This trend

will continue in the coming years which is expected to lead to a further increase of these exports. Especially, East Europe and the Far East are growth areas for EU general purpose machinery.

Research and development efforts are also expected to increase in order to comply with the increasing demand for more sophisticated and flexible machinery. This development and a further control of production costs is expected to enhance the competitiveness of the EU industry.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: European Federation of Handling Industries/Fédération Européenne de la Manutention (FEM), Address: Kirchenweg 4, CH-8032 Zürich; tel: (41 1) 384 4844; fax: (41 1) 384 4848; European Committee of Chemical Plant Manufacturers (EUCHEMAP). Address: c/o FME, Boerhaavelaan 40, P.O.Box 190, 2700 AD Zoetermeer; (31 79) 353 12 56; fax: (31 79) 353 13 05; Confederation of Packaging Machinery Association (COPAMA). Address: c/o VDMA, P.O. Box 710864, D-6000 Frankfurt/Main; tel: (49 69) 66 03 (0) 1431; fax: (49 69) 66 03 1211.

# Agricultural machines and tractors

NACE (Revision 1) 29.31, 29.32

The situation of the European agricultural machinery industry has substantially improved since 1993. The difficult period experienced between 1989 and 1993 (38% drop in volume) has indeed been followed by a 12.5% increase between 1994 and 1995. There is a strong correlation between this favourable development and the situation of the European agriculture. However, this favourable situation must not conceal the slow deterioration of certain important indicators for this Industry's sector, such as a reduced working population in agriculture (- 36% since 1980) and an increasing share of extra-EU imports.

In the long run this leads to a slow erosion of the turnover and, due to sustained productivity increases, this results in an important reduction in the number of persons employed. The future chances of the branch or, alternatively, the risks it may run, will depend predominantly on the evolution of the CAP.

In addition, the importance of North-American transplants in this sector must not be neglected. Should the economic situation remain unfavourable in Europe, or the exchange rates change durably, North American companies may repatriate part or all of their activity, thus amplifying already existing economic fluctuations.

## INDUSTRY PROFILE

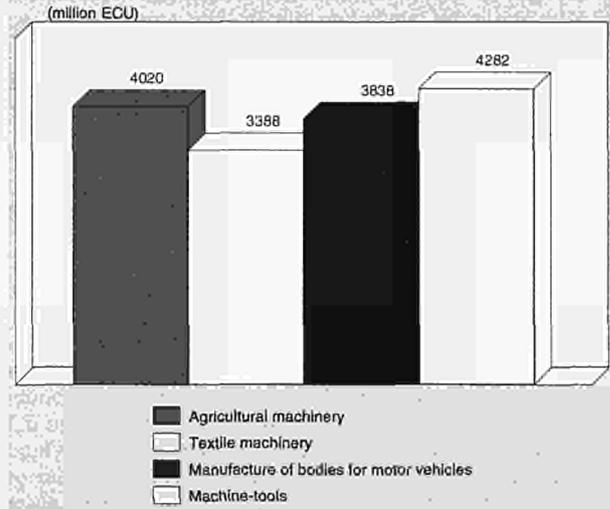
### Description of the sector

The diversity of European Agriculture conditions the manufacture of a wide range of farm equipment: the diversity of animal and vegetable products, the variety of soils, climatic conditions, as well as topographical differences and the many traditions and customs involved in farming call for the use various items of equipment. In this respect, more than 450 different types of machines are manufactured in Europe, whereby each category is subdivided into several models and variants. The main categories of machines include: agricultural and forestry tractors; motorcultivators, motorhoes and motor mowers; ploughs, harrows, tillers and many other machines and implements for soil preparation and soil working; machines and implements for sowing and planting; fertiliser and slurry spreaders; combine harvesters, forage harvesters and other self-propelled crop and root harvesting machines; sprayers; machines and implements for irrigation; dairy and cattle-breeding equipment; machines and implements for cleaning, grading, weighing and bagging agricultural products; forestry machines, specialised transport and storage equipment; tedders and winnowers, rotary mowers, balers, lawnmowers and other grass harvesting machines and implements.

All these machines can be divided into four main categories: agricultural and forestry tractors; self-propelled machines; other PTO driven machines; unpowered implements.

The products of the first two categories are generally supplied by large (often multinational companies); this sector is characterised by the pre-eminence of North American companies. The products of the other two categories are usually supplied by a very large number of small and medium-sized companies, whose supply area sometimes does not exceed a radius of ten kilometres. All in all, this activity is one of the most important of the European mechanical engineering industry, representing approximately 8% of the total production.

Figure 1: Agricultural machinery Value added in comparison with related Industries, 1994



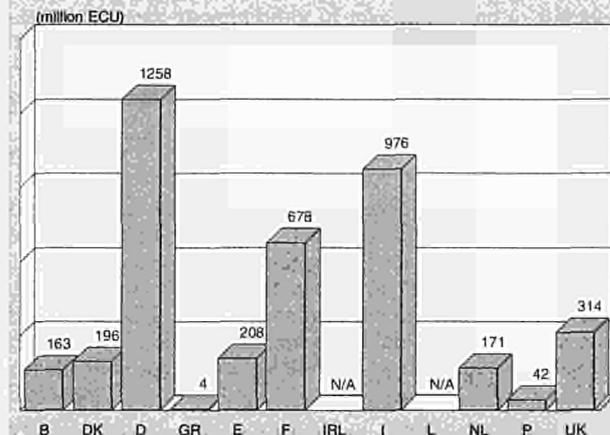
Source: DEBA GEIE, CECIMO, Vieweg

Germany, with 30.4% of the total added value, is the largest producer of agricultural machinery in the EU, followed by Italy (24.3%), France (17.5%) and the United Kingdom (7%).

### Recent trends

The long-term trend is downward oriented, as much in terms of turnover (- 19% in constant prices over ten years) as in terms of employment (- 25% since 1990). This erosion must be ascribed to the steady decline in the farming population as well as to the deterioration of the trade balance (- 35% since 1980). The share of imports increased from 5.7% in 1985 to 12.6% in 1994. In the same time, extra-EU exports more or less stagnated between 20 and 25% of the total turnover, so that the trade balance dropped by about 27% over the period under consideration. This downward trend considerably worsened between 1990 and 1993 ; the uncertainty resulting from the fall of the Berlin Wall (fear of massive imports from East European countries), the Uruguay Round and the projected reform of the CAP led farmers to postpone their purchases.

Figure 2: Agricultural machinery Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Agricultural machinery**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	11 397	12 253	10 651	11 241	10 420	11 220	11 910	13 117	13 248	13 367	13 488
Production	14 024	14 312	12 479	12 670	11 996	13 014	13 835	14 967	15 999	16 223	14 601
Extra-EU exports	3 321	3 147	2 998	2 649	2 834	3 206	3 345	3 127	2 986	2 607	2 795
Trade balance	2 627	2 059	1 828	1 429	1 575	1 794	1 925	1 850	2 751	2 856	1 113
Employment (thousands)	177.8	137.8	128.6	121.2	111.2	103.6	103.5	113.3	110.5	106.1	101.6

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded CEMA forecasts for EUR15.

Source: DEBA GEIE, Eurostat, CEMA

**Table 2: Agricultural machinery**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	-2.4	-4.2	-3.2	6.5
Production	-3.3	-4.1	-3.6	7.3
Extra-EU exports	-3.8	-1.8	-2.9	9.6
Extra-EU imports	7.4	1.0	4.5	5.2

(1) Some country data for apparent consumption and production have been estimate

Source: DEBA GEIE, Eurostat

**Table 3: Agricultural machinery**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	3 321	2 621	2 394	2 623	2 990	3 147	2 998	2 649	2 834	3 206	3 345	3 127
Extra-EU imports	694	690	758	1 010	1 185	1 088	1 170	1 221	1 258	1 412	1 420	1 277
Trade balance	2 627	1 931	1 635	1 613	1 805	2 059	1 828	1 429	1 575	1 794	1 925	1 850
Ratio exports / imports	4.8	3.8	3.2	2.6	2.5	2.9	2.6	2.2	2.3	2.3	2.4	2.4
Terms of trade index	95.4	98.6	101.6	100.7	96.5	100.0	95.3	94.8	90.8	87.8	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Agricultural machinery**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	91.6	83.4	85.5	97.0	103.7	100.0	90.2	94.5	97.8	112.7
Unit labour costs index (3)	85.3	99.3	100.7	95.1	90.4	100.0	116.3	118.4	118.3	106.6
Total unit costs index (4)	81.2	87.8	89.2	90.6	95.8	100.0	104.9	107.0	107.2	104.9
Gross operating rate (%) (5)	7.3	5.0	5.0	7.2	7.0	5.5	3.3	4.0	3.7	6.0

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

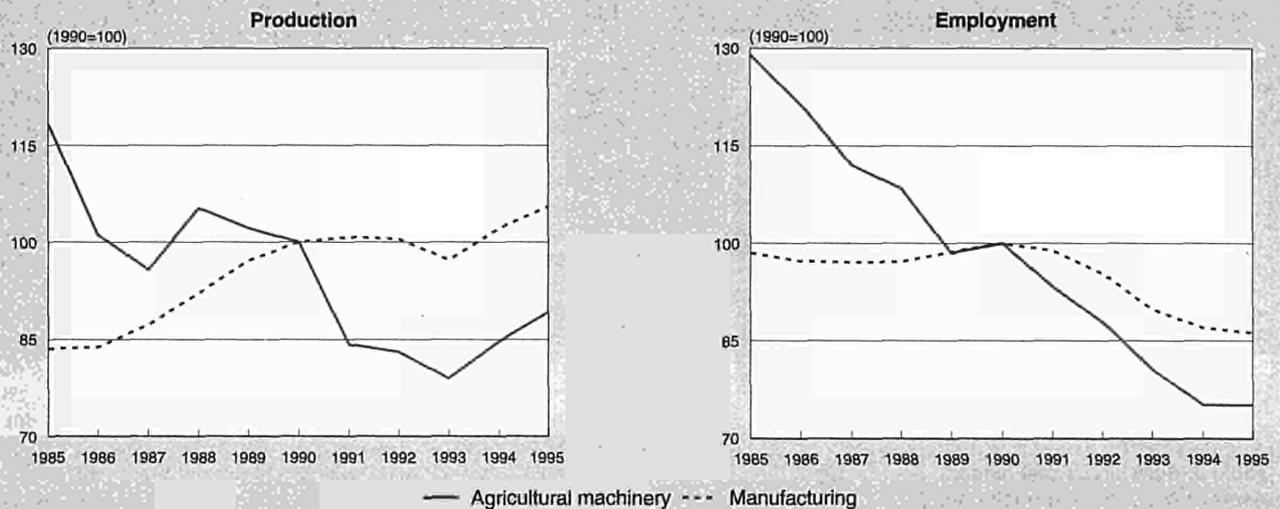
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Agricultural machinery**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

However, actual developments belied the fears of the farmers: East European countries remained net importers for their products, subsidies have offset the losses incurred by set-aside schemes, world prices for agricultural products have recovered. Since 1994, investments in machinery have been catching up (+ 7.7% in 1994; + 5.1% in 1995). It may well be that this upturn is only the upper part of the cycle and that the long-term trend will remain unchanged, unless changes occur in the fundamentals of the economy.

It must also be noted that this recent trend is much contrasted depending on the countries under review: continuing decline in production in Germany (- 2.7% in volume between 1993 and 1995) and in the United Kingdom (- 2.3%), increase in France (+ 8.3%), in Italy (+ 11.5%) and in Spain (+ 11.8%).

#### International comparison

Although the agricultural machinery industry in the USA is subject to cyclical movements similar to those experienced

in the EU, it nevertheless enjoys a positive evolution in the long run, which could be ascribed to several factors:

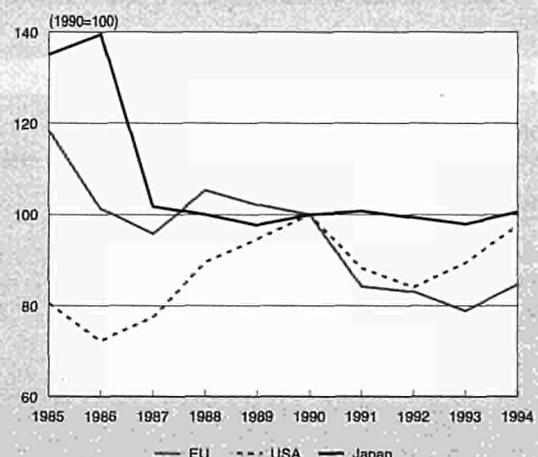
- the repatriation of certain activities which had previously been located elsewhere, in particular in Europe; in this instance exchange rates play a major role;
- all figures concerning agricultural machines and tractors are based on DEBA estimates;
- the soundness of the American agriculture which profits from very low cost prices (less intensive agriculture), thus enjoying the full benefits of the improvement of the world market (absorption of surpluses);

the Japanese industry stagnated since 1993, being handicapped by the high level of the Yen and the uncertain prospects of the Japanese agriculture which is still heavily protected and subsidised.

**Figure 4: Agricultural machinery**  
International comparison of main indicators in current prices

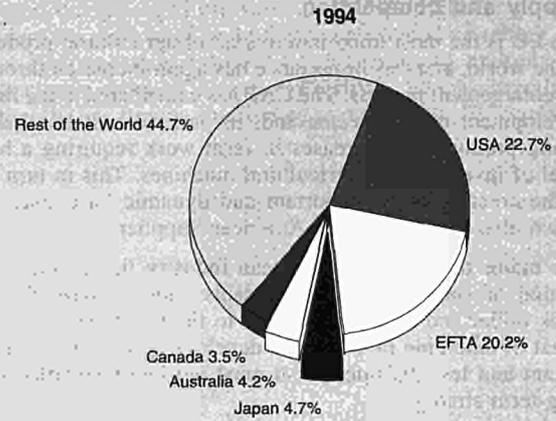
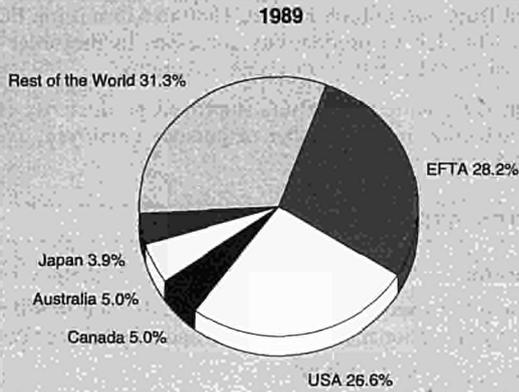


**Figure 5: Agricultural machinery**  
International comparison of production in constant prices



Source: DEBA GEIE

**Figure 6: Agricultural machinery  
Destination of EU exports**



Source: Eurostat

### Foreign trade

In 1994, the companies belonging to this Industry's sector have exported around 24.6% of their total production outside the EU. This percentage remains more or less constant in the long run. Total exports, including intra-EU trade, represented 43% of the total turnover.

However, imports are always increasing in real terms as well as in market share: they represented 6.1% in 1984, 8.2% in 1989 and 12.6% in 1994. Nevertheless the EU still remains a net exporter of agricultural machines with an export-import ratio of 2.3 in 1994 (against 4.8 in 1985 and 2.9 in 1990).

In 1994 the largest importer of agricultural machines was France (1 322 million ECU) followed by Germany (904 million ECU and the United Kingdom (805 million ECU).

The largest exporter remains Germany with 2 298 million ECU, followed by Italy (1 378 million ECU) and the United Kingdom (1 239 million ECU).

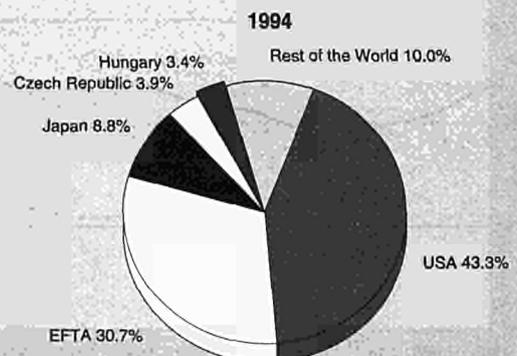
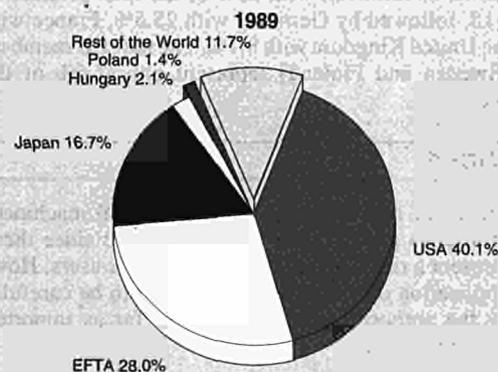
### MARKET FORCES

#### Demand

The agricultural machinery market is conditioned by the evolution of the agricultural economy and can be characterised as follows:

- there is a long-term downward trend in the order of 2% per annum, which is related to the steady decrease in the farming population (- 36% since 1994 in the EU as a whole);
- this downward trend shows cycles of 5 to 7 years duration which are more or less accentuated depending on the economic situation, the socio-political climate, etc. These cycles seem to be linked to the world prices of agricultural raw materials. The amplitude of the last cyclical movement has been accentuated by the uncertainties resulting from the revision of the CAP, the Uruguay Round, the opening of East European countries. As this stage is now over, the recovery has been all the more important as the preceding crisis had been serious. Since 1994 the agricultural machinery industry profits from a good economic situation,

**Figure 7: Agricultural machinery  
Origin of EU imports**



Source: Eurostat

which does not however make it possible to reach the sales levels observed in the period 1980-1985.

As to extra-EU exports, there seems to be a general stagnation.

### Supply and competition

The EU is the most important market of agricultural products in the world, and this importance has again increased through the enlargement process. The CAP has contributed to the rapid development of this sector and, in particular, it has led to strong productivity increases in farm work requiring a high level of investment in agricultural machines. This in turn led to the creation of an important and dynamic local industry, which also attracted North American suppliers.

The major threat to the European industry lies in the repatriation of some of these transplants which benefit from a weak dollar and have easy access to the Old Continent. The threat of emerging industries in developing countries is more distant and less definite, but it must not be disregarded in a long-term strategy.

### Production process

The standards of the agricultural machinery industry are those of a modern industry in the sector of small and average series, which implies in particular the setting up of important research departments using computer-aided design (CAD) and even computer-aided manufacturing (CAM), the creation of test and simulation centres, flexible machining centres, the use of robotics and finally, modern management methods based on the principles of the "just in time" and "total quality". In this respect, some companies in this sector have been awarded ISO 9000 certifications.

Products have evolved rapidly in three directions:

- power increase, especially in the field of tractors: their power increases by 2 or 3 HP per annum in direct proportion to the size of the holdings;
- the general use of electronics, for instance on combine harvesters (for instance grain loss monitor);
- the introduction of automatic systems fitting the gears of tractors and self-propelled agricultural machines. In this respect, the more sophisticated gear boxes, the so-called "full power shift", are a quasi North American monopoly. This spectacular product development has entailed signifi-

cant increases in engineering costs and required major investments. However, it was not enough to spur the farmers' propensity to invest in machinery.

All these efforts have necessitated major investments, which increased from 346 million ECU in 1980 to 517 million ECU in 1990. This led to productivity increases in the order of 30% between 1991 and 1995 (GVA fc/capita).

However, the counterpart of this improved productivity is a serious reduction in the number of persons employed, averaging -4.5% per annum.

## INDUSTRY STRUCTURE

### Companies

In this industry's sector, companies can be divided into three segments: multinational, national, small and medium-size companies.

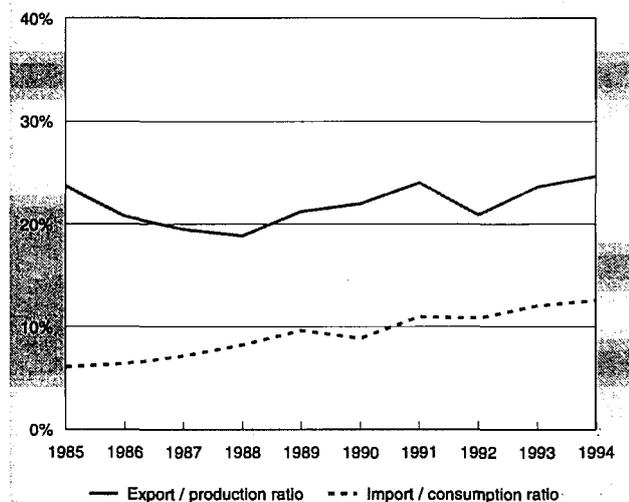
The multinationals, or "long liners": they manufacture and market tractors, self-propelled agricultural machines and very often a whole range of related implements. In the EU, these manufacturers are represented by New Holland (fiat Group), born from the merger of Fiat-Geotech and Ford-New Holland; Same-deutz-fahr, born from the acquisition of the farm machinery division of Klöckner-Humboldt-Deutz (KHD) by the SLH Group (Same-Lamborghini-Hürlimann).

In addition, North American "transplants" are very much present in this sector, with John Deere, Case IH and Massey Ferguson (which is now a branch of the American company AGCO). All these large companies generate around 45% of the turnover of the sector.

The national companies: their number has decreased in the recent decades. They are represented by such companies as Fendt (Germany), Steyr (Austria) and Kuhn (France), and produce either tractors or harvesting machines. The general trend goes toward cooperation or acquisition, in order to meet ever-increasing engineering costs and investments. For instance, Massey-Ferguson concluded an agreement with Renault Agriculture, John Deere with Renault Agriculture and Renault Agriculture with JCB Landpower; SAME absorbed DEUTZ Landwirtschaft and became a multinational company.

The small and medium-size companies: they constitute the main bulk of the thousand companies of the sector. Usually, they specialise in the production of a particular type of implement intended for a definite use. Their specialisation makes them less dependent on the fluctuations of the general economic situation, but more vulnerable to local crises.

**Figure 8: Agricultural machinery Trade Intensities**



Source: DEBA GEIE, Eurostat

## REGIONAL DISTRIBUTION

In 1995, Italy became the first producer of agricultural machines in terms of turnover, with 26% of the total production of the EU-15, followed by Germany with 25.5%, France with 16% and the United Kingdom with 8.1%. The new EU members (Austria, Sweden and Finland) represent only 7.6% of the total production.

## REGULATIONS

The importance of regulations in the agricultural machinery sector continues to grow, which is rather logical since these machines present a real danger, especially to their users. However, the application of these regulations need to be carefully checked by the authorities, in particular as far as imported products are concerned.

In addition, standardisation plays an ever-increasing role, for instance regarding couplings (compatibility between all machines and all implements) and on-board electronics.



**Table 5: Agricultural machinery  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.6	0.8
Danmark	1.8	1.9
Deutschland	1.2	0.9
Ellada	0.2	0.1
España	0.6	0.8
France	0.9	0.9
Ireland	N/A	N/A
Italia	1.6	2.0
Luxembourg	0.0	0.0
Nederland	0.5	0.8
Portugal	0.3	0.6
United Kingdom	0.7	0.7

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

Two other sectors are particularly concerned by new standards:

- the environment, which is concerned not only by the accurate measurement of distributed fertilisers and plant protection products but also by engine emissions;
- safety in use, in the fields and on the road. In this respect, it is to be noted that customers, in their search for improved productivity, express the wish for faster tractors on the road.

## OUTLOOK

The future of the EU agricultural machinery industry depends basically on two factors:

- the evolution of the agricultural economy;
- foreign trade.

In 1994-1996 EU agriculture has profited from the favourable combination of Community prices and aids. However, voices can already be heard to curb these. What will the future hold ?

The foreign trade suffers from an often uneven competition: heavy expenses and payroll charges, and more importantly handicaps resulting from a strong currency policy. .

It is quite obvious that one of the virtues of competition is to exert unchallenged pressure and that the fight for survival renders possible what could not be envisioned yesterday. But it is also true that it would be dangerous to multiply the obstacles in front of a sector of activity which, directly or indirectly, has already contributed so much to the EU economy.

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# Metalworking machine tools

## NACE (Revision 1) 29.4

The EU industry has got a strong position in the high-technology and engineering business. In volume markets Japanese competitors are in the lead. Currently, the EU firms' focus of R&D is on mechanical technologies; efforts in the areas of new technologies should be increased. Moreover, machine tool firms have to improve their financial performance and reduce their break-even point to strengthen their ability to stay competitive in a highly volatile market.

In an early phase of the recovery after the recession of 1993 the economic growth had lost momentum. While some observers hope that further growing demand for machine tools will follow the slowdown in the recovery (which is regarded as an intermediary phenomenon in a medium-term upswing), growing fears are being expressed for 1997 because of the levels of new orders for major markets between the end of 1995 and the middle of 1996.

### INDUSTRY PROFILE

#### Description of the sector

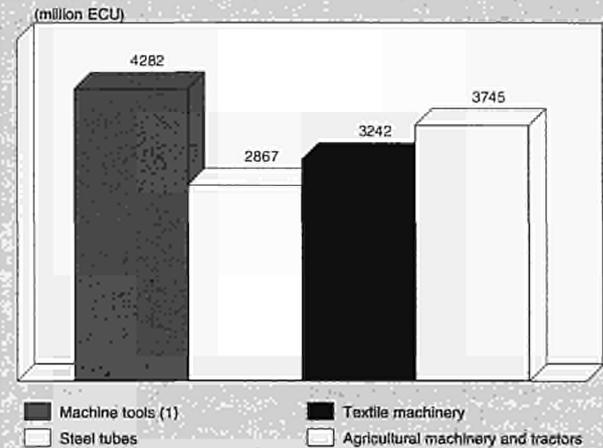
Group 322 of NACE 1970 only contained metalworking machine tools. Category 29.4 of NACE Revision.1 is called machine tools, and comprises a much broader, heterogeneous product range. Beside machine tools for metalworking, which are applied above all in capital goods industries, this category includes machine tools for woodworking (NACE Revision.1 29.4042) and for stone working (NACE Revision.1 29.4041) that are mainly used in industries for the manufacture of durable consumer goods. Additionally, manually controlled, air and electrical driven tools (NACE Revision.1 29.4051 and 29.4052), as well as soldering- and welding machines (NACE Revision.1 29.4051) are compiled under NACE Revision.1 29.4.

Metalworking machine tools, as defined in NACE 1970, are compiled in NACE Revision.1 29.4011-29.4031 (cutting machine tools) and in NACE Revision.1 29.4032-29.4035 (forming machine tools). These NACE groups are used for the definition of sector machine tools within this industry report. Therefore, a consistency between the analysis in this issue of "Panorama of the EU industry" and the preceding issues is guaranteed. This aggregation provides a sufficient homogeneous industry for analysis.

The product programme of the machine tool industry can be divided into two broad groups: cutting machines and forming machines. In the mid-1980s, approximately three-quarters of the industry's output in value consisted of cutting machine tools. Since then that group has lost importance, and its share of EU machine tool production shrank during the latest recession. In the mid-1990s cutting machine tools account for less than two-thirds of output. In the years to come cutting machine tools will regain some weight in the industry's production, but will not reach their former level. The major products are lathes, milling machines, grinding machines, gear cutting machinery and machining centres. The remainder of production comprises forming machine tools, such as presses, bending and shearing machines.

Most machine tools are based on mechanical machining operations, but non-mechanical machining, such as laser cutting, electrical discharge manufacturing (EDM) and electrical chemical manufacturing (ECM), has gained in importance since the mid-1980s. Its share of total EU production has

Figure 1: Machine tools for metal working  
Value added in comparison with related industries, 1994



(1) Vieweg estimate.

Source: CECIMO, Eurostat, Vieweg

increased to roughly 2% (6% taking into account the huge Swiss production of these machines).

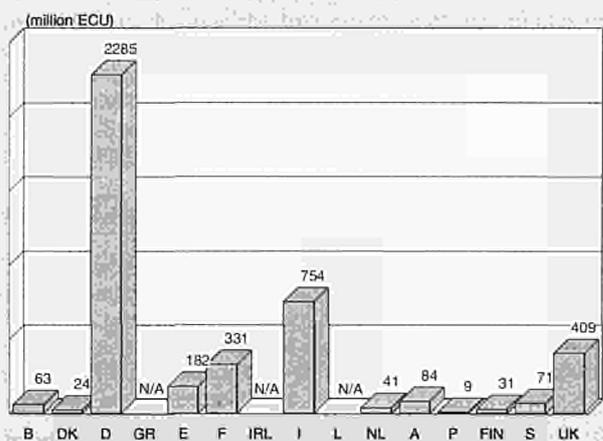
The machine tool industry's supply comprises complete production systems in addition to stand-alone machines. Among them are transfer lines (especially destined for the automotive industry) and advanced, flexible manufacturing systems and cells (FMS/FMC) for a broad range of applications.

Beside machinery and equipment, the supply of services has become more and more important. The services comprise software, which is necessary to control machining operations and automated systems, as well as related areas such as production planning systems (PPS) and computer aided design (CAD). Other services include the design of customised systems, the training of clients' operators, maintenance and repair.

#### Recent trends

During the second half of the 1980s the machine tool industry enjoyed a dynamic expansion of demand caused by a fundamental renewal and expansion of the manufacturing industries' capital stock. There was an emphasis on automation of production processes, and clients were inclined to procure highly

Figure 2: Machine tools for metal working  
Value added by Member State, 1994 (1)



(1) Estimates.

Source: CECIMO, Eurostat, Vieweg

**Table 1: Machine tools for metal working**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995	1996 (2)	1997 (2)	1998 (3)
Apparent consumption	6 434	12 895	12 191	9 789	6 965	7 306	8 823	9 441	9 702	10 187
Production	8 144	13 946	13 377	11 164	8 798	9 119	10 848	11 608	11 956	12 554
Extra-EU exports	2 962	3 492	3 466	3 201	3 335	3 490	3 769	4 033	4 235	4 489
Trade balance	1 710	1 051	1 186	1 375	1 833	1 813	2 026	2 167	2 254	2 367
Employment (thousands) (4)	172.4	186.1	175.3	157.3	135.2	126.6	125.0	N/A	N/A	N/A

(1) Excluding Greece and Ireland.

(2) Vieweg estimates.

(3) Vieweg forecasts.

(4) Excluding Denmark and former East Germany.

Source: CECIMO, Vieweg

**Table 2: Machine tools for metal working**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	10.1	-14.9	-1.8	4.4
Production	6.7	-11.8	-2.0	3.2
Extra-EU exports	-1.0	-2.0	-1.4	4.1
Extra-EU imports	9.5	-10.7	0.0	11.1

Source: CECIMO, Vieweg

**Table 3: Machine tools for metal working**  
**External trade in current prices (1)**

(million ECU)	1985	1988	1989	1990	1991	1992	1993	1994	1995
Extra-EU exports	2 962	3 261	3 679	3 492	3 466	3 201	3 335	3 490	3 769.2
Extra-EU imports	1 252	1 704	2 162	2 441	2 280	1 826	1 502	1 677	1 743.6
Trade balance	1 710	1 557	1 517	1 051	1 186	1 375	1 833	1 813	2 025.6
Ratio exports / imports	2.4	1.9	1.7	1.4	1.5	1.8	2.2	2.1	2.2
Terms of trade index (2)	87.5	97.1	97.0	100.0	98.3	99.9	91.8	91.4	N/A

(1) Excluding Greece and Ireland.

(2) Nace 322: including other tools and equipment for use with machines.

Source: CECIMO, Vieweg

**Table 4: Machine tools for metal working**  
**Labour productivity, unit costs and gross operating rate**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 (1)
Labour productivity index (2)	78.2	84.3	85.0	91.1	97.3	100.0	98.3	89.2	80.6	88.8
Unit labour costs index (2)	85.4	89.6	94.4	95.3	94.7	100.0	114.1	127.2	130.3	123.8
Total unit costs index (2)	81.0	85.5	88.2	90.3	94.7	100.0	105.4	111.3	113.5	111.3
Gross operating rate (%) (3)	9.5	9.5	9.8	10.7	9.9	9.6	7.3	3.9	3.6	2.5

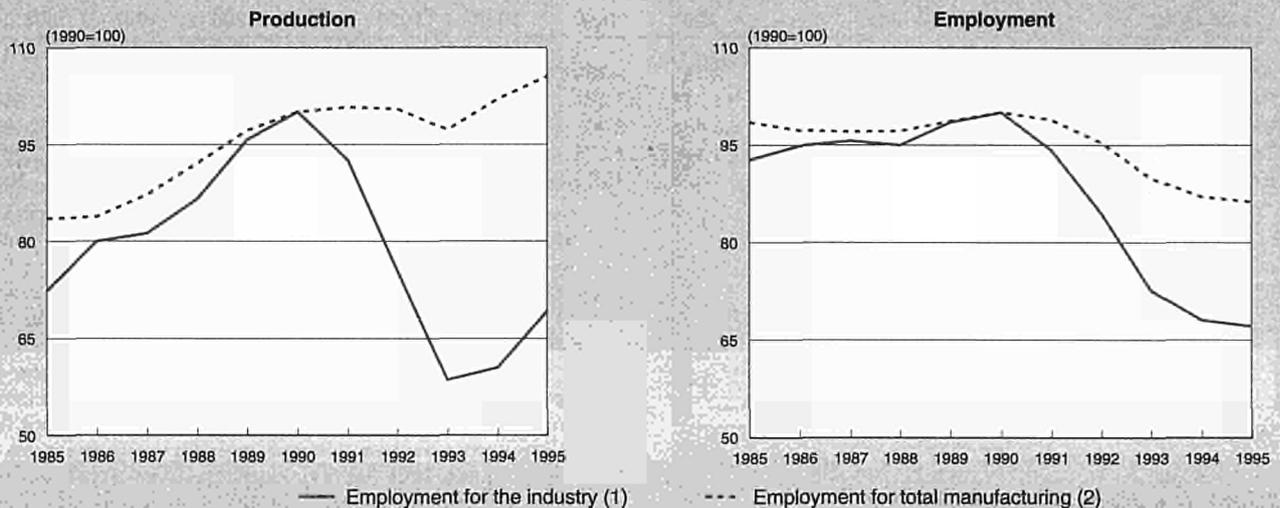
(1) Vieweg estimates.

(2) Excluding Greece and Ireland. Based on index of production in constant prices of 1985.

(3) Based on (value added at factor costs - labour costs) / production.

Source: Eurostat, Vieweg

**Figure 3: Machine tools for metal working**  
**Production and employment compared to EU total manufacturing industry**



(1) Eurostat estimates for 1995.  
 (2) Vieweg estimates for 1995.  
 Source: CECIMO, Vieweg, DEBA GEIE, Eurostat

integrated, complex systems. During the early 1990s, this widely accepted paradigm for advanced production systems lost some of its reputation. Difficulties in running these systems often reduced efficiency. In many areas the clients' demand shifted to less complex systems. These systems, made compatible by using open architecture computerised controls, mark a new tendency in factory automation.

The recession which levelled out in 1993 hit the EU manufacturing industries hard. Shrinking profits and over-capacities induced a slump in investment, and the EU machine tool suppliers suffered the most severe recession since World War II. In 1994 the European economy, preceded by the United Kingdom, recovered progressively. For most of the important EU-member states new order bookings of machine tools expanded at high double-digit rates, and this dynamic growth continued until mid-1995.

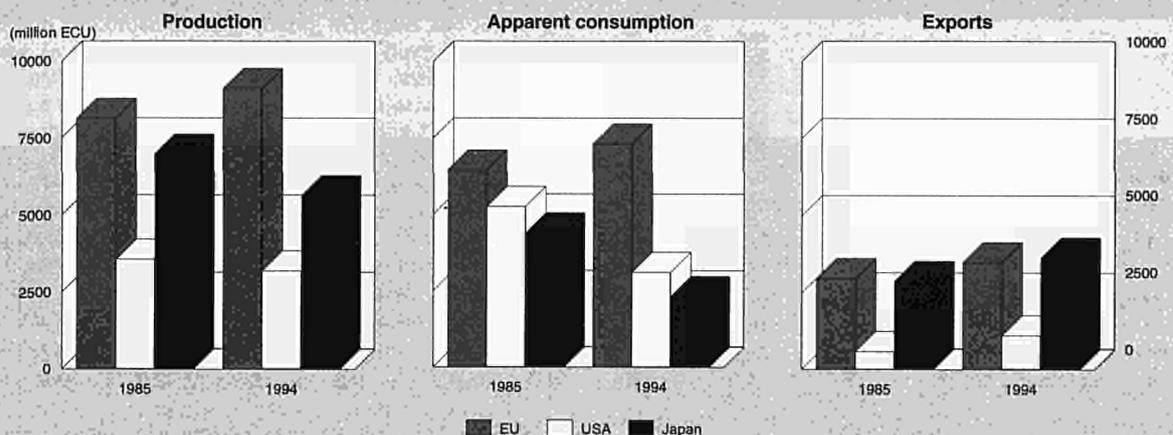
Since early 1995 the overall economic framework conditions have worsened, and the loss of cyclical momentum continued until mid-1996. The demand for capital goods was affected by this development, and in the last quarters of 1995 and in the first of 1996 new order bookings for machine tools were

below the level of the same quarter of the preceding year for some of the Member States.

The production of the EU-15 machine tool industry grew by about one-fifth in 1995 (in current prices and ECU); Spain was in the lead with output growing by one-third. The expansion of production was driven by new orders greatly exceeding production and high order backlogs. In 1996 production has caught up, and in the course of the year expansion will likely lose momentum. Nevertheless, the average annual growth rate of production is estimated to be between 5% and 10% in 1996. The economic framework conditions are expected to be good beyond 1996 and the demand for machine tools will grow in the medium-term.

The dismissal of employees in the machine tool industry levelled out in the aftermath of the recession only in 1995, in spite of strong growth in production. Currently the demand push induces companies to hire new staff, primarily blue collar workers; demand for other qualifications will takeoff only later on. The companies have become "leaner," and even under the assumption of a strong medium-term expansion the record height of employment in 1990 will likely not be regained.

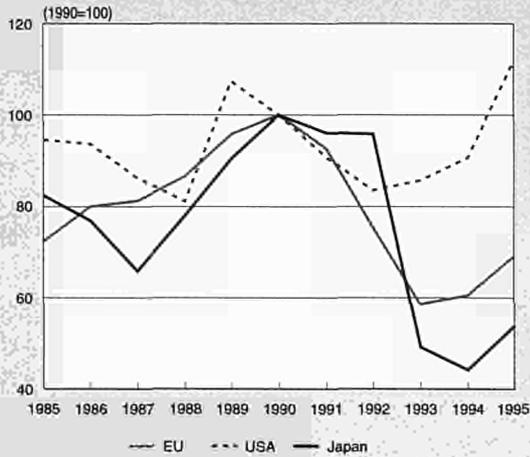
**Figure 4: Machine tools for metal working**  
**International comparison of main indicators in current prices**



Source: CECIMO, American Machinist, Vieweg



**Figure 5: Machine tools for metal working**  
International comparison of production in constant prices



1995 are Vieweg estimates.  
Source: CECIMO, American Machinist, Vieweg

### International comparison

The EU is the most important supplier of machine tools, and in 1995 the 15 Member States contributed 38% to global production. Second in this ranking is Japan with 25%, well ahead the USA with 13%. Since 1990 the Japanese and EU contribution to the world's machine tool production has been stable, while the US industry strongly gained in importance. This development is partly due to the cyclical recovery of the US manufacturing industries, whereas in the EU and Japan a recession induced a slump in demand for machine tools. One must remember, however, that the US machine tool industry suffered a severe shrinkage throughout the 1980s and up to now has not regained its former importance.

The Asian NICs have become important suppliers of machine tools. In the early 1980s Taiwan and Korea contributed less than 2% to world output and in 1995 they commanded 8%. Further growth can be expected. While the Korean machine tool manufacturers are strongly dependent on domestic demand, the Taiwanese manufacturers have a strong position in world markets and their share on international trade is close to 10%.

The EU-15 is the biggest single machine tool market. Foreign manufacturers face no major trade barriers, and they command a share of roughly one-fifth. Nevertheless, the EU-15 balance on international trade shows a permanent high surplus for machine tools. With respect to the size of the internal market, the export quota of 38% is noteworthy and indicates the international competitiveness of the industry.

The Japanese machine tool industry enjoys the advantage of a big domestic market, in which foreign suppliers have only small shares. Total imports have just gained 10% of apparent consumption and comprise above all special machines not manufactured in Japan. But Japanese manufacturers are strongly dependent on foreign markets; during the mid-1980s 40% of production was sold abroad. In the course of the recession in the early 1990s, partly due to the slump of domestic demand, the export quota reached a record height of 64%.

The Japanese suppliers have gained a dominant role in international trade. In 1980 they commanded a share of 14% on international trade only, but they succeeded in expanding their share continuously to around 30% of the industrialised countries' total exports. Thus, Japan has reached about the same share of world trade as the EU-15. This development has been accompanied by heavy foreign direct investment in Asia, the USA and Europe to launch transplants.

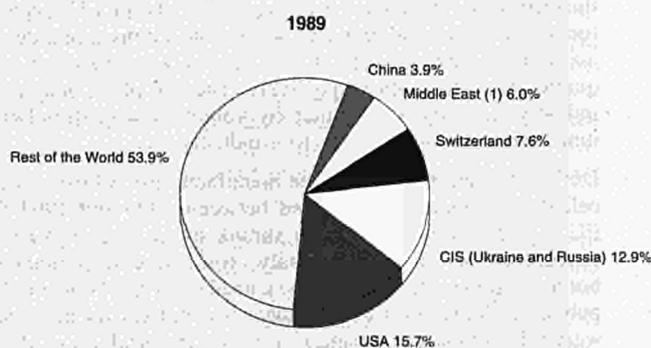
The US machine tool industry is strongly dependent on its domestic market. However, one-third of production is sold abroad, although between 1985 and 1994 the US suppliers expanded their exports by an average annual rate of 7%. Major stimuli for this development have been the creation of the North American Free Trade Area (NAFTA) and direct foreign investment, in particular of the US automotive industry. Moreover, Japanese machine tool manufacturers also use their US transplants for exports into third countries. In addition, the improved price competitiveness, caused by the depreciation of the USD, stimulated exports.

### Foreign trade

The EU machine tool industry has long been a dominant player in world trade. In spite of emerging new competitors, such as the Japanese during the 1970s and 1980s and the Asian NICs during the 1980s and 1990s, the EU-15 has successfully maintained its share of about 30% of international trade.

The dissolution of the CMEA and the breakdown of the East European economies induced a slump in demand from a region that was of major importance for the EU machine tool industry. The crisis of the CIS economies has not yet come to a standstill

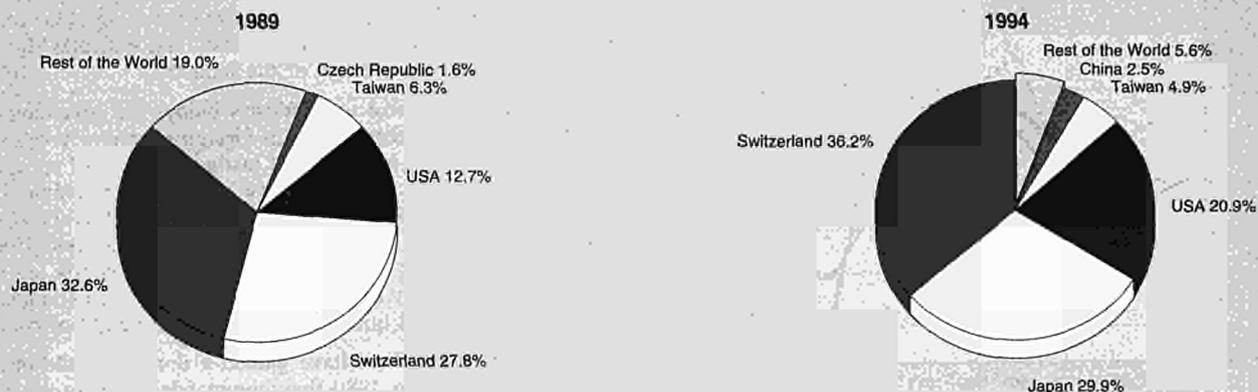
**Figure 6: Machine tools for metal working**  
Destination of EU exports



(1) Lebanon, Syria, Iran, Iraq, Israel, Saudi Arabia, Kuwait, United Arab Emirates.  
(2) Thailand, Vietnam, Indonesia, Malaysia, Singapore, Philippines, Brunei.  
Source: Cecimo, Vieweg



**Figure 7: Machine tools for metal working**  
Origin of EU imports



Source: Cecimo, Vieweg

and the medium-term perspective remains poor. In contrast, the restructuring of the Central European economies has induced a growing demand for machine tools; nonetheless, the losses from the CIS have not yet been offset.

The industrialising Far Eastern countries have been heavily investing in manufacturing industries, and the demand for machine tools is growing strongly. The EU suppliers participated in this development and the share of EU deliveries to Far Eastern markets as a share of total EU machine tool exports increased from 13% in 1989 to 27% in 1994. Above all, this expansion has been driven by the People's Republic of China, which has become the most important single client country beside the USA.

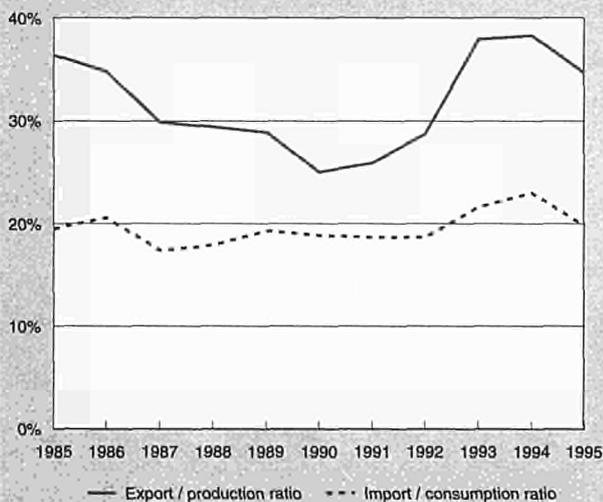
In spite of the growing importance of the Far Eastern markets, the EU machine tool industry has not yet increased its market share. The average yearly growth rate of exports to this region of about 10% in constant prices is approximately the same as the market growth rate. It is a challenge for EU companies to improve their access to Asian markets and to benefit from the growth potential, especially in markets other than China.

The USA experienced a cyclical upswing during the first half of the 1990s. In the early phase of the recovery the EU machine tool industry did not benefit from the growth in demand. It was only in 1994 that EU companies enjoyed growing exports in this market, a trend which continued in 1995.

EU-15 machine tool exports to third countries grew at an average yearly rate of 1.8% between 1985 and 1994; simultaneously imports grew at 3.3% per year. This development indicates that the EU position in international trade has been worsening, although indicators for international performance, such as the trade balance and the ratio of exports to imports, have not changed much.

Swiss firms are the most important foreign suppliers of machine tools with an EU-market share of about 7% in 1994. The Japanese machine tool manufacturers, who were in the lead in 1989, have lost some importance as indicated by tool imports. However, Japanese companies deliver machines into the EU not only from their domestic country, but also from transplants in other Asian countries and the USA (which has gained in its share of EU imports). Additionally, Japanese firms operate transplants within the EU.

**Figure 8: Machine tools for metal working**  
Trade intensities



Source: Cecimo, Vieweg

## MARKET FORCES

### Demand

Most clients of machine tool firms are manufacturers of the capital goods themselves and related subcontractors specialised on metal working. Mechanical engineering firms are in the lead and command a share of one-third of total EU-machine tool demand. Second in this ranking is the automotive industry and third the electrical products industry with shares of one-quarter and one-tenth respectively. The aeroplane and space industry is of less importance by volume, but is stimulating innovations in the machine tool industry.

During the latest recession the manufacturing industries cancelled investment projects, and between 1990 and 1993 the EU market for machine tools shrank by more than 40% in current prices. Simultaneously, some overseas markets boomed, among them the USA, Canada and the People's Republic of China. This development was not sufficient to outweigh the slump of demand in Europe: the production of the EU machine tool industry shrank by 37%.

In 1994 a macroeconomic recovery took place, and a booming demand for machine tools induced a dynamic expansion of production in 1995. Early in the upswing during 1995 the economic development became more moderate and dampened

**Table 5: Machine tools for metal working**  
**Average size of enterprise by country, 1994**

(units)	Number of enterprises	Number of employees	Employees per enterprise
EUR15 (1)	1 247	126 637	101.6
Belgique/België	15	1 850	123.3
Danmark	15	N/A	N/A
Deutschland	320	66 000	206.3
España	104	5 360	51.5
France	130	5 800	44.6
Italia	420	28 200	67.1
Nederland	18	800	44.4
Österreich	35	2 533	72.4
Portugal	24	950	39.6
Sverige	30	1 800	60.0
United Kingdom	125	11 800	94.4

(1) Vieweg estimates.  
 Source: CECIMO, Vieweg

the growth of demand for machine tools, although EU-market volume is far below the record height of 1990.

Within this economic environment most manufacturing companies have become more cautious in their investment plans. Presumably the investment projects of the automotive industry are less affected by the current situation than those of other industries (the automotive industry's strategic investment in European production networks are at least partly autonomous of short-term developments).

### Supply and competition

The analysis of the market environment requires a distinction between three segments. The first segment concerns the volume businesses and comprises standardised machinery, which has high shares in turning, milling, drilling and machining centres. The second segment concerns high-technology businesses and comprises machines for sophisticated processes, such as finishing, gear production and car body presses. This segment's market access is hampered by key technologies. The third segment concerns engineering businesses and comprises the supply of customised machinery as well as production systems designed to client requirements.

The environment in most markets for standardised machinery has evolved to volume businesses, and global players are of major importance. Japanese companies have taken the lead, while European companies face strategic disadvantages: their production capacities are too low to enjoy economies of scale similar to their Japanese competitors.

During the latest recession the market for standardised machinery suffered a greater set back than most other markets. The slump in demand not only affected European suppliers; Japanese production fell even more. However, the effects on the structure of the supply side were more severe in Europe, and some strategic investments were withdrawn. In contrast, the predominant Japanese suppliers could maintain their position, and lately an important expansion of capacities in European subsidiaries has been announced. In addition, new suppliers from Taiwan and Korea have increased international competition.

In the high-technology business environment European companies have a good position in international competition, and will likely maintain their technological lead. Usually, firms specialise in specific techniques and domestic market size is compared with markets for small series machines. But these companies often command a noteworthy share of the global market and thus even enjoy some economies of scale.

Under the environment of the engineering businesses a close contact between the supplying firm and its clients is necessary

for the co-ordination of a project, especially in the phases of design and installation. In this market segment competition was traditionally regionally restricted and global competition was of minor importance. During past years some changes have taken place. Among them is the application of advanced information and communication technologies, which improved the opportunities of remote interaction between a supplier's engineers and the client. Additionally, direct access to machines via electronic media for diagnosis, supervision and repair purposes provides new opportunities for globalisation.

In the market environment of high-technology and engineering businesses the European machine tool industry enjoys a comparative advantage against suppliers from Japan and the Far East industrialising countries such as Korea and Taiwan. In both of these market segments price competition is generally less tough than in the volume market, but exceptions can be found for the suppliers of the automotive sector. Nevertheless, the EU firms must take into account that new competitors will try to penetrate the high-technology and engineering markets if sufficient profits can be expected.

The US machine tool industry has gained in international competitiveness, partly due to the depreciation of the USD, but also by gaining technological competence. The latter development has been stimulated by former R&D for defence projects that has become available for market-oriented innovations. Moreover, the reduction of R&D for the defence industry has set free capacities for other applications.

During the 1980s the competition in the machine tool market was characterised by the Japanese challenge. During the 1990s a competition among all Triad members is emerging to take the leading edge in advanced production technologies. The challenge for the European industry in this environment is to strengthen efforts in the area of new technologies, above all the application and machining of new materials, sensors, highly integrated electronic components, high speed processing and micro machining.

### Production process

During the 1980s, the machine tool industry invested heavily in computer aided design (CAD), production planning systems (PPS) and advanced production technologies. Multi-purpose machines, flexible manufacturing systems (FMS) and flexible manufacturing cells (FMC) were installed. These initiatives were directed towards more efficient innovation and manufacturing. Moreover, they served as pilot projects to convince clients of the advantages of automated systems.

The advantages of such automated production technology come into effect only if the utilisation of capacities is high. Especially in the machine tool industry, with phases of extreme

under-utilisation of capacities, a flexible adaptation of running hours is an indispensable prerequisite. But in certain Member States relative rigidities in working practices threaten the efficiency of such automated systems.

Usually machine tool manufacturers procure drives, controls and other electrical as well as electronic components from companies specialising in this area. European machine tool manufacturers prefer to combine different components to build new types of machines, and up to now the mutual adaptation has been time consuming. Currently more and more electrical and electronic components are supplied that are designed as modules. Their compatibility renders possible an easy combination of different units, and the introduction of a so-called open architecture for CNC systems should ease the adaptation of different software packages. These developments provide the European machine tool industry with a cost reduction potential in an area in which they experienced a major disadvantage in international competition, in particular with Japanese suppliers.

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## INDUSTRY STRUCTURE

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### Companies

In 1994 the EU-15 machine tool industry consisted of 1 247 predominantly medium-sized companies. The top three enterprises account for about 15% of EU production, while in Japan the biggest three firms command 25% of Japanese production and the top three US machine tool enterprises account for over 25% of US production.

The average EU-15 machine tool company commands a turnover of 7.3 million ECU and has 102 employees. The industry's structure differs widely between the member states: the average German firm employs 206, whereas the average Italian firm, which works with more subcontracting operations, employs only 67. Firms of the Netherlands, Portugal and Sweden are even smaller.

### Strategies

The recession of 1993 provoked a major reshuffling of the industry, after some important suppliers had been dismantled. Mergers and acquisitions took place, but often a strategic re-orientation of companies was hampered by poor profits and financial institutions which hesitated to grant credits.

Due to such frictions, some cross-border investments were left undone and the evolution towards a homogenous pan-European industry slowed down. Companies, in particular those with an interest in volume markets, have difficulties in financing investments adequate to meet the challenges of foreign global players.

An economic policy framework is of importance for the international competitiveness of the EU machine tool industry. The reduction of non-wage labour costs, the co-ordination of R&D, the trade policy and the qualification and flexibility of the labour force are of priority. With respect to these issues, the Commission adopted a communication on the competitiveness of the machinery construction industry in October 1994. It suggests a coherent package of horizontal industrial policy measures to be taken by the industry, Member States and the EU.

Generally speaking, small machine tool companies have problems gaining access to EU schemes. This is particularly true for companies with more than 250 and less than 500 employees. These firms are not classified as "small" by the Commission, and thus have to meet all requirements in application forms for R&D schemes that were designed for large companies.

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## REGIONAL DISTRIBUTION

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The German and Italian machine tool manufacturers command about 70% of EU-15 production. Since the mid-1980s German firms experienced slight losses, while Italian ones gained in share. Next in this ranking are the United Kingdom, France and Spain with 7%, 8% and 4% respectively. Spanish firms have caught up, and currently command 4% of the EU value added. Together, the new member states, Austria, Sweden and Finland, contribute about 5% to EU-15 machine tool output.

German production of machine tools is concentrated in Baden-Württemberg and in Nordrheinwestfalen. The unified Germany has another important region, Saxony, situated in the south of the new Länder. In Italy most of the industry is located in the north, in Piemonte, Lombardia, EmiliaRomagna and Veneto. French suppliers are concentrated around the Ilede-France and RhôneAlpes. In the United Kingdom the machine tool industry is located in the traditional industrialised region of the Midlands, in Yorkshire/Humberside and in the south-east. Spanish companies are centred in Euskadi, Catalunya and Madrid. In Portugal the industry is concentrated around Oporto. Denmark, Belgium and the Netherlands do not have particular areas of concentration.

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## ENVIRONMENT

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The machine tool industry's production consists predominantly of mechanical machining, most of the preliminary products are of metal, and consumption of energy is low in comparison with basic material production. Thus, emissions from machine tool plants are of minor importance. The major threat for the environment and the labour force lies in the use of cooling and lubricating liquids.

Currently new kinds of cooling liquids are being developed, posing a reduced threat to the environment and the health of employees. Also, the application of improved dressing equipment has expanded the life span of liquids and reduced the amount of liquids requiring disposal. Moreover, the development of dry manufacturing processes has helped to save cooling and lubricating liquids, not only within the machine tool industry, but in client industries as well.

Hardening and galvanising are necessary to increase the durability and rigidity of materials and special surfaces such as slides. These processes pose some threat to the environment, in so far as chemical procedures are utilised. This refinement of parts and components for machine tools is usually not carried out within the industry but by specialised subcontractors that have to meet environment regulations.

Increasingly advanced machine tools are equipped with electronic devices, and new materials such as composites and compounds are applied. Therefore, advanced machine tools are not as easy to scrap as their predecessors. Companies are aware of this problem and are beginning to comply with the requirement to develop machines which are adequately designed for the recycling of parts and components.

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## REGULATIONS

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The Machine Directive allows machine tools which comply with essential safety requirements, and whose compliance has been attested in accordance with set procedures, to circulate freely within the European Economic Area. Although intra-EU trade has become easier, there remain some hindrances to free trade. Even the interpretation of harmonised standards differs between Member States and is a concern to clients. Thus, additional national certification is sometimes required.

Some groups of machine tools are so-called dual-use machines (i.e. they could be used for military purposes). They require special permission for export to third countries. In mid-1995

**Table 6: Machine tools for metal working  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.5	0.5
Danmark	0.6	0.3
Deutschland	1.9	1.7
España	0.6	0.6
France	0.4	0.4
Italia	1.3	1.6
Nederland	0.2	0.2
Österreich	0.8	0.7
Portugal	0.2	0.2
Suomi/Finland	0.1	0.4
Sverige	1.0	0.4
United Kingdom	0.6	0.6

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: CECIMO, Eurostat, Vieweg

a harmonised approval procedure on exports of dual-use machines came into force and replaced the former national regulations. This provides more transparency for EU machine tool companies and simultaneously liberalises intra-EU trade.

Directives, such as the electromagnetic compatibility directive and agreements on interfaces between information and communication facilities set standards that ease the combination of products and components. These regulations are a prerequisite for setting up automated manufacturing processes and for the free movement of goods between different EU Member States.

## OUTLOOK

The West European economies have enjoyed a broad cyclical recovery that nearly came to a standstill in early 1996. A comparison with preceding business cycles shows that an interim slowdown in a medium-term upswing is a well known phenomenon. Thus it is expected that companies will regain confidence in the future and the development and investment climate will improve once more.

Some threats could endanger the expected acceleration of the overall economic growth in the course of 1996, such as disturbances in the financial markets and exchange rate alterations. Of most importance for bright economic prospects is the introduction of the European currency.

In this environment it can be expected that the demand for machine tools will regain momentum. In spite of these perspectives companies have to develop long-term strategies that enable them to retain their competitiveness in an extremely volatile market environment. As major efforts have already been undertaken by companies to reduce their production costs during the latest recession, additional reduction of the break-even point is necessary. This also implies a change of the fiscal and the social policy of the EU and the Member States towards small- and medium-sized enterprises.

Written by: Dr. HansGünther Vieweg

The industry is represented at EU level by: Comité Européen de Coopération des Industries de la MachineOutil (CECIMO). Address: 66 Avenue Louise, B1050 Brussels, Belgium; Tel.: (32 2) 502 7090; fax: (32 2) 502 6082.

# Food, drink and tobacco processing machinery

## NACE (Revision 1) 29.53

*In 1994, the recession in some major markets, which has adversely influenced demand for food processing machinery, came to an end. This development, however, has not resulted in a stronger demand for machinery and equipment in 1995. The industry must still cope with the structural problem of maturing food markets in the Western world and with changing demand patterns as a result of changing consumer preferences. Due to the increasing competition among the manufacturers of food processing equipment in combination with the concentration process in the food processing market, a further downward pressure on prices is expected. In response, EU manufacturers are increasingly focusing on extra-EU exports and on research and development in order to comply with the demand for more sophisticated and flexible machinery. These developments together with the expected upswing of the trade cycle is expected to favourably encourage demand for food, drink and tobacco machinery, although demand growth is envisaged to be moderate both in the short and in the medium term.*

### INDUSTRY PROFILE

#### Description of the sector

The food, drink and tobacco processing sector is a specialised sector within the machinery industry. In the NACE 70 classification NACE 324 encompassed the manufacture of machinery for food, chemical and related industries. At a 5-digit level food processing formed a separate subsector (NACE 324.11). In the new NACE classification the industry is ranked under the category 'other special purpose machinery' (NACE 29.5) in Class 29.53.

Demand for, and consequently the supply of food processing machinery is highly fragmented. The market of food processing machinery includes: flour milling equipment, noodle making machines, baking machines, confectionery machines, fermenting machines, dairy product processing machines, meat processing machines, seafood processing machines, rice and barley polishing machines, fruit and vegetable processing machinery, and other machinery. Within the EU, meat processing machinery, bakery machinery and fruit and vegetable processing machinery are especially important segments of the industry.

The production of food, drink and tobacco processing machinery accounts for an estimated 5-6% of total machinery production. Food processing machinery represents the greater part of the production of this sector. Germany is the largest producer of food, drink and tobacco processing machinery in the EU with a production value of 3 365 million ECU in 1994. Its share lies between 40% to 45% of the total EU production of this machinery, estimated at ECU 7-8 billion. With a production value of 1.5 billion ECU, Italy is the second largest manufacturer followed by France and the UK.

#### Recent trends

Overall production of food processing machinery in the EU showed declining trends during the recession in the early 1990s, but in 1994, there were signs of recovery. However production of food processing machinery grew differently among the various Member States. Germany's production in current prices rose continuously over the period 1988-1992, at an average annual growth rate of nearly 10%. Since 1993,

due to the economic recession, German production recorded a decline of 2% and a further drop of 1% in 1994 and 1995. Thus the average annual growth rate over the period 1988-1995 was only 4.8%. The UK suffered from a weak demand in the early 1990s, but in 1994 and 1995 UK production picked up again. In contrast, in Italy, production grew throughout the early 1990s, but declined in 1993 and 1995 mainly because of the depreciation of the Italian Lira against the ECU. In ECU, Italian production grew with an average of 2.3% per annum from 1990 to 1995. Since 1992, France's production grew at an average annual growth rate of 4.2%.

Almost all EU companies have been affected by the recession and the stagnating growth rates. Due to the maturing demand within the EU, exports have become increasingly important for EU manufacturers of food processing machinery. Consequently the EU trade surplus has increased from ECU 2.1 billion in 1990 to 3.1 billion ECU in 1994. While extra-EU exports increased by an average annual growth of 8.8% , extra-EU imports increased by only 4.5% during the 1990-1994 period.

Food consumption patterns are changing in the EU with the ready-to-eat food, pre-packaged meals and frozen food sectors increasing in importance. As a consequence, production of food is becoming increasingly centralised, giving rise to more capital intensive production methods. At the same time demand for ready-to-eat food has become increasingly diverse, thereby raising demand for more efficient and flexible machinery.

#### International comparison

The world's food-processing machinery industry is largely concentrated in the developed countries. Major producers like the EU, the USA and Japan apply different definitions of the industry. Therefore, comparisons cannot always be made. US manufacturers of machinery for the industry are among the world's most competitive. US production rose by 23% between 1991 and 1995 to reach ECU 2 billion, reflecting increased demand from US and foreign food processors. Due to renewed economic growth in Europe and the relative depreciation of the US dollar, US exports rose by more than 38% during the 1991-1995 period to 720 million ECU or 36% of total US production. At the same time, the US is the world's largest importer of food processing machinery, with imports growing by 25% since 1991 to reach a value of 450 million ECU in 1995. The widening range of foods sold by US companies has led to higher machine imports from Europe, particularly for bakery, pasta and confectionery equipment.

Both the USA and the EU manufacture a wide variety of food-processing machinery. However, due to different food production and consumption patterns, the output structure of their food processing machinery is not identical, although there are similarities. The USA is particularly strong in cereal-based machinery and in machinery for processing new types of convenience food, whereas in Europe, dairy processing machinery is important. Meat-processing machinery is significant in both the EU and the USA.

The Japanese industry is highly oriented on the large domestic market and the considerable requirements for after-sales service. Furthermore, the Japanese manufacturers cannot cope with the highly fragmented character of demand in food processing. When the industrial trend moves towards more standardised machinery and equipment, Japan could become a more serious threat to the international market.

#### Foreign trade

The EU is a net exporter of food processing machinery. Over the 1988-1994 period, the trade surplus more than doubled, and the export to import ratio increased from 4.4 to 5.8, due to growth in extra-EU exports.

In 1994, the main destinations for the extra-EU exports were the EFTA countries, the United States and China. Although

**Table 1: Food, drink and tobacco processing machinery  
Production in current prices by Member State**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 (1)	1995 (1)
Belgique/België	73	67	81	88	113	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland (2)	1 938	2 102	2 249	2 385	2 569	2 847	3 255	3 481	3 405	3 365	3 330
France (1)	1 170	1 230	1 278	N/A	N/A	N/A	N/A	625	692	701	708
Italia	N/A	N/A	N/A	N/A	1 162	1 297	1 280	1 630	1 389	1 473	1 453
Nederland	486	536	601	601	634	671	739	796	N/A	N/A	N/A
United Kingdom	539	487	443	519	547	501	484	530	450	455	465

(1) NEI estimates.

(2) Including former East Germany from 1988 onwards.

Source: National Statistics, ANIMA, NEI

**Table 2: Food, drink and tobacco processing machinery  
External trade in current prices**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	1 968	2 268	2 662	2 835	2 845	3 537	3 736
Extra-EU imports	452	512	544	623	611	630	649
Trade balance	1 516	1 756	2 118	2 212	2 235	2 908	3 087
Ratio exports / imports	4.4	4.4	4.9	4.5	4.7	5.6	5.8

Source: Eurostat

these countries recorded growing imports from the EU, their shares of total extra-EU exports decreased. In 1994 the EFTA countries, accounted for 11.4% of total extra-EU exports compared with a share of 17.8% in 1989. Extra-EU exports to China declined from 6.9% in 1989 to 6.7% in 1994 and the US share dropped from 12.1% in 1989 to 10.2% in 1994. The reason for these declining shares of extra-EU exports to the EFTA countries, China and the USA, is the strong rise of extra-EU exports to East Europe and the countries of the former Soviet Union. Poland, Russia, Hungary and the Czech Republic together constituted 11.8% of total extra-EU exports in 1994. The EFTA countries and the United States are the major non EU suppliers of food processing machinery. With the entry of Austria, Finland and Sweden, the EU has lost some important extra-EU export destinations, and this will become evident in the trade figures for 1995. Extra-EU imports especially will decline as the former EFTA-countries used to be major suppliers.

## MARKET FORCES

### Demand

Market demand differs among the EU Member States. In the UK, food processing and packaging is the largest sector of the market, accounting for 35% of value sales, whilst the sector for drinks, pharmaceuticals, tobacco and coffee is by far the largest market in Germany, accounting for 50% of total sales in 1995. In France, general food has become the largest sector of the market, accounting for 35% of the total in 1995.

On the one hand, the market for food, drinks and tobacco consumption is maturing in the Western industrialised countries; on the other hand the food processors have to cope with fast and frequently changing food consumption patterns. The trend towards smaller households and the increasing number of women joining the labour force are giving rise to more

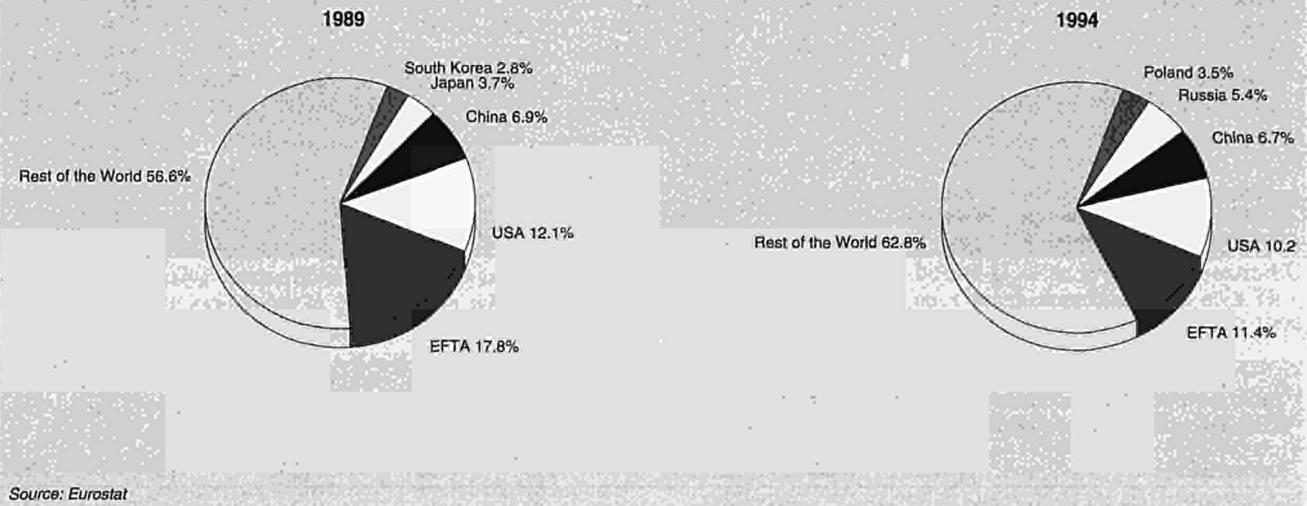
demand for reliable, non-perishable and convenient food products. Diet and health conscious consumers are reducing their intake of fats, salt, sugar, and high cholesterol foods, while still demanding flavourful, wholesome and appealing food along with greater convenience and variety.

Investing in up-to-date production lines is a prerequisite to keep pace with fast changing consumption patterns and to cope with intensifying competition. New technologies provide opportunities for cost reduction, larger-scale production, a higher degree of flexibility and the development of new products. Only through sophisticated production processes, can the food processing industry maintain or even increase shares in core areas, which are considered to yield high profits and long-term growth opportunities. This will result in a continuous search for new products and new processing techniques, where flexibility seems to be the key-word.

Demand from East Europe and the Far East is rising. The main problem for further developments remains the lack of capital in these regions. Because of the primary characteristics of food, the food industry and the food machinery manufacturers are expected to benefit earlier, from the industrial and political restructuring processes in these countries, as compared with other industries. Furthermore, the capital problem may be solved by large food processing multinationals entering these countries.

Intensified competition and changing consumer demand as well as the creation of the Internal Market encouraged the process of concentration in most downstream industrial food segments. A large share of food processing is currently taking place in larger corporations (e.g. Unilever and Nestle). These companies dominate the development of new processes and new products. As a result they have become knowledgeable buyers of processing machinery and equipment. Through their international network, they can obtain relevant market information, which puts them in a favourable position for nego-

**Figure 1: Food, drink and tobacco processing machinery  
Destination of EU exports**



tiating prices and other terms when buying processing equipment.

### Supply and competition

The applications of food processing machinery are largely limited to specific segments of the food processing industry. Supply is highly fragmented, with manufacturers operating and specialising in one or more market segment, which can differ considerably in size. For instance, the manufacture of meat processing machinery, bakery machinery and processing machinery for fruits and vegetables are relatively large and important market segments with very specific applications. Many small companies specialise in one field, as many different machines are produced for very specific applications. Many of the small manufacturers will undoubtedly disappear in the coming years unless they can manage to establish themselves in a niche market.

Machinery manufacturers have coped with the need of food processors for modern, flexible equipment by introducing more capital-intensive and research-intensive production machinery. New technologies are providing new opportunities for cost reductions, larger-scale production, a higher degree of flexibility and the development of new products.

The growing concentration in the food processing sector urged the food processing machinery and equipment manufacturers to concentrate too. This gave rise to the emergence of large and international machinery producers. Internationalisation encouraged the growth of technology transfer necessary for the large producers to carry out their own research and take out patents, which can be commercialised.

Most of the machinery is sold direct to end users by manufacturers. Small companies are more likely to use the services of an agent than the larger ones which have their own distribution network. As the market becomes more sophisticated, direct sales are becoming more prevalent at the expense of the distribution by agents.

### Production process

The food processing industry is developing towards less, but larger production centres with the ability to produce a greater variety of products. Concentration of production is developing very strongly in the Western industrialised countries and some Asian countries in particular. Consequently, production and process systems have to meet more stringent requirements

for flexibility and efficiency. These requirements have stimulated the widespread application of CAD, CAM and flexible manufacturing techniques within the industry.

The changing food consumption patterns are driving increased machinery demand in such areas as deep freezing and refrigeration equipment, sanitation and clean processing equipment. These and other advanced processes and complicated production lines also require more sophisticated CAD/CAM systems to manage them. Heavy competition in the food industry makes image and product quality a must; therefore, machinery designed to detect flaws in the product also have a growing place in the market.

To face the demand for a wider diversity of products and greater preparation convenience, while at the same maintaining good taste, food processors and equipment suppliers are developing joint research and developments programs to speed up the development, testing and introduction of new production equipment in the industry.

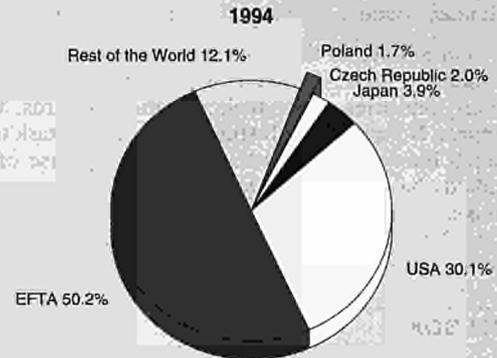
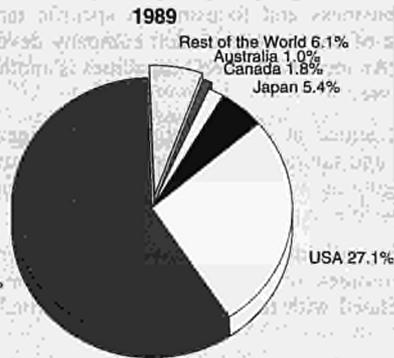
## INDUSTRY STRUCTURE

### Companies

Swedish Tetra-Laval is the largest global manufacturer of food machinery processing industry. Other large operators are the German GEA and APV which is an English manufacturer of food processing machinery. In spite of the stagnating market growth Tetra-Laval and GEA could improve their turnover during the recession of the early 1990s. The success of GEA is mainly due to the success of its food and processing engineering division. The company is ranked 15th out of the 20 largest engineering companies in Europe. GEA's turnover amounted to 1.7 billion ECU in 1994, representing a 22% increase on the previous year. Over 40% of the company's turnover is constituted by the food and process engineering division.

Tetra-Laval was able to increase turnover as a result of the merger between the Swedish Tetra Pak and the French Alfa Laval, on January 1, 1993. The company's turnover reached around 7 billion ECU in that year. Tetra Laval consists of 4 companies: Tetra Pak, accounting for 68% of sales; Tetra Laval Food, for 6.4%; Alfa Laval for 18% and Alfa Laval Agri for 7.6%. Tetra Pak, with 15 700 employees is the biggest company of the group and specialises in equipment for liquid food

**Figure 2: Food, drink and tobacco processing machinery  
Origin of EU imports**



Source: Eurostat

processing. The activities of Tetra Laval Food (2 200 employees) concentrate on solid food processing equipment. Alfa Laval has 11 200 employees and specialises in manufacturing equipment for food, wood, metals and energy processing. Alfa Laval Agri employs 3 300 employees and mainly produces dairy equipment.

Korber is a German company which was established in 1946. The principal activities are the creation of food production plants and machinery and packaging machinery. Approximately 90% of sales stem from exports. Korber employs 8 066 people, and holds subsidiaries in Europe and the USA. Bongard - owned by Strafor Facom - is the European leader in the baking equipment market and covers the whole of the bread making process. Other important German manufacturers of food processing machinery are Panasonic Deutschland, Klockner, MTI and Berry Wehmiller.

The English company APV has gone through a difficult period where it has had to rationalise its production drastically and divest non-core business. APV's turnover decreased by 3% since 1993 to a total of 1 120 million ECU in 1994. In order to boost its sales the company is aiming to target new geographical markets, notably in the Far East.

### Strategies

The EU food processing machinery sector is dominated by small and medium sized firms, which specialise in one or more subsectors of the industry. World-wide differences in demand patterns are underlying the strong fragmentation of the sector. However, a trend towards more concentration and internationalisation can be observed. Within each segment one or more relatively large companies are operative. Companies with over 500 employees are especially active on a global scale.

Until the beginning of the 1990s the process of concentration implied horizontal integration. However, the merger of two Swedish firms Tetra Pak (beverage packaging group) and Alfa-Laval (a mechanical engineering firm, and a major producer of dairy and process equipment for the food industry) in 1991, set a trend to vertical integration. The trend towards vertical integration of specialised medium-sized companies enables them to offer tailor-made machinery and equipment to meet customer needs.

Vertical integration increases the convenience for customers who can purchase packaging and processing machinery at the same location. However, horizontally integrated firms are better equipped to cope with future challenges in the largely

untapped markets of less developed countries and in Eastern European countries.

Manufacturers of food machinery and equipment have increasingly followed a dual policy. Firstly, in order to cope with the changing demand pattern they have focused their research and development efforts on more efficient and flexible machinery, which resulted in the application of robots and industrial automation systems. Secondly, they intensified their export activities

Machines are adapted to the specific needs of the food processing companies

Technical innovation, quality, after sales service and prices are the primary factors influencing the customers in their food processing machinery purchases

Providing an efficient after sales service is very important, therefore is essential to have a physical presence in the market

### ENVIRONMENT

The growing importance of ecological issues is especially reflected in measures against packaging waste. For the manufacture of food processing machinery, however, no specific consequences can be recognised. The more stringent EU regulations on sanitary conditions during the processing of foods and drinks and new hygiene and safety standards enhance the technical requirements for the applied machinery. In general, however, the resulting effects for the manufacturers of food processing machinery are expected to be quite modest.

The increasing number of measures against smoking has already discouraged and will further depress the use of tobacco. A possible prohibition of promotional activities by the tobacco industry on EU level, will undoubtedly affect the number of smokers. As a consequence, the demand for tobacco processing machinery by tobacco processors is likely to decline.

### REGULATIONS

Like for other machinery industries the Machinery Directive is relevant to the food processing sector. This Directive has come into force on January 1, 1995. This Directive sets out safety requirements for all machinery, and hygiene requirements for machinery used to make or pack food. Compliance with the standards set in the Machinery Directive entitles manufacturers to carry the so-called CE mark (Conformité Européenne). Currently Member States apply different tech-

nical and quality standards with respect to safety and hygiene, implying an obstacle to free intra-EU trade. Hence the commercial value of the CE mark is that it will bring about free trade among the Member States. Once carrying the CE mark, a product is entitled to enter the market of any Member State; individual countries cannot refuse the product to their market.

The central issue of the new regulation - self-certification by the industry itself - will give the final responsibility to the various industries to set their specific standards. CEN, the European Normalisation Institute, has the final task to provide detailed European standards. Control on the use of the new standards has been given to the national governments. The European industry would like to see the CEN standards adopted by the International Standards Organisation (ISO) in order to avoid unfair competition on foreign non-EU markets.

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## OUTLOOK

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In 1994, the recession in some major markets, which has adversely influenced demand for food processing machinery, has come to an end. This development has not resulted in a stronger demand for machinery and equipment in 1995. The industry is still coping with the structural problem of maturing food markets in the Western world and with changing demand patterns as a result of changing consumer preferences. The principal reasons behind new equipment purchases in the coming years will include: increasing productivity, producing a new items for a product line, replacing obsolete equipment, and meeting new hygiene or safety standards. Due to the increasing competition among the manufacturers of food processing equipment in combination with the concentration process in the food processing market, a further downward pressure on prices is expected

In response, EU manufacturers are increasingly focusing on extra-EU exports and on research and development in order to comply with the demand for more sophisticated and flexible machinery. These developments together with the expected upswing of the trade cycle is expected to favourably encourage demand for food, drink and tobacco machinery, although demand growth is envisaged to be moderate both in the short and in the medium term.

With the modest growth rate in the market only the very best companies in terms of technology and price will survive until the end of the decade. These companies will, increasingly depend on exports. In order to survive on the international market, rationalising capacity, improving efficiency, divesting non-core business and focusing on specific target markets will be one of the most important company developments in the future. An increase of R&D capacities is another challenge for the future.

Equipment aimed at deep freezing and refrigeration, clean processing and sanitation, fruit and vegetable cutting, washing and packaging as well as computer controlled machinery are area of possible expansion.

Forecasts for individual sectors have to be considered carefully, because changes in demand and production outputs are strongly related with the different habits of final consumers.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: Committee of European manufacturers of food industry (COCEMA). Address: c/o ANIMA, Via Battistotti Sassi 11, I-20133 Milano; tel: (39 2) 73 9711; fax: (39 2) 73 97 316; and

European Bakery Equipments Manufacturers Association (EBEMA). Address: 13, rue St. Lazare, F-75009 Paris; tel: (33 1) 42 80 44 41; fax: (33 1) 42 85 29 00

# Textile machinery

## NACE (Revision 1) 29.54

After another decline in 1993, EU production has started to recover in 1994 especially induced by an increase of extra-EU exports (+19%). In 1994 total EU production increased by more than 5%, a trend that has continued during 1995 (+5%). Whereas the production growth in 1994 was mainly induced by increasing extra-EU exports, the continuing trend in 1995 was stimulated by a recovery of EU demand. Figures of production growth, however, vary drastically among EU Member States.

The EU is still the world's largest producer of textile machinery, with Germany commanding 52.7% of total EU production, followed by Italy with a share of 22.6% and France with a share of around 8%. During the 1980s and early 1990s, the EU manufacturers have lost market share to Japan, which has been able to increase its production also in recent years despite the expensive yen.

Despite the recovery of EU demand in 1995, sales of textile machinery in the EU will continue to be adversely affected by a shift of labour-intensive textile operations to low-wage countries. The industry will remain dependent on exports and thus on the international economic developments. Since moderate economic growth is forecast in the major export markets and some new export markets are emerging, the EU production is expected to grow until the year 2000.

### INDUSTRY PROFILE

#### Description of the sector

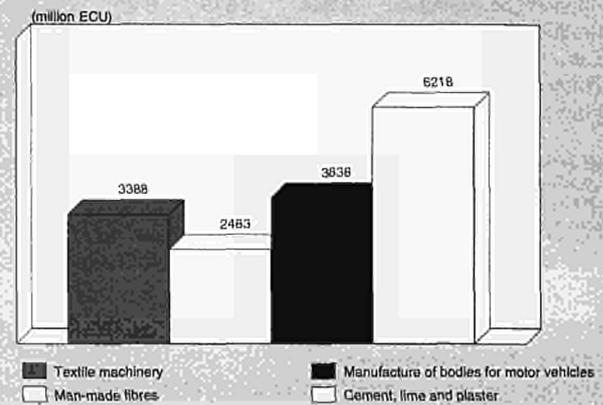
In the former NACE 1970 classification, NACE 323 covered the manufacture of textile machinery, of accessories of the textile machinery and of sewing machines. Compared with the old classification, the category of machinery for textile, apparel and leather production (class 29.54) has been extended. Class 29.54 also includes the following former NACE classes: manufacture of laundry and dry cleaning machinery (NACE 327.3) and manufacture of plant for the leather industry (NACE 327.4). Although the category has been extended, the applied statistics in this monograph, however, are still limited to the former NACE 323.

Textile machinery can be further subdivided into: spinning machinery; weaving machinery; knitting and hosiery machinery; dyeing and finishing machines; parts, accessories and other machines, such as man-made filament and fibre processing machinery, and preparatory machines. These machines spin (natural and synthetic) fibres into yarn; weave or knit the yarn into fabric; dye, print and finish the resulting fabric; and produce garments or other fabric products. The main products of the spinning and weaving machinery are the following: short staple spindles (for short-staple fibres, e.g. cotton); long staple spindles (for long-staple fibres, e.g. wool); open-end rotors for spinning; shuttle and shuttle-less looms for weaving.

The production of textile machinery in the EU (in current prices) accounts for approximately 4% of the total production of the mechanical engineering industries in the EU. Compared to other related industries, the textile machinery industry is relatively small.

The EU is the world's largest producer of textile machinery, with Germany commanding 52.7% of total EU production, followed by Italy with a share of 22.6% and France with a share of around 8%. As a result, Germany accounts for more than 50% of the employment in the EU textile manufacturing industry. Italy is responsible for about 18% of the employment.

Figure 1: Textile machinery  
Value added in comparison with related industries, 1994



Source: DEBA GEIE

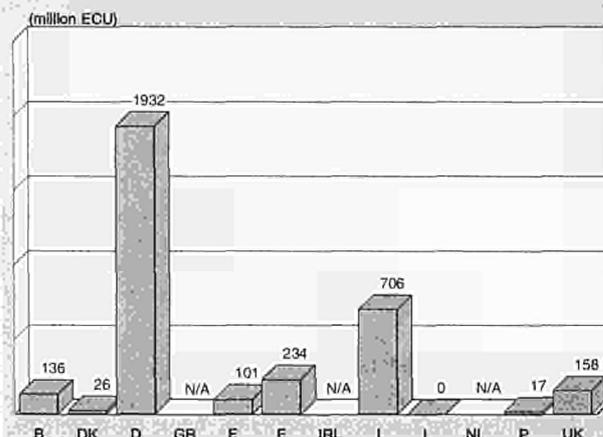
The EU market is highly fragmented with many small and medium-sized enterprises involved. The German textile industry, for instance, encompasses some 600 companies, nearly all of which are small or medium-sized enterprises. These small and medium-sized companies tend to specialise, both at product category level (e.g. spinning, fabric forming), and within these categories.

#### Recent trends

The general world recession of the early 1990s did not spare the textile sector. Sales of textile machinery are closely tied to the business cycle of the textile industry. In 1991, EU production dropped by 5% on the previous year due to depressed demand and overcapacity. After another decline in 1993, EU production started to recover in 1994 especially induced by an increase in extra-EU exports (+19%). In 1994 total EU production increased by more than 5%, a trend that has continued during 1995 (+5%).

Whereas the production growth in 1994 was mainly induced by increasing extra-EU exports, the continuing trend in 1995 was stimulated by a recovery of EU demand. Figures of pro-

Figure 2: Textile machinery  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Textile machinery  
Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1996 (3)	1997 (3)	1998 (3)
Apparent consumption	3 844	5 875	6 227	4 860	4 400	2 973	4 326	4 416	4 646	4 863	5 090
Production	6 249	9 341	9 700	8 208	8 465	8 094	8 545	8 991	9 622	10 249	10 924
Extra-EU exports	3 476	4 985	5 019	4 629	5 230	6 239	5 490	5 862	6 358	6 911	7 474
Trade balance	2 405	3 466	3 474	3 348	4 065	5 121	4 220	4 575	4 975	5 386	5 834
Employment (thousands)	100.7	107.3	107.2	99.2	88.8	81.8	76.6	74.8	74.8	74.9	74.3

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Rounded DRI forecasts for EUR12.

Source: DEBA GEIE, Eurostat

**Table 2: Textile machinery  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	7.1	-7.0	0.6	37.5
Production	4.4	-4.5	0.3	5.9
Extra-EU exports	0.9	-3.9	-1.2	-15.5
Extra-EU imports	2.3	-12.8	-4.7	4.7

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Textile machinery  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995(2)
Extra-EU exports	3 476	3 831	4 039	4 322	4 985	5 019	4 629	5 230	6 239	5 490	5 862	5 939
Extra-EU imports	1 072	1 181	1 297	1 504	1 519	1 546	1 281	1 165	1 118	1 270	1 287	1 289
Trade balance	2 405	2 650	2 742	2 818	3 466	3 474	3 348	4 065	5 121	4 220	4 575	4 650
Ratio exports / imports	3.2	3.2	3.1	2.9	3.3	3.2	3.6	4.5	5.6	4.3	4.6	4.6
Terms of trade index	93.4	94.7	97.2	95.4	97.3	100.0	101.1	101.7	94.2	90.4	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

duction growth vary drastically among EU Member States. For the three major EU manufacturing countries, the average annual growth differs from a modest 0.8% for France, 3.3% for Germany to a high 11% for Italy.

The textile machinery manufacturers have to meet the changing needs of the textile industries of both the developing and developed countries of the world, and perhaps more importantly to meet the growing needs of the vastly expanding textile regions of Asia/Pacific in which China is now the predominant producer of textiles.

In Europe employment in the textile machinery industry has been declining since 1990. Between 1990 and 1993 the number of employees in the EU fell from 107 000 to 82 000. Despite the upswing since 1993, the employment further dropped to 75 000 in 1995.

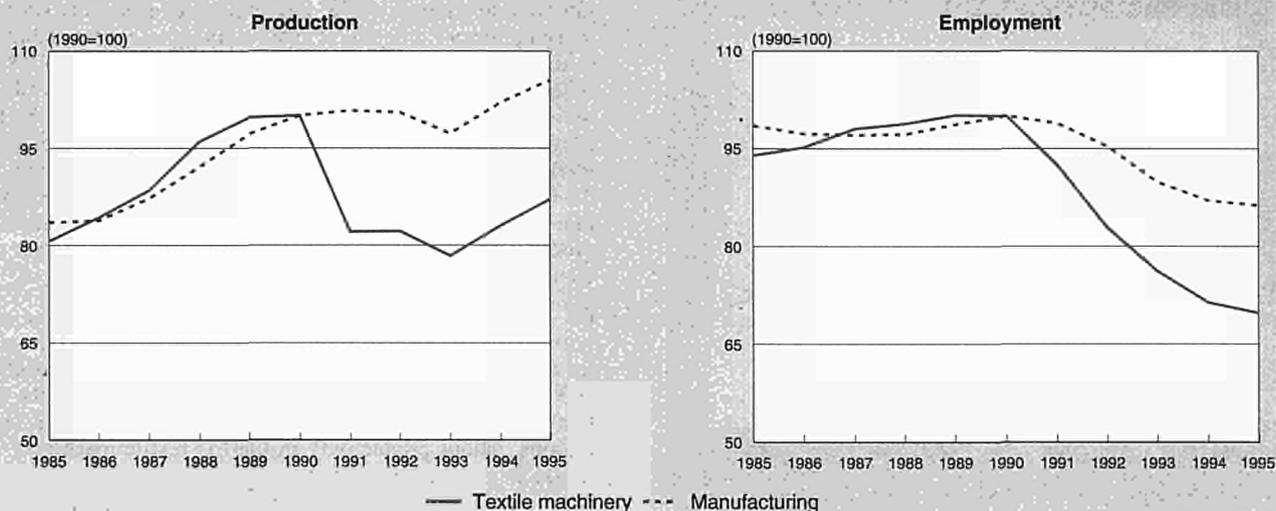
### International comparison

In 1985, total EU production of textile machinery was still 50% higher than the Japanese production, while the difference was only 13% in 1995. Between 1985 and 1995 Japan recorded an average annual growth of 6.7%, which was considerably

higher than Germany (4%), the second largest producing country of textile machinery. Being the world's largest single producing country of textile machinery with a total production reaching nearly 8 billion ECU, Japan employs more than 40 000 people. In 1993, the appreciation of the Japanese yen caused a drop in the Japanese production as exports fell. Since then, however, Japan has been able to increase its production despite the expensive yen. In addition to Japan and Germany, Switzerland is an important producer and supplier of textile machinery on the world market.

As Japanese manufacturers have concentrated on building up export markets, import penetration in textile equipment is higher than in many other machinery markets. Europe is by far the most popular source of imports with countries like Germany and Switzerland, which have long-established industries performing well. The US production is relatively small compared to the production of Japan and the EU. In contrast with the EU, the US production has been continuously increasing since 1991.

**Figure 3: Textile machinery  
Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

### Foreign trade

The textile machinery sector can be characterised as highly export-oriented. In 1993, the EU export rate was nearly 77%, compared with a rate of 52% in 1990. In 1994, however, this rate has declined to 64%, thereby indicating an improvement in EU demand for textile machinery. After a period of decline, extra-EU imports have increased by nearly 14% in 1994, which is also an indication for a recovery of EU demand. Due to the falling exports and the increasing imports, the trade surplus dropped by 17% in 1994 to a level of 4.2 billion ECU.

Germany is responsible for 60% of total extra-EU exports. In 1994, the most important export destinations for European textile machinery were USA (18%), China (10%), India (6%), Turkey and South-Korea (5%), and Brazil (4%). Current market trends show Asia and the USA as the most active areas, while India and Brazil are becoming increasingly important. Exports to India almost tripled since 1989, while exports to Brazil increased by 60% over the 1989-1994 period. In contrast, exports to Japan and Switzerland have declined by more than 30% and 40%, respectively, over the same period. The

extra-EU imports mainly originate from these two countries. Both countries together accounted for 61% of total imports in 1994. In absolute terms, however, imports from these countries have declined by 30% since 1989.

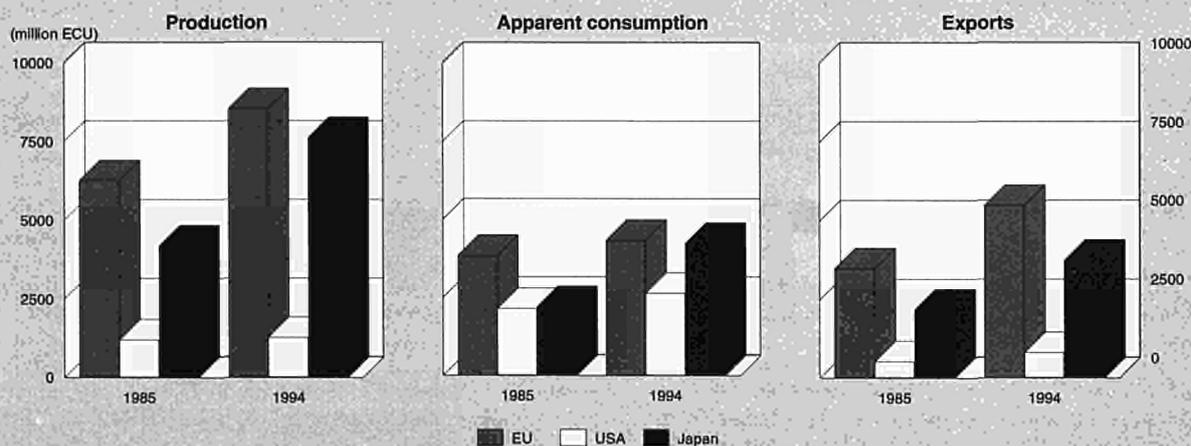
### MARKET FORCES

#### Demand

The demand for textile machinery depends on the demand for clothing and textiles. The world market for textiles and clothing is expected to reach 56 million tonnes by the year 2000. By the year 2002, the population of China, Latin America, developing Asia and Africa are expected to consume some 21 million tonnes of textiles compared with 15.7 million tonnes in 1992, a rise of 36% over the ten-year period.

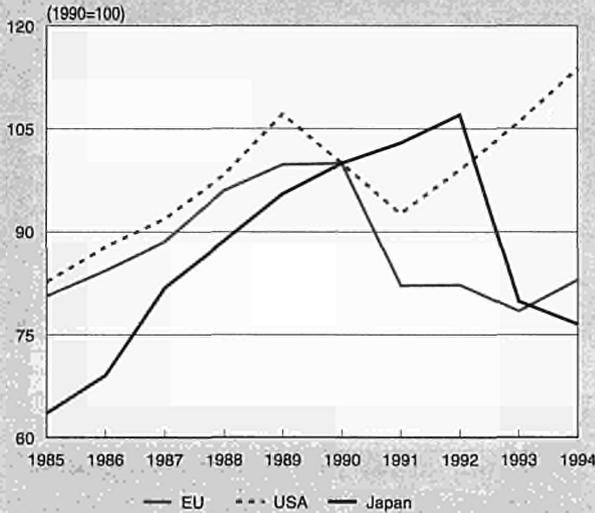
The industrialised countries of North America, Western Europe and Japan are becoming markets of the past as textile manufacturers seek to establish operations in the developing areas of the world, especially in the Middle and Far East. They will require the most modern and innovative equipment in

**Figure 4: Textile machinery  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Textile machinery**  
International comparison of production in constant prices



Source: DEBA GEIE

order to produce the highest quality products with the greatest flexibility. Some of the growth markets of the 1980s, such as Korea and Taiwan, are reaching a point of stagnation and their investments will increasingly be placed elsewhere. South East Asia, China, India, the Near and Middle East and South-America offer the best prospects for the next decade.

The structure of demand differs among the major EU countries. In the UK, parts and reconditioned machinery is the largest sector of the market, accounting for over a third of total sales. Carpet production machinery has been the fastest growing sector, albeit from a small base, increasing by 30% over the review period. The dyeing and finishing machinery sector has also experienced a higher than average growth rate in this country, with an increase of 27% since 1991. In Germany, spinning machines covered 36% of the total market demand. Weaving machinery sales have remained the most static between 1991 and 1995, currently accounting for only 3% of the total market. In France, spinning, twisting and texturing machinery is the largest sector, commanding 33% of the total market. The fastest growing sector, dyeing and finishing machinery, increased by around 150% between 1991 and 1995 to reach 70 million ECU.

### Supply and competition

Sales of textile machinery are being adversely affected by a growing import penetration of textiles and a shift of labour-intensive operations to low-wage countries especially situated in the Far East. Competition in the market for textile machinery is strong, especially from Japan, the Far East and South East Asia. Japan has become the major competitor of the EU in the world market. The Japanese produce standard and highly advanced machinery. They have a strong position in the Asian markets, although the importance of Japanese products on the EU market is not increasing. Local companies in the newly industrialising countries in the Far East and South East Asia produce standard machinery at low prices, and have thus become important competitors in the low-end markets.

EU manufacturers are responding to tough competition with rationalisation, standardisation and specialisation in high-quality flexible machinery. Due to rationalisation of production and a reduction of the labour force, unit labour costs and total unit costs have further declined in 1994. For the same reasons, labour productivity in the EU textile machinery industry has continued to rise.

Due to their complexity, size and technology the EU textile machinery is generally sold at a higher cost price than the more standardised machinery from the Far East. The increasing complexity of market demand and the growing need for expertise and specialisation have stimulated close co-operation between manufacturers and technical, and textile, research centres.

### Production process

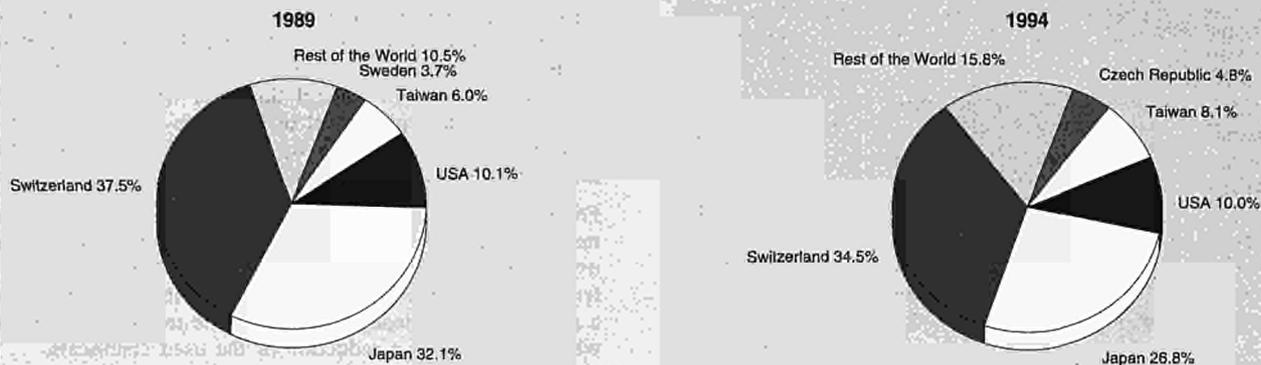
In order to meet the increasing flexibility of demand, the European textile manufacturers have developed Quick Response production methods involving the design and installation of integrated Computer Aided Design (CAD) and cyrogenil machinery at all levels of the production process. Information and communication technologies (ICT) are also applied in order to increase efficiency. Most of the machinery provides opportunities for computer aided manufacturing (CAM). Especially in spinning and weaving, an integrated data exchange with the production planning system (PPS), and the supervision of the process, is state of the art. The integration of several production steps to an automated flexible manufacturing system (FMS) is reached, but fully automated production lines still represent an exception. In-house integrated data processing, connecting R&D, stocks and other logistic functions with the PPS are found in the textile manufacturing industry, but the level of penetration is low.

**Figure 6: Textile machinery**  
Destination of EU exports



Source: Eurostat

**Figure 7: Textile machinery  
Origin of EU imports**



Source: Eurostat

Induced by the intensifying competition in the textile industry and textile machinery, manufacturers are increasingly looking for more cost-saving methods, such as Computer Aided Fabric Evaluation (CAFE) and Demand Activated Manufacturing Architecture (DAMA). Through Computer Aided Fabric Evaluation, weaving errors can be controlled and diagnosed during the production process. In the next stage of the process, computers can reckon with these errors, thus avoiding unnecessary costs. Demand Activated Manufacturing Architecture is another tool for a more efficient production process. By means of a tracking system, products are followed from the farm to the market place. The combination of production and sales allows excess time to be minimised.

## INDUSTRY STRUCTURE

### Companies

The EU textile machine industry consists of mainly small or medium-sized enterprises. There are about 160 German enterprises. About 39% of these enterprises encompasses less than 100 employees. Only 24% of the German enterprises employ 500 people or more. Supply in Italy is even more fragmented. The Italian industry of textile machine consists of 400 enterprises. Most Italian companies are small or medium-sized. Among the 20 leading textile machinery manufacturers in Europe, there are only two Italian companies.

The fact that many companies are medium-sized is one reason for the flexibility and innovative potential of the German textile machinery industry. High levels of expenditures on R&D also typify the German machinery sector.

Despite the fact that the EU industry is highly fragmented, there are also some larger, mainly German, companies which are operating world-wide. German companies like Babcock, Pfaff and Drkopp Adler ( a subsidiary of the FAG Group) are the key players. Their main competitors are based in Japan and Switzerland, whose textile machinery manufacturers are major players in the world market. Swiss textile machinery manufacturers also own subsidiaries in EU countries. The UK-based Rieter-Scrugg is part of Rieter AG of Switzerland, which recently took control of the German specialist machinery manufacturer Schubert and Salzer. Courtaulds Engineering Ltd is a subsidiary of the giant clothing and textiles conglomerate, Courtaulds plc. This company specialises in design, project management and special machinery installation fields.

Deutsche Babcock's turnover amounted to more than 4 billion ECU in 1994, thereby employing around 40 000 people. Babcock has 21 subsidiaries in Europe and the US. Drkopp Adler

reached a turnover of 260 million ECU. Compared to the trend towards relocating labour-intensive operations to low-wage countries, Drkopp Adler has intensified and expanded production and distribution activities in Central and Eastern Europe as well as in Asia.

Rieter Ingolstadt's main activities are the design, manufacture and sale of machinery for the textile industry, particularly spinning machines. The company was established in 1883 and is situated in Ingolstadt, Bavaria. In 1994, the company had a turnover of 165 million ECU, thereby employing around 1 300 people.

The Pfaff group is one of the world's leading producers and distributors of sewing machines, high-tech sewing equipment and systems. Established in 1862, the company is situated in Kaiserslautern, Rheinland-Pfalz, and has been a public company since 1926. With a turnover of around 500 million ECU, the company employs nearly 6 000 people and is operating through 30 principal subsidiaries of which 24 are fully owned.

In France, two major players can be mentioned, Superba and Lectra Systemes Group. Superba's turnover reached 45 million ECU. The company is based in Mulhouse (France) and sells its products through agents across the world. It produces machines for hand and machine knitting yarns, carpet yarns and roboticized, and computerised, equipment for the automatic control of yarns.

Lectra's turnover amounted to 80 million ECU in 1994. The company has a strong foothold in the production of CAD/CAM systems for cutting machinery in industries such as footwear, upholstery, and technical/industrial fabrics.

While Belgium has a specialisation in the yarn and fabric making processes, the Netherlands has one at the finishing end of the business. The three leading Belgian companies are: Picanol (weaving machinery), Van de Wiele (carpet equipment) and Gilbos (winding systems). Stork, Brugman and EFT are Dutch companies operating internationally.

### Strategies

The industry has been confronted with internationalisation and increasing competition. The resulting rationalisation of production has led to a number of acquisitions, mergers and other forms of co-operation within Europe, and at the international level. The specialised individual textile machinery manufacturers aim at becoming a complete supplier to meet with the growing demand of the newly industrialised and the industrialised countries for fully equipped, highly automated production plants.

**Table 5: Textile machinery  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	1.2	1.5
Danmark	0.3	0.4
Deutschland	1.8	1.7
Ellada	N/A	N/A
España	0.6	0.4
France	0.4	0.5
Ireland	N/A	N/A
Italia	1.5	1.6
Luxembourg	0.0	0.0
Nederland	N/A	N/A
Portugal	0.5	0.2
United Kingdom	0.4	0.3

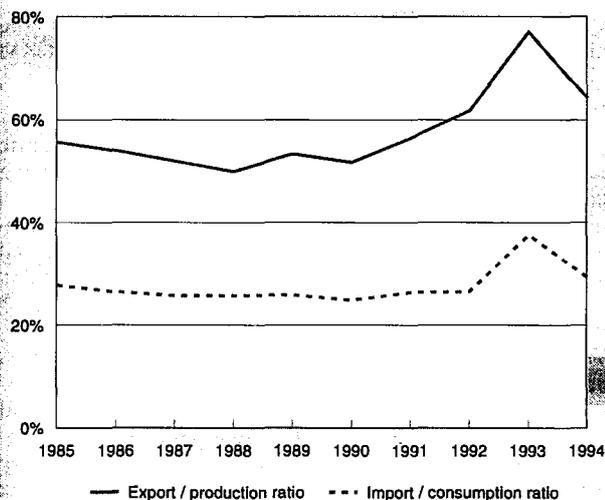
(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

In already maturing markets, three basic strategies can be followed: the specialisation in selected markets, cost reduction, and diversification. Only the larger internationally operating EU textile manufacturers are able to follow a cost reduction strategy, while at the same time remaining innovative and maintaining a high service and performance level. The strategy of cost reduction is also followed by the Far Eastern suppliers of machinery, but they are only able to do this by manufacturing standardised equipment.

The greater part of the smaller EU companies follow a specialisation strategy. These companies specialise in certain markets and try to survive by offering innovative high-quality machinery and equipment.

As production is still concentrated in Europe and at the same time markets are often far away, EU manufacturers have their own subsidiaries in important markets such as the USA and the Far East. In some cases they cooperate with local companies. These agreements allow them to service markets directly.

**Figure 8: Textile machinery  
Trade intensities**



Source: DEBA GEIE, Eurostat

## ENVIRONMENT

Concerning developments in new technology the industry pays a lot of attention to environmental issues such as a reduction of the noise production (a maximum of 85 decibels being allowed for unprotected workers) and of other emissions. Stricter laws on noise levels will raise the prices of the machines. The trend in noise levels differs according to the kind of machinery, but in general the level will be affected by two factors: the replacement of the noise-making parts with quieter parts, and secondly by the actual running speed of the machines which has been increasing.

For the reduction of emissions, the textile and textile machinery manufacturers are developing methods for the recycling of used fibre materials, for the efficient and environmentally friendly cleaning of machinery and for the development of a spray system instead of basins for the treatment of textiles which will lead to a reduction of the used chemicals.

## REGULATIONS

In 1995, the EU Directive 89/392 attained a definite character. This Directive defines essential requirements concerning machine safety, health provisions for people and environment. Provisions relate to the design, the materials used, the way in which machine operations should be illuminated, machine operations itself, safety against mechanical risks, the application of screens and other safeguarding components, maintenance and machine indications and identifications. Machines complying with the EU regulations will obtain the EU mark.

Each machine traded and sold within the EU should be labelled with a EU mark. Although the validity of this mark is limited to the EU market, it can also become beneficial for EU manufacturers with respect to their extra-EU export markets. While technology and know-how are becoming increasingly important to survive, the strict EU regulations inspire the manufacturers to innovate. Perhaps not in developing countries, but certainly in the Western economies, the EU mark will stand for safe and environmentally friendly machinery and equipment.

On the 1st of January 1996, the Directive for electromagnetic compatibility (89/336) came into force. The Directive applies to all electrical and electronic equipment, systems and installations which can cause electromagnetic disturbances, or which can be influenced by such disturbances. The Directive tries to prevent the electromagnetic susceptibility of machinery and to stimulate the electromagnetic immunity of machinery. Manufacturing of machinery following this Directive implies the incorporation of the relevant measures in the development stage.

## OUTLOOK

Although the EU textile manufacturers have recorded positive results in production and profits in 1995, the upswing should be viewed with caution. With their high-quality and specialised machinery, EU manufacturers are still able to maintain their leading position in most parts of the world. Despite the recovery of EU demand in 1995, sales of textile machinery in the EU will continue to be adversely affected by a shift of labour-intensive textile operations to low-wage countries.

Since the industry is still highly depending on exports, international economic developments will strongly influence the performance of the EU industry. Since economic growth is expected to continue in major export markets and some new export markets are emerging, the EU production is forecast to grow until the year 2000. Growth rates will, however, be moderate.

The internationalisation of the industry will continue through acquisitions, mergers and other forms of co-operation at both European and international levels. Increased price competition from the Far East will add extra pressure on the market. In the international competitive environment, innovation and, at the same time, a high-quality service level will be the necessary conditions for further growth.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: Comit European des constructeurs de Matériel Textile (CEMATEX). Address: p/a VSM, Kirchenweg 4, CH-8032 Zrich, Switzerland. Phone 41-1-384 4844. Fax: 41-1-384 4849.

# Plastics and rubber machinery

NACE (Revision 1) 29.56

*Some improvement is being seen in the growth of the plastics and rubber machinery sector following several lean years depressed by the downturn in the global economy.*

*The UK economy has slowly continued to improve and signs of an upturn are starting to be seen in mainland Europe. The ASEAN region is continuing to develop and has provided the recent focus for activity by European manufacturers, despite tough local competition.*

*Environmental considerations, including the need for greater energy efficiency, have challenged machinery manufacturers to provide new innovative features to reduce power consumption, and encouraged the development of new machinery for recycling waste plastics.*

## INDUSTRY PROFILE

### Description of the sector

About 60 000 people are employed by the plastics and rubber machinery manufacturing industry in Europe, which numbers around 600 companies with a combined annual turnover in the region of seven billion ECU. A wide range of machinery is produced to meet the increasingly sophisticated needs of both trade and in-house manufacturers of consumer and industrial products. This range includes extruders, injection moulding and blow moulding machines, compression presses, foam converting and thermoforming machines.

It also includes other equipment not separately classified, such as granulators, calenders, mills and a variety of spare parts and ancillaries such as static eliminators, automated unloading and quick-change moulds systems. Specialised equipment is increasingly being developed for recycling materials and products into secondary applications in support of the growing needs for care of the environment. Much of this machinery can also be adapted to the particular requirements for use with both rubbers and plastics.

Machinery size ranges from small benchtop machines for making precision miniature components for the electronics indus-

try, to giant plants for making agricultural sheet and bulk storage tanks.

Products produced by such machinery range from: lightweight clamshell burger cartons to large expanded polystyrene formers used in huge concrete constructions: precision medical catheter tubing to sewer pipes over 1m in diameter: and miniature fine-tolerance components for car instruments to full size lorry and train cabs.

The wide range of plastics and rubber materials in use require machinery specifications to be adaptable to suit an equally wide range of processing characteristics.

Certain specialised machinery such as used for tyre forming presses and compounding mills are specific to rubber processing.

The worlds leading manufacturers of plastics and rubber processing machinery are based within the EU and include Germany, Italy, France, Switzerland UK, Austria, Netherlands, Spain and Luxembourg. Germany and Italy are the principal producers, having shares of over one half and one third respectively. The other countries together account for approximately just one fifth of the total.

An analysis of the production and consumption figures by machinery type shows the leading role that both injection moulding and extrusion machines play in the processing sector.

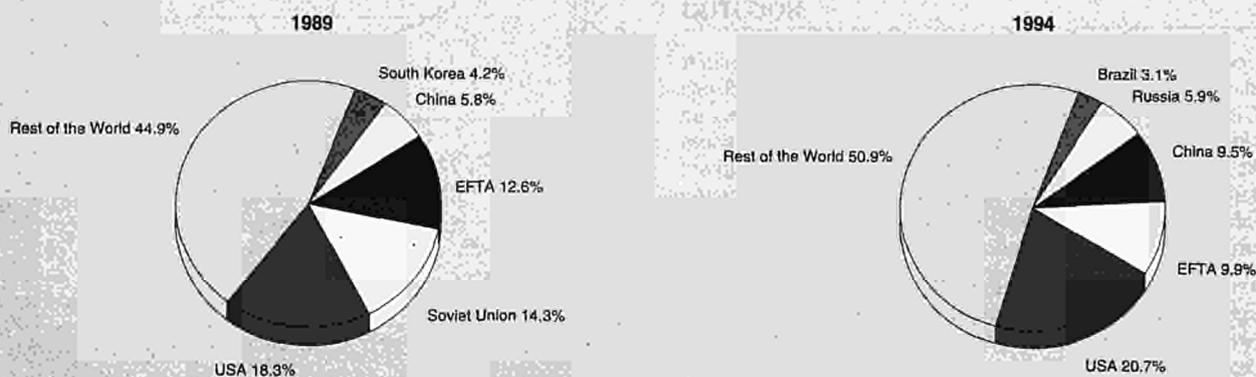
### Recent trends

Apparent consumption, considering total trade data in the four principal EU Member States (Germany, France, UK and Italy) increased by an annual average of 20% between 1984 and 1988 making the sector one of the fastest growing in the EU during the last decade. However, between 1989 and 1995 this average (excluding intra-EU trade) was 1% due to an average decrease in consumption of 27.6% between 1991 and 1993.

Production of machinery in these countries in 1995 totalled around 6 262 million ECU, an increase of about 26% over the previous year. This growth is, however, less than in the previous year and is regarded as a return to the continuing growth of the sector.

Total exports during this period showed a growth of 10% in value and it rose from 4 293 to 4 683 million ECU. This gives the industry confidence that its competitive strength will enable it to take advantage of the upturn in investment by the plastics processing sector, which is already starting to happen, as demand in world markets begins to grow.

**Figure 1: Plastics and rubber machinery  
Destination of EU exports**



Source: Eurostat

**Table 1: Plastics and rubber machinery  
Main indicators in current prices (1)**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Apparent consumption (2)	1 632	1 890	2 631	2 850	3 557	4 285	4 455	2 994	2 327	2 447	3 219
Production (3)	3 271	3 758	4 277	5 058	5 615	6 512	6 385	4 734	3 384	4 962	6 262
Extra-EU exports (4)	1 483	1 569	1 465	1 664	1 911	2 029	1 797	1 877	2 272	2 626	2 903
Trade balance (4)	1 217	1 287	1 118	1 249	1 418	1 491	1 213	1 335	1 762	2 089	2 367

(1) Germany, France, Italy and the United Kingdom only.

(2) Calculated using data for total trade. BPF forecast for the United Kingdom for 1995.

(3) BPF forecast for the United Kingdom for 1995.

(4) Eurostat forecast for 1995.

Source: Euromap/BPF, Eurostat

**Table 2: Plastics and rubber machinery  
Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption (2)	Production	Extra-EU exports
Injection moulding machines	441.6	893.3	426.3
Extruders	424.7	824.1	364.2
Blow moulding machines	95.3	544.3	409.2
Thermoforming machines	65.9	147.2	66.2
Others, including parts and components	1 049.8	2 336.7	1 243.8
Total	2 077.3	4 745.6	2 509.7

(1) Germany, France and Italy only.

(2) Calculated using data for total trade.

Source: Euromap/BPF, Eurostat

**Table 3: Plastics and rubber machinery  
Average annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	21.3	-13.1	4.6	5.2
Production	14.8	-6.6	4.7	46.6
Extra-EU exports	6.5	6.7	6.6	15.6
Extra-EU imports	15.2	0.0	8.2	5.5

(1) Germany, France, Italy and the United Kingdom only.

Source: Euromap/BPF, Eurostat

**Table 4: Plastics and rubber machinery  
External trade in current prices**

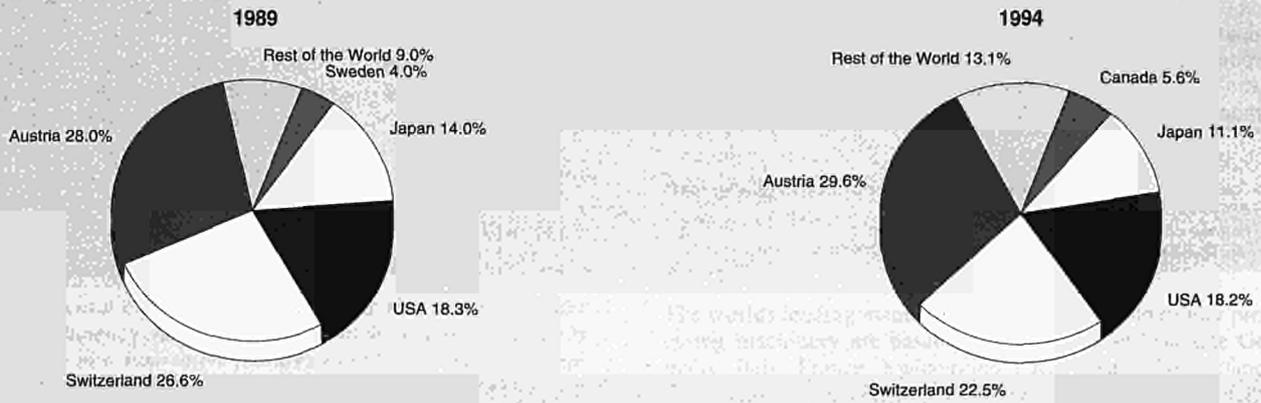
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	1 550	1 655	1 574	1 763	2 020	2 156	1 913	2 026	2 456	2 868
Extra-EU imports	355	376	446	544	655	714	776	724	677	718
Trade balance	1 195	1 279	1 128	1 220	1 365	1 442	1 137	1 302	1 779	2 151
Ratio exports / imports	4.4	4.4	3.5	3.2	3.1	3.0	2.5	2.8	3.6	4.0
Terms of trade index (1)	92.2	95.5	99.3	100.0	97.1	100.0	98.2	101.1	94.3	89.9

(1) Nace 3240.

Source: Eurostat



**Figure 2: Plastics and rubber machinery  
Origin of EU imports**



Source: Eurostat

### International comparison

European manufacturers are continuing to build upon their long established technological leadership in this sector in which they have already established a commanding position with over 70% of the world market.

Although competition from USA, Canada and Japan continues to intensify, prospects remain good for European manufacturers whose knowledge and experience give them an overall advantage. The growing ASEAN countries continue to be targeted as an area of great opportunity for the near future.

### Foreign trade

Germany continues to rank first in world exports of plastics and rubber machinery in 1994, with 34% of the total. Italy is now in second place with about 23% and Japan third with 16% of the total. Overall European manufacturers secured 76% of world exports in 1994. A 10% recovery in the growth rate of European exports was seen over the last year reversing the trend of the previous three years. Most of the trade during this period was within the EU with UK and France being the main destinations.

The single European market already exists in the plastics and rubber machinery sector. As for potential markets in Eastern Europe, they still have to show significant growth.

The continuing growth of internationalisation in the major consumer product manufacturers is leading to internationalisation of their key suppliers and of manufacturing standards. Although this provides opportunities for the leading suppliers and their sub-suppliers, it can also pose the challenge of rationalisation and put increasing pressure on market prices.

### MARKET FORCES

#### Production process

Computerisation of control systems, and automation of materials and product handling continue to be an increasingly important feature of machinery specifications. Energy efficient drives and operating systems are also becoming essential features, as already are the requirements for the integration of processing machinery into modern production lines to meet ever increasing quality standards, and productivity levels.

European protocols have been established for these computerised control systems and for links to ancillary equipment and control computers.

Environmental considerations are now an established part of the machinery specification, and enable product weight and energy consumption to be optimised, and process waste to be collected and recycled.

New types of machinery have also been developed specifically to reprocess and recycle used products collected from domestic and industrial waste streams to reduce their impact on the environment and ultimately to recover the residual energy content of end-of-life components and products.

New plastics and to some extent rubber materials, products and applications continue to present a challenge to the imagination and ingenuity of machinery manufacturers. European manufacturers welcome the challenge and continue to design and develop machinery which is innovative and at the leading edge of the technology.

**Table 5: Plastics and rubber machinery  
External trade by Member State, 1994**

(million ECU)	EUR12	B/L	DK	D	GR	E	F	IRL	I	NL	P	UK
Extra-EU exports	2 868.4	63.5	21.1	1 447.2	4.0	31.3	367.5	2.1	695.0	118.5	1.5	116.8
Extra-EU imports	717.5	64.6	16.8	251.1	5.9	24.7	87.7	12.9	56.4	43.5	11.2	142.8
Trade balance	2 150.9	-1.1	4.3	1 196.1	-1.9	6.6	279.9	-10.8	638.6	75.0	-9.7	-26.0
Ratio exports / imports	4.0	1.0	1.3	5.8	0.7	1.3	4.2	0.2	12.3	2.7	0.1	0.8

Source: Eurostat

**Table 6: Plastics and rubber machinery  
Production and consumption by country, 1994**

(million ECU)	Apparent consumption (1)	Share (%)	Production	Share (%)
Deutschland	969.4	39.6	2 661.6	53.6
France	244.7	10.0	404.0	8.1
Italia	863.2	35.3	1 680.0	33.9
United Kingdom	370.0	15.1	216.2	4.4
Total	2 447.3	100.0	4 961.8	100.0

(1) Calculated using data for total trade.

Source: BPF/Euromap, Eurostat

## INDUSTRY STRUCTURE

### Companies

The leading machinery manufacturing companies in the EU include, Battenfeld (D), Billion (F), Bucher-Guyer (CH), Engel (A), Francis Shaw (UK), Klockner (D), Krupp (D), Mannesmann Demag (D), Krauss-Maffei (D), Negri Bossi (I), Reifenhäuser (D), Sandretto (I), Stork (NL), Windmüller and Hölischer (D).

Rationalisation of the European machinery manufacturing sector continues, as global competition increases, with the resultant acquisitions and mergers, and eventual consolidation of resources and expertise.

### Impact of the single market

The single market in Europe, which has long existed for the machinery sector, is now being put to the test by increasingly global competition, particularly from Asia Pacific.

The unification and harmonisation of regulations is progressing positively in the main, and initial teething problems are being overcome. The removal of remaining barriers to internal trade has a high priority.

Barriers to external trade with third countries is still the cause for some concern and will require ongoing priority effort to overcome. The machinery sector continues to aim for the encouragement of mutual recognition of regulations world-wide.

## ENVIRONMENT

Environmental considerations continue to grow in importance as public opinion and legislation focus increasingly on energy conservation and the avoidance of pollution. Policies, codes of practice, and legislation are ever increasingly impacting upon product and machinery specification and design.

The EU machinery sector, through its trade association has been at the forefront of developments in design and technology, to facilitate the exploration of opportunities for improving products and processes. Modern machinery enables the minimisation of product weight and process waste, has low process emissions and maximises energy efficiency. Special machinery has been developed for the efficient collection conveying, sorting, size-reduction and re processing of domestic and industrial waste. The sector also collaborates with other pan European organisations in relevant promotional and educational activities.

## REGULATIONS

Manufacturers and users of plastics and rubber machinery have focused a great deal of time and effort in ensuring compliance with the new EC Machinery Directive.

## OUTLOOK

The UK economy has been improving slowly but surely over the last three years. Other principal European countries have only just started to see an improvement in trade in their plastics and rubber machinery. This has been a period of considerable change, with many mergers, acquisitions and some painful restructuring to become more globally competitive.

Asian and Eastern European markets are still believed to hold the key to future business, but present a tough challenge to the sector in the face of growing competition.

European machinery makers however, are well pleased to exploit their leading knowledge and expertise, particularly in the fields of new technology and environmental know-how.

Considerable growth potential for plastics is forecast on a world-wide scale in the markets for packaging, building and construction, transport and electrical/electronic products.

The EU plastics and rubber machinery sector is well skilled, well placed and a world leader in this field. It seeks to work in partnership with the processing sector to exploit the full potential of the mutual benefits foreseen.

Written by: British Plastics Federation

The industry is represented at the EU level by: European Committee of Machinery Manufacturers for the Plastics and Rubber Industries (EUROMAP). Address: c/o VDMA Postfach 710864, D-60498 Frankfurt; tel: (49 69) 660 3840; fax: (49 69) 660 3831.

# Domestic Appliances

## NACE (Revision 1) 29.7

The domestic appliance industry has undergone important changes over the last 10 years, in terms of demand patterns, competition and geographical expansion. Industry globalisation has led to more industrial and financial concentration. Moreover, European players have had to face harsh competition from East European and Asian producers who have been able to intensify their European market penetration. At the same time, the Asian and East European regions have become strategic targets for most manufacturers, due to the market potential they represent.

High competition and increasing Single Market regulations have also led to product innovation, in terms of equipment aesthetics, end-user comfort and environmental protection. In the future, the number of competitors is expected to decrease due to further mergers & acquisitions activity.

### INDUSTRY PROFILE

#### Description of the sector

With the introduction of the NACE Revision 1, this sector now covers both electrical and non-electrical domestic appliances, while only electrical appliances were taken into account previously.

The domestic electrical sector includes electrical refrigerators and freezers, washing-machines, dishwashers; other equipment with electrical motors (vacuum cleaners, floor polishers, grinders and electrical apparatus for treatment of hair and skin); stoves and similar electrical heating appliances; and finally other heating equipment, including hair dryers and electrical ironing appliances.

The non-electrical equipment sector comprises cookers and ovens using gas or other fuels, either liquid or solid; gas water-heaters and bath-heaters, non-electrical heating appliances and non-electrical blower heaters.

Within the domestic appliance sector, non-electrical equipment accounts for only 13% of electrical production and around 17% of the electrical industry work force within the EU.

#### Recent trends

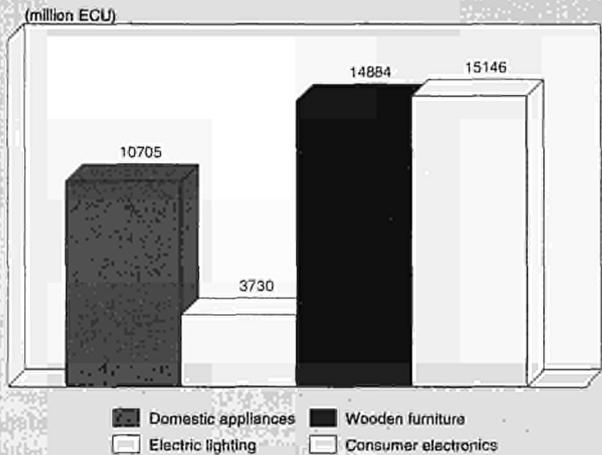
From 1985 to 1995, the industry experienced positive growth, with an increase in electrical domestic appliance production of around 5% per year in constant prices, which is higher than for the US (3%). Total production for the EU 15 reached a total of ECU 28.7 billion in 1995.

Non-electrical appliance production in Europe increased on average by only 1% per year over the same period to reach a total of ECU 3.8 billion in constant prices in 1995.

In 1996, general economic growth is expected to stagnate in Europe. This should affect consumer expenditure and demand for domestic appliances which is not expected to rise by more than 2% in 1996. Germany and Italy are the only Member States with more optimistic consumption prospects, with expected growth rates of around 2.5%.

The electrical appliance industry employs 217 000 people at the European level (EU 15). But the number of employees should decrease in the future, since the regroupings that are taking place have caused the closing of production sites. In 1996, employment should continue to decrease by 1%. In the non-electrical sector rationalisation of production has also led to a reduction of the workforce, which has been declining at a 2.5% rate per year since 1985.

Figure 1: Domestic appliances Value added in comparison with related industries, 1994



Source: DEBA GEIE

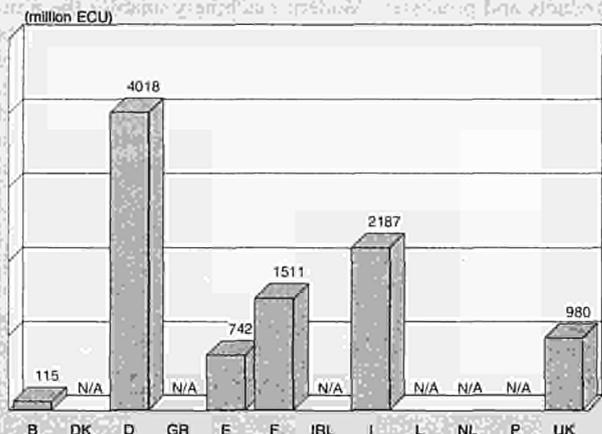
#### International comparison

Japan and the US combined account for 65% of electrical appliance production among the Triad, whereas in the non-electrical sector, the dominance of European players is obvious. In value terms, Germany was still the major European producer both for electrical and non-electrical appliances in 1994, representing over 32% of EU value added. The second player is Italy, with a 27% share in electrical appliances and a 20% share in the non-electrical sector within EU. France ranks third, with a 13% share.

#### Foreign trade

The EU remains one of the biggest markets for manufacturers, representing 25% of the global market in 1995. Moreover, if we include East European and Central European countries, Europe absorbs no less than 40% of world-wide production of domestic appliances. However, Europe's importance is decreasing in comparison with the Asian region, which was the largest world market in 1995. Thanks to the increasing demand in this region, white goods sales have experienced 15% growth in 1994 whereas this figure only reached 4.6% for Europe.

Figure 2: Domestic appliances Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Domestic appliances**  
**Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	17 742	24 282	24 958	28 591	28 038	26 896	27 925	29 349	31 090	31 820	32 740	33 730
Production	18 751	25 190	26 163	29 458	29 409	28 184	29 894	31 543	33 110	33 960	35 010	36 090
Extra-EU exports	2 364	3 127	3 281	3 401	4 201	4 179	5 009	5 280	4 738	5 000	5 240	5 510
Trade balance	1 009	908	1 204	867	1 371	1 288	1 969	2 194	2 020	2 140	2 270	2 360
Employment (thousands)	278.3	273.8	276.7	277.3	266.0	252.9	247.1	245.8	257.1	250.0	250.0	250.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Domestic appliances**  
**Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Electric domestic appliances	24 282	26 108	4 532
Non-electric domestic heating and kitchen appliances	3 642	3 786	478

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Domestic appliances**  
**Production of washing machines and refrigerators**

(thousand units)	Washing machines				Refrigerators			
	1990	1991	1992	1993	1990	1991	1992	1993
Belgique/België	61	99	138	49	160	150	155	171
Danmark	N/A	N/A	N/A	N/A	152	148	164	143
Deutschland (1)	2 579	3 088	2 836	2 842	2 048	2 194	2 362	2 344
España	1 340	1 400	1 370	700	1 600	1 600	1 470	1 450
France	1 490	1 510	1 530	1 400	450	450	450	400
Italia	4 500	4 600	4 770	4 930	2 400	2 600	2 500	2 700
Österreich	82	83	77	55	N/A	N/A	N/A	N/A
Suomi/Finland	60	90	90	85	N/A	N/A	N/A	N/A
Sverige (1)	107	103	104	115	267	271	310	320
United Kingdom (2)	1 324	1 111	600	800	704	687	463	500

(1) Automatic washing machines only.

(2) Estimated.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK

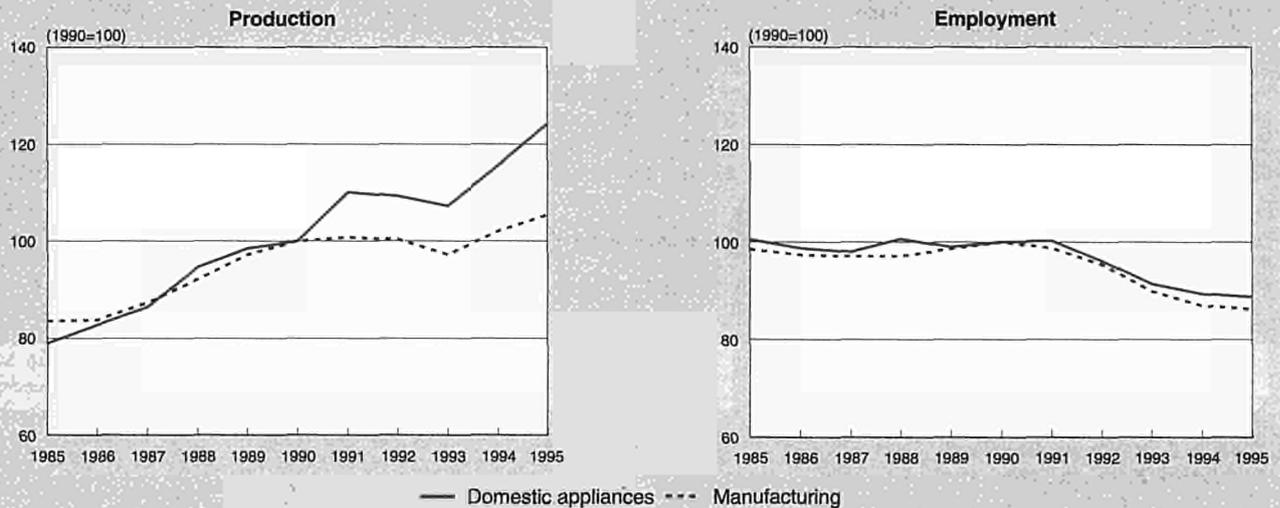
**Table 4: Domestic appliances**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	5.2	3.3	4.4	6.0
Production	4.9	3.7	4.3	7.9
Extra-EU exports	4.0	8.6	6.0	17.8
Extra-EU imports	8.2	7.0	7.7	3.5

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Figure 3: Domestic appliances**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

Japan, which in 1994 used to account for up to 14% of total EU imports in domestic electrical equipment, has seen its share falling to 3.5% in 1995. By contrast, other Asian countries had a 37% share of extra-EU imports last year, with China accounting for more than 20%.

Competition from outside the EU should continue to increase. A recent development in this area is the EU market penetration by East European countries. In 1994, 16% of extra-EU imports came from Eastern Europe, whereas they only represented a mere 4% in 1989. Last year, imports from the Czech Republic, Russia, Hungary and Poland altogether reached ECU 201.1 million; this represents a 40% growth per year since 1989. But, at the same time, this region has become an important export market for the EU, accounting for 15% of extra-EU exports in 1994.

The improvement of the European trade balance continued in 1995, reaching 6% of production. Extra-EU imports which had caused the deterioration of the European trade balance, only grew by 4% per year in constant prices from 1989 to 1994, compared to 13% between 1985 and 1989.

Within the EU, Italy remains the leading exporter of domestic electrical equipment, with a 34% market share in 1994. It is followed by Germany (25%) and France (14%). Overall, the EU is a key trade area for European producers, with intra-EU exports 1.7 times larger than extra-EU exports in 1994.

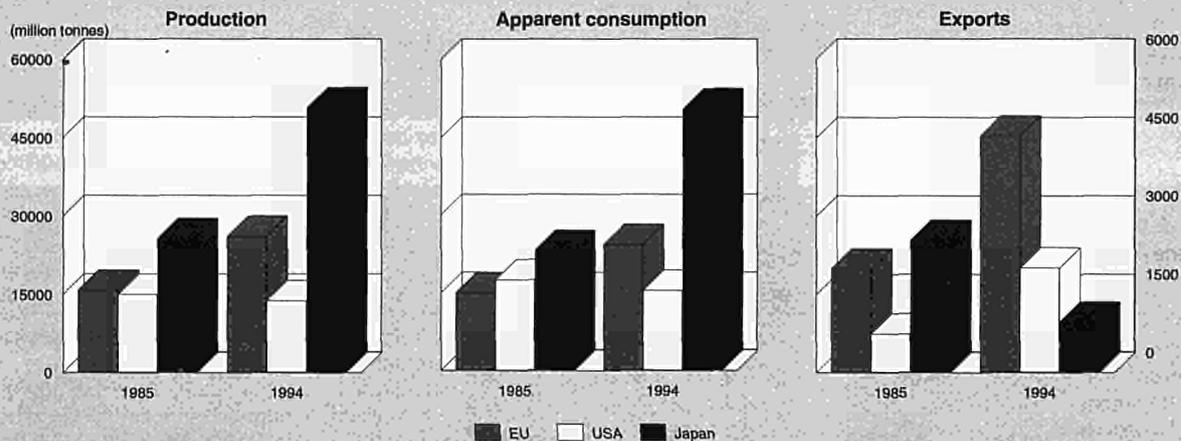
### MARKET FORCES

#### Demand

Due to high market saturation levels (i.e. 97% for refrigerators, 90% for washers and 86% for vacuum cleaners), European demand for electrical appliances is mainly linked to factors such as the evolution of the housing market and the number of single person households, which can affect 'first purchase' sales. In the replacement market, consumers tend to keep a cautious attitude and to postpone their purchases in times of recession.

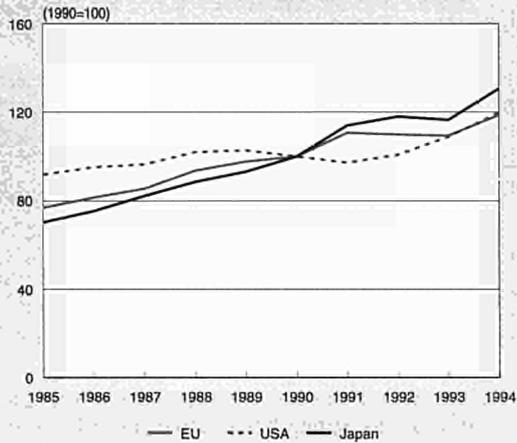
The EU countries with the highest demand growth in 1994 were Italy and Greece (6%), followed by Portugal and the UK (5%). From 1989 to 1994, demand in current prices grew

**Figure 4: Electric domestic appliances**



Source: DEBA GEIE, Eurostat

**Figure 5: Electric domestic appliances**  
International comparison of production in constant prices



Source: DEBA GEIE

on average by 3.2% annually. This rate is slower than from 1985 to 1989, when average growth was around 8%.

### Supply and competition

Both in the electrical and non-electrical appliance markets, foreign competition, especially from Asian and East European countries, is becoming fierce and is having a negative impact on EU manufacturers' market share. Some countries such as Romania, The Czech Republic and China are expected to become strong competitors in the medium term. South Korean brands are also gaining strong positions in Europe.

The successive devaluation of the Spanish, Portuguese and Italian currencies have allowed local manufacturers to export inside the EU at competitive prices, thus putting pressure on the margins of other European producers.

Another factor having an impact on European manufacturers' profitability is the increasing penetration of Asian players with high productivity levels. Moreover, this threat has become stronger now that Asian companies, mainly Korean, have started to produce in Europe.

The importance of large distribution outlets such as hypermarkets is increasing. However, specialised chains and large local independent retailers are still strong, though large outlets

are increasing their market share over small players. The progressive concentration of distribution is having a positive effect on prices to the consumer.

### Production process

The introduction of electronics is one of the biggest technological upheavals affecting the electrical segment. Other important features that players are taking into account to satisfy demand include economy of energy, reliability, simplicity of use, economy of water and service. All these innovations should allow manufacturers to increase average prices by adding value to their equipment. Significant improvements have also been added in terms of aesthetics and shapes of the equipment.

Most of the innovations introduced in the non-electrical field also focus on electronics, which should provide the end-user with more safety, more comfort and precision. Other significant product improvements will include equipment that allows better environmental protection through the use of specific components, and a better control of polluting emissions.

## INDUSTRY STRUCTURE

### Companies

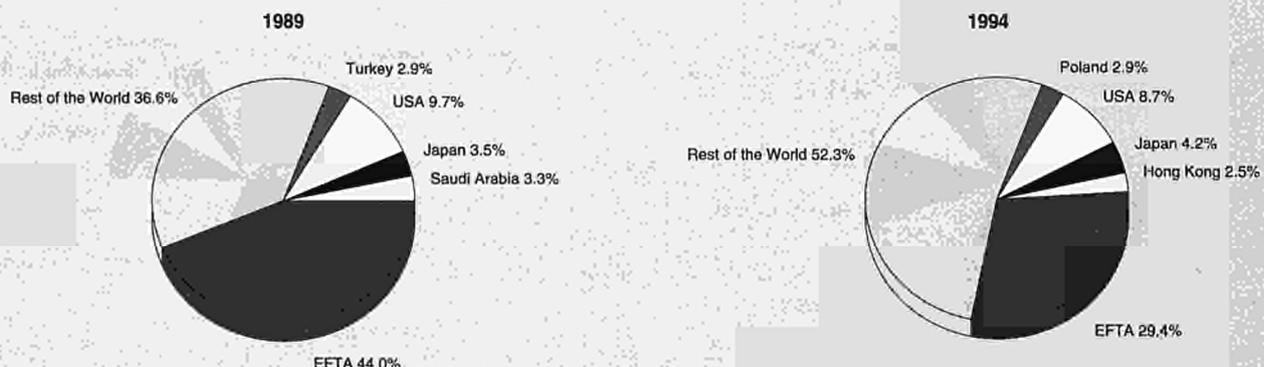
The electrical appliance sector is highly concentrated. This industry allows mass production and high levels of standardisation; nowadays, around 60% of raw materials and components contained in electrical appliances are completely standardised, whatever the market of destination.

In 1995, four leading groups clearly dominated the European market: Electrolux (S), Europe's leading household appliance manufacturer since the acquisition of AEG, had over 25% market share in Europe. They were followed by Bosch-Siemens (D) (16%) and Whirlpool (US) (15%), which is also the second largest world player for domestic appliances. Two Italian groups, Merloni and ELFI, had a market share of 10% each.

The non-electrical market has remained fragmented for quite a long time, with national manufacturers dominating their domestic markets. Concentration has started at a later stage but an increasing number of acquisitions and joint-ventures are currently under way.

The non-electrical appliance segment in Europe is also composed of big groups such as the already mentioned group ELFI, which acquired one of the French leaders in wall-hung boilers and water-heaters, Chaffoteaux & Maury. Other big European players include the French company Elm Leblanc

**Figure 6: Domestic appliances**  
Destination of EU exports



Source: Eurostat

**Table 5: Domestic appliances**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	2 364	2 413	2 406	2 631	3 127	3 281	3 401	4 201	4 179	5 009	5 280	4 738
Extra-EU imports	1 354	1 454	1 703	2 009	2 220	2 076	2 534	2 830	2 891	3 040	3 086	2 717
Trade balance	1 009	959	702	622	908	1 204	867	1 371	1 288	1 969	2 194	2 020
Ratio exports / imports	2	2	1	1	1	2	1	1	1	2	2	2
Terms of trade index	91	93	96	96	96	100	99	100	98	99	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

and Viessmann (D), which is one of the leaders in heat and hot water appliances.

In the domestic appliance market as a whole, the concentration taking place is increasing the weight and dominance of the leading companies, thus widening the gap between global and national players.

### Strategies

The overall domestic appliance market continues its development towards globalisation. This trend has led to intensive relocation of EU production towards lower labour-costs countries, and to geographical market expansion. For instance, the Swedish company Electrolux is moving beyond its core European and US markets, seeking to build up its presence into Japan, Taiwan and the Philippines. In 1995, the company started its East Asian headquarters in Singapore with plans to target the region as an area for growth.

In the nineties, most of the leading companies operating in the electrical appliance sector have tried to reduce their manufacturing costs in order to remain competitive. This has been possible through intensive regroupings, economies of scale and sub-contracting. However, the need to meet European legislation requirements, the significant rise in the price of raw materials (which represent between 50% to 60% of production costs) and the necessity to make huge marketing investments, are putting pressure on the overall industry profitability.

In such a harsh environment, companies have also adopted strategies of building strong brand names in order to differentiate their products from those of competitors. Moreover, in order to win customer loyalty, there has been a notable focus on after-sales service. Another strategy adopted in order to guarantee safe margins is to develop new products, a key element to induce replacement purchases which might not otherwise have been made.

In the non-electrical sector as well, increasing competition has also reshaped manufacturers' strategies around two factors: a focus on technological innovations in order to maintain high margins; and an increase in mergers and acquisition activities to reach critical mass.

As far as concentration is concerned, companies such as the English group Hepworth (via their French subsidiary Saunier Duval) have demonstrated an active strategy of external expansion around Europe in 1994, with the acquisition of 49.9% of the French activities of the Italian company UNICAL and the creation of Saunier Duval Polska in 1995. Other companies are trying to develop partnerships and joint-ventures in order to consolidate their European position.

### Impact of the Single Market

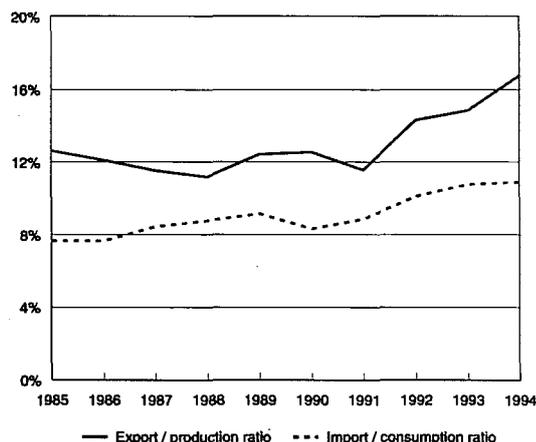
In the non-electrical sector, specific technical and customs requirements have made it difficult for foreign manufacturers to penetrate other European markets. Through the implementation of EC standards, the Single Market has contributed to

**Figure 7: Domestic appliances**  
**Origin of EU Imports**



Source: Eurostat

**Figure 8: Domestic appliances  
Trade intensities**



Source: DEBA GEIE, Eurostat F1

boost market concentration and pan-Europeanisation of products and operations.

In the electrical sector, the efforts carried out by the EU in order to normalise the Single Market and the process of cultural homogenisation started among all Member Countries should incite manufacturers to build pan-European brands, even though some national patterns still appear to be quite strong.

## ENVIRONMENT

Environmental protection has become an important issue for the EU. An illustration of this trend is the total banning in the use of CFCs in refrigerators since 1995. This regulation should have significant impact on the production cost of refrigerators and freezers, because the costs of substitute products are high. Other legal constraints, introduced in 1994, relate to the elimination of waste water coming from dishwashers and washing-machines.

The other important measures that have greatly affected European manufacturers are the packaging directives. The objective of the Commission is to harmonise national measures on the management of packaging waste in order to prevent any impact on the environment and to encourage reuse and recycling.

## REGULATIONS

An agreement has been reached on the directive concerning the requirement for energy efficiency in refrigerators, freezers and combined electrical appliances for household use. The directive is now in discussion in Parliament, for a second reading. In this agreement, each EU member is expected to take all measures to guarantee that refrigeration equipment will comply with the maximum electricity consumption authorised for each category. Equipment that conforms to the directive will be allowed to have the 'CE' marking.

As far as the non-electrical appliances are concerned, the main regulations focus on users, i.e. control of energy emissions and thermic insulation. Since 1996, norms have been imposed on manufacturers of water-heaters, boilers and other heating appliances. For instance, these norms stipulate the need to incorporate automatic stopping systems within water-heaters and boilers to prevent toxic emissions.

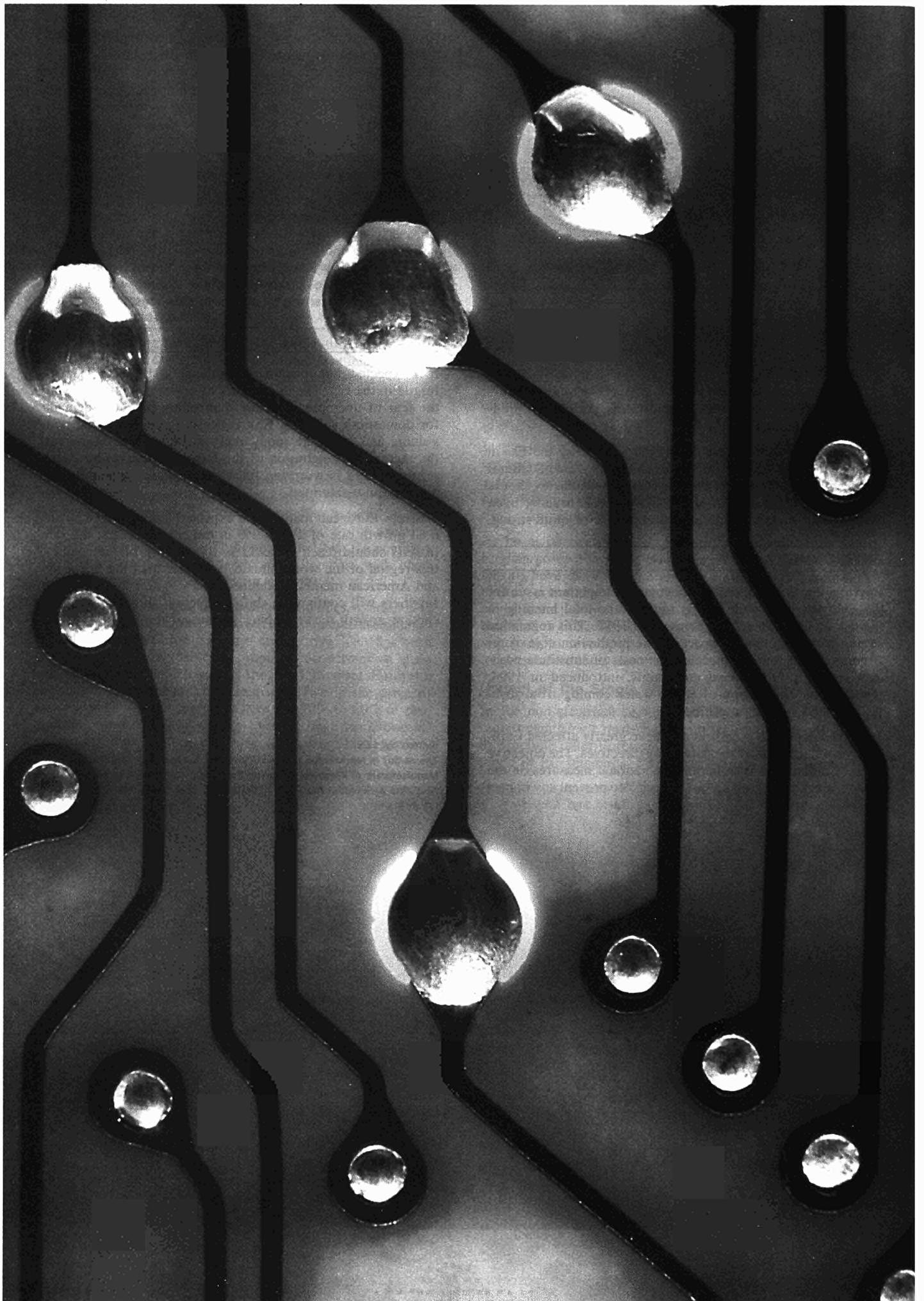
## OUTLOOK

It is expected that consumer confidence in 1996 will remain fragile in the EU. The uncertainty of economic prospects and the fear of unemployment are dampening potential demand for domestic appliances. Consequently, growth rates in both volume and value are more likely to be modest. Moreover, the increasing penetration of the European market by Asian manufacturers is worrying for a sector which appears to be already quite saturated.

Whereas European markets are expected to experience an annual growth rate of 2% to 3% in the coming years, the rate in Asia should reach 10 to 12%. By the turn of the century, this region of the world should be bigger than the European and American markets combined, and it is fair to expect that suppliers will continue to shift production abroad in order to capture growth in developing regions of the world.

Written by: LEK

The sector is represented at the EU level by: European Committee of Manufacturers of Electrical Domestic Equipment (CECED). Address: c/o ANIE, Via Alessandro Algardi 2, I-20148 Milano; tel: (39 2) 326 4299; fax: (39 2) 326 4212.



## Overview

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The electronics industry (data-processing and office automation, telecommunications equipment, consumer electronics and components) represents one of the major challenges for the EU economy. After a difficult period at the end of 1992 and the beginning of 1993, the sector's overall health has improved from 1994 onwards, even though a certain fragility and hence some uncertainty about the future are still observable. The data-processing sector remains particularly vulnerable. Consumption and production have picked up during the last two years (1994 and 1995), while the trade deficit has stabilised after having increased steadily and very considerably up to the beginning of the 1990s (having trebled between 1985 and 1991). The decline in employment, which was very marked between 1991 and 1994 and permitted a substantial improvement in productivity, has been partly checked. In international competition, however, American and Japanese firms appear to be stronger, even though a few particularly powerful and diversified European groups (Philips, Siemens, Alcatel and a few other) rank among the world leaders. The role of the EU remains essential for supporting cooperation in R&D, ensuring healthy competition and promoting the single European market.

### Industry profile

#### Description of the sector

The electronics industry comprises: data processing and office automation, telecommunications equipment, electronic components and consumer electronics.

Data processing and office automation consist of:

- minicomputers and large data-processing systems, workstations and PCs;
- peripheral units: printers, VDUs, keyboards, disk readers;
- data-communication equipment.

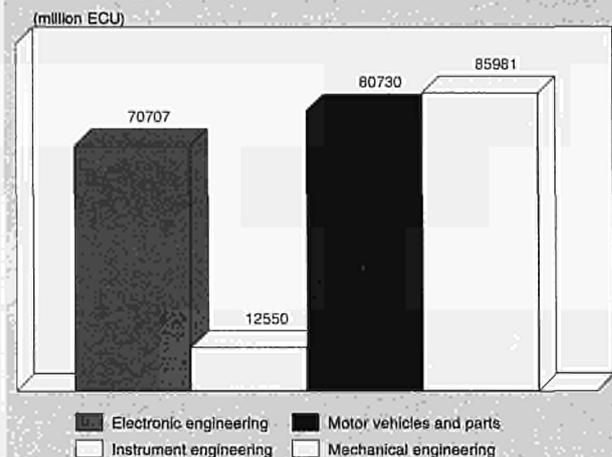
In the telecommunications equipment sub-sector the main product types are public and private switching equipment, terminals, radio and mobile and data communication transmission equipment. The group also embraces, in addition to the manufacturing of telecommunications equipment, that of electrical and electronic measuring apparatus, recording devices and electromedical equipment.

Consumer electronics encompass all audio-visual products intended for domestic use and their accessories, such as colour and black-and-white television receivers, video-tape recorders, video cameras and camcorders, CD readers and audio equipment in general. This sector also includes other "brown goods" such as cable terminals and decoders for Pay-TV channels. Other products are aerials and dishes for satellite reception, audio and radio-guidance systems for cars, mobile telephones, personal data-processing terminals and telecommunications terminals. Video game consoles are another important category belonging to the consumer electronics category.

Lastly, the electronic components sector comprises active, passive and electromechanical components.

The electronics sector is a very important part of the EU industry: in 1994 the sector's value added was over ECU 70 billion, or more than twice that of the primary metals

Figure 1: Electronic engineering Value added in comparison with related industries, 1994



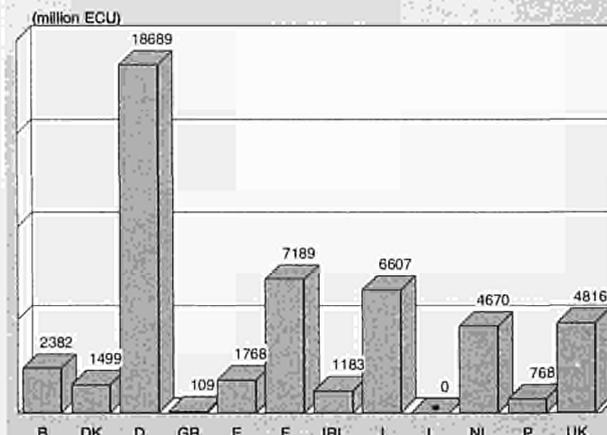
Source: DEBA GEIE

processing industry. In 1994 telecommunications equipment accounted for 37.3% of the total electronics market in the EU, data processing and office automation for 25.8%, consumer electronics for 23.9% and components for 13%. The leading EU producer is Germany, with 39.6% of the EU's value added, followed by France, the United Kingdom and Italy (19.1%, 15% and 11.7% respectively). With an annual average growth rate of 4.9% at constant prices between 1985 and 1994, electronics is one of the most dynamic European industries, although its growth rate falls short of that of the United States (5.1%) and Japan (6.8%).

#### Recent trends

Apparent consumption at current prices increased in the EU as a whole at a composite annual growth rate of 4.4% between 1985 and 1994, while production increased by 4.9% per annum on average and extra-EU exports rose at an annual rate of

Figure 2: Electronic engineering Value added by Member State, 1994



Source: DEBA GEIE



**Table 1: Electronic engineering**  
**Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	129 860	183 194	192 146	201 438	195 831	192 438	208 150	220 155	236 133	253 010	270 630	289 800
Production	121 654	159 648	168 755	174 912	170 858	170 687	184 400	196 824	211 696	227 240	243 760	261 720
Extra-EU exports	26 952	26 757	27 319	29 539	32 242	36 948	43 721	50 741	51 523	56 200	60 990	66 190
Trade balance	-8 206	-23 546	-23 391	-26 527	-24 974	-21 752	-23 750	-23 331	-24 437	-25 770	-26 870	-28 080
Employment (thousands)	1 544	1 578	1 566	1 549	1 459	1 376	1 311	1 307	1 377	1 390	1 400	1 400

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Electronic engineering**  
**Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Electronic components	31 032.0	15 411.0	10 968.0
Consumer electronics	57 251.2	44 603.0	13 176.5
Office machinery and data processing machinery	61 749.0	47 191.3	14 224.5
Telecommunications equipment, electrical and electronic measuring and recording equipment, and electro-medical equipment	89 149.7	92 605.6	16 320.1

(1) Apparent consumption and production have been estimated.

Source: EECA, DEBA GEIE, Eurostat

**Table 3: Electronic engineering**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	6.47	1.95	4.44	6.44
Production	5.89	3.64	4.89	9.63
Extra-EU exports	-0.16	10.57	4.47	24.65
Extra-EU imports	4.24	1.43	2.98	7.05

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Electronic engineering**  
**External trade in current prices**

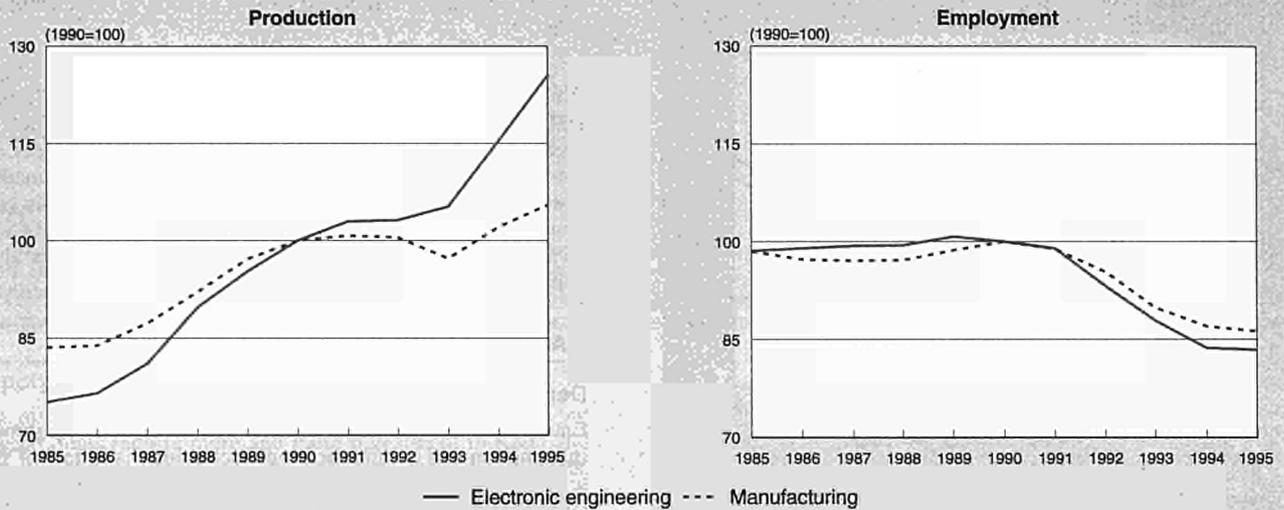
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	26 952	23 037	23 682	23 962	26 757	27 319	29 539	32 242	36 949	43 721	50 741	51 523
Extra-EU imports	35 158	32 493	36 278	43 750	50 303	50 710	56 066	57 216	58 700	67 471	74 072	75 960
Trade balance	-8 206	-9 456	-12 597	-19 788	-23 546	-23 391	-26 527	-24 974	-21 751	-23 750	-23 331	-24 438
Ratio exports / imports	0.8	0.7	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Terms of trade index	108.3	112.6	109.7	102.3	99.2	100.0	96.7	95.6	97.4	85.6	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Electronic engineering  
Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

5.3%. After having reached a peak in 1991, the trade deficit declined slightly from then on, despite a considerable increase in imports in 1994. During the last ten years the electronics sector's production has increased appreciably more than that of European industry as a whole.

In 1995 employment was 1.3 million for the EU 12 and 1.4 million with the inclusion of Sweden, Finland and Austria. The overall trend has been downwards since the beginning of the 1990s, 260 000 jobs having been lost in five years. Since 1990, employment has worsened more markedly in electronics than in other EU sectors.

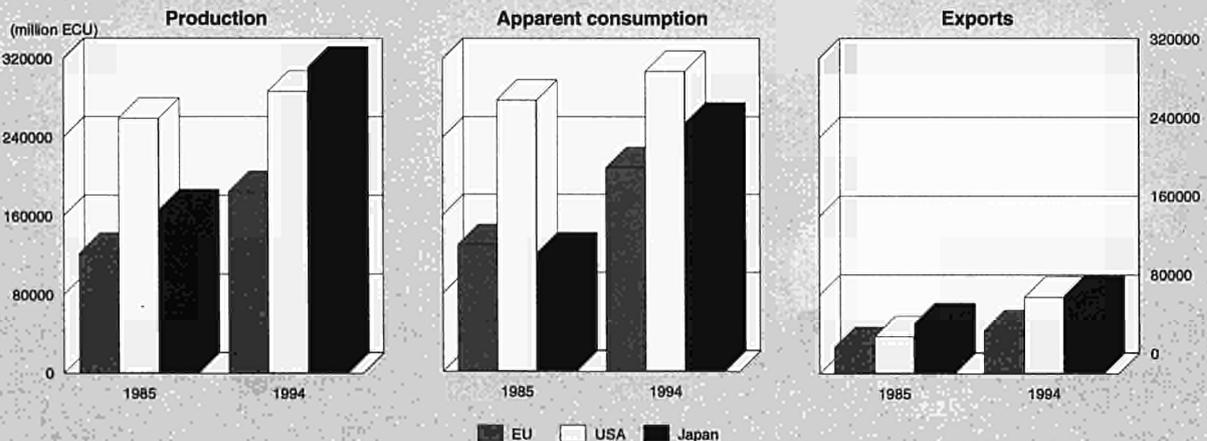
After a fall in 1991 and 1993 due to the recession and the decline in prices, apparent consumption and production increased significantly during 1994 and 1995, as a result of the overall recovery of the European economy.

### International comparison

In 1994 EU production of electronic equipment amounted to ECU 184.4 billion, that of the United States to 287.1 billion and that of Japan to 311.4 billion. At constant prices EU production increased by 51.6% between 1985 and 1994, that of the United States changed very little (+10.6%), while that of Japan almost doubled (+87.2%).

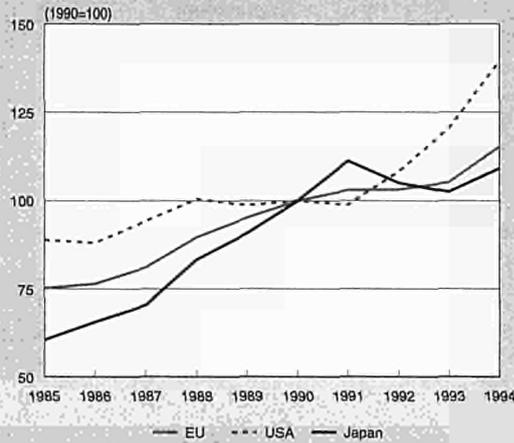
The competitiveness of the European electronics industry varies greatly from segment to segment. At the technological level, European telecommunications have long held a strong position compared with other world competitors and have created many major innovations. However, the trend towards standardisation of the technologies used makes these accessible to a larger number of producers, particularly in Asia. In order to retain their lead, the Europeans therefore have to concentrate on activities with a higher value added (especially software). Consumer electronics, on the other hand, are dominated by Japanese and Korean enterprises, particularly in segments such as video recorders and camcorders; EU enterprises are stronger

**Figure 4: Electronic engineering  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Electronic engineering**  
International comparison of production in constant prices



Source: DEBA GEIE

in the segment of colour television or decoders. Production and consumption in the European market are much less strong than in the American and Japanese markets. The data-processing industry is particularly marked by the relocation of a large proportion of the industry to South-East Asia, while the components sector is dominated by the Americans and the Japanese. Generally speaking, European enterprises are more competitive in the sectors with a high value added.

#### Foreign trade

Between 1985 and 1991 extra-EU imports increased on average more rapidly than exports. The relationship was reversed after 1991, making possible an improvement in the trade balance from then on; 1995, however, saw a very marked slackening of extra-EU trade, as regards both exports and imports. Overall, exports are still going primarily to the United States, as EFTA, which was the main destination up till 1994, has been substantially diminished since the integration of three of its Member States in the EU. Imports, too, come very largely from the United States; the share of Japan, which ranks second, decreased appreciably between 1989 and 1994.

The situation also varies depending on the segments concerned. Between 1988 and 1994 extra-EU imports of telecommunications equipment rose by 79%, but during the same period

extra-EU exports, for their part, went up by 125%. This trade surplus, rather exceptional among European high-technology sectors, rose particularly fast during 1993 and 1994, bringing the exports/imports ratio up to 1.3, against 1.14 in 1992 and 1 in 1988.

In consumer electronics the trade balance has shown a heavy structural deficit since 1988, reaching ECU 12.1 billion in 1995, as has also the data-processing industry, in which the level of imports is twice that of exports: nevertheless, the entry of Sweden, Finland and Austria into the EU made it possible to reduce this phenomenon. Trade in electronic components worsened in 1994, with a rise in the deficit of over 75% compared with 1993; the 1994 deficit represents about half of apparent consumption.

## MARKET FORCES

### Demand

Enterprises are the main market for electronic equipment: information and communications technology is in fact of strategic importance for improving their efficiency and gaining competitive advantages. Producers of data processing and office automation equipment and electronic components all aim at corporate customers. For telecommunications equipment the bulk of demand still comes from public operators in connection with the establishment and extension of their networks. However, demand from individuals is growing steadily not only in the field of consumer electronics but also for telecommunication terminals (cordless telephones, answering devices, etc.) and personal computers.

Professional demand for electronic equipment picked up in 1994 as a result of the general improvement of the EU economy. Sometimes opposing movements resulted in the end in an expanding market: the budgetary restrictions or other recessive factors were counterbalanced by the fall in the prices of most types of equipment and, more specifically in the field of telecommunications, by the introduction of network modernisation programmes.

All electronic goods, whether intended for individuals or for enterprises, are based on micro-electronics, the technological developments of which give a direct boost to industry. Production is characterised in each sub-sector by the improvement in intelligence and functionality, miniaturisation and price reduction.

**Figure 6: Electronic engineering**  
Destination of EU exports



Source: Eurostat

**Table 5: Electronic engineering  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	76.2	77.2	81.5	90.2	94.5	100.0	104.1	110.7	119.8	137.9
Unit labour costs index (3)	98.9	102.3	104.2	99.5	100.5	100.0	104.6	104.4	100.0	89.6
Total unit costs index (4)	94.6	95.4	95.1	96.0	98.6	100.0	102.2	102.6	101.2	96.9
Gross operating rate (%) (5)	13.2	12.7	12.4	12.9	12.2	11.6	10.3	8.0	7.2	9.3

(1) Some country data has been estimated.  
 (2) Based on index of production / index of employment.  
 (3) Based on index of labour costs / index of production.  
 (4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.  
 (5) Based on (value added - labour costs) / turnover.  
 Source: DEBA GEIE, Eurostat

**Supply and competition**

The market for electronic products is a worldwide one, but new products require more and more investment in R&D and hence ever-larger production volumes to cover these costs. Industrial competition is worldwide. Very many American or Japanese groups own R&D and production units in Europe, either via establishments directly set up by them or through purchases of European enterprises.

In telecommunications, after a long period characterised by integration strategies, policies of specialisation and renewed concentration on the basic trades are now being more and more widely adopted. European enterprises hold a strong position on the world scene. However, the markets for equipment for corporate networks, a more recent development, are dominated by the American producers. In data processing the slump of the early 1990s called in question the dominance of the big world leaders. Nevertheless, the European industry still suffers from a lack of internationalisation. In consumer electronics the degree of competition at world level is such that it is difficult to achieve any substantial margins except in growth segments: mobile telephony, satellite decoders, etc. Lastly, the electronic components industry is an extremely competitive one, with virtually zero transport costs, in which Europeans are underrepresented. A large number of countries, especially in Asia (Korea, Taiwan, etc.) are proving to be powerful competitors on the international scene.

On the technological plane the general use of digital technology makes possible convergence of the data-processing, telecommunications and consumer electronics sectors and a great increase in the number of products on offer. The miniaturisation of components and the steady increase in power, for their part, generally offer a more and more extensive range of potential functions for electronic equipment.

**Production process**

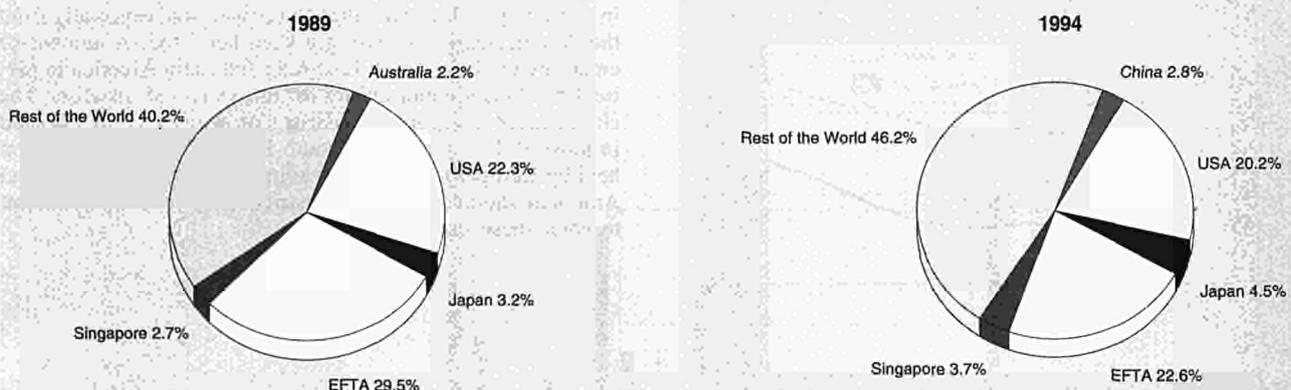
R&D costs represent an ever-growing proportion of product costs (between 10 and 20% for the various products of the electronics branch), whose life cycle is itself shorter and shorter. The combination of these two phenomena is forcing producers to rationalise their production processes more and more. This is taking place through movements of vertical integration in order to control supplies and of horizontal integration in order to spread the expenditure over various segments.

**Industry STRUCTURE**

**Companies**

In each sector of the electronic industry at least three European enterprises rank among the 20 world leaders. Overall, Siemens, Philips and Alcatel occupy the first three positions in the European electronics industry (adopting a strict definition and thus excluding IBM Europe). The telecommunications sector

**Figure 7: Electronic engineering  
Origin of EU imports**



Source: Eurostat



**Table 6: Electronic engineering  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	1.14	1.18
Ellada	N/A	N/A
España	0.38	0.39
France	1.15	1.05
Irøland	N/A	N/A
Italia	0.75	0.73
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	N/A	N/A
United Kingdom	1.12	1.18

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

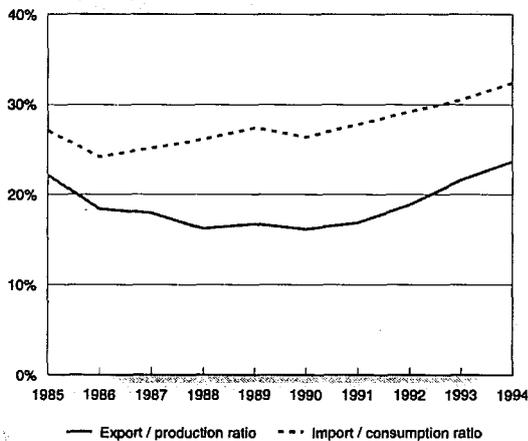
is best represented: European suppliers have for five years retained between eight and ten of the twenty leading positions in the world classification of the industry. The French Alcatel, the German Siemens and the Swedish Ericsson have long shared three of the top ten world positions between them. Thanks to the explosion of the market for mobiles, the Finnish firm Nokia is also climbing towards the top of the table. In the other three segments the European positions are less marked: SNI (Siemens Nixdorf, Germany), Olivetti (Italy) and Bull (France) in data processing, Thomson (France), Philips (Netherlands) and Nokia (Finland), until 1995, in consumer electronics and Philips (Netherlands), SGS-Thomson (France/Italy) and Siemens (Germany) in components.

Apart from the very large groups, the industry is composed of a multitude of small enterprises: in 1992, nearly 100 000 companies with fewer than 20 employees, representing a total of 180 000 jobs, were recorded in the electronics sector in the EU.

### Strategies

EU electronic enterprises are engaged in efforts of rationalisation and consolidation as well as reduction of costs and of the time taken to market innovative products. Following the restructuring programmes carried out by Philips and, to a smaller extent, by Siemens at the beginning of the 1980s,

**Figure 8: Electronic engineering  
Trade intensities**



Source: DEBA GEIE, Eurostat

Alcatel in 1995 performed a very marked recentring operation which has led temporarily to a very large deficit. At the same time, partnership agreements are continuing to take place in growing numbers, enabling the protagonists in the sector to achieve critical mass or gain access to certain markets. These alliances are taking the place of the more direct concentration movements (mergers/acquisitions) which marked the 1980s and the early 1990s.

### ENVIRONMENT

The processing of some products, particularly in the field of components, entails the use of substances which are sometimes highly toxic. Industrialists are therefore paying close attention to the work concerning the environment which is being carried out at European level (participation in the "International Conference on the Environment, Safety and Health"), with an eye, particularly, to the problems of waste and of product recycling.

### REGULATION

In telecommunications the European Commission has been engaged for ten years in a continuous course of action for the harmonisation of standards. The creation of pan-European networks and services depends on this. The Commission also - and more comprehensively - plays a part through the financing of major programmes of pre-competitive research (ACTS and ESPRIT in telecommunications, JESSI, followed by MEDEA, in micro-electronics). The sector comprising information and communications technology is thus regarded as the heart of the competitiveness of the European economy (see the Bangemann report). The Commission has also set up programmes for aid to less favoured regions for the purpose of providing them with technological resources.

### OUTLOOK

Overall, the electronics sector continues to be one of the most dynamic branches of the EU industry. It has to contend, however, with growing difficulties, partly due to the intensification of international competition. In three of the four segments of which it is composed, the situation is clearly disquieting. Despite a renowned technological level, consumer electronics is unable to climb out of the red, while data processing is suffering, in Europe more than elsewhere, from extreme slackness of activity. In the components field, despite the improvement in the technological and financial situation of the major European protagonists, the gap between them and the Americans and Japanese continues to widen.

Only telecommunications, which are traditionally one of the fields in which the Old Continent's industry excels, are still in a strong position, even though competition, especially from the Americans, is increasingly keen here, too. A number of emerging markets, South-East Asia and Latin America in particular, all offer opportunities for European industrialists. The choice made as regards standards (for instance GSM, adopted in most of the countries of South-East Asia) and the position held by European operators in some regions (especially Latin America) should help the industrialists of the Old Continent to enter these markets.

Written by: IDATE

The industry is represented at the EU level by: The European Telecommunications and Professional Electronics Industry (ECTEL).

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# Computer and office equipment

Nace (Revision 1) 30

The lacklustre growth of the European market in the first half of the 1990s is beginning to benefit from developing technology drivers, which started to play an important role in driving the market in 1994. In addition the Information Technology (IT) world is poised for a significant shift with large implications for business and society. Computer hardware, particularly personal computers, have grown in number and power. Communications software has made the connection of previously isolated PCs routine, current microprocessor technology has evolved to encompass not just PCs but increasingly powerful families of easily-scaleable systems and servers capable of storing and manipulating unprecedented quantities of real-time data. The IT sector is expected to have a strong potential for growth in the coming years thanks to increasing performance/price ratios, new applications, the emergence of multimedia capabilities and the increasing penetration of the mass home market.

## INDUSTRY PROFILE

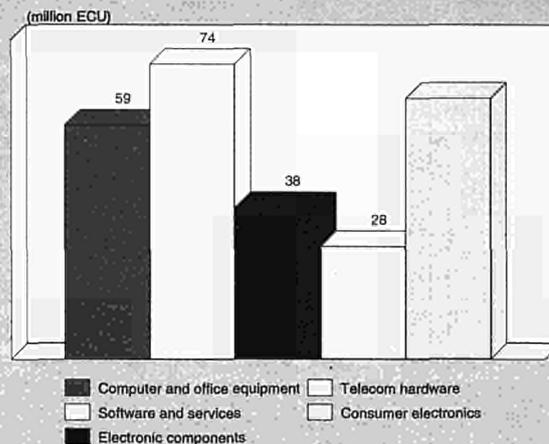
### Description of the sector

The computer and office equipment sector makes up division 30 in the NACE (Rev. 1) classification. Within this division, office equipment such as typewriters, calculators, cash registers, mail and money handling equipment, form class 30.01; while class 30.02 covers the following product categories:

- large, medium and small Electronic Data Processing (EDP) systems, workstations and personal computers;
- EDP-peripherals such as printers, monitors, keyboards and disk drives;
- data communication equipment;

In 1995, the market value of the computer and office equipment sector for the EU-15 represented 58.7 billion ECU. Of this, 46.5 billion ECU (79%) represented computer hardware, 7.9

Figure 1: Computer and office equipment - Bar chart  
Market value in comparison with related industries, 1995



Source: EITO, Eurostat

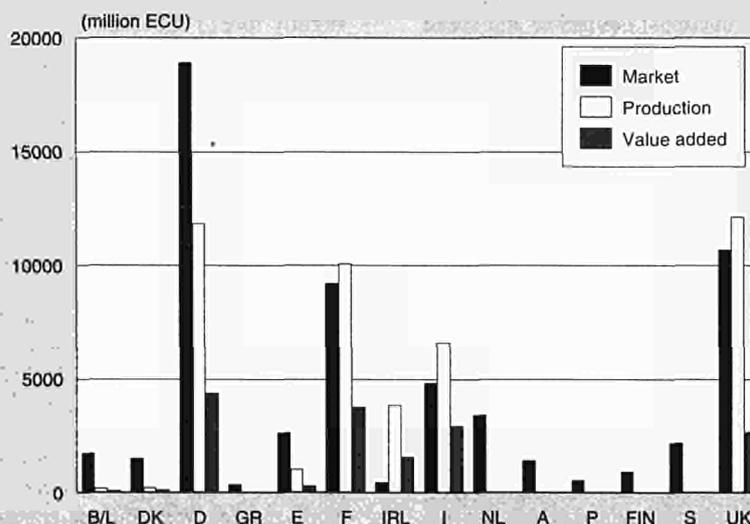
billion (14%) was for office equipment, while 4.3 billion ECU (7%) was for data communications hardware, modems etc.

Production in 1995 was concentrated in Germany (26%), the UK (26%), France (22%) and Italy (14%). Germany's large market sector and growth in hardware means that, although she produces a large proportion of computer and office equipment, market demand is still higher (the highest in the EU at 18.9 billion ECU or 32% of market value) and so Germany is a net importer.

Meanwhile, France, Italy, and the UK are all net exporters of office and computer equipment; and Ireland, who has a small home market relative to production (8% of total EU production), produces 9 times her national market value for the sector.

In comparison with other IT sectors, the market value for the hardware and office equipment is less than for software and services sector but is twice the size of the market of the telecommunications hardware sector, with 28 billion ECU and

Figure 2: Computer and office equipment  
Value added by Member State, 1995



Source: DEBA GEIE, EITO

**Table 1: Computer and office equipment  
Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)
Market value	N/A	N/A	N/A	N/A	48 815	47 902	50 236	54 203	58 738	63 180	67 230
Production	36 408	45 147	47 007	50 257	47 698	42 003	47 191	47 609	50 627	55 430	60 580
Extra-EU exports	9 407	9 331	9 192	9 940	9 984	12 129	14 224	16 655	15 677	17 350	19 110
Trade balance	-5 714	-12 124	-12 515	-13 921	-14 500	-12 972	-14 558	-15 058	-18 076	-19 350	-20 380
Employment (thousands)	252	267	259	293	268	233	215	206	218	220	220

(1) Some country data for production and employment have been estimated.

(2) DEBA GEIE estimates for production and employment.

(3) Eurostat estimates for EUR15, except for market value.

(4) Rounded EITO forecasts for market value and rounded DRI forecasts for the other variables.

Source: EITO, DEBA GEIE, Eurostat

**Table 2: Computer and office equipment  
EU computer and office products market by segments**

(million ECU)	1993	1994	1995	1996 (1)	1997 (1)	1993/94 (%)	1994/95 (%)	1995/96 (%)	1996/97 (%)
Large Systems	6 420	5 863	5 365	5 110	4 910	-9	-8	-5	-4
Medium Systems	5 390	5 259	5 373	5 530	5 710	-2	2	3	3
Small Systems	5 309	5 469	5 600	5 790	6 060	3	2	3	5
Workstations	2 993	3 328	3 880	4 390	4 880	11	17	13	11
Personal Computers	16 010	18 239	21 582	24 350	26 890	14	18	13	10
PC Printers	3 878	4 160	4 708	5 220	5 640	7	13	11	8
Data Communication Equipment	3 473	3 889	4 342	4 830	5 110	12	12	11	6
Total Computer Products	43 473	46 207	50 850	55 220	59 200	6	10	9	7
Copiers	4 206	4 245	4 287	4 350	4 420	1	1	1	2
Other Office Equipment	3 702	3 620	3 601	3 610	3 620	-2	-1	0	0
Total Office Products	7 908	7 865	7 888	7 960	8 040	-1	0	1	1
Computer & Office Products	51 381	54 072	58 738	63 180	67 240	5	9	8	6

(1) Rounded EITO forecasts.

Source: EITO

a third more than the electronic components sector, with 38 billion ECU.

The IT industry is steadily merging the developments within the hardware industry with those in the software and computer services sector. Computers no longer act in isolation and increasingly their success depend upon their ability to fit into an overall 'product solution'. For example, the trend towards the networking of computers involves the integration of telecommunication and software functions; the power and speed of computer and office equipment is linked closely to the developments within the electronic components sector; while the success of the home PC market and 'edutainment' functions, means the sector is becoming closely related to the consumer electronics market.

### Recent trends

Whereas in the 1980s the IT market outperformed overall economic growth, the economic slowdown at the beginning of the 1990s demonstrated that the computer and office equipment market had reached a mature stage and had entered into a cyclical trend where market growth approached the main GDP and investment trends.

Between 1992 and 1993, market value declined by nearly 2%, partly influenced by the general economic recession but also by increased competition and increasing price/performance ratios whereby volume of specific segments grew substantially yet the total market value remained low.

Such a decline necessitated a strategic re-focus and restructuring of the computer and office equipment sector. EU production suffered, falling 5% 1991-92 and by nearly 12% 1992-93. Production has since rebounded to show double digit growth 1993-94 and is expected to stabilise.

Since 1992, employment has consistently fallen - on average by 8% per year between 1992 and 1995. With the addition of the 3 new Member States, total employment increased slightly to 217 thousand in 1995.

New technology and innovations will keep the market stimulated and the EU market value is expected to increase by 8% 1994-95 and by 7% per year 1995-97.

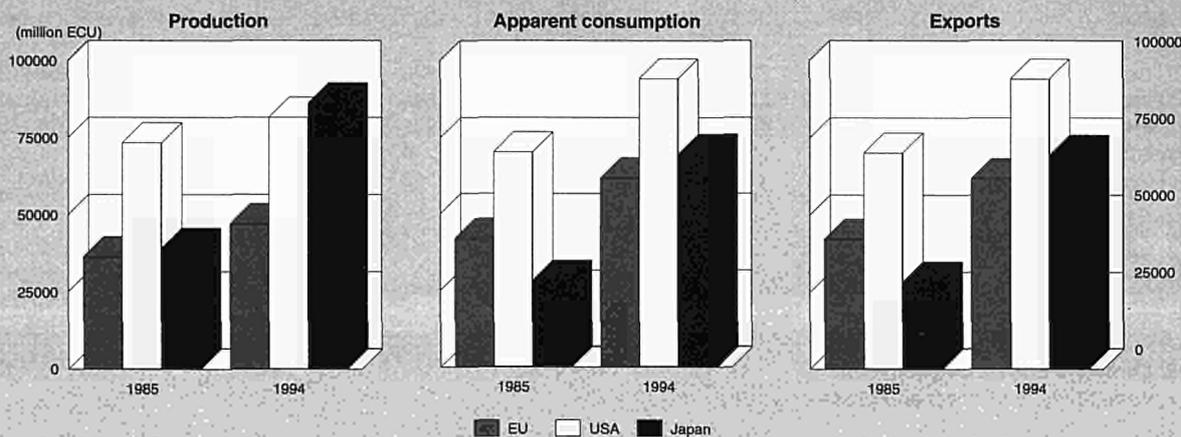
### International comparison

US production in 1985, at 73 billion ECU, was approximately double that of the EU and that of Japan.

However, while EU and US production between 1985 and 1994 on average grew by 2% and 1% per year respectively, Japanese production increased at a annual growth rate of 7%; so that in 1994, the Japanese production of 86 billion ECU had caught up with and even surpassed that of the USA and was nearly double that of the EU.

In 1995, the value of the world market for computer and office equipment reached 220 billion ECU. At 88 billion ECU, the USA is the largest market and represents 40% of the world market. West Europe is second with 62.4 billion ECU or 28% of world market share, while Japan represents 17% of the world market.

**Figure 3: Computer and office equipment**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Table 3: Computer and office equipment**  
Average real annual growth rates (1)

(%)	1985-90	1990-94	1985-94	1993-94
Market value	N/A	N/A	N/A	-0.20
Production	5.08	4.45	4.80	14.60
Extra-EU exports	-1.86	9.90	3.20	41.45
Extra-EU imports	-0.90	1.12	-0.01	4.64

(1) Some country data for production have been estimated.  
Source: EITO, DEBA GEIE, Eurostat

The growth in the home market especially in the USA and also in the EU exceeded production so that in 1994-95 both regions were net importers of computer and office equipment, while Japan is a net exporter for this sector. In fact, in 1994, the Japanese domestic market of 38 billion ECU represented only 47% of the total value of the country's production in the sector. This indicates Japan's global orientation.

Due to cost developments in Japan and relocation from the USA and the EU, several Pacific rim countries such as Singapore, Taiwan, Hong Kong and Malaysia have substantially increased their contributions to world production. Meanwhile, China is emerging as a new important host country for production, while East Europe represents 1% of the world market. Apart from Japan, Eastern Europe and the Pacific Rim countries will be the fastest growing markets.

**Foreign trade**

The EU trade balance is negative with the value of imports being approximately double that of exports in 1995.

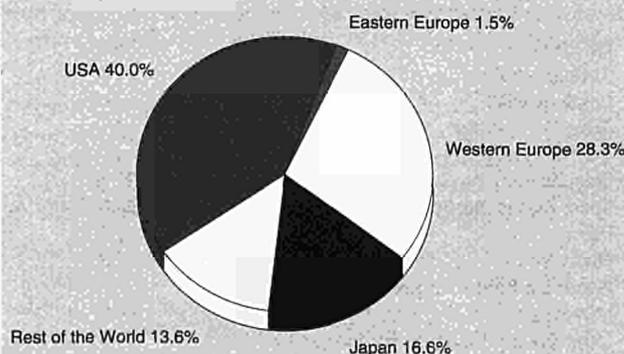
Although extra-EU exports picked up strongly in 1993 and continue to show double digit growth, international competition is strong, extra-EU imports rebounded in 1994 and so the large trade gap is difficult to bridge.

Much of EU trade is between European economies, and since Finland, Sweden and Austria are net importers, the addition of these 3 new Member States reduces further the extra-EU exports, extra-EU imports have increased and the trade balance has become more negative.

The USA still maintains a dominant share of the extra-EU imports with a 38% share in 1994, and Japan with a 19.4% share, although these shares have been slipping due to intensified international competition. Over the 5 years to 1994,

the countries of emerging Asia have increased their importance. Singapore has nearly doubled its share of EU imports to 12.8%, while Taiwan has increased its share of 2% to 10.7%.

**Figure 4: Computer and office equipment**  
International comparison of market value, 1995



Source: EITO

**Table 4: Computer and office equipment  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	9 407	7 753	7 752	8 210	9 331	9 192	9 940	9 984	12 129	14 224	16 655	15 677
Extra-EU imports	15 120	13 663	15 229	18 965	21 454	21 707	23 861	24 484	25 100	28 782	31 712	33 753
Trade balance	-5 714	-5 910	-7 477	-10 755	-12 124	-12 515	-13 921	-14 500	-12 972	-14 558	-15 058	-18 076
Ratio exports / imports	1	1	1	0	0	0	0	0	0	0	1	0
Terms of trade index	140	138	123	104	105	100	98	96	111	84	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 5: Computer and office equipment  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	80.3	79.4	84.6	91.6	93.5	100.0	95.6	107.3	115.5	143.5
Unit labour costs index (3)	94.6	101.0	101.5	95.5	99.8	100.0	110.1	105.9	96.5	79.9
Total unit costs index (4)	95.7	95.6	92.3	94.0	97.6	100.0	101.0	100.5	92.7	87.2
Gross operating rate (%) (5)	18.5	18.8	18.7	18.5	16.5	15.4	13.3	7.8	8.2	10.6

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Table 6: Computer and office equipment  
Breakdown by size of enterprise, 1992 (1)**

(%)	Number of enterprises (units)	Share of number of enterprises	Share of employment	Share of turnover
Less than 20 employees	9 542	91	10	5
20-99 employees	657	6	8	5
100 or more employees	278	3	82	90

(1) Estimates for EUR15.

Source: Eurostat Enterprises in Europe

**Table 7: Computer and office equipment  
The twelve largest companies in Europe, 1994**

(million ECU)	Country	Turnover	Net profit	Employment (thousands)
De La Rue	GBR	974.9	142.0	8.01
Triumph-Adler	D	591.8	14.9	3.69
Linotype-Hell	D	515.5	2.7	3.52
Tulip Computers	NL	211.5	3.3	0.60
Tecnost	I	189.4	18.7	1.04
Domino Printing Sciences	GBR	116.6	11.1	0.85
Micro Focus Group	GBR	115.9	5.9	0.75
Psion	GBR	79.1	5.4	0.49
Riva Group	GBR	74.8	-0.4	0.81
Acom Computer Group	GBR	65.1	-4.3	0.27
Microvitec	GBR	57.0	2.5	0.68
Ingenico-Cie Indus et Fin d'Ingenierie	F	25.8	9.1	0.16

Source: DABLE

**Table 8: Computer and office equipment**  
**Share of top ten hardware vendors in Member State markets**

(%)	1992	1993	1994
Belgique/België, Luxembourg	58.3	60.5	60.7
Danmark	62.9	62.0	60.1
Deutschland	56.2	56.6	56.9
Ellada	N/A	N/A	N/A
España	59.6	53.9	54.7
France	62.8	60.3	61.2
Ireland	N/A	N/A	N/A
Italia	69.0	62.6	63.4
Nederland	61.1	57.1	58.9
Österreich	60.1	63.4	61.4
Portugal	N/A	N/A	N/A
Suomi/Finland	51.1	53.9	57.7
Sverige	57.1	56.4	56.0
United Kingdom	52.5	51.1	50.3

Source: EITO

**Figure 5: Computer and office equipment**  
**Destination of EU exports**



Source: Eurostat

## MARKET FORCES

### Demand

The main positive factors contributing to the growth in computer equipment are: recovered business confidence driving new purchase plans; the Internet as a tool for communication and electronic delivery attracting new consumers and business users to purchase IT; continued price erosion in desktop and notebook personal computers; continued improvements in integration capabilities of network and software products; increasing availability of new applications running in distributed computing environments.

In the printer market, growth in colour-capable ink-jets was superseded by the growing market for colour non-impact printers. The printer market will shift from monochrome to colour output over the next few years. The ink jet market boom coincided with strong PC growth and growth with small office and home office users. Growth in the laser page printer continued.

However, the IT hardware market continues to be driven by PC sales, which continues to show annual double digit growth. The shift towards the adoption of higher performance machines

and a vendor price war enabling buyers to purchase top-of-the-range PCs at attractive prices has helped to boost the market.

Shrinking system life cycles and expanded software capabilities is boosting upgrade demand. For example, in order to run Windows95 acceptably and benefit from the additional features, most users will need to either upgrade or replace older PCs.

Meanwhile, new market are expanding. There are lower entry price points and declining costs for the total PC solution, making investment in IT affordable for small businesses. Many developing countries are embracing computer technology as falling costs have made equipment more affordable.

Wider consumer acceptance of home computing has increased demand from the home market. Sales of PCs purchased out of consumer disposable income continue to drive overall PC growth in the EU. The increasing availability of high quality PCs at affordable prices, combined with the expansion in the range of applications and increased exposure in the mass media through television and newspaper advertising has helped significantly to increase the market. Consumers are tending to spend more, choosing higher performance PCs for greater

**Table 9: Computer and office equipment  
Revenues of European IT Companies by product range, 1994**

(million ECU)	1994 revenue	Large systems revenue	Mid range revenue	PC-Peri- pherals revenue	Work stations revenue	Software revenue	Data commu- nications revenue	Services and support revenue	1993/94	(% change in total revenue)
Siemens-Nixdorf	8 575	883	1 098	1 158	86	1 466	1 243	0	2 641	39
Groupe Bull	6 409	1 025	449	1 538	64	385	577	0	2 371	50
Olivetti	6 308	145	341	1 659	0	1 180	1 344	252	1 388	46
ICL	4 831	319	599	1 048	0	299	729	0	1 836	44
Cap Gemini Sogeti	3 515	0	0	0	0	0	211	0	3 304	111
Alcatel Business Systems	1 414	0	0	0	0	0	0	1 414	0	N/A
SAP	1 344	0	0	0	0	0	981	0	363	102
Finsiel	1 114	0	0	0	0	0	56	0	1 059	27
Sema Group	1 086	0	0	0	0	0	76	0	1 010	70
LM Ericsson	999	0	0	0	0	0	0	799	200	N/A

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return on their investment. Further enhancing consumer demand is the expanding number work-at-home households.

However, the household segment has developed much slower in some countries than others; no growth is expected in Spain, Italy and even France until 1997, while demand from the small business community and home PCs in Germany continues to expand.

In the portable market, the arrival of cost-effective, low-power portable Pentium PCs is pushing down the high price premium which has to be paid for the most up-to-date technology. The diminishing cost differential, the comparable power and ease of use of portable PCs, complemented by docking stations and port replicators, ensures that while in 1995 they represented 26% of the total market value for PCs, their share is increasing and high growth rates are expected to be sustained in the medium term.

Against this, some factors held back sales in the PC market: a wait and see attitude towards new high-end hardware in some countries, shortages of TFT displays (high quality colour screens for portable), competition from new high performance home game systems, limited multi-media applications in business, delay in the development of the information superhighway, and the inability to see the PC as a mainstream electronic consumer product.

Meanwhile, Client/server computing is gaining acceptance and the market is increasing. European users tend to be more comfortable with smaller systems and have a high rate of

UNIX machines, which creates a positive environment for distributed computing. Users are moving to networked distributed architectures either by using client/servers or by downsizing corporate multi-user systems. They are demanding a new combination of features for their advanced services: robust application services, distributed computing services, simple to integrate components, ease of operations (installation, maintenance) and a large cache of applications and tools

The bulk of growth in the LAN hardware market came from sales of Internet working equipment and smart hubs offering both local and wide area network interface cards market remained essentially static.

In the workstation market double digit growth rates in 1995, were driven by considerable activity amongst vendors with new products. This was further supported by the traditional workstation market which still has to reach saturation point.

In the multi-user hardware systems market, the large scale systems experienced another year of shrinking markets. The flat performance of medium scale systems was driven by the increasing size of databases held in this scale of machine, driving demand for more processing power, against falling prices. Small-scale systems also experienced a flat performance, despite falling prices, as client/server environments continued to proliferate.

In the traditional office equipment market, the emergence of new technologies such as image compression, optical character recognition, optical plastics and artificial intelligence and the integration of new features attracted new customers in demand for more sophisticated image processing capabilities, particularly in the reprographics market. The shift towards digital computer-connective, network-shared office equipment is poised in the next few years to accelerate true connectivity between networked computers and such digital office equipment as copiers, printers, scanners and facsimile machines and will represent an excellent opportunity for long-term growth.

### Supply and competition

In the early 1990s, computer and office equipment companies fought for survival, then as the recovery from recession took off, they restructured their operations and in 1994-5, companies have started to show financial stabilisation and growth.

In a steady growing market environment, computer systems vendors have split into leaders, followers and transients seeking to catch on to potential future industry standards. The strong players in the IT market are now getting stronger and

**Table 10: Computer and office equipment  
The ten largest European IT vendors, 1994**

(billion ECU)	Revenues (1)
IBM	19.4
Siemens-Nixdorf	5.3
Hewlett-Packard	5.0
Digital Equipment	4.6
Fujitsu & ICL	3.3
Compaq	3.2
Olivetti	3.0
Groupe Bull	2.9
Apple	1.8
Unisys	1.6

(1) Including software and services.

Source: Eurobit

**Figure 6: Computer and office equipment  
Origin of EU imports**



the vendors that are showing weakness are in danger of being acquired or forced out of the market. The swift pace of merger and acquisition activity continues as solid revenue growth and financial stability are sustained for most vendors.

In 1995, in an attempt to boost the market for Macintosh computers, Apple Computer granted licenses to a few companies to build clones of Apples' Macintosh line of computers. While it is a positive move, the current licensees are targeting niche markets and none is expected to generate the volume necessary to change the competitive strong hold of the PC market.

In addition, new competition in the home market is expected. Technological improvements have boosted the power and lowered the cost of mobile digital devices with computing capabilities, ensuring greater market acceptance. Digital, interactive TVs, PC/TVs and other hybrid digital equipment, for 'infotainment', are starting to be sold, predominately by the major consumer electronics companies, who bring the knowledge to make complex electronic equipment - camcorders, CD players - easy to use and have the consumer marketing power to build growth.

Indeed, many companies feel that the PC is still too complicated and expensive for mass home use. Their aim is to make the PC an information appliance that is as inexpensive and easy to use as the telephone or the television. This means stripping the PC to a minimum with little power or memory and linking it to applications held on servers on the Internet, which will rely on much quicker data telecommunications.

Therefore the usage of a PC for specific information applications will therefore have to compete with specialised information appliances.

In businesses too, these lower-power network computers would mean lower support, software and training costs because the network computers can be upgraded and controlled from a central location.

### Production process

The continuing technology trends in the 1990s can be summarised as follows:

the increasing convergence of the office, computer, telecommunications and consumer electronics sectors with regard to technology, media and applications and the shift from analogue/optical to digital technologies;

- the miniaturisation of electronic components with a parallel cost (and price) reduction and an increasingly greater level of reliability and ease of use;
- the evolution of IT products and systems towards becoming ubiquitous and powerful tools for both business and domestic use;
- the improvement of human/machine interactions, with the goal of reaching a natural quality interface;
- declining hardware prices and improvements in the compatibility and speeds of audio, video and storage devices;
- multi-functional applications and use of machines, with more office equipment incorporating the same technology;
- suppliers push to adopt multi-media technologies in standard PC configurations, coalescing standards for videos.

## INDUSTRY STRUCTURE

### Companies

The computer and office equipment sector is highly concentrated and although there are incentives for the industry to consolidate, the globalisation of markets has also meant there are many new international manufacturers entering the EU market, and opportunities for niche marketing as the market becomes differentiated and specialised, becomes possible.

In 1992, there were 10 477 computer and office equipment manufacturers in the EU, representing a 38% increase over 1990. 91% of these enterprises had less than 20 employees and contributed 5% of the turnover and 10% of the employment in the sector. The 278 enterprises with 100 or more employees accounted for 90% of the turnover and 82% of the employment.

The top ten manufacturers in each EU Member State represented a total market share of 68-82% in 1991. In 1994, these market shares had fallen to 51-63%, due to the fact that new domestic and international manufacturers entered the market whilst others had re-focused their business.

Ongoing price competition and industry globalisation may well lead to further consolidation among the second and third-tier vendors. Increasing competition is the result of the fact that PC manufacturers now must be able to compete on a global basis, which requires substantial investment in global manufacturing and distribution infrastructure. This has crowded out the many smaller players that are not able to

**Table 11: Computer and office equipment  
The eight largest companies worldwide, 1994**

(million ECU)	Country	Revenue	Profits	Employment (thousands)
IBM	USA	76 191	3 594	243
Fujitsu	Japan	39 010	539	164
Hewlett-Packard	USA	29 727	1 902	98
Canon	Japan	22 503	362	68
Digital Equipment	USA	16 000	-2 565	78
Compaq Computer	USA	12 925	1 031	14
Ricoh	Japan	12 218	222	50
Apple Computers	USA	10 930	369	15

Source: Fortune 500, (C) 1992 Time Inc. All rights reserved.

compete on this scale. In addition, the top-tier vendors have narrowed the price gap between their machines and those manufactured by clone makers. In the past, clone machines sold for as much as 20-30% less than comparable first-tier computers, now with the price gap narrowed, the quality of support, the range of available products and options. Larger companies can leverage on their brand name and increase market share.

However, companies are surviving by re-focusing on their core business or are placing strategic emphasis on specific market segments or links of the market chain. For example, providing complete hardware and software solutions for the banking and finance sectors, or focusing on PCs for the home market.

Because of tighter margins on hardware and increased customer demand for help in choosing and supporting IT systems, companies are integrating the sale of computer and telecommunications hardware with software and services solutions.

With revenues of 19.4 billion ECU, IBM was the largest IT manufacturer in Europe (including software and services) in 1994, followed by Siemens-Nixdorf at 5.3 billion ECU, Hewlett-Packard at 5.0 billion ECU and Digital Equipment at 4.6 billion ECU. Fujitsu & ICL, Compaq and Olivetti showed revenues of just above 3 billion ECU, with Groupe Bull at 2.9 billion ECU. Apple and Unisys showed revenues of 1.8 and 1.6 billion ECU respectively.

### Strategies

Products cycles are both important and increasingly short. The combination of the advances in technology and the fierce competition means that new products are outdated, in as little as one year. The 2-3 year product cycles in the 1980s have reduced. Older models are marked down aggressively in price. And these rapid product transitions have put a premium on execution and quick market reactions.

In recent years, sharply reducing prices was a strong competitive move. A company willing to take the risk, could slash prices and steal market share, while its competitors were slow to respond. For example, Compaq in 1992, introduced a line of computers that were one-third less expensive than its previous generation and priced well below those of the competition. The company's sales subsequently increased sharply. However, when in August 1995, Compaq cut prices across its desk-top line by 25%, within days its competitors announced similar or greater reductions. While price remains a strategic weapon, it no longer has the lasting impact it once had.

PC vendors continue to pack features into each PC in an effort to expand the market and differentiate themselves from competitors. While the price point remains the same, the power and performance of the computer has increased significantly.

As prices and features of competitors' products narrow, a vendors' reputation for quality and service has become an important factor in the decision to buy a desktop computer. PC manufacturers spend considerable amounts of money to promote their brand name and image among potential customers. Industry participants have also been forced to focus on service as a way to differentiate their products.

Rapid growth in the consumer segment has also dramatically changed the way computers are distributed. All major PC vendors have broadened their reach in the consumer market through expanded distribution channels, such as computer superstores, mass merchants/department stores, consumer electronics stores, direct mail-order consumer PC. In many consumer electronic shops, PCs can be found alongside TV sets and microwave ovens.

As companies which are traditionally consumer electronics providers enter the market, computers will be simpler to use and design is likely to be more important and stylish, featuring dark colours that will co-ordinate with other consumer electronics in the home. In this way, the transition of the computer in the home market, will become as customary as consumer electronics appliances.

Whereas technological and strategic alliances and joint ventures within the sector dominated until recently, alliances with related industries, such as media and information manufacturers and distributors, are gaining increased significance.

**Table 12: Computer and office equipment  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.17	0.07
Danmark	0.26	0.25
Deutschland	1.00	0.84
Ellada	N/A	N/A
España	0.38	0.26
France	1.24	1.07
Ireland	6.68	5.92
Italia	1.08	1.01
Luxembourg	N/A	N/A
Nederland	0.60	N/A
Portugal	N/A	0.02
United Kingdom	1.06	1.74

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

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## REGIONAL DISTRIBUTION

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Intensity of IT penetration remains polarised between North and South. Consider the number of PCs installed per white collar worker. According to this ratio, Switzerland and Norway have the lead with 1 PC for every white collar worker; followed by the Netherlands, Denmark, Germany, Sweden and the UK, with about 0.7 PC installed, while in Ireland, Portugal, Italy and Greece, the ratio is less than 0.6 PC installed per white collar worker. The low-lying position of South Europe reflects the greater level of dependency upon agriculture and manufacturing as compared to services and per capita income.

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## ENVIRONMENT

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IT is making an essential contribution to breaking the link between economic development and the consumption of natural resources through the integration of 'raw material information' into products and processes. It thereby helps to reduce the amount of raw material and energy used in industry production and administration as well as to reduce the pollution caused by these activities.

The IT industry itself has developed recycling concepts which take account of the complete life cycle of a product, beginning with the design and development of the hardware, through environmentally friendly production, to the recycling of used equipment. In addition, methods of integrated environmental protection, such as environmental auditing and efficient resource management, are increasingly being applied.

In 1994, the European commission initiated a Priority Waste Streams project on waste from electrical and electronic equipment. Among other tasks the project addresses the relevant technical, logistical and financial issues in order to fully analyse the waste stream and to identify the areas which may have significant repercussions on end of life issues. European IT Industry supports this initiative in view of its lead waste experience in recent years.

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## REGULATIONS

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Regulation of IT products is based on Directives that mainly deal with technological parameters on safety, compatibility and access in the field of telecommunications. By now, all relevant technological regulations are based on EU Directives such as the Low Voltage (73/23/EEC), the Electromagnetic Compatibility Directive (89/336/EEC) and the Telecommunications Terminal Equipment Directives. For technical requirements, there are European harmonised standards such as the EN 60950 for low voltage and the EN 50022 for EMC. By 1996, at the latest, IT products will have to be marked with the CE sign to prove their legal and technical conformity.

Issues of encryption services and security (either integrated with the device or via special purpose cards) are now in debate with the increasing use of global communications and electronic message transfer; these debates will in turn impact the type of hardware demanded. The Commission's Green Paper on Encrypted Services is particularly relevant to the computer hardware, since PCs that can be used to decode broadcasts in real time could eventually be banned.

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## OUTLOOK

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The lacklustre growth of the European market in the first half of the 1990s is beginning to benefit from developing technology drivers, which started to play an important role in driving the market in 1994. And the IT world is poised for a significant shift with large implications for business and society. Computer hardware, particularly personal computers, have grown in number and power.

Communications software has made the connection of previously isolated PCs routine. In addition, current microprocessor technology has evolved to encompass not just PCs but increasingly powerful families of easily-scaleable systems and servers capable of storing and manipulating unprecedented quantities of real-time data.

Only about half of the computer users are currently linked to interconnected computer networks but by the end of the decade, this number will swell to well over 100 million, providing a critical mass of telephone-like interconnectivity.

While computers have been used in the past to improve internal business activity, in the future they will increasingly be used to automate external links between customers and suppliers in a manner similar to, but more powerful than that of the telephone. These external applications have the potential to transform business and improve productivity, while providing a new distribution channel that will offer direct and potentially more profitable relationships with customers.

Price and performance have historically driven demand in the personal computer market, but although falling costs and the increasing power of PCs continues to fuel growth in the home market, numerous other factors are also at work. Entertainment and educational software have strong appeal. On-line services have attracted millions of home users who log-on to send electronic mail, download software and participate in discussion groups. The growing number of people who spend their week working from home or while travelling has spurred demand for desk-top and portable machines. Personal productivity software, such as tax preparation and budget management applications has also made the PC a vital part of many households.

With the move into the home market, the market behaviour within the PC industry could become more like the consumer electronics market with competition focused on brand, price and quality. However, the beauty of the computer is that it is totally unspecialised - it is a generic carrier that serves as a carrier and a repository for ideas of any sort. Therefore demand depends upon the uses it can be put to and the applications and networks to which it is connected; an abundance of inexpensive computing power and human imagination are fuelling an explosion in new digital equipment, which will continue to boost the market in the coming years.

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# Electronic components

## NACE (Revision 1) 32.1

Since 1993, both consumption and production in the European electronic components industry have increased and this should continue in 1996.

The same trend was even more pronounced in the semiconductor field, where both world-wide and European markets grew considerably in 1994 (in both cases by more than 30%) and continued to grow even more strongly in 1995.

The growth is helped by the rising market for electronic equipment, but has a more structural aspect: the cost of electronic components (particularly integrated circuits) is a constantly increasing proportion of the cost of equipment, and this trend will continue in the long term, making it ever more crucial that this sector is brought under control by Europe.

However, the growth both of the market and of European production has remained below that of the world market which has been boosted by the countries of south-east Asia.

Globalisation continues with the setting up of numerous factories by non-European companies in Europe, and by European companies mainly in Asia. The effect of this on employment is uncertain. The increasing investment in semiconductors in Europe and the growth in the market for passive components should enable employment in Europe to stabilise and even to rise.

### INDUSTRY PROFILE

#### Description of the sector

The electronic components sector comprises three main categories:

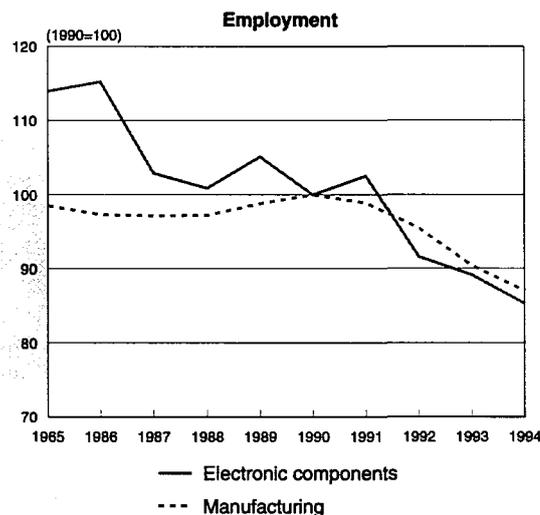
- active components: semiconductors, which include integrated circuits and discrete components, components for display (cathode-ray tubes, flat screens), and electro-optical components;
- passive components: capacitors, resistors, inductors and ferrites;
- electro-mechanical components: printed circuits, connectors, hybrid circuits, MCMs, relays, switches, keyboards.

Components such as antennas, loudspeakers and microphones are classified in another specific category, audio-visual components, and do not belong to this sector. This is also the case for batteries and accumulators.

The growth in active components, pushed up by that of semiconductors, is much greater than that of passive and electro-mechanical components, whereas a few years ago the latter two categories were as important as the first. In the active component area, cathode ray tubes constitute a large and regularly expanding market in which Europe is well positioned. On the other hand, in the emerging flat screen market (estimated at USD10 billion in 1995) which is destined to experience strong growth, Japan and its recent competitor South Korea dominate the world market, with the European company Flat Panel Displays being the only significant non-Asian producer.

Electronic components are used in almost all equipment. Moreover, their share in the cost of electronic equipment is rising continuously: in the EU, it has increased from less than 18% in 1986 to more than 20% in 1994 according to EECA, and this trend will continue because of the growing complexity of electronic components, particularly of semiconductors and passive components. The trend is even more pronounced at world level.

Figure 1: Electronic components  
Employment compared to EU manufacturing



Source: EECA, DEBA GEIE

Electronic components are mainly developed and used in the following sectors: data processing, communications, consumer electronics, transport, aerospace and military, industry and medicine. Consumption per sector is directly related to the development of each of them but may experience a much higher growth.

The industrial structure of producers of electronic components varies greatly according to their products: the semiconductor and cathode-ray tube industries consist of a small number of large companies. The semiconductor industry in particular is dominated by large industrial firms, including Philips, SGS-Thomson, Siemens and many American and Japanese companies. In the passive components sector, industrial giants mix with numerous SMEs and SMIs. Lastly, the electromechanical components sector is characterised by smaller sized firms widely distributed over various European countries, together with a few large companies.

#### Recent trends

The cost of electronic components is a constantly increasing proportion of the cost of equipment, and this is particularly marked in the case of semiconductors: for the past 20 years, technological progress in the manufacture of semiconductors has been rapid and continuous; the possibility of placing several million transistors on one circuit means that we can speak of a "system on a circuit". Such progress will continue for at least 15 years and probably at the same rate. Moreover, semiconductors are increasingly being used in sectors that until now have only been small consumers. According to most analysts the world market in semiconductors, estimated at USD146 billion in 1995, should achieve average annual growth of 20% or more until the year 2000.

The European semiconductor industry enjoyed rapid growth and large profits in 1995. It benefited from the success of the European JESSI programme, which has made a major contribution towards restoring the European industry to a world-class technological level. This programme, involving most producers of electronic equipment, has also contributed to better and more effective co-operation between producers of semiconductors and producers of electronic equipment, and to co-operation between European producers of semiconductors. JESSI has thus enabled the industry to take advantage of the very strong world-wide growth in the semiconductor

**Table 1: Electronic components**  
**Main indicators in current prices**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (1)	1996 (2)	1997 (2)	1998 (2)
Apparent consumption	16 491	21 679	22 318	21 373	22 039	31 032	34 450	37 957	41 812	46 242
Production	10 535	13 345	12 845	12 300	13 173	15 411	16 681	18 033	19 428	20 940
Extra-EU exports	4 195	5 193	5 237	4 564	6 137	10 968	11 915	12 740	13 595	14 463
Trade balance	-5 956	-8 334	-9 473	-9 073	-8 866	-15 621	-17 769	-19 923	-22 384	-25 303
Employment (thousands) (3)	258.9	227.2	233.1	208.1	202.6	193.9	198.6	202.2	205.0	206.7

(1) DRI estimates.

(2) Rounded DRI forecasts for EUR12.

(3) 1985: excluding Spain; 1988: excluding Belgium.

Source: EECA

**Table 2: Electronic components**  
**Breakdown by sector, 1994**

(million ECU)	Apparent consumption	Production	Extra-EU exports	Extra-EU imports
Printed circuit boards	3 049	2 639	224	634
Integrated circuits	11 035	3 770	4 147	11 412
Connectors	2 235	2 100	217	352
TV and monitor tubes	1 647	1 439	266	474
Discrete semi-conductors	2 241	1 316	1 097	2 022
Capacitors	5 327	929	3 548	7 946
Film circuits	1 062	540	337	859
Inductors	1 213	759	293	747
Switches and relays	780	677	301	404
Others	2 441	1 240	538	1 739

Source: EECA

**Table 3: Electronic components**  
**Average real annual growth rates**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	5.96	7.02	6.43	37.04
Production	3.33	3.38	3.35	17.82
Extra-EU exports	4.63	15.84	9.47	75.06
Extra-EU imports	8.38	13.63	10.68	71.36

Source: EECA, Eurostat

**Table 4: Electronic components**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	4 195	3 594	3 064	4 705	4 879	5 193	5 237	4 564	6 137	10 968
Extra-EU imports	10 151	9 096	9 545	11 846	13 599	13 527	14 710	13 637	15 003	26 589
Trade balance	-5 956	-5 502	-6 481	-7 141	-8 720	-8 334	-9 473	-9 073	-8 866	-15 621
Ratio exports/imports	0.41	0.40	0.32	0.40	0.36	0.38	0.36	0.33	0.41	0.41
Terms of trade index (1)	95.3	101.7	101.0	101.4	95.1	100.0	94.0	89.1	81.0	75.8

(1) Nace 3450.

Source: EECA, Eurostat



**Figure 2: Electronic components**  
**Destination of EU exports and origin of EU imports, 1994**



Source: EECA

market. However, the growth of the European industry remains below world level due to its relative absence from the two sectors with the highest growth: memories and microprocessors. The growth of the European market, although substantial, was also below that of the world market.

In the area of passive components, telecommunications has always been a large consumer, representing as much as a quarter of the European market. This situation will be reinforced with the explosion in radio telephony. The use of passive components in cars is also growing strongly. These two markets should contribute to a more sustained growth in passive components.

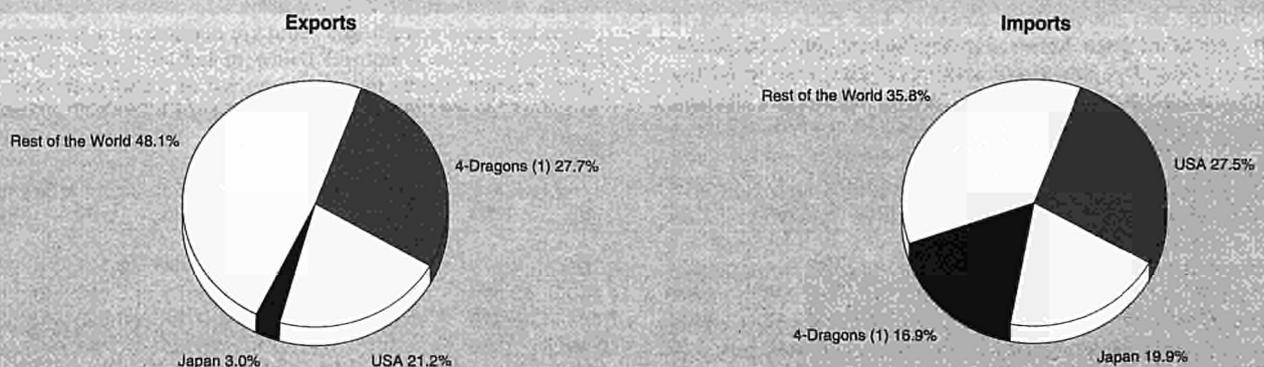
After a big drop in 1992, the fall in employment continued until 1994 but should level off and even disappear in future years. An increase in jobs related to semiconductors can be expected in view of the extremely high level of investment planned in Europe. In November 1995, the European Commission estimated this level at 5 billion dollars for 1995 (almost double that of 1994), an increase greater than that of the USA or Asia. Employment in the area of passive components

may be expected to stabilise. The methods for assembling circuits or for manufacturing passive components are becoming increasingly complex (thus reducing the relative labour costs) and market constraints requiring rapid responses to demand should facilitate the return to Europe of a number of activities which until now have been displaced to Asia.

#### International comparison

The major European semiconductor companies have very diverse structures: Siemens (D) is a generalist giant, while SGS-Thomson (F/I) specialises in components and Philips (NL) aims mostly at consumer electronics. The Japanese structure is very different: the top ten semiconductor manufacturers are also the top ten purchasers and this helps to make the Japanese market a closed one. For several years now, the Japanese have cut back their investment in this area and have lost market share to the Americans. A major factor is the growing power of the Koreans who, taking up the strategy used a few years ago by the Japanese, have invested heavily in the production of dynamic memories (DRAMs) and won large parts of the market; Samsung has become a world leader

**Figure 3: Semiconductors**  
**Destination of EU exports and origin of EU imports, 1994**



(1) Hong Kong, Singapore, South-Korea and Taiwan  
 Source: Eurostat

**Figure 4: Active components (1)**  
**Destination of EU exports and origin of EU imports, 1994**



(1) TV & monitor tubes, other tubes, integrated circuits and discrete semiconductors.  
 Source: EECA

in this area. The Taiwanese industries, who first concentrated on circuits for PCs, have also invested strongly in memories. The Americans have a much more specialised industry: Intel, the world leader in semiconductors, generates the major part of its turnover from integrated circuits.

The very limited presence of Europeans, apart from Siemens, in the dynamic memory and microprocessor fields (the two most strongly growing markets) explains their lower growth in the semiconductor sector.

Competition takes place within the framework of a rapidly growing world market which, according to many industrialists, could rise from USD 100 billion in 1994 to USD 300 billion in the year 2000. Faced with this, announcements of huge investments have increased substantially: between one and two billion dollars are needed for one production unit. In order to share costs, alliances between manufacturers have increased and strengthened at world level. In Europe, the following alliances can be quoted: between Philips and SGS-Thomson in research and development; between Philips and IBM (USA) and between Siemens and Motorola in production.

The American semiconductor market owes its size largely to the power of the American IT industry. The IT industry is still by far the largest customer for integrated circuits. The Japanese market is oriented more towards consumer electronics and has thus suffered from the stagnation in this market. The European semiconductor market is attracted more to telecommunications applications.

**Foreign trade**

The statistics for external trade are difficult to interpret, given the globalisation of the process for manufacturing an integrated circuit (it may be designed anywhere in the world, manufactured in Europe, installed in Singapore and sold in the USA), and also given the presence of so many SMEs and SMIs, particularly for electromechanical components. We might add that the target of large producers, whether European or not, is the world market. The data on external trade do not necessarily reflect the strength of producers with "European nationality".

However, the data do reveal that Europe is a long way from satisfying its internal market. According to Eurostat, the export/import ratio for active components has been stable since

**Figure 5: Passive components (1)**  
**Destination of EU exports and origin of EU imports, 1994**



(1) Capacitors, resistors, inductors, soft ferrites and film circuits.  
 Source: EECA

**Table 5: Electronic components**  
**Breakdown of EU trade by component type, 1991-94**

(million ECU)	1991	1992	1993	1994
<b>Active components:</b>				
Extra-EU exports	4 767	4 369	5 814	7 472
Extra-EU imports	7 362	7 161	9 227	12 285
Ratio exports/imports	0.65	0.61	0.63	0.61
<b>Passive components:</b>				
Extra-EU exports	1 170	1 157	1 326	1 547
Extra-EU imports	1 590	1 559	1 811	2 225
Ratio exports/imports	0.74	0.74	0.73	0.70
<b>Electro-mechanical components:</b>				
Extra-EU exports	5 534	5 532	6 286	7 339
Extra-EU imports	3 790	3 594	3 911	4 660
Ratio exports/imports	1.46	1.54	1.61	1.57

Source: Eurostat

1991 at around 0.6; for passive components it is falling, slightly but constantly, changing from 0.74 in 1991 to 0.70 in 1994; it is only in the electromechanical component sector that the export/import ratio is significantly greater than unity (1.6 in 1993 and 1994).

The deficit on the trade balance for electronic components increased considerably in 1994 with a large rise of more than 75% compared with 1993. The 1994 deficit corresponded to about half apparent consumption. It might be worth noting that the increases in imports, exports and the deficit are of the same order of magnitude: greater than 75%.

## MARKET FORCES

### Demand

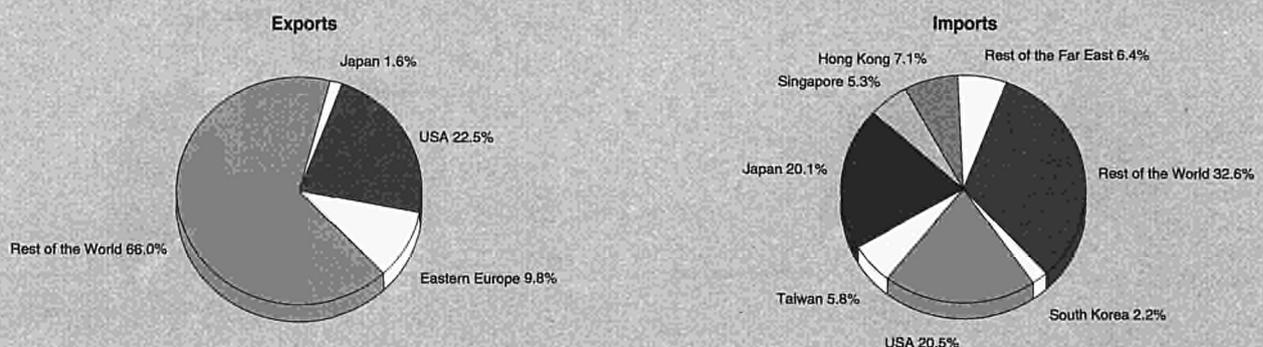
The users of electronic components are the original equipment manufacturers (OEMs), who produce equipment aimed at a wide range of end markets, mainly those of data processing, telecommunications, consumer electronics, cars, industry, aerospace and the military.

Active components, particularly semiconductors, exhibit a high rate of innovation: the technological development of semi-

conductors (miniaturisation) enables the computing power for a given area of silicon to double every three years. Such progress, which has been going on for 20 years and is likely to continue for the next 10 or 15 years, is a major factor in technological progress from which IT and telecommunications are benefiting, with the market for equipment growing in consequence. The considerable advances made in IT or telecommunications have been made possible by the constant increase in the power of components in parallel with developments in software. Semiconductor use does not increase solely with the growing amount of equipment using it, but is also produced by a mechanism that might be called pervasion: functions provided in the past by other methods (mechanical or electrical) are now provided using semiconductors. These two long-lasting effects make a considerable contribution to the increase in demand, that will continue in the years to come.

The passive and electromechanical components are experiencing a more moderate growth in demand. These are products which have reached a state of relative maturity, but which have to be improved technologically in order to match the performance of integrated circuits in the most demanding fields: examples of this are the production of miniature passive components (possibly integrated together), circuit-assembly

**Figure 6: Electro-mechanical components (1)**  
**Destination of EU exports and origin of EU imports, 1994**



(1) Printed circuit boards, connectors, switches and relays.  
 Source: EECA

**Table 6: Electronic components  
EU trade balance in semiconductors, 1990-94**

(million ECU)	1990	1991	1992	1993	1994
Discrete semiconductors	-237.0	-209.0	-108.8	-37.5	-43.8
Integrated circuits	-1 617	-2 049	-2 413	-3 099	-4 424
Opto-electronics	-59.0	-107.0	-113.2	-117.4	-160.4
Total	-1 913	-2 365	-2 635	-3 254	-4 629

Source: Eurostat

methods allowing a higher packing density and more especially a higher rate of executing commands, the development of cards and of multi-layer assemblies. Radio telephones bring new requirements: miniaturisation, but coupled with higher frequencies and lower power consumption. The automobile industry also has very specific requirements. Because of all this, the efforts put into research and development must be increased in order to respond to demand; the speed with which products become obsolete leads to their manufacturers working in close liaison with users. These two effects should mean that part of the activity now located elsewhere returns to Europe in parallel with a stronger growth in demand related initially to radio telephones and cars.

The data processing sector is still the main market for components, particularly integrated circuits which represented more than 50% of the market in 1994 (a little less than 50% if all semiconductors are included). Information technology is the major consumer of semiconductors both on a world scale and in all geographical sectors: the USA, Europe, Japan. This is related to the huge increase in the personal computer market, an increase that may be prolonged by that of multimedia computers. The two key products are microprocessors, which have made the fortune of Intel, and dynamic memories or DRAMs (dynamic random access memories). The weakness of the European IT industry contributes significantly to the low consumption of semiconductors in Europe as compared with the USA and Japan (in 1994, it was of the order of 20% of the world market compared with 33% in the USA and 29% in Japan).

The communications sector is an important market for components. The success of mobile telephones together with the advances in digitisation and all the multimedia developments stemming from it, make them key factors in any growth in demand. This demand requires innovative integrated circuits and relies largely on specialised circuits. The design of such highly specialised circuits requires a very good knowledge of the areas in which they are to be used (unlike memories which are "generalist" circuits) and it is hardly surprising that Europe has a good position in the market for telecommunications circuits given the strength of its equipment industry.

The consumer electronics sector is expanding along with the development of new digital products: compact discs, Digital Video Disc (DVD), CDROMs, CDI, digital radio and television, high definition television. In this area, the Japanese were traditionally leaders in the production of components. The presence of large European or American players in these new fields may challenge this position.

Of less importance for semiconductors are the markets for industrial and medical equipment and for cars. In these areas, however, Europe enjoys a large market and the importance of semiconductors in them is constantly increasing.

Military and defence systems are rapidly losing their market share. The intrinsic characteristics of the market - small volume and very high degree of sophistication - are less and less attractive to producers. Moreover, the historical context of

the reduction in expenditure on arms is contributing to the decreasing economic importance of this sector.

### Supply and competition

The electronics components industry is a highly competitive one, in an area where transport costs are virtually non-existent. Large original equipment manufacturers handle their semiconductor purchases on a world-wide basis, often having teams of buyers in Europe, the USA and Asia. Smaller firms operate through specialist distributors or through representatives of the producers.

With semiconductors, a distinction must be made between standard and specific circuits. The best examples of standard circuits are memories, and here the competition is world-wide and price-driven. The situation is different for specific circuits, which may be suitable for one application or even developed for a single customer. Because of the increase in the size of circuits, they may become "systems on a circuit". Although until recently original equipment manufacturers bought standard circuits and produced added value in the assembly of such circuits, increasingly nowadays the system knowledge is incorporated in the circuit. This has industrial consequences and the change in the nature of the product is shifting the boundaries of the industry: close co-operation is necessary between the original equipment manufacturer and the producer of the components. This technically essential rapprochement is reflected in a proliferation of co-operation agreements between equipment and component producers.

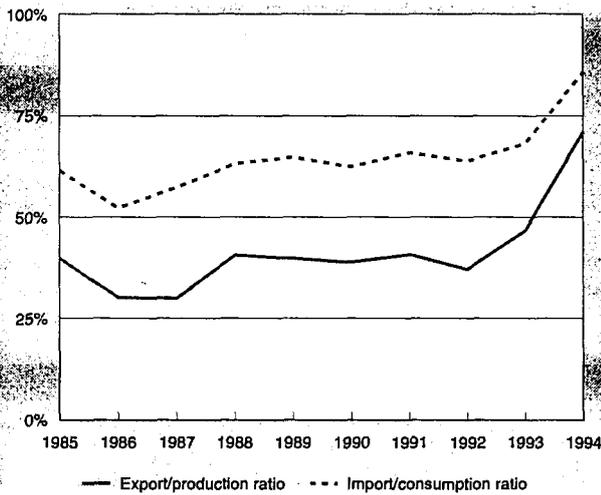
By contrast, in the field of electromechanical components, we are witnessing the abandonment by original equipment manufacturers of their internal activities, except for the most advanced technologies. This is particularly the case with printer circuit boards (PCBs).

### Production process

The most spectacular development is that of semiconductors: constant technological advances have led to a considerable increase in the cost of production units which doubles approximately every 3 or 4 years for each new technological generation. For future plants, producers are currently announcing investments for a dynamic memory plant of between one and two billion dollars (USD 600 million in 1993). To this must be added the cost of research and development of the same order for each new generation: the semiconductor industry is highly capital-intensive. The cost of capital and the conditions for redemption are tending to become an important factor when deciding on the geographical location of a plant.

There are three distinct stages in semiconductor manufacture, which are performed in different plants with very different costs. Circuit design essentially requires a thorough technical expertise and mainly uses workstations. The silicon wafers carrying the circuits are manufactured in an extremely expensive plant using very advanced technology. Lastly, the slicing, assembly and testing of the various circuits require another plant using a larger but generally less skilled workforce. The three stages may be executed in different countries without any technical disadvantages, depending on the cost and on the regulations in force: the "content of local origin

**Figure 7: Electronic components  
Trade intensities**



Source: EECA

in the assembled system" forming part of the European regulations has played a role in encouraging the establishment of Japanese and American factories in Europe. These factors explain why the majority of European producers have a large proportion of their circuit assembly carried out outside Europe. However, the increasing complexity of the technologies involved in assembly and testing (associated with the increased complexity of circuits) could change the situation: these technologies become ever more greedy of capital and there is a tendency for plants to return to the places where the products are used. Another advantage stemming from this is that it facilitates the increasingly desirable co-operation between the customer and the circuit assembler.

The considerable increase in production costs has driven producers into large-scale international co-operation, in the areas both of research to develop new technologies and of production. In the case of production, it most frequently involves the formation of joint subsidiary companies.

## INDUSTRY STRUCTURE

### Companies

In the semiconductor sector, the main European producers with the highest production levels on a world scale are Philips, Siemens and SGS-Thomson; also in this sector are the American companies Motorola, Texas Instruments, IBM, Intel and National Semiconductor and the Japanese companies Toshiba and NEC. The American company AMD is to build a factory in Dresden (Germany), while the American Atmel bought 75% of the European company ES2 in 1992 and decided to build a second factory in France at a cost of USD 500 to 800 million and employing a workforce of 500. There are also companies closely associated with a powerful electronics company. Examples of this are: GEC Plessey Semiconductor (UK) with GEC; ABB Hafo (S), a subsidiary of Asea Brown Boveri; Mietec (B), a subsidiary of Alcatel; and Thomson CSF Specific Semiconductors (F). The Temic company (D) formed in 1992 and belonging to the Daimler Benz group has greater ambitions and has announced its intention of investing very heavily. To this list must be added the Austrian company AMS (Austrian Mikro Systeme), a small independent company.

The electromechanical component sector is much less concentrated and is distributed more widely over the whole of the EU. The sector involving passive components of the ca-

pacitor and resistor type includes both a large number of small enterprises and some very large companies, particularly Philips (having a strategic alliance with Matsushita) and Siemens.

### Strategies

Important alliances have been developed with European partners: IBM and Philips have set up a joint venture to produce circuits in Germany (memories and logic circuits). Similarly, Motorola and Siemens have combined to produce 64 Mbit memories. In the field of technological development, Motorola have brought Siemens, Toshiba and IBM together in an agreement for the development of memories up to 1 Gigabit. The co-operation developed within the Eureka JESSI project has strengthened existing alliances and has created others between the producers of equipment and of semiconductors.

The European industry has continued to become more concentrated faced with the rise in manufacturing costs: In 1995 the Austrian company AMS bought the South African SAMES together with 51% of the German company Thesys. Micronas, a Finnish semiconductor manufacturer and subsidiary of Nokia, bought the Swiss company Ascom Microelectronics in 1994.

Investment in general has revived: Philips, Siemens, SGS-Thomson have announced very large investments. American and Japanese producers have also invested heavily in Europe.

With the help of JESSI, the European semiconductor industry has caught up with the technological level of its main competitors, and this has enabled it to profit from the strong growth of the world market. However, it continues to fall behind in its share of the market. The relative slowdown in market growth anticipated over the next few years will demonstrate its capacity for making progress in a more difficult environment.

## ENVIRONMENT

The manufacture of electronic components, particularly that of integrated circuits, requires the use of many extremely toxic liquid and gaseous products. Action on this by industry has been strengthened by the formation in 1993 of a European working group on environmental problems. The group participated actively in setting up the "International Conference for the Environment, Health and Safety" which met for the first time in Brussels in May 1994.

## REGULATIONS

The European regulation concerning the local content of equipment being produced is a factor in the decisions taken by non-European industries to invest in Europe. Customs duties also have a significant impact. Several other factors also count: protection against abrupt variations in exchange rates, and the need to be close to customers. The latter factor is not significant for memories, a standard product, but is essential for specific circuits.

An agreement between the EU and the USA was signed in December 1995 providing for a reduction in the duties on semiconductors on 1 January 1996: the EU will reduce to 7% duties for all bound rates higher than 7% (which would have been 7% or more under the Uruguay Round), and will abolish those which would have been below 7% and EPROM, Flash EPROM, SRAM, Microprocessors. Future discussions will aim at abolishing duties before the year 2000.

According to SIA (Association of American Semiconductor Producers) 1.5 billion dollars worth of duties will disappear before the year 2000. The American producers hope that the abolition will help them to win an even larger share of the European market.

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## OUTLOOK

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In the next few years, the semiconductor market will enjoy sustained growth, greater than that of the industries producing equipment. It will be supported by growth in the personal computer and telecommunications markets. It must be hoped that the cyclic crises of the past, particularly those involving memories, will diminish, although the dramatic fall in DRAM prices at the beginning of 1996 suggests that this will continue in the short term. Passive components, on the other hand, will experience a growth rate nearer to that of the equipment itself. Advances in the digitising of communications and in the audio-visual field will mean the appearance and development of new products requiring increasingly sophisticated specific components. The existence and development of a European electronic components industry will be a decisive factor in the industrial future of Europe.

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# Telecommunications equipment

NACE (Revision 1) 32.2

Over the last two years, output from the European telecommunications equipment industry has revived itself thanks to a considerable increase in exports from the EU. This has compensated for the slowdown in internal consumption observed over the past five-years, making the sector thus distinctive in exhibiting a growing trade surplus.

On the supply side, the combined effect of technological development and market deregulation is causing both a proliferation in the numbers of those coming from neighbouring sectors (information technology and electronics) to become active in this one and a move towards concentration through mergers, acquisitions and alliances. This is being done in order to gain access to the necessary skills and to achieve a significant commercial presence in what has become a global market. These strategies have caused a great deal of industrial restructuring, bringing the total workforce in the sector down to a level far below what it was ten years ago.

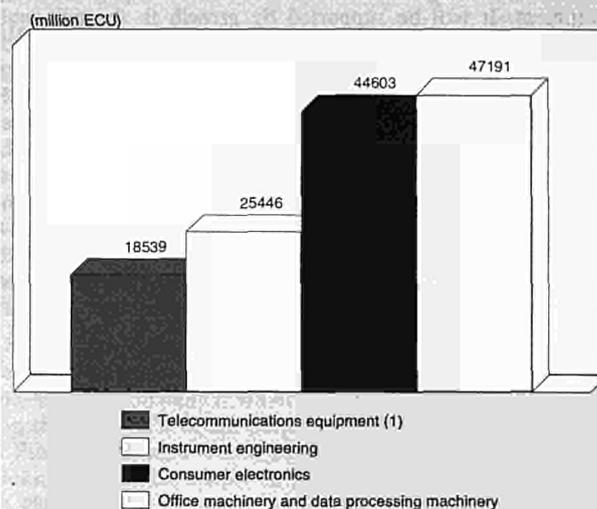
In spite of these difficulties, European manufacturers hold a strong position occupying eight of the top twenty places in the world. In comparison, North American firms hold seven (including the top two) while Japanese firms hold four places. However, it must be taken into consideration that not only do the Europeans have to face strong Asiatic competition in markets for products with low added value, but they also have to stand up to the dominance of the Americans in equipment for company LANs (local area networks).

## INDUSTRY PROFILE

### Description of the sector

The main types of product in this sector are: public and private exchanges, terminals, radio, transmitting equipment and equipment for mobile communications and data transmission. The NACE group 32.2 (formerly NACE 1970 344) also embraces the manufacture of telecommunications equipment, electrical and electronic measuring apparatus, recording equipment and electro-medical equipment.

Figure 1: Telecommunications equipment Production in comparison with related industries, 1994



(1) Excluding Portugal, Greece and Luxembourg.

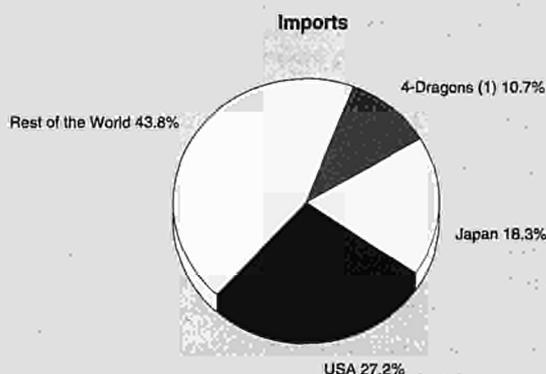
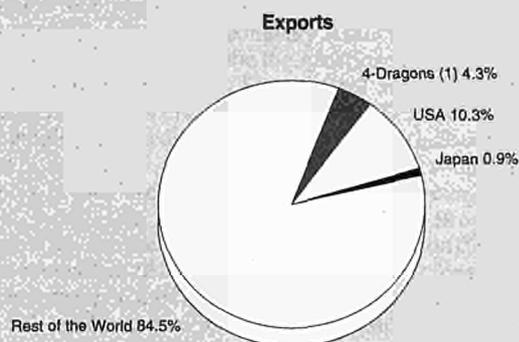
Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK, DEBA GEIE

The recent market trends towards the development of services combining different technologies (speech, data, images) is reflected in an increasingly close and dependent relationship between the manufacture of telecommunications equipment and other technologies and sectors, such as electronic components, IT equipment, aerospace equipment (satellites), software, consumer electronics, radio broadcasting, the media and the publishing sector.

During the last few years, the great diversification in both public and private telecommunications services and the digitisation of networks and terminals have had a strong influence on this sector. This is reflected both in an increase in the range of available products and also in a tendency towards standardisation of the technologies in use, thus creating a globalisation of the markets and an intensification of competition.

There are great disparities, however, in the development process between the various segments of the sector. Thus, public

Figure 2: Telecommunications equipment Destination of EU exports and origin of EU imports, 1994



(1) Hong Kong, Singapore, South-Korea and Taiwan.

Source: Eurostat

**Table 1: Telecommunications equipment**  
**Main indicators in current prices**

(million ECU)	1985	1990	1991	1992	1993	1994
Market size (1)	13 777	18 939	19 878	18 598	16 884	16 277
Production (1)	14 913	18 808	19 947	19 007	18 425	18 539
Extra-EU exports (2)	4 770	4 558	5 215	5 850	6 930	8 526
Trade balance (2)	1 570	297	384	11 495	1 409	1 904
Employment (thousands) (3)	889.6	924.2	880.5	839.9	813.3	777.7

(1) Excluding Portugal, Greece and Luxembourg.

(2) A change in trade nomenclature in 1988 makes a comparison of pre-88 and post-88 figures hazardous.

(3) Nace 3440: includes measuring, recording and electro-medical equipment.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK, DG III, DEBA GEIE

exchanges, although retaining their strategic importance, are suddenly facing a slowdown in demand in economically developed countries resulting in a constant fall in prices. Simultaneously, the explosion in markets such as radio communications and company LANs has enabled the leaders in this sector to record two-digit growth rates.

### Recent trends

Overall, European production of telecommunications equipment, which has recorded a downturn in value over the past two years, (-4.7% and -3.1% respectively for the 91/92 and 92/93 periods), has undergone renewed growth in 1994 and 1995, reaching a total value of ECU 18 792.9 million at the end of 1995, as oppose to ECU 18 425 million in 1993. The market itself has recorded negative growth rates in value for four years. Thus in 1995, using comparable frontiers (EU-12), the European market was smaller than it was in 1988. The reason for this was the increase in competitive pressure associated with the standardisation of technologies, leading to large price decreases in most segments. After experiencing such contrasting trends over the 1985 - 1990 period, exports from the EU since 1991 have recorded annual growth rates fluctuating between 12 and 23%

Generally speaking, the recent opening up of new markets, especially in Asia and Latin America, along with the adoption by more than 150 operators world-wide of the European GSM standard for radio telephony, have enabled European equipment manufacturers to compensate to some extent for the

slowdown in the development of their domestic markets. Increasing competition is also responsible for large restructuring programmes leading to a significant reduction in the numbers employed in this sector. The total workforce in the EU-12 (including those involved in the production of measuring, electro-medical and recording equipment) has been steadily falling over the last eight years and at the end of 1995 was substantially below the size in 1985 which stood approximately at 900 000 employees.

### International comparison

For the last 5 years, European suppliers in the telecommunications sector have occupied between eight and ten of the top twenty places in the world ranking of the industry. Alcatel in France, Siemens in Germany and Ericsson in Sweden have long shared 3 of the top ten world rankings. The explosion in the mobile telecommunications market has also pulled the Finnish company Nokia towards the top of the table.

Technologically, the European telecommunications sector has, for a long time, occupied a strong position, in comparison with other world competitors, and has been the source of many major innovations. However, the increasing standardisation of the technologies, now being used, makes technologies more accessible to a larger number of producers, particularly in Asia. In order to hold on to their lead, the Europeans should therefore concentrate on activities with a greater added value, requiring scarcer skills and expertise (particularly in software).

**Table 2: Telecommunications equipment**  
**European production breakdown by sector, 1994 (1)**

(million ECU)	Production	Market
Radio communications and public broadcast	8 409	8 331
Radio communications (2)	7 483	8 146
Public broadcasting	164	185
Mobile radio telephones	762	N/A
Telecommunication equipment, other than radio	18 539	16 354
Switching equipment (3)	5 931	4 792
Facsimile machines	390	817
Other data and text terminal equipment	372	460
Transmission equipment	2 646	2 356
Telephone sets	2 249	2 476
Other telecommunication equipment (4)	5 153	4 419
Accessories and parts	1 798	1 033
Total telecommunications	26 948	24 686

(1) EUR12, excluding Greece, Luxembourg and Portugal.

(2) Including public broadcasting for all countries except for Denmark and the United Kingdom where they are including mobile radio telephones; Ireland is not included.

(3) Including other telecommunication equipment for Denmark.

(4) Including all Belgian, Dutch and Spanish telecommunication production and markets except facsimile machines; including all Irish telecommunication production and markets except accessories and parts.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK

**Table 3: Telecommunications equipment  
Telecommunications production by Member State**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	683	754	692	615	787	890	977	879	1 091	1 134
Danmark	114	129	110	94	112	103	97	97	112	116
Deutschland	4 332	4 082	4 205	4 271	4 411	4 732	5 931	6 151	6 166	6 289
España	710	756	926	1 405	2 093	2 388	2 138	1 509	1 404	1 390
France	3 491	3 549	3 461	3 385	3 544	3 652	3 752	3 937	3 981	4 020
Ireland	199	203	203	223	248	215	243	217	276	290
Italia	2 141	2 211	2 351	2 716	3 448	3 858	3 997	3 773	2 843	2 559
Nederland	569	576	651	653	733	820	815	832	978	1 007
Österreich	288	273	282	278	288	280	274	358	373	377
Suomi/Finland	214	257	325	332	503	534	327	352	455	477
Sverige	1 697	1 423	1 168	1 405	1 639	1 517	1 606	1 563	1 328	1 341
United Kingdom	2 674	2 416	2 170	2 566	2 634	2 147	1 996	1 612	1 575	1 733

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK

Because of its homogeneous and thriving domestic market, the USA, in comparison to a still very fragmented Europe, stands out as the leader in new services and technology. Although the American market is officially a very open one, penetration by foreign manufacturers of networking, switching or transmission equipment remains at a very low level since the two main suppliers, AT&T and Northern Telecom, dominate the market. In order to increase market presence across the Atlantic, several of the European equipment manufacturers have adopted the personal call system (PCS) of the GSM technology.

Four North American producers are among the top ten companies world-wide (AT&T/Lucent Technologies, Motorola, Northern Telecom and GTE). These are followed by about ten companies which are among the world's top 50. These specialise in the strongly expanding markets of LAN equipment and broad-band communication. In Asia, whereas the Japanese market is only very slowly opening up to foreign competition, China wishes to carry through a large catching-up programme in telecommunications and is mainly resorting to foreign manufacturers (American, European or Asiatic), thus bringing about the maximum degree of competition.

#### Foreign trade

Between 1988 and 1994, imports from outside the EU increased by 79%, while exports to countries outside the EU increased by 125%. Such a trade surplus, quite exceptional among the various European high-technology sectors, accel-

erated particularly strongly during 1993 and 1994, increasing the export/import ratio to 1.3 from 1.14 in 1992 and 1 in 1988.

For 1994, the geographical breakdown of exports to countries outside the EU shows Asia at the top with 25.1% of exports (3.4% to Japan and 6.7% to China), followed by non-EU European countries with 19.4% of the total and North America (USA and Canada) with 18.3%. Notable here is the almost tenfold increase in exports to Eastern Europe, which moved from 1.9% of the total in 1989 to more than 11% in 1994.

Regarding imports, North America remains by far the main supplier to the EU with 40% of the total. This is followed by Asia with 27.6%, including 15% for Japan (which had 22.4% in 1989) and 3.6% for China, and finally western European countries with 21.2%. In analysing these figures, it is clear that Europe is in the process of balancing its trade with Asia, that the trade deficit with North America is persisting year after year, and that the surplus appearing in the consolidated figures is mainly the result of trade with developing countries.

#### MARKET FORCES

##### Demand

The market for telecommunications equipment is divided into three categories: These include exchanges and transmission for public telecommunications networks, equipment for corporate networks, such as switchboards and LANs (for speech and data), and the mass market of line and radio terminals.

The first category, exchanges/transmission for public telephone networks is characterised by a two-fold trend. The first trend consists of a slowdown in the traditional exchange and transmission markets due to a combination of factors. In the most highly developed countries, the high rate at which networks are being digitised and the high density of lines per inhabitant are slowing the percentage growth of the investments of operators in this field. In addition, increasing market deregulation is leading traditional operators to anticipate or face up to the arrival of new competitors in activities that are highly profitable. This produces a situation in which operators and equipment suppliers compete with each other in optimising their investments and in gaining access to technical means in the hopes of broadening their portfolio of services and providing the best response to the expectations of customers. The second trend consists of a more pronounced dynamism in markets that are either emerging (broad-band exchanges) or already strongly growing (radio communications). The latter is now acting as a real prime mover for the

**Table 4: Telecommunications equipment  
Production of major producers in the World market (1)**

(million ECU)	1985	1990	1994
EUR12 (2)	14 913	18 805	18 539
USA	22 229	12 544	16 915
Japan	7 956	11 478	14 558
EFTA	2 786	3 132	2 939
Canada	1 770	1 892	1 895
South Korea	1 008	1 379	1 595
Taiwan	675	1 030	1 089
Brazil	974	1 037	1 174

(1) The contents of this table has been strongly influenced by exchange rate fluctuations.

(2) Excluding Greece, Luxembourg and Portugal.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK



whole of the sector and is poised to become a mass consumption market.

The category covering company LAN equipment for speech and data is also part of the "driving force" for the sector because of the growing need for EU companies to integrate their activities and to react rapidly to market changes. Once again, this category involves both saturated markets whose development is based only on the renewal of equipment (modems, fax machines) and strongly growing markets like terminal adapters for digital networks, switching equipment for data networks (Ethernet, Token Ring) and asynchronous equipment (ATM) for high-speed networks.

As for terminals, the requirements regarding the mobility and diversity of services are giving rise to a strong growth in demand for products such as cellular phones and those offering functionalities of access to new types of services. By the year 2000, forecasts of the increase in the number of subscribers to radio telephone services, both world-wide and for Europe, allow us to predict the persistence of a strong growth rate in the demand for terminals associated with them.

### Supply and competition

The combination of technological developments and the deregulation of EU markets will continue to generate a thorough reorganisation of the industry. After a long period consisting of policies characterised by strategies of integration, we now expect to see policies of specialisation and refocusing on basic activities that will be implemented more widely, both at a generally strategic level and even within the divisions of a group. Examples include the refocusing of the activities of Alcatel, the increased specialisation in mobile equipment at Nokia and Ericsson, and the disengagement of Philips from public telecommunications.

The gradual arrival of a greater deregulation of the markets in telecommunication services world-wide, and particularly within the European Union, calls into question the historically privileged relationships between the national operator and its appointed supplier or suppliers of equipment. After a period of trials involving integration upstream for operators (BT and Mitel, Telefonica and Alcatel SESA) and integration downstream for manufacturers (IBM in MCI), the trend was quickly reversed and has led to strategies involving alliances and partnerships dividing up the market according to specialist activities. On the other hand, in the markets involving company LAN equipment, the most characteristic feature at present is undoubtedly concentration. Two groups of players are operating in these markets:

The first is a constantly increasing number of newcomers, mainly Californian start-ups, which have developed around a particular technological expertise (Ethernet or Token Ring exchanges, ATM, routing, etc.). The second is a small number of players wishing to be more generalist and wishing to build

up supplies responding to all the needs of their customers. Because of the lead times and funds necessary for the development of such supplies, these companies are very active in their acquisitions and mergers. In 24 months, five of the leaders in company LANs (Cisco, Bay Networks, 3Com, Fore Systems and Madge) have taken over more than 10 specialised companies. What is noticeable here is the virtual absence of European manufacturers in a sector largely dominated by the Americans, the result of segregated markets, each with national champions, in Europe at a time, before the Internal Market, when elsewhere, this industry was in full competition on the World market.

In the majority of consumer markets, there is fierce competition from Japanese and Southeast Asian firms for products with low value added. In the radio telephony field, on the other hand, where the products have a high value added, the technological expertise and software skills have so far enabled European and American constructors (especially Motorola, Ericsson and Nokia) to retain their dominant position.

### Production process

The abundance of services provided by new generations of telecommunications products is very often synonymous with increasing technological complexity. As a result, it becomes very difficult for manufacturers to support investment in increasingly expensive R&D which turns out to be out-dated in ever shorter periods of time. This is creating a proliferation of strategic mergers or acquisitions in order to gain rapid access to new technological skills and to be in the field early on in order to gain a significant market presence.

From the technological point of view, the general trend in the sector is characterised by an increasingly marked dominance of digital systems (public telephone networks, radio telephony, company local area networks), by the introduction of broad-band technologies to respond to new requirements and to optimise network management, but also by the search for technologies allowing a better exploitation of installed equipment (particularly in the field of cable systems and company exchanges).

## INDUSTRY STRUCTURE

### Companies

Since 1989, between 8 and 10 European companies have been featured among the top twenty companies world-wide. After several years at the top of the world ranking, the French company Alcatel suddenly suffered from the stagnation in traditional markets and in 1994 had to give way to the Americans, AT&T and Motorola\*Siemens in Germany (a group active in the power supply sector and in industrial equipment, information technology, semiconductors and telecommunications), long in third place, is now being pushed into fourth

**Table 5: Telecommunications**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	77.2	78.0	82.7	90.7	94.9	100.0	105.2	110.9	125.3	138.5
Unit labour costs index (3)	96.6	99.5	101.9	99.0	100.1	100.0	103.7	104.3	98.9	92.8
Total unit costs index (4)	91.6	93.0	94.9	96.3	98.8	100.0	102.7	104.3	106.6	103.6
Gross operating rate (%) (5)	12.7	11.9	11.3	11.6	11.1	10.9	10.2	9.4	7.2	8.8

(1) Some country data has been estimated. Nace 3440: includes measuring, recording and electro-medical equipment.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat



**Table 6: Telecommunications**  
**External trade in current prices (1)**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	4 770	4 304	4 615	3 787	4 663	4 558	5 215	5 850	6 930	8 525.9
Extra-EU imports	3 200	3 063	3 586	3 696	4 552	4 261	4 831	5 132	5 520	6 621.6
Trade balance	1 570	1 241	1 029	91	111	297	384	718	1 409	1 904.3
Ratio exports / imports	1.5	1.4	1.3	1.0	1.0	1.1	1.1	1.1	1.3	1.3
Terms of trade index (2)	90.3	97.1	101.4	97.9	95.8	100.0	99.4	101.6	100.8	99.5

(1) A change in trade nomenclature in 1988 makes a comparison of pre-88 and post-88 figures hazardous.

(2) Nace 3440: Includes measuring, recording and electro-medical equipment.

Source: DG III, Eurostat

place by the Japanese NEC and the Swedish Ericsson. However, the opening up of the East German markets and a good start-up in expanding markets have enabled Siemens to compensate for the stagnation in traditional markets.

The third European company among the top ten world-wide, the Swedish company Ericsson, has made a success of out-and-out redeployment: which was faced with real problems of growth before 1988. The group has since then concentrated its activities into radio communications at the level of both network infrastructures and terminals, allowing it to aspire to one of the top five places in the world ranking. The limited nature of the Swedish market has from the start obliged Ericsson to expand internationally, which, together with its technological expertise, has been one of the main factors in winning it a position as a world leader in radio communications.

Among other EU companies, Bosch in Germany and Italtel in Italy have had their work cut out to maintain growth since they do not hold a strong position in expanding markets. Thus, Bosch recorded a downturn of 4.2% in its telecommunications turnover in 1994, while Italtel showed a 12% reduction in 2 years. Recently absorbed into the EU, Nokia in Finland has, like Ericsson, been one of the firms showing the greatest progress over the last few years, gaining 10 places in the world ranking in five years. Here again, the development of a strong expertise in radio communications in general and in GSM technology in particular has been the source of the growth.

Finally, the Dutch company Philips, continuing its strategy of refocusing on consumer electronics, ceded a large part of its telecommunications activities to the American company AT&T during 1995 in order to keep only those (i.e. terminals) closely related to mass consumer markets.

### Strategies

The proliferation and globalisation of opportunities arising from increasingly widespread market deregulation and tech-

nological development are giving rise to a number of strategic trends.

The first clear trend is the refocusing of industrial groups on their core activities (and hence the end of the process of vertical integration) in order to improve a profit level seriously impaired by the intensification of competition. A direct consequence of this type of decision is a proliferation of restructuring plans synonymous with a reduction in the workforce.

Consequences of this trend are (a) an increased number of acquisitions in activities closely related to the basic activity and (b) the proliferation of strategic alliances and partnerships with the aim of sharing R&D investment costs along with the ability to rely on the skills and geographical presence of a partner to facilitate the penetration of certain markets (e.g. Nortel is seeking to increase its presence in France and in the European radio telephone market by its alliance with Matra; in Italy, Italtel is combining with Siemens in order to expand its international trade).

Moreover, the increase in competitive pressure in the majority of sectors makes globalisation of activities one of the priorities of industrial strategy. The squeezing of national markets no longer allows profits to be made from increasingly expensive investment in developing new generations of products, both software and hardware. On the other hand, market deregulation opens up new prospects of growth for manufacturers who still are generating the majority of their turnover in their country of origin. This effect is even more pronounced for manufacturers originating from countries with a fairly limited national potential (Ericsson in Sweden and Nokia in Finland generate nearly 90% of their turnover from exports). In the medium term, the opportunities offered by many developing countries will only strengthen this trend, and manufacturers who can survive without international expansion will be thin on the ground.

Finally, the most recent phenomenon, the increasingly widespread availability of intelligent services (freephone numbers, call transfers, caller identification) and the need to optimise

**Table 7: Telecommunications**  
**Trade breakdown by sector, 1994**

(million ECU)	Extra-EU exports	Extra-EU imports	Trade balance	Ratio exports / imports
Switching equipment	2 111	715	1 396	2.95
Transmission equipment	1 617	1 090	527	1.48
Radio-related equipment	252	189	63	1.34
Components for telecom equipment	399	474	-75	0.84
Telecom terminals	4 147	4 154	-7	1.00
Facsimile terminals including parts	523	1 586	-1 063	0.33
Other telecommunications terminals	3 624	2 568	1 056	1.41
Total telecommunications equipment	8 526	6 622	1 904	1.29

Source: DG III, Eurostat

**Table 8: Telecommunications equipment  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	1.34	1.73
Danmark	0.48	0.37
Deutschland	0.98	1.09
Ellada	N/A	N/A
España	0.69	1.05
France	1.19	1.13
Irland	1.42	1.35
Italia	0.95	0.96
Luxembourg	N/A	N/A
Nederland	0.76	1.16
Portugal	N/A	N/A
United Kingdom	1.02	0.63

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK, DEBA GEIE

the management of telephone networks has caused manufacturers from the IT world, seeking new opportunities for growth, to arrive on the scene. Here, the European representatives are of two types. The first consists of large IT manufacturers like Bull, Siemens-Nixdorf or Olivetti, who face many problems in countering the offensives launched by the Americans Hewlett-Packard, Digital or IBM. The second consists of companies developing specialist applications in telecommunications who often hold strong positions in fields such as that of billing systems for radio telephone networks.

## REGULATIONS

The deregulation of the European market in telecommunications equipment is still incomplete, particularly as regards the development of transparent competition for public markets. Countries such as Italy and Spain have not yet fully transposed the various directives taken by the Commission in this field. The situation is different in the case of terminals since, with a few exceptions, all the markets are completely deregulated in all EU countries.

Previous opinions of the EU Commission against vertical integration between network operators and domestic equipment manufacturers are currently being re-examined due to the trend towards global competition with integrated companies outside the EU, and the ongoing privatisation of EU telecommunication operators. Reasons being that because of the consequences for manufacturers of the WTO not having agreed on Telecommunications Services and of neither the US Telecommunication Act 1996 nor the TABD have led to an opening of the American Operators Market for Foreign ownership

The aim is therefore no longer to open up markets, but rather to move towards a harmonisation of standards and applications in all member countries. ETSI (European Telecommunications Standard Institute) is putting great effort into establishing common European standards, although full European standardisation will be possible only when new systems, such as narrow-band ISDN, broad-band ISDN and GSM have been introduced and widely diffused in all EU countries. The Commission also continues to support European research programmes and a wide distribution of their results.

## OUTLOOK

During the next five years, the global telecommunications equipment sector should experience a mean annual growth of about 5% in value. However, since such a development is closely related to that in telecommunications services, it will be highly dependent on the speed and size of the growth in markets like radio communications, as well as on all markets related to high-speed intelligent networks. The relatively slow start-up of new multi-media and interactive services makes it impossible to envisage strong growth in the short term.

The role played by public authorities, both national and European, through investment programmes, will therefore be an important element in launching and stimulating these markets. In addition, the trends observed so far are expected to continue and become even stronger in the future. The globalisation of competition and the pressure towards price-cutting, technological standardisation, more refocusing of activities combined with mergers- acquisitions and alliances; and radical modification in the behaviour of operators as customers who will develop an attitude similar to that of a private customer (pressure on prices, demands for quality, service and performance) are all expected to help this process along.

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# Consumer electronics

## NACE (Revision 1) 32.3

After the difficult years of 1992 and 1993, the EU consumer electronics market and production expanded in 1994 and 1995. The trade balance has been structurally and heavily in deficit since 1988, amounting to ECU 11.5 billion in 1995. With automation increasingly dominating the production process, employment fell more than in manufacturing industry as a whole, with a loss of 60 000 jobs world-wide since 1990; this trend will probably continue in the next few years.

Japanese and Korean companies dominate the consumer electronics sector, particularly in areas such as video recorders and camcorders. EU firms, on the other hand, are particularly strong in colour television and decoders. In facing the challenge of moves towards globalisation of the market, Europe can produce three first-rate national companies: Thomson, Philips and Nokia, all well-positioned in the world market but, like the Japanese, facing a number of problems. In spite of cost rationalisation, world competition is such that large profit margins are difficult to achieve except in areas of growth (mobile telephones, satellite decoders).

Technological innovation, economies of scale, user-friendliness, promotion and distribution are the key factors for success in markets where the demand for mass-produced goods (TV sets, video recorders) has stagnated in volume but where prices are continually falling year after year.

The future of the consumer electronics sector thus depends greatly on the development of new technologies, such as digital television, encoding systems and wide-screen television, and also on the success with which new products such as CCDs, CDI, DVDs, multimedia PCs and cellular phones are marketed and the extent to which they are adopted.

In spite of the recovery in the EU economy as a whole, the next few years will probably remain difficult because of market saturation, fierce price competition, and overcapacity in production. In the short term, a revival in the electronics sector depends on a continuation of the vigorous restructuring programmes launched by large firms to restore structural profitability. In the long term, while waiting for the new era in multimedia, success will depend on the capacity of EU businesses to increase their share of the world market, to define common and world-wide standards in the fields of satellite and cable television, and to market innovative products.

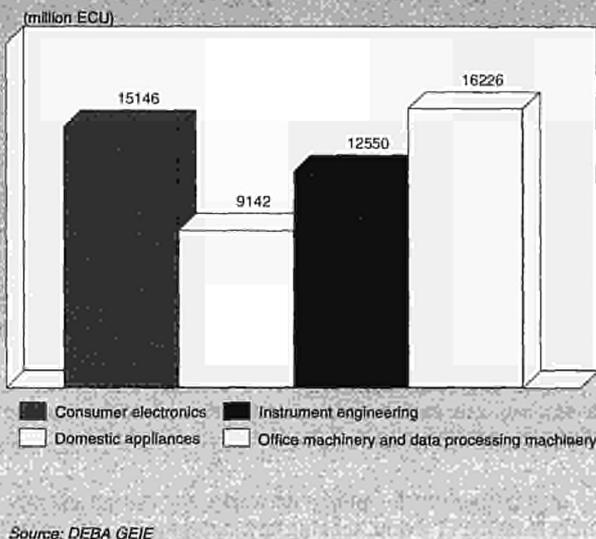
### INDUSTRY PROFILE

#### Description of the sector

The consumer electronics sector embraces all the audio-visual products and their accessories intended for use in the home such as black-and-white and colour television sets, video recorders, video cameras and camcorders, compact disc players and audio equipment in general. The sector also includes other "brown goods" such as terminals for cable television and decoders for pay-TV channels. Other products are aerials and dishes for satellite reception, car radios and radio guidance systems, mobile telephones, personal IT terminals and telecommunications terminals. Video games consoles are another large group included in consumer electronics.

Thus, with the change from analogue to digital systems and the convergence of telecommunications, information technology and the technologies and applications of consumer electronics, the traditional definition of consumer electronics as "brown goods" is becoming increasingly inappropriate. In addition to video and audio equipment, we must add multimedia home computers and telephone terminals (radio telephones).

Figure 1: Consumer electronics  
Value added in comparison with related industries, 1994

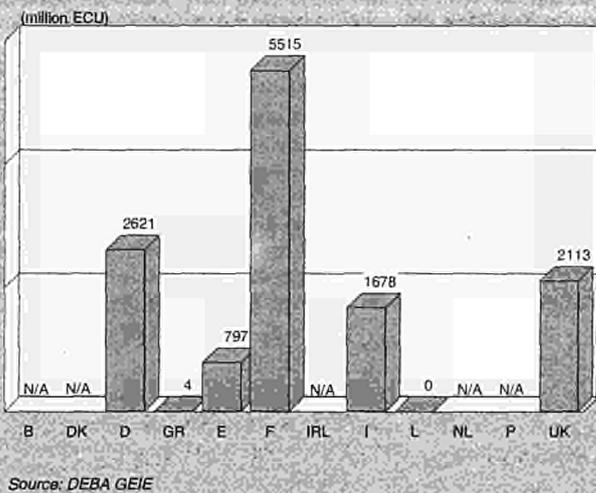


Television sets, however, are holding on to their lead in the consumer electronics market. Continual technological advances have been made in the quality and size of the picture and in the range of facilities available. The latter include the option of being connected to peripheral equipment (video recorders and camcorders) and of access to videotex services such as teletext. Sets with videotex are widespread in Europe and a second improved version of it (Hitext or teletext version 2.5) was introduced in 1995. TV sets with cinemascope formats (16/9) have been on the market since 1991, as has stereophonic sound (NICAM system) since 1994.

Following in the wake of television sets, video recorders have become widespread throughout Europe and have now reached the mature stage in their life cycle, being in use in over 60% of households.

The main audio component, the market in electroacoustic systems, has also grown: an increasing number of homes have hi-fi systems, with a marked preference for smaller models

Figure 2: Consumer electronics  
Value added by Member State, 1994



**Table 1: Consumer electronics**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	34 621	54 628	57 525	53 982	51 942	57 251	60 110	65 018	67 750	71 000	74 550
Production	30 951	43 187	44 365	42 213	40 453	44 603	48 612	52 473	54 410	56 710	59 020
Extra-EU exports	4 769	7 960	8 410	8 888	10 819	13 176	16 462	16 328	17 970	19 620	21 490
Trade balance	-3 670	-11 441	-13 161	-11 769	-11 489	-12 648	-11 499	-12 545	-13 340	-14 290	-15 530
Employment (thousands)	403	383	375	351	329	318	322	339	330	330	320

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DFI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Consumer electronics (excluding music recording)**  
**Total market (sales to distribution channels) in volume**

(thousand units)	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
Colour televisions	20 558	20 462	20 785	20 395	20 211	20 460	20 671
Car radios (3)	16 147	16 708	15 785	13 732	13 794	14 028	14 297
CD players	10 661	14 066	16 571	17 319	N/A	N/A	N/A
Video tape recorders	11 581	11 069	11 199	10 821	10 834	10 657	10 907
Camcorders	2 475	3 320	3 319	2 711	2 276	2 260	2 296

(1) EACEM estimates.

(2) EACEM forecasts.

(3) Excluding sales to the German automobile industry from 1992.

Source: EACEM

**Table 3: Consumer electronics**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	9.31	-0.41	4.88	8.33
Production	6.38	2.24	4.52	11.93
Extra-EU exports	10.50	14.15	12.11	21.79
Extra-EU imports	18.96	0.85	10.54	8.21

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Consumer electronics**  
**External trade in current prices**

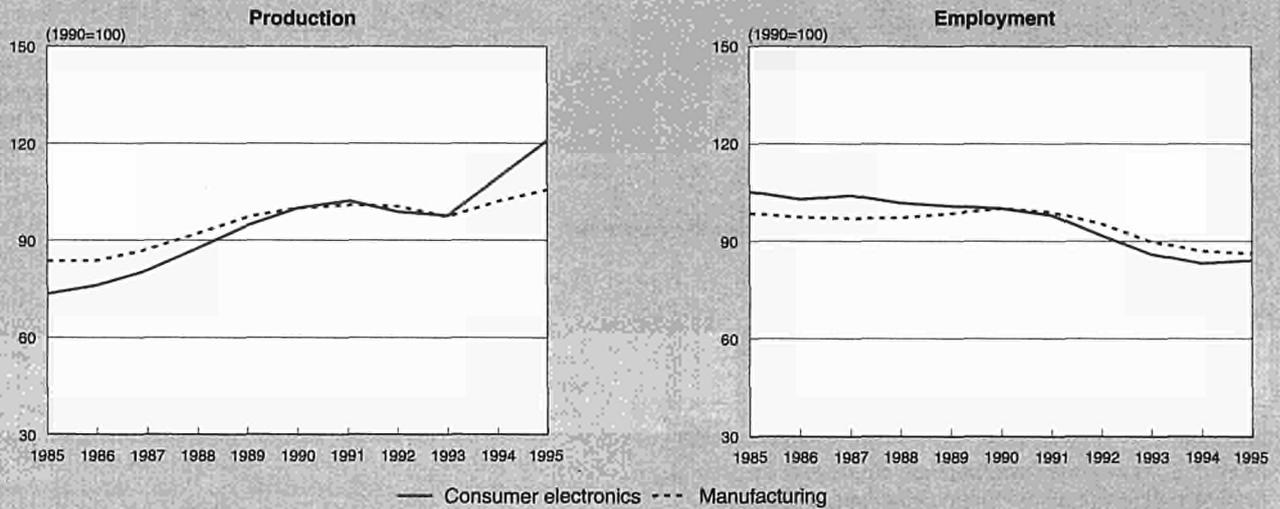
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	4769	5623	5936	6576	7394	7960	8410	8888	10819	13176	16462	16328
Extra-EU imports	8439	12073	13696	16704	18612	19401	21570	20657	22308	25825	27960	28872
Trade balance	-3670	-6450	-7761	-10128	-11217	-11441	-13161	-11769	-11489	-12648	-11499	-12545
Ratio exports / imports	0.57	0.47	0.43	0.39	0.40	0.41	0.39	0.43	0.48	0.51	0.59	0.57
Terms of trade index	95.3	101.7	101.0	101.4	95.1	100.0	94.0	89.1	81.0	75.8	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Consumer electronics**  
**Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

(MICRO and MINI at the expense of MIDI), while the success of audio CDs has meant the disappearance of record players.

The car radio market is strengthening its position in the audio field and is still growing: in addition, RDS (radio data system) appears to be a major innovation in the broadcasting field.

Innovative products launched in Europe in 1993, such as the Philips DCC (digital compact cassette) and the Sony Minidisk, are based on optical technology and will form the next generation of products for playing and recording music (although they are still a long way from achieving the market success of compact discs). CDI (compact disc interactive), launched by Philips and also based on optical technology, is still at the stage of market penetration.

For the future, the main companies active in the field are counting on digital technology to revitalise the sector (digital video discs or DVDs, digital television and video recorders due to appear during the course of 1996), but there is a danger that it will only slowly be taken up by the general public.

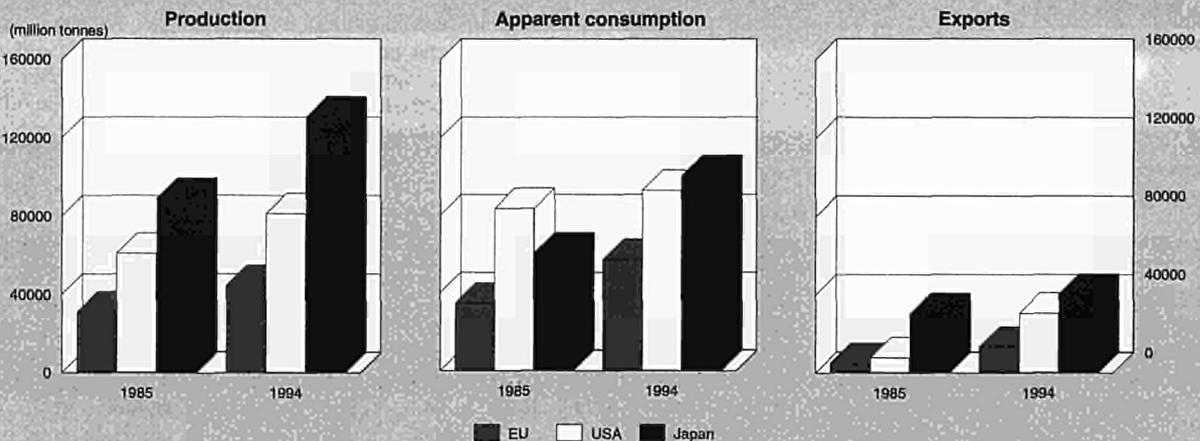
**Recent trends**

Compared with the years of expansion over the 1984-1991 period, when the composite annual growth rate reached 9.7%, EU consumption and production fell on hard times in 1992 and 1993 with a reduction in both. In 1993, visible consumption fell by 10% in comparison with 1991. Over the last ten years (1985-1994), the mean growth rate in consumption was 4.9% and that in production 4.5%.

In spite of the increase in exports from the EU in 1993 and 1994, the trade balance has remained structurally in deficit since 1988 (between ECU 10 and 13 billion).

Employment has a structural tendency to shrink. It has decreased every year since 1984, except for 1987 and 1995. Since 1990 it has decreased more spectacularly than in manufacturing industry as a whole, with a world-wide reduction in the workforce of 60 000 (or -15% in comparison with 1990). In spite of an improvement in 1995, with an increase

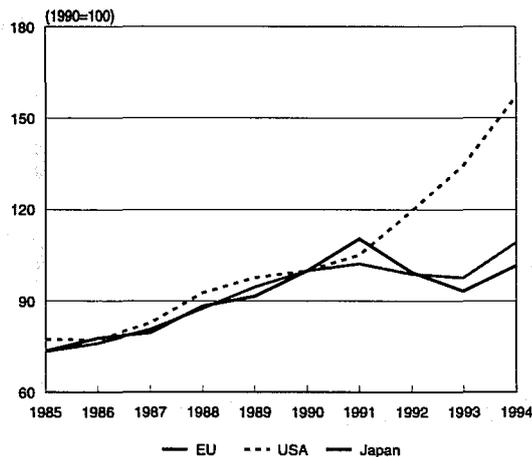
**Figure 4: Consumer electronics**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



Figure 5: Consumer electronics



Source: DEBA GEIE

of 4 000 jobs to 322 100, employment will probably continue to fall in the next few years.

The sector began to revive in 1994, emerging from the general economic and industrial recession in Europe. Production increased by 10% over the previous year and by 9% in 1995.

The trade deficit rose to ECU 12 648 million in 1994, a level higher than that of 1993. An estimate of the figure for the 15 EU countries gives a deficit of ECU 12 545 million compared with 11 499 million for 12 countries.

The consumer electronics sector generated an added value of ECU 15 146 million in 1994 (or half of that for the pharmaceutical industry). More than a third of this added value came from France (ECU 5 515.3 million in 1994), the rest coming from Germany (ECU 2 621.1 million in 1994), the UK (ECU 2 113.1 million), Italy (ECU 1 678.2 million) and Spain (ECU 796.7 million). France, Great Britain and Germany accounted for two thirds of the total value added.

### International comparison

Japanese firms (Sony, Matsushita, etc.) are the main producers of consumer electronics for the world market. The value of the Japanese goods produced in 1994 was ECU 130 billion, or 1.6 times that of the USA (ECU 81 billion) and nearly three times that of the EU (ECU 44.6 billion). In the audio-visual sector, Japanese suppliers control more than 99% of their national market and export more than 30% of their production. Moreover, Japanese firms, through their foreign production plants, account for about half the local production in the USA and a quarter in Europe. According to some estimates, EU firms produce about 16% of all audio-visual products in the world, while their American counterparts produce 8% of them. South Korean firms account for about 10% of the total and export most of their production. Developing countries, where many western and Japanese companies are established, represent about 16% of the total production. The USA and the EU are large net importers of consumer electronic products and have negative trade balances in the sector.

The visible consumption of the European market (ECU 57 billion in 1994) was considerably less than that in the USA (92.6 billion) and Japan.

### Foreign trade

External trade is structurally and heavily in deficit (ECU 12.1 billion in 1995) and the terms of trade have continuously deteriorated since 1990.

After two years of strong growth in 1993 and 1994, exports and imports both contracted in 1995.

The destinations of EU exports have changed over the period 1989-1994. In fact, the proportion of exports to EFTA countries (three of whom joined the EU in 1995) fell from 30% to 22%, while that to Singapore, Malaysia, Taiwan and the rest of the world increased from 53.8% to 63.4%. The proportion exported to the USA remained stable (16.9% in 1994). Very few goods from the EU are exported to Japan, a very closed and competitive market. Spare parts and accessories, television sets, and blank tapes and discs are the main categories of exported goods. Imported products come mainly from Japan (24.2%), the USA (20.5%), Malaysia (10.3%), Singapore (6.2%) and China (5.7%). Direct imports from Japan have declined since 1989, while imports from the USA and South-east Asian countries have increased. Spare parts and accessories, audio-visual products for home use, television sets, camcorders and blank tapes and discs are the main imported goods.

## MARKET FORCES

### Demand

In the EU, purchases of audio and video equipment account for about 1% of total consumer spending, a proportion that has not changed significantly for the last six years. However, prices have continually tended to fall (by about 5% per annum), while the products themselves have improved. The difference between sales expressed in units and in value stems from the fall in prices, reflecting the competition between manufacturers, are now a basic characteristic of the sector.

The volume of sales of certain more traditional key products has stopped growing since 1990. The sale of TV sets in the EU has been relatively stagnant at around 20 million sets per annum, and that of video recorders at nearly 11 million per annum.

In fact, the proportion of EU households with at least one colour TV set is nearly 100%, and most of the sales are therefore the result of replacing older sets or buying second sets.

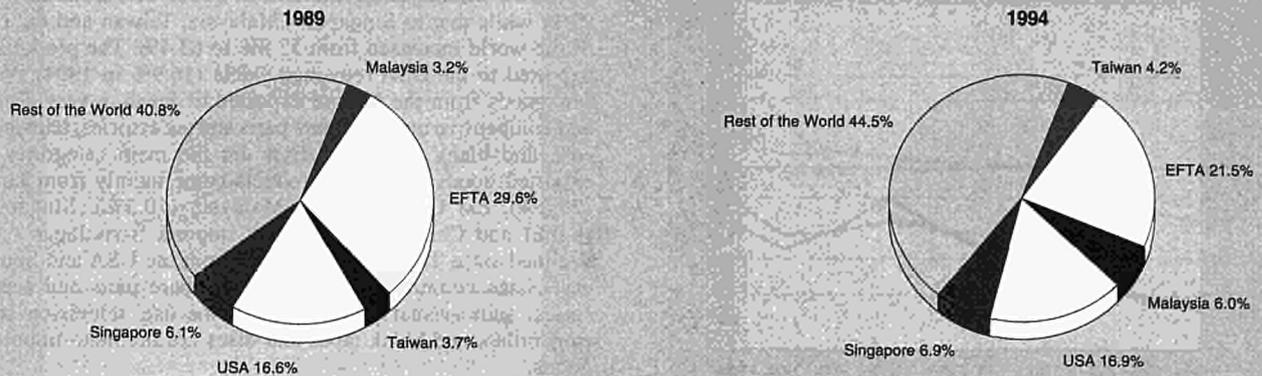
A little over 60% of households have video recorders, but this type of equipment is not yet old enough for replacement to account for a large share of the market. Sales depend mainly on the smaller number of new consumers.

In spite of the increasing saturation of mature segments of the market, more than 20% of consumer spending on audio-visual equipment is on goods which appeared only at the end of the 1980s, notably camcorders, compact disc players and satellite receivers. The strengthening of the satellite market (Astra and Eutelsat) and the development of multi-channel digital packages launched in 1996 will further benefit the market in satellite reception, aerials and decoders.

The market for 16/9 format screens made a promising debut in 1995 with a total sale of 500 000 units. The German market benefited from the launching of the PAL Plus services, while the British market benefited from Channel 4 broadcasts in 16/9 format. According to "Vision 1250", the European organisation responsible for promoting the 16/9 format, the growth should become stronger (a forecast of 2 million television sets in 1997).

Overall consumer demand can be divided into two large segments. Up-market users demand high quality products and services (e.g. high definition TV sets in 16/9 format, NICAM sound) while down-market users are looking for cheap and easily used products. It is also accepted that many of the functions on consumer goods (such as video recorders and camcorders) are not in fact used because of their complexity. User-friendliness, price and the quality of products are the main factors leading to success in the consumer electronics

**Figure 6: Consumer electronics  
Destination of EU exports**



Source: Eurostat

market, and suppliers are attempting to balance these elements in order to obtain the appropriate combination for the various market segments.

### Supply and competition

In real terms, the cost of goods such as colour TV sets and video recorders fell by at least 50% between 1980 and 1994.

The productivity of the workforce has been increasing continuously since 1990, especially in 1994 when it rose by 15%.

Moreover, a 1995 colour TV set or video recorder is a far more highly developed and reliable product than it was in 1980. The fall in price has mainly been achieved through improvements in production methods and economies of scale, although the reduction in profit margins and improvements in the efficiency of the systems have also contributed to it. The Japanese industry dominates the sector world-wide, particularly with products such as video recorders and camcorders, by selling large volumes at low prices and with small profit margins.

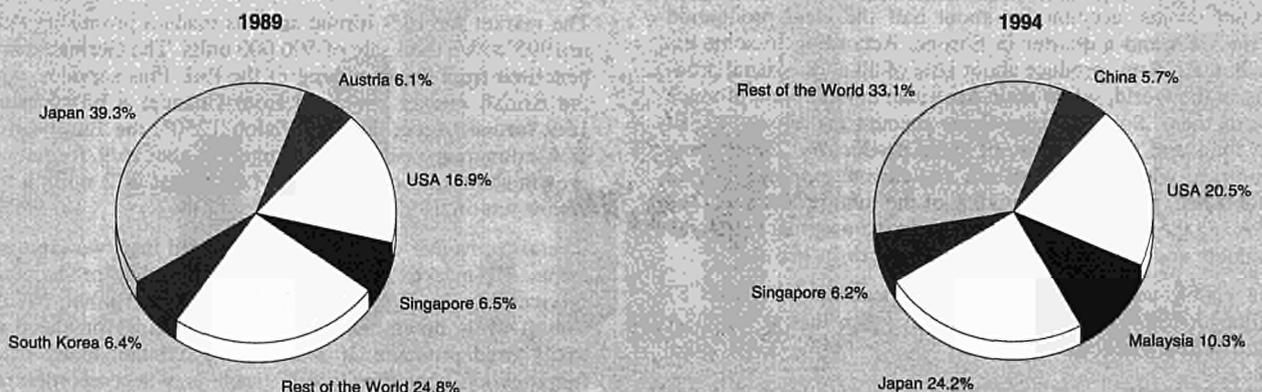
Europe still controls one of the major sectors: the manufacture of television tubes. All TV sets made in Europe, whether by European or Asian firms, use tubes produced by European companies, except for Sony, who make their own Trinitron

tubes in the UK, and Samsung who have started production of their tubes in Berlin. This is a significant factor, since tubes account for 30% of the cost of a TV set.

EU firms are particularly strong in the colour television field, but South Korean firms like Samsung are improving their position, benefiting from their lower labour costs. Manufacturers in southern Asia are particularly strong in the more mature products at the lower end of the market, but also in video recorders and camcorders. Very few American companies have a presence in this field, the American market being dominated by Japanese, Korean and EU firms.

The Japanese assets in this sector are well known: their firms benefit from large economies of scale, from the low cost of capital and a highly skilled workforce. They also benefit from high investment in R&D and from their experience in international marketing. In addition, Japanese firms are in a position to take advantage of their vertical integration and their diversification. In fact, a good many large Japanese conglomerates are also present in the electronic components, information technology, professional electronics and telecommunications sectors and can therefore distribute their investments over several divisions. Another key factor involves the brand image and the extent of distribution channels such as the department stores for the mass market or specialist retail

**Figure 7: Consumer electronics  
Origin of EU Imports**



Source: Eurostat

**Table 5: Consumer electronics**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	69.8	73.9	77.6	85.9	93.8	100.0	104.3	107.7	113.4	131.5
Unit labour costs index (3)	110.7	110.9	112.2	106.5	102.5	100.0	103.8	106.0	102.5	90.5
Total unit costs index (4)	99.1	99.5	98.1	98.1	99.2	100.0	102.9	102.7	99.6	95.2
Gross operating rate (%) (5)	8.1	7.7	8.0	9.0	9.4	8.9	7.2	5.7	6.2	8.7

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

sales outlets for high-tech and high quality products. Distribution is becoming increasingly concentrated, because department stores and purchasing groups are taking up an ever larger share of the market. The number of independent specialist retailers is falling in every country. There is also an increasing proportion of sales made through large non-specialist distribution channels, particularly for cheap and less advanced products. Because goods are more reliable, customers think it is no longer necessary to buy from specialists capable of providing an after-sales service.

### Production process

During the period 1984-1994, the EU productivity index increased by more than 60%, while unit labour costs have risen by almost 20% since 1990. Japanese and EU firms are continuing to rationalise their production plants (the EU has about 125 plants making audio-visual products) and to transfer production with a low added value to south-east Asian countries where labour costs are lower. EU firms tend to have relatively large R&D, sales and marketing teams and to employ fewer people in production.

As a result of transferring the production of down-market products and of converting production sites in the EU into centres for experiments on new production methods, the average qualifications of those employed in production are rising. The largest European manufacturers are attempting to revitalise the market by introducing new products and new standards for them. Philips has launched DCCs (digital compact

cassettes) for digital sound recording and Sony has reacted by launching the Minidisk on to the market, another optical product for digital sound recording. These two companies are trying to repeat the success of the compact disc by replacing traditional analogue cassettes. They are also seeking to establish their standards by alliances with equipment suppliers (e.g. Philips DCCs are also produced by Matsushita, the largest Japanese electronics company). For these two competitors, partnerships with the audio-visual content sector are essential for the success of their new products.

On the other hand, EU firms have not participated in the development of camcorders, whose technology is controlled solely by the Japanese.

The most significant attempt at revitalising the market in TV sets is that involving the new developments in digital television, to be broadcast in Europe by cable and satellite from 1996. This will allow broadcasting companies to offer a much larger number of services over the same channel (in particular the possibility of providing video almost on demand). Faced with these developments, the main European companies are getting ready for action: Philips and Thomson, already heavily involved in R&D to create an American digital HDTV standard, are also supporting the introduction of the new digital standard into Europe.

In the USA, the success of the Hughes Direct TV satellite service has enabled Thomson Multimedia to deliver 2 million decoders, and in Europe digital broadcasting by satellite and cable has also begun with the launching of various multi-channel packages (Canal+, BSKyB, etc.). The supply of equipment for satellite reception (aerials, decoders) is thus an expanding sector for the manufacturers.

A great deal of research into digital technology is at present being carried out throughout Europe, as part of the Eureka, ACTS and JESSI programmes. Digital television will also increase the need for TV programmes and other media products such as videos and databases.

In the long term, innovation in the consumer electronics field is closely related to the trend towards technological convergence with telecommunications, information technology and the media.

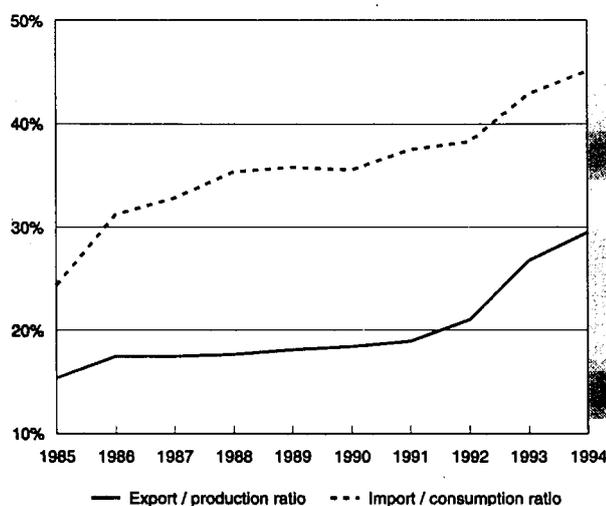
## INDUSTRY STRUCTURE

### Companies

The top ten companies account for three quarters of world production, six of them being Japanese, two European and two South Korean.

The main companies at world level are Matsushita, Sony, Philips, Thomson and Toshiba. The top three European producers, Philips, Thomson and Nokia, are vertically integrated and diversified, although to a lesser extent than Japanese companies.

**Figure 8: Consumer electronics**  
**Trade Intensities**



Source: DEBA GEIE, Eurostat

**Table 6: Consumer electronics  
Structure of imports and exports, 1994 (1)**

(million ECU)	Destination of EU exports	Origin of EU imports	Ratio exports / imports (%)
Japan	74	3 390	2.2
China	9	1 304	0.7
Malaysia	16	966	1.7
Österreich	323	908	35.6
South Korea	24	750	3.2
Singapore	134	724	18.5
USA	392	681	57.6
Thailand	34	324	10.5
Hong Kong	81	298	27.2
Indonesia	3	257	1.2
Taiwan	29	231	12.6
Turkey	36	111	32.4
Philippines	2	99	2.0
Hungary	58	76	76.3
Brazil	20	31	64.5
Total extra-EU, of which EFTA	2 577 1 060	10 613 1 139	24.3 93.1

(1) Excluding music recording, mobile phones, home computers, telecommunications terminals, video games.

Source: EACEM

Philips, the top European electronic group with a turnover of more than \$18 billion in 1994, is carrying out a restructuring of several of its activities, subsidiaries or interests such as Grundig.

Thomson Multimedia is fourth in the world ranking (and second in Europe) with a turnover of nearly \$6 billion (65% of which is for television). It is the market leader in the USA with 20% of the colour TV market, is second in Europe (about 13% of the market) and employs 50,400 people. Its organisation is world-wide (Europe accounting for only a third of its activities), but it has suffered losses for two years and is heavily in debt.

Nokia is the third European manufacturer (brand name Oceanic) with a turnover of \$1.2 billion in 1994. It is the second ranking cellular telephone producer after Motorola and has entered the multimedia digital decoder market (agreement with Kirch).

In parallel with this, it is noticeable that several consumer electronics companies are trying to revive their growth and increase their profit margins by diversifying into associated sectors such as public telephones or home computers. Thus, Nokia, Thomson Multimedia and Philips are active in the mobile telephone field and Sony is investing in home computers.

For a number of analysts, very few companies have made profits in Europe over the last few years by producing only consumer electronics products. Although it is a mature market in which established firms can generally make good profits, intense world competition and overcapacity seem to have forced the sector to pass on most of its profits from increased productivity to consumers.

### Strategies

Strategies of consumer electronics companies are focused on cost control, rationalisation of production, improvements in the quality and user-friendliness of existing products, pene-

**Table 7: Consumer electronics (excluding music recording)  
Principal producers of colour televisions and video recorders (1)**

(% of total market)	Colour televisions		1992	Video recorders	
	1993	1994		1993	1994
Net EU production (2)	68.00	73.00	45.1	48.6	61
Extra-EU imports, of which	41.90	27.50	51.2	44.1	44
Thailand	8.10	4.60			
Turkey	2.60	3.00			
Malaysia	5.40	1.80			
Singapore	3.90	1.10	7.6	11.6	10.3
China	3.50	1.10			
South Korea	4.00	1.00	3.3	3.6	3.9
Hong Kong	1.00	0.50			
Taiwan	0.70	0.50			
Japan	0.60	0.20	28.1	11.2	7.5
USA			0.05	0.05	0.03
Österreich			11.1	14.2	16.8

(1) Blank data is negligible.

(2) Home production minus extra-EU exports. Due to different data collection techniques the net EU production and extra-EU imports do not equal one hundred per cent.

Source: EACEM

**Table 8: Consumer electronics (excluding music recording)  
Equipment rates of EU households at the end of 1994 (1)**

(%)	Benelux	Dk	D	Ellada	España	France	Italia	Portugal	UK
Colour televisions (2)	98	96	96	N/A	100	94	96	96	97
Video tapé recorders	53	55	65	N/A	60	65	40	40	71
Camcorders	17	9	16	N/A	12	14	7	N/A	11
CD players	47	38	61	N/A	30	34	35	16	45

(1) At least one set.

(2) For Portugal, monochrome TVs included.

Source: EACEM

tration of rapidly growing new markets and the launching of innovative products. Firms are tending, on the one hand, to concentrate on their key skills and on the other to cooperate and set up joint enterprises with companies which are in fact likely to originate in other sectors such as the media, information technology, satellite and cable broadcasting and telecommunications. In general, strong competition forces firms to form networks of alliances and partnerships in very different market segments such as those of audio, video, satellite and cable pay-TV and intelligent telephone systems. After a wave of mergers and take-overs in the 1980s, strategies moved more towards agreements covering a limited range of products or towards R&D in several technologies of highly differentiated sectors of the consumer electronics market. Philips and Thomson, who collaborated in the development of a European HDTV standard, are together designing flat TV screens and LCDs (liquid crystal displays).

The major companies have strategies covering three main consumer markets: Asia, North America and Europe. Thus, two thirds of Thomson's activities are located in North America, and large Japanese companies like Sony or Matsushita carry out a considerable proportion of their business in Europe and the USA.

The large European companies are also attempting to penetrate new and rapidly growing consumer electronics markets, particularly in Asia.

## REGIONAL DISTRIBUTION

The European consumer electronics equipment industry at present consists mainly of a small number of multinational companies selling standardised products throughout the EU. The free movement of goods has enabled production to be concentrated in a smaller number of large manufacturing units. As a consequence of this rationalisation, employment has fallen and numerous small independent producers have gone out of business. The common external customs tariff and the threat of anti-dumping measures have encouraged Japanese and other Asian manufacturers to establish production facilities in the EU.

The main area in which the Single Market is not yet operational is distribution: few manufacturers have Europe-wide distribution systems. This is partly because, despite the existence of several pan-European purchasing groups, the retail distribution structure in each country is historically very different and because legislation in such areas as trade practices, packaging and advertising varies from one country to another.

## ENVIRONMENT

Laws on waste disposal have already been introduced in Germany and France. EU and national regulations will compel suppliers to use recyclable materials. Consumer electronics firms take environmental problems very seriously. This implies designing equipment to be recyclable and non-toxic, setting up waste disposal plants for customers, providing systems

for the return of packaging, and using non-polluting processes and materials, such as water-based paints.

## REGULATIONS

The problems posed by technical harmonisation have largely been overcome, although the PAL and SECAM colour TV standards still exist. For future technologies, good progress has been achieved in establishing digital audio broadcasting (DAB) and digital television standards.

A digital television standard for Europe is being developed by the Digital Video Broadcasting Group formed in 1993. This brings together 180 organisations on a voluntary basis, including television manufacturers, broadcasting companies, satellite operators, public authorities and the European Commission. Its aim is to establish technical standards on which the introduction of digital television can be based.

The standardisation work of the DVB affects all the ways of transmitting digital television and is based on the use of MPEG 2 digital compression methods. The family of DVB standards includes 7 elements and these now form the basis of digital broadcasting for all transmission methods. The European Commission Directive of July 1995 also makes it obligatory to use certain DVB standards, and the success of DVB will lie in preventing Europe from adopting a series of incompatible standards.

The aim of the Commission was to avoid a proliferation both of competing systems in Europe for encoding satellite broadcasting pay-TV channels and of transmission standards themselves; this has been achieved.

Apart from texts specific to the consumer electronics sector, the organisation of the sector is also affected by some of the Commission's more general measures, notably the opening up of public markets and the respect for rules of competition. In this context, the Member States were asked to adopt some specific rules in providing rapid and effective legal protection against the manufacture and distribution of unauthorised decoding devices. Therefore, in its July 1994 Communications entitled "Europe's way to the Information Society, An Action Plan (COM(94)347), the Commission announced the preparation of a "Green Paper on the Legal Protection of Encrypted Services in the Internal Market," which focused on analysing two main problems: first, the absence of specific legislation on illicit reception of encrypted services in some of the Member States, and second, the disparities between existing legislation in others.

## OUTLOOK

Electronics, out of all consumer durable sectors, is the one that has experienced the most spectacular changes since the beginning of the 1980s, yet it now finds itself faced with new prospects:

- more and more pictures and sounds are becoming available to the general public and can be accessed through three

**Table 9: Consumer electronics  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	0.65	0.53
Ellada	0.43	0.03
España	0.51	0.70
France	1.91	1.94
Ireland	N/A	N/A
Italia	0.83	0.79
Luxembourg	0.00	0.00
Nederland	N/A	N/A
Portugal	N/A	N/A
United Kingdom	0.85	0.91

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

types of broadcasting system: satellite, cable and the terrestrial stations;

- the services on offer are also becoming ever more numerous and varied: teletext, conditional access, reception of videos on demand, remote activation of recording, interactively, stereophonic sound, etc.;
- the quality of sound and pictures is improving either because of new systems (D2MAC, HD MAC, SVHS, Hi 8) or because of technological advances (100 Hz TV sets);
- new products are appearing or improving: camcorders, television projectors, audio and video compact discs, rerecordable digital discs and cassettes, interactive compact discs, cellular phones, etc.).

In prospect for the future are digital methods of audio-visual broadcasting and the development of multimedia products and services. New possibilities in terms of the quantity and quality of the services offered are manifold as long as the change to digital systems is not made abruptly, but is carried out gradually on the basis of two principles:

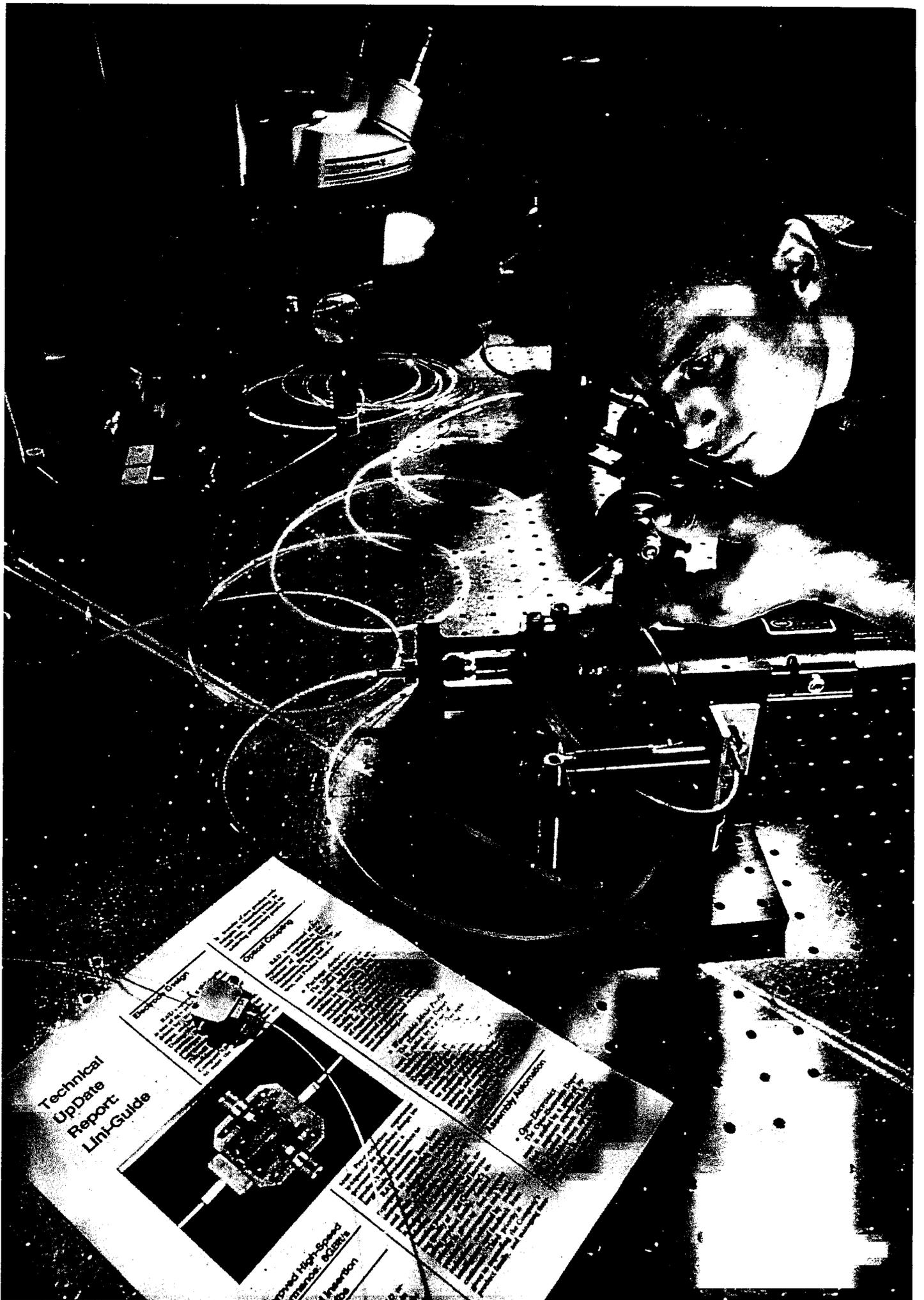
- that the present services will continue to be broadcast in the same way;
- that the industry will offer equipment for adapting present sets to ensure their compatibility and their ability to access the new programmes.

In the short term, the revival of the electronics sector depends on the continuation of the rationalisation programmes undertaken by the large companies in the sector. In the long term, the success of the sector also relies on its capacity to increase its share of the world market and to exploit expanding niches in the market through technological and commercial alliances. The emergence of the multimedia sector signals the convergence of the consumer electronics, information technology, telecommunications and software sectors and can be regarded as one of the new focal points in the development of the "information society". These developments are likely to accelerate the integration of certain classes of consumer electronic items (e.g. TV, in-car services, Internet, PDA's - Personal Digital Assistants, etc.) into intelligent computer and communication based systems.

Written by: IDATE

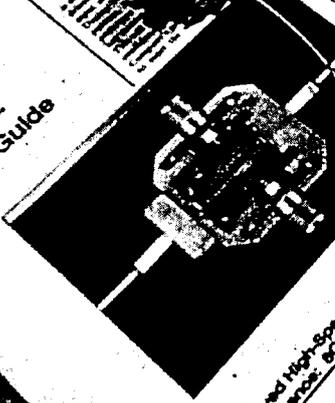
The industry is represented at the EU level by: European Association of Consumer Electronics Manufacturers (EACEM). Address: Rue d'Arlon 69-71, Bte 8, B-1040 Brussels; tel: (32 2) 230 5010; fax: (32 2) 230 9608.





**Technical  
Update  
Report:  
Link-Guide**

**Report Date:**  
1/15/88  
**Author:**  
John Doe  
**Editor:**  
Jane Smith  
**Reviewer:**  
Bob Johnson  
**Version:**  
1.0



**Speed High-Speed  
Interface: 200ns**  
Interaction  
The...

**Assembly Instructions:**  
1. Check the...  
2. The...

## Overview

### NACE (Revision 1) 31

With a total output in excess of 105 billion ECU and a workforce of nearly 1.04 million, the manufacture of electrical machinery and apparatus was one of Europe's largest industries in 1994. It contributes over 5% to the total output of EU industry. It has a very broad range of products - demand depends on the investment activity of the private and public sectors as much as on private households. Many of the things it produces serve as primary and intermediate products for other sectors, in particular mechanical engineering and the transport equipment industry. The sector is also a vital stimulus for power supply and transport infrastructure investments.

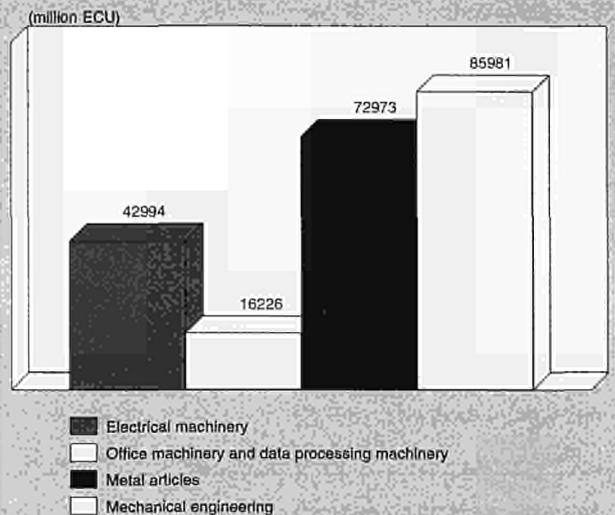
### INDUSTRY PROFILE

#### Description of the sector

The new statistical classification according to NACE Rev. 1 has entailed appreciable changes to the data base, resulting in breaks with the previous figures. In the statistics, the manufacture of electrical machinery and apparatus is covered by the new NACE group 31, which contains the following - in part very heterogeneous - subgroups: electric motors, generators and transformers (NACE 31.10), electricity distribution and control apparatus (NACE 31.20), insulated wire and cable (NACE 31.30), accumulators, primary cells and primary batteries (NACE 31.40), lighting equipment and electric lamps (NACE 31.50), electrical equipment for engines and vehicles, and other electrical equipment, e.g. signalling and safety equipment (NACE 31.6).

Much of this statistical breakdown of the sector does not follow the industry's market activities, and it does not, in every case, allow a meaningful statement to be made, since the subsectors combine very heterogeneous product areas. It must, in particular, be noted that this composition of NACE 31 makes it an artificial entity that has been extracted from the former field of the electrical and electronics industry as a whole. This formerly also contained the new NACE group 32 (electronic components, telecommunications, consumer electronics) and the electrical and electronic segments of the NACE group 33, in particular electro-medical equipment and electrical/electronic measurement and control equipment. The close technological relationship between these fields is evident from the fact that products that might be expected to be in NACE 32 can be found in NACE 31 (for example, passive components, signalling equipment). Neither the combination of electrical/electronic medical equipment nor the measurement and control equipment with the corresponding segments of mechanical engineering to form NACE 33 is justified on technological grounds, even if demand for them is subject to similar conditions. On the other hand, a virtually "classic" segment of measurement and automation engineering, namely stored-program controls, is excluded from NACE 33.20 and placed in group 31.20, the development of which is greatly affected by this high-growth product category. These statistical classifications follow the division of chapters under the Harmonised System and can be justified by foreign trade and customs considerations, but they are difficult to understand from a market point of view. There are even more serious objections when it comes to another important sub-group of the former electrical industry - domestic appliances - which are now found under the totally alien heading of manufacture

**Figure 1: Electrical machinery**  
Value added in comparison with related Industries, 1994



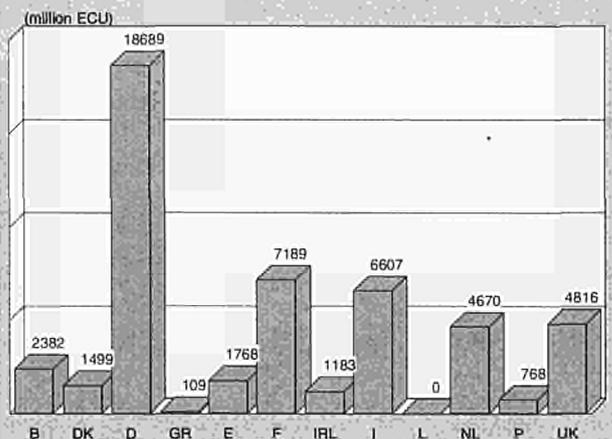
Source: DEBA GEIE

of machinery and equipment (NACE 29). This typical sector of capital goods now also contains a group of products, demand for which depends almost entirely on private consumption and which is also completely different technologically.

Within the former electrical industry (old NACE 34), these very heterogeneous fields were held to be related on the basis of the production technology and electricity as the common form of power. This is particularly clear from the high level of linkage between the new NACE groupings 29.7, 30, 31, 32 and 33. The basis for this is the key technology "micro-electronics", which has a decisive influence on the development of these sectors.

In the past, the data available has provided only inadequate coverage of the electrical machinery and apparatus manufacturing sector since, for the most part, especially before 1993, the only figures available were in the former NACE categories.

**Figure 2: Electrical machinery**  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Electrical machinery**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	65 902	101 124	105 264	104 290	97 411	102 159	99 848	114 216	120 950	127 540	134 570
Production	72 611	104 641	107 925	107 535	101 675	105 497	102 886	117 083	123 670	130 100	137 090
Extra-EU exports	14 798	17 183	18 259	18 919	21 513	24 538	27 547	26 606	28 050	29 510	30 910
Trade balance	6 709	3 517	2 661	3 245	4 264	3 338	3 039	2 866	2 720	2 560	2 520
Employment (thousands)	1 162	1 205	1 187	1 138	1 068	1 037	1 036	1 128	1 140	1 150	1 150

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Electrical machinery**  
**Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Assembly of electrical equipment	N/A	N/A	2 048
Electric lighting	8 336	8 941	2 048
Electrical appliances for industrial use; batteries and accumulators	490	N/A	5 306
Insulated wires and cables	10 545	10 353	2 063

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Europacable, Eurostat

**Table 3: Electrical machinery**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	7.09	0.63	4.17	4.95
Production	5.45	1.08	3.49	5.02
Extra-EU exports	0.02	6.10	2.68	12.79
Extra-EU imports	9.34	4.39	7.11	15.13

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Electrical machinery**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	14 798	14 421	13 715	14 679	16 423	17 183	18 259	18 919	21 513	24 538	27 547	26 606
Extra-EU imports	8 089	8 565	9 203	10 888	12 884	13 667	15 598	15 674	17 249	21 201	24 508	23 740
Trade balance	6 709	5 856	4 512	3 791	3 538	3 517	2 661	3 245	4 264	3 338	3 039	2 866
Ratio exports / imports	1.83	1.68	1.49	1.35	1.27	1.26	1.17	1.21	1.25	1.16	1.12	1.12
Terms of trade index (3)	90.4	95.2	96.8	97.0	95.0	100.0	97.2	96.6	91.3	87.1	N/A	N/A

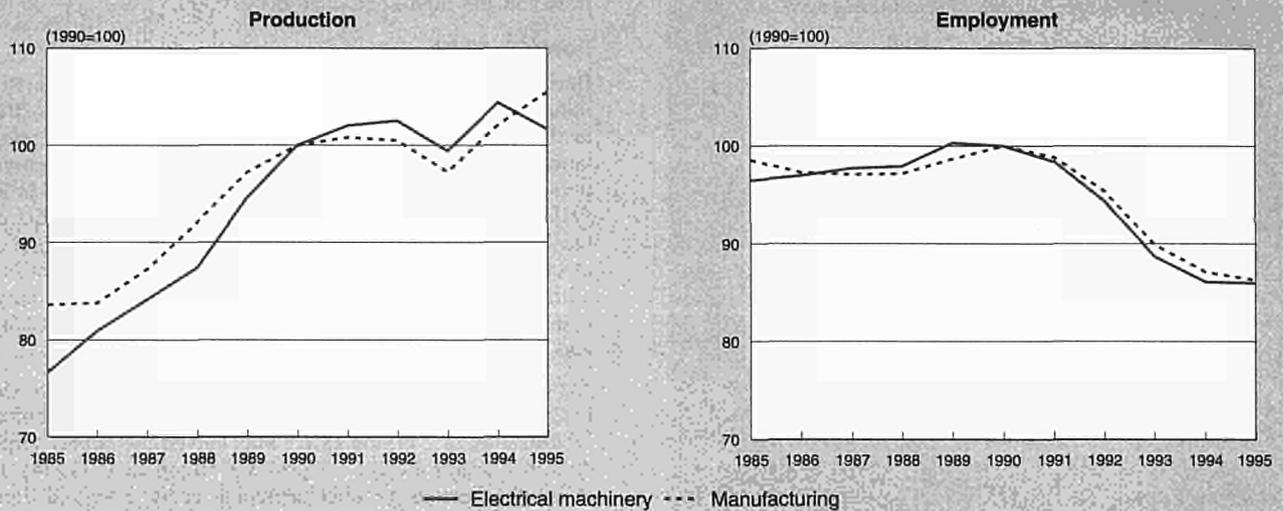
(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

(3) Nace 3400.

Source: Eurostat

**Figure 3: Electrical machinery**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

For the time being, they can be used only as an indicator of the trend. This overview will therefore look only at particularly conspicuous sectoral aspects.

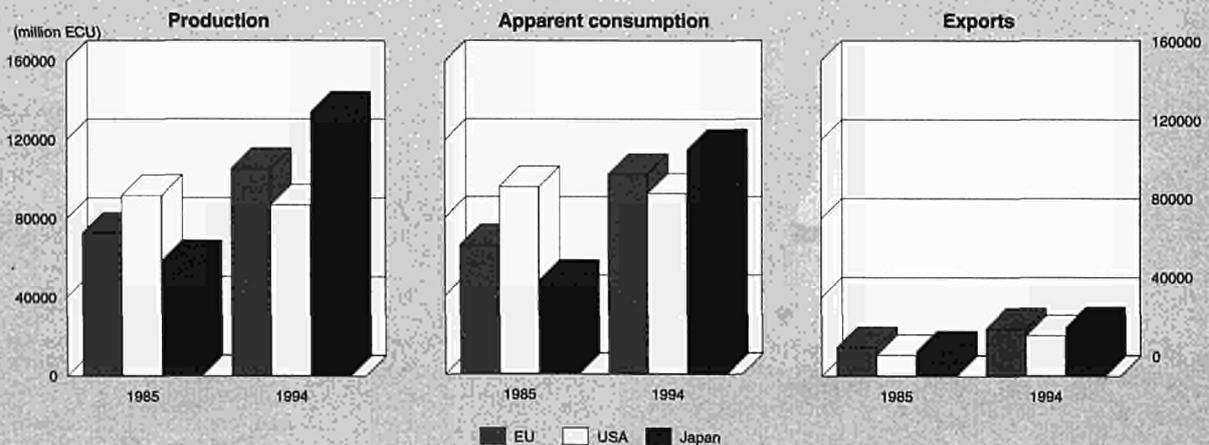
It should be stressed that the manufacture of electrical machinery and apparatus accounts for nearly 45% of the former overall branch of "electrical engineering". Its development is marked primarily by industrial applications, power supply and transport infrastructure. The construction sector and private households also play a part as purchasers. Technical development is marked by the trend towards electronics, which is accompanied by a strong growth in industrial services. This means that the value added pattern is constantly changing. Above all, it means planning, engineering and software production, are estimated to have reached almost one quarter of the industry's total output. The statistical data, which is geared to hardware production, characterises both the initial quantities and the trends, since services are incompletely recorded and have experienced particularly dynamic growth.

### Recent trends

At current prices, output rose from 72.6 billion ECU to 105.5 billion ECU in the period 1985 to 1994. That is a nominal average growth rate of almost 4% a year; in real terms This is equal to an annual average rate of 3.5%, significantly above the trend in the rest of industry. The 1992/93 recession means that growth was much higher in the period before 1990 than after. However, production had already peaked in 1991. The recession followed in the two years after that with a cumulative decline of around 6%, which the subsequent recovery of 1994 (+ 4%) and 1995 was insufficient to make up for. The annual average market growth (apparent consumption) rose almost one percent faster than production in the same period, largely due to the high increase in imports from third countries.

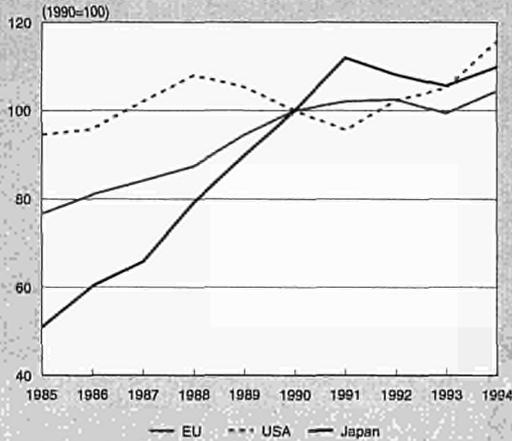
Although the number of persons employed increased slightly up until 1990, because of the favourable trend in production, it has since declined by about 170 000. This is a moderate reduction when compared to industry as a whole. Germany achieved a 38% share of the overall EU figure for the sector's value added. France took 14%, Italy just over 13%, the United

**Figure 4: Electrical machinery**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Electrical machinery**  
International comparison of production in constant prices



Source: DEBA GEIE

Kingdom just under 10%, the Netherlands 9% and Belgium 5%.

### International comparison

The world market for the manufacture of electrical machinery and apparatus reached a volume of around 540 billion ECU in 1994. It is dominated by the USA, Japan and the EU, their share amounting to just under 60% in total which is less than their corresponding share of the electronics sector. With just under 20%, the EU is the second largest block after Japan (over 20%). Like the EU, the Japanese industry in particular has, since 1992, fallen into a deep recession, whereas since 1993 the American industry has already been experiencing a sustained recovery. Despite these trends in the more recent past, these three blocks have, in the longer term, followed very different courses. In the last decade since 1985, the USA has seen a slight decline in output and market volume, however, the volume of exports has doubled. Japan doubled its output and exports and increased its market volume by a factor of 2.4, moving it up from third to first place.

The EU market had a volume of 102 billion ECU in 1994. It had a gross output of 105 billion ECU, with exports of 24 billion ECU and imports of 21 billion ECU. This means that the EU industry had an import surplus of a good 3 billion

ECU in its trade with third countries. About 77% of the EU market was covered from its own production and 23% came from non-EU countries. The USA, Japan and the EFTA countries had the highest market shares here.

### Foreign trade

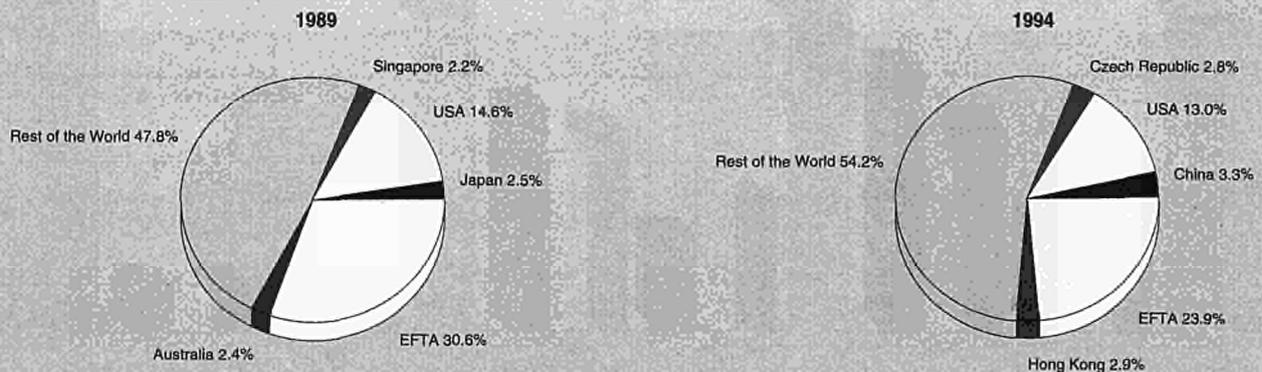
Because of its electronics sectors, in particular, the electrical industry has always been export-intensive and foreign trade in the electromechanical sectors is of below-average importance. Nevertheless, world exports doubled in the ten-year period since 1985 to an estimated volume of around 110 billion ECU. The three largest export regions - Japan, the EU and the USA - accounted for around three fifths of all exports of electrical machinery and apparatus. The EU is almost level with Japan as the second largest exporter. Its main exporting countries include Germany, the United Kingdom, France, Italy and the Netherlands.

Exports to third countries have risen by two thirds since 1985 to 24.5 billion ECU, while imports have risen much quicker by 160% to 21.2 billion ECU. This halved the export surplus from 6.7 billion ECU (1985) to 3.3 billion ECU (1994). Because the various product segments carry a very different weight within the electromechanical sector as a whole, the export and import volumes differ greatly from one group of goods to another. The greatest proportion of this trade - about two thirds - consists of power generation and distribution plant, which is, however, also used as industrial equipment. Just under one quarter is accounted for by other equipment for industrial use and deliveries to other sectors of industry. Lighting equipment and wires and cables make up around 5 % each of the export/import volume.

Exports are, therefore, preponderantly capital goods, with only small proportions consisting of consumer goods and intermediate products. The dependence on foreign markets is much higher than is suggested by the export ratio, i.e. the ratio of exports of goods to manufacturers' sales. If account were taken of indirect exports, i.e. of all products going into other goods as intermediate consumption, the export ratio would be even higher. Apart from the motor industry, most indirect exports are in mechanical engineering.

The main buyers of EU exports of electromechanical products are the EFTA countries and the USA. The developing countries are the biggest market in the rest of the world, although their import volume has actually declined again in recent years. The reforming countries of Central and Eastern Europe together with the People's Republic of China are gaining increasing importance as sales markets. On the other hand, the

**Figure 6: Electrical machinery**  
Destination of EU exports



Source: Eurostat

**Figure 7: Electrical machinery  
Origin of EU imports**



Source: Eurostat

trend towards globalization and the convergence of international markets that goes hand in hand with keener competition have not been without effect on imports. Imports have been rising faster than exports for quite some time, and imports from third countries almost trebled between 1985 and 1994. The average annual growth rate was a good 10%. Capital goods dominate imports as they do exports, accounting for over 80% of the corresponding EU imports. The import ratio, i.e. imports as a proportion of the total volume of the internal market, rose steadily from 12% in 1985, reaching more than 20% by 1994.

It is clear from the regional structure that the EFTA countries are not only the EU's most important customers in this sector, but that they have also become the biggest supplier on the import side. They are followed by the USA, with Japan in third place, each contributing about 20 % of third country imports. Although there was an absolute rise in imports for almost all countries, there are, nonetheless, some shifts in the import structure. Japanese suppliers, in particular, have maintained their position, despite being less important as customers. China and South Korea, meanwhile, have also gained large shares with 5% each.

As in many other sectors of industry, intra-Community trade exceeds that with third countries. Thus, over 60% of all deliveries and purchases of goods by the EU countries in 1994 were deliveries between individual Member States (intra-Community trade). Shares of intra-Community trade largely follow production structures both sectorally and regionally.

## MARKET FORCES

### Demand

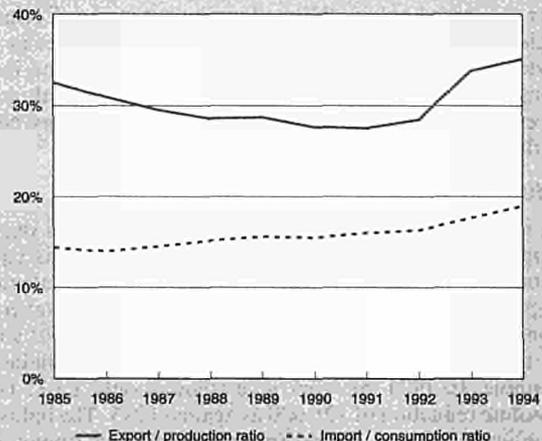
The NACE sector 31, electrical machinery and apparatus, covers the production of motors, generators and transformers, electricity distribution and control apparatus, electrical equipment for vehicles and machines, wire and cable, and lighting equipment. The pattern of demand is therefore largely determined by general investment activity and trends in the construction, electricity and motor industries. Demand is, to a small extent, directly dependent on private consumption. As many products must be classified rather as primary or intermediate products, the growth in production is, to a large extent, determined by trends in other sectors. For example, the electrical industry itself was the biggest buyer of its own products

intended for downstream processing or incorporation into other products. Mechanical engineering, the service sector and transport equipment also take large quantities as intermediate consumption. Large infrastructure investment projects, both within the EU and throughout the world, also play an important part. Even if there are only a few power supply or transport system projects at any one time, their volume has a great effect on trends.

### Supply and competition

If we look at the products and their possible uses, we see that this is a highly diversified branch of industry, ranging from the smallest components to entire installations for industry or infrastructure. The overall growth rate, therefore, hides the very different trends followed by individual product groups. In addition, the growth in production is affected by technological change, cost and price trends and other factors (the manufacturing technologies used in the highly diversified production processes range from heavy engineering to miniaturisation in precision engineering). These trends affect the various product segments to a different extent.

**Figure 8: Electrical machinery  
Trade Intensities**



Source: DEBA GEIE, Eurostat

**Table 5: Electrical machinery  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	79.5	83.5	86.1	89.3	94.3	100.0	103.6	108.6	112.1	121.3
Unit labour costs index (3)	96.0	97.6	99.4	100.2	99.2	100.0	103.7	104.4	105.2	100.0
Total unit costs index (4)	89.7	89.5	90.2	94.5	99.8	100.0	100.6	100.4	99.4	97.2
Gross operating rate (%) (5)	10.1	9.8	10.3	10.8	10.2	9.5	9.2	8.8	7.6	8.4

(1) Some country data has been estimated.

(2) Based on Index of production / Index of employment.

(3) Based on Index of labour costs / Index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / Index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

The most important aspects for the various sectors are varied. For example, the need to supply the world's growing population with electricity while at the same time preserving the natural living environment means that power engineering has to seek innovative solutions in power station technology and power transmission. Priority is given to systems that cut fuel consumption and emissions from electricity generation, reduce losses in power transmission and make for better control of energy flows in the grids. New concepts such as fuel cells for decentralised power generation and superconducting energy disseminators may push back the existing frontiers of technology. In world-wide competition, supply is characterised by the demand for low energy prices.

In plant engineering, craft trades and industry require a high level of productivity while safeguarding resources and the environment to the greatest extent possible. Hardware and software, engineering and servicing have to be fine-tuned to these tasks, and logistics and information processing combined with these requirements in digital control technology. These trends have repercussions especially for motive power, circuitry, installation and automation engineering. Industry's renewed and growing readiness to invest has been a clear stimulus here in the last two years.

Two opposing trends are evident in transport engineering. On the one hand, growing affluence is increasing the desire for greater mobility, while, on the other, environmental protection requirements and the high level of investment needed for the transport infrastructure are setting limits. These requirements can be met by integrated transport schemes with solutions to the problems of rail and road transport and traffic control and navigation systems.

Lighting engineering is also undergoing constant change. The interior lighting of functional buildings, for example, is no longer concerned only with functionality but is giving priority to lighting design to suit individual needs. This takes in the knowledge gained in building systems engineering and innovations in the technology of light sources. The growth areas are therefore in innovative lamps such as halogen lamps, compact fluorescent lamps and halide metal lamps.

### Production process

Even in the new statistical delimitation, the sector is one of the biggest employers in manufacturing industry. It is equal to about one half of machinery and equipment manufacture in importance. Up until and including 1991, the number of persons employed in the sector increased slightly, but since 1992 there has been an appreciable decline, as in industry as a whole. In 1994 the workforce stood at only 1 037 000, an absolute reduction of 125 000 as against 1985. The industry was obliged to absorb the severe pressure of unit labour cost trends by increasing productivity. The trend towards globalization and the keen competition on price from the low-wage

countries are causing production to be increasingly shifted abroad, especially for primary and intermediate products. This is accelerating the process of reducing the depth of value added in hardware production. On the other hand, the trend towards specialisation in high-tech products is increasing, with an ever more rapidly growing service component. This trend is also seen in the fact that electromechanics is one of the branches with the highest research intensity. About 8 to 10% of turnover is spent on research every year.

## INDUSTRY STRUCTURE

### Companies

Since many firms in the industry, especially the large firms, are also active in other sectors (e.g. communications engineering), the company structure largely follows the former NACE classification of "electrical engineering" (3400). It shows a very high level of concentration. About 4% of all the firms involved account for approximately 80% of the total workforce and over 80% of total turnover. It is a remarkable fact that in all the Member States and in the world's other industrial countries as well as the size pattern of firms is very similar. They all have a number of very large firms operating world-wide in virtually all product segments, together with a large number of small and medium-sized enterprises.

In 1991, the three biggest EU firms in the industry were Siemens (D), Philips (NL) and Alcatel-Alsthom (F). The strong presence of the former EFTA countries among the leading 15 firms deserves particular mention, the most important being Asea Brown Boveri (CH/S), Electrolux (S) and Ericsson (S).

### Strategies

The environment is undergoing fundamental changes. The key words are: liberalisation and deregulation of national infrastructure markets, new low-cost locations in Central and Eastern Europe, the combination of high tech and low cost in South East Asia, incalculable shifts in currency parities, reduction in the extent of value added in the factories following the performance explosion in microelectronics, and the growth in engineering and software at the expense of hardware.

Apart from expanding its exports, the industry is, therefore, still very much looking to invest abroad (construction of production and distribution facilities). Combined with the expansion of existing markets, these investments will create new sales potential. In this respect, particular attention is being paid to the reforming countries of Central and Eastern Europe and to South East Asia, which is still the fastest growing region in the world. The revolutionary political changes in Eastern Europe will also bring high potential for growth in the longer term.

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## REGULATIONS

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From the industry's point of view, public contracting is particularly important in shaping the internal market. In the EU, contracts placed by the state and public enterprises such as the railways and power supply companies make up a high proportion of the national product. Liberalisation of public contracting is needed if the supply sectors covered by the sector directive are to be used with the advantages of increased competition in the large market. It must be ensured that these provisions are actually applied and that the market is opened simultaneously. European technical standardisation is, however, also an essential prerequisite for expanding trade.

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## ENVIRONMENT

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The production of electrotechnical products is normally not very polluting. On the other hand, the industry's products serve to preserve the natural living environment by bringing innovative solutions in power station and transport engineering and optimising industrial production processes.

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## OUTLOOK

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The structural environment will continue to be marked by the liberalisation and harmonisation of markets in the EU and by technological progress. With the overall economic situation still very favourable all over the world, growth remained stable in 1995. In Western Europe and the reforming countries of Central and Eastern Europe, trends were predominantly upward. In the USA, there was again a two-figure increase in demand. In the US, however, the cycle in the electrical industry has passed its peak. While the Japanese economy continued to suffer the effects of the high yen and the banking crisis, the dynamic trend in the Asia-Pacific region, and South East Asia, in particular, continued. Meanwhile, economic activity in Europe has begun to slow down, dampening the prospects for 1996. The general upward trend will probably reassert itself in 1997, however.

Written by: ZVIE

The industry is represented at the EU level by: Liaison Group of the European Mechanical, Electrical, Electronic and Metalworking Industries (ORGALIME). Address: Rue de Stassart 99, B-1050 Brussels; tel: (32 2) 511 3484; fax: (32 2) 512 9970.

# Motors, Generators and Transformers

NACE (Revision 1) 31.1,31.2

After a substantial increase in demand for motors, generators and transformers in the second half of the 1980's, growth has slowed down over the past five years. Overcapacity in the electricity production sector and the decline in investment activity are partly responsible for the relative fall in demand growth.

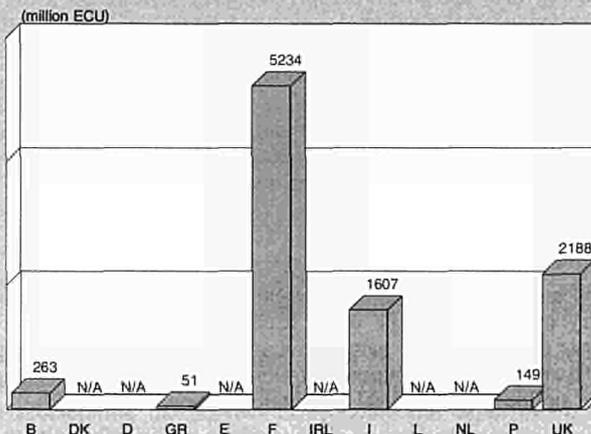
The generally improved investment climate in 1994 and 1995, combined with growing demand from developing and industrialising countries (South East Asia, China, India and Eastern Europe), are likely to have a positive effect on demand for the industry's products. EU producers must however deal with increasing extra-EU competition. Thus, in order to remain competitive EU producers must streamline production and increase cost competitiveness. Furthermore, they must try to benefit from the growth in emerging markets, in part by ensuring physical presence and by developing ventures with local operators.

## INDUSTRY PROFILE

### Description of the sector

This monograph deals with the NACE Rev. 1, group 31.1 and 31.2. It describes the sector of motors, generators and transformers, which comprises two main subsectors: machines and equipment for the production and conversion of electricity, which includes electrical motors, electricity generators and rotary converters, and transformers; and equipment for the distribution of electric power, including equipment for opening, closing and protecting electric circuits of 1 KV or more (high-voltage switchgear) as well as installation equipment up to 1 KV (low-voltage switchgear). Unless otherwise specified, all Eurostat sectoral data presented in this chapter include the manufacture of electromagnets, capacitors and resistors. In the old NACE 1970 classification this sector was covered by the following two groups: NACE 342 (Electrical machinery) and NACE 343.1 (Electrical equipment for industrial use).

Figure 1: Motors, generators and transformers  
Value added by Member State, 1994



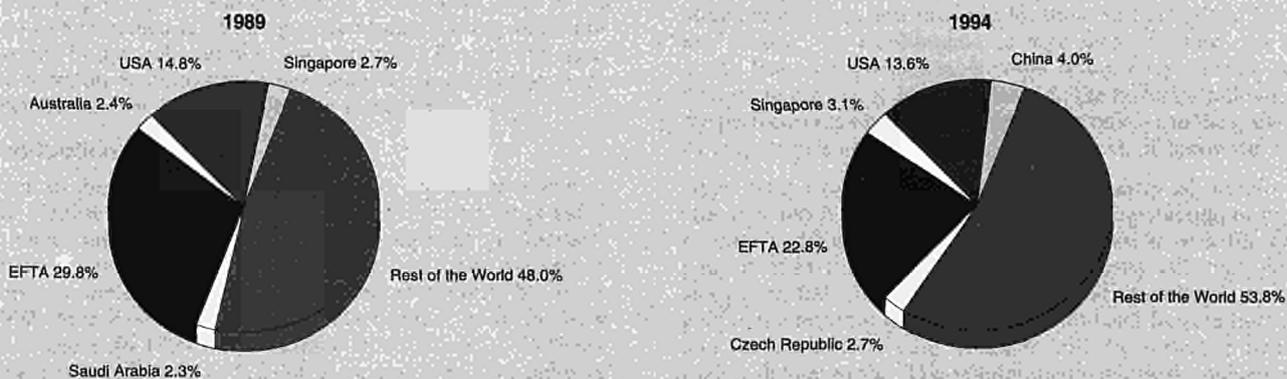
Source: DEBA GEIE

### Recent trends

The EU production index for electricity distribution and control apparatus, with 1990 as the basic year, decreased by 3.3% between 1990 and 1994. The corresponding index for the manufacture of equipment for the production and conversion of electricity decreased by 6.9% over the same period. By contrast, demand for motors, generators and transformers grew by approximately 3% per year in real terms between 1984 and 1993. Over the past ten years, the industry has thus had to cope with growing competition from outside the EU. In current prices, extra-EU imports increased by 13% per year between 1985 and 1994, whereas extra-EU exports grew by nearly 8% per year. The increasing pressure of extra-EU competitors was particularly felt during the second half of the eighties; from 1985 to 1989, extra-EU imports grew by more than 16% whereas extra-EU exports increased by only 6% per year.

Due to a major industry restructuring in the early 90's, sectoral employment has been reduced significantly in the EU in recent years. Although aggregate employment figures are not available, sectoral employment has been declining by approxi-

Figure 2: Motors, generators and transformers  
Destination of EU exports



Source: Eurostat



**Table 1: Motors, generators and transformers  
Production at current prices by Member State**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)
Belgique/België	N/A	N/A	N/A	N/A	579	610	632	616	623	660	713
Ellada	119	N/A	100	110	126	131	130	131	141	141	152
France	9 719	10 089	10 354	11 035	11 636	12 841	13 940	12 399	12 290	12 963	11 740
Italia	2 872	3 312	3 896	3 863	4 683	5 071	5 209	4 923	4 173	4 246	4 141
Portugal	114	116	131	145	190	334	354	492	395	380	468
United Kingdom	4 269	3 833	3 782	4 536	4 965	5 091	5 374	5 265	5 250	5 411	4 795

(1) DEBA GEIE estimates.  
Source: DEBA GEIE

**Table 2: Motors, generators and transformers  
Employment by Member State**

(units)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)
Belgique/België	N/A	N/A	N/A	N/A	7 365	7 247	7 030	6 566	6 211	5 907	5 942
Ellada	3 610	N/A	3 012	2 906	2 891	2 970	2 686	2 540	2 358	2 261	2 201
France	147 934	140 362	138 692	134 435	129 593	132 474	136 074	118 741	114 501	115 632	117 394
Italia	44 532	44 510	47 670	43 477	47 523	46 354	45 838	43 651	41 929	40 673	39 880
Nederland	7 552	6 812	7 452	6 749	7 266	7 561	8 226	8 588	8 234	7 707	N/A
Portugal	5 771	5 805	5 620	5 776	5 874	8 884	8 332	13 179	12 744	12 193	N/A
United Kingdom	96 431	92 805	91 212	91 476	92 110	89 384	81 054	75 581	73 106	73 283	78 024

(1) DEBA GEIE estimates.  
Source: DEBA GEIE

**Table 3: Motors, generators and transformers  
Production Index by Member State**

(1990 = 100)	1990	1991	1992	1993	1994
EUR15	100.0	100.8	99.2	93.8	93.1
Deutschland	100.0	100.7	98.6	90.1	93.5
France	100.0	101.3	100.2	99.4	86.8
Italia	100.0	105.3	106.7	102.0	109.1
Luxembourg	100.0	97.4	88.1	96.8	82.3
Portugal	100.0	117.5	135.5	109.7	103.5
United Kingdom	100.0	95.2	90.0	89.9	86.1

Source: Eurostat

**Table 4: Electricity distribution and control apparatus  
Production index by Member State**

(1990 = 100)	1990	1991	1992	1993	1994
EUR15	100.0	100.1	98.4	90.7	96.7
Deutschland	100.0	100.8	100.3	91.3	99.0
France	100.0	96.9	92.8	83.8	87.0
Italia	100.0	108.5	104.2	99.7	107.0
Luxembourg	100.0	78.5	63.0	104.6	110.2
Portugal	100.0	117.5	135.5	109.7	103.5
United Kingdom	100.0	94.6	91.1	91.6	90.8

Source: Eurostat

**Figure 3: Motors, generators and transformers  
Origin of EU imports**



Source: Eurostat

mately 2% to 3% per year from 1990 to 1995 in major producing Member States such as France, Italy and the UK.

### International comparison

The EU is the most important producer in the Triad. In 1992, Japanese production was the equivalent of 82% of EU production whilst US production represented about 68%. However, production trends over the last decade indicate that those ratios are likely to change significantly in the near future. Japanese production increased sharply by 8.7% per year in constant prices between 1985 and 1995. US production grew only by 2% between 1990 and 1994 in constant prices, whereas the EU production index decreased between 1990 and 1994.

### Foreign trade

The last decade saw a sharp increase in extra-EU12 imports, mainly to the benefit of East Asian exporters. In current prices, extra-EU imports grew by 13% per year between 1985 and 1994. The former EFTA countries remained the most important origin of imports, but their share of total extra-EU imports fell from roughly 30% in 1989 to 24% in 1994. The imports from the USA fell from 28% to 20% of total extra-EU imports over the same period, whereas Japan's share fell from 20% to 18%. All the traditional competitors have thus been losing ground mainly to the benefit of developing and industrialising countries (including East Asian NIC's), the market shares of which increasing from 21% in 1989 to 37% in 1994 (Taiwan and South Korea held 4% and 9% respectively).

Between 1985 and 1994, extra-EU exports increased by 8% per year in current prices, the most important market being the group of developing and industrialising countries (including East Asian NIC's) which accounted for around 60% of total exports in 1994, up by 50% from its level in 1989. The 5 former EFTA countries represented slightly below 23% of total exports (down by 30% from its level in 1989) and the USA slightly below 14%. The EU trade balance remained positive throughout the decade and amounted to ECU 3.4 billion in 1994, the extra-EU exports being about 1.5 times the size of imports.

Intra-EU imports and exports grew fastly, by respectively 9.1% and 10.7% per year, between 1985 and 1994. In 1994, in current prices, Germany was the most important intra-EU exporter with about 40% of the total EU exports, followed by France (19%), the UK (11%) and Italy (9%).

In 1995, the EU-15 trade surplus is estimated at ECU 3.2 billion. Extra-EU15 exports should reach ECU 14.9 billion whereas extra-EU15 imports should amount to ECU 11.7 billion. Extra-EU exports are forecast to grow by approximately 7% per year between 1996 and 1999. The trade surplus should grow by some 3% per year in 1996 and 1997 and, due to the increase in Asian markets' demand, by some 5% towards the end of the decade.

## MARKET FORCES

### Demand

The 1985-1994 compound annual growth rate of overall demand for the industry's products is close to 3%. There are however important variations both on a year by year and on a segment basis.

The investment boom of the late eighties led to a rapidly growing demand for electrical power towards the end of the decade. Producers of equipment such as electricity generators, transformers and high voltage switch gears benefited from the subsequent expansion of electrical energy supply. However, the slowdown of electricity demand growth in more recent years has had a negative effect on those producers. As a result of substantial investments in most EU countries, the industry must now deal with excess capacity. It is therefore expected that new investments will be oriented towards replacement rather than towards capacity increase, at least for several years.

The development pattern of products more closely related to manufacturing processes was quite different. In the second half of the eighties, the EU manufacturing sector made efforts to increase production capacity and improve efficiency in expectation of the Common Market. This resulted in strong demand for electric motors, low-voltage switch gears as well as installation equipment. Product innovations, such as the change from DC converters to three-phase converters, also had a positive effect on demand. Since most of these products are highly sensitive to variations in the general level of economic activity, recession is the main cause of the 1990-1993 market slowdown.

The beginning of a general economic recovery in 1994 is likely to have different repercussions on the various segments of the motors, generators and transformers sector. Sales of equipment for production of electricity tend to follow general demand cycles with shorter average delays than sales of distribution equipment. Given that the time needed to deliver

**Table 5: Motors, generators and transformers**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	7 655	8 234	7 779	8 570	9 666	10 290	11 151	11 546	13 147	15 122	16 596	16 368
Extra-EU imports	3 890	4 748	4 997	6 029	7 139	7 457	8 462	8 513	9 443	11 707	13 469	12 919
Trade balance	3 765	3 486	2 782	2 540	2 527	2 833	2 689	3 033	3 704	3 415	3 127	3 449
Ratio exports / imports	1.97	1.73	1.56	1.42	1.35	1.38	1.32	1.36	1.39	1.29	1.23	1.27
Terms of trade index	95.2	97.3	96.8	98.0	96.6	100.0	95.9	95.1	88.1	81.5	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 6: Motors, generators and transformers**  
**Extra-EU trade by Member State, 1994**

(million ECU)	B/L	DK	D	GR	E	F	IRL	I	NL	P	UK	EUR12
Extra-EU exports	358	399	6 676	18	387	947	136	1 296	510	71	2 322	15 122
Share in total EU exports of electrical machinery (%)	2	2.6	44.1	0.1	2.6	19.5	0.9	8.6	3.4	0.5	15.4	100.0
Extra-EU imports	316	235	5 267	42	360	1 166	331	852	613	678	2 457	1 707
Share in total EU imports of electrical machinery (%)	3	2.0	45.0	0.4	3.1	10.0	2.8	7.3	5.2	0.6	21.0	100.0
Trade balance	43	164	1 409	-24	28	1 781	-195	444	-102	3	-135	3 415
Ratio exports / imports	1.1	1.7	1.3	0.4	1.1	2.5	0.4	1.5	0.8	1.1	0.9	1.3

Source: Eurostat

turnkey power plants has been reduced over the years to reach on average 12 to 18 months, sales of distribution equipment benefit from economic recovery with a delay of at least 18 months. The impact of improved investment activity in 1994 on the motors, generators and transformers sector should therefore be visible in 1996.

### Supply and competition

In many areas of the motors, generators and transformers sector, EU producers may be considered to be market leaders with significant market shares. In 1990, EU manufacturers held a 35% share of the world market for high-voltage switchgear, followed by the USA with 28% and Japan with 26%. In low-voltage switchgear, EU producers held a similar share compared to the USA at 24% and Japan at 20%.

Faced with competition from Japanese and other low-cost Asian suppliers, EU producers will have to increase co-operation and improve their cost competitiveness. This increased competition is having significant repercussions on several market segments. In some segments of the power generators market, prices have fallen by as much as 7% per year between 1991 and 1995. In the transformers segment, the exports to imports ratio fell from 6 in 1982 to less than 2 in 1994.

The emergence of Independent Power Producers (IPP) constitutes a significant evolution in key markets for products related to generators and transformers. IPP like Powergen (UK) are target clients for large manufacturers which are able to supply turnkey power plants. By aiming specific performance ratios, IPP's are likely to drive prices down by playing the suppliers off against each other.

### Production process

The generators industry has recently had to change its forecasts on the use of different fuel-mix types. Due to the heavy reliance

of the Chinese and Indian markets on coal, fossil-fired steam turbines are expected to see an important rise in orders in the next years. The market for combined cycle gas turbine will continue to increase, but at a slower rate than in the early 90's. Orders for hydro-electric and nuclear generators are also generally expected to hold their own.

## INDUSTRY STRUCTURE

### Companies

The industry is undergoing a concentration process. Thus, the number of companies manufacturing motors, generators and transformers has been declining in the last 20 years. As a result, this concentration has generated a few large pan-European manufacturers, which operate in a wide range of electrical engineering activities.

The most important European producer is ABB (CH/S) which is active in the major electrical machinery segments (turbo-alternators, high-voltage and low-voltage switchgear and motor-control equipment), followed by Siemens (D), also active in the main market segments. GEC (UK) is mainly specialised in turbo-alternators and high-voltage switchgear, and the joint-venture GEC-Alsthom (UK/F) is present in the main segments of the sector. AEG (D) is a leading firm in low-voltage switchgear and motor-control equipment. The other major players are Schneider (F) and Jaeger (F).

There are no precise sectoral employment figures, however total employment is estimated at around 340 000 in 1994. In Germany only, there were 48 000 people employed in the low-voltage switchgear sector in 1993, whereas 35 000 people were employed in the EU in the high-voltage switchgear sector.

The Single Market has had a strong impact on the consolidation of the sector, by promoting intra-EU trade and agreements

**Table 7: Power transformers**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	439.1	421.3	376.4	418.4	487.6	518.2	574.7	632.1	687.2	747.9
Extra-EU imports	145.7	157.6	158.9	225.4	276.9	263.5	285.4	316.8	343.8	426.2
Trade balance	293.4	263.8	217.5	193.1	210.7	254.7	289.3	315.3	343.4	321.7
Ratio exports / imports	3.01	2.67	2.37	1.86	1.76	1.97	2.01	2.00	2.00	1.75

Source: Eurostat

**Table 8: Power transformers**  
**Extra-EU trade by Member State, 1994**

(million ECU)	B/L	DK	D	GR	E	F	IRL	I	NL	P	UK	EUR12
Extra-EU exports	73.3	8.9	223.2	3.2	24.5	183.0	8.1	104.1	22.6	23.1	73.8	747.9
Share in total EU exports of power transformers (%)	9.8	1.2	29.8	0.4	3.3	24.5	1.1	13.9	3.0	3.1	9.9	100.0
Extra-EU imports	10.0	21.5	165.3	9.1	9.0	50.1	21.8	30.6	18.6	3.4	86.9	426.2
Share in total EU imports of power transformers (%)	2.3	5.0	38.8	2.1	2.1	11.8	5.1	7.2	4.4	0.8	20.4	100.0
Trade balance	63.4	-12.5	57.9	-5.9	15.6	132.8	-13.7	73.6	4.1	19.7	-13.1	321.7
Ratio exports / imports	7.4	0.4	1.3	0.4	2.7	3.7	0.4	3.4	1.2	6.8	0.8	1.8

Source: Eurostat

between EU manufacturers. In order to avoid being locked out of the EU market, Japanese and US manufacturers have sought co-operation agreements with the largest European manufacturers.

### Strategies

The relative saturation of domestic markets has forced many companies in the motors, generators and transformers sector to modify their strategies in recent years. EU producers currently follow two strategic objectives: development of sales on emerging markets, and improvement of quality in parallel with cost reductions.

Most EU producers are increasingly focusing on emerging markets, mainly in South American and East Asian countries. By the year 2010, it is expected that East Asia will account for more than 40% of the aggregate global requirements in power generation equipment. This has attracted most internationally active players and the battle for market share in these new areas is already fierce. Success seems to be increasingly dependant on local presence and the ability to subcontract to local industry. Thus, in order to ensure physical presence in these countries, EU producers are looking for partnerships and other commercial agreements with local companies. In a more recent trend, many large EU companies have started shifting part of their workforce, particularly engineers, to East Asian and South American countries.

At the same time, EU producers are going through a large restructuring process that was initiated in the beginning of the 90's. On the one hand, R&D and quality control expenditures are increased in order to compete on product quality and know-how. On the other hand, cost reduction and product line modernisation continue, in order to allow companies to

remain competitive with respect to East Asian low-cost manufacturers.

### ENVIRONMENT

The production of motors, generators and transformers does not present particularly relevant environmental issues. In the past, the use of PCB (polychlorinated bi-phenyls) to insulate the wires in the bodies of transformers did represent a threat to the environment, but their use in the production process has since been discontinued.

However, with the potential increase in the use of coal-fuelled generators, the industry is likely to be faced with increased concerns regarding the emissions from fossil fuels, as well as demand for production of more environmentally-friendly generators (e.g. hydro-electric generators).

### REGULATIONS

The important directives for the sector are the Low Voltage Directive (73/23/EEC) and the Electromagnetic Compatibility Directive (EMC; 89/339/EEC). Manufacturers whose products comply with the provisions of these Directives and who have demonstrated this conformity by following the applicable procedures set out in the Directives may affix the CE-mark. This mark allows for a free movement of the products throughout the EU.

### OUTLOOK

In 1994 and 1995, several studies projecting future world consumption of electricity were published. Based on a con-

sensus of those projections, it seems that aggregate global installed capacity for producing electricity should increase by more than 20% between 1995 and 2000. Moreover, by 2010, aggregate capacity should represent 160% of existing total capacity.

Population growth, the increased per capita consumption and the migration of the world's population to urban areas are the primary drivers of this increase in world electricity consumption. The Far East will capture most of this increase and is likely to represent more than 40% of the aggregate global requirements by the year 2010.

For European producers, the major challenge thus appears to be getting a foothold in certain countries such as China and India, in order to benefit from the potential growth in their large markets.

Although all areas of the world are planning at least minimum capacity expansion, it seems unlikely that developed markets will have a growth rate higher than 2% per year. Furthermore, demand for replacement investments in developed countries is not forecast to grow significantly at the EU level. Growth is however expected in Southern Europe and Ireland.

The European motors, generators and transformers sector is likely to grow at a slow pace over the next five years, although it now seems certain that in the medium term growth will be stimulated by developing markets.

Written by: LEK

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# Insulated wires and cables

## NACE (Revision 1) 31.3

Demand for insulated wires and cables is influenced by two fundamental factors: development of the infrastructure for its client industries, mainly electrical and telecommunications, and the general health of the economy. The upturn in this industry expected last year has not yet materialised, with the major client industries experiencing minor, if any, growth. Future growth is still expected, and is expected to be derived particularly from growth in the information technology market, and liberalisation of telecommunications and energy infrastructure. Potential legislation regarding used cable recycling may have an impact on the industry.

### INDUSTRY PROFILE

#### Description of the sector

The market for insulated wires and cables is extremely diverse with applications in virtually all areas of modern life. Three broad sub-sectors of insulated wires and cables are evident, namely electrical energy cables, information cables and winding wires.

Electrical energy cables are fundamental to domestic life and all industrial and commercial activities of the Community. Wires and cables supply energy from the electricity generation centres to the individual points of utilisation, and differ according to the voltage range.

Information cables have two important areas of application: telecommunications and electronic data and control. Information cables use both copper wiring and optical fibres with the latter becoming more important in many areas of use. Other communications cables, such as coaxial cables and armoured cables are also important to the sector.

Winding wires are used in all forms of electrical equipment where a magnet is required. Thus, every electric motor, transformer, generator, dynamo, etc. requires an enamelled winding wire.

#### Recent trends

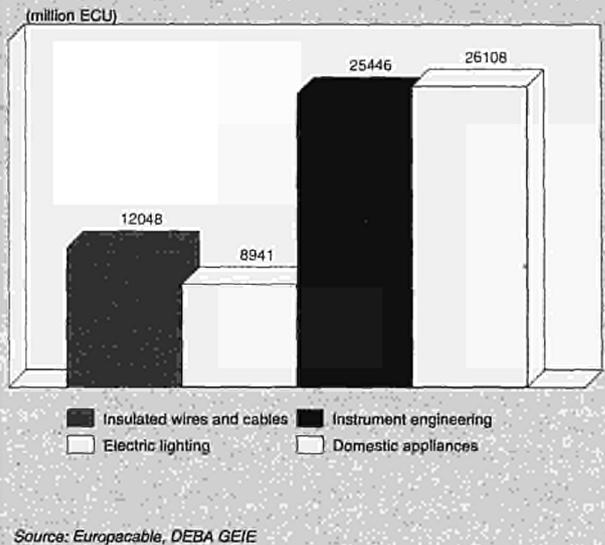
Whilst there has been a steady growth in the relative industry production of information cables from 1986 to 1992, (growing from 23% to 37%) this share diminished in 1993 and 1994 to 31%. The decline in production share of energy cables from 1986 (70%) to 1992 (56%) has also reversed somewhat in 1994, with an increase in share to 59%.

The insulated wires and cables sector in the EU has witnessed a mild if unimpressive increase in demand, as measured by apparent consumption, resulting from a slight increase in activity in its major client industries. In 1994, the EU's demand for insulated wires and cables showed the first increase for four years.

1994 also saw a slight increase in production, which had been declining for the past three years. This is a good sign given the fact that imports increased 28% in 1994, whilst exports only increased 10% (yielding the first negative trade balance for over 10 years).

After reductions in employment of 20 000 (1991-92) and 7 000 (1992-93), the sector experienced further reductions in 1994 and 1995, with job losses of 2 000 and 3 000 respectively. This decline reflects the recent downturn in activity and also recent restructuring, productivity gains and trend towards more capital intensive production. In particular, the

Figure 1: Insulated wires and cables  
Production in comparison with other industries, 1994



shift away from copper to optical fibre in the production of telecommunications cables has induced changes in the production process, which in turn translates into changes in the profile and level of employment in the sector.

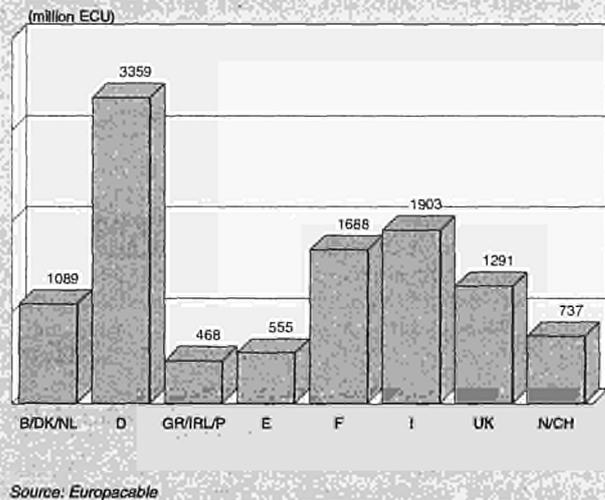
#### International comparison

The EU remains the largest producer of insulated wires and cables in the world. Proximity to the market is very important, particularly for heavy industrial cable. Investment in Europe's infrastructure has historically been a strong source of demand for EU producers.

The USA and Japan are also sizeable producers. Unlike the EU market for insulated wires and cables, where both supply and demand sides are still fragmented, the USA and Japanese industries have benefited from an early deregulation and liberalisation of their telecom and energy markets. Implementation of this process in the EU is happening slowly, with a planned full implementation target of 1998. This could boost consumption in Europe in the medium term.

The European cable industry is unusual in that it is truly global. Seven major companies with European HQs and in-

Figure 2: Insulated wires and cables  
Production breakdown by Member State



**Table 1: Insulated wires and cables  
Main indicators in current prices**

(million ECU)	1992	1993	1994
Apparent consumption	11 033	9 576	10 545
Production	11 040	9 655	10 353
Extra-EU exports	1 665	1 861	2 063
Trade balance	7.0	78.6	-192.4
Employment (thousands)	78.3	71.2	69.1

Source: Europacable, DEBA GEIE

vestments are invested in all market regions of the world (except Japan). Together they represent 60-70% of world cable operations.

Little inward investment in Europe cable industry has been made by non-European companies.

## MARKET FORCES

### Demand

The demand for insulated wires and cables is dependent on the fortunes of client industries. As there are several client industries for each of the sub-sectors of this industry, different market forces impact on the demand in each.

Demand for energy cables is not only dependent on increases in electricity consumption, but also on demand for new generation and transmission facilities, as well as replacement demand. As a result, the demand for wires and cables can be affected considerably by energy policy. In the long-term, demand for energy cables will keep pace with the growth of GDP and the associated growth in electricity consumption. The energy cable industry derives demand from three main sources: power utility companies, the construction sector, and from the white goods sector.

Demand for information cables is linked to the development of the telecommunications market and the level of advancement of telecommunications infrastructure as well as increasing consumer usage of telecommunications equipment, such as fax machines and other electronic processing equipment. The largest portion of the market is accounted for by the public telephone network operators. The strongest growth is in trunk (long-distance) traffic, where technological developments have substantially reduced cable-costs. This sector has the potential to grow with deregulation as new organisations enter this market. Demand for electronic data and control cables will increase as data transmission requirements and growth in information technology occurs, allowing small and medium size companies to enter the market.

Demand for winding wires is naturally linked to trends in end markets such as automotive and electro-domestic devices. This sub-sector enjoyed its best year ever in 1994/95, on the back of booming vehicle and electro-domestic appliance sales, but 1996 showed a substantial decline. As well as the long term growth predicted in these client markets, the usage of insulated wires and cables per vehicle and appliance will increase, due to advances in technology.

### Supply and competition

Production capacity of the EU cable and wire industry has traditionally exceeded demand. Technological improvements, an increase in capital intensity and shrinking home demand are key forces which have combined to change the environment in which manufacturers operate.

The EU cable and wire industry has achieved a world lead in numerous technologies which are important for cable production. These include: non-ferrous metallurgy, insulation

physics, rubber chemistry, high-tech materials, superconductivity, electrical engineering for power cables and optical-fibre technology for telecommunications cables. The industry's investment in R&D has also translated into new capital intensive production techniques which have generated higher turnover, and a steady increase in productivity, but which have also contributed to the declining employment levels in the sector.

The EU wire and cable industry has a strong presence on world markets through local investment. However, the EU wire and cable industry is faced with stiff competition on world markets, not only from its traditional competitors (USA and Japan), but also, increasingly, from emerging producers. Many former principal export markets have established their own production facilities. In particular, Korea and Taiwan have become sizeable producers of insulated wires and cables, and are emerging as formidable competitors on international markets. China is also emerging as an important world producer, though there is considerable investment (in terms of both money and technology) from Western and Japanese companies. These countries enjoy unit labour costs largely below western levels, thus enhancing their competitiveness on international markets.

### Production process

Two raw materials are of particular importance to insulated wires and cables production: copper and aluminium. In the EU cable and wire industry, more than 1.3 million tonnes of copper and about 215 000 tonnes of aluminium were used in 1995.

About twice as much aluminium is needed in electrical applications (copper is a better conductor of electricity than aluminium). Thus, while copper is generally preferred to aluminium because of its intrinsic qualities (durability, conductivity), the choice between the two metals is influenced by other factors such as cost, availability and technical suitability for some specific applications.

The trend in copper prices provides an example of the degree of price variability. The price per tonne of copper fluctuated from USD 1200 to USD 3216 in the 1995/96 period, with the copper price in mid-1996 showing extreme volatility. These wide price fluctuations, and currency fluctuations tend to distort the figures on trade, consumption and production somewhat. The figures in this report must be viewed in light of this potential distortion.

During the last ten years, optical fibre has replaced copper as the major form of cable within the EU. Optical fibre cables are designed particularly for transmitting data and sound impulses and signals by light generated by laser. Perfect substitutes for copper cables in these types of applications, optical fibre cables also provide higher transmission capacity and are much cheaper than metal cables. The industry has seen a major substitution from copper to optical fibre in the production of telecommunication cables. Although there are similarities between the manufacturing and production technologies applied, the production of optical fibre cables requires a clean, laboratory-type atmosphere. In contrast, the

**Table 2: Insulated wires and cables  
Breakdown by sector (1)**

(million ECU)	1992	1993	1994
Energy cables	7 082	6 248	7 128
Information cables	4 671	3 989	3 763
Winding wires	985	938	1 157

(1) EUR15 plus Norway and Switzerland.  
Source: Europacable

production of copper cables remains a metallurgical process. As a result, cable manufacturers tend to construct new plants dedicated to the manufacture of optical fibre cables rather than converting copper cable production facilities to optical fibre processing. The shift from copper to optical fibres has accelerated in the last five years. This has coincided with a severe downturn in demand following the boom of the 1980s, which led to a dramatic over-capacity in optical fibre production.

Further restructuring of the industry, towards more capital intensive production, is likely, accompanied by further decreases in employment levels.

## INDUSTRY STRUCTURE

### Companies

There are more than 100 firms that produce cables and insulated wires in the EU with 250 production facilities and about 72 000 employees (EU-15). Production sites are located in all Member States, with the exception of Luxembourg. The major manufacturers of insulated wires and cables are: Alcatel (F), ABB (S/CH), BICC (UK), Pirelli (I), Siemens (D), NKF (NL) and Draka (NL). These large companies produce all types of cables and wires. Small enterprises tend to specialise in one product, often in energy cables, although this varies according to country. In the smaller countries, small companies often manufacture the whole spectrum of products. In France, Germany and Italy, however, apart from four of the top five large producers, there are many small specialist producers. About 10% of production volume is accounted for by small and medium-sized companies in the EU.

Over the last five years there has been an increase in pan-European trade, with companies setting up plants to service several countries demand for specialised products. Specialisation is a trend that is likely to continue.

The increasing share of optical fibre cables in telecommunication cables has led to the fusion of small and medium-sized firms, in order to provide the necessary capital inputs for the technologically advanced production processes. There are now only about a dozen manufacturers of optical fibres in the EU.

The EU insulated wires and cables industry is also characterised by its lack of downstream or vertical integration, in spite of the close commercial links they have developed in terms of supply.

### Strategies

To meet the challenges of increased competition, there are three main strategies: investment; research and development; and co-operation and concentration.

The main motive for investment is an increase in productivity and reduction in costs, especially those related to labour, in the medium and long term. In the years when the cable business was booming, expansion was an additional objective.

Innovation in new products or new processes and production methods is another strategy for keeping up with competitors.

Mergers, acquisitions, alliances and joint ventures are organisational methods for increasing, or at least maintaining, competitiveness on the international market. Several large cable manufacturers have made cross-border investments within the EU, either for reasons of cost or for closer proximity to markets.

There has been a large amount of foreign investment by European companies world-wide, with companies seeking to produce cable close to end users in North and South America, the Middle East, and most parts of Asia (with the exception of Japan).

EU companies are active in the emerging economies of China and East Europe, where they are setting up joint ventures or green-field production facilities. Such investments outside of the EU have been primarily made in order to benefit from new growing markets with expanding infrastructures, a diversification of holding for companies whose European markets are typically mature and where labour costs are historically very high.

## REGIONAL DISTRIBUTION

EU insulated wires and cables production is greatest by Germany, which accounted for 30% of total EU production in 1994 (EU-15 basis). France, Italy and the United Kingdom are also large producing countries. A glance at the regional distribution gives evidence of the gravitation of production of insulated wires and cables towards the industrial heartland. Relatively limited by high transportation costs, particularly for heavy industrial cable, producers have tended to locate near their main customers.

With the enlargement of the EU, data from Austria, Finland and Sweden is now included. These countries together represent 8% of the EU-15 production (ECU 958m) and have combined employment of approximately 6 000 people. There is no disproportionate structural change to any sub-sector of the industry from the inclusion of these new members. With the inclusion of the two Nordic countries, an increased environmental awareness is being brought into the union.

## ENVIRONMENT

Generally speaking, cable manufacturing is not a burden on the environment. The manufacturing process is clean and the materials used are normally non-toxic; those posing potential risks are strictly regulated. The cable industry has been very responsive to environmental concerns. In 1993, the manufacturers actually expressed this environmental consciousness by producing a voluntary code of practice.

The industry puts particular attention on its use of raw materials and its design of products, minimising the potential hazards of their installation and use. Specially designed cables, with reduced flammability, are available and there are already acceptable alternatives to PVC and other compounds in areas with fire risks. Cable makers no longer use materials containing dioxin and are investigating the possibilities of substituting materials containing halogens. Cable insulation without halogens emits little in the way of toxic fumes. This is particularly

important in public areas, transport and warehouses, as well as any place frequented by people or housing combustible goods.

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## REGULATIONS

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Regulations that relate to technical standards, the use of dangerous preparations and health and safety all have implications for cable makers, although there are no specific directives which are directed at the industry.

On another front are the public procurement directives which liberalise the awarding of public contracts. A large part of the market for insulated wires and cables has been dominated in the past by the public utilities (both in energy and telecommunications), which often favour national suppliers. With the liberalisation of the tender procedure and procurement, competition within the EU will intensify. Harmonised standards will also allow EU manufacturers and their foreign competitors to penetrate markets other than their own, once the utilities have themselves harmonised their systems.

The impact of possible legislation dealing with waste from end-of-life electrical equipment and waste from the demolition of construction projects (both potentially aimed at recycling waste metals) is yet to be gauged, but there undoubtedly will be effects to the industry, if these recycling initiatives are adopted. These may be in terms of extra industry costs and responsibilities.

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## OUTLOOK

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As already mentioned, the outlook for the EU insulated wires and cables sector is diverse across the three main categories, which are subject to different forces of demand.

The market for energy cables remains fairly limited as the energy infrastructure is mature in the Union. Demand therefore consists to a large extent of replacement, maintenance and upgrading of existing infrastructure. Energy cables will, nevertheless, benefit from increased deregulation. Sales possibilities in less developed economies are unlikely to increase significantly. In spite of important needs, improvement in the energy infrastructure is making very slow progress due to limited financial leeway.

The development of the market for telecommunication cables has stumbled over the last three years. Whilst overall volume demand has increased, competitive pressures and lower cost technology have reduced the sales value of the market. In the medium term, this market segment should witness significant improvement, driven by developments in the information technology market and the growth in personal communications, particularly, mobile telecommunications. Privatisation will also positively impact on the sector's prospects. Demand for data and control cables will remain buoyant, based on a dynamic market for office and data processing equipment. However, the EU sector will remain in a fragile competitive position in this market segment, as it faces stiff competition from the world leading computer producers, the USA and Japan.

The demand for winding wires, buoyant for the last two years, and heavily reliant on the automobile/electro-domestic market, is already showing signs of falling back.

In the long term, the energy cable segment will benefit from the growth in GDP and the associated increase in electricity consumption. Telecommunications cables will continue to be a growing segment, and will benefit from the buoyancy of the information technology market. In spite of false dawns, no positive sign of improvement in the commercial or domestic construction industry has been seen. If and when this sector does pick up, it will have a large positive impact on the insulated wires and cables industry.

In terms of employment, the outlook remains rather grim. As the industry completes rationalisation and is confronted by over-capacity in both metallic and optical fibre cables, employment will continue to drop further into the future.

Written by: DRI Europe

The industry is represented at the EU level by: European Confederation of Associations of Manufacturers of Insulated Wires and Cables (EUROPACABLE). Address: rue du Luxembourg 19-21, B-1000 Brussels; tel: (32 2) 513 0612; fax: (32 2) 502 2169.

# Batteries and accumulators

## NACE (Revision 1) 31.4

Since the 1990s, the battery and accumulator industry is moving towards high concentration. US manufacturers have now consolidated their position in the EU: they control the market for primary batteries and for lead-acid car batteries. While the demand for consumer batteries is boosted by the growth of battery operated appliances, the demand for car batteries is stagnating. Companies are investing heavily in research to develop longer lasting batteries respecting environmental norms, as well as rationalising their EU operations to remain competitive.

### INDUSTRY PROFILE

#### Description of the sector

The industry can be divided into two subsectors: the production of primary batteries (or primary cells), which are not rechargeable, and the production of rechargeable (or secondary) batteries, known also as accumulators.

There are six types of primary batteries: zinc-carbon, alkaline-manganese, mercuric oxide, silver oxide, zinc-air, and lithium batteries.

Secondary batteries are of three main types: lead-acid batteries, alkaline batteries and lithium-ion batteries. The alkaline accumulator subsector includes nickel-cadmium (NiCd) and nickel-metal hydride (NiMH). Lithium batteries, an emerging technology, is currently used in portable applications.

Batteries can be divided further along functional lines: drive batteries, stationary batteries, on-board batteries, starter batteries and portable batteries. Drive batteries supply current to the electric motors of products such as electric vehicles or handling equipment. Stationary batteries are used mainly for the operation of emergency devices such as alarms, control systems and back-up units. On-board batteries are used for back-up and emergency power in transportation systems (aircraft and rail). Starter batteries provide the necessary current for the start-up of internal combustion motors. Portable batteries power consumer and professional portable electronic equipments such as cellular phones, lap-top computers, cordless tools, etc.

In the EU, Germany, France, Italy, Spain and the UK represent approximately 70% of the European battery market. The auto-

motive sector is the major client of the battery and accumulator industry, accounting for over 40% of sales.

#### Recent trends

Unit domestic sales of lead-acid batteries by West European producers to car manufacturers have increased at an average real annual growth rate of 0.23% from 1984 to 1994. The rate was negative (-3.01%) in the period 1990-1994, because of the drop in car orders in the 1990-1993 period, combined with the slower replacement rate. Unit domestic sales of lead-acid batteries to other customers grew at an average annual rate of 1.07% from 1985 to 1994. Over the 1985-1994 period, while total sales in units have increased at a yearly growth rate of 1.11%, imports grew at a rate of 1.92%.

Other types of secondary batteries show a good volume increase over the last decade. This increase is mainly due to booming market segments, portable batteries in particular, and to the introduction on the same market of new battery technologies offering improved energy densities, i.e. longer autonomy for the end-user.

Many factors explain the lower level of employment in this sector since 1989: the increasing concentration of the sector, the rationalisation of EU operations, the transfer of production facilities in lower cost countries and the stagnation of the industry in general.

In real terms, the price of batteries tended at best to stagnate while growth remained limited.

#### International comparison

Japan is by far the most important per capita consumer of alkaline primary batteries in 1994, at 18 dry batteries per person as opposed to 14 for an American and 10 for a European.

There is a clear international trend towards the use of longer lasting alkaline batteries instead of the zinc-carbon batteries. However, alkaline batteries represent only 50% of primary cell consumption in Europe while this ratio reaches 80% in the US.

The primary cell market was controlled in 1995 by two US companies: their combined world market share reached 60%. Major EU competitors maintained a combined world market share of approximately 30%. For non-lead accumulators, key extra-EU players came from Japan. For lead-acid accumulators, Exide (USA) is the world leader with a 20% market share.

Nevertheless, some European companies succeed in defending or improving a leadership position on some markets. For instance, Salt (France) controls more than 50% of the world market in the segment of industrial, railway and aviation NiCd battery.

**Table 1: Accumulators  
Main Indicators (1)**

(thousand units)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Domestic sales by Western European producers (2)										
-to car manufacturers	10 035	10 198	10 745	11 032	11 962	11 576	11 470	11 056	9 940	10 243
-to other customers	21 731	20 955	22 159	20 554	21 111	22 105	23 418	23 044	22 695	23 919
Imports (3)	11 256	11 495	12 888	12 880	13 153	13 584	14 192	13 580	14 069	13 362
Total sales	43 022	42 648	45 792	44 466	46 226	47 265	49 080	47 680	46 704	47 524

(1) Accumulators of more than 5 kg and of more than 15 Ah; Austria, Belgium, Denmark, Germany, Spain, Finland, France, the United Kingdom, Italy, the Netherlands, Norway, Portugal, Sweden and Switzerland.

(2) Including imports by battery manufacturers.

(3) Excluding imports by battery manufacturers.

Source: EUROBAT

**Table 2: Accumulators**  
Average real annual growth rates (1)

(%)	1985-90	1990-94	1985-94	1993-94
Domestic sales by Western European producers (2)				
-to car manufacturers	2.90	-3.01	0.23	3.05
-to other customers	0.34	1.99	1.07	5.39
Imports (3)	3.83	-0.41	1.92	-5.03
Total sales	1.90	0.14	1.11	1.76

(1) Accumulators of more than 5 kg and of more than 15 Ah; Austria, Belgium, Denmark, Germany, Spain, Finland, France, the United Kingdom, Italy, the Netherlands, Norway, Portugal, Sweden and Switzerland.

(2) Including imports by battery manufacturers.

(3) Excluding imports by battery manufacturers.

Source: EUROBAT

## Foreign trade

The EU industry for batteries and accumulators has been confronted with increasing extra-EU competition. However, in the field of lead-acid batteries, since the transportation costs for some products such as starter batteries are high, extra-EU imports still have a relatively low penetration rate. There is potential for more production in Eastern Europe and more extra-EU imports coming from this region, but it should take five to ten years of heavy investments before these factories meet EU quality and productivity standards.

In 1994, the major competitor for EU producers was Japan, with slightly more than 35% of total extra-EU imports. This is mainly due to Japan's strong position in consumer electronics markets. The USA and EFTA countries followed with around 20%. Excluding Japan, the share of South East Asian countries in extra-EU imports has increased from 7% to 14% in the period 1989-94. From 1989 to 1994, the share of Eastern and Central Europe in extra-EU exports has increased from 1% to more than 12%.

Germany is the most important exporter of batteries outside the EU, while France comes in second place. Germany is also the first European importer of extra-EU batteries and accumulators, followed by the United Kingdom.

## MARKET FORCES

### Demand

The demand for non-rechargeable primary batteries has grown by about 2% annually in the last decade. Primary batteries are used in high-fidelity equipment, games, watches, alarms and photo equipment. This demand is linked to private consumer expenditure and the growth of battery-operated appliances. The market share of the basic zinc-carbon battery is

eroded by alkaline batteries that are more expensive, but lasting on average three times longer. Alkaline-manganese and zinc-carbon general purpose batteries account for 92% of the primary batteries sold in Europe.

Driven by the introduction of consumer devices such as portable cellular phones, laptop computers, pagers, and remote controlled equipment, the demand for non-lead accumulators has increased considerably in the last decade. Consumers now demand more powerful batteries and require better power management systems for their portable and wireless equipment. This demand sparked the development of the "smart" batteries which relay status information on runtime. Manufacturers are also embedding micro-controllers to ensure efficient recharging operations. The nickel-cadmium rechargeable batteries have dominated the market since 1985, but the demand for longer-lasting accumulators has led to the emergence of nickel-metal hydride, and more recently lithium-ion batteries, which complement the existing range.

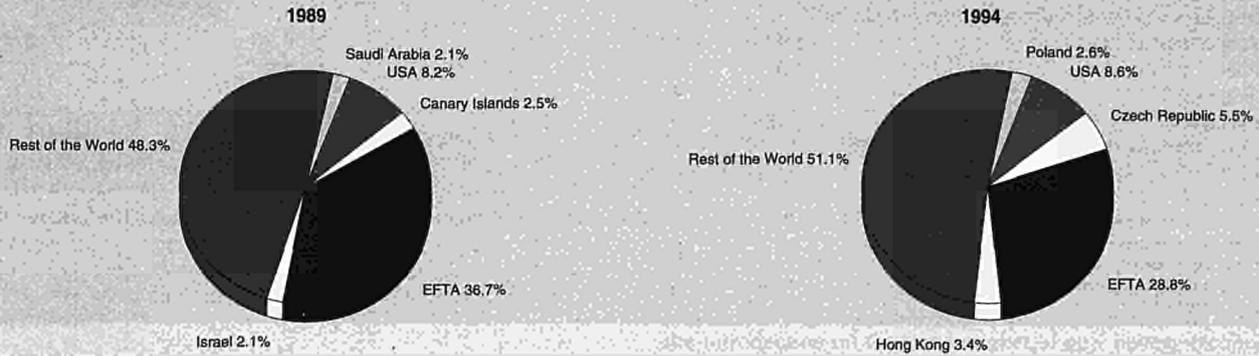
Starter batteries are the most important segment of accumulators and account for more than 50% of the total production of rechargeable batteries. Car manufacturers are the largest buyers of accumulators, accounting for over 40% of sales. Replacement demand is relatively unaffected by economic cycles since vehicle fleets are not subject to short term variations. However, the demand for new starter batteries is cyclical and follows the demand for new motor vehicles. Two issues are of concern to major players. First, as a result of the improved longevity of batteries and accumulators, the demand for these devices should decrease, thus leading to declining sales in volume terms. Second, the increasing power of distributors and the development of own-branding for automotive batteries affect negatively the margins of producers.

**Table 3: Batteries and accumulators**  
Production Index by Member State

(1990 = 100)	1990	1991	1992	1993	1994
EUR15	100.0	101.2	95.4	87.2	90.3
Deutschland	100.0	105.7	99.8	88.6	85.9
España	100.0	101.5	107.2	101.1	114.0
France	100.0	102.3	97.8	95.1	98.7
Italia	100.0	95.4	80.2	62.7	75.0
Luxembourg	100.0	111.5	113.0	105.7	129.4
Portugal	100.0	93.6	100.0	87.6	84.5
United Kingdom	100.0	98.1	89.6	87.0	87.3

Source: Eurostat

**Figure 1: Batteries and accumulators  
Destination of EU exports**



Source: Eurostat

### Supply and competition

The main global producers of primary cells have production facilities in the EU and the Intra-EU supply is thus important. As a result of the aggregate over-capacity of EU production, the price of dry batteries has declined from 1992 to 1994 and stagnated in 1995. Because of the competitive environment, no manufacturer has been able to impose an increase in prices. For dry batteries, volumes did go up slightly in 1995 but margins were down due to numerous promotions by the main manufacturers.

Intense competition on price of car batteries explains why the recovery of the car industry in 1994-95 did not have an impact on the accumulator industry: higher volumes did not lead to a proportionate rise in profits. In some EU countries; current prices declined at a yearly rate of 2% to 5% in 1993-95, with an improvement in late 1995. In 1995, manufacturers also faced an increase in the price of lead. Improvements in the situation of the accumulator subsector are due mainly to alkaline rechargeable portable batteries such as batteries for cellular phones and laptop computers. Some sectors of the non-lead accumulator market are highly concentrated. In 1995, Sony (JPN) Saft (F) and Sanyo (JPN) controlled 70% of the world market for the lithium-ion battery.

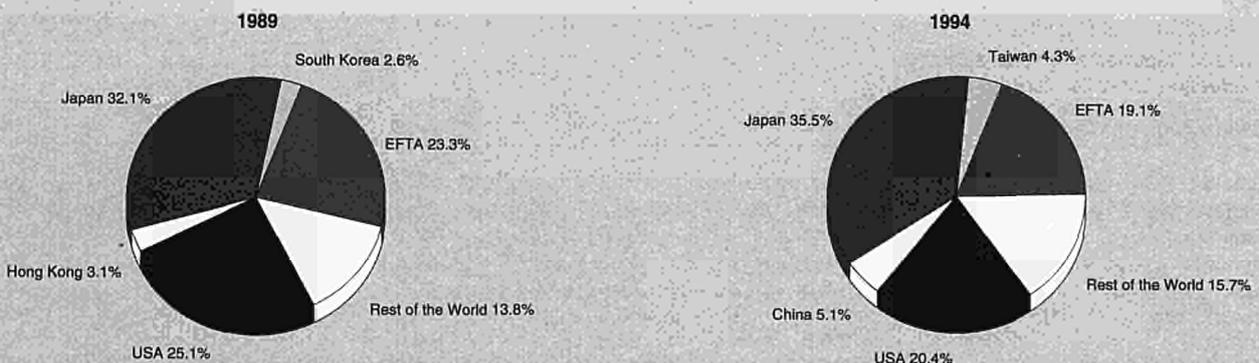
The strength of some European currencies in 1995 has hindered the competitive position of EU-based companies in international markets and favoured the growth of extra-EU imports.

### Production process

The demand for higher battery performance stimulated product developments. The tendency is towards longer lasting batteries and the developments of new devices meeting the market need. Examples are the lithium-ion accumulator: with equal weight, it offers up to 50% more energy than NiMH batteries and twice the energy of NiCd, and a new lead-acid battery where sulphuric acid is replaced by a jelly which makes leakage impossible.. An important innovation occurred in 1995 when Duracell and Eveready both introduced in the market primary batteries with built-in gauges showing how much power they have left. Developments concern also the new technologies of rechargeable batteries, stimulating joint programmes with companies involved in the recycling process and the production of the 'super battery' for non-polluting electric cars. Since the international demand for environmentally safe vehicles is increasing, significant efforts are undertaken in order to improve the range batteries for electric cars. In California, for example, 2% of new cars will be required to be emission free by 1998.

In 1995, the increase in demand allowed EU companies to reach more efficient levels of production. However, employ-

**Figure 2: Batteries and accumulators  
Origin of EU imports**



Source: Eurostat

ment levels are expected to decline over the next few years, due to over-capacity and increased productivity.

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## INDUSTRY STRUCTURE

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### Companies

The world primary cell market was controlled in 1995 by Duracell (USA) with 40%, followed by Philips (NL) with 20%, the US based Ralston Energy (Energizer) with 20%, and Varta (D) with 10%. These four companies control 80% of the EU market. For rechargeable portable batteries, key extra-EU players are Sanyo (JPN), and Matsushita (Panasonic) (JPN). The only European player is Saft (F). Private labels play an important role in some EU markets like France. The segment of non-lead accumulators is less concentrated and includes major players such as Sony (JPN), Panasonic (JPN) and Saft (F). In the lead-acid batteries segment, there are about 25 manufacturers in the EU. Euro-Exide, the division of the American company Exide, is the leader in the EU with a 40% market share. Major EU players include Varta Bosch (D), Autosil-CFEC (P), Fiamm (I), and Hawker (UK). Varta and Bosch manufacture and commercialise batteries together. In 1988, the first 18 companies shared 92% of the market for lead-acid accumulators. In 1995, eight companies controlled 96% of the market. Companies tend to focus on either primary or secondary batteries, but rarely on both. Varta is an exception with a presence in both subsectors. Saft, in the top three producers of rechargeable batteries for portable devices, is also the world largest producer of NiCd industrial batteries.

### Strategies

The past five years have seen a concentration of the market for lead-acid batteries. Autosil bought the Compagnie Francaise d'Electro-Chimie (CFEC) in 1994. The US company Exide has followed also a plan of expansion in the EU; it took control in 1995 of CEAC (F), the first lead-acid battery producer in Europe in 1993. This followed Exide's acquisition of BIG (UK), Gemala (UK) and TUDOR (S). The strategy was to gain market share through acquisitions.

The subsector of industrial batteries saw major developments in 1995. Saft bought the Czech company Ferak, specialist in NiCd industrial batteries in Eastern Europe. This geographic market had remained closed to Western industrial batteries and Saft secured its position as a world leader in the NiCd industrial segment. Also, Varta sold its industrial lead-acid battery division to the conglomerate Hawker (UK). Varta did not believe that it had the size to thrive in this market, handicapped by unfavourable currency movements and Asian competition. Hawker is now becoming the European leader in the subsector of lead-acid industrial batteries.

High R&D costs are forcing major competitors to pool their resources. Varta, Duracell, and Toshiba united within the 3C Alliance to develop NiMH rechargeable batteries. Each of these players retains control of the production of battery casing, of packaging, and marketing. Similarly, Philips and Panasonic have a partnership for the production of primary cells in Belgium. Resources are also invested in the development of batteries adapted to electric cars. Duracell and Varta are working jointly on the development of batteries for electric cars. Saft is producing NiCd batteries for electric cars and develops NiMH and lithium-ion batteries for this market. The company has developed a partnership with French car manufacturers to develop this emerging market.

Productivity gains are essential in order for companies to maintain their margins. In the battery and accumulator sector, many EU companies are pursuing a strategy of economies of scale. Exide is planning to maintain the same level of production in Europe while closing at least half of its 41 factories over the next 5 years. At the same time, these manu-

facturers are also trying to gain a foothold in the fast growing East Asian and South American market.

The shift from non-rechargeable to rechargeable products has strategic implications, as rechargeable products could lead to a decline in volumes of sales.

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## ENVIRONMENT

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An important concern has been the reduction of the heavy metals content for non-rechargeable batteries, especially mercury which has been used traditionally in both saline and alkaline batteries. Since the Environmental Directives of 1982 and 1984, the primary batteries industry in the EU has cut the amount of mercury discharged from batteries in the environment by half, and has undertaken measures to reduce this by a further 84%. 8% of primary batteries in the EU now contain mercury and these are used only in selective applications. Since mercury was a key element contributing to the performance of primary cells, manufacturers had to modify the technological process and the quality of components in order to obtain identical performance.

Other environmental concerns are directed towards recycling batteries. Some Member States have already introduced separate waste collection for primary batteries containing mercury. In 1991, the Commission adopted a Directive (91/157/EEC) forcing producers to take back used batteries in order to collect and recycle harmful substances. Each country is to establish a national funding system for the collection and recycling of used batteries, based on the principle of producer responsibility. The industry has supported the improvement of battery marking for separate collection, as presented in Directive 93/86/EEC, and it has supported recycling of waste batteries where this can be carried out in a sound and viable manner.

One must also consider the cost of collecting used batteries and the increase in production costs due to the use of recycled material. EU producers could lose price competitiveness if the international competition is not forced to face identical requirements.

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## REGULATIONS

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The request for the internationalisation of technical standards for accumulators would provide battery users with value and convenience by making batteries widely available and make it easier for retailers who cannot stock different batteries for each brand of a particular device. There is no consensus on the issue and standardisation is not expected in the near future. Stationary and portable batteries are becoming global products but technical differences remain between starter batteries in the US and Europe.

Relevant regulations for this sector are found in the section devoted to the environment.

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## OUTLOOK

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A number of players claim that the world annual sales of portable rechargeable cells could triple before the turn of the century even though these devices presently have a marginal market share. This growth would be driven by the need for mobile energy sources. Some manufacturers anticipate that the market share of lithium-ion accumulator should grow from 2% in 1995 to reach 30% in 2000.

There is no expectation of increased employment level in the industry: cost-driven rationalisations should take place in groups consolidating their global operations. Groups will maintain the same level of production but concentrate manufacturing facilities. Some producers are likely to concentrate their production in lower cost sites. Some lead-acid battery producers have been asked by car manufacturers to follow



# Electric lighting

## NACE (Revision 1) 31.5

After a period of growth in the 1980s, production and consumption in the electric lighting industry stagnated from 1991 to 1993, picking up slightly in 1994 in line with trends towards economic recovery in Europe. Competition from producers in East Europe and the East Asian newly industrialised countries (NICs) has increased since 1989 and extra-EU imports have increased twice as fast as extra-EU exports. The EU light bulb subsector is dominated by global players seeking to rationalise their EU operations and to extend their presence in Asia. Product innovations and new energy-saving light bulbs are likely to maintain demand at existing levels over the next few years.

### INDUSTRY PROFILE

#### Description of the sector

The electric lighting industry can be divided into two main subsectors:

- Electric light bulbs for domestic and industrial uses, including incandescent, fluorescent, halogen and dual light bulbs; and
- Electric lighting equipment, which includes indoor electric lighting equipment, special purpose electric lights, portable lights, outdoor lights, and spotlights (including lights for motor vehicles). The lighting equipment subsector includes products for domestic, industrial and infrastructure uses.

In 1995, the most important EU producer of light bulbs and lighting equipment was Germany, with 36% of total EU production, followed by France (16%), Italy (15%), the UK (12%) and Belgium (6%). The most important EU producer of electric lighting goods (Philips) is based in the Netherlands but limited data is available on this country.

#### Recent trends

From 1985 to 1990, EU production of electric lighting goods grew at an annual rate of 7.6% in constant prices. Due to difficult economic conditions, production decreased by 1.6% per annum from 1990 to 1993 but recovered in 1993-95 with an annual increase of 6.7%; this increase was primarily driven by demand in the light bulb subsector. The recent upward trend has not been shared by all Member States: the German production has declined by a compound rate of 0.3% over 1993-95.

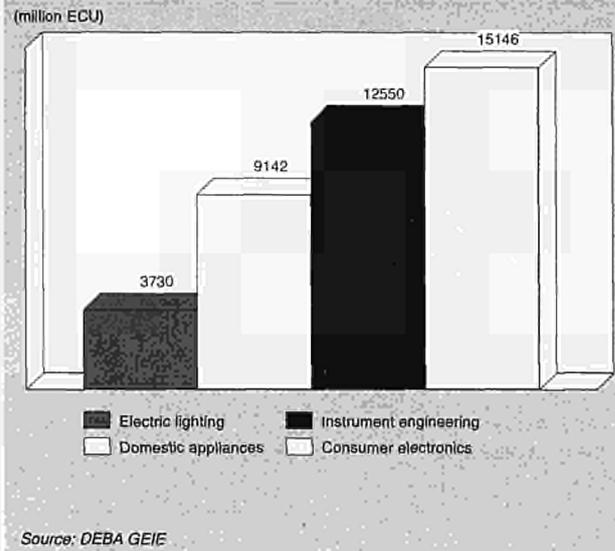
In current prices, apparent consumption increased by 6.3% per annum from 1985 to 1994. From 1990 to 1994, the annual rate stood at a mere 1.5% even though apparent consumption increased by 2.4% in 1994.

The EU has maintained a positive trade balance in this sector from 1985 to 1994. Over this period, however, extra-EU imports have increased by 9.6% per annum while extra-EU exports increased at a rate of 5.1%.

Employment in the electric lighting industry increased by nearly 1.8% per annum from 1985 to 1990. A reversal of this trend occurred from 1990 to 1995 when employment decreased at a rate of nearly 3.6% annually.

Most EU companies thus experienced a slowdown in activity from 1991 to 1994 and benefited from economic recovery in 1995.

Figure 1: Electric lighting  
Value added in comparison with related industries, 1994



#### International comparison

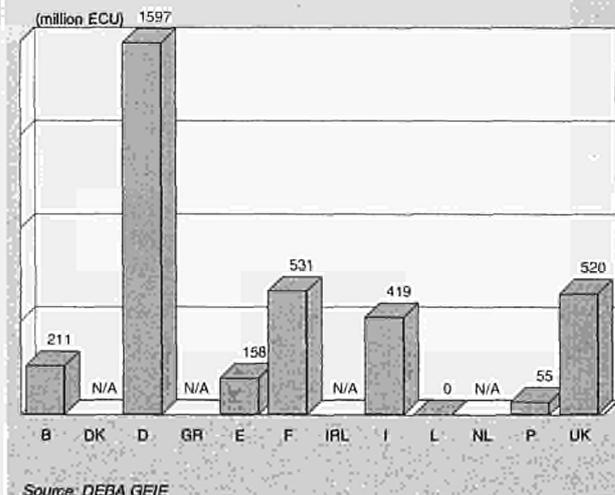
With 38% of total production in the Triad, the largest producer of electric lighting devices in 1994 was Japan, followed by the USA (32%) and the EU (30%). Japan experienced a 5% real annual growth rate from 1990 to 1995 while the EU rate stood at 2.4%. The production in the USA experienced a 14% growth rate in 1994 which can be explained by the American economic recovery.

#### Foreign trade

From 1985 to 1994, extra-EU imports grew almost twice as fast as extra-EU exports (10.6% and 5.7% respectively). Nonetheless, from 1990 to 1994, extra-EU exports have fared better with a yearly increase of 12.8% in constant prices while extra-EU imports increased at a rate of almost 10%.

Extra-EU imports accounted for approximately 17% of EU apparent consumption in 1994 compared to nearly 11% in 1985. In 1994, more than 22% of extra-EU imports came from China, followed by EFTA imports with 19% and USA

Figure 2: Electric lighting  
Value added by Member State, 1994



**Table 1: Electric lighting**  
**Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	4 813	7 730	8 251	8 308	8 319	8 139	8 336	9 239	10 363	10 970	11 560	12 200
Production	5 476	8 187	8 712	8 649	8 814	8 681	8 941	9 816	10 769	11 400	12 030	12 710
Extra-EU exports	1 213	1 322	1 314	1 320	1 587	1 810	2 048	2 132	1 906	2 040	2 190	2 330
Trade balance	662.8	457.1	460.8	340.9	494.3	541.6	604.9	576.4	405.9	430.0	470.0	510.0
Employment (thousands)	100.0	110.9	109.3	102.2	98.5	93.7	91.9	91.2	97.4	100.0	100.0	100.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Electric lighting**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	9.53	-1.71	4.39	0.58
Production	7.58	-0.38	3.97	3.23
Extra-EU exports	-0.64	12.76	5.11	16.41
Extra-EU imports	9.36	9.96	9.62	6.46

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Electric lighting**  
**Production Index by Member State**

(1990 = 100)	1990	1991	1992	1993	1994
EUR15	100.0	93.8	95.1	91.9	90.5
Deutschland	100.0	101.2	102.1	98.5	93.5
España	100.0	89.5	91.0	85.1	85.9
France	100.0	98.9	98.9	96.6	104.9
Italia	100.0	90.7	92.5	86.2	76.6
United Kingdom	100.0	79.1	81.9	83.2	87.0

Source: Eurostat

**Table 4: Electric lighting**  
**External trade in current prices**

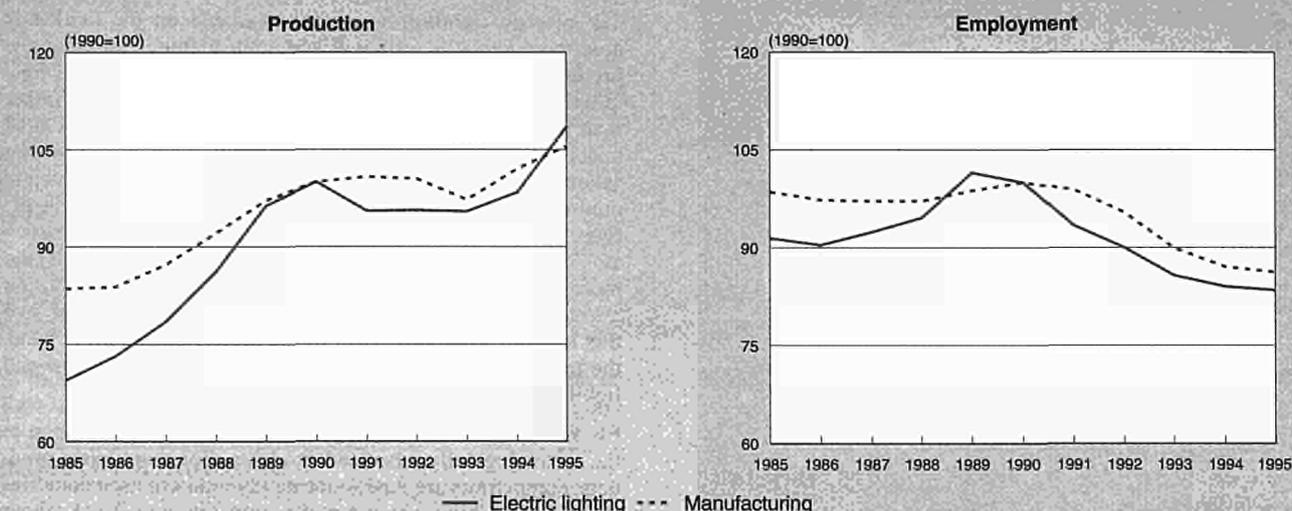
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	1 213	1 107	1 063	1 175	1 322	1 314	1 320	1 587	1 810	2 048	2 132	1 906
Extra-EU imports	550	551	610	735	865	853	979	1 092	1 268	1 443	1 556	1 500
Trade balance	662.8	556.7	452.6	439.9	457.1	460.8	340.9	494.3	541.6	604.9	576.4	405.9
Ratio exports / imports	2.21	2.01	1.74	1.60	1.53	1.54	1.35	1.45	1.43	1.42	1.37	1.27
Terms of trade index	88.7	92.2	93.0	97.8	93.3	100.0	97.5	99.4	91.6	83.3	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Electric lighting**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

imports with 11%. Other extra-EU imports came from Taiwan (9%) and Hungary (9%). Extra-EU imports from East and Central Europe represented more than 18% of extra-EU imports, compared to only 7% in 1989.

An 11% share of extra-EU exports went to the USA in 1994, around 10% to Southeast Asian countries, 9% to Austria and 8% to Switzerland. The inclusion of Austria, Finland and Sweden should lead to a decrease of the EU positive trade balance from ECU 598 million to ECU 435 million in 1995.

## MARKET FORCES

### Demand

Demand for electric lighting goods can be subdivided into five main areas: residential construction, commercial and industrial projects, public works, the automotive industry, and the demand for specialised equipment in the arts and theatre sector.

Demand for light bulbs is mainly driven by the replacement market which is less sensitive to cyclical fluctuations, although

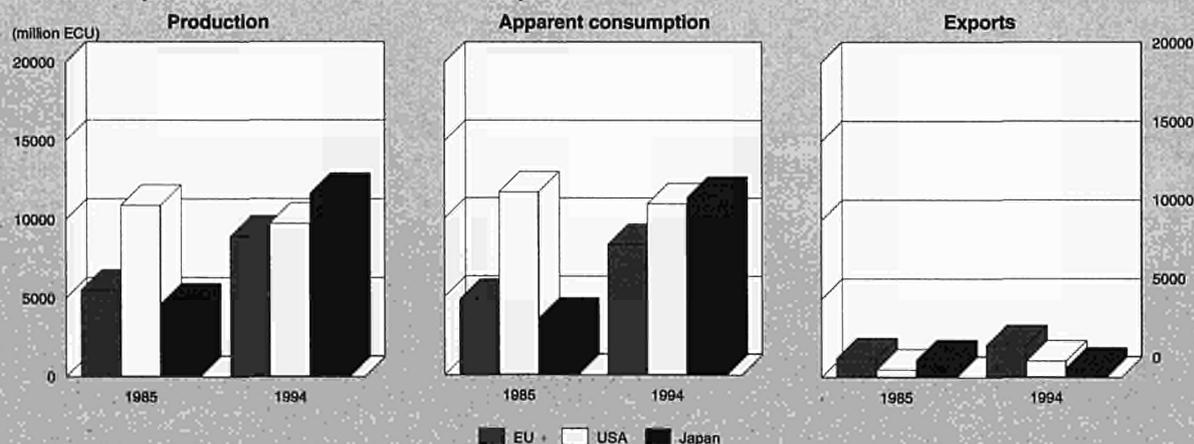
the growth of disposable income, technological innovations, fashion trends and energy saving issues can positively influence replacement rates.

Demand for electrical lighting equipment is influenced by the requirements of residential and commercial construction as well as public projects. The demand for commercial and industrial lighting equipment is cyclical and linked to construction activity. Renovation is counter-cyclical and partly compensates for downturns in construction.

The recent downturn in private and public construction activity as well as the difficult situation of the automotive industry have hindered demand for electric lighting. However, 1995 showed renewed growth in the sector.

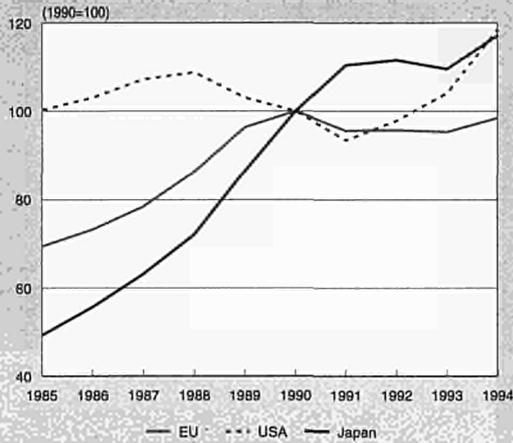
Product innovation increased the replacement rate in the last decade. Products such as halogen and compact fluorescent light bulbs (CFL) use less energy and last longer; these new products are gaining market share progressively. However, CFLs are more expensive than normal incandescent light bulbs and this explains their low penetration rate in EU countries. Nonetheless, there has been a slight shift in demand from

**Figure 4: Electric lighting**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Electric lighting**  
International comparison of production in constant prices



Source: DEBA GEIE

incandescent light bulbs to high-grade devices. Also, one can note an increase in the spending of households for indoor electrical lighting equipment. Value-added equipment and light bulbs have a small volume share but represent a more important portion of revenues. Though still marginal, the greater use of accent lighting in environments such as shops, offices and museums will continue to fuel growth in the lighting equipment subsector.

### Supply and competition

The inclusion of three new Member States (Austria, Finland, Sweden) will reinforce the international position of the EU which controlled 30% of the Triad production in 1994. Trade among EU countries has increased at a nominal annual rate of more than 10% since 1985 but this rate has decreased to 6% in the period 1990-94.

Incandescent light bulbs account for more than 80% of the light bulb segment. Nevertheless, EU manufacturers of light bulbs are now focusing on value-added products such as compact fluorescent light bulbs, which last ten times longer than basic incandescent light bulbs while consuming five times less electricity. Sales of these new high value-added products are increasing at a faster rate than commonplace incandescent light bulbs and provide better margins. It remains to be seen

if producers can maintain these margins because it is difficult to follow a strategy of differentiation with light bulbs and strong competition is bringing down prices.

The electric lighting equipment available on the market is now more versatile, efficient and controllable. Consequently, producers have managed in some instances to raise interest in lighting as an important aspect of a building's design rather than just a necessary utility. Poor lighting is now considered unacceptable in the work environment. Due to a growing awareness of the benefits of good lighting, consumers are now investing in sophisticated lighting equipment. Light fittings are now incorporating more complex technology such as electronic control gear, new manufacturing materials and more sophisticated design for improved light distribution. As a result, lighting equipment is becoming more expensive, and this leads to revenue growth in the sector. On the other hand, the trend is towards a decrease in the sales price of low-end lighting equipment.

EU firms face strong competition from the US and Japan in the technologically advanced products. For more basic products, competitors are East Asian newly industrialised countries (NICs) and China which benefit from lower costs of labour and raw materials compared to the EU. As a result, major EU and American players of the lighting industry are developing production facilities in areas such as East Europe and Southeast Asia.

Recent developments include the entry of large national distributors into the market of electrical lighting devices. These distributors now offer a range of their own-brand products thus increasing the downward pressure on price. The price of electric lighting devices declined by just under 4% from 1993 to 1994, stabilising in 1995.

### Production process

There are four important trends in product innovation. First, increasingly compact light sources are being developed mainly as a result of improvement of the miniaturisation process in fluorescent technology. Second, lights are decreasing in size, providing better optical control and moving toward the integration of electronic control gear. Third, there have been substantial improvements in efficacy and colour rendering of light sources. Fourth, sparked by environmental concerns, there is also a focus on the energy consumption of light bulbs. The US Environmental Protection Agency has suggested that commercial buildings could cut electricity consumption in half, and national demand by 11%, if energy-efficient lighting were used. The interest in energy savings partly explains the focus

**Figure 6: Electric lighting**  
Destination of EU exports



Source: Eurostat

**Table 5: Electric lighting  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	75.8	81.0	84.9	91.2	94.9	100.0	102.2	106.2	111.3	117.2
Unit labour costs index (3)	99.1	98.4	99.0	97.8	98.0	100.0	105.2	107.9	107.8	104.5
Total unit costs index (4)	92.4	92.8	93.4	95.1	99.0	100.0	104.5	107.4	106.2	105.4
Gross operating rate (%) (5)	10.7	10.4	10.6	11.8	10.8	11.3	10.5	9.9	10.6	11.1

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

of producers on the development and the mass production of light bulbs consuming less energy, such as fluocompact lights.

## INDUSTRY STRUCTURE

### Companies

In electric light bulbs, three companies control over 75% of the market. There is a trend in this subsector towards concentration of activities to profit from economies of scale and to generate resources to support R&D activities. The concentration of the light bulb subsector is complemented by numerous licensing agreements between the main manufacturers in order to share technology. Many of the largest manufacturers now operate on a global basis and concentration is high. Philips (NL) is the first producer of light bulbs in the EU with a 50% share of the European electric lighting industry. The second prominent company is Osram (D), a division of Siemens since 1990. Osram acquired the US operations of Sylvania from GTE (USA) and is now among the top three global producers of light bulbs along with Philips and General Electric (USA). The latter acquired in 1990 the light bulb producer Tungsram (Hungary) as part of its programme to develop European operations.

The electric lighting equipment industry is also dominated by large international players although smaller regional companies are also active in this industry. The main European players are Philips (NL), Siemens (D), Trilux (D), AEG (D), Sylvania Lighting International (UK) and Thorn Lighting (UK). Smaller regional companies are either family-owned or divisions of large public works companies. The current

harmonisation of technical standards in Europe will lead to increased competition between small- to medium-sized lighting equipment suppliers.

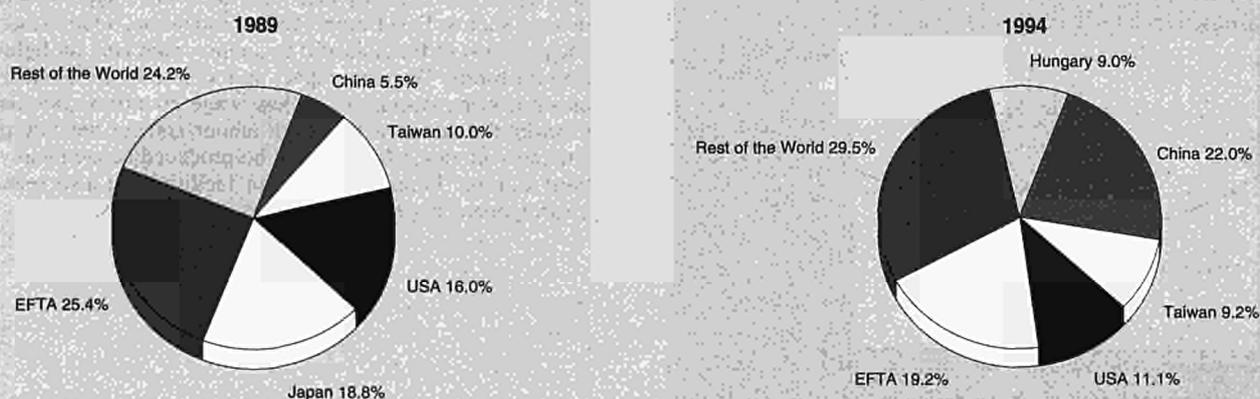
### Strategies

There is ongoing restructuring of activities among the major lighting multinationals due to increased competition. Some large suppliers are transferring production facilities in countries with lower production costs. The internationalisation of production and a strong presence in expanding markets of Asia and East Europe is a strategy followed by many manufacturers. Philips is present in Poland and has four joint-ventures in China. Osram hopes to start up its first lighting factory in China as part of the Osram Foshan joint venture. Osram has also bought the Slovak lamp producer Tesla Nove Zamky in 1995 while GE Lighting (USA) has developed its European production through acquisitions in numerous EU countries.

EU producers are striving to improve productivity in order to compensate for unit cost disadvantages in low value added products compared to the NICs. This trend towards better productivity is linked to increased automation and labour force reductions. It also involves a rationalisation of logistics: the location of distribution centres is based on an increasing European perspective of operations.

In the EU, the strategy of the main light bulb manufacturers is to promote value-added devices. These producers thus try to increase the market share of fluocompact and halogen light bulbs and to distribute them widely. However, lamp manufacturers wish to avoid their products becoming commodities and thus focus on constant technological innovation.

**Figure 7: Electric lighting  
Origin of EU imports**



Source: Eurostat

**Table 6: Electric Lighting  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	1.67
Danmark	N/A	N/A
Deutschland	1.13	1.19
Ellada	N/A	N/A
España	1.37	0.58
France	0.78	0.82
Irland	N/A	N/A
Italia	0.62	0.95
Luxembourg	0.00	0.00
Nederland	N/A	N/A
Portugal	1.16	1.14
United Kingdom	1.07	0.95

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

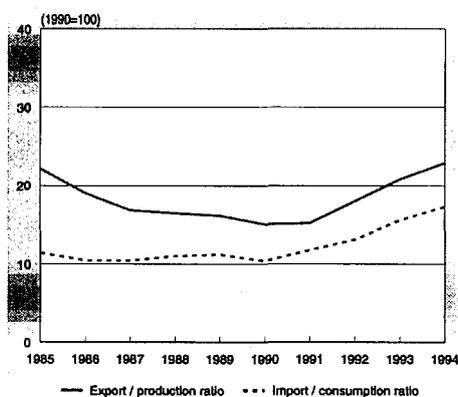
For technologically advanced products, the focus is on R&D. Responding to the demand for appropriate lighting environments in offices and stores, some manufacturers are developing value-added consultancy services for the selection and installation of lighting products. In order to face the decline of prices in highly competitive fields, Osram is also investing in sales force and trying to gain private customers' loyalty by entering into partnership agreements with distributors.

Since 1989, GE Lighting has emerged as a key player in the EU market. After the acquisition of Tungsram (Hungary) in 1989, GE also acquired the UK lamp-making operations of Thorn (UK) in 1991 and those of Lumalampa (S) in 1993. Thereafter, GE Lighting acquired the lamp-maker Lindner Licht (D) and bought the remaining 49% of Sivi, GE's Italian subsidiary.

## REGIONAL DISTRIBUTION

There is usually an important cluster of subcontractors surrounding the manufacturing facilities of large EU producers of lighting equipment. Consequently, the location of major factories determines the location of these numerous smaller subcontractors.

**Figure 8: Electric Lighting  
Trade Intensities**



Source: DEBA GEIE, Eurostat

## ENVIRONMENT

Environmental issues have traditionally played a minor role in the electric lighting industry though national and European standards, in particular ECOLABEL, and waste management regulations now have repercussions on the industry.

Gas discharge light bulbs contain some toxic elements such as mercury, antimony and lead. Another problem is the use of packaging materials, given the fragile nature of the products. Industry efforts are dedicated towards the reduction of toxic materials and the reduction of packaging materials through reusable and recyclable material. Interest in energy savings by governments and consumers has also sparked the demand for more energy efficient products.

## REGULATIONS

Important directives for the sector are the Low Voltage Directive (73/23/EEC), the Electromagnetic Compatibility Directive (EMC; 89/339/EEC) and, to a lesser extent, the Machinery Directive 89/392. Products that comply with the relevant provisions of these Directives and which have demonstrated this conformity by following the procedures set out in the same Directives may affix the CE-mark. This marking allows the free movement of the products within the EU. The existing EU and national regulations regarding standards and quality represent a barrier to entry to NIC producers with lower technical and quality standards.

## OUTLOOK

Innovation will probably continue to stimulate demand, as R&D efforts of EU firms are oriented towards electric lighting devices. The development of high-grade lamps and the present trend towards tungsten halogen and compact fluorescent light bulbs will presumably lead to a decline in EU production of incandescent devices. Compact high-density discharge light bulbs will start to play a more significant role in the total market towards the end of the decade. Also, there should be an increase in consumer purchase of sophisticated and expensive light fittings prompted by growing awareness of the importance of proper lighting.

One can expect intense competition for the years to come, especially in the field of low-end products. Demand for compact fluorescent and tungsten halogen light bulbs should grow steadily but falling unit prices could slow revenue growth. The price of basic light bulbs is expected to fall while the price of fittings is expected to rise. Large players are aiming at a compound annual growth rate of sales over 5% in the electric lighting industry.

Global players, such as Philips and Osram, should develop their global presence by extending their sales and operations in areas such as East Europe, China, Indonesia, South America and probably India. Asia will be an important area for lighting manufacturers. One can expect an increase in the number of manufacturing operations in low wage countries, especially to make the lamps with a high labour content but low production volumes, which cannot be produced economically in West Europe. Foreign production facilities are also seen as a springboard for expanding sales in new areas.

Written by: LEK

The industry is represented at EU level by: European Lighting Council (ELC). Address: Avenue E. Mounier 83, Box 1 (4th Floor), B-1200, Brussels, Belgium; tel: (32 2) 772 83 77; fax: (32 2) 770 53 86.





Overview

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Demand in the instrument engineering sector is closely linked to the health of the overall economy. It is therefore not surprising that this sector has experienced a difficult period in recent years. Whereas the sector experienced underlying real production growth averaging 3.5% per year between 1985 and 1990, no real growth has been experienced since then. Employment, which had increased in the late 1980s, has fallen each year since 1990.

Trade has become increasingly important to the sector. Between 1985 and 1994, both extra-EU imports and exports grew more than twice as fast as EU sector apparent consumption and production, respectively. Sector trade intensities have increased to a point where over half of all 1994 EU sector consumption was satisfied by foreign suppliers, of which over 70% were American, Japanese and Swiss. By the same token, 47% of 1994 EU sector production satisfied non-EU demand, the USA and EFTA countries being the principal destinations. The internationalisation of the sector, in terms of both trade and production, is likely to continue.

The sector should move back to growth as the EU economic climate improves. Long-term prospects for EU producers depend on their ability to compete globally, against American, Japanese and Swiss companies in high technology product areas and against the Pacific Rim/ASEAN producers at the lower end. Different strategies are needed for each segment. Product and process innovation, increased R&D expenditure and sophisticated marketing strategies are all critical in higher price segments, whereas asset migration and cost control are critical issues in lower price segments.

INDUSTRY PROFILE

Description of the sector

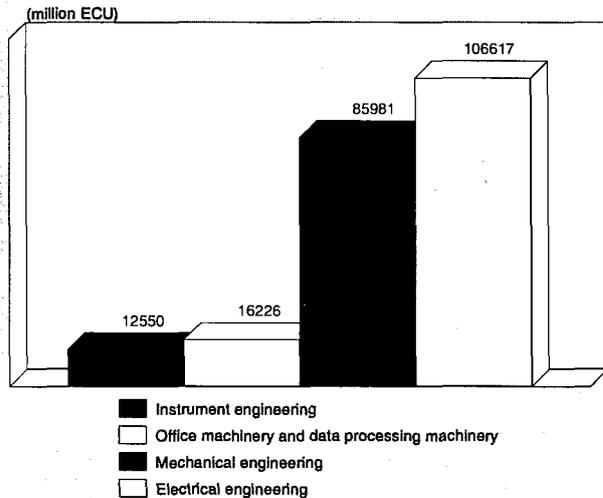
The instrument engineering industry contains the following subsectors:

- measuring, checking and precision instruments and apparatus;
- medical and surgical equipment, and orthopaedic appliances;
- optical instruments and photographic equipment; and
- clocks, watches and parts thereof.

In the NACE Revision 1 classification, this sector will be classified as Sector 33. This replaces its NACE 1970 classification as Sector 37. The four product areas listed above are those included in the old classification - all data in these pages refer to this definition. There will be a number of changes in the scope of the sector as it moves to its NACE Revision 1 definition. A new subsector, the manufacture of industrial process control equipment, will be added as 33.30. The first two subsectors listed above (measuring etc. and medical etc.) will be expanded and the third (optical etc.) will be slightly reduced in scope. Details of these changes are contained in the descriptions of the individual subsectors following this overview. There will be no change in the definition of the clocks and watches subsector.

Instrument engineering production had a 1994 value added of 12 550 million ECU, as Figure 1 shows. To compare this to other manufacturing sectors, it represented 55% of the value

Figure 1: Instrument engineering Value added in comparison with related industries, 1994

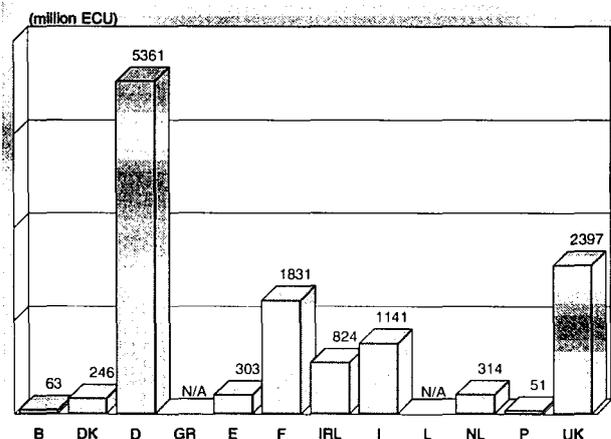


Source: DEBA GEIE

added of the footwear and clothing sector, or 14% of the value added of the mechanical engineering sector. Within instrument engineering, Table 2 shows that three of the four subsectors are similar in size in the EU, in terms of both production and apparent consumption. The clocks and watches subsector is the exception, and lags behind. It can be seen that 1994 EU consumption of clocks and watches was more than twice as large as EU production. This contrasts with the three larger subsectors, where the production and consumption figures were similar.

Germany is the largest EU producer in instrument engineering, with 43.6% of 1994 value added. It was followed by the UK (19.8%), France (13.9%), Italy (9.1%) and Ireland (6.6%). These five Member States generated 92.2% of 1994 value-added. Figure 2 shows the value added for each of the 12 Member States.

Figure 2: Instrument engineering Value added by Member State, 1994



Source: DEBA GEIE



**Table 1: Instrument engineering  
Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	23 978	25 524	27 934	28 685	26 895	27 484	27 605	32 700	33 150	32 940	32 590
Production	16 901	23 282	24 755	25 641	24 836	25 446	25 178	29 207	30 840	32 510	34 370
Extra-EU exports	6 934	8 855	9 245	8 486	10 825	11 910	12 279	11 722	12 470	13 190	13 940
Trade balance	42.6	-2 241.4	-3 179.3	-3 044.2	-2 060.0	-2 038.5	-2 426.9	-3 492.5	-2 310.0	-430.0	1 780.0
Employment (thousands)	322.5	334.9	333.6	328.3	310.1	304.2	297.7	324.6	320.0	320.0	320.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Instrument engineering  
Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Clocks and watches	2 964	1 246	1 199
Medical and surgical equipment	8 802	8 675	1 887
Optical instruments and photographic equipment	7 678	6 668	5 177
Precision instruments and apparatus	8 040	8 857	3 647

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Instrument engineering  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	3.24	-2.00	0.88	-5.90
Production	3.54	-0.03	1.94	1.62
Extra-EU exports	-0.22	6.34	2.64	25.27
Extra-EU imports	-0.09	1.13	0.45	3.90

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Instrument engineering  
External trade in current prices**

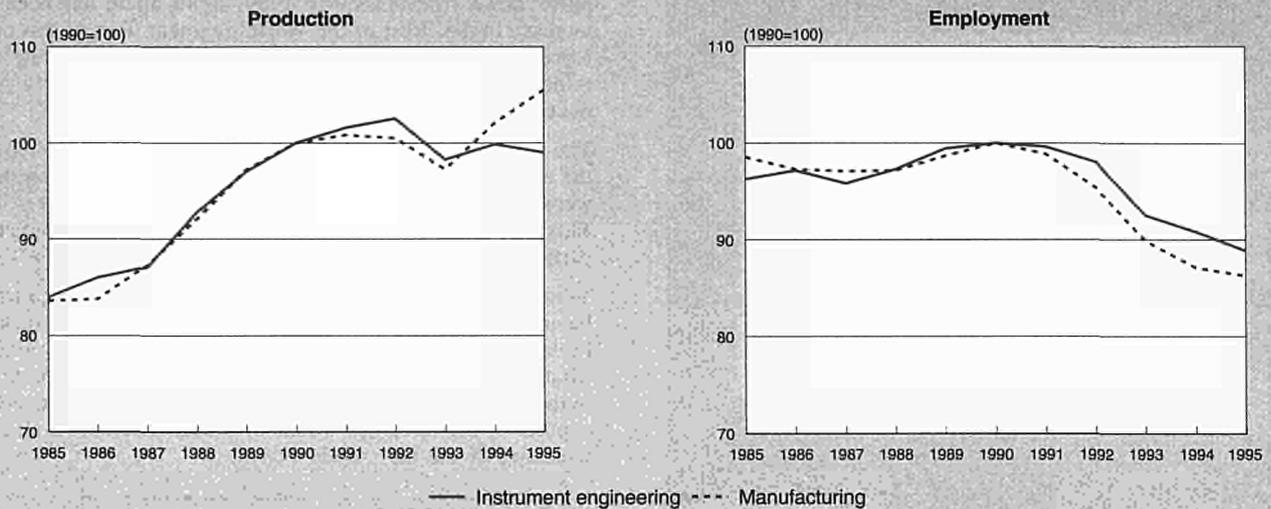
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	6 934	6 606	6 342	7 824	8 735	8 855	9 245	8 486	10 825	11 910	12 279	11 722
Extra-EU imports	6 891	7 044	7 236	9 337	10 814	11 096	12 424	11 530	12 885	13 949	14 706	15 214
Trade balance	43	-438	-894	-1 513	-2 079	-2 241	-3 179	-3 044	-2 060	-2 039	-2 427	-3 493
Ratio exports / imports	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.8	0.9	0.8	0.8
Terms of trade index	125.3	120.4	111.8	106.5	102.7	100.0	92.7	94.2	103.8	87.5	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Instrument engineering  
Production and employment compared to EU total manufacturing industry**



1995 figures are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

Table 1 contains estimates for EU-12 and EU-15 production and consumption for 1995. It should be emphasised that these data are only estimates. They indicate that Austria, Finland and Sweden added 16% to EU production and 18.5% to EU consumption. This demonstrates a strong presence in this sector by the three new Member States.

**Recent trends**

Between 1985 and 1994, EU production and apparent consumption in this sector grew at nominal rates of 4.7% and 5.6%, as Table 1 shows. The sector's performance can be divided into two periods. In the 1985-1991 period, annual growth was high for the two indicators (6.6% and 8.8%) but fell dramatically between 1991 and 1994 (a 0.9% rise in production and an annual consumption fall of 0.5%). This shows clearly the sensitivity of this sector to the performance of the economy as a whole. The strong economic growth of the late 1980s and the drive towards the Single Market drove growth in instrument engineering, whereas the lower growth

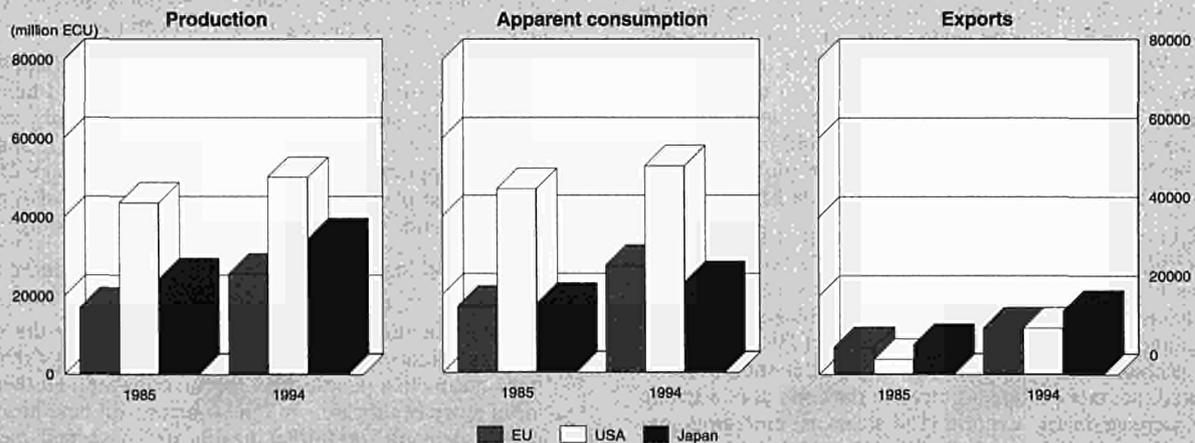
1990s have seen a sectoral decline. The 1994 performance was, however, a big improvement on 1993, which represented the bottom of the business cycle for this industry.

Over the period 1988-1994, extra-EU exports had an average nominal growth rate of 7.2%. This has clearly been an important driver of the overall growth of this sector in the EU. Indeed, the sector showed robust export growth in both 1993 and 1994, reducing the EU's trade deficit in this sector by 1 billion ECU and cushioning the effects of the recession.

Employment in the sector increased modestly in four of the five years from 1985 to 1990, and peaked in that year. Table 1 shows that sectoral employment decreased by 9.2% between 1990 and 1994. The gap between the output and employment trends indicates ongoing productivity improvements in instrument engineering.

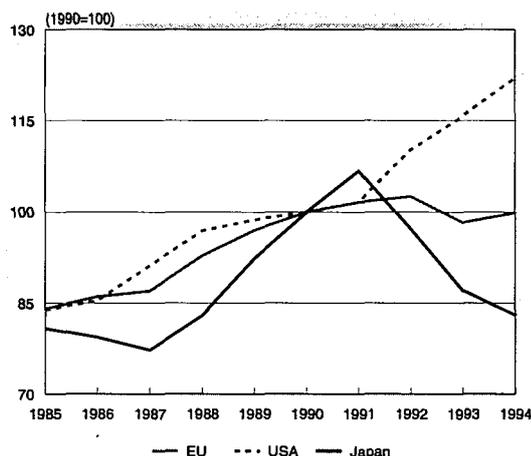
Figure 3 shows that between 1985 and 1990, the sector shadowed the broader EU manufacturing trends very closely. How-

**Figure 4: Instrument engineering  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Instrument engineering**  
**International comparison of production in constant prices**



Source: DEBA GEIE

ever, between 1990 and 1994, it appears that instrument engineering suffered slightly more than EU manufacturing as a whole. In fact, the four product areas which make up this sector have somewhat different trends, and one product area (medical equipment) has performed well throughout. The different drivers of demand in the different product areas are discussed later.

#### International comparison

In comparing Triad nominal output between 1985 and 1994, Figure 4 shows that the USA maintained its leadership position. It accounted for 45.5% of Triad production in 1994 and 51.1% of Triad consumption. While these figures are substantially larger than those for the EU and Japan, the USA's position has eroded somewhat since 1985, when the respective figures were 51.5% and 57.7%. This slight decline has led to increased shares for both Japan and the EU. In 1994, Japan accounted for 31.4% of Triad production and 22.4% of Triad consumption. The EU's figures were 23.1% and 26.5% respectively.

Figure 5 shows real growth in production for the Triad between 1985 and 1994. The main point of interest is the post-1990 increase in the real production of the USA, which has coincided with a virtually constant EU real production and a sharp decline in Japanese real production.

#### Foreign trade

The EU has run a trade deficit in this sector each year since 1986, as seen in Table 4. This widened steadily in the late 1980s, as strong EU demand led to a rapid increase in extra-EU imports. While imports have continued to rise in the 1990s, this has coincided with a vigorous increase in exports, particularly in 1993. The result has been a reduction in the EU's trade deficit from over 3 billion ECU to 2 billion ECU. The trends have also led to an increased level of globalisation in the sector, as the level of intra-industry trade has increased.

The USA is the largest single country market for EU instrument engineering exporters, accounting for 22.7% of exports in 1994, as Figure 6 shows. The former EFTA states accounted for a further 21.9%. These destinations combined have therefore declined in relative importance since 1989, when they jointly accounted for 57.5% of EU exports. It should be remembered that this decline occurred in the context of a strong overall increase in EU exports. The strongest emerging segment has been the 'Rest of the World', which includes the burgeoning markets of the Pacific Rim/ASEAN region.

Figure 7 shows that EU imports are largely sourced from the USA, Switzerland and Japan. In 1994, producers from these countries provided 70.2% of EU instrument engineering imports, down from 83.3% in 1989. Again there has been an increase in the 'Rest of the World' segment. Part of this may represent imports from developing countries, following the relocation of production by companies which formerly produced in Triad countries.

The sector's trade intensities are shown in Figure 8. Both the export/production ratio and the import/consumption ratio were higher in 1994 than in any of the preceding nine years. This again reflects the increasing globalisation of the sector, particularly since 1992.

Table 4 provides estimates for the EU-12 and the EU-15 trade balance in 1995. They show that the inclusion of Austria, Finland and Sweden reduces the extra-EU export figure somewhat, and increases the extra-EU import figure. EU 12 exports to these three countries appear to be greater than the extra-EU exports of the three new Member States. The net result is a widening of the EU's trade deficit.

## MARKET FORCES

### Demand

The sector consists of four broad product subsectors, and each of these in turn contains a large number of products. The output of the instrument engineering sector is employed in many industrial and consumer applications. In order to look at the trends in, and drivers of, sectoral demand, it is useful to review each of the four subsectors in turn.

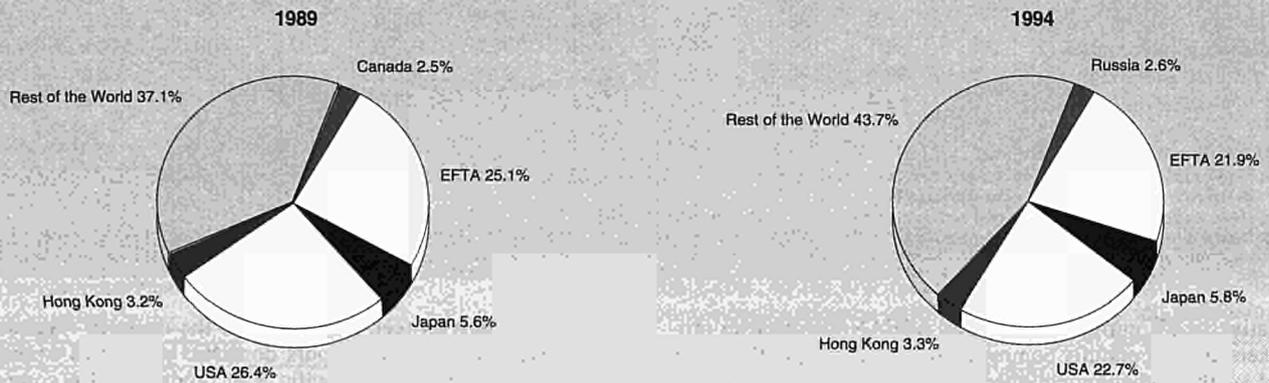
#### Optical instruments and photographic equipment

- Growth in demand for eyeglass ware is driven firstly by demographic changes, i.e. the increase in the overall EU population, its gradual ageing and the longer average lifespan of an EU citizen have all encouraged demand for spectacles, lenses, frames and mountings. A second driver has been a greater fashion sense, particularly about frames, with designer brands entering the spectacles market. A third factor supporting demand has been technological innovation, which has facilitated differentiation by allowing consumers to choose from a menu of features and products. A negative factor has been a gradual tightening of social security aid for eyecare.
- Demand for precision optical instrumentation is a derivative of demand for better industrial measurement and testing methodologies. It is driven by expanding manufacturing plants and older plants wishing to modernise. This has induced increased research investment activity, particularly in the area of laser technology. Another driver of demand is the increased usage of precision optical instrumentation in environmental management applications.
- Demand for photographic equipment has been impelled by private consumption (particularly within the hand-held camera area), product innovation (more user-friendly technology and increased film quality per unit cost), and new product application (largely through the marriage of electronics and photography). However, there has also been a move towards simpler, more disposable technology.

#### Medical and surgical equipment and orthopaedic appliances

- Demand in this area has also been pushed by the demographic factors mentioned above. Indeed, successful healthcare means that people are kept alive longer, and therefore need more healthcare - in effect, successful healthcare creates a demand for further healthcare. A second factor is the gradual increase in EU income levels - as people become richer, they spend more of their money on healthcare. This links to a third factor, an increased awareness among EU

**Figure 6: Instrument engineering  
Destination of EU exports**



Source: Eurostat

citizens of health-related matters. A final factor is technological innovation. This sub-sector is highly research-intensive, and technology has facilitated new treatments, which has driven demand.

**Measuring, precision and control instruments**

- While demand within this subsector is largely linked to overall economic health, there tends to be a correlation between demand for a particular instrumentation and the health of particular industries such as a gyrosopic/inertial navigation instrumentation and the aircraft and shipbuilding industries.
- As electronic technology has developed generally, it has permeated the sub-sector to a point where over 90% of all instrumentation is electronically controlled. This has provided the sub-sector with a value-added content that has served to bolster demand. Changes in environmental awareness and regulation affect the demand for the sector's output as the requirement for effective measurement and monitoring of polluting activity grows.

**Clocks and watches**

- Private household discretion impels much demand in this area as technological innovation is least important within

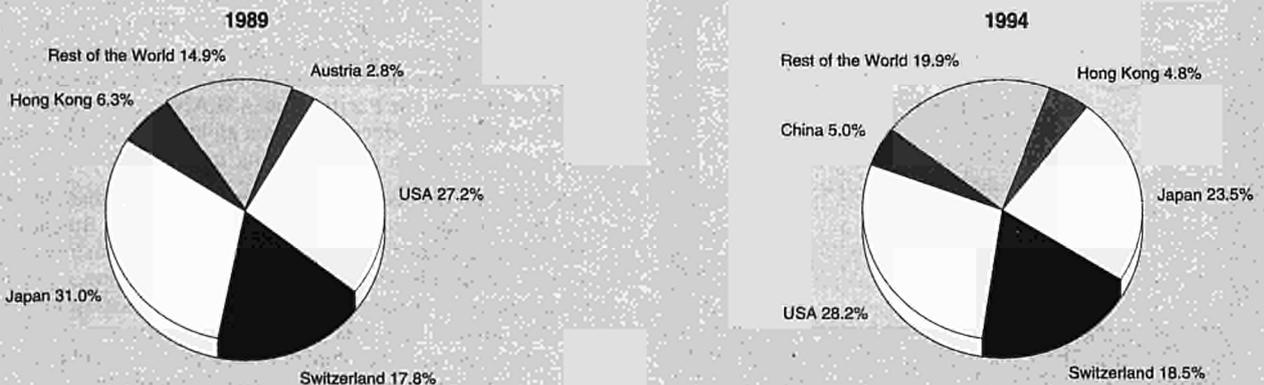
this subsector relative to the sector's other three product groupings. Thus, demand for clocks and watches is closely linked to a general level of disposable income. However, the evidence suggests a growing role for technological innovation in driving demand, particularly for middle and upper range watches.

It can be observed that different factors drive demand in each of the four product areas. However, the experience of the sector in recent years has shown that all four subsectors are very sensitive to the overall level of demand in the economy. The only subsector which partially escaped the recession was medical equipment, which has strong fundamental growth drivers.

**Supply and competition**

Extra-EU imports grew as a share of EU apparent consumption in seven of the eight years to 1994, when 51% of sector demand was satisfied by foreign instrument engineering companies. This success of non-EU producers is due to several factors. Firstly, the USA is the single largest market for instrument engineering and American companies tend to enjoy technological competitive advantages, as well as being attuned to the product needs of emerging market segments. Secondly, there has been a general depreciation of the dollar and yen

**Figure 7: Instrument engineering  
Origin of EU imports**



**Table 5: Instrument engineering  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	87.3	88.5	90.8	95.4	97.6	100.0	102.0	104.6	106.2	110.0
Unit labour costs index (3)	88.1	92.3	94.9	94.3	96.8	100.0	105.3	109.0	110.9	110.5
Total unit costs index (4)	86.0	89.1	90.6	92.1	97.7	100.0	104.1	107.1	108.2	108.4
Gross operating rate (%) (5)	12.4	11.0	11.2	12.8	10.9	11.3	11.9	11.3	11.5	12.1

(1) Some country data has been estimated.

(2) Based on Index of production / Index of employment.

(3) Based on Index of labour costs / Index of production.

(4) Based on Index of total costs (excluding costs of goods bought for resale) / Index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

relative to EU currencies. Thirdly, ASEAN/Pacific Rim producers are successfully competing on a cost basis at the lower end of the technological spectrum. In fact, these producers are now beginning to compete at higher levels of technological sophistication as they develop manufacturing proficiency and market understanding. The following paragraphs characterise the supply and competition picture among the four subsectors:

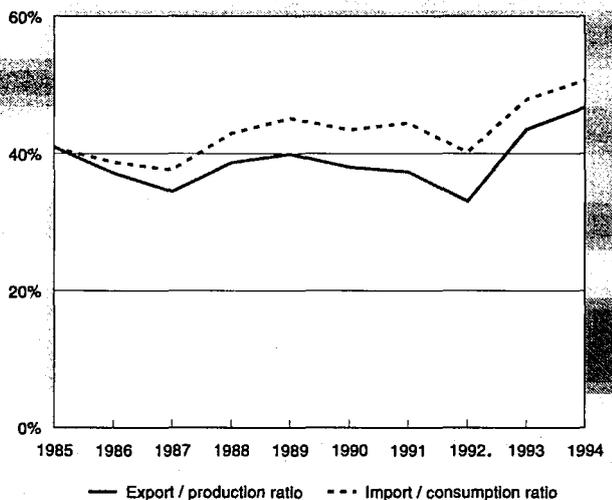
#### Optical instruments and photographic equipment

- In eyeglass ware, EU firms are market leaders, both in the EU and internationally. Italian and French manufacturers have exploited competitive advantages around design and branding. Low price segment competition from Asian producers is increasing.
- EU producers are also performing well in optical precision instrumentation, and the EU market is characterised by relative self-sufficiency.
- USA and Japanese manufacturers are very strong in the area of photographic equipment where price competition has eroded EU producers' market share.

#### Medical and surgical equipment and orthopaedic appliances

- The United States is the leading global producer of medical equipment, and accounted for 44% of EU imports in 1994. The USA's Commerce Department feels its companies have strong competitive advantages in this sector and a 1995 report forecast that its trade surplus would continue to grow.

**Figure 8: Instrument engineering  
Trade intensities**



Source: DEBA GEIE, Eurostat

Some analysts feel, however, that the complex regulatory system in the USA favours domestic companies over EU and other importers. Pacific Rim producers also compete within the EU market, mostly in the lower price segments.

#### Measuring, precision and control instruments

- American producers have enjoyed much success within the EU market in recent years because of both a clear technological competitive advantage as well as a general devaluation of the US dollar relative to European currencies. However, reflecting the increasingly global nature of the industry, EU firms have also seen impressive growth in extra-EU exports.
- Japanese producers, in contrast, have not been able to penetrate the EU market beyond a 10-13% level of total extra-EU imports. Still, the Japanese have enjoyed somewhat of a currency devaluation relative to EU currencies as well as the synergies that accompany a large research infrastructure. They also have niche competencies in such areas as weighing instrumentation. The Japanese have begun to invest directly in such EU markets as the United Kingdom in order to compete more effectively.

#### Clocks and watches

- EU manufacturers face formidable price competition from the Pacific Rim/ASEAN countries in the area of less expensive electronic watches.

Increased investment in R&D and new product development, as well as restructuring to yield advantages of scale economies, will help EU firms to maintain market share.

#### Production process

The first trend in production has been the movement towards greater automation and system integration, driven by the need to reduce costs and increase yield/quality. A second trend has been the subcontracting of components production and lower-level technologies to specialty houses, due to the large number of product components in many instrument engineering products. A third development has been the migration of certain production assets and functions to relatively low-wage markets such as those in the Pacific Rim/ASEAN region. This enables EU producers to reduce costs on a global level and to compete more effectively in these growing markets.

An issue of discussion is the time spent by manufacturers on their production processes. A 1995 Harvard Business Review article argued that in high technology industries, which would include elements of instrument engineering, companies underrate process innovation. The authors (Pisano and Wheelwright) argued that it is vital for manufacturers to excel at the simultaneous development of new products and new processes, rather than undertaking them sequentially.

Table 5 shows that labour productivity increased every year between 1985 and 1994. This is consistent with the earlier data showing a more rapid rise in output than in employment.

**Table 6: Instrument engineering  
Breakdown by size of enterprise, 1992 (1)**

(%)	Number of enterprises (units)	Share of number of enterprises	Share of employment	Share of turnover
Less than 20 employees	51 137	93.6	33.9	33.2
20-99 employees	2 774	5.1	20.4	16.7
100 or more employees	706	1.3	45.7	50.2

(1) Estimates for EUR15.  
Source: Eurostat Enterprises in Europe

Table 5 also shows that unit labour costs and total unit costs rose in line with the productivity increases. This limited the gain in competitiveness by EU companies.

## INDUSTRY STRUCTURE

### Companies

Table 6 shows that the overwhelming majority of instrument engineering firms (94%) employed fewer than 20 employees in 1990. This indicates a sector largely comprised of small, niche component manufacturers. A further 5% of companies employ under 100 people. In effect, this 98.7% of companies act as sub-suppliers to the remaining 1.3% of companies. These large firms, which numbered 706 in 1992, account for 46% of sectoral employment and 50% of sectoral output. These are the firms which are competing head to head with non-EU companies, many on a global basis. These companies control the economic dynamic of the sector, and if they lose global market share, then the 99% of smaller companies will suffer a knock-on effect. Table 7 lists the 15 largest EU instrument engineering firms in 1994.

Unlike the small and medium sized firms which tend to specialize in one product area or competency, the larger firms tend to offer a portfolio of products across subsectors. For some large companies, including several of the top 15, instrument engineering is not even the main source of revenue.

### Strategies

This sector, with the exception of parts of medical equipment, is in a mature phase of development. Even when the EU economy fully recovers from the recession, most product areas will not grow faster than the economy as a whole. This implies that competition in the sector is likely to remain intense. There are two groups of competitors for EU producers. At the high

value-added end of the product spectrum, EU manufacturers face competition from large American, Japanese, and Swiss producers. At the low value-added, labour intensive end, the competition emanates mostly from the rapidly industrialising countries of the Pacific Rim/ASEAN region. The competitive strategies required differ accordingly.

For technologically sophisticated products, the key centres around marketing and product innovation. Building share is difficult in a mature market and EU manufacturers need to keep pace with the leading USA, Japanese and Swiss companies. This requires a focus on emerging market segments, with products being developed accordingly. Intensive research efforts, possibly involving major R&D investments, may be required. One option is inter-company collaborative research to reduce the cost. The trend of growing import penetration into the EU shows no sign of slowing down, and implies that for EU manufacturers to grow their market share, more effective penetration of non-EU markets will be needed. This will not be easy as distribution channels tend to be closely controlled in mature markets.

In order to compete effectively against the mainly Asian producers at the low end of the product spectrum, EU producers will need to focus on their cost bases. One option is to invest directly in the emerging markets. This would allow EU producers to compete more effectively on a cost basis and would provide a foothold in areas of growing demand. Asset migration has already been occurring within the sector, e.g. in the area of clocks and watches. There is also evidence that EU producers are competing at the low end of the technology spectrum through their other option, i.e. a general reduction of costs via the automation of production processes in Europe.

An issue for the larger EU companies is how to not only how to compete effectively in these two different segments

**Table 7: Instrument engineering  
The 15 largest companies in Europe, 1994**

(million ECU)	Country	Turnover	Net profit	Employment (thousands)
The General Electric Company	GBR	7 624	735.9	82.3
Thomson-CSF	F	5 532	-146.3	46.8
Asea Brown Boveri	D	5 170	86.7	35.1
Siebe	GBR	2 808	209.7	32.3
Incentive	S	1 992	239.0	19.1
OCE-Van der Grinten	NL	1 284	41.9	11.7
Danfoss	DK	1 236	45.9	14.8
Smith & Nephew	GBR	1 226	-69.5	12.2
Gambro	S	1 072	75.5	8.9
Essilor International	F	958	58.6	13.4
Draegerwerk	D	720	7.6	7.8
Dassault Electronique	F	619	8.7	4.1
Kraftanlagen	D	556	-5.6	3.9
Senior Engineering Group	GBR	503	16.1	5.6
Carl Schenck	D	498	-18.7	5.3

Source: DABLE



**Table 8: Instrument engineering  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.29	0.18
Danmark	1.03	1.10
Deutschland	1.44	1.32
Ellada	0.08	0.14
España	0.27	0.32
France	0.85	0.84
Ireland	3.49	3.58
Italia	0.77	0.76
Luxembourg	N/A	N/A
Nederland	0.40	0.59
Portugal	0.24	0.35
United Kingdom	1.20	1.32

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

of instrument engineering, but how to compete in both at the same time.

### REGIONAL DISTRIBUTION

Table 8 shows the level of product specialisation, by Member State, in 1985 and 1994. The country most specialised in this sector among the EU producers was Ireland, both in 1985 and 1994. This is somewhat surprising given that Ireland contributed only 6.6% of the sector's total EU value-added in 1993 as Figure 2 shows. This suggests that while Ireland is not a leading contributor to EU total value-added, the sector is relatively important to the Irish economy. In fact, much of the instrument engineering production in Ireland is due to multinational subsidiaries, taking advantage of a relatively cheap and well educated labour force, as well as an EU location. The figures show that instrument engineering accounts for about 1% (or under) of manufacturing output in most EU Member States.

### ENVIRONMENT

The production processes of this sector impose relatively few environmental hazards. Minor hazards exist in the following areas:

- Photographic equipment - the disposal of chemicals used in film production and development
- Clocks and watches - in this generally benign sub-sector, potential risks lie in the use of small nickel-cadmium batteries whose disposal is thought to pollute ground water
- Medical devices - problems are mostly related to the disposal of syringes and other sterilised instruments. An EU Directive provides that a certain percentage of packaging materials must be recycled or recovered by the year 2000.

Indeed, not only are there relatively few environmental concerns associated with the sector, but this sector is in the enviable position of benefiting from heightened world concern over environmental matters. As the need for analysing and monitoring air, soil and water pollutants increases, there is a growing demand for instrument engineering products, particularly in the area of measuring, precision and control instrumentation.

### REGULATIONS

The directive on machinery which came into force in 1994 covers all four subsectors. Because such harmonisation will make it easier for foreign producers to penetrate the EU market, the EU Commission has taken the further measure of protect against the dumping of extra-EU products. In the field of electronic weighing machines, for example, anti-dumping duties have been imposed on a number of Japanese firms. Recent legislation affecting the medical device area include one which requires any device sold within the EU must meet harmonised requirements and procedures and bear a CE-mark, a token of compliance with essential safety requirements, in order for it to enjoy unencumbered movement within the EEA. Details of regulations affecting specific subsectors are contained in the relevant monographs.

### OUTLOOK

Assuming that the EU economy moves back towards stronger growth in the second half of the 1990s, then the instrument engineering sector will get some relief from the fairly difficult times it has suffered in recent years. Growth rates should improve and the decline in employment should slow down, if not stop. However, more fundamental forces are at work in the industry. It is generally mature, which limits its growth potential. It is going through a globalisation process, which stiffens competition for EU producers. Also, developing countries are playing an increasing role in the industry and are proving hard for EU manufacturers to compete against.

The long-term prospects for EU producers depends on their ability to adapt to these changes in the industry environment. This will not be easy, but as many of the EU companies listed in Table 7 have shown, it can certainly be done. The objective is to compete and build market share on a global level, either by technological and product innovation or by cost leadership.

Written by: Fitzpatrick Associates

# Medical and surgical equipment and orthopaedic appliances

## NACE (Revision 1) 33.10

The past ten years have seen strong growth in EU production and consumption in this sector. The ageing of the EU population, rising income levels, a heightened sense of health awareness, technological innovation and EU regulatory harmonisation have all acted as drivers of demand. The USA dominates the sector globally and accounts for 60% of Triad production, compared to the EU's share of about 25%. Although extra-EU exports have grown over time, penetration of the American market has proven difficult, partly due to USA regulations. The EU runs a small trade deficit in this sector. The outlook is promising as health care expenditure is likely to rise despite global efforts to control costs. The extent to which EU producers can compete with USA producers depends on their ability to differentiate products and improve production processes, both of which depend on R&D investment, as well as their success in building share in the large USA market.

### INDUSTRY PROFILE

#### Description of the sector

The sector consists of the following four activities:

- manufacture of medical apparatus for diagnostic work
- manufacture of medical, surgical and veterinary equipment and instruments
- manufacture of dental instruments and apparatus, and
- manufacture of orthopaedic appliances and artificial limbs

Under the NACE Revision 1 classification, this sector will be defined as Sector 33.10. This replaces its NACE 1970 classification as Sector 372. The four product areas listed above are those included in the old classification and all data in these pages refer to this definition. The new sector classification will consist of seven product areas, i.e. the four areas listed above and three new product areas:

- manufacture of electro-medical equipment
- production of hand-made orthopaedic footwear
- manufacture of medical and dental appliances of plastic

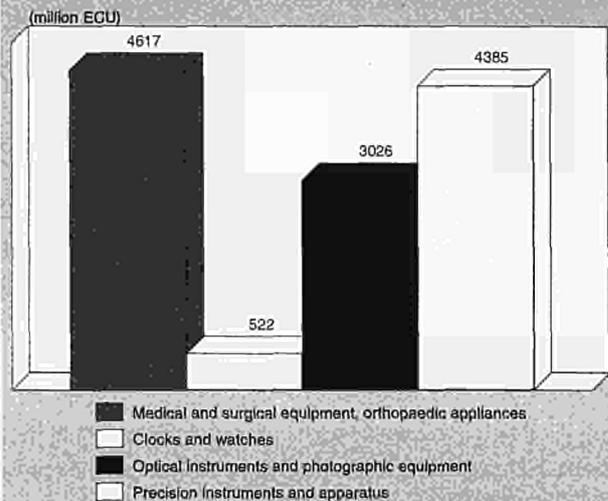
This redefinition is more inclusive of the medical equipment industry as a whole.

The sector (i.e. the four product areas) had a 1994 value added of 4 617 million ECU, as shown in Figure 1. To place this in context, it represented a higher value added than the EU wool industry in 1994, but was significantly smaller than either the foundries or meat sectors.

Germany is the leading EU producer with 54% of total EU value-added. Other major producer countries are France (20%), the United Kingdom (14%) and Italy (8%). These four countries generate 96% of the value added in this sector. Figure 2 shows the value-added for each Member State.

It is estimated that Austria, Finland and Sweden added 17.3% to EU apparent consumption and 16% to EU production in 1995. This represents a sizeable increase in this sector, relative to the size of the three new Member States.

Figure 1: Medical and surgical equipment, orthopaedic appliances  
Value added in comparison with related industries, 1994



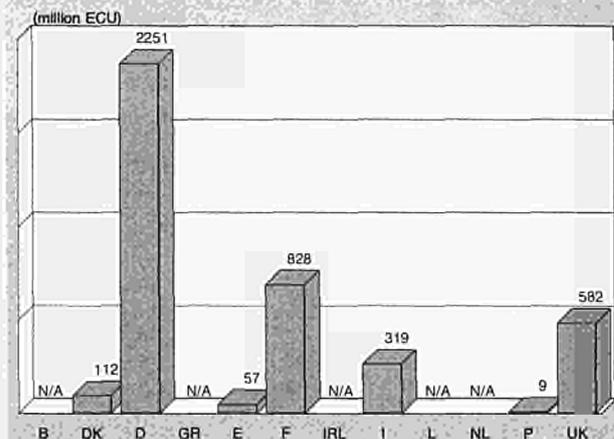
Source: DEBA GEIE

### Recent trends

Both apparent consumption and production have had strong historic growth. Between 1985 and 1992, apparent consumption and production grew by 10.9% and 8.7% respectively, as measured in current prices. Between 1992 and 1993, growth slowed to 1.7% for consumption and 3.6% for production. However, between 1993 and 1994, growth moved back towards its earlier rates, with increases of 6% in both consumption and production. Given the difficult economic environment which companies were facing in 1994, this appears to represent evidence of an underlying demand growth in this sector. (It should, however, be noted that the provisional figures for 1995 indicate falls in consumption and production which, if true, represent the first annual decline in the sector since 1985).

Extra-EU exports grew at an average rate of 6.9% between 1985 and 1993. Yet, in contrast with the increases in apparent consumption and production, extra-EU exports declined sharply (by one third) between 1993 and 1994. This decline acted as a brake on the growth experienced in the sector in 1994.

Figure 2: Medical and surgical equipment, orthopaedic appliances  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Medical and surgical equipment, orthopaedic appliances**  
Main indicators in current prices (1)

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	3 952	6 497	7 605	8 158	8 300	8 802	8 410	9 902	10 620	11 260	11 950
Production	4 410	6 579	7 394	7 902	8 186	8 675	8 054	9 342	10 070	10 820	11 650
Extra-EU exports	1 657	2 151	2 335	2 460	2 834	1 887	3 032	2 850	3 020	3 180	3 350
Trade balance	458.1	81.2	-210.7	-255.7	-113.8	-126.8	-356.2	-559.4	-550.0	-440.0	-300.0
Employment (thousands)	92.2	100.8	105.7	108.3	105.8	107.8	104.5	114.0	120.0	120.0	120.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Medical and surgical equipment, orthopaedic appliances**  
Average real annual growth rates (1)

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	7.92	4.62	6.44	3.77
Production	5.49	4.50	5.05	5.10
Extra-EU exports	2.70	-6.60	-1.54	-31.44
Extra-EU imports	9.98	-6.62	2.27	-35.04

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Medical and surgical equipment, orthopaedic appliances**  
European production breakdown by sector, 1995 (1)

(million ECU)	Production	Market
X-ray and medical equipment	4 106	3 015
X-ray equipment	1 901	963
Other medical equipment	2 205	2 052
Industrial equipment	2 749	2 774
Signaling equipment	2 125	2 175
Other industrial equipment	624	599
Total medical and surgical equipment and orthopaedic appliances	6 855	5 789

(1) EUR12, excluding Greece, Luxembourg and Portugal.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK

**Table 4: Medical and surgical equipment, orthopaedic appliances**  
External trade in current prices

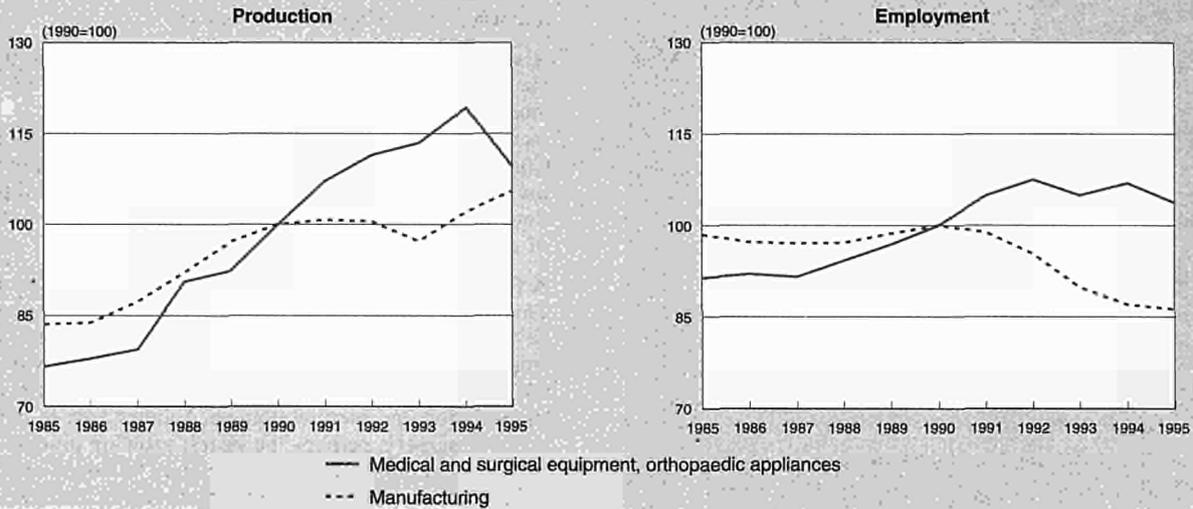
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	1 657	1 774	1 685	1 781	1 953	2 151	2 335	2 460	2 834	1 887	3 032	2 850
Extra-EU imports	1 198	1 229	1 332	1 606	1 943	2 069	2 546	2 715	2 948	2 014	3 388	3 409
Trade balance	458.1	544.8	353.1	175.0	10.6	81.2	-210.7	-255.7	-113.8	-126.8	-356.2	-559.4
Ratio exports / imports	1.38	1.44	1.27	1.11	1.01	1.04	0.92	0.91	0.96	0.94	0.89	0.84
Terms of trade index	94.4	97.3	102.5	109.4	99.4	100.0	101.3	101.7	97.5	90.1	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Medical and surgical equipment, orthopaedic appliances  
Production and employment compared to EU total manufacturing industry**



1995 figures are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

Employment in the sector increased slowly between 1985 and 1992, peaking in 1992 at 108 300. The 1994 figure was just below this level. The gap between the output and employment increases over this period indicates ongoing improvements in productivity.

Production and employment in the sector outpaced manufacturing generally, as Figure 3 shows. This is true for both the 1985-1990 period and the 1990-1994 period. The latter period saw a 6.9% increase in employment in this sector, compared to a 13.8% decrease in employment in EU manufacturing as a whole.

**International comparison**

The EU, Japan and the USA all experienced strong increases in production and consumption between 1985 and 1994, as measured in current prices. Production shares remained fairly constant, with the USA at just over 60%, Japan at about 15%

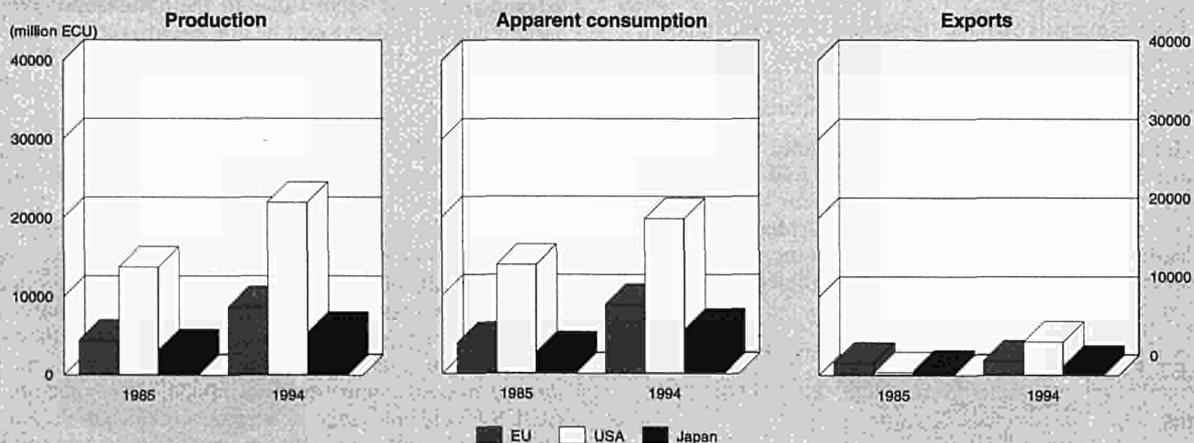
and the EU increasing very gradually from 20.7% in 1985 to 24.1% in 1994. The apparent consumption shares are very similar to the production shares, showing that the most developed medical equipment market is that of the USA.

Figure 5 shows the figures in constant prices. It shows that while Japan enjoyed the fastest growth in production between 1985 and 1990, it has performed badly since then, particularly in 1993 and 1994. This relates to efforts in Japan to rein in healthcare spending. USA production increased strongly in the latter time period.

**Foreign trade**

The EU had a trade surplus in this sector between 1985 and 1990, with the peak year being 1986. However, EU apparent consumption has consistently grown faster than the rate of production causing extra-EU imports to grow faster than extra-EU exports. The EU trade balance therefore deteriorated

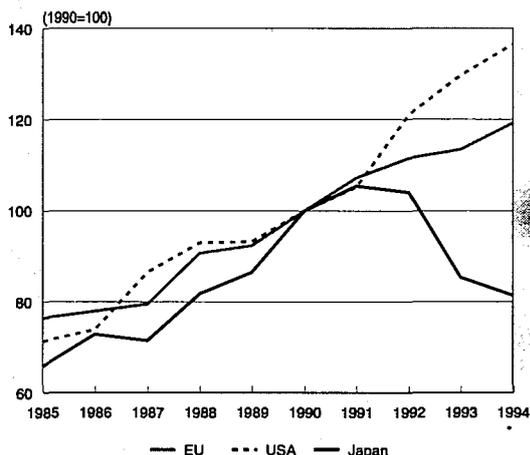
**Figure 4: Medical and surgical equipment, orthopaedic appliances  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 5: Medical and surgical equipment, orthopaedic appliances**  
**International comparison of production in constant prices**



Source: DEBA GEIE

significantly between 1986 and 1992. The trend was reversed in 1993 and the deficit fell. In 1994, as has already been mentioned, exports fell sharply. However, this was accompanied by an almost equally sharp fall in imports. The net result was a small increase in the EU's trade deficit in the sector. The ratio of exports to imports in 1994 was 0.94, compared to 0.96 the previous year.

The USA and the EFTA states were the main destinations for EU exports in 1994. Their combined share has declined from 45% in 1989 to 41% in 1994, although in fact the EFTA share has increased slightly while the USA share has fallen by 5.3%. The latter may be partly due to regulatory factors. The USA's Food & Drug Administration has played a greater role in the area of medical equipment since the 1990 Safe Medical Devices Act, and some analysts feel that this has discouraged non-American companies from selling in the USA (see later). Russia is emerging as an important destination for EU exports, taking almost 5% of 1994 exports.

The USA is overwhelmingly the largest source of imports into the EU (44% in 1994). The USA has a competitive advantage in this industry, given its large domestic market and the fact that it is the source of most new product developments in the sector. Switzerland and Japan are the next most important sources of imports. These three countries accounted for 76% of EU imports in 1994.

Figure 8 shows a relative balance between exports and imports, as percentages of production and consumption respectively, between 1985 and 1994. This balance held in 1994, with both exports and imports showing similar sharp declines.

The inclusion of Austria, Finland and Sweden reduces the total extra-EU export figure by 100 million ECU. EU-12 exports to these three countries therefore appear to be greater than the extra-EU exports of the three new Member States. The extra-EU imports figure remains almost the same, so the net effect is a widening of the EU's trade deficit in the sector (based on these provisional figures).

## MARKET FORCES

### Demand

EU demand for medical and surgical equipment and orthopaedic appliances has increased strongly since 1985. One reason is demographic trends. The EU is experiencing a general ageing of its population, and at the same time the average

lifespan of an EU citizen is lengthening. Improved healthcare means people live longer, and therefore need more healthcare - in effect, successful healthcare creates demand for further healthcare. These demographic factors will continue to be important in driving sectoral demand.

A second factor is the gradual increase in income levels in the EU. As people become richer, they spend more of their money on healthcare. This combines with a third factor, the increased, and still growing, awareness about health matters. Common manifestations of this increased awareness include the increased number of television programmes and publications about health matters, as well as a growing awareness of dietary-related matters.

A fourth factor driving demand is technological innovation. This sector is highly research-intensive and R&D expenditures have induced a range of technological innovations. For example, technological advances have allowed for video diagnostic methodologies, including improvements in data transmission and picture storage. Another area is minimally invasive surgery, perhaps the fastest growing product area in the sector. Equipment for this surgery includes endoscopes (which allow the viewing of organs using narrow, lighted tubes), laparoscopy (systems relying on puncturing, not incision) and products such as light sources and imaging devices. Advances in the accuracy of corneal-measurement methods have spawned an array of surgical techniques for the correction of eyesight. Improvements in data processing systems have transformed many applications including anaesthetic processes where data-based technology operates in areas which had been the exclusive domain of unaided observation. Improvements in materials technology have benefited prosthetic and orthopaedic devices. These are just some of the areas where technological innovation has created the possibility of new treatments, which in turn drives demand for medical and surgical equipment.

Medical instrumentation has become more disposable and consumer-friendly in recent years which supports greater medical self-administration and out-patient therapy. This can facilitate a more efficient allocation of resources but may also allow hospitals to save money on medical and surgical equipment. It is not clear if the trend has benefited or dampened demand. It appears that while past demand was almost exclusively from hospitals and traditional care-givers, it now stems to a greater extent from the private consumer. This trend is expected to continue.

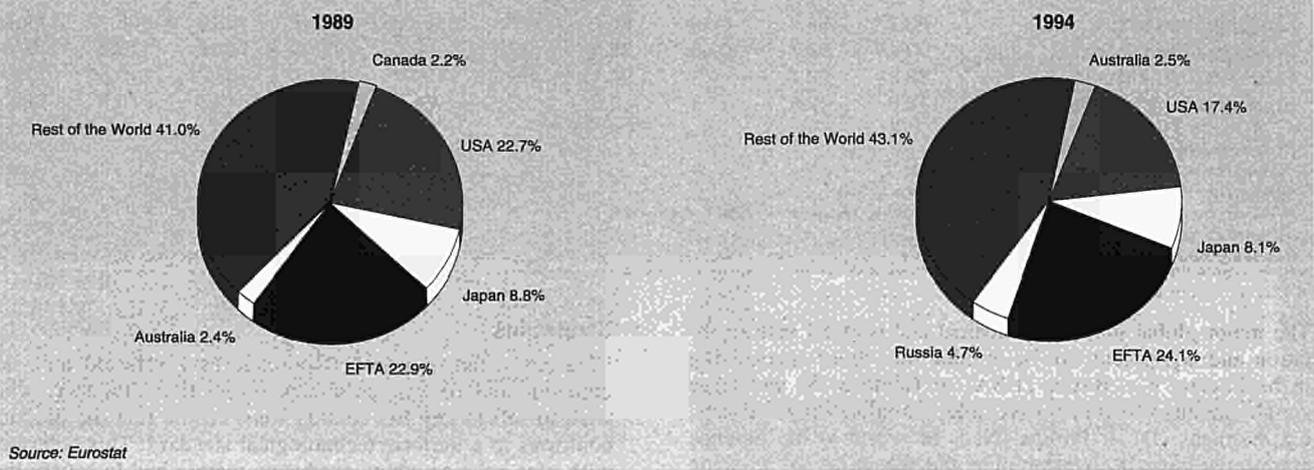
### Supply and competition

The USA is the leading global producer of medical equipment, as already outlined. It accounted for 44% of EU imports in 1994, but only 17% of EU exports. USA companies have an advantage in this sector, due to their homebase being the largest and most developed healthcare market and their R&D investments. A 1995 report by the US Commerce Department forecast that the USA's trade surplus in medical equipment would double between 1995 and 2000.

Some analysts feel however that one reason EU companies do not sell more products in the USA is the difficult regulatory environment which exists there. In recent years, legislation has required manufacturers of certain medical devices to establish tracking systems to contact patients in the event of product recall, to maintain and regularly publish safety and effectiveness data, and to perform post-market surveillance protocols for implants. These and other regulations have tended to work in favour of US domestic producers - which may already possess competitive advantages. Other factors in the EU/USA trade imbalance include the weakness of the American dollar, particularly towards the deutschmark, and the implementation of the Canada/USA/Mexico NAFTA trade accord.

Japan is the second largest manufacturer country in this sector with approximately 17% of Triad output. Japanese companies

**Figure 6: Medical and surgical equipment, orthopaedic appliances  
Destination of EU exports**



have captured a relatively small slice of the EU market with 14% of EU imports in 1994. Japanese companies are strong in particular product areas, e.g. Olympus overwhelmingly dominates the world market for flexible endoscopic instruments.

Other sources of competition include less industrialised countries such as Indonesia, Malaysia, Pakistan and Pacific Rim countries. It seems likely that a portion of EU companies' lower price segment sales will be captured by these markets over time.

**Production process**

Historically, this sector was characterised by relatively unsophisticated production processes, e.g. the orthopaedic area did not involve electronic functionality at all. Today, the technological complexity of this sector requires advanced production techniques and processes. One effect has been a trend towards outsourcing, with subcontractors specialising in particular product areas. This is likely to continue with the ongoing adoption of electronic communication links between companies. There are also ongoing advances in the materials used, e.g. a stronger and more workable titanium alloy was developed in 1995.

An important issue is whether companies spend enough time on their production processes. A 1995 Harvard Business Review article argued that in high technology industries, including medical equipment, companies underrate the importance of process innovation. The authors (Pisano and Wheelwright) argued that it is vital for manufacturers to excel at the simultaneous development of new products and new processes, rather than undertaking these functions sequentially.

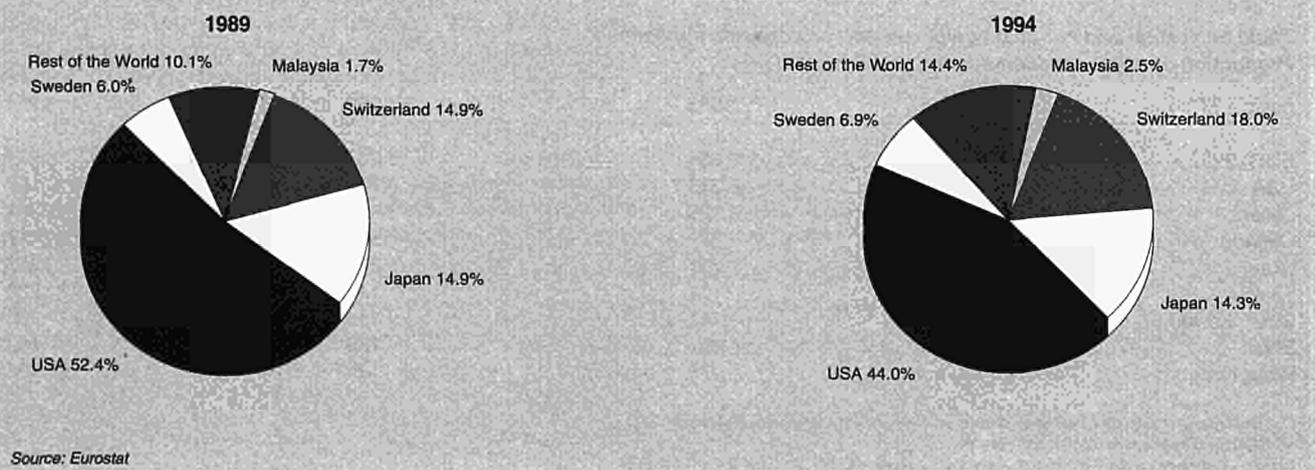
EU labour productivity has improved markedly since 1985 (this is in the context of employment growth also) and labour and non-labour costs have risen in line with productivity. Indeed, costs rose much faster than productivity in 1991 and 1992, before this was corrected in 1993 and 1994.

**INDUSTRY STRUCTURE**

**Companies**

As mentioned, the sector consists of many subcontractors and relatively few large organisations. The subcontractors often specialise in niches of activity and can be quite removed from the final manufacturer. Indeed, some subcontractors sell to multiple manufacturers, including non-EU manufacturers.

**Figure 7: Medical and surgical equipment, orthopaedic appliances  
Origin of EU imports**



**Table 5: Medical and surgical equipment, orthopaedic appliances  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	83.7	84.7	86.8	96.2	95.3	100.0	102.2	103.8	108.1	111.5
Unit labour costs index (3)	93.1	97.7	100.5	95.8	99.3	100.0	105.5	111.6	110.6	110.1
Total unit costs index (4)	88.3	92.7	96.1	94.1	98.9	100.0	105.8	109.7	110.6	110.6
Gross operating rate (%) (5)	13.6	12.4	11.5	14.8	12.9	14.2	14.0	12.8	13.9	14.6

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

The major global players in medical and surgical instrumentation and equipment can be divided into those specialising in healthcare, e.g. Baxter (USA) or Gambro (S) and large conglomerates which also have other manufacturing interests, e.g. Siemens (D) or Philips (NL). In recent years, defence companies have been examining the feasibility of leveraging off their skills in manufacturing defence systems to allow for a move into this sector.

There are also identifiable leaders in particular product applications. Important EU manufacturers of fixed endoscopic devices include Karl Storz (D) and Richard Wolf (D), each with about 35% of the world market. Draeger Werke (D), l'Air Liquide (F), Ohmeda (UK) and British Oxygen (UK) are all major producers of anaesthetic apparatus and equipment. About half of the world's output of small medical instrumentation is produced by small German companies, most having under 100 employees. Aesculab (D) is one of the few large companies in this area. In orthopaedic appliances, important EU companies include Smith and Nephew (UK), Dow Corning (F), Otto Bock (D), Waldemar Link (D) and the Gebr. Martin (D).

Of the three new Member States, Sweden has the most developed medical equipment manufacturing sector. Important Swedish manufacturers include Gambro (renal care), Arjo (hygiene systems and patient handling products), Getinge (sterilisation and disinfection systems) and Moelnlycke (disposables).

The USA has some of the largest and most important companies in the sector. Baxter, for example, is the world's largest producer of health care products, producing in virtually all areas of medical equipment. Other important American producers are 3M, Becton Dickinson, Bristol Myers Squibb, GE, Johnson and Johnson and Pfizer. Important Japanese companies include Olympus and Toshiba.

## Strategies

Changes in the regulatory landscape have affected both indigenous and foreign producers in the EU. Producers who wish to sell to any EU country must ensure that the product conforms to a uniform technological standard. This contrasts with past practice where producers merely had to satisfy the purchaser-country's standards. The harmonised EU standard particularly benefits major foreign producers as they no longer have to deal with several (potentially conflicting) regulatory standards.

USA companies are likely to maintain technological and size advantages in the medium term. They, with Japanese companies, will present vigorous competition for EU producers. For high end products, EU producers are likely to continue upgrading and modernisation plant capability and processes. Focused R&D investment will be central to EU companies' efforts to achieve technological parity with the USA at the top end of the market, as will product differentiation and constant improvements in marketing and distribution. For low end product segments, asset migration to developing countries such as Malaysia and Thailand is a real option, either fully or via joint ventures. The latter is already occurring with companies in South East Asia and China. A further option is a coordinated EU governmental R&D policy, as has been implemented in Japan.

Smaller niche producers in the EU, without significant financial resources, are likely to continue their strategy of product specialisation.

## REGIONAL DISTRIBUTION

The specific regions involved with the production of medical and surgical equipment tend to be those which are well developed in terms of the engineering industry in general, e.g.

**Table 6: Medical and surgical equipment and orthopaedic appliances  
Production of major producers in the World market (1)**

(million ECU)	1985	1990	1993
EUR12 (2)	3 881	5 204	6 217
USA	8 285	6 787	9 189
Japan	3 125	3 878	5 362
Canada	271	315	417
Israel	311	216	333
Taiwan	97	149	220
South Korea	62	134	208
Brazil	307	165	192
Hong Kong	78	85	106

(1) The contents of this table have been strongly influenced by exchange rate fluctuations.

(2) Excluding Greece, Luxembourg and Portugal.

Source: Elsevier Advanced Technology, Oxford, UK - Yearbook of World Electronics Data 1995

**Table 7: Medical and surgical equipment, orthopaedic appliances  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.19	N/A
Danmark	1.72	1.28
Deutschland	1.67	1.53
Ellada	N/A	N/A
España	0.18	0.17
France	0.72	1.05
Ireland	N/A	N/A
Italia	0.82	0.60
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	0.28	0.23
United Kingdom	0.87	0.81

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

the UK Midlands, and the so-called 'banana' of regions from the South East of England, via the Paris region and Eastern France, down through Germany and into Northern Italy. An interesting factor is that the rapid technological changes in the industry mean that closeness to R&D centres and universities is becoming more important. An example of this would be the Lund area in southern Sweden, which has very good science-based universities and several medical equipment companies (e.g. Gambro). Another factor is the attempts by some regions (e.g. in Scotland and Ireland) to attract the manufacturing functions of multinational medical equipment companies, either of EU or non-EU origin.

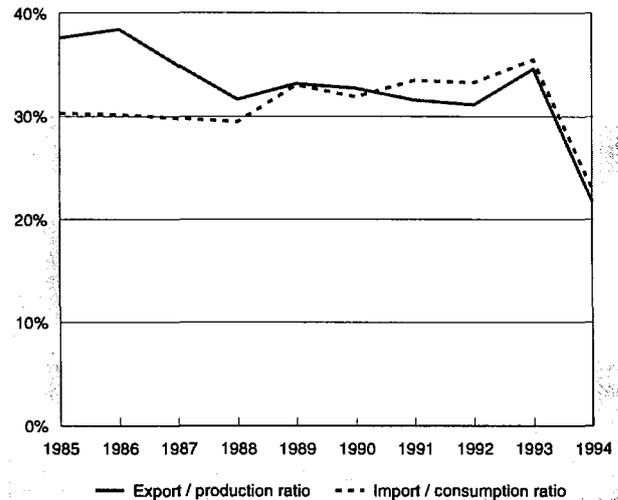
## ENVIRONMENT

While awareness of environmental issues has increased in the industry, the medical and surgical equipment sector is viewed as one with a low environmental impact, in terms of its effects on air, land and water, and is perceived as having a generally clean image. The NACE Revision 1 classification adds the electro-medical equipment product area, which may raise more issues, e.g. the disposal of chemicals used in X-Ray machines and the waste processing of equipment.

## REGULATIONS

In recent years, EU regulations have changed the competitive environment within the sector. At least three important EU directives have affected the movement of medical and surgical devices in the EU. The Active Implantable Medical Devices directive, effective since 1993, concerns the manufacture and sale of pacemakers and other implantables. The Medical Devices Directive became effective in 1995 and covers medical devices generally. The In Vitro Diagnostics Draft Directive concerns such areas as endoscopic technology, and is likely to take effect from 1998. An important aspect of this legislation is the requirement that any device sold in the EU must comply with a set of harmonised requirements, and bear a stamp of approval - the CE marking - to that effect, in order for it to enjoy free movement in EU Member States.

**Figure 8: Medical and surgical equipment, orthopaedic appliances  
Trade intensities**



Source: DEBA GEIE, Eurostat

## OUTLOOK

The medical and surgical equipment and orthopaedic appliances sector should experience strong medium and long term growth, due to the four factors driving demand which were described earlier. New markets, for example in China and the ASEAN/Pacific Rim regions, which have been only marginally exploited to date, will grow strongly as their economies and health services develop.

The issue for EU companies is whether they can exploit this strong market growth. USA companies are likely to remain world leaders, at least in the medium term, due to their accumulated competitive advantages, particularly in high end product areas. Challenging American companies for market share will need to be done in the context of the difficult regulatory environment in the United States itself, as well as the ongoing reforms likely in the provision of healthcare services in many industrialised countries. Success for EU companies will depend on their ability to achieve technological equivalence with American producers in high end areas and build efficiency in low end product areas, particularly in production processes.

Written by: Fitzpatrick Associates

The industry is represented at the EU level by: European Federation of Precision Mechanical and Optical Industries (EUROM). Address: C/- ASSOTTICA, Via Elba, 12, I-20144 Milano, Italy; tel: (39 2) 48 00 48 81; fax: (39 2) 48 00 50 61

# Measuring, precision and control instruments

## NACE (Revision 1) 33.20

After the decline in fortunes during 1992 and 1993, a return to the strong pattern of growth experienced in the late 1980s remains unlikely in the short term for firms manufacturing measuring, precision and control instrumentation. Conditions are expected to improve steadily in the medium term as increases in productivity throughout manufacturing carry over into higher demand for the products of the industry. In addition, new opportunities will emerge in the growing markets of the Pacific Rim/ASEAN region. However, to gain most from improved market conditions, EU producers must continue to keep production costs low, while allocating sufficient resources into new technology and product development to compete with their competitors from Japan and the USA.

### INDUSTRY PROFILE

#### Description of the sector

The new NACE (Revision 1) 33.20 industry classification covers the manufacture of instruments and appliances for measuring, checking, testing, navigation and other purposes, except industrial process control equipment. Included under the definition are the following:

- thermometers;
- electrical and electronic measuring and recording equipment;
- gas meters, water meters and other liquid supply meters including petrol pump meters;
- measuring, checking or automatic control instruments and apparatus;
- equipment for navigation, hydrology, geophysics and meteorology;
- drawing and mathematical calculating instruments;
- precision measuring instruments;
- precision balances, laboratory equipment and teaching equipment; and
- other precision equipment and apparatus.

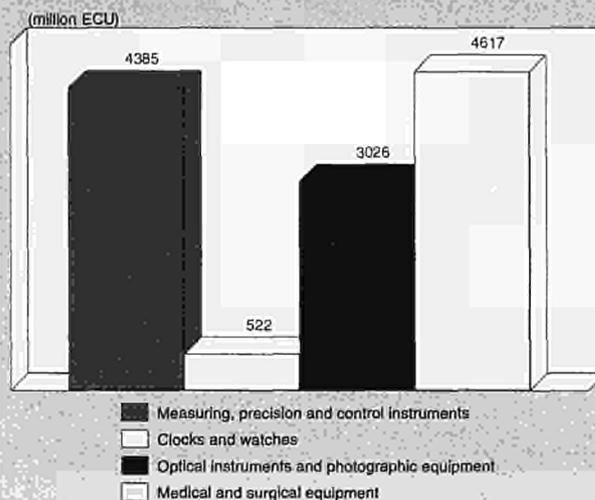
Except for the current inclusion of the manufacture of thermometers, and electrical and electronic measuring and recording equipment, the coverage of the subsector has not changed with the changeover from NACE (1970) to NACE (Revision 1).

The total value added within the EU from the sector amounted to almost 4.4 billion ECU in 1994. As shown in Figure 1, this is comparable in size to the EU fruit and vegetables industry. However, it is not evenly distributed among member states, with Germany and the UK together accounting for over three quarters in 1994. Production elsewhere in the EU is much less significant, with only Italy recording value added in excess of 300 million ECU. In terms of shares, Germany and Italy have both lost ground in recent years, mainly in favour of the UK.

#### Recent trends

As in other sectors, the period 1985 to 1994 was one of striking contrasts for EU producers in the sector. Firstly, in the years up to 1992, demand, as measured by apparent consumption, had average annual nominal growth of 5.4%. This

Figure 1: Measuring, precision and control instruments Value added in comparison with related industries, 1994

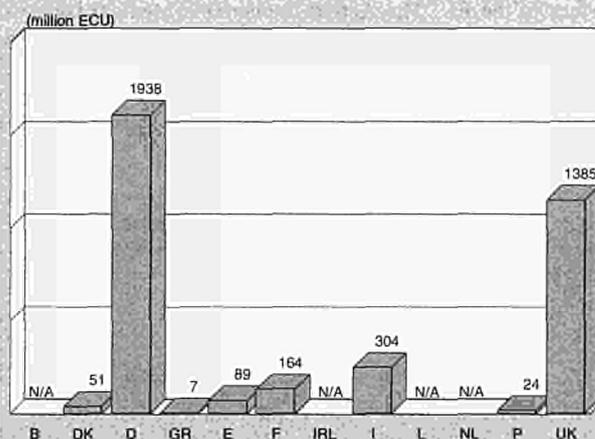


Source: DEBA GEIE

growth rate peaked in 1988/89, when EU apparent consumption was 15.2% higher than in the previous year. Over the same period, extra-EU exports also grew strongly, but didn't match the growth in extra-EU imports, so that by 1992 the EU trade surplus had declined to 463.8 million ECU, the lowest yearly surplus in the period. However, with growing exports coupled with buoyant demand conditions within the EU, production grew steadily, with average nominal growth amounting to 4.4% annually between 1985 and 1992.

After the sector's growth in the late 1980s and early 1990s, the EU-wide recession of the early 1990s did, however, take its toll on the industry. In 1993, apparent consumption fell by 11.2% in nominal terms, which resulted in a marked decline in import growth on the previous year. The slowdown in production was not as sharp as the drop in apparent consumption, thanks mainly to a concurrent jump of almost 14% in extra-EU exports. This growth in sales outside the EU had the effect of increasing the year on year trade surplus by a dramatic 77.5% in 1993.

Figure 2: Measuring, precision and control instruments Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Measuring, precision and control instruments**  
Main indicators in current prices (1)

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	6 245	8 484	8 769	8 990	7 985	8 040	8 153	9 863	10 270	10 680	11 130
Production	7 015	9 085	9 343	9 458	8 811	8 857	8 903	10 327	10 780	11 240	11 750
Extra-EU exports	1 673	2 836	2 994	1 970	3 453	3 647	3 730	3 347	3 600	3 850	4 120
Trade balance	769.2	601.0	573.9	468.2	826.1	817.0	749.5	464.0	510.0	560.0	620.0
Employment (thousands)	128.4	129.7	124.9	120.3	111.5	107.0	104.3	113.7	110.0	110.0	110.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Measuring, precision and control instruments**  
Average real annual growth rates (1)

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	3.15	-4.64	-0.39	-3.07
Production	2.12	-2.80	-0.10	-0.62
Extra-EU exports	10.79	5.63	8.47	9.41
Extra-EU imports	23.24	2.19	13.40	5.70

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Measuring, precision and control instruments**  
European production breakdown by sector, 1995 (1)

(million ECU)	Production	Market
Total Industrial and Process Control (2)	8 336	7 506
Instrumentation (3)	7 982	6 792
Analytical instruments	1 061	1 028
Machine and materials test instrument	1 191	827
Electrical quantity measuring instruments	462	375
Other test and measuring instruments	5 268	4 562
Accessories and parts	2 260	2 172
Total control and instrumentation	18 578	16 469

(1) EUR12, excluding Greece, Luxembourg and Portugal.

(2) For Ireland, the instrumentation production and market figures are included in control instruments.

(3) For Spain and Austria, control instruments' production and market are included in instrumentation.

Source: Yearbook of World Electronics Data Series, Elsevier Advanced Technology, Oxford UK

**Table 4: Measuring, precision and control instruments**  
External trade in current prices

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	1 673	1 568	1 516	2 536	2 747	2 836	2 994	1 970	3 453	3 647	3 730	3 347
Extra-EU imports	904	852	811	1 866	2 199	2 235	2 420	1 501	2 627	2 830	2 980	2 883
Trade balance	769	716	705	671	549	601	574	468	826	817	749	464
Ratio exports / imports	1.85	1.84	1.87	1.36	1.25	1.27	1.24	1.31	1.31	1.29	1.25	1.16
Terms of trade index	85.7	92.2	97.6	93.3	96.7	100.0	96.5	96.2	93.9	89.0	N/A	N/A

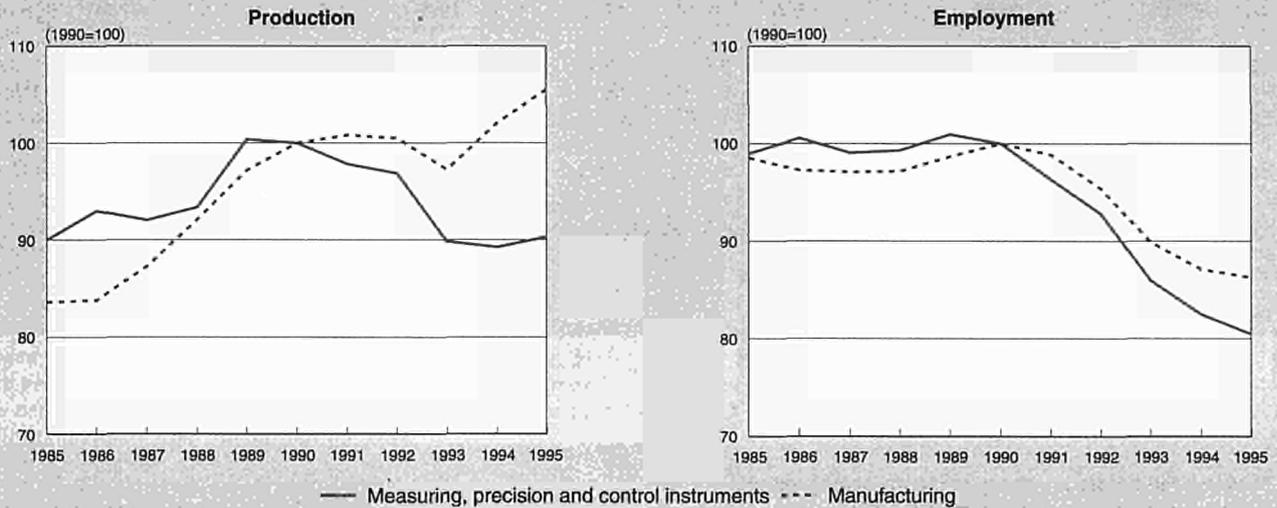
(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat



**Figure 3: Measuring, precision and control instruments**  
**Production and employment compared to EU total manufacturing industry**



1995 figures are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

The cyclical trend in the sector is also evident from Table 2. In real terms there was an annual average decline in consumption and production volume of 0.4% and 0.1% respectively, in the ten years to 1994. However in both cases the data show growth in the earlier years followed by decline more recently. Conversely, trade within the sector has grown throughout the period, although at a distinctly slower pace since 1990.

Under the recessionary conditions of 1994, apparent consumption fell in volume by 3.1%. However EU producers maintained impressive growth in their export propensity, whereby extra-EU exports grew in volume by an impressive 9.4% on 1993. This strong export performance again cushioned the effect of worsening consumer demand within the EU.

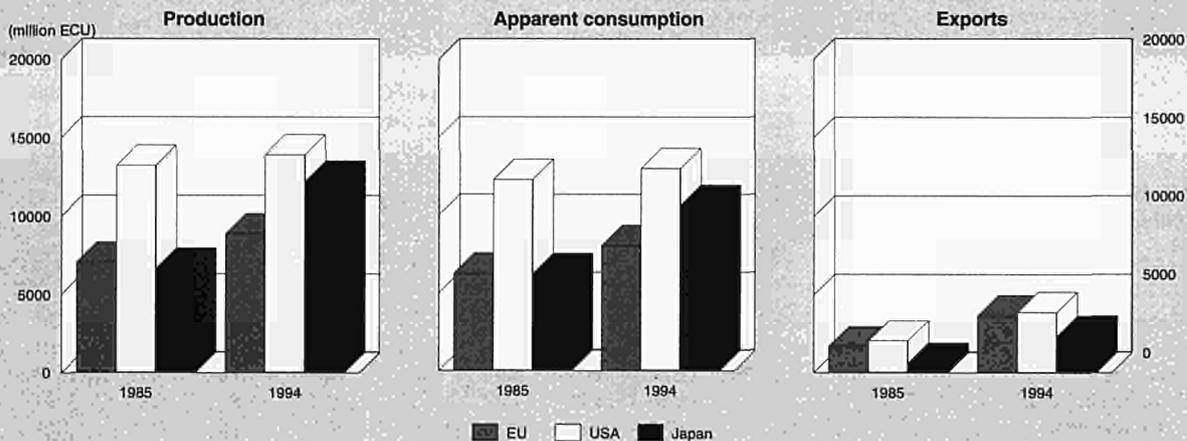
**International comparison**

In 1994, the USA continued to lead Triad production, apparent consumption and exports of measuring, precision and control instruments, although its dominant position had diminished

in all three cases over the previous decade. Measured at current prices, USA production totalling 13.9 billion ECU in 1994 was only 5.1% higher than in 1985. Meanwhile, growth in the EU of 26.3% to 8.9 billion ECU, combined with the 83% growth in Japan's output, has resulted in a drop in the USA share of Triad production from 49% in 1985 to under 40% ten years later. Although EU production also increased, its share also fell at the hands of the Japanese growth over the period. Similar trends have occurred in Triad apparent consumption and exports, with USA Triad shares falling by 8.5 and 9.2 percentage points respectively. In both cases the trends in the EU have allowed it to maintain market share, while Japan has experienced accelerated growth in comparison.

The trend in production volume has, however, differed from that described above. Figure 5 shows that the USA has experienced steady growth over the ten years. Indeed, measured in volume terms, production in the USA grew faster than in the EU or Japan in the ten years to 1994, although the Japanese trend peaked somewhat earlier.

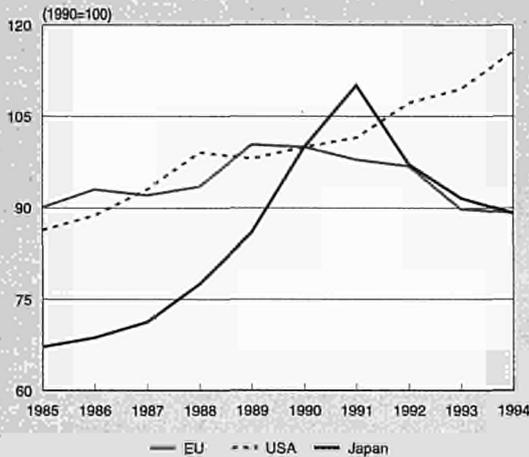
**Figure 4: Measuring, precision and control instruments**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 5: Measuring, precision and control instruments**  
International comparison of production in constant prices



Source: DEBA GEIE

### Foreign trade

The level of international trade in measuring, precision and control instruments grew significantly between 1985 and 1994. While slight downward trends were evident in both extra-EU imports and exports up to 1988, in the period 1989 to 1994, the nominal value of total EU trade increased, on average, by 6.5% annually. The overall growth was the result of comparable increases in both imports and exports, the former increasing, on average, by 7.3% annually, and the latter by 6.3%. While the current value of the trade surplus has fluctuated year on year, the sector is one in which the EU remains a net exporter. The degree to which growth in extra-EU trade has exceeded that in production and apparent consumption is reflected in the upward trend in trade intensities. As can be seen in Figure 8, with the exception of 1992, there has been steady growth in both the export/production and import/consumption ratios since the late 1980s.

In destination markets beyond the EU, the USA as well as the EFTA countries have seen their combined share of extra-EU exports fall from 74% to 44% in the five years to 1994. While South Korea, Turkey, and Japan are also important

single markets for EU exports, the real growth has been balanced throughout the rest of the world, whose share of total extra-EU exports increased from 12% in 1989 to 46% by 1994 (see Figure 6). Within the EU market however, the USA remains the dominant competitor faced by EU producers. Its share of total extra-EU imports has remained at a steady 40% during the early 1990s. Price competitiveness with EU producers, ameliorated by the depreciation of the USD relative to EU currencies during the early part of the decade, remains an important factor behind the high import penetration of USA manufacturers. The other major source countries of extra-EU imports in 1994 were Switzerland (15%), Japan (13%), Austria (7%) and Sweden (4%).

## MARKET FORCES

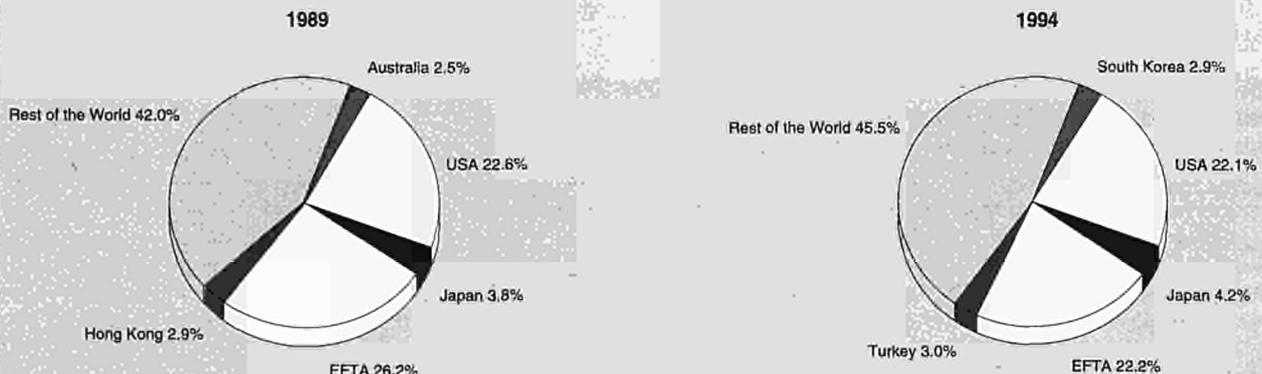
### Demand

The products manufactured in the sector are used in a wide range of industry and manufacturing, as well as service activity. For certain ranges of products, final consumption is also an important driver of demand. As such, the economic climate within the industry is in large part dependent on the general health of the economy. However, within the sector there is considerable heterogeneity among products, and as a result, the industrial sectors upon whose health the industry depends differ widely for different types of producers. For firms manufacturing measuring, checking and controlling instruments, for example, the fortunes of sectors engaged in productive processes involving meticulous monitoring and control are of significant consequence. The trends in industries manufacturing machinery, vehicles, chemicals and food and drink are important in that regard. On the other hand, the shipbuilding and aircraft manufacturing sectors constitute important sources of business for firms producing instruments for navigation, hydrology, geophysics and meteorology.

Similarly, demand within different subsectors within the industry as a whole can be dependent on varied forces. For example, a high proportion of demand for weighing instruments comes from wholesale, retail and consumer markets. As such, trends in final household consumption are important. However, measurement instrumentation intended for use as part of large scale productive processes are to a higher degree subject to changing trends in capital investment.

Technological development has become an increasingly important driver of demand for the sector's products. Of particular relevance in recent years has been the development of products

**Figure 6: Measuring, precision and control instruments**  
Destination of EU exports



Source: Eurostat

**Figure 7: Measuring, precision and control instruments**  
**Origin of EU imports**



Source: Eurostat

amenable to integration into large scale data processing systems, allowing greater scope for alteration and adaptability to particular procedures.

### Supply and competition

Between 1985 and 1994 the volume of production of measuring, precision and control instruments in the EU declined by 0.7%. Over the same period, output in the USA and Japan grew 34% and 32% respectively. However, both the EU and Japan managed to increase significantly the current value of exports while the growth in the USA was much more modest. Within the EU market, the rate of extra-EU import penetration increased from 25.7% to 32.7% between 1988 and 1994, which is an indication of the growing competitiveness of non-EU manufacturers in the period. On the import side, the USA continues to pose the biggest competitive threat, accounting for a steady 42% of total. While the general depreciation of the USD relative to the EU currencies has contributed to this, the evidence is of a continued technological competitive advantage held by many USA manufacturers over their EU counterparts.

While Japanese suppliers have a smaller foot in the EU market, they are expected to become increasingly competitive, particularly within subsectoral niches. Between 1985 and 1994, Japanese production increased at more than three times the rate of EU production, while their exports increased at twice the rate, aided by a depreciation of the Yen. With a stronger R&D focus as well as the competitive advantages of economies of scale, Japanese producers can undermine the prices at which EU firms are operating within specialist market sectors such as weighing equipment. Furthermore, a growing trend of Japa-

nese direct investment in the EU is likely to further enhance their growing competitiveness. A smaller, yet growing threat now also comes from imports from east Asian producers, particularly in South Korea and Singapore. Enjoying lower cost production, most notably lower labour costs, producers are attracting a growing EU market share, particularly at the low technology end of the market.

### Production process

In recent years the industry has seen significant changes in the manner by which production is organised. Technological developments, most notably the gradual movement from mechanical systems to the new and important role of electronic components in new products, has forced changes in manufacturers' relationships with upstream industries. Without the necessary knowledge and capability themselves, a growing emphasis has been put on subcontracting as the most cost effective way for producers to remain abreast of the growing technology-based competition. This growing trend in outsourcing activity has also been in part responsible for the upward trend in trade intensities within the sector and, as with all newly developed machine tools, the share of information technology and software in the value added of the products of the industry is constantly increasing.

Within firms, recent growth in labour costs has been higher than those of other production costs. As a result of this, as well as the effects of automation and modernisation, total employment has fallen from 128 000 in 1985 to 107 000 in 1994, with subsequent increases in the levels of labour productivity.

**Table 5: Measuring, precision and control instruments**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	90.9	92.5	92.9	94.1	99.4	100.0	101.6	104.4	104.4	108.2
Unit labour costs index (3)	83.2	86.7	89.9	93.0	94.0	100.0	105.5	108.8	112.6	113.0
Total unit costs index (4)	84.4	86.0	87.2	90.7	96.7	100.0	104.7	107.3	108.9	109.6
Gross operating rate (%) (5)	13.0	11.7	11.9	12.4	11.0	10.8	11.2	10.8	10.1	10.6

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Table 6: Measuring, precision and control instruments  
Production of major producers in the World market (1)**

(million ECU)	1985	1990	1993
EUR12 (2)	13 205	17 832	17 488
USA	27 259	20 177	23 509
Japan	4 907	5 372	6 916
Canada	697	711	794
Brazil	786	471	555
Singapore	131	154	264
Australia	189	206	209
S Korea	139	155	198
Israel	68	98	196

(1) The contents of this table have been strongly influenced by exchange rate fluctuations.

(2) Excluding Greece, Luxembourg and Portugal.

Source: Elsevier Advanced Technology, Oxford, UK - Yearbook of World Electronics Data 1995

## INDUSTRY STRUCTURE

### Companies

The subsector is generally characterised by a large number of small and medium-sized enterprises which specialise in the production of a small number of specific products. Also active are a small number of large companies, producing a wider range of precision, measuring and control products as well as other instrument and non-instrument engineering products such as consumer electronics and computer equipment.

However, within different subsectors, structural characteristics tend to depend on the product line. Firms in the weighing equipment industry, for example, range in size from those employing less than 50 to a few large entities employing thousands. Among those in the latter category, GEC Avery (UK) and Sartorius (D) are particularly noteworthy. Within the counting instruments industry, as well as the checking and controlling sector, firms tend to be medium to large-sized manufacturers. The main EU producers in this sector include Zeiss (D), Renault Automation (F) and Dea (I). In contrast, there tends to be more small to medium-sized firms in measurement and automation technology. Among the few larger firms with employees exceeding 1 000, are Hottinger Baldwin (D), Hartmann & Braun (D), which was recently purchased by Eltag Bailey Process Automation, Krohne (D), Endress & Hauser (D), and Foxboro (UK), recently taken over by Siebe (UK). Within the automation technology sector, production tends to be concentrated in large multinationals. Chief among these are Siemens (D), ABB (D) and Philips (NL).

### Strategies

The competitive pressures under which EU producers are increasingly finding themselves are two fold. In the fields of

highly sophisticated products with a high technological input, the pace of innovation set largely by producers in Japan, but also the USA and EFTA countries will continue to drive demand. At the other end of the technology spectrum, the low production cost advantage of imported goods from east Asia can be expected to intensify the price competition already evident in this sector. Measures to offset such cost advantages are taking the form of increased investment in automation and modernisation, and firms will continue to try to shift the burden of uncompetitively high cost labour.

In the high-tech end of the market, firms have found themselves at a disadvantage in terms of the investment levels required to successfully compete with the new products being offered by their counterparts in the USA and Japan. Without the benefits of the economies of large scale production enjoyed by their generally much larger foreign competitors, EU firms have looked to expansion, both within and beyond the EU, as a means of addressing the imbalance. Recent expansionary activity of note has included the GEC Avery (UK) take over of Berkel, the acquisition by Testut (F) of Trayvou (F) and Lutrana (F), Siebe's (UK) take over of Foxboro, and more recently its acquisition of Form Rite (USA), as well as its 49% stake in the air compressor operations of the Mahle Group (D), and the majority stake taken in Microm by Zeiss (D).

## REGIONAL DISTRIBUTION

Within the EU, as has been shown, production of measuring, precision and control instruments is highly concentrated in Germany and the UK, with Italy a much less significant contributor. In the UK, the highly industrialised central and midlands region of England continues to dominate, although Scotland is becoming an attractive base for investment in new manufacturing activity. In Germany the majority of firms operate in the West and South, which, combined with firms in nearby Switzerland, another important producing nation, constitutes a significant cross border industrial concentration.

## ENVIRONMENT

Within all manufacturing, the production of measuring, precision and control instruments is not regarded as especially environmentally damaging. In fact, rising environmental concerns are increasingly having a positive effect on the industry, with the growth in demand from other manufacturing sectors for measuring and controlling equipment for gas, vapour, dust and other noxious substances in air and water. Similarly, there are increasing needs for equipment and instruments to gauge the harmful effects of environmental deterioration on plants, animals and soil.

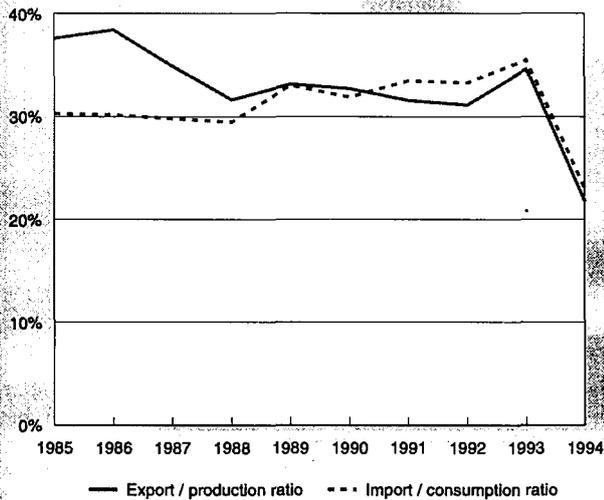
**Table 7: Measuring, precision and control instruments  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.58	N/A
Danmark	0.58	0.60
Deutschland	1.40	1.35
Ellada	0.09	0.31
España	0.30	0.31
France	0.38	0.27
Ireland	N/A	N/A
Italia	0.67	0.65
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	N/A	0.44
United Kingdom	1.85	2.11

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

**Figure 8: Measuring, precision and control instruments  
Trade Intensities**



Source: DEBA GEIE, Eurostat

## REGULATIONS

The recent technical standardisation of machinery within the EU is expected to continue to ease trade between EU member states, although extra-EU imports may also increase as a result. Meanwhile non-tariff trade barriers, such as divergences in national meteorological regulations, will continue to be the subject of removal by EU Directive.

To protect against the dumping of low-cost electronic weighing machines, EU anti-dumping duties have been introduced against imports from Japan, while similar measures regarding equipment manufactured in South Korea and Singapore are under consideration.

## OUTLOOK

After the declining fortunes experienced in the industry during the recessionary years of 1992 and 1993, the recent signs are a little more promising. With apparent consumption steady in 1994, and expected to fall only slightly in 1995, there are grounds for optimism that there will be a return to steadily increasing demand in the years to come.

The short term challenges facing EU producers remain the ability to retain market share within the EU, as well as to consolidate the strong export performance achieved during the downturn at home. In the medium term, both intra-EU and extra-EU competitive pressures are unlikely to ease, and the retention of EU market share will depend on efficiency in the production process, as well as continued investment and technological innovation. Newly developing economies in the Pacific Rim/ASEAN region will offer new opportunities to producers world-wide, but EU firms will face strong competition in new markets, and efficiency and scale in production are likely to be preconditional to success.

Written by: Fitzpatrick Associates

The industry is represented at the EU level by: European Committee of Weighing Instrument Manufacturers (CECIP). Address: CEDEX 72, F-92038 Paris la Défense, France; tel: (33 1) 47 17 63 76; fax: (33 1) 47 17 63 77; and

European Federation of Precision Mechanical and Optical Industries (EUROM). Address: C/- ASSOTTICA, Via Elba, 12, I-20144 Milano, Italy; ph: (39 2) 48 00 48 81; fax: (39 2) 48 00 50 61

# Optical instruments and photographic equipment

## NACE (Revision 1) 33.40

While this sector enjoyed general growth from 1985 to 1992, that growth stumbled in 1993 as both apparent consumption and production fell. This decline was halted in 1994, which was a year of consolidation. The trade balance has improved each year since 1991, and showed a further slight improvement in 1994, due to a sharp increase in extra-EU exports. This strong export performance prevented a decline in production in 1994. It also reflected the growing globalisation of the sector.

The performance of this sector in 1993 and 1994, has been influenced by the recessionary environment, which has affected production and consumption. These indicators can be expected to recover in the medium term. However, the sector may not return to the strong growth exhibited in the past, as it is now in a mature phase of development. Strong productivity growth will limit the scope for increasing employment, as will the trend to move some production functions to developing countries.

### INDUSTRY PROFILE

#### Description of the sector

This product areas in this sector can be divided into three general groupings:

- spectacles, lenses, frames and mountings and equipment for use by opticians;
- optical precision instruments (other than optician items);
- photographic and cinematography equipment.

In the new Nace Revision 1 classification, these three groupings are classified as number 33.40. Their old (NACE 70) classification number was 373. There has been one change in this sector's definition in this transition. One part of photographic and cinematography equipment (the third grouping) has been removed, namely the manufacture of photocopy apparatus. This is now classified as 30.01.

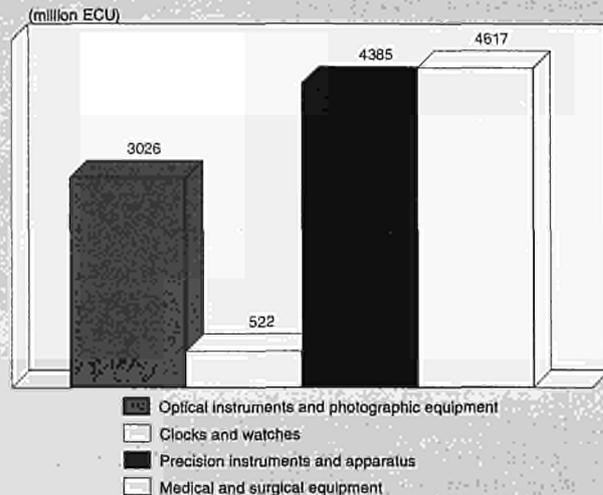
Figure 1 shows that this sector had a 1994 added value of 3 026 million ECU. This means it is comparable in size to the manufacture of textile machinery sector and the sugar manufacturing sector, and somewhat behind the footwear sector.

In terms of value added per country, Germany was the clear leader of the EU-12 in 1994, with 35.7% of total value added, followed by France (21.7%), Italy (17.2%), and the United Kingdom (13.2%) - meaning that almost 88% of the value added in this sector is generated in these four countries. Figure 2 depicts value added for the EU-12 in 1994.

Across these four Member States, the sector is marked by product specialisation, with German manufacturers making more technical optical, precision and photo instruments, while French and Italian producers concentrate on ocular optics, primarily spectacle frames.

Table 1 contains estimates for EU-12 and EU-15 consumption for 1995. It should be emphasised that these data are only estimates. They indicate that Austria, Finland and Sweden added 18.6% to EU apparent consumption and 16% to EU production in that year. This is a strong boost for this sector, relative to the size of the three new member states.

Figure 1: Optical instruments and photographic equipment Value added in comparison with related industries, 1994



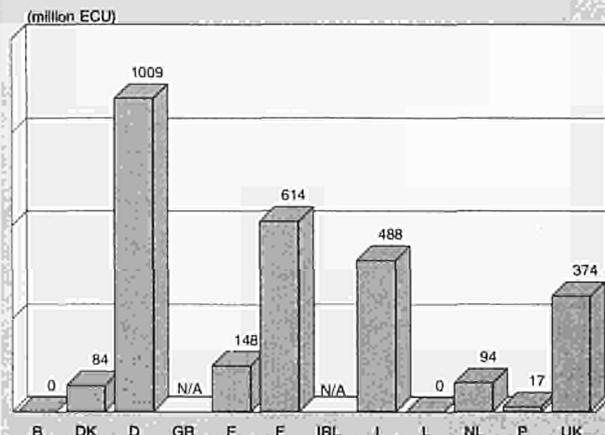
Source: DEBA GEIE

### Recent trends

The performance of this sector between 1985 and 1994 divides into a pre-1991 phase and a post-1991 phase. Table 1 shows that between 1985 and 1991, the sector was marked by strong growth in apparent consumption (9.8% per annum) and production (7.8%). Growth in production was helped by a slow but steady increase in extra-EU exports of 2.2% per year over the period. The data for 1992 showed a slowdown in this growth phase and 1993 brought a sharp decline in apparent consumption and a small decline in production, despite a strong increase in extra-EU exports in 1993. The 1994 figures show that the decline of 1993 has stopped. Apparent consumption rose by 0.6% and production rose by 1.8% in 1994.

Table 1 also shows that this sector experienced a surge in extra-EU exports in 1994 (up by 49.4%). This strong increase in extra-EU exports prevented a continuation of the decline in production experienced in 1993.

Figure 2: Optical instruments and photographic equipment Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Optical instruments and photographic equipment  
Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	4 774	7 432	8 381	8 401	7 633	7 678	8 054	9 509	9 890	10 170	10 460
Production	4 156	5 966	6 522	6 838	6 547	6 668	6 931	8 041	8 600	9 200	9 870
Extra-EU exports	2 610	2 896	2 975	3 061	3 465	5 177	4 253	4 232	4 560	4 880	5 220
Trade balance	-618	-1466	-1859	-1563	-1086	-1010	-1123	-1469	-1290	-970	-590
Employment (thousands)	77.2	83.2	83.7	81.5	76.3	74.2	73.8	80.4	80.0	80.0	80.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Optical instruments and photographic equipment  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	6.26	-6.59	0.35	-12.49
Production	4.20	0.67	2.62	1.30
Extra-EU exports	3.04	16.16	8.68	52.58
Extra-EU imports	6.92	2.44	4.90	24.02

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Optical instruments and photographic equipment  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	2 610	2 508	2 406	2 548	2 989	2 896	2 975	3 061	3 465	5 177	4 253	4 232
Extra-EU imports	3 228	3 249	3 373	3 715	4 299	4 362	4 834	4 624	4 551	6 187	5 376	5 701
Trade balance	-618	-741	-967	-1 167	-1 310	-1 466	-1 859	-1 563	-1 086	-1 010	-1 123	-1 468
Ratio exports / imports	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.7	0.8	0.8	0.8	0.7
Terms of trade index	101.3	101.4	102.0	97.3	91.6	100.0	96.4	91.8	85.4	76.2	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Optical instruments and photographic equipment  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	87.8	87.7	93.5	98.5	99.3	100.0	104.2	109.0	110.6	115.3
Unit labour costs index (3)	89.1	94.1	93.9	92.7	96.8	100.0	103.3	104.3	105.5	103.7
Total unit costs index (4)	84.9	89.1	89.2	91.4	97.8	100.0	102.3	105.7	106.2	106.1
Gross operating rate (%) (5)	11.5	9.8	11.5	12.3	9.4	9.7	11.8	11.0	10.9	11.5

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

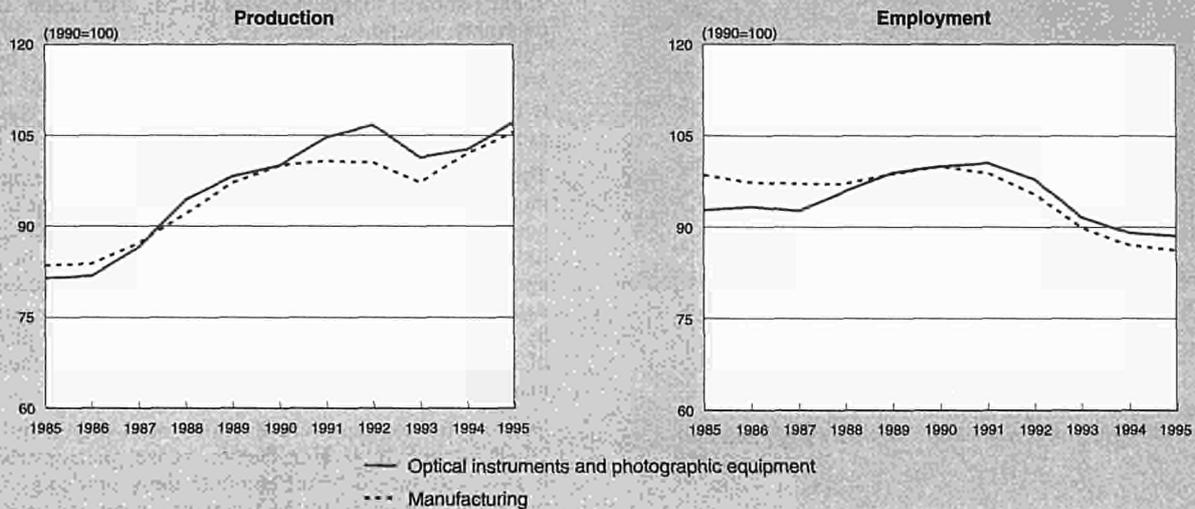
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Optical instruments and photographic equipment  
Production and employment compared to EU total manufacturing industry**



(1) Eurostat estimates.  
Source: DEBA GEIE, Eurostat

The employment data in Table 1 indicate that 74,200 people were employed in this sector in 1994. This represents a decline of 11.4% since the peak in 1991. This decline has been caused by the slowdown in the sector's production output, by increases in productivity, and by the relocation of certain production functions in developing countries (see later).

Figure 3 shows that production and employment in this sector have fared slightly better since 1990 than EU manufacturing as a whole. The data indicate that the trend is for small increases in production combined with decreases in employment. It can be seen that before 1990, the sector grew much more quickly than manufacturing as a whole.

#### International comparison

Figure 4 shows that the USA was the leading producer and consumer of optical instruments and photographic equipment in the Triad in 1994. It accounted for 44% of Triad production and 66.6% of consumption, compared to 22.1% and 29.9% (EU) and 33.9% and 3.6% (JPN).

Figure 4 also shows that the US share of production has declined since 1985, when it produced 55% of total Triad output. Interestingly, its share of consumption has remained at approximately the same level during this period.

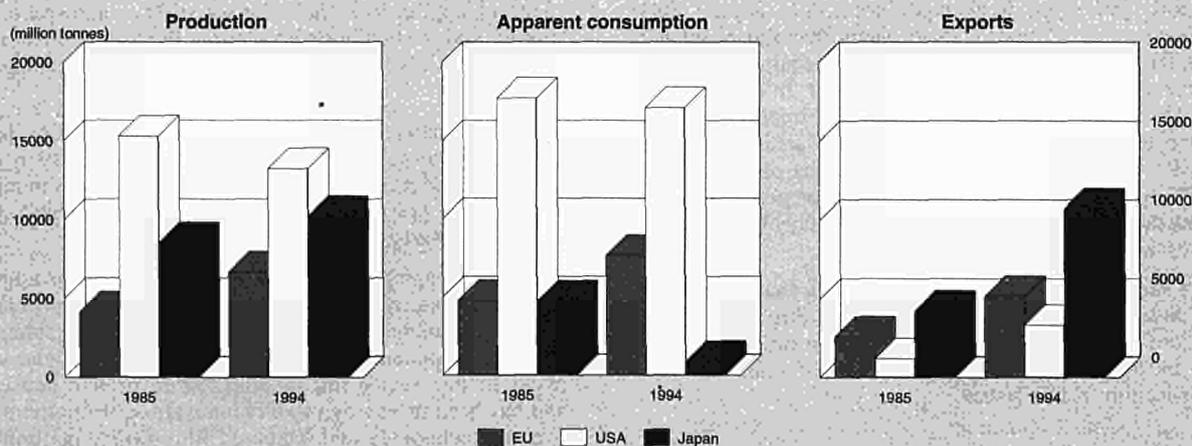
The largest change in this period occurred in the consumption shares. While the US share remained at around two thirds of total Triad consumption, the EU share rose from 17.5% to 29.9% and the Japanese share declined from 17.5% to 3.6%.

Figure 5 shows that while the US share of Triad production has fallen since 1985, all of this fall took place in the late 1980s. Indeed, the US has actually seen its share of production increase since 1992, while the level of European production has remained constant and Japanese production levels has fallen sharply.

#### Foreign trade

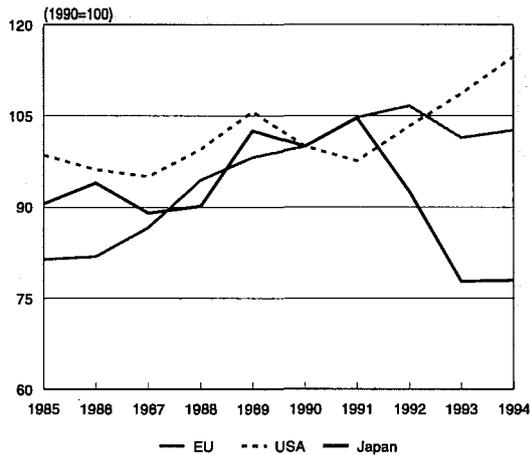
Table 2 shows that both exports from, and imports into, the EU have increased steadily since 1985. Exports have increased

**Figure 4: Optical instruments and photographic equipment  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Optical instruments and photographic equipment  
International comparison of production in constant prices**



Source: DEBA GEIE

by an average of 8.7% per annum, but the rate of increase has become stronger since 1992. From 1993 to 1994, the value of extra-EU exports rose by 49.4%. This very large increase has been crucial in maintaining EU production levels since 1992.

Table 2 shows that extra-EU imports have increased by an average of 4.9% per annum since 1985. The highest increase was again seen from 1993 to 1994, when imports increased by 35.9%. The strong increases in both exports and imports in 1994 indicate a rapid increase in the level of globalisation in this sector. Table 3 shows that the EU has managed to increase its ratio of exports to imports from 0.6 to 0.8 since 1991, and take advantage of the globalisation trend to reduce its overall trade deficit in this sector. It also shows estimated figures for 1995, which indicate that the effect of the three new Member States is to increase the EU deficit somewhat.

Figure 6 shows where EU companies are selling their products. In the context of a large increase in total exports, it shows that the US share of exports has declined from 37.2% in 1989 to 28.5% in 1994. The destination showing the strongest growth is 'Rest of the World', i.e. neither the USA, Japan, Canada, Russia nor the EFTA countries. This area took 40.8% of EU exports in 1994.

Over this period, Japan has served as the EU's greatest source of imports. Still, as Figure 7 indicates, Japan's grasp on the EU import market has weakened since 1989. Indeed, 1993 represented the first time in many years that Japan did not provide the majority of the EU's import requirements, and Japan's share fell further (to 37.7%) in 1994. In contrast, the United States provided almost 30% of EU imports in 1994 compared to just over 20% in 1989. Once again, the share of the 'Rest of the World' has increased sharply, from just under 5% to just under 20% in this five year period. Part of this increase may be due to the globalisation of production processes within companies.

Figure 8 shows that 1993 and 1994 marked a sharp departure from a downward trend in trade intensities. Strong increases in both the export and import to production ratios were exhibited and these support the evidence of a significant rise in globalisation in this sector.

## MARKET FORCES

### Demand

Table 1 showed that demand for optical instruments and photographic equipment increased by 76% between 1985 and 1992, before falling by 9% in 1993 and increasing by under 1% in 1994. In order to understand the factors driving demand, it is necessary to break the sector into its three constituent groupings.

The first grouping relates to spectacles, lenses, frames and mountings. Demographic changes are an important influence here. As the general population of the EU has increased, so has demand for eyeglassware. More significantly, the gradual ageing of the EU population has induced an increase in the demand for spectacles. The demographic factors are reinforced by changes in the nature of work, with a higher proportion of employees needing to use their eyes in a concentrated manner for longer periods.

Demand for eyeglassware has also been driven by several other factors. A greater fashion sense, particularly about frames, has served to differentiate these products in a way that appeals directly to the tastes and needs of new market segments. Examples of 'designer brands' which have entered the spectacles market include Giorgio Armani, Brooks Brothers, Yves St. Laurent and Swatch. EU consumers have shown a willingness to own more than one pair of glasses, depending on their aesthetic and practical needs. Sunglasses and sports eyewear represent growing market segments. Finally, technological innovation has facilitated product differentiation by allowing consumers to choose from a menu of features and products. Technological innovations include gas permeable contact lenses, continuously variable lens strength, and special designs to safeguard wearers against the effects of computer and TV monitors.

There have also been negative effects on the demand for eyeglassware. Since 1989, revisions in social security systems have made guidelines for prescription eyeglass refunds, and eye tests, more restrictive. Also, the general recessionary environment has increased the average length of time between purchases, particularly in low price segments.

The second product grouping is precision optical instruments. This area consists mainly of instrumentation designed to improve industrial measurement and testing methodologies. An important advantage of optical technology is the fact that measurement and testing can be accomplished through light sensing mechanisms, often without physical contact. Demand for this instrumentation has come from expanding manufacturing plants and older plants wishing to modernise. This demand has fuelled technological innovations and increased investment activity, particularly in laser technology, for a wide range of applications in industries such as aerospace, automotive, and medical instrumentation. Precision optical instrumentation is also being used in environmental management applications.

While demand for precision optical instrumentation has increased in the past decade, demand since 1992 has been hit by the general recessionary environment. Cutbacks in military expenditures exacerbated this situation. German manufacturers were particularly affected.

The third grouping relates to photographic and cinematography equipment and includes the following product segments: still and motion picture equipment; sensitised photographic film, chemical, paper and plates; and micrographics equipment. Demand in this sector largely flows from private households and has been driven by product innovations using more user-friendly technology and increased film quality per unit cost. Current areas of technological development would include digital video cassette cameras, for example.

**Figure 6: Optical instruments and photographic equipment  
Destination of EU exports**



Source: Eurostat

Demand has also increased due to new product applications. For example, micrographics equipment and supplies have become important components in the electronic imaging industry. Demand for still picture equipment has been stimulated by improved automation and convenience. The marriage of electronics and photography has boosted demand. Increasing lens and camera applications within the fields of space and aerial photography, security and traffic monitoring, medicine, and studio and press equipment have all increased demand in the past decade.

While demand has been supported by product development and differentiation, there has also been a move towards simpler, more disposable technology, particularly in the consumer photographic segment. The recessionary climate, which has hit both research investment and consumer spending, has also served to retard demand, particularly for sales of luxury and leisure items. One 1995 study showed that camera sales had fallen by 20% in the UK and 26% in France between 1989 and 1993. The study also found that price increases had been low, as manufacturers discounted to maintain market shares and consumers opted for more compact cameras, at lower prices.

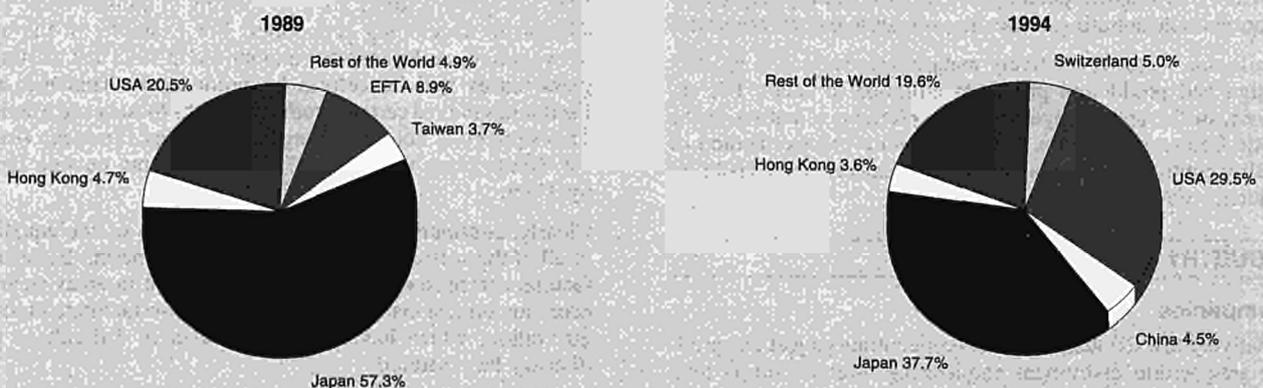
### Supply and competition

Despite the recession and the increase in extra-EU imports, indigenous production levels have held up well in the 1990s, as shown in Table 1. This is partly due to the strong export performance, as described earlier. Within the overall optical instruments and photographic equipment sector, Japanese and American products have a significant, if declining, share of the EU market. As with demand, the precise supply situation varies by product area.

Japanese and American competition is particularly striking in photographic equipment, where price wars have increased their market share, and that of the East Asian NICs. The few surviving EU manufacturers have had difficulty in fending off foreign competition - particularly from Japanese firms, which are effective in satisfying the demands of the different consumer market segments. Europe is also the United States' largest export market for photographic equipment, and regulatory liberalisation has helped American manufacturers.

EU firms are performing well in optical precision instrumentation, where the local market is characterised by relative self-sufficiency. EU exports are also strong in this area, and the American market provides the greatest source of demand.

**Figure 7: Optical instruments and photographic equipment  
Origin of EU imports**



Source: Eurostat

**Table 5: Optical Instruments and photographic equipment  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.00	0.00
Danmark	1.36	1.73
Deutschland	1.19	1.05
Ellada	N/A	N/A
España	0.37	0.51
France	1.48	1.07
Irèland	N/A	N/A
Italia	0.96	1.14
Luxembourg	0.00	0.00
Nederland	0.43	0.68
Portugal	0.46	0.43
United Kingdom	0.71	1.07

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

In eyeglassware, EU firms are the premier manufacturers in the EU and throughout the world. Italian and French manufacturers - known for fashion design - are strong exporters, as are the German spectacle manufacturers. However, foreign manufacturers - primarily from Asia - have begun to penetrate the EU market. Japanese manufacturers have been particularly successful in this regard, and have benefited from concerted government efforts in ophthalmic research

In the context of increased globalisation, and increased competition from non-EU manufacturers, EU manufacturers have had to focus on their cost base. Table 4 shows that total unit costs increased by 6.1% between 1990 and 1994, considerably less than in the 1985 to 1990 period. Unit labour costs increased by even less, while labour productivity rose by over 15% in the four year period. These figures, combined with the total employment figures in Table 1, reflect the adjustments which EU manufacturers are attempting to make.

### Production process

Table 1 showed that the 1994 level of employment within this sector was at its lowest level since 1985, continuing a downward trend which began in 1991. In real terms, production grew by 2.6% per year between 1985 and 1994 compared to only a 0.4% annual average decrease in employment level. This indicates an increasing level of productivity, supporting the Table 4 data.

More generally, the manufacturing process within this sector involves highly specialised techniques requiring thousands of components. It is common practice in the EU to subcontract the manufacture of these components, as well as ultimate assembly, to smaller specialty houses, with the primary manufacturers concentrating on design, research and development.

While this sector is relatively mature, innovations in product design and production processes continue to occur. For example, in the area of eyeglassware, German scientists at the Optic Centre in Bochum designed a more precise method of quality control for glass in 1995, which can eradicate visibility reducing scratches and air bubbles.

## INDUSTRY STRUCTURE

### Companies

Relatively few EU manufacturers concentrate on just one product area within instrument engineering. Manufacturers tend to participate in several subsectors, of which optical instruments and photographic equipment is just one.

Most EU manufacturers of eyeglassware are small to medium-sized firms, with fewer than 500 employees. Typically, no firm manufactures the entire eyeglass - the major eyeglassware manufacturers usually subcontract the work to frame manufacturers, lens manufacturers etc. These smaller manufacturers are not dependent on the EU manufacturers and also have a thriving export business, mainly to the USA. This again emphasises the increasing globalisation of the sector.

The relatively few larger eyeglassware manufacturers within the EU include Rodenstock (D), Bausch & Lomb (D), Carl Zeiss (D), Essilor (F), Luxottica (I), Safilo (I), De Rigo (I) and Indo (E). Major 1995 developments were the acquisition by Luxottica of Lenscrafters, the leading US retailer of eyeglass frames. Vertical integration in the opposite direction was signalled by Fielmann, Europe's leading optician, which expressed interest in acquiring manufacturers of eyeglassware. Incidentally, the strong Italian presence in this industry is concentrated in five provinces in the north-east of the country.

Important EU manufacturers of precision optical instrumentation include Carl Zeiss (D), Schott (D) and Philips (NL). A company of dual origin, Leica (CH/UK), has become a world leader in the manufacture of precision instrumentation. Nikon (JPN) is the world leader in this area.

The photographic segment consists of several major manufacturers as well as specialty manufacturers. Larger manufacturers tend to be German, and include Agfa Gevaert AG (D), Carl Zeiss (D), Rollei (D), Minox (D), Linhof (D), Durst (I), and Bosch (D). Angenieux (F) manufactures camera lenses. Major 1995 developments were the acquisition by Agfa-Gevaert of the printing plates business of the German chemical company Hoechst, Rollei's acquisition of Minox and the acquisition of Rollei itself by Samsung, the Korean industrial group.

An overview of product specialisation is shown in Table 5. This shows the extent to which each country concentrates on optical instruments and photographic equipment, within their manufacturing industry as a whole. The sector is relatively most important for Denmark, followed by France, Italy the UK and Germany. However, even in these countries, the sector accounts for a small part of overall manufacturing output.

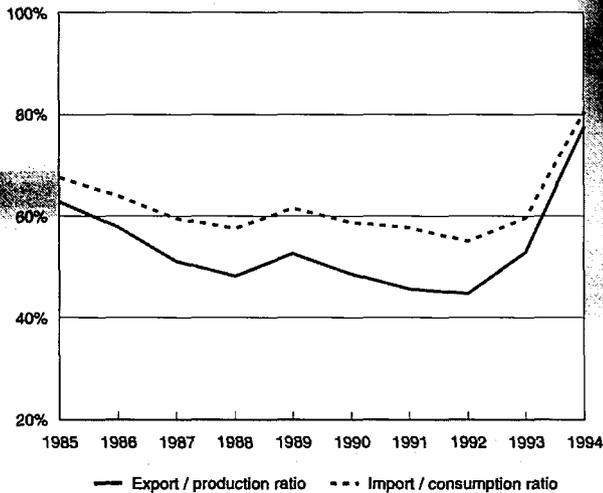
### Strategies

While this sector will benefit as the EU moves out of recession, more fundamental forces are also at work. This sector, particularly the photographic equipment grouping, is now a mature industry. Products have begun to commodify and globalisation means that manufacturers have to compete with companies from low wage, developing countries, especially those of the Pacific Rim. To confront this, EU manufacturers are trying to control costs as well as following the lead of Japanese photographic manufacturers in product differentiation. EU manufacturers are also looking to transfer some production to developing economies. For example, in the area of eyeglassware, Rodenstock announced in 1995 that its simple glass lenses will henceforth be produced in Thailand, and Essilor has moved certain production tasks to Asia and Mexico. This strategy is not only being employed by European firms, e.g. Nikon plans to produce 75% of its output outside Japan by 1999.

Clearly, continued R&D expenditure is part of the equation in all of the sector's product areas. This will permit EU manufacturers to preserve competitive advantage in areas such as precision optical instrumentation. It will also facilitate product innovation, which has become increasingly difficult as the industry has matured.

This maturity is leading to some vertical integration in the eyeglassware industry. This has occurred in both directions, as mentioned earlier. A consolidation of retail opticians has

**Figure 8: Optical Instruments and photographic equipment Trade Intensities**



Source: DEBA GEIE, Eurostat

created bigger retail groups with the resources to acquire their own sources of supply. On the manufacturing side, there is a desire to maintain secure sources of demand for output.

## ENVIRONMENT

This sector has a relatively low environmental impact. While potential concerns reside in a few areas - such as the disposal of chemicals used in the development and production of film, as well as the waste processing of disposable cameras - this sector does not adversely affect the water and air supply in any significant way. Indeed, manufacturers within this sector actually benefit from the increasing environmental awareness. Precision optical instrument technology satisfies increased standards of environmental monitoring. There is also increased demand for instrumentation which performs chemical and other ecological analyses. Photographic equipment manufacturers will benefit as the demand for atmospheric photographic analysis increases.

## REGULATIONS

In the area of eyeglassware, the principal regulation is Directive 93/42, which covers all medical devices. This facilitates the free movement of eyeglassware products within the EU, subject to minimum health and safety standards. Increased environmental monitoring and measuring requirements cover all product areas in this sector, and actually boost demand for measurement and control instruments.

## OUTLOOK

It is clear that the recession hit hard in 1993 and it was only in late 1994 that the earliest signs of recovery emerged. Indeed, conditions would have been far worse had it not been for the strong EU export performance. As the EU moves out of recession, the issue is whether renewed growth, or mere survival, is likely.

One influence is the likely trends in demand in this sector. As outlined earlier, the different product areas have different demand drivers. What they have in common is a move to maturity, which makes it difficult to simply grow with the market, and increases the need for product innovations around any emerging market segments.

Another crucial influence is the extent to which EU manufacturers can meet the challenges posed by globalisation and global competition. It appears that in some market segments, EU manufacturers cannot compete adequately with manufacturers from developing countries. This is particularly true with photographic equipment where price competition has inflicted significant harm on EU manufacturers. Asset migration, product differentiation, and enhanced R&D are all important for EU manufacturers. Opportunities in areas such as the Pacific Rim and South America not only provide EU manufacturers with cheaper labour, but also with new export markets, if EU manufacturers can identify and exploit areas of competitive advantage around design and technology and can design products to meet the needs of the different market segments.

Written by: Fitzpatrick Associates

The industry is represented at the EU level by: European Federation of Precision, Mechanical and Optical Industries, Ophthalmic Optics (EUROM I), Optics, Laser and Laboratory Instrumentation (EUROM II) and Photographic and Video Technology (EUROM III). Address: C/- ASSOTTICA, Via Elba, 12, I-20144 Milano, Italy; ph: (39 2) 48 00 48 81; fax: (39 2) 48 00 50 61

# Clocks and Watches

## NACE (Revision 1) 33.50

After a period of strong growth in the late 1980s, the EU clocks and watches industry suffered considerably during the recession of the early 1990s. Faced with declining market demand stemming from reduced levels of personal expenditure, employment and production in the industry have fallen steadily since 1990. In addition, competition from the newly industrialised countries of South East Asia has intensified to the point where most of the EU market is now served by extra-EU imports. While the outlook is improving as the recovery boosts consumer demand, EU producers will have to take action to alleviate the competitive pressures which have hampered their growth.

### INDUSTRY PROFILE

#### Description of the sector

Included in the clocks and watches industry are watches, instrument panel clocks, clocks, control apparatus and timing devices using clock-work or synchronous motors and time switches, as well as clock and watch movements. The sector covers mechanical, electrical and electronic watches.

Accounting for only 5% of total sectoral output and employment in 1994, the sub-sector is the smallest within the EU instrument engineering sector.

Within the EU, the manufacturing of clocks and watches is concentrated in France and Germany, together accounting in 1994 for over 80% of total EU value added. In 1994, France's total value added amounted to over 225 million ECU in 1994, while in Germany, traditionally the largest contributor to the EU total, value added was about 164 million ECU. Among smaller producer nations, the UK accounted for 11% of EU total value added in 1994, while Italy accounted for 7%, and Spain for about 2%.

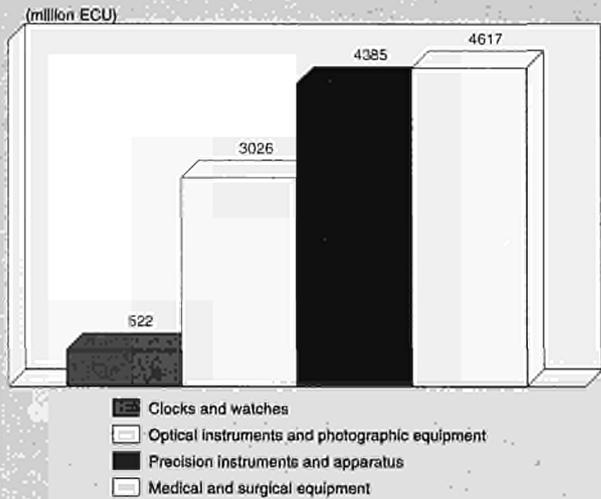
#### Recent trends

Since 1985, EU production of clocks and watches experienced two periods of contrasting trends. In the five years to 1990, production grew at an average annual rate of 2.1% in volume terms, while between 1990 and 1994 there was an average annual fall in real output of 8%. The concurrent effects of economic recession and depressed consumer expenditure, along with the intensification of competitive pressures, particularly from the low cost "newly industrialised countries" (NICs) of Southern Asia, have seen the current value of EU production fall to 1.25 million ECU in 1994, the lowest in 10 years. In volume terms, the EU produced 21% fewer clocks and watches in 1994 than in 1985. An upturn in consumer and investment expenditure as well as high export growth in 1993-94 has slowed the rate of production decline. Over the period 1993-94 the volume of production fell by 3%, whereas the fall had been 18% over the previous two years.

Employment in the clock and watches industry has declined steadily since 1985. The total of 15 200 people employed in 1994 marked a 39% drop from 1985. This compares with a 12% fall for all manufacturing over the same period. Competition from lower cost countries in South East Asia has significantly contributed to the decline of EU's employment levels.

Apparent consumption of clocks and watches in the EU grew, on average, by 1.5% in real terms between 1985 and 1994, although like production, the period was characterised by growth up to 1990 followed by decline to 1994. Between 1985 and 1990, the average annual increase in the volume

Figure 1: Clocks and watches  
Value added in comparison with related industries, 1994



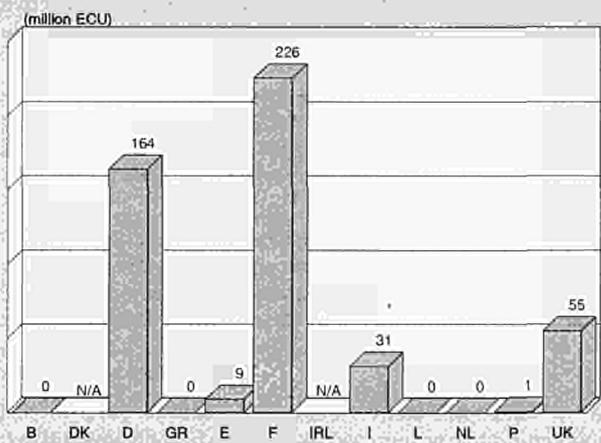
Source: DEBA GEIE

of EU apparent consumption was almost 6%, while the following four years recorded average annual declines of about 4%. While the trend followed that of production, the higher absolute growth in consumption reflects the growing competitiveness of extra EU imports.

#### International comparison

Japan is by far the most important world producer of clocks and watches. In 1994, the value of Japanese production was almost three times that of the EU and the USA combined. Furthermore, this dominance has been growing. Accounting for 68% of the value of the EU, USA and Japan's combined output in 1985, in 1994 Japan's share grew to 74%. In terms of volume, the USA saw average production growth of 1% per year between 1985 and 1994, while the EU and Japan saw corresponding falls of 2.4% and 2% respectively over the same period. In 1993-94, production in the USA increased by almost 2% in real terms, while the EU experienced a decline of over 3%, and Japan, a fall of over 14%.

Figure 2: Clocks and watches  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Clocks and watches**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	2 072	3 109	3 178	3 136	2 978	2 964	3 028	3 443	3 430	3 410	3 390
Production	1 323	1 651	1 495	1 442	1 291	1 246	1 290	1 497	1 460	1 430	1 400
Extra-EU exports	753	972	941	996	1 073	1 199	1 272	1 256	1 310	1 360	1 410
Trade balance	-748.9	-1 457.3	-1 683.6	-1 693.6	-1 686.4	-1 718.3	-1 738.1	-1 946.7	-1 970.0	-1 980.0	-1 990.0
Employment (thousands)	24.8	19.4	18.2	16.5	15.2	15.1	16.4	20.0	10.0	10.0	

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DFI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Clocks and watches**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	5.81	-3.65	1.50	-13.60
Production	2.09	-8.20	-2.62	-3.11
Extra-EU exports	13.22	10.61	12.05	27.50
Extra-EU imports	12.03	5.08	8.88	-2.32

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Clocks and watches**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	753	754	733	875	957	972	941	996	1 073	1 199	1 272	1 256
Extra-EU imports	1 502	1 712	1 718	2 062	2 288	2 429	2 625	2 690	2 759	2 917	3 010	3 203
Trade balance	-749	-958	-986	-1 187	-1 331	-1 457	-1 684	-1 694	-1 686	-1 718	-1 738	-1 947
Ratio exports / imports	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Terms of trade index	132.1	129.9	145.3	131.7	104.0	100.0	104.7	114.2	103.3	83.7	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Clocks and watches**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	77.3	81.1	84.0	87.7	90.1	100.0	96.9	96.6	94.4	99.0
Unit labour costs index (3)	98.3	101.2	109.7	103.0	104.1	100.0	108.8	113.7	121.1	121.2
Total unit costs index (4)	89.7	92.9	95.5	95.5	97.9	100.0	103.6	104.6	106.7	107.1
Gross operating rate (%) (5)	7.7	6.8	5.6	9.0	8.4	8.1	6.5	7.9	8.4	8.2

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

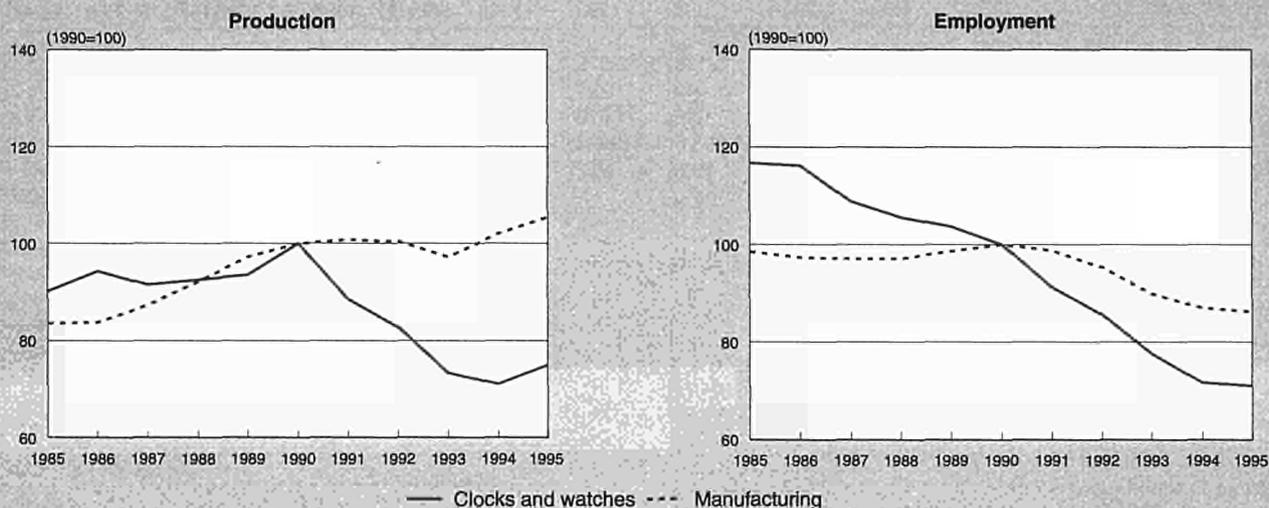
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Clocks and watches**  
**Production and employment compared to EU total manufacturing industry**



1995 figures are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

In terms of market size, the total value of Japanese apparent consumption was about 6 billion ECU in 1994, over twice the sum of EU and USA consumption, each having roughly equal shares. Between 1985 and 1994, apparent consumption in Japan grew by 54% in current prices, while in the EU it increased by 43% and in the USA, consumption fell by almost 7% in current prices.

With almost 1.85 billion ECU, the total value of Japanese exports of clocks and watches in 1994 was 1.5 times higher than in the EU, and almost six times higher than in the USA.

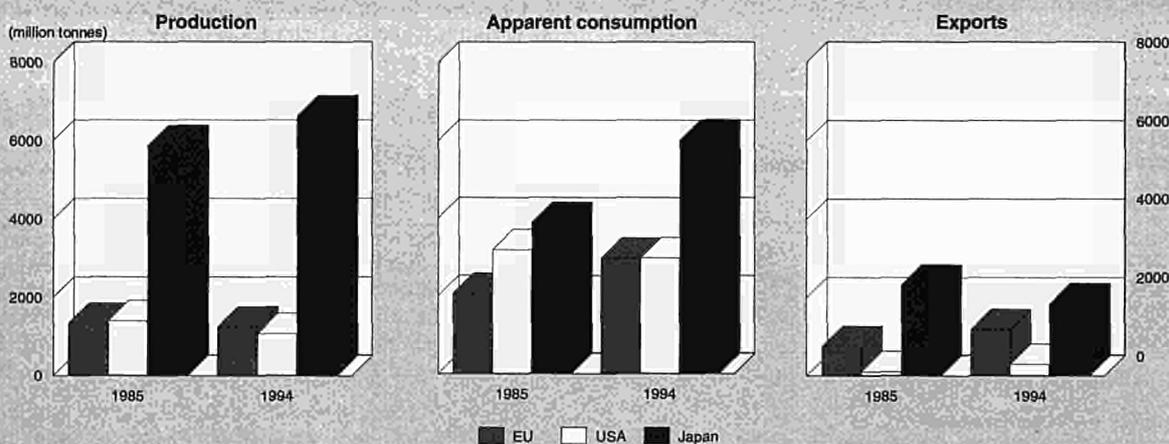
**Foreign trade**

In 1994, extra-EU imports accounted for over 98% of total consumption, while exports amounted to over 96% of production. The EU's trade openness has grown strongly since 1987, when the extra-EU import and export ratios were 72% and 52% respectively. Extra EU imports grew in volume by

almost 9% between 1985 and 1994, reflecting the strengthening competitive position of non-EU producers, particularly in the lower price segment of the market. Over the same period, extra EU exports grew in volume by 12%.

In 1994, total extra-EU imports amounted to over 2.9 billion ECU, while extra EU exports amounted to about 1.2 billion ECU. The trade deficit grew from 0.75 billion ECU in 1985 to 1.7 billion ECU in 1994. In terms of value, Switzerland continues to be the largest source of extra EU imports, in 1994 accounting for 50% of the total, while in terms of volume, Switzerland's share is lower, reflecting specialisation in the high price and quality end of the market. Other important sources of EU exports were Hong Kong, Japan and China, in 1994, their shares of extra-EU imports were 15%, 10%, 12% respectively. In 1994, extra EU exports to Switzerland was of 28% value share and in Hong Kong and Brunei of 25%.

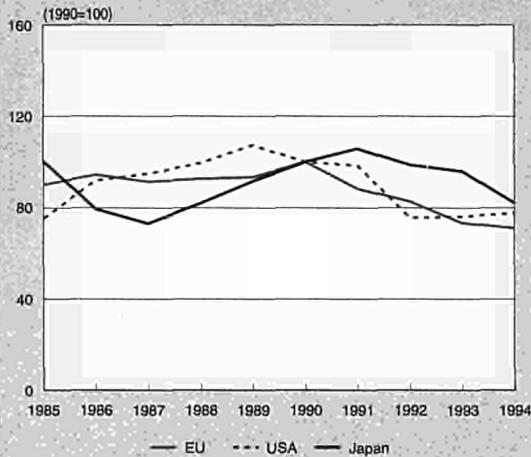
**Figure 4: Clocks and watches**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 5: Clocks and watches**  
International comparison of production in constant prices



Source: DEBA GEIE

## MARKET FORCES

### Demand

The clocks and watches industry's output is included in the luxury ornamental and jewellery consumer product sectors, thus demand for clocks and watches is strongly affected by trends in personal disposable income and demographic factors. Population growth among the highest spending 45 to 55 year old age group will benefit sales, while recently concerning teenagers and young adults, also a significant target group for watch sales, there has been a decline in sale. In addition, the rising numbers of women in paid employment, and increased purchasing power among women in general, offer expanding market opportunities. Research suggests that as watches are increasingly seen as fashion accessories, women are moving faster towards multiple ownership than are men. In general, rising consumer expenditure on luxury items during a period of strong economic growth will benefit the industry, particularly the higher price and quality segments of the market. Fashion trends also play a significant role, although demand surges which are fashion driven tend to be short lived. While design features remain the most influential factor in

fashion led growth, technological and new product development, which have traditionally had little influence on market conditions, are becoming more important as the market approaches saturation. The success of the solar radio watch developed by Junghans, the German manufacturer, is an example of this. There is also evidence of a trend towards reliable and good quality watches, such a development will bode well for EU and Swiss manufacturers, operating in the middle and upper quality ranges of the market.

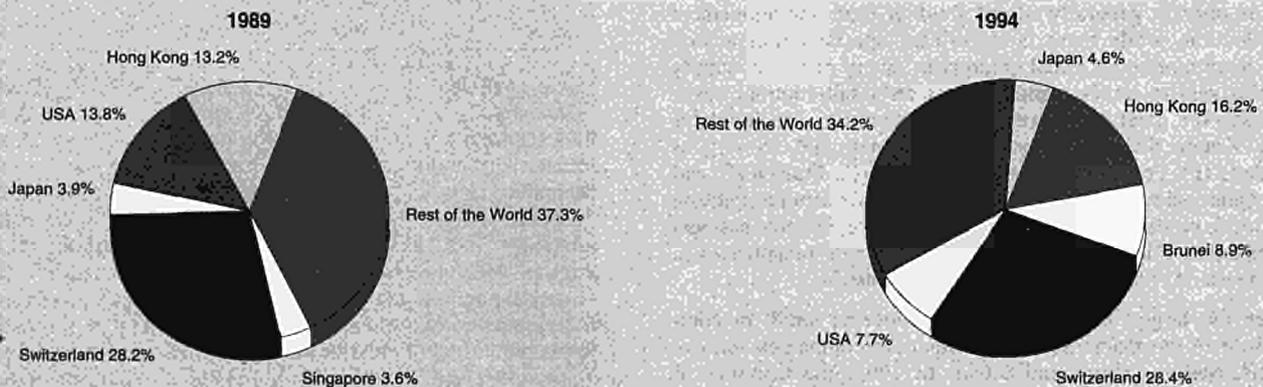
### Supply and competition

The EU clocks and watches industry has been very adversely affected by extra-EU competition. An import penetration rate of over 98% and a trade deficit growth of 10% on average between 1985 and 1994, show that foreign manufacturers, particularly Swiss, now control the bulk of the EU market. In the high quality market segment, EU manufacturers cannot compete with their Swiss counterparts, generally larger firms enjoying significant economies of scale. These firms are able to operate intense marketing and sales strategies, as well as benefiting from established and recognised brand names. Recently Switzerland has also been gaining share in the middle-range market: the development of the Swatch watch marked the most dynamic diversification of Swiss manufacturers into the mid-range sector in which EU manufacturers tend to operate. SMH (Societe Suisse de Microelectronique et d'Horlogerie), the Swiss manufacturer of the Swatch range, seems intent on capturing further market share by adapting the Swatch brand to fit current fashion trends. The recent launch of the "Irony" range of metal-cased watches signals a departure from the original plastic design, and it's extremely competitive price means that increased market share will be in the middle rather than the upper segment of the market.

Although a strong Yen has reduced Japanese exports, due to lower labour costs and economies of scale manufacturers in Japan, Hong Kong and China are expanding their market share at the expense of the EU companies. As a group however, these countries have seen their value share of total EU imports fall in recent years, while that of Switzerland has grown. In the range of cheaper electronic watches,

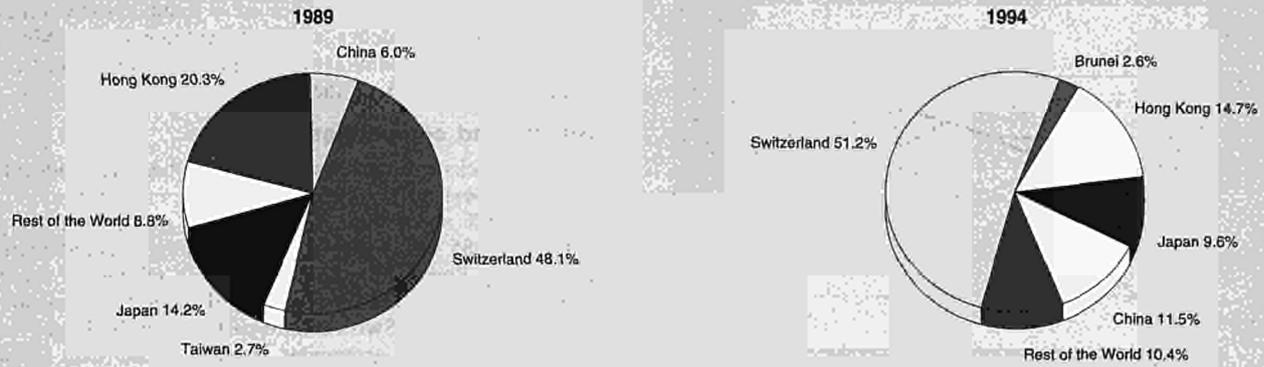
EU manufacturers will have difficulty in regaining market share even as demand conditions improve during the economic upturn. Prices should continue to fall in response to the growing price competitiveness of the Swiss manufacturers in the middle-range products.

**Figure 6: Clocks and watches**  
Destination of EU exports



Source: Eurostat

**Figure 7: Clocks and watches  
Origin of EU imports**



Source: Eurostat

### Production process

Price competition from Japan and Hong Kong continues to put pressure on the margins of EU manufacturers. Efforts to rationalise production have focused on the substitution of new machinery and capital for labour. Between 1985 and 1994, the rate of decline in employment in the industry has been almost twice the rate of the real production decline, reflecting the increasing labour productivity which has resulted from the investment and cost cutting programmes implemented by manufacturers. The decline in employment has been more prevalent in Germany and the UK than in France.

Another activity which has characterised the industry in recent years is the moving of the production process to lower cost countries. Faced with high domestic costs, particularly labour costs, EU producers have been forced to relocate outside the EU to take advantage of cheaper labour as well as the better availability of components. In addition, EU manufacturing, is structured so that firms tend to have much smaller production units than their competitors both in Switzerland and in the low cost countries of South East Asia, which deprives the EU of large scale production cost advantages.

### INDUSTRY STRUCTURE

#### Companies

The structure of the EU clocks and watches industry is characterised by a large number of small and medium size firms, mainly producing parts and components, with only a few larger manufacturers employing greater than 700 people. The larger firms operate generally in the field of case and movement production, while there is significant specialisation among the large number of small enterprises, many of whom supply exclusively to larger manufacturers on a sub-contract basis. Among the most prominent EU manufacturers are Junghans (D), Kundo Staiger (D), and Dufa Kienzle (D), as well as Vedette (F), France Ebauches (F), Ambra (F), Fralsen (F) and Isa Quartz (F). Larger companies have grown from a tradition of local production and trade into significant multinational companies. For example, Junghans now owns subsidiaries in Switzerland, Italy, Spain, the UK and Austria.

Even the largest EU producers are however small in comparison to the major Swiss and Japanese companies such as SMH, Seiko, Citizen and Casio. In 1992, the turnover of SMH, the Swiss firm responsible for brands such as Swatch, Omega, Longines, Tissot and Rado, amounted to almost nine times the turnover of Junghans, the largest German producer.

### Strategies

EU producers of clocks and watches have been subject to intense competition from foreign manufacturers in recent years. With markets approaching saturation level, efforts to gain market share have focused on price. Acute price competition, particularly in the low price segment of the market, is to the detriment of many small EU manufacturers. More recently, competition within the mid-range of the market, where EU producers have traditionally held their highest market share, has also heightened. The approach of Swiss manufacturers in expanding their market share by supplying fashionable, recognised brands at extremely competitive prices has had considerable success and added to the competitive pressures facing EU firms. Most significant has been the success of the Swatch brand, which by mid-1992 had sold some 100 million Swatches.

Recently, in reacting against intense competition, many EU firms have regrouped and formed alliances. The Dufa Kienzle Uhrengruppe now consists of a number of companies including amongst others Badische Stahlwerke, Necker Drahtwerke and Peter Uhren. The present Kundo Staiger group emerged from the 1991 merger of Gebrüder Staiger and Kundo Kiesinger after a period of R&D partnership. Most recently, Kundo Staiger entered into a cooperation agreement with Junghans whereby the latter will integrate its production of quartz mecha-

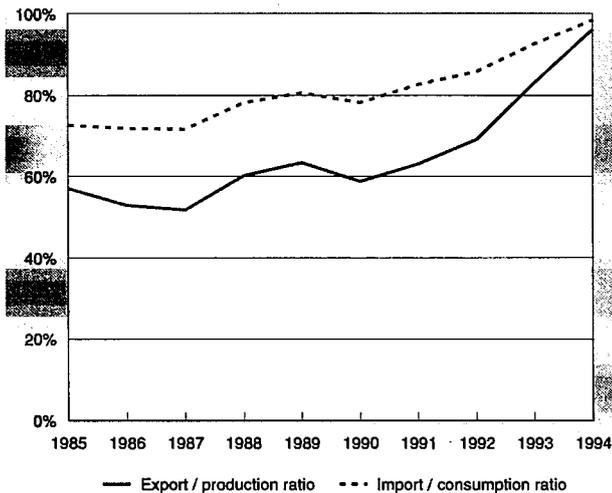
**Table 5: Clocks and watches  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.00	0.00
Danmark	0.00	0.00
Deutschland	1.61	1.04
Ellada	N/A	0.00
España	0.12	0.35
France	1.78	2.29
Ireland	N/A	N/A
Italia	0.56	0.60
Luxembourg	0.00	0.00
Nederland	0.00	0.00
Portugal	0.00	0.13
United Kingdom	0.38	0.54

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

**Figure 8: Clocks and watches  
Trade intensities**



Source: DEBA GEIE, Eurostat

nisms for large-size clocks into the Kundo Staiger subsidiary UTS Uhrentechnik Schwarzwald, thus forming Europe's largest producer of large-size quartz clocks.

As well as measures to increase production efficiency, new product development is widely pursued as a means of increased market share. To encourage multiple ownership, the constant introduction of a range of new watch styles, notably in the quartz analogue sector, has been the traditional method of gaining the most from changing fashion trends. The solar radio watch developed by Junghans is a case of important technology innovation. Other products currently developed in Japan are high-tech watches including the Timex Indoglo which has an electro-luminescent light powered by the watch's battery, and watches as receivers of information and as two-way transceivers.

## REGIONAL DISTRIBUTION

Within the EU, the production of clocks and watches is highly concentrated in France and Germany, who together accounted for around 80% of total EU value added in 1994. The remainder is almost exclusively accounted for by the UK, Italy, and Spain. In France, the largest producing region is Franche Comté, where a tradition in the production of timepieces has existed for decades. The development of the region has been assisted by its links with and proximity to the Swiss industry. Today the region accounts for approximately three quarters of French watch and clock making activity.

## ENVIRONMENT

Given the nature of the production process and final product, environmental concerns are only of minor importance for the EU clocks and watches industry. The most significant recent issue is the problem of the disposal of the small nickel-cadmium batteries used to power electrical and electronic time pieces. Also the small quantities of nickel present in most watches as a component of stainless steel and as an element used in gold plating have been found to cause allergic skin reactions. Manufacturers have been developing titanium and nickel-safe ranges, as well as products with more environmentally friendly features like solar and natural power, such as Seiko's Kinetic watch, the first quartz watch which does

not require batteries. Manufacturers are also beginning to experiment with biodegradable recycled packaging material.

## REGULATIONS

The clocks and watches industry is generally free of trade restrictions. However, the upcoming EU directive concerning the harmonisation and free movement of precious metals is expected to have an impact on the industry. Under this directive it is proposed to harmonise the standards used for the qualification of precious metals across EU countries.

The EU Nickel Directive became law in June 1994 in response to the rising numbers of complaints of nickel allergy. The directive puts severe limits on the use of nickel in skin contacting products, including jewellery and watches.

## OUTLOOK

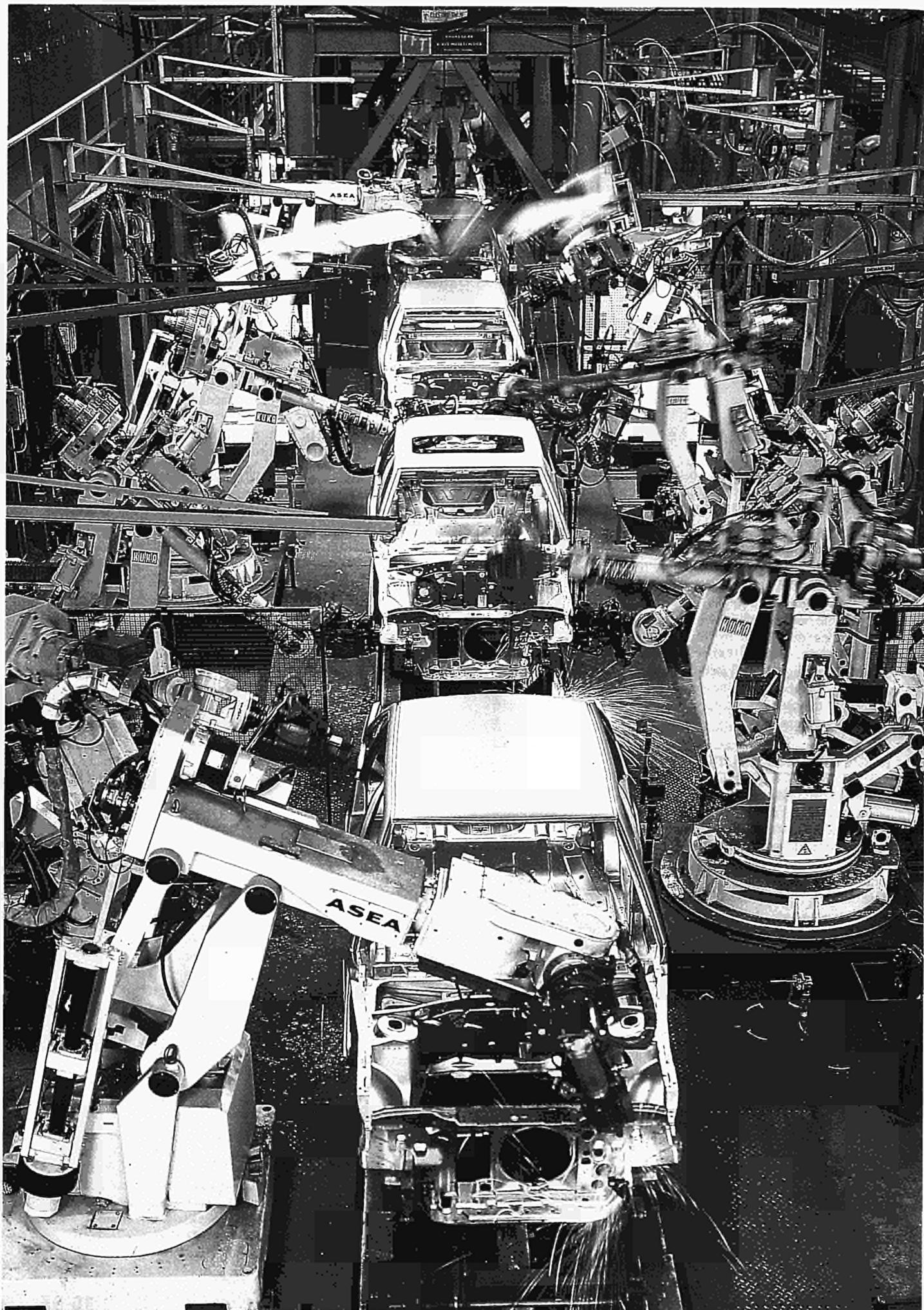
The industry's outlook is slightly more favourable than in recent years. As the European economy continues to recover from the recession of the early 1990s, rising consumer expenditure and confidence are likely to boost demand. However EU producers will continue to face intensified competition from extra-EU imports at both the upper and middle ends of the market. To benefit from the growth in consumption, they will have to intensify the programmes of cost reduction and product development which have begun.

In the medium term, while competitive pressures are unlikely to diminish significantly, the emerging consumer markets such as China and India will offer new opportunities for the industry.

Written by: The Netherlands Economic Institute

The industry is represented at the EU level by: European Watch and Clock Permanent Committee. Address: Rue d'Argent 6, CH-2501, Bienne, Switzerland; tel: (41 32) 22 59 11; fax: (41 32) 23 31 97.





## Overview

### NACE (Revision 1) 34, 35

The transport equipment industry is an integral part of the EU industrial complex and has a far-reaching effect on important input sectors such as metals, rubber, and plastics and engineering services. Nearly three-quarters of the industry's value-added derives from motor vehicle and related products. In contrast to the period of 1985-1990, there was negative real growth within the EU transport equipment industry between 1990 and 1994, largely owed to the disastrous performance in 1993. The industry saw an impressive, across-the-board rebound in 1994. Growth in production looks promising through 1998. Still, this industry lost over 400 000 jobs between 1990 and 1994 and it is highly unlikely that future employment levels will ever approach those levels seen in the mid-80s, particularly in light of the restructuring that this industry has experienced in recent years.

### INDUSTRY PROFILE

#### Description of the sector

The transport equipment industry involves the manufacture of motor- and nonmotor-driven vehicles. The industry includes the following sectors:

- motor vehicles (NACE Revision.1, groups 34.10 and 34.20);
- motor vehicle parts and accessories (NACE Revision.1, group 34.30);
- shipbuilding (NACE Revision.1, group 35.11);
- cycles, mopeds and motorcycles (NACE Revision.1, groups 35.41, 35.42);
- aerospace equipment (NACE Revision.1, group 35.30).
- railway rolling stock (NACE Revision.1, group 35.20)

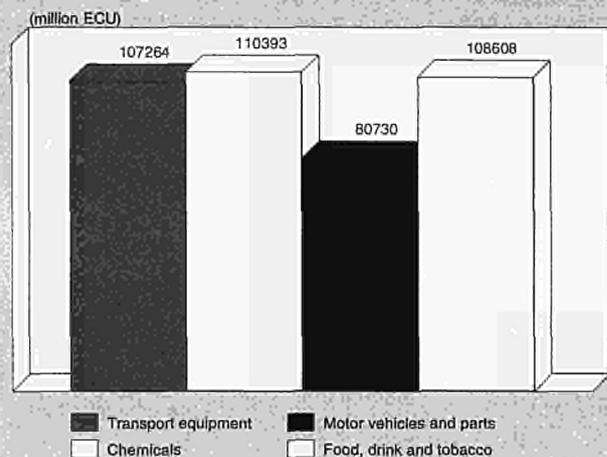
The transport equipment industry is an integral part of the EU industrial complex. In terms of value-added, it is peered by such behemoth sectors as chemicals and food, drink, and tobacco. Nearly three-quarters of transport's value-added derives from motor vehicles and motor vehicle parts and accessories. Aerospace ranks a distant second both in terms of production and employment. The transport equipment industry has a far-reaching effect on important input sectors such as metals, rubber, and plastics and engineering services.

Germany, by far, is the largest contributor of value-added to the EU transport industry with 43% of 1994 total value-added. Germany, France, the United Kingdom, Italy, and Spain contributed 94% of total value-added within the industry in 1994.

#### Recent trends

Between 1985 and 1990, production within the EU transport equipment industry grew by more than 50% in nominal terms. This growth was driven largely by the tremendous growth witnessed in the motor vehicle industry. Growth during this period was also seen in the aerospace industry. Between 1990 and 1994, there was negative real growth within EU transport sector. The year 1993 saw a nominal decline in production of 11%, the worst annual performance within the post-War period. Such decline in transport equipment production during this period was owed to cross-cutting recessionary effects as well as particular declines in such sectors as aerospace and shipbuilding. The year 1993 also saw a precipitous decline

Figure 1: Transport equipment Value added in comparison with related Industries, 1994



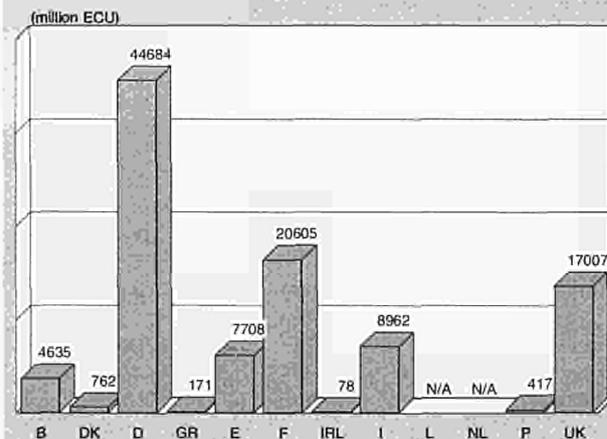
Source: DEBA GEIE

in domestic demand as measured by apparent consumption with a decline of 13.4% relative to consumption in 1992. In this regard, consumption of motor vehicles was particularly hard hit in that deeply recessionary year. With squeezed military budgets, defence aerospace was also badly hurt.

Overall, between 1990 and 1994 there was negative real growth in both apparent consumption and production within the EU transport industry. Over the same period, real extra-EU exports increased slightly, albeit at a slower rate than during the 1985-90 period. Such underscores the burgeoning role that exports have come to play within the industry. In 1994, for example, extra-EU exports represented about 22.2% of total EU production. In 1991, that figure stood at 15.5%.

The difficult challenges that have confronted this industry are underscored in employment data. Between 1990 and 1994, the EU transport industry lost about 440 000 jobs, about 17%

Figure 2: Transport equipment Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Transport equipment**  
**Main indicators in current prices (1)**

(billion ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	193.5	303.5	323.2	341.2	348.5	301.9	324.4	355.2	380.8	410.0	440.0	460.0
Production	219.7	317.8	338.0	349.1	361.1	321.4	350.1	377.1	404.0	440.0	470.0	500.0
Extra-EU exports	49.7	49.5	51.5	52.9	56.2	63.8	71.9	68.8	65.5	70.0	70.0	80.0
Trade balance	26.2	14.2	14.7	7.9	12.6	19.5	25.7	21.9	23.2	30.0	30.0	40.0
Employment (thousands)	2 709.4	2 624.9	2 688.2	2 650.9	2 560.8	2 354.5	2 249.0	2 233.6	2 369.8	2 390.0	2 420.0	2 410.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DFI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Transport equipment**  
**Breakdown by sector, 1994 (1)**

(million ECU)	Apparent consumption	Production	Extra-EU exports
Aerospace	38294	41734	19589
Assembly of motor vehicles	194153	212682	37378
Cycles and motor-cycles	7226	5109	779
Parts and accessories for motor vehicles	52964	55030	6846
Railways	6298	6843	1116
Shipbuilding	12831	15602	5039

(1) Apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Transport equipment**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	4.9	-2.4	1.6	3.9
Production	4.7	-1.5	1.9	7.5
Extra-EU exports	6.7	1.0	4.1	6.1
Extra-EU imports	-4.0	-1.4	-2.9	-11.3

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Transport equipment**  
**External trade in current prices**

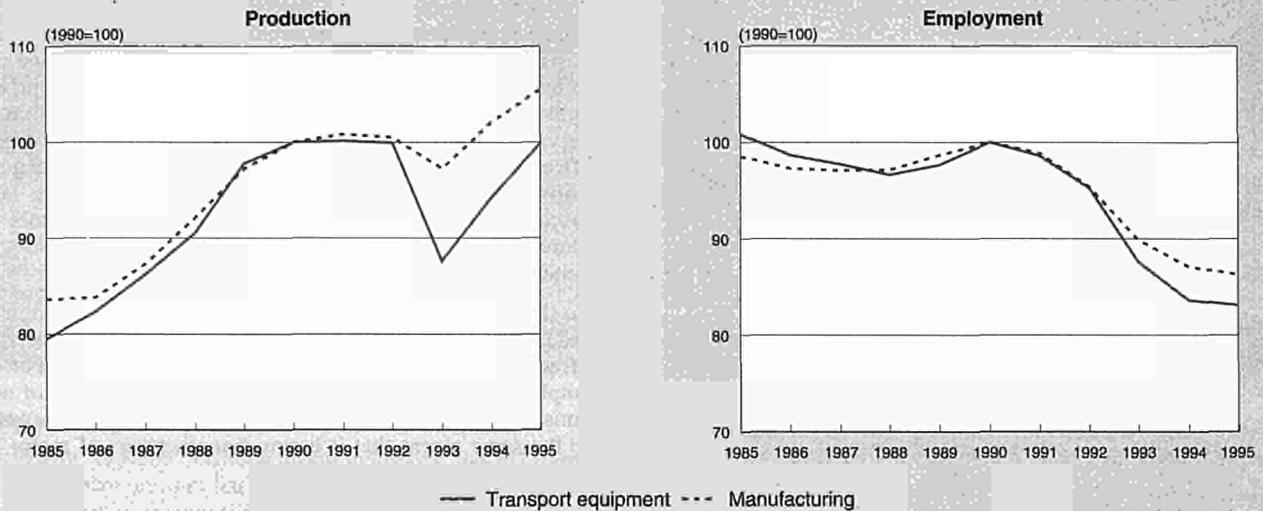
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	49 699	43 837	44 178	44 739	49 514	51 491	52 903	56 195	63 809	71 903	68 760	65 457
Extra-EU imports	23 451	21 367	22 184	28 870	35 284	36 754	45 014	43 620	44 296	46 202	46 812	42 257
Trade balance	26 248	22 470	21 994	15 870	14 230	14 737	7 889	12 575	19 512	25 701	21 948	23 201
Ratio exports / imports	2.1	2.1	2.0	1.5	1.4	1.4	1.2	1.3	1.4	1.6	1.5	1.5
Terms of trade index	176.7	149.4	142.2	110.8	102.0	100.0	86.0	95.9	107.0	89.5	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Transport equipment**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

of the sector's workforce. In 1993, alone, the industry lost over 200 000 jobs, an unambiguous sign of structural adjustments. Losses were felt particularly within the automotive, aerospace and shipbuilding sectors.

#### International comparison

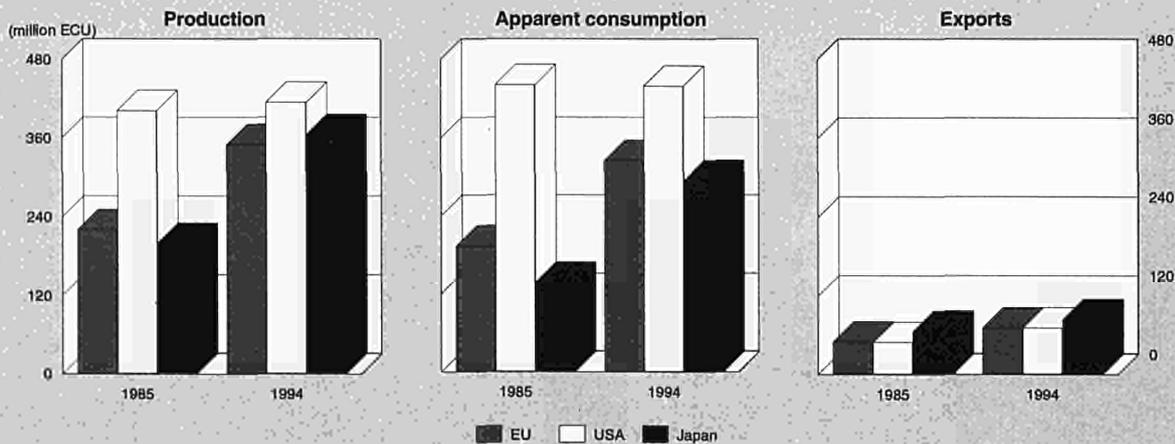
Notwithstanding the difficulties of the 1990-94 period, the EU transport industry gained ground in important respects. In 1985, EU manufacturers enjoyed about 26.8% of Triad production. In 1994, that share was 31%, a gain realised at the expense of the USA. The EU represented 30.7% of Triad apparent transport equipment consumption in 1994, more than 5 percentage points gain over the 1985 share. Of total Triad transport equipment exports, the EU's share increased slightly over the period. Indeed, changes have occurred within the industry such that there is a much closer sense of parity among the legs of the Triad now than there was in 1985.

#### Foreign trade

Since 1986, extra-EU exports within the transport equipment industry have risen when such exports are measured in current prices. Moreover, dependency on export to countries outside the EU has increased as well. Whereas, in 1991, 15% of EU production of transport equipment was destined for countries outside of the EU, that figure swelled to 21% in 1994. Such reflects the increasing emphasis on export markets within the EU generally as indigenous demand continues to shrink. Aerospace is, by far, the most export-oriented of the subsectors with 47% of 1994 EU aerospace production targeted for extra-EU markets. Shipbuilding's analogous figure stands at 32%. The sector of parts and accessories for motor vehicles, largely captive to the EU motor vehicles sector, boasted the lowest rate of extra-EU export-intensity at 12% of 1994 production.

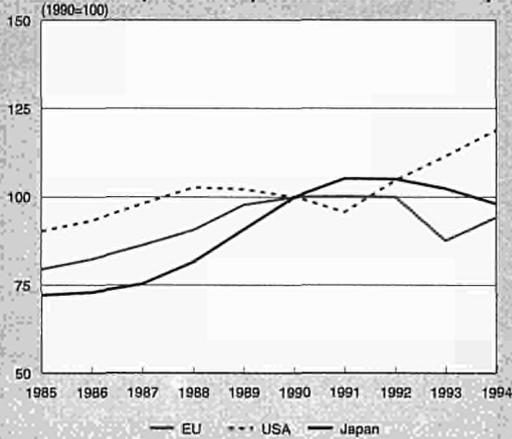
Extra-EU imports within the transport equipment industry have also become more important. In 1987, only 9% of EU apparent consumption was satisfied by extra-EU production. In 1994, that figure was 14%. The absolute value of extra-EU imports

**Figure 4: Transport equipment**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Transport equipment**  
International comparison of production in constant prices (1990=100)



Source: DEBA GEIE

doubled between 1985 and 1994 when measured in nominal terms.

The ratio of extra-EU exports and imports experienced wide swings between 1985 and 1994. Whereas the value of 1985 extra-EU exports was more than twice that of 1985 extra-EU imports, that ratio lessened to 1.2 by 1991, only to increase to 1.6 by 1994. Such variability is largely owed, itself, to the variability in exchange rates between Member States and non-Member States. The EU transport equipment industry trade surplus for 1994 was the highest it has been since 1985.

EU exporters of transport equipment have become less dependent on the USA and the EFTA countries. In 1989, nearly 52% of extra-EU exports of transport equipment were destined for those regions. In 1994, that figure stood at roughly 43%. Those two regions still stand as, by far, the most important areas for extra-EU exporters. Japan is also an important market for extra-EU exporters. Nearly 70% of 1994 extra-EU imports of transport equipment came from three regions: Japan, the EFTA countries, and the USA.

## MARKET FORCES

### Demand

Any understanding of the forces of demand within the EU transport equipment industry really must occur on a sectoral basis. Demand for bicycles, motor vehicles, mopeds and motorcycles, for example, is most notably influenced by private consumer demand. The aerospace sector, in contrast, largely depends on the military and airline services, areas adversely affected by shrinking budgets and recession. Shipbuilding and railway rolling stock are sectors whose clientele are large private or state-owned entities. These latter two sectors are more influenced by changes in infrastructure policies than general economic developments.

To the extent that sectors within the EU transport equipment industry represent either direct or indirect substitutes, the effect of any externality on the industry may be minimal. For example, heightened awareness of the harmful effects of auto emissions may benefit manufacturers of rail-related equipment to the same extent that it harms manufacturers of motor vehicles.

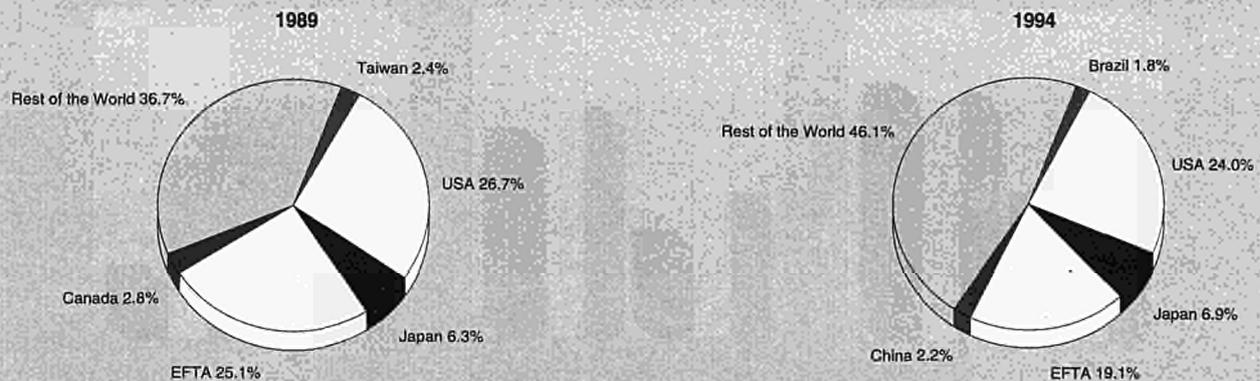
### Supply and competition

Manufacturers within the EU transport equipment industry satisfy internal demand. Indeed, the industry has run a positive trade balance at least since 1985. Also, production has exceeded apparent consumption within EU transport equipment since 1985. With the exception of the sector of bicycles, mopeds, and motorcycles, production exceeded apparent consumption in each of the industry's sectors in 1994.

Competitive pressures depend on which sector is under consideration. Within the motor vehicle industry, for example, the threat is Japan: to remain competitive, the EU automobile manufacturers must improve production efficiencies. Within aerospace, American producers are the clear leaders, although smaller countries such as Indonesia are becoming increasingly important. With respect to the bicycle, mopeds and motorcycle sector, EU manufacturers face stiff competition from Asian NICs and especially Japan and Korea.

Profitability within the EU transport equipment industry had been strongly affected by the world-wide recession. Between 1989 and 1993, the industry's gross operating rate (gross profit/turnover) declined from 9.4% to 5.3%, with the aerospace sector particularly hard hit. In 1994 the gross operating rate increased to 7.1%, the first significant increase in 5 years.

**Figure 6: Transport equipment**  
Destination of EU exports



Source: Eurostat

**Table 5: Transport equipment  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	78.8	83.5	88.2	93.7	100.1	100.0	101.5	104.9	100.1	112.7
Unit labour costs index (3)	94.9	94.9	95.3	94.5	94.2	100.0	106.0	109.8	117.6	108.5
Total unit costs index (4)	81.8	84.4	87.2	90.8	94.5	100.0	104.0	108.1	111.4	110.6
Gross operating rate (%) (5)	7.4	7.7	8.5	8.7	9.4	7.9	7.1	6.6	5.3	7.1

(1) Some country data has been estimated.  
 (2) Based on index of production / index of employment.  
 (3) Based on index of labour costs / index of production.  
 (4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.  
 (5) Based on (value added - labour costs) / turnover.  
 Source: DEBA GEIE, Eurostat

### Production process

Like many "old-line" manufacturing industries, the EU transport equipment industry has been severely affected by a highly competitive market from abroad. As a result, EU manufacturers have been forced to produce faster, better, and cheaper. To this end, new forms of organisation and management of production started, together with new methods of production. Innovation in production technique has been particularly manifest within the automotive and aerospace sectors, where new methodologies such as just-in-time production and increased emphasis on quality control are reducing production times and improving cost-efficiency.

### INDUSTRY STRUCTURE

#### Companies

A pronounced dichotomy characterises the structure of the EU transport equipment industry. On the one hand, nearly 94% of the industry is comprised of enterprises with fewer than 100 employees according to 1992 data. According to these same data, 83% of all EU transport equipment companies have fewer than 20 employees. At the same time, however, over 91% of EU transport equipment industry employment exists within the 6.1% of firms with 100 or more employees. Indeed, this latter group of companies garnered 95% of industry revenue in 1992. The five largest companies in the industry represent 52% of total 1994 industry revenue. These companies are: Daimler-Benz (D), 15% of total, Volkswagen (D), 12%, Fiat (I), 10%, Renault (F), 8%, and Peugeot (F),

7%. The next five largest companies within the EU transport equipment industry include: BMW (D), 6%, Volvo (S), 5%, Ford-Werke (D), 3%, MAN (D), 3%, and Cofide (I), 1%. Although the majority of these leading companies are best known as automobile manufacturers, certain of them are involved in other industry-related activities as well such as Germany's Daimler-Benz which has active involvement in the aerospace sector.

#### Strategies

Strategies employed within the major sectors of the EU transport equipment industry regards the motor vehicles, shipbuilding and aerospace industry.

The EU motor vehicle manufacturers have been active in investing within the EU, as well as in non-EU countries, particularly in East Europe and the USA, as part of a long-term globalisation strategy. Also, EU car manufacturers are accelerating and restructuring their innovation, product and process activities to reduce the time from initial concept to production.

As economic circumstances have not been favourable in recent years, EU shipyards have sought ways to compete strategically. Some yards have pursued the classical European approach of product differentiation. In this context, EU shipbuilders have endeavoured to distinguish themselves from their Asian competitors through construction of ships within the relatively high value-added part of the product spectrum.

The defence portion within EU aerospace has undergone dramatic change in recent years. In reaction to shrinking defence budgets, EU defence aerospace companies have sought merg-

**Figure 7: Transport equipment  
Origin of EU imports**



Source: Eurostat

**Table 6: Transport equipment  
Breakdown by size of enterprise, 1992 (1)**

(%)	Number of enterprises (units)	Share of number of enterprises	Share of employment	Share of turnover
Less than 20 employees	17 463	83.0	3.4	2.1
20-99 employees	2 298	10.9	5.2	3.0
100 or more employees	1 280	6.1	91.4	95.0

(1) Estimates for EUR15.  
Source: Eurostat Enterprises in Europe

ers and other forms of rationalisations. A number of companies have been involved in talks aimed at collaborating. The civil side of EU aerospace has also pursued joint ventures, mergers, and acquisitions as a strategic response to difficult circumstances. For example, further steps have been taken to continue the consolidation of the EU regional aircraft industry.

### REGIONAL DISTRIBUTION

As mentioned, Germany, France, the UK, Italy, and Spain contribute approximately to 94% of the total value-added within the EU transport equipment industry. These concentration ratios are quite similar among the major sectors within the industry. In aerospace, for example, Germany, France, the UK, and Italy accounted for over 97% of 1994 value-added.

Notwithstanding the concentrated nature of the EU transport equipment industry, more production is expected to occur in Eastern European countries as economic relations with the EU become more liberalised. Already, a number of EU transport equipment manufacturers have entered into agreements with producers from Eastern Europe. Some EU transport manufacturers such as Opel (D), Volkswagen (D), and Mercedes-Benz have established production facilities in the East. Other companies have established joint production arrangements with established firms from the East. Fiat of Italy outrightly purchased the Polish company FSM at the end of 1992 and acquired a 30% stake in VAZ, the Russian car manufacturer, in 1993. Of course, the continuation of this Eastern migration of EU productive assets will, to a large extent, depend on a clarification of the Russian political environment.

### ENVIRONMENT

Few industries are more affected by environmental regulations than the transport equipment industry. Important sectoral considerations include aerospace, motor vehicles and shipbuilding.

Aerospace environmental concerns have played an increasingly important role in the aircraft and engine selection process applied by EU airlines. To this end, regulations have specified the kinds of pollution levels that an engine may produce. Such environmental regulations have compelled airlines to buy newer, more efficient aircraft in lieu of the cheaper, older model--at greater expense to the airline.

As a result of strict EU legislation, the European automotive industry has invested heavily in improving the environmental performance of vehicles during the last decade. The technical changes required to meet these regulations were substantial and expensive; cost was not always able to be passed on to the customer. Also, vehicle manufacturers have made substantial progress in improving fuel efficiency. Examples of such improvement include the reduction of drag factors, a better combustion process, and vehicle weight reduction.

In recent years, there has been considerable emphasis on the painting of ships, particularly with respect to paint and coating substances and abrasive blasting. In this regard, a number of anti-fouling substances have been placed under intense scrutiny by environmentalists. Such substances include red lead (Pb3O4) and zinc chromate (ZnCrO4), as well as tin compounds. They are expected to be banned along with previously discontinued substances such as cadmium and other heavy metals.

**Table 7: Transport equipment  
The 15 largest companies in Europe, 1994**

(million ECU)	Country	Turnover	Net profit	Employment (thousands)
Daimler-Benz	D	54 123	548	330.6
Volkswagen	D	41 625	77	242.3
Fiat	I	34 577	536	248.2
Renault	F	27 143	553	138.3
Peugeot	F	25 267	472	139.8
Bayerische Motoren Werke	D	21 907	360	109.4
Volvo	S	17 044	1 447	75.5
Ford-Werke	D	12 168	352	44.0
MAN	D	9 429	78	57.0
Cofide	I	5 244	-118	41.7
Compagnie Industriali Riunite	I	5 201	-200	38.8
Investor	S	3 849	307	27.5
Valeo	F	3 504	151	28.1
Lucas Industries	GBR	3 251	-218	46.2
GKN	GBR	3 148	119	32.5

Source: DABLE

**Table 8: Transport equipment  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	1.15	1.32
Danmark	0.43	0.40
Deutschland	1.24	1.16
Ellada	0.30	0.24
España	0.86	1.05
France	1.23	1.31
Ireland	0.08	0.06
Italia	0.71	0.61
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	0.39	0.43
United Kingdom	0.96	0.92

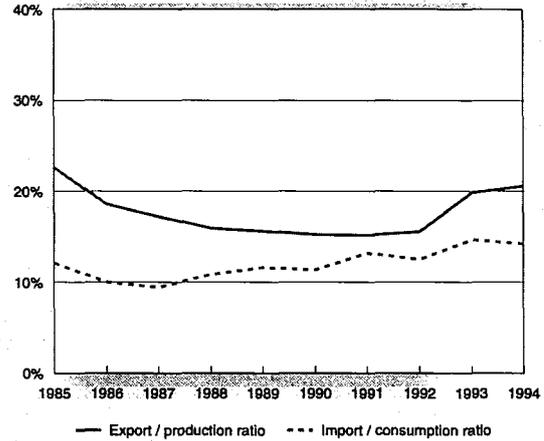
(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

It should also be noted that as certain environmental regulations burden the manufacturers in certain transport equipment sectors such as motor vehicles and aerospace, those same regulations may benefit companies manufacturing public and personal forms of transport equipment such as railway rolling stock, bicycles, mopeds, and motorcycles. Thus, the impact of an environmental regulation on the industry as a whole may be offset somewhat.

## OUTLOOK

After one of the strongest recession, 1994 was a year of recovery for the EU transport equipment industry. This recovery is expected to continue as growth in production will reach more than 40% between 1994 and 1998. Employment is also expected to grow somewhat, although it will not see the levels achieved in the mid-80s.

**Figure 8: Transport equipment  
Trade intensities**



Source: DEBA GEIE, Eurostat

But the overall outlook is gloomy largely because of the still-fragile state of the airline industry and the unsettled circumstance surrounding the defence sector. Increased competition will beset the motor vehicle and shipbuilding sectors in the years ahead. Environmental pressures continue for all sectors within the EU transport equipment industry.

A challenge for the industry will be to face foreign competition and further improve the streamlining and rationalisation process already started in order to assure the industry's prosperity for many years to come.

Written by DRI Europe

# Motor vehicles

## NACE (Revision 1) 34.1, 34.2

The West European car and commercial vehicle markets are slowly recovering from the severe recession of 1993. It will be 1998/99 before passenger car sales recover to the levels seen in 1990.

The recession highlighted the need for all vehicle manufacturers to accelerate the restructuring programmes needed to achieve global levels of competitiveness. All vehicle manufacturers are meeting this challenge by restructuring their development and production processes, re-evaluating their sourcing policies and improving skill and productivity levels. In addition more attention is falling on the distribution of vehicles and the elimination of vehicle stocks.

### INDUSTRY PROFILE

#### Description of the sector

NACE 34.1, 34.2 covers the manufacture and assembly of motor vehicles, and the manufacture of motor vehicle engines. Motor vehicles include passenger cars as well as commercial vehicles. All volume car producers also operate in the commercial vehicle market, especially the light commercial vehicle market.

Vehicle manufacturers also produce motor vehicle components and accessories (NACE 34.3) and are engaged in the distribution and maintenance of vehicles.

#### Recent trends

World-wide sales of new cars increased from 33.0 million units in 1993 to about 34.6 million in 1995. In the EU15 market, 1995 sales recovered to 11.6 million units from 10.9 million in 1993.

While the UK (+1.8%), German (+3.3%) and Italian (+1.6%) car markets grew in 1994, the demand for new cars declined further in Spain (8.1%) and France (2.1%). Recovery in the French and Spanish markets was halted by the ending of government incentives for car replacement.

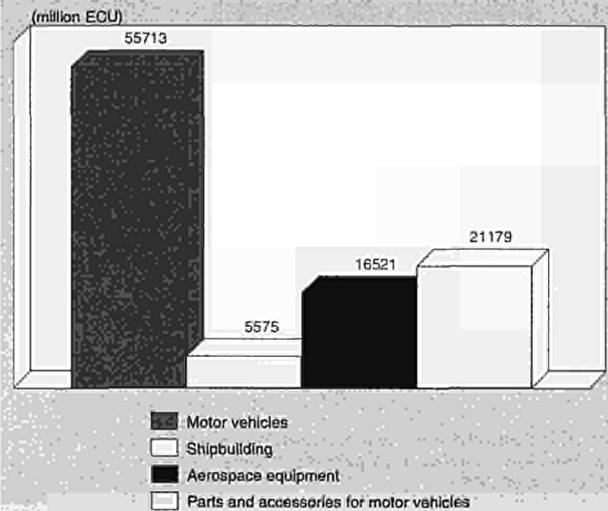
Sales of light commercial vehicles of less than 6 tonnes gvw rose by 2.9% from 1.151 million to an estimated 1.185 million between 1994 and 1995. Sales of trucks of more than 6 tonnes gvw increased from 204 761 in 1994 to an estimated 244 731 in 1995 - an improvement of 19.5%. 1993 was the worst year for truck sales in Europe for some time.

Imports from outside the EU accounted for 10% of total consumption and exports to countries outside the EU accounted for 16% of production in 1993.

The industry is a net exporter and an important positive contributor to the EU trade balance. Between 1985 and 1992 the surplus declined from 14.9 billion ECU to 5.6 billion ECU. The main reason behind the decline was the loss by EU car-makers of third-country markets. However, between 1985 and 1994, the trade balance surplus rose from ECU 4.9 bn to 18.5 bn.

Vehicle manufacturers generally adopt pan-European not global strategies, exploiting strengths of specific countries and expanding their presence in the major markets through new investments, joint ventures and alliances. Ford is not the only company attempting to introduce a global strategy. Fiat (The world car), VW, GM, PSA, Renault, Mercedes Benz, BMW have also adopted global strategies. Although, the exemption being that Fiat does not use the same model for all markets. A distinction can also be made between selling and sourcing strategies.

Figure 1: Motor vehicles  
Value added in comparison with related industries, 1994



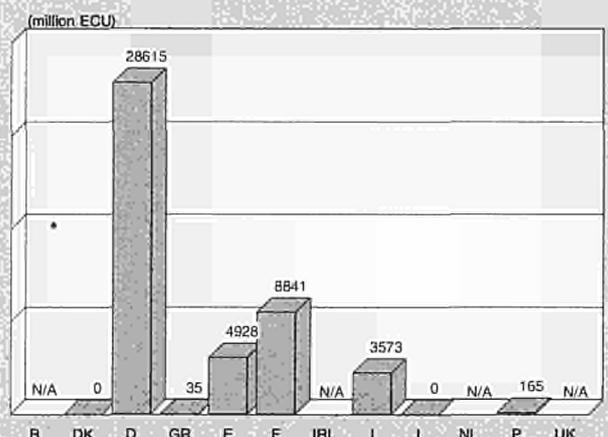
Source: DEBA GEIE

Between 1985 and 1990, production increased in real terms by 27%. In the early 90s the industry was hit by recession, so that in 1993 production was below the 1986 level. In 1994 the industry recovered, and by 1995 had matched the peak reached in 1990.

New competitive dynamics have led to significant structural changes and implementation of new organisational and production processes. According to Eurostat, the vehicle assembly industry employed 1.02 million people in the EU in 1994, down from 1.23 million in 1990. Productivity improvements, restructuring, and rationalisation have all contributed to a steady decline in the level of employment in the industry. The downturn of the early 1990s exacerbated this situation and in 1993 many vehicle manufacturers announced the long term aim of large reductions in their work-force. This has led to a reduction in employment levels. Total employment in the EU vehicle assembly industry fell from over 1.3 million in 1983 to 1.07 million in 1993, a reduction of 20%. 1995 levels are estimated at 1.02m.

Employment remains an important issue for the industry and the sharp downturn of vehicle production in 1993 exacerbated

Figure 2: Motor vehicles  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Motor vehicles**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	114 124	191 906	203 107	213 735	179 150	194 153	210 606	N/A	N/A	N/A	N/A
Production	129 026	203 865	209 770	219 351	191 225	212 682	232 027	N/A	N/A	N/A	N/A
Extra-EU exports	28 322	27 915	25 132	25 545	29 958	37 378	40 704	38 530	41 560	44 870	47 610
Trade balance	14 902	11 959	6 663	5 616	12 074	18 529	21 421	22 232	26 750	31 400	35 390.
Employment (thousands)	1 247	1 228	1 207	1 164	1 067	1 020	1 026	N/A	N/A	N/A	N/A

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Motor vehicles**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	6.6	-2.6	2.4	7.2
Production	4.8	-1.7	1.9	9.8
Extra-EU exports	-5.8	3.9	-1.6	20.8
Extra-EU imports	0.0	-1.8	-0.8	1.0

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Motor vehicles**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	28 322	25 697	26 220	25 163	26 530	27 915	25 1312	5 545	29 958	37 378.	40 7034	38 5230.
Extra-EU imports	13 419	11 544	12 372	14 134	15 597	15 956	18 469	9 929	17 884	18 849.	19 282.	16 2978
Trade balance	14 902	14 154	13 848	11 029	10 933	11 959	6 663	5 616	12 074	18 5289	21 4211	22 2312
Ratio exports / imports	2	2	2	2	2	2	1	1	2	2	2	2
Terms of trade index	89	92	96	91	95	100	98	96	91	91	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Motor vehicles**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	77.8	83.5	89.4	95.6	101.9	100.0	101.3	105.8	97.9	112.3
Unit labour costs index (3)	95.5	95.0	94.9	93.1	93.3	100.0	106.1	110.1	120.8	109.5
Total unit costs index (4)	80.2	83.0	86.7	90.1	94.1	100.0	104.1	108.5	113.4	112.7
Gross operating rate (%) (5)	6.7	7.6	8.7	8.7	9.3	7.5	7.1	7.0	4.9	6.7

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

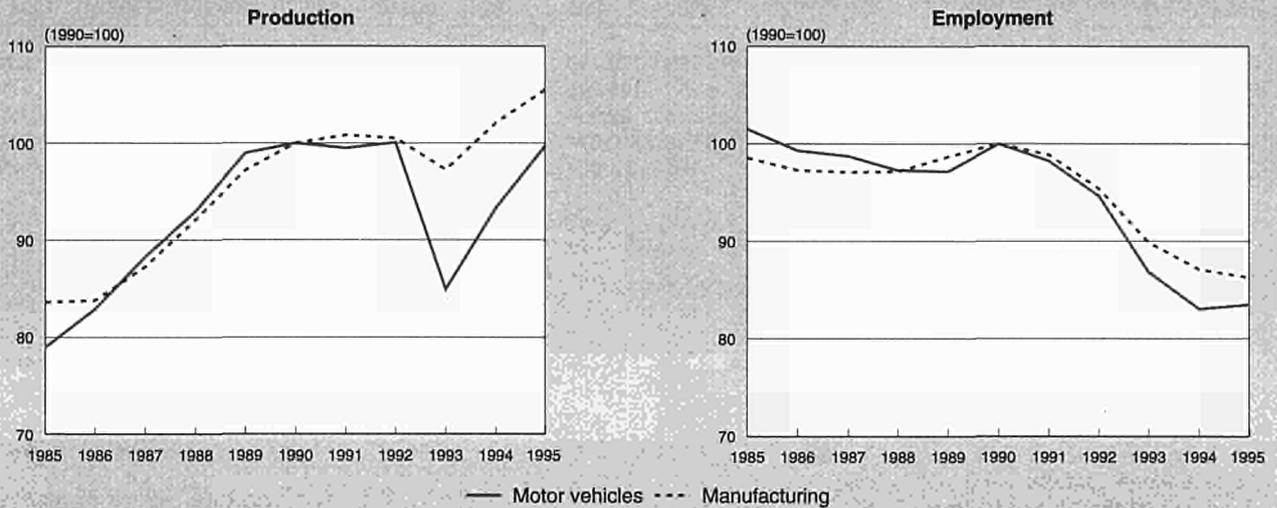
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Motor vehicles**  
**Production and employment compared to EU total manufacturing industry**



(1) Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

the situation. Over 260 000 jobs have been lost between 1984 and 1994. The recovery in 1994 did not prevent further job losses. Increases in European production to 2000 will not reverse this trend. Figure 5 illustrates the employment trends in the five major EU countries. The German industry, which until 1991 witnessed increases in levels of employment, has suffered the largest job losses in recent years, as almost all manufacturers accelerate their rationalisation and productivity improvement programmes.

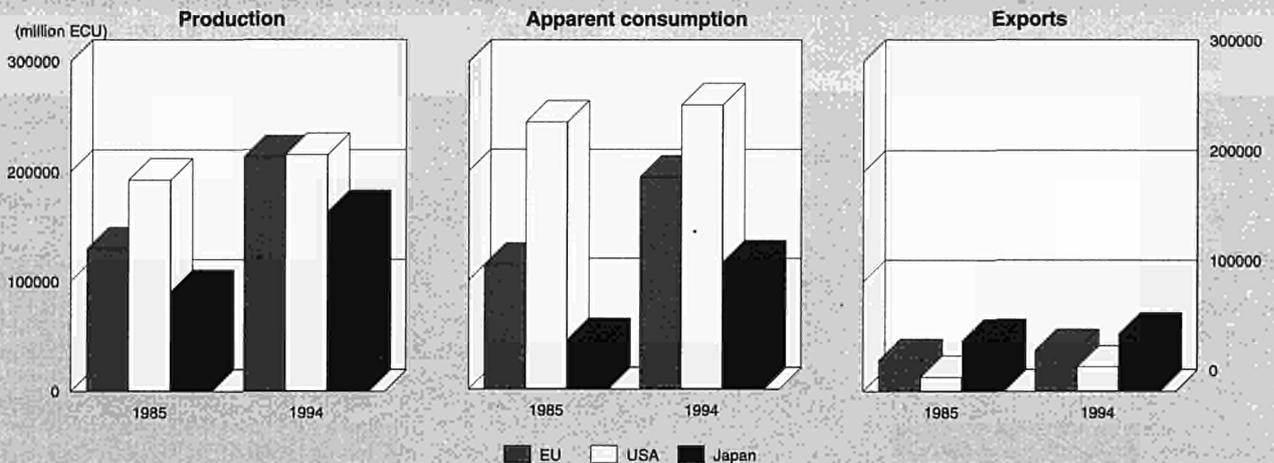
**International comparison**

In 1992, EU-15 accounted for 38.5% of world-wide cars sales, but this figure fell to 33.4% in 1994 and slightly rose to 33.6% in 1995. 32.2% of world-wide car production took place in the EU-15 in 1993 and this figure increased to 34.6% in 1994 and 35.4% in 1995. The EU was both the largest consumer of vehicles and the largest producing region for automobiles during the period.

In 1995, sales of cars in EU countries (including the three new Member States) amounted to 11.64 million compared to 9.39 million in North America (NAFTA), however, it must be kept in mind that 40% of the US market is made up of so-called light trucks. The sales of cars in Japan for 1995 amounted to 4.44 million. Production of cars in EU15 in 1995 was 12.62 million compared to 8.36 million in North America and 7.61 million in Japan.

Between 1988 and 1995, in a world market which increased by 2.1%, sales of cars in EU-12 countries declined by 5.8%. North American sales dropped by 19.0% and sales in Japan rose by 18.9%. Sales in the rest of the world increased by 42.5%. In 1992, car sales in EU-12 countries exceeded sales in the North American market by 3.2 million units. However, in 1993, this gap had narrowed to 0.9 million units as EU sales declined and North American sales picked up. In 1996, the gap is forecasted to increase again to 2.0 million units, following general economic recovery in the EU.

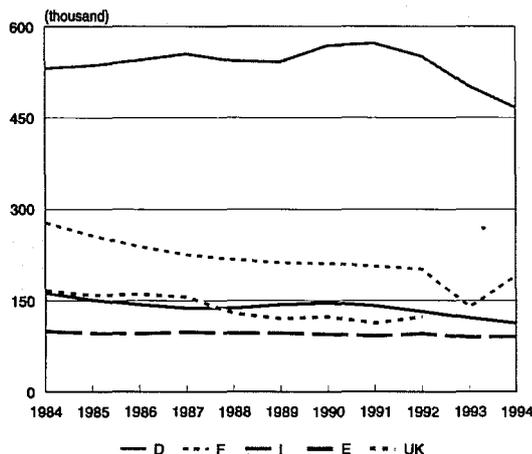
**Figure 4: Motor vehicles**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 5: Motor vehicles**  
**Vehicle assembly employment in the 5 principal EU manufacturing countries**



Source: DEBA

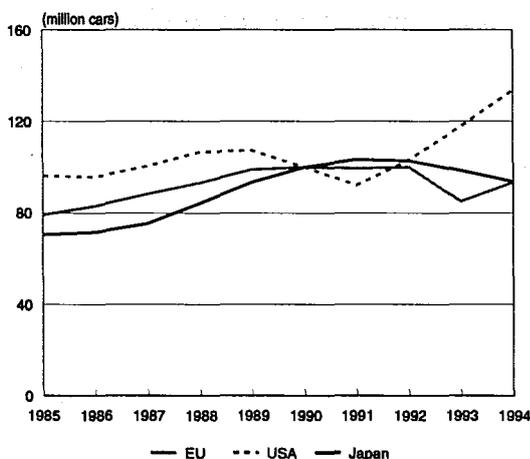
Trends in motor vehicle (car and commercial vehicle) production in value terms in the EU-12, USA and Japan are compared in Figure 4. The value of EU production in real terms has grown at a compound rate of 5.7% p.a. between 1985 and 1994. This contrasts with 1.2% per year in the USA and growth of 6.7% per year in Japan (see Figure 5).

**Foreign trade**

In the mid-1980s, North America was the most important export market for EU car manufacturers, and the major outlet for European cars above 3 000 cc. Unfavourable currency movements, recession in North America, increased competition from domestic car manufacturers and encroachment into the luxury sector by Japanese manufacturers have all contributed to the decline in exports of EU produced cars to North America. The start of a recovery in exports to the USA and Japan was seen in 1993, a trend which has been confirmed in 1994.

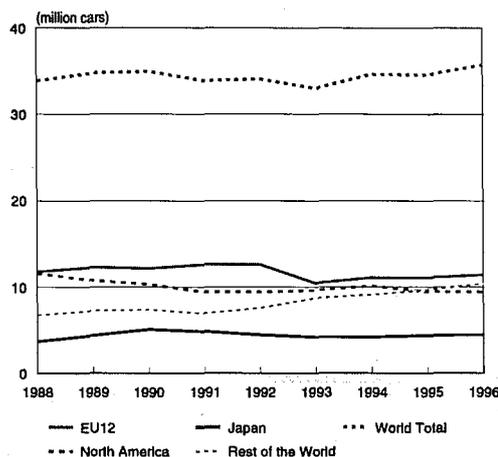
In recent years, some EU car manufacturers operating in the luxury cars segment have responded by announcing plans to invest in North American production facilities. As this capacity

**Figure 7: Motor vehicles**  
**International comparison of production in constant prices**



Source: DEBA GEIE

**Figure 6: Motor vehicles**  
**International comparison of sales**



Source: DRI Europe

comes on stream, the EU trade surplus with North America could be reduced further. Car manufacturers based in the USA are well established in Europe, and the absence of direct imports from the USA has contributed to the EU trade surplus.

Figure 9 shows the share of various regions of origin in the number of passenger cars imported into the EU (unit terms). Figure 10 also shows the distribution of the origin of EU car imports, but in value terms and for the entire motor vehicle market (including commercial vehicles). The share of Japan in EU car imports in unit terms has fallen by 20% between 1988 and 1995. This is due to improved European competitiveness, better quality/price ratio, more attractive model policy, and the strong yen. In value terms the fall was just 11% between 1989 and 1994, indicating the move towards the upmarket by the Japanese manufacturers. The increase in the number of Japanese vehicles assembled in Europe helped offset the fall in imports. EFTA's share has increased in value terms (most of EFTA is now EU), while imports from Korea increased sharply from 21 000 units in 1988 to 161 000 units in 1995. There has been a marked rise in the level of imports from the USA to Europe in recent years, from 5.7% in 1989 to 10.0% in 1994.

**MARKET FORCES**

**Demand**

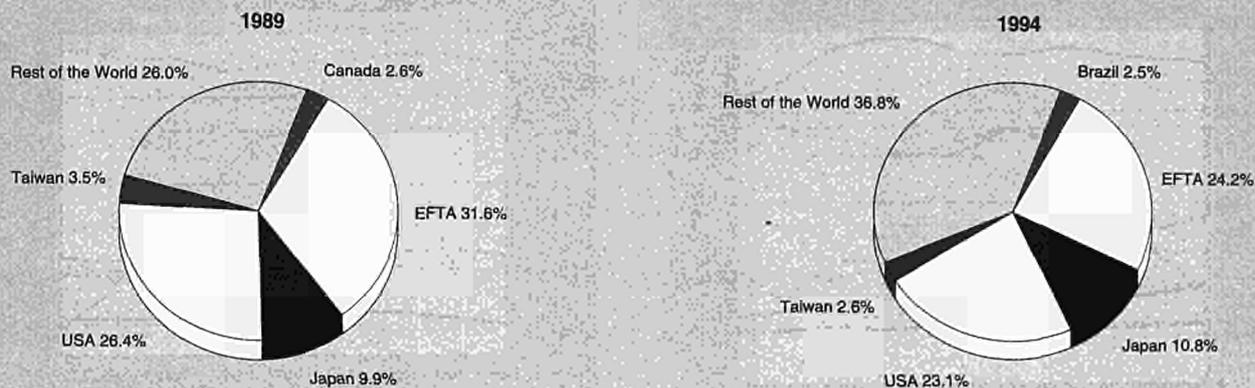
**Cars**

Demand for cars is determined by a number of factors including personal disposable income, wealth and consumer confidence. Changes in these factors account for the cyclical nature of sales over the past two decades with economic downturns generally triggering slumps in new car registrations.

The West European passenger car market has grown steadily over the last twenty years, punctuated by two periods of downturn (see Figure 11). Demand for passenger cars slowed down in the early 1990s, and 1993 marked a deep drop of sales in most EU markets. 1994 saw the start of a gradual recovery in demand (see Table 5).

In the long term, as the motorisation rate continues to grow, demand for cars will continue to rise. Average car ownership figures vary widely across countries as illustrated in Figure 12. It was nearly 600 units per 1 000 inhabitants in Western Germany prior to unification. In the larger EU economies (with the exception of Spain) there are over 400 cars per 1 000

**Figure 8: Motor vehicles  
Destination of EU exports**



Source: Eurostat

inhabitants, but in Portugal, Greece and Ireland car ownership is less than 300 cars per 1 000 inhabitants. There is further scope for increases in car ownership throughout the EU, especially in countries where car ownership per capita is currently low.

### Trucks

The demand for trucks is highly correlated with trends in industrial output and in investments in plant and machinery.

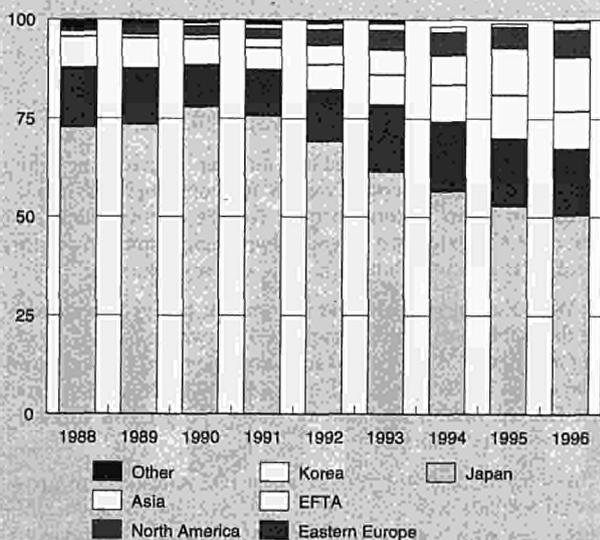
The long term demand for trucks is highly dependent on trends in the road haulage industry, which in turn is affected by the level of economic activity and by the competitiveness of road haulage with respect to other transport modes. Over the past two decades, the road haulage sector has consistently gained market shares against rail and inland waterways. This trend is expected to continue. In this field, EU industry is a world leader. There has been a vast amount of overseas investments made by the EU companies.

While the demand for freight transport is expected to grow strongly in the future, the demand for trucks will not follow all the way. Harmonisation and deregulation of the road haulage industry has resulted in the use of larger trucks and in increased efficiency. The EU truck fleet will still grow, but truck replacement patterns will be dominating factor in determining the overall levels of demand of new trucks.

The commercial vehicle market is highly cyclical. The market suffered dramatic downturns in the mid-1970s and the early 1980s. In the late 1980's, increased economic activity led to very strong growth in the road freight transport demand, with a corresponding growth in the size of the EU fleet. This was accompanied by high replacement demand (to replace the vehicles initially registered in the late 1970s) and led to a boom in the truck market.

1990 saw the beginning of a cyclical downturn in EU sales of trucks of more than 6 tonnes gv.w. Booming sales in Germany after re-unification cushioned this decline but sales dropped sharply in 1992 and in 1993, with only the UK showing signs of recovery. In 1994 a more general recovery was underway, and 1995 saw a 20% rise in demand as companies made truck replacements which had been postponed in the recession.

**Figure 9: Motor vehicles  
Share of EU12 imports of passenger cars**



1996 figures are DRI forecasts  
Source: DRI Europe

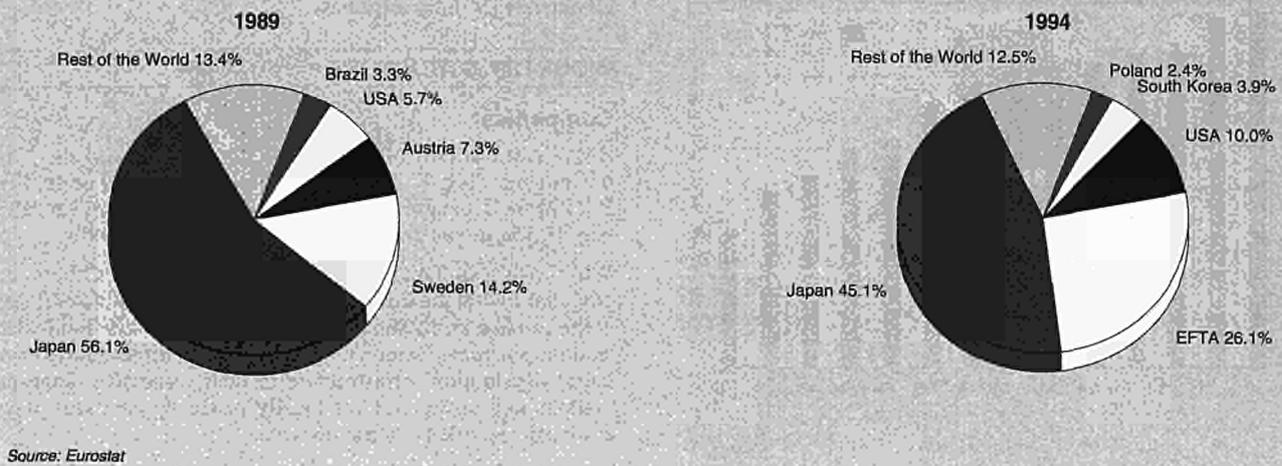
### Supply and competition

Cyclical under-utilisation of capacity is one of the key issues facing the European vehicle assembly industry at present. During the boom of the late 1980s, the industry was operating very close to full capacity. In this period the European assemblers expanded total capacity, mostly through elimination of bottlenecks and new shift practices.

With the recent addition of new transplant capacity as well as capacity in Eastern Europe, and the steep decline in sales in 1993 and the slow recovery, there are serious implications for vehicle manufacturers' profitability. It should be noted that manufacturers have managed, however, to lower their break-even-point, providing for more flexibility in cyclical up- and downturns in demand. In a low growth market, increases in productivity are only possible by further manpower reduction.

A challenge for European manufacturers is posed by Japanese production in Europe, where Nissan, Toyota and Honda are already claiming globally competitive levels of quality and efficiency. While Japanese imports are a falling gradually in market share terms, chiefly as a consequence of the rise of the Yen and high labour costs in Japan, significant growth

**Figure 10: Motor vehicles  
Origin of EU imports**



in Japanese manufacturers' market share will come from the output from these transplants.

Newly industrialised countries, for example in East Asia and East European countries, are adding to competition in the EU. Although the volume of imports into the EU from these countries is still at a relatively low level, the EU market is attractive to importers. Plans for new models and distribution capacity indicate an ambition from Korean companies to raise European sales substantially by the year 2000. This would have a direct impact on European produced passenger car sales. Japanese car manufacturers played a key role in the development of the Korean and Malaysian automotive industries with Mitsubishi having close ties with Hyundai of Korea and Proton of Malaysia, and Mazda having ties with Kia of Korea. Samsung plans to build Nissan models in Korea before designing its own vehicles.

Several studies have shown that Europeans have a relatively high cost to productivity ratio. Figure 13 shows an international comparison of wages and social costs for 1994. In terms of the total cost of an employee the UK is the lowest and Germany the highest. In terms of pure wage cost Italy is lowest and Japan the highest.

Employers in most EU Member States have higher social costs and have less flexibility in making adjustments to the labour force in response to changing commercial requirements than their global competitors.

Reduction in unit costs through productivity improvements in all parts of the supply chain is, along with the search for innovation and quality, the most important issue facing the industry. Further data on productivity is given in Table 4.

**Production process**

In recent years, changes in the production and operational philosophies in the motor vehicle industry have led to widespread adoption of "lean production" techniques, resulting in lower levels of vertical integration and substantial changes in the nature of :

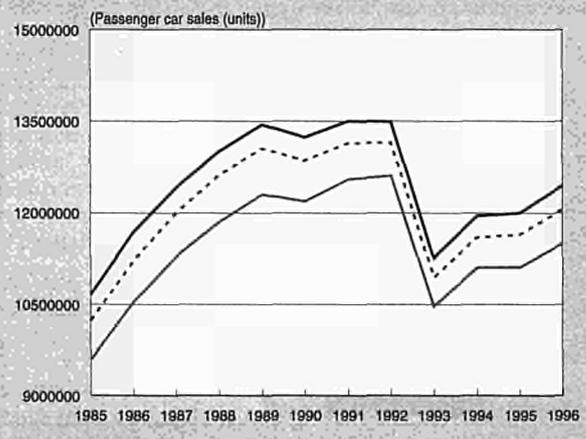
- relationship between vehicle manufacturers, its suppliers and dealers;
- coordination between product design and the production process;
- production and logistic operations;
- work-force responsibility, flexibility and skill levels.

Benefits have included a reduction in the development time from initial concept to production, improvements in quality and productivity, and increased flexibility and responsiveness.

Changes in the interaction between vehicle manufacturers and component suppliers are widely seen as instrumental to achieving global standards of competitiveness. These changes imply a restructuring of the automotive component supply chain with ramifications for the production and logistics processes (see section on Industry Structure). It is now common for the level of cooperation between vehicle manufacturers and suppliers to extend to joint development of complete subsystems and assemblies, and their supply to the assembly plant on a Just-In-Time basis.

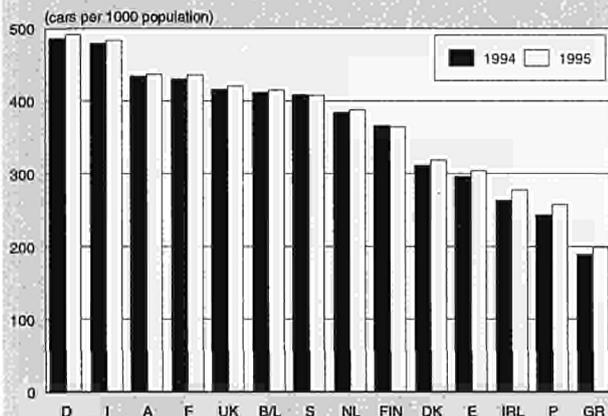
Shorter reporting lines, improved interfaces between management and work-force and better communication systems are contributing to the successful implementation of Total Quality Management, Quality Circles and Continuous Improvement programmes, with resulting improvements in productivity and quality. Flexible shift-working is already leading to better utilisation of plant and equipment.

**Figure 11: Motor vehicles  
Historic demand trends**



1996 figures are DRI forecasts  
Source: DRI Europe

**Figure 12: Motor vehicles**  
**Comparison of car ownership levels in the EU**



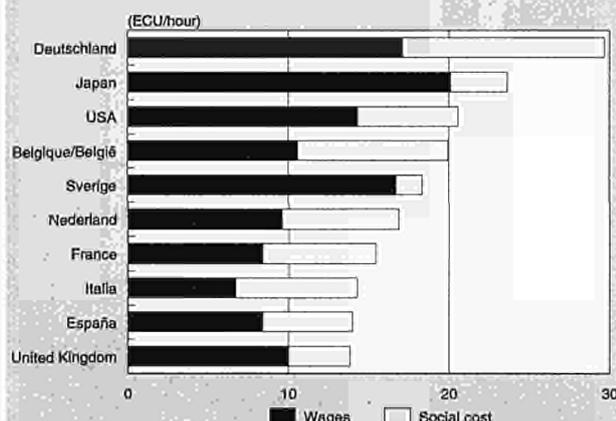
Source: DRI Europe

Improvement in flexibility through reduction in machine set-up time, optimisation of batch size and reduction in raw materials, work in progress and finished goods inventory are all part of common continuous improvement programmes. The 1993 recession has placed additional emphasis on the need to reduce break-even volumes.

The Simultaneous (or Concurrent) Engineering approach, involving the use of multi-disciplinary platform teams to control a design project with the use of specific techniques such as QFD (Quality Function Deployment) and DFMA (Design for Manufacture and Assembly) and complemented by widespread use of tools such as Computer Aided Design (CAD) and Computer Aided Engineering (CAE), has been implemented by all EU car manufacturers.

New automated equipment has been introduced in the production steps, where working conditions are hardest and most repetitive. Widespread use of robot painting and welding in the industry is improving quality, reducing labour costs as well as reducing the mundane and hazardous manual operations. Optimisation of the capital to labour ratio will remain a key factor in improving competitiveness. However, there will not be an ever-increasing automation of operations. Final

**Figure 13: Motor vehicles**  
**International comparison of wages and social costs, 1994**



Source: VDA

assembly largely remains the domain of the manual employee, due to the variety and complexity of the operations. While "state of art" work practices have been adopted in many of the newer vehicle assembly plants, EU manufacturers face the task of extending these practices to all their plants and all aspects of their activities.

## INDUSTRY STRUCTURE

### Companies

BMW's acquisition of the Rover Group has turned the "big 6" into the "big 7" EU car manufacturers (see Figure 14). In 1995 the Japanese market share of West European car sales was 10.7%, down from over 12% in the early 1990s.

While five manufacturers have car market shares of between 10% and 13% at the European level, a different picture emerges at the country level. The individual markets are still dominated by domestic manufacturers. Vehicle manufacturers tend to have larger distribution infrastructure in their respective domestic markets and preference for locally produced cars still plays a significant role in some markets.

In the market for light trucks, Renault, Ford and PSA have the largest shares due to their successful range of vans (see Figure 15).

In the market for trucks over 6 tonnes gvwt, Mercedes-Benz is the clear leader. Its market share rose from 23% in 1989 to 31% in 1993, but has fallen back to 25.3% in 1995. Both Mercedes-Benz and MAN benefited from the reunification boom in Germany in 1992 and were the only manufacturers to record higher levels of sales in 1992 than in 1989 (see Figure 16).

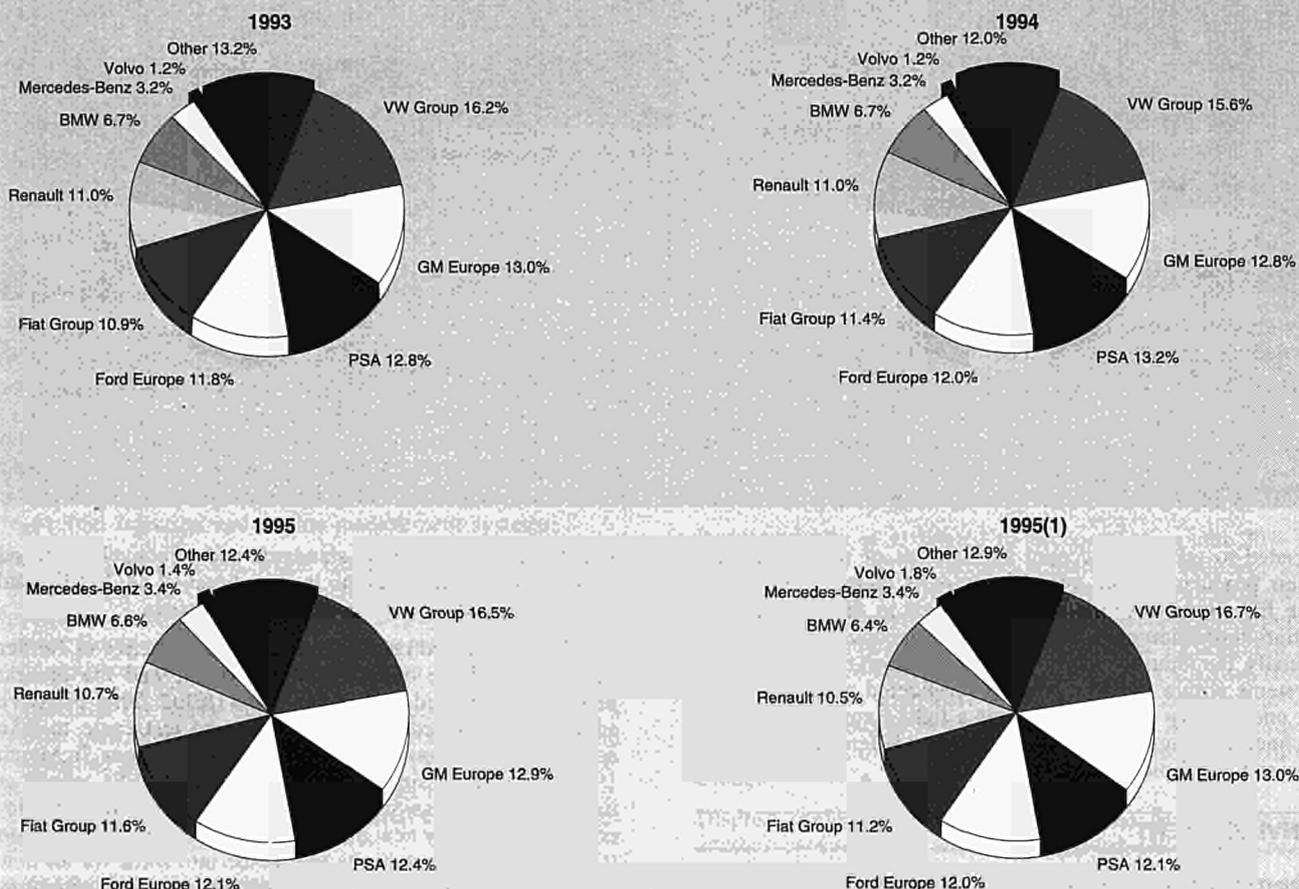
### Strategies

Vehicle manufacturers' strategies respond to long term trends affecting the industry. The 1993 slump in motor vehicles sales has accelerated the implementation of long term strategies and resulted in a re-examination of the more ambitious expansion programmes. Key long term trends which shape vehicle manufacturers' strategies include:

- Globalisation: the need to reduce traditional dependencies on domestic markets and improve ability to compete, initially at European level and subsequently at global level. While non-EU manufacturers have been investing in transplant production facilities in the EU, EU manufacturers have been active in investing outside their home country within the EU, as well as in non-EU countries, particularly in Eastern Europe and North America. Asian markets are enjoying high growth rates and this region has already attracted a lot of attention. EU manufacturers are expected to increase their presence in this region, especially through joint ventures.
- Product Development: the rate at which new vehicle models are introduced into the market place has become one of the key basis for competition in the automotive industry. Car manufacturers are speeding up and restructuring their innovation, product and process activities (Simultaneous Engineering) to reduce the time from initial concept to production. Continuous improvements in the flexibility of designs and processes are needed to ensure maximum customisation to consumer requirements. Evolution in manufacturers' market shares reflect the rates of new model introductions. In particular, the need to develop many vehicles from one platform has been a recent focus for the industry.
- Improved competitiveness through improvements in organisational processes: cost structure, productivity, quality and flexibility have all become crucial elements of competitiveness.



**Figure 14: Motor vehicles**  
**Major European vehicle manufacturers' EU car market share**



(1) EU15  
 Source: DRI Europe

The 1993 recession in the industry has highlighted the need for all vehicle manufacturers to accelerate the restructuring programmes needed to achieve global levels of competitiveness. Manufacturers are:

- restructuring their design and production processes (see section Production Process);
- re-evaluating the degree of vertical integration, out-sourcing policies and supplier relationships;
- improving work-force skill levels.

In the short term, each EU manufacturer is faced with different priorities and this is reflected in their strategies.

The late 1980s and the early 1990s saw a reduction in the number of independent motor vehicles manufacturers, as niche producers were acquired by volume manufacturers. As product and business development costs escalate, partnerships and alliances are increasingly regarded as providing the most cost effective method of developing a competitive product portfolio and reducing dependence on domestic markets.

Alliances between Ford and Iveco in the light commercial vehicle market, between PSA and Fiat, and Ford and VW for development and production of a multi-purpose vehicle, and between Ford and Nissan for development of a four wheel drive vehicle, are examples of joint product development and production alliances.

Rover and Honda worked together on a number of collaborative projects before taking a cross share holding of 20% in each

others UK businesses in 1990. Both companies produce versions of jointly developed cars. However, this alliance came to an end by the acquisition of the Rover holding company by BMW.

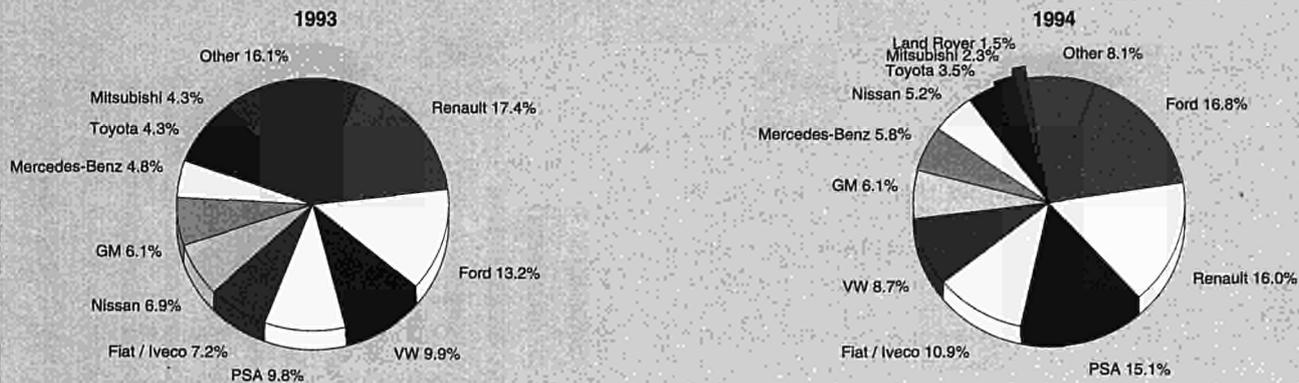
Table 6 shows that financial result measured by turnover for Europe's car manufacturers were much improved in 1994, in marked contrast to those for 1993. For example, Mercedes financial turnover figure of 33 million ECU in 1993, had increased to 37 million ECU in 1994.

### Impact of the Single Market

According to the industry, the Single Market programme definitely had a positive impact on the car manufacturing sector. The free movement of goods opened up new market opportunities, which the major manufacturers seized by spreading their production facilities throughout the EU. Car-makers' operations have been eased by the achievement of free movement of capital and progress in the area of cross-border payments.

The full completion of the Single Market still requires the harmonisation of taxation systems and further progress in the field of cross-border payments. More specifically to the sector, the free movement of goods is still hampered by different national registration formalities. The first important step towards the free circulation of cars within the EU was the European type approval, i.e., a car whose technical specifications are approved in one Member State is automatically approved all over the EU. Since January 1, 1993, EU type approval has been in force on an optional basis, prior to its mandatory application in 1996. Since then, manufacturers have only

**Figure 15: Motor vehicles**  
**Major European vehicle manufacturers' EU15 market share for trucks under 6 tonnes GVW**



Source: DRI Europe

needed to take into account a single set of rules to market their products (whole vehicles, or parts thereof) throughout the EU. Harmonisation is still required in the national registration procedures, which still vary from country to country. Finally, the industry wants the harmonisation of classification systems within the EU: what is considered a passenger car in one country can be defined as a light commercial vehicle in another country. This entails taxation differences and blurs the statistical picture.

## ENVIRONMENT

The reduction of emissions achieved by the EU motor vehicles in the past few years has been impressive. Further reductions, while technologically possible, are becoming costlier to achieve. Progress in the areas of driver education, more frequent and stringent vehicle inspection and the use of road telematics to reduce traffic congestion can also contribute to reducing emissions.

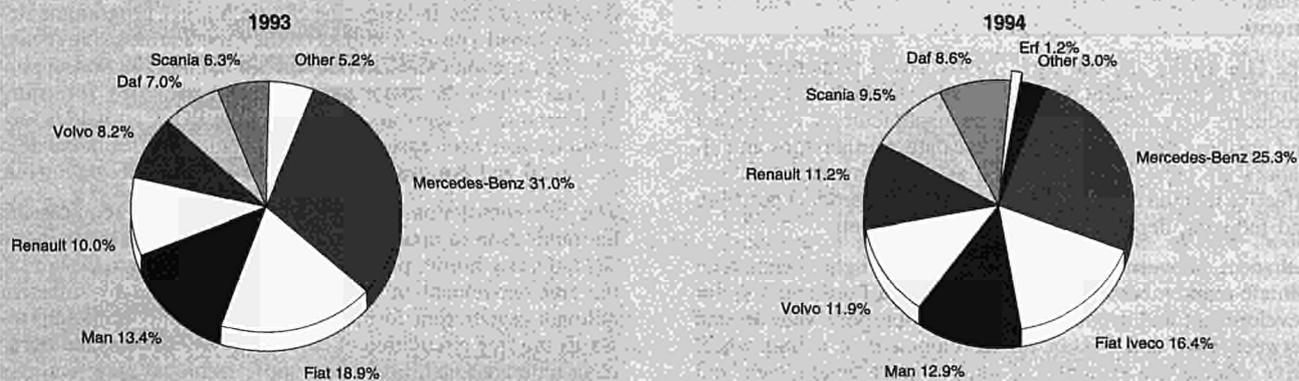
Since the early 1970s, EU legislation has controlled the emission of both unburned hydrocarbons and carbon monoxide. In 1978, oxides of nitrogen also became subject to control. The "Luxembourg Agreement" of 1985 marked a significant

step for future emissions standards and effectively initiated developments which were to lead to directive 88/76/EEC and the requirement of the 3-way catalyst system.

The EU has moved rapidly in introducing a series of further light duty vehicle directives, 89/458/EEC and the present newly consolidated Directive, 91/441/EEC. This directive added a high speed test to the standard test cycle to take account of emissions in suburban driving situations. In March 1994, the Commission issued directive 94/12/EEC aimed at tightening car emission limits further. This directive also incorporates a totally new method for conformity of production (COP) testing. These limits will come into force for all new vehicles by the end of 1996. The next step to reduce emissions from road vehicles will be in the year 2000. The measures will be based on the results of the "Tripartite" Auto-Oil programme a collaboration between the Commission, the petroleum and car industries, designed to determine the most cost-effective package of measures to reduce vehicle emissions.

Emissions of light commercial vehicles have been reduced to the level of passenger cars emissions with Directive 93/59/EEC of June 1992. Following the introduction of the most recent emissions standards at the end of 1992, passenger

**Figure 16: Motor vehicles**  
**Major European vehicle manufacturers' EU15 market share for trucks over 6 tonnes GVW**



Source: DRI Europe

**Table 5: Motor vehicles**  
**Summary of unit sales and production for EUR15**

(thousand units)	1993		1994		1995	
	Sales	Production	Sales	Production	Sales	Production
Passenger cars	10 944	10 845	11 598	12 110	11 643	12 617
Light trucks gvw	1 071	1 094	1 151	1 270	1 185	1 383
Trucks 6 tonnes gvw	189	224	205	284	245	358

Source: DRI Europe

car CO emissions will have been reduced by over 90% compared to 1970 levels and HC plus NO<sub>x</sub> emissions by 80% from 1970 levels.

During the last decade, the European automotive industry has invested heavily in improving the environmental performance of vehicles. The technical changes required to meet these regulations were substantial, with the consequence of higher costs which could not always be passed on to consumers. Gasoline engine passenger cars needed to be fitted with closed loop catalytic converter systems, which in turn required electronic fuel injection and engine management systems.

During the next decade, while vehicle ownership levels and traffic levels will continue to increase, older models will be replaced by models equipped with 3-way catalyst systems and the European car park is expected to produce substantially less emissions of CO, HC and NO<sub>x</sub> than today.

Legislation for heavy duty diesel vehicles followed along a similar path. Regulation No. 49 was introduced in 1982 and established limits for CO, HC and NO<sub>x</sub>. Directive 88/77/EEC lowered the emissions limits, but it was not until the introduction of 91/542/EEC that fundamental changes in technology became necessary.

Euro I regulations came into force in 1992-93 and Euro 2 limits will come into force in 1995-96. Complying with Euro 2 limits without increasing fuel consumption and without using expensive after-treatment equipment presents a major technical challenge for the European industry. A further tightening of emissions limits (Euro 3) for the year 2000 will be prepared as part of the Auto-Oil programme.

With the introduction of new limits for cars and trucks, a complete set of stringent standards, acknowledged to be as severe as the US 1994 requirements will be in force by 1996.

Road transport is estimated to account for around 20% of total European carbon dioxide emissions and reducing fuel consumption is the only method of reducing these emissions. Vehicle manufacturers have made substantial progress improving fuel efficiency. For example, through reducing drag factors, improving the combustion process and weight reduction. However, in order to contribute to the goal of stabilising carbon dioxide emissions at 1990 levels by the year 2000, improvement in both traffic efficiency and fuel consumption will be needed.

Disposal/scraping of vehicles at the end of their lives is another issue receiving attention by the vehicle industry, regu-

**Table 6: Motor vehicles**  
**Financial performance of the main EU manufacturers**

Turnover (million ECU)	1991	1992	1993	1994
BMW	14 550	15 443	14 920	22 481
Fiat Group	34 140	34 240	29 597	36 523
Ford Europe	19 433	17 546	15 328	19 065
GM Europe	20 498	22 186	20 604	18 264
PSA	22 969	22 693	21 921	25 228
Renault	23 801	26 199	25 592	27 970
Volkswagen	37 213	42 272	39 753	41 568
Volvo	10 325	11 019	12 187	17 026
Rover	5 341	4 989	5 510	N/A
Mercedes-Benz	31 850	32 099	33 401	36 621

Source: DRI Europe

**Table 7: Motor vehicles**  
**EUR15 annual growth rates in number of vehicles**

(%)	1993	1994	1995	1995-2000 average
Cars				
New registrations	-15.3	6.0	0.4	4.1
Production	-15.4	11.7	4.2	2.9
Commercial vehicles (under 6 tonnes gvw)				
New registrations	-18.3	7.5	2.9	2.4
Production	-22.7	16.1	8.9	1.5
Commercial vehicles (over 6 tonnes gvw)				
New registrations	-23.1	8.2	19.5	2.9
Production	-32.6	26.9	25.9	-0.4

Source: DRI Europe



**Table 8: Motor vehicles  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	0.0	0.0
Deutschland	1.5	1.3
Ellada	0.1	0.2
España	1.0	1.3
France	1.1	1.3
Ireland	N/A	N/A
Italia	0.7	0.5
Luxembourg	0.0	0.0
Nederland	N/A	N/A
Portugal	0.2	0.5
United Kingdom	N/A	N/A

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

lators and environmental groups. Some of the manufacturers have already set up recycling plants and EU manufacturers appear to be leaders in this field.

## OUTLOOK

1993 will be remembered for the sharpest downturn in European car production since the 1974 oil price induced recession. Output fell by 15.4% or nearly 2 million units to 11.4 million units. Of the major EU markets, Germany, France, Italy and Spain all showed reductions in sales in 1993 of around 20%, but the UK market recovered and increased by over 11%.

Car production recovered by 11.7% to 12.1 million units in 1994, with Japanese transplant production accounting for a significant part of this growth, increasing from 316 000 units in 1993 to 333 000 units in 1994. In 1995 production increase a further 4.2% to 12.6 million. In 1994, car sales in the EU15 rose by 6.0%, but in 1995 rose only 0.4%.

According to DRI, total EU sales are expected to increase in 1996 by 3.6% to 12.1m: 1996 should see growth in all EU markets with the exception of Denmark. Sales in Germany,

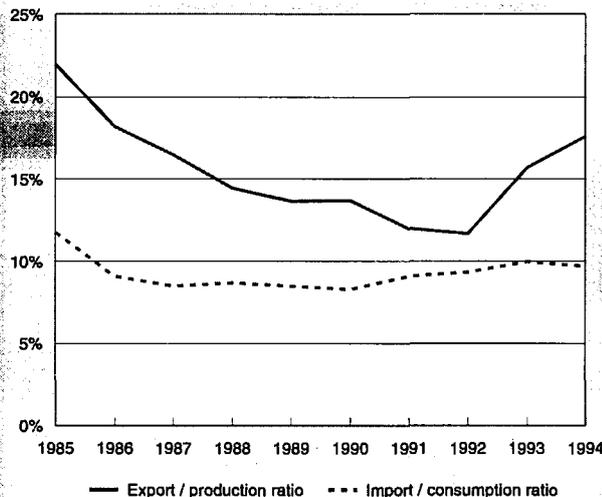
France, the UK and Italy will grow by between 2% and 4%. EU15 sales are not expected to reach the 1992 level of 13.1 million units until 1999.

After achieving 5.1% growth in 1992 (re-unification boom), the light truck market declined by 18.3% in 1993. In 1994 and 1995 the market grew by 7.5% and 2.9% respectively.

Truck sales dropped sharply by 23% in 1993 after declining for four years. Sales were down in all markets with the exception of the UK. Germany, Spain and the Benelux countries, in particular, suffered major falls in demand. Demand for 1994 began to recover and the market grew by 8.2%. 1995 saw a revival of demand and sales increased by 19.5% to 245 000 trucks.

All EU vehicle manufacturers are expected to continue to streamline their operation to reduce costs and improve competitiveness. Introduction of four-wheel drive and multi-purpose vehicles will dominate car product development programmes in the short term. Joint development and production, already used with success in such programmes, is expected to continue as complexity increases, development costs escalate and manufacturers look for cost effective alternatives.

**Figure 17: Motor vehicles  
Trade Intensities**



Source: DEBA GEIE, Eurostat

Written by: DRI Europe

The industry is represented at the EU level by: Association des Constructeurs Européens d'Automobiles (ACEA). Address: Rue du Noyer 211, B-1040 Brussels; tel: (32 2) 732 5550; fax: (32 2) 732 6001.

# Motor vehicle parts and accessories

## NACE (Revision 1) 34.3

The motor vehicle parts and accessories industry employs nearly the same number of people (approximately 1 million) as the motor vehicle industry it supplies. The parts and accessories sector presently includes a sizeable number of small firms; however, greater industry concentration is expected as trends in vehicle production techniques increasingly demand tighter cooperation with the parts and accessories industry. The business climate for parts and accessories is strongly tied to the cyclical performance of the motor vehicle sector. While supply of parts for new cars closely reflects fluctuations in new car demand, superimposed on this are several trends with long term influences. There has been a steady upgrade in car model mix to larger and better equipped models. At the same time, equipment levels on all vehicles are continuously improving, thereby increasing the value to component suppliers. Acting contrary to this is the demand for improved durability and life expectancy of all vehicle components which has a significant effect on replacement demand. Another trend is the general increase in the level of outsourcing. While the European car parc will continue to grow through the 1990's, much of the new car sales growth will be taken by Japanese transplants. The challenge for the European parts industry is to supply this demand and, in doing so, raise its performance to best world standards.

### INDUSTRY PROFILE

#### Description of the sector

The parts and accessories market is traditionally broken down into two main segments. First, the market for original equipment (OE), that is parts that car manufacturers buy from specialised producers for assembly into new vehicles. Second, the replacement market or after-market (AM) which comprises parts destined for maintenance and repairs and automotive accessories. Roughly 75% of the production goes to the OE market and 25% to the AM, although this varies depending on the country and the individual product.

The precise coverage of the component industry in terms of products is difficult to assess. Data which corresponds to NACE 34.3 (parts and accessories for motor vehicles) is too narrow in its coverage as it excludes, for instance, heavy construction vehicles, tyre manufacturers who supply vehicle manufacturers, and most of the electrical and electronic components that are so important in vehicle manufacturing today. Furthermore, existing statistics, which are based on the production of companies of more than 20 employees, marginally understate the value of production of this highly fragmented industry.

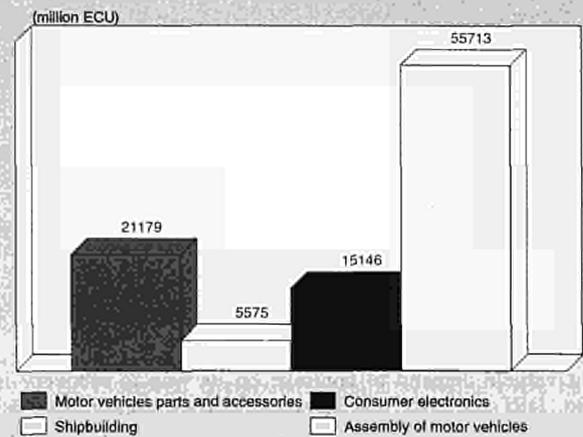
A study carried out for EU DGIII, also sourced in this monograph, covers a wider range of products than the strict NACE definition.

#### Recent trends

With turnover estimated at almost 100 billion ECU, the EU parts industry is about half the size of the auto industry. However, in terms of employment the parts and auto industries are much closer in size, with each having close to 1 million workers.

Within the parts and accessories sector, independent manufacturers account for nearly 90% of both production and em-

Figure 1: Motor vehicles parts and accessories Value added in comparison with related Industries, 1994



Source: DEBA GEIE

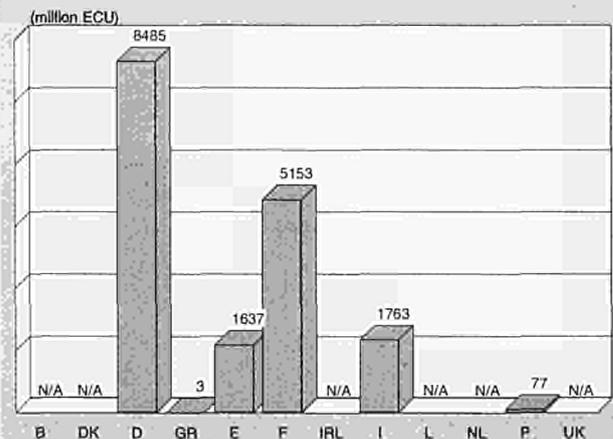
ployment, with the remaining 10% stemming from subsidiaries of vehicle manufacturers.

Turning to the breakdown of production by Member States, leading vehicle producing countries are also leading parts manufacturers. Germany accounts for more than 45% of EU-12 value added, followed by France, the United Kingdom, Italy and Spain (see Figure 2). The rankings are similar in the auto and parts industries. This is explained by a frequent geographical clustering of parts manufacturers in proximity to vehicle production sites.

During the 1980s, the parts industry expanded somewhat faster than its main industrial end-market, the auto industry. It grew consistently between 1982 and 1992 and then dipped in 1993, following the downturn in the vehicle market. This has been followed by a period of strong growth in 1994 and 1995 (see Figure 3).

After a 17% drop in 1993, EU15 combined demand for passenger cars and light commercial vehicles increased by 6.1% in 1994 and 0.6% in 1995. Manufacturers are expecting new

Figure 2: Motor vehicles parts and accessories Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Motor vehicles parts and accessories**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	23 540.5	44 402.5	46 377.4	50 303.8	46 352.2	52 963.8	61 372.8	N/A	N/A	N/A	N/A
Production	30 268.2	47 057.4	48 849.8	52 485.2	48 868.2	55 030.3	63 975.5	N/A	N/A	N/A	N/A
Extra-EU exports	8 780.2	5 442.9	5 684.8	5 587.5	6 022.7	6 846.0	7 997.5	6 548.6	6 690.0	6 840.0	6 870.0
Trade balance	6 727.7	2 654.9	2 472.4	2 181.4	2 516.0	2 066.5	2 602.7	2 758.9	3 370.0	3 950.0	4 700.0
Employment (thousands)	498.3	540.2	535.0	521.6	480.6	466.6	470.7	N/A	N/A	N/A	N/A

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

light vehicle demand to continue on its way to recovery in 1996. DRI forecasts that sales of over 14 million vehicles will be achieved in 1998 - a level last achieved in 1992. The lower sales levels of the intervening period will continue to affect components suppliers, although they have the replacement parts market to marginally help buffer the fall in original equipment demand. In addition, a reduction in new car purchases results in the car parc (cars in use) getting older on average, resulting in more maintenance and replacement parts expenditure.

Productivity improvements in the parts industry, on average have been marginally faster than improvements in the vehicle manufacturing industry. Improvements have been achieved thanks to rapidly expanding production rather than lay-off, as a result, employment was still higher in 1991 than in 1982. A substantial proportion of productivity gains have been transferred by negotiation and sometimes by imposition to the car makers. The upward price adjustments of parts and accessories have lagged far behind vehicle price increases. Car makers have partially reinvested their differential pricing gains in enriched vehicle equipment, thus keeping their suppliers' level of activity buoyant well into 1992. The sharp downturn in vehicle demand and production did not become visible until 1993 due to German reunification.

#### International comparison

Once relatively sheltered from foreign competitors, EU component suppliers are now facing increased domestic, European and world-wide competition. This trend is fostered by several factors:

- The creation of the single market is forcing European suppliers to intensify cross-penetration of each others' markets.
- The increased internationalisation of EU car producers results in a geographically enlarged supply base, with which tougher competition prompts a constant search for lower cost suppliers.

- The trend towards global supply contracts, rather than national and regional contracts of the past.

The Japanese component industry has several serious competitive advantages over its European counterpart. Although smaller than the EU industry, the Japanese component industry is much less fragmented and already benefits from the tiered structural shape which the EU industry is presently constructing. Aside from the 40 000 sub-contractors who form the second and third tiers of the pyramidal structure in the Japanese industry, there are only 310 first tier component suppliers, compared to 3 200 companies in Europe. The average size of the first tier enterprises is 900 people compared with the European average of 270. Including the sub-contractors, the per company average of employees would be just 5.5. Of the Japanese firms, 45% employ more than 500 people, compared with only 10% in Europe.

Japanese companies have close organisational and financial links with vehicle manufacturers, and most of them are attached to groups around a major manufacturer. For instance, Nippondenso (the largest Japanese component producer) is partly owned by Toyota. Many component producers are owned by more than one vehicle producer. This system has resulted in an industry which is more specialised and concentrated than the European industry.

According to a study undertaken for the EU Commission, the EU industry remains competitive with Japan in terms of technology, but suffers (in its first-tier segment) from several disadvantages such as lower labour productivity, lower product quality, lower stock turnover, and slower design and development cycles.

When the Japanese car manufacturers started building cars in North America, their inclination was to put pressure on their traditional suppliers to come with them and set up new plants. While they needed high local content, they did not think that existing US component companies would be willing or able to provide them with components and systems of the quality and at the price they were accustomed to receiving

**Table 2: Motor vehicles parts and accessories**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	10.4	2.8	6.9	13.1
Production	6.0	2.3	4.3	12.0
Extra-EU exports	-12.9	2.3	-6.5	13.8
Extra-EU imports	0.2	10.1	4.4	29.4

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Motor vehicles parts and accessories**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	8 780.2	7 769.7	7 923.1	5 487.2	5 687.3	5 442.9	5 684.8	5 587.5	6 022.7	6 846.0	7 997.5	6 548.6
Extra-EU imports	2 052.5	1 862.8	2 079.1	2 407.9	2 737.2	2 788.1	3 212.4	3 406.1	3 506.7	4 779.6	5 394.8	3 789.7
Trade balance	6 727.7	5 906.9	5 844.0	3 079.2	2 950.1	2 654.9	2 472.4	2 181.4	2 516.0	2 066.5	2 602.7	2 758.9
Ratio exports / imports	4.3	4.2	3.8	2.3	2.1	2.0	1.8	1.6	1.7	1.4	1.5	1.7
Terms of trade index	108.8	111.3	111.2	106.6	108.9	100.0	96.5	105.9	103.5	98.2	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

from their close knit "keiretsu" suppliers. As a result, the Japanese component companies had set up over 300 plants in the US during the 1980s to support the growing vehicle production.

For several reasons this has not been repeated in Europe. One reason is that the projected volume of cars built in Europe is in many cases too small to justify setting up new plants solely for transplants. The financial performance of the Japanese component companies in the US has been a growing cause for concern and with falling margins throughout the Japanese car industry, they are not looking to repeat this mistake. Another reason is the intense political concern in Europe

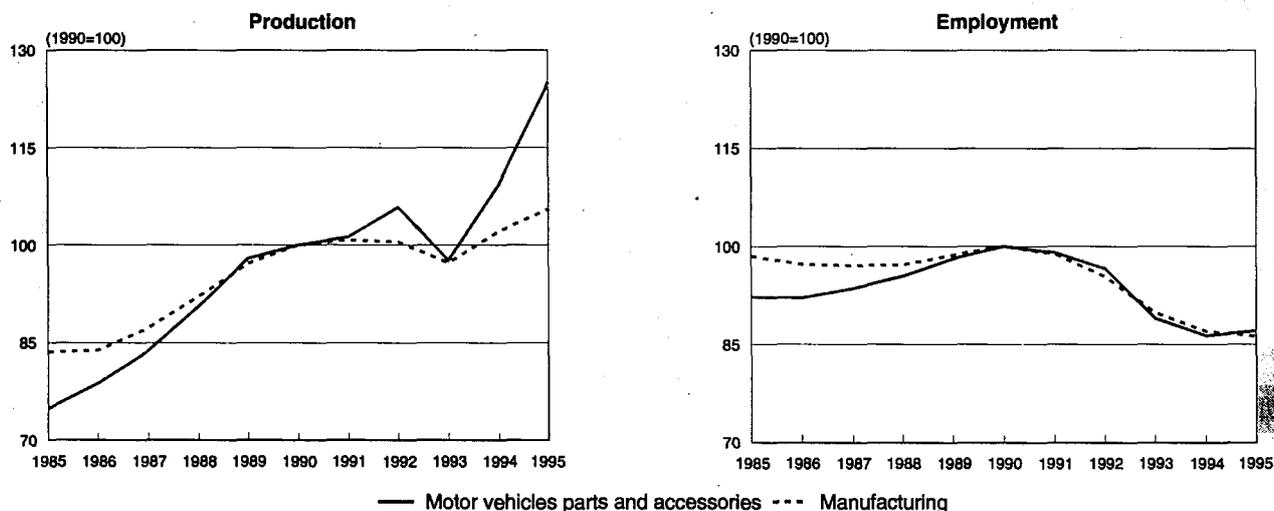
over the arrival of the Japanese transplants. The Japanese car companies have taken pains to reassure governments that they will be good Europeans, and one way of doing this has been to choose European component suppliers. While there have been some 50 new component plants set up by Japanese companies to date, and a few notable acquisitions or joint ventures (such as Calsonic and Nippondenso), for the most part, Japanese car producers have selected existing European companies to supply their components. In addition, the Japanese car companies, particularly Nissan and Toyota, have set out where necessary to bring these companies up to Japanese standards. In so doing, they are making a real contribution to the European

**Table 4: Motor vehicles parts and accessories**  
**Total component demand**

(billion ECU)	1992	1999	1992/99 AAGR (%)
Deutschland	39.4	35.5	-9.9
España	8.2	9.5	15.9
France	15.9	16.8	5.7
Italia	9.4	10.9	16.0
United Kingdom	11.2	17.7	58.0
Rest of the EU	4.7	6.1	29.8
Total	88.8	96.5	8.7

Source: Boston Consulting Group

**Figure 3: Motor vehicles parts and accessories**  
**Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

**Table 5: Motor vehicles parts and accessories  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	81.1	85.5	89.4	94.9	99.8	100.0	102.3	109.6	109.7	126.6
Unit labour costs index (3)	94.2	94.9	96.2	94.8	95.0	100.0	105.4	104.7	108.9	98.6
Total unit costs index (4)	85.4	87.8	89.9	93.2	96.4	100.0	104.0	105.4	107.6	104.6
Gross operating rate (%) (5)	10.2	10.0	9.8	10.0	9.1	8.1	6.8	8.2	7.6	10.3

(1) Some country data has been estimated.  
 (2) Based on index of production / index of employment.  
 (3) Based on index of labour costs / index of production.  
 (4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.  
 (5) Based on (value added - labour costs) / turnover.  
 Source: DEBA GEIE, Eurostat

component industry. In Europe there has traditionally been an adversarial relationship between the vehicle makers and their suppliers, with the vehicle makers continuously demanding lower prices and threatening to use competitors. While this is now beginning to change, the Japanese have been much more concerned about their suppliers' costs, and helping them to improve their quality and efficiency. Thus, they have developed a more constructive and certainly a more long-term partnerships. The long-term result of the arrival of the Japanese transplants in Europe will be to accelerate the restructuring of the components industry and to help raise its standards to world class. The benefits of this will be available not only to transplants, but also to all the European vehicle makers.

Starting from this idea that the collaboration between automobile manufacturers and automobile suppliers should be based on a mutual trust and a mutual gain relationship, the association of the European automobile industry (ACEA) and (CLEPA), the association of the European automotive supplier industry, have agreed on "European guidelines for cooperation between automobile manufacturers and their suppliers". These guidelines aim at further improving the two industries' relationship by means of joint problem and solution sharing, and joint search for perfection in quality, logistics, administration and customer satisfaction.

Figures 4 and 5 compare component production in the USA, Japan and Europe. In the USA production stagnated in the period from 1985 to 1992, while Japan and Europe saw very

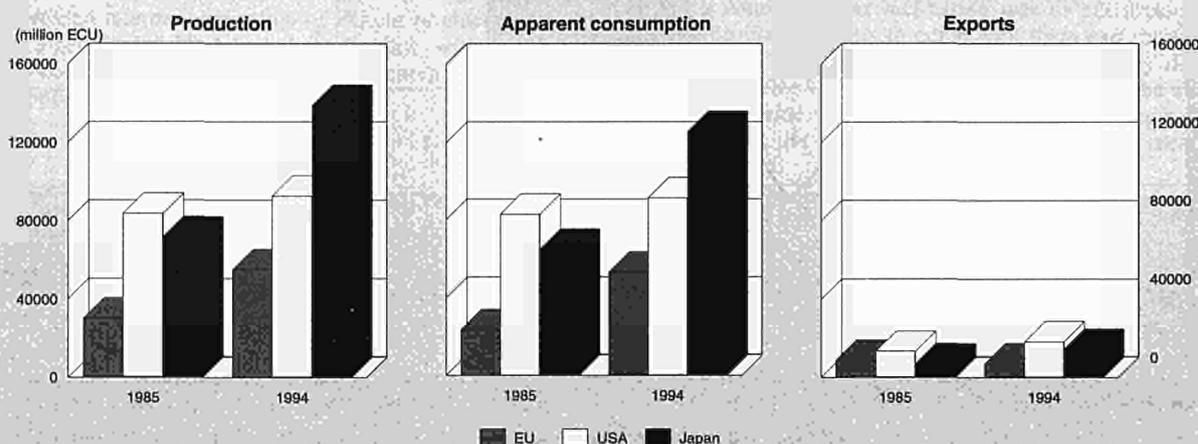
substantial increases. However, while the USA was recording double digit real growth figures in 1992 and 1993, Japan and Europe were feeling the effects of recession. In 1994 Europe and the US moved strongly ahead, but Japan's production fell below 1990 levels.

### Foreign trade

The internationalisation of the industry has been a determining factor in the substantial increase in foreign trade since 1980. The expansion of intra-EU trade has been particularly rapid in recent years. Intra-EU trade reached the 14 billion ECU level in 1991, a threefold increase compared to 1980. The industry remains essentially intra-EU oriented and intra-EU imports are more than 4.4 times higher than extra-EU imports, a ratio which is usually in the 2 to 2.5 range for most of the other engineering and transport industries. Given the difficult nature of defining the industry, a word of caution regarding trade figures is in order. Statistics on trade are not necessarily related to the independent component industry's products, but frequently include the movements of the vehicle makers own in-house products to and from assembly plants across national borders, thus causing significant distortions in the data.

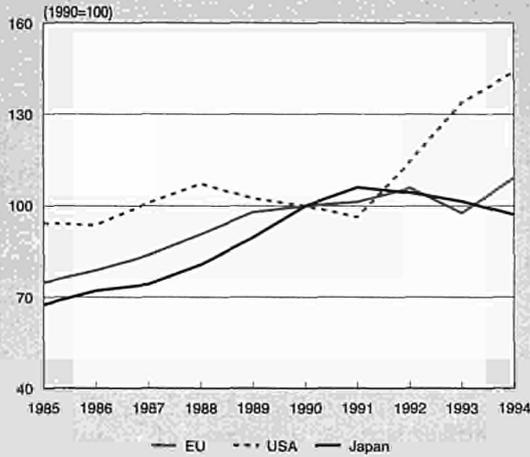
The industry is a traditional balance of payment earner. After a peak in 1985, when it reached 6.5 billion ECU, the EU trade surplus decreased to almost 2.5 billion ECU in 1991. The second half of the 1980s were marked by a rapid increase in extra-EU imports and a relative stagnation in extra-EU

**Figure 4: Motor vehicles parts and accessories  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat

**Figure 5: Motor vehicles parts and accessories  
International comparison of production in constant prices**



Source: DEBA GEIE

exports. This situation is partly attributed to a change in the classification of trade statistics and more importantly, to the rapid growth of car demand experienced in Europe between 1986 and 1990. During that period, European parts producers were predominantly busy trying to meet increased demand from EU car manufacturers. As a result, their export effort remained limited, while imports were boosted by the buoyancy of the EU car market. Nevertheless, the trend was not really reversed in 1990 and 1991 when the European vehicle demand was somewhat weaker. The dwindling European trade surplus certainly signals some of the structural problems presently encountered by the European industry. However, one must also consider that there is a trend to site production close to where demand exists, which results in more EU firms manufacturing outside the EU instead of exporting. Naturally, lower cost locations are preferred.

Extra-EU exports are relatively diversified in terms of destinations with the (former and current) EFTA countries and North America both accounting for over 20% of total shipments. Developing countries also remain an important end market with a share of more than 35%. In terms of extra-EU

imports, figure 7 shows that flows are more concentrated with 50% of total non-EU supply originating from Sweden, Austria and Switzerland. The first two of these countries have now joined the EU. When this change is consolidated into the EU figures it will appear that considerable change has taken place, where in fact, between 1989 and 1994 the picture is remarkably stable. With a share of approximately 20%, Japan is the second largest supplier to the EU. Trade with North America has dwindled considerably in recent years both in terms of imports and exports. With regard to the EU trade surplus, Germany continues to be the major contributor.

Figure 8 shows that whereas exports as a percentage of production has fallen dramatically in Europe, imports as a percentage of consumption has remained steady in terms of automotive components.

## MARKET FORCES

### Demand

Component demand is linked to the level of automotive production. However, some components benefit from faster growth than the auto market in general. This situation exists where a component's rate of penetration of vehicles is still on the rise, such as where equipment which previously was optional (primarily in the upper car segment) is now fitted as standard on most models. Some examples include: electronic fuel injection, anti-lock brakes, air-bags and air conditioning systems. In addition, component manufacturers have benefited from a trend towards increased out-sourcing.

On the other hand, demand for replacement parts depends on the usage of cars and other motor vehicles as opposed to new sales. Demand is likely to be more stable in this market than in the original equipment market. The replacement parts market differs greatly from country to country. Market features in various EU countries depend largely on the annual mileage per vehicle, the average age of the car parc and the existence of specific legislation with regard to obligatory inspection of vehicles when they reach a certain age.

### Supply and competition

The supply of original equipment is undergoing fundamental structural change. Increasing internationalisation of vehicle manufacturers calls for the emergence of large international (sometimes world-wide) component manufacturers. In addition, the pattern of relationships between manufacturers and

**Figure 6: Motor vehicles parts and accessories  
Destination of EU12 exports**



Source: Eurostat

**Figure 7: Motor vehicles parts and accessories  
Origin of EU imports**



Source: Eurostat

suppliers is being substantially modified. A rising share of the value added generated in the auto industry is transferred from vehicle to component manufacturers. To some extent, the balance of power is now shifting from the former to the latter. A good example is the Ford Mondeo launched in 1993, which uses the same supplier for many components in both North America and Europe.

A major reason behind such a change arises from the necessity for car manufacturers to limit investments and resources to essential activities which represent the core of their industry. One method is to increase out-sourcing and to pass on the responsibility for product development, manufacturing and quality assurance functions to their suppliers (systems suppliers and/or specialised affiliated companies). Component producers contribute to the competitiveness of the industry, and the two sectors become increasingly interdependent.

Although conceiving, designing and producing in accordance with manufacturers' specifications, the component producer is increasingly technically autonomous. This is typically the case with systems suppliers who possess proprietary technology and product know-how. As a result of these transfers of value added, car manufacturers reduce the number of their

suppliers to a smaller number of large producers, who in turn out-source part of their output to smaller companies; thus, the whole supply chain forms a tiered structure.

Modularisation is another key theme of the components industry. The module supplier assembles several components into a module which are delivered on a just in time basis to a vehicle assembly plant. The argument in favour of this process is that it reduces complexity for the vehicle manufacturer and the module supplier may operate on lower overheads and labour costs. Unlike the systems supplier, the module supplier may not manufacture any of the components delivered, and possess only assembly and logistical skills.

It is generally accepted that the overall level of outside purchasing carried out by European car manufacturers (60% to 70% of total component requirements) is more important than in the US industry (40% to 50%), but less than in Japan (around 80%). However, within the EU there is a great variation between manufacturers.

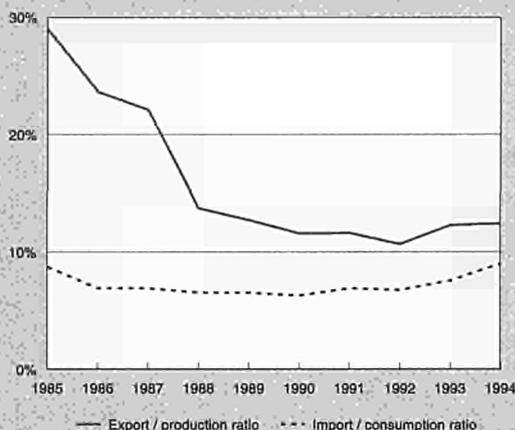
Turning to the market for replacement equipment, it is estimated that about 70% of the market is supplied by independent parts manufacturers, with the remaining 30% controlled by car manufacturers via their distribution and service networks. With regard to the origin of such parts, however, car manufacturers only take a 10% share of the market.

### Production process

The nature of automotive products, together with shorter product life cycles, has increased the emphasis on the technological content of automotive parts. More use of electronics and new materials has led to increased collaboration with other leading high-tech industries, and a sizeable investment in R&D at all levels of the pyramidal structure of the component sector. Once almost exclusively oriented towards applied engineering, R&D resources of the sector are now taking greater initiative in terms of new technologies offering improved performance, fuel economy, emission control, safety and comfort. Suppliers have an increasing involvement during the early stages of the development process of new vehicles.

Competitive pressure on costs, prices, quality and delivery standards has led the industry to restructure in a parallel manner to that of car manufacturers. Automotive parts suppliers compete on the basis of price, as well as, delivery and quality. Just-in-time, zero-defect, CAM (Computer-aided manufacturing), automation, and faster communication systems are some of the features which have allowed substantial productivity gains while improving flexibility and allowing quality assur-

**Figure 8: Motor vehicles parts and accessories  
Trade intensities**



Source: DEBA GEIE, Eurostat

**Table 6: Motor vehicles parts and accessories  
EU automotive components industry consumption, 1992**

(billion ECU)	OE market	Replacement market	Total
Deutschland	34.3	5.1	39.4
España	6.5	1.7	8.2
France	12.2	3.7	15.9
Italia	6.3	3.1	9.4
United Kingdom	6.9	4.3	11.2
Rest of the EU	1.9	2.8	4.7
Total	68.1	20.7	88.8

Source: Boston Consulting Group

ance schemes to be put in place. Linking of these various systems, combined with electronic linking of component suppliers and vehicle manufacturers will provide long term efficiency benefits. However, this process (requiring sizeable investment and a recourse to skilled manpower) while at an advanced stage amongst tier one suppliers, is far from being complete amongst small to medium-sized producers.

## INDUSTRY STRUCTURE

### Companies

The industry is basically composed of three types of producers: large system suppliers with a global presence and substantial R&D capability; medium-sized first-tier component suppliers also increasingly with in-house R&D capability; SME second- and third-tier parts suppliers.

The trend towards more component out-sourcing by car manufacturers combined with fundamental changes in the nature of the industry are having a dramatic impact on the number of independent operators present in the industry. Vehicle manufacturers are cutting back on the number of suppliers and committing larger shares of their purchasing requirements to preferred systems suppliers. These systems suppliers then out-source part of their work to second or third tier suppliers. As regards to the main car manufacturers in Europe, the number of suppliers per vehicle manufacturer dropped from 1°370 to 1°220 between 1990 and 1994. At the level of individual manufacturers, the reduction of the number of direct suppliers ranged from none to almost 50%. A large part of this reduction has been achieved via mergers, take-overs and consolidations among previous competitors or companies having industrial synergy's, such as Valeo and Neiman and also Magneti-Marelli, Solex, Jaeger and Weber. However, the total number of sup-

**Table 7: Motor vehicles parts and accessories  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	1.3	1.2
Ellada	0.0	0.0
España	0.9	1.0
France	1.3	1.4
Ireland	N/A	N/A
Italia	0.7	0.6
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	0.7	0.4
United Kingdom	N/A	N/A

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

pliers directly servicing the vehicle makers should not have decreased by more than 25%. Supply relationships are, however, very difficult to estimate given the large number of models produced by manufacturers, and the underlying groups of parts suppliers supporting each model line.

In spite of the increased presence of large international companies, the original equipment sector continues to be very fragmented. The average size for firms is about 270 people, but 64% of these enterprises employ less than 100 persons. Only 4% of the companies account for 50% of total employment (firms with more than 1 000 employees). This is essentially due to the nationally based nature of parts procurement. Although intra-EU trade has grown to extremely high levels during the past decade, most vehicle manufacturers continue to source largely from their domestic suppliers. For instance, Daimler-Benz procures approximately 90% of its needs from Germany, Renault, about 70% from France, and Fiat, about 85% from Italy.

The independent German industry dominates the European market with over 45% of total European production. This strength comes from the sheer size of the German motor vehicle industry, the importance of the upper market segment, and from strict legislation on car maintenance. The large German firms have played a major role in developing new products as illustrated by Bosch (the world's largest unaffiliated auto parts producer) which is a pioneer in the fields of fuel injection and anti-locking brake systems. Bosch alone is estimated to account for nearly a quarter of German production. The leader's vitality aided many smaller firms and contributed (together with other large firms such as ZF, Fichtel and Sachs, Siemens, and VDO) to Germany's unchallenged leadership within Europe.

The French industry is the second largest in Europe, with about 23% of the European total. Its structure is still characterised by a large number of nationally oriented small to medium-sized producers. Major restructuring has taken place in recent years, led by the three international scale groups: Valeo, Bertrand-Faure and ECIA (PSA group).

The Italian industry (which accounts for about 14% of European production) is dominated by the Fiat group. The leading producer is Magneti-Marelli (a subsidiary of Fiat) which now has an increased presence in all major European markets. Widely dispersed in the early 1970s, the sector is being tightly restructured under the influence of Fiat.

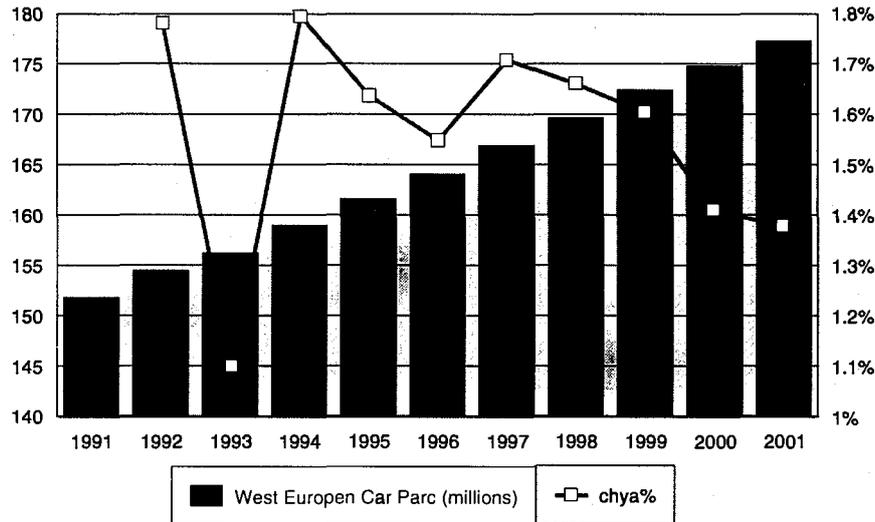
The United Kingdom components industry (10% of the total sector) has been badly hit by the decline of British vehicle production and its excessive dependence on domestic manufacturers. However, the major British component producers (such as Lucas, T&N and GKN) have performed well in the important replacement market. The increased rate of (Japanese) investment in automotive production in the United Kingdom has strengthened their position in a home market with considerable potential. British component manufacturers have expanded overseas through investment and acquisition. In addition, the decline in value of the pound sterling has greatly assisted the UK industry's exports during the 1992 to 1994 period.

The Spanish industry has emerged since the late 1970s as another important producer of automotive components, having reached a size comparable with the United Kingdom. Originally developed to comply with local content requirements, the industry has grown considerably since the early 1980s thanks to the increased importance of Spain as a car manufacturing country. However, most of the component producers present in Spain are subsidiaries of foreign companies.

### Strategies

As the Japanese car industry has shown, the trend for car manufacturers to rely on a smaller supply base implies fun-

**Figure 9: Motor vehicles parts and accessories  
West European Car Parc**



Source: DRI Europe

damental changes in the structure of the sector. This means an increase in the out-sourcing of high-value added products, faster growth in R&D expenditure and a need for organisations to adapt to new constraints (excellence in quality, delivery and price, not to mention production flexibility). Finally, there is a need to share productivity gains with car manufacturers, and to finance a growing share of development and machinery costs (tooling and specific equipment) necessary for production dedicated to one vehicle manufacturer.

In return, car manufacturers are offering longer term purchasing commitments and closer co-operation, both of which contribute to improved stability in supplier/customer relationships.

As a result of this process, the component industry will increasingly be reshaped into a pyramidal structure. First tier suppliers with a world-wide presence, proprietary technology and scale economies will design and supply full systems rather than single components. They will out-source part of their work to smaller second or third tier suppliers. The observed trend toward increased concentration will continue during the decade, but a further radical reduction in the number of independent producers is unlikely since many will survive as second or third tier suppliers.

## OUTLOOK

EU15 car sales in 1994 rose to 11.6 million, an increase of 6.0% over 1993. In 1995 the rise was a disappointing 0.4%. In 1997, total West European car production will exceed 13 million for the first time. The medium term outlook is therefore brighter. The main source of overall OE car component market growth in the five year period to 2001 will come from the Asia-Pacific region (excluding Japan); particularly China, India, Malaysia, Thailand, Taiwan and South Korea. Asia-Pacific will be followed by Western Europe, Eastern Europe, NAFTA and Latin America, in that order, in terms of growth in car production.

With regard to the original equipment market, most of the growth will result from: vehicles increasingly fitted with such standard equipment as automotive electronics, anti-pollution devices and more efficient safety restraint systems; the general "up-market" move in car demand with customers demanding more equipment, comfort and power; and, the increase in

high added value component out-sourcing by car manufacturers.

With regard to the replacement market, it should be remembered that this segment is governed by the number and the condition of vehicles on the road, as well as changes in consumer behaviour. These changes can either come about spontaneously, or be spurred by legislation on vehicle testing or compulsory maintenance. The constitution of the single market makes it likely that such measures will spread to countries where they have been absent until now. This, combined with the consumer's desire for safer and more comfortable driving, and the growth of the total car parc in Europe (see figure 9), implies that there will be promising demand growth in the replacement parts market. Technological advances should, however, result in more durable parts and slow replacement cycles. Increased opportunities in East European markets will also have a positive influence on demand for automotive components.

The overall outlook for growth in motor vehicle parts and accessories is good, but major adaptation to new working methods and competitive efforts from the industry are urgently required.

Written by: DRI Europe

The industry is represented at the EU level by: Liaison Committee of the Automotive Components and Equipment Industry (CLEPA). Address: Rue de Stassart 95, B-1050 Brussels; tel: (32 2) 511 2919; fax: (32 2) 513 3802.

# Mopeds and motorcycles

NACE (Revision 1) 35.41

Between 1985 and 1992, EU apparent consumption and production grew at generally strong rates. In 1993, however, both indicators showed negative growth mostly due to recessionary effects felt throughout Europe. Fuelled mostly by a significant upturn in exports, 1994 showed a marked improvement in nominal production while apparent consumption declined slightly. Italy dominates this sector with nearly half of the EU's value added in 1994 while Germany's is the largest market for mopeds and motorcycles. Europe dominates Triad market share with 57%, but Japan dominates Triad production with 53%. As consumption has grown, consumers have increasingly turned to non-European sources to satisfy that burgeoning demand: between 1985 and 1994, extra-EU imports more than quadrupled. Common production standards adopted by the EU will lead to further rationalisation and automation of manufacturing processes and, thus, to enhanced competitiveness.

## INDUSTRY PROFILE

### Description of the sector

Motorcycles and mopeds have historically been included in the NACE 1970 group 36.3 along with bicycles. With the NACE Rev.1 classification, however, motorcycles and mopeds are now separately categorised in class 35.41, the manufacture of mopeds, motorcycles, scooters, and their parts and accessories.

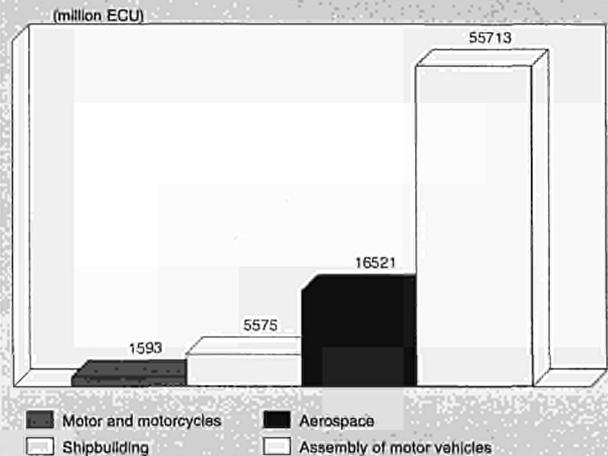
Mopeds are motor driven vehicles with two to three wheels and an engine displacement not exceeding 50cc and a maximum design speed of 45 km/h. Motorcycles are motor driven vehicles with two to three wheels with an engine displacement greater than 50cc. Generally, the motorcycle sector varies from small capacity motorcycles (51cc-125cc) that are used primarily for commuting, to large capacity models (650cc-1200cc) that are used for sports and touring. Within the Europe, mopeds and motorcycles represents a tiny industry when compared to such sister industries as shipbuilding, aerospace, and the assembly of motor vehicles as Figure 1 shows.

### Recent trends

Between 1985 and 1992, apparent consumption and production generally grew at reliably strong rates when measured in current prices. Because of tremendous recessionary effects felt throughout Europe, both apparent consumption and production declined in 1993. Nominal apparent consumption continued its decline in 1994, albeit at a slower rate. In contrast, nominal production grew by 6.4% in 1994 fuelled by a nearly 20% jump in extra-EU exports. Indeed, 1994 marked the first year since 1984 where nominal production grew faster than nominal apparent consumption within the motorcycle/moped sector. It was because apparent consumption grew so much faster than production between 1985 and 1993, as Table 1 indicates, that this sector witnessed a more than twelve-fold increase in its extra-EU trade deficit.

Table 2, which displays data in constant terms, depicts a slightly different story. Real apparent consumption grew at nearly twice the average annual rate as real production between 1985 and 1994. Between 1985 and 1990, real apparent consumption grew at an average annual rate more than twice that of real production. Between 1990 and 1994, however, real apparent consumption *declined* on an annual average basis while real production increased on the same basis over the

Figure 1: Cycles and motorcycles  
Value added in comparison with related industries, 1994



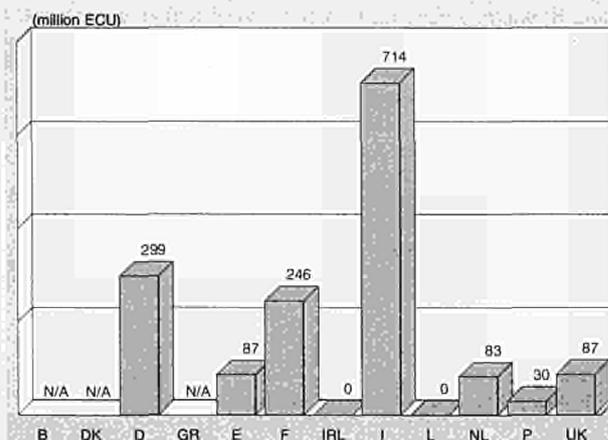
Source: DEBA GEIE

period. This shift in trend is particularly manifest when one compares the rates of growth in real production and apparent consumption in 1994, 6.7% versus -3.1%. Table 2 also shows that while the EU has been more import-oriented than export-oriented over the entire period of 1985 through 1994, there has been significantly greater growth in real extra-EU exports than real extra-EU imports since 1990. The growth in real exports and imports between 1993 and 1994 accounts for a good deal of that shift.

Employment within the sector has declined by approximately one-third since 1985, a by-product of the overall decline in real exports, tremendous productivity improvements within the manufacturing process, and the European recession.

When measured in terms of value added, Italy dominates the motorcycle and moped sector with about 46% of the EU's value added. Italy is followed by Germany with 19% and France with 16% as seen in Figure 2. Other important country-producers within this sector include Spain, the Netherlands, the United Kingdom, and Portugal. Italy's dominance is un-

Figure 2: Cycles and motorcycles  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Cycles and motorcycles**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	3 537	6 714	7 275	7 602	7 305	7 225	7 453	8 024	8 500	9 000	9 540
Production	3 351	5 087	5 058	5 157	4 802	5 109	5 382	5 669	6 000	6 360	6 770
Extra-EU exports	609	629	628	584	651	779	863	810	840	870	880
Trade balance	-186	-1 626	-2 217	-2 445	-2 503	-2 116	-2 071	-2 355	-2 500	-2 640	-2 770
Employment (thousands)	58	50	48	45	41	39	37	39	40	40	40

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Cycles and motorcycles**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	9.0	-0.9	4.5	-3.1
Production	4.3	0.1	2.4	6.7
Extra-EU exports	-6.2	2.0	-2.6	14.9
Extra-EU imports	15.5	-2.6	7.1	-17.9

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Cycles and motorcycles**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	609	570	521	541	568	629	628	584	651	779	863	810
Extra-EU imports	795	886	1 079	1 313	1 780	2 255	2 845	3 029	3 155	2 895	2 933	3 165
Trade balance	-186	-316	-558	-772	-1 213	-1 626	-2 217	-2 445	-2 503	-2 116	2 071	-2 354
Ratio exports / imports	1	1	0.5	0	0	0	0	0	0	0	0	0
Terms of trade index	97	100	95	91	90	100	98	97	86	80	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Cycles and motorcycles**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	71.1	78.9	78.8	87.5	94.5	100.0	100.0	108.0	114.0	128.8
Unit labour costs index (3)	103.8	97.9	102.8	97.9	97.0	100.0	107.7	103.9	97.2	89.4
Total unit costs index (4)	83.4	83.8	89.8	92.8	98.2	100.0	102.5	105.1	100.3	98.4
Gross operating rate (%) (5)	6.6	8.9	7.4	7.7	7.8	9.8	8.5	9.0	9.6	11.0

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

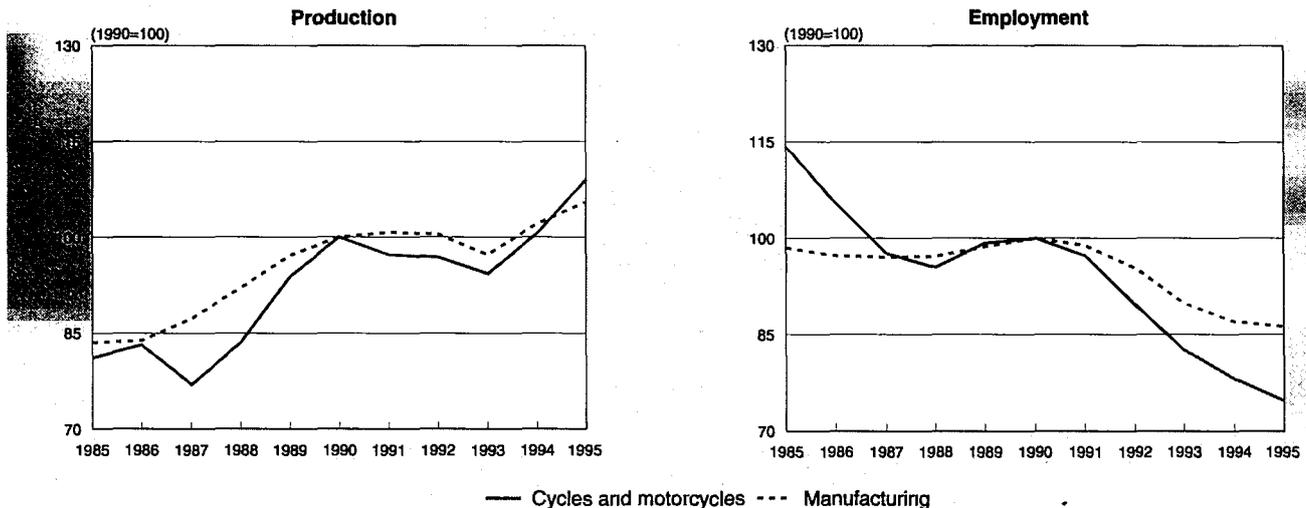
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Cycles and motorcycles**  
**Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

discouraged by the fact that, in recent years, it has been responsible for 50% of moped production and about 70% of motorcycle production within Europe. Indeed, Italy's thriving moped and motorcycle activity since 1985 has helped offset other states' lacklustre performance, affording the entire EU a better assessment within this sector than it otherwise would have had. License agreements with Japanese manufacturers and a relatively strong components industry will help ensure Italy's position of comparative advantage.

Germany has the largest market for motorcycles and mopeds within the EU. Germany accounted for approximately 40% of all EU motorcycle sales and 30% of all EU moped sales in 1994. Italy purchased about 50% of all mopeds within the EU, but only a little over one-tenth of all motorcycle sales. Other important markets include France, Spain, the Netherlands, and the United Kingdom.

### International comparison

Figure 4 offers several interesting observations regarding Triad production, apparent consumption, and exports within the sector. Japanese production now represents over one-half of Triad production, with the EU second at 36%, and the USA last with only 11%. In 1985, the United States represented the largest of the three Triad markets for mopeds and motorcycles. In 1994, it fell to 22% of the Triad market, nearly tied with Japan. Such a decline is even more remarkable given the fact that Japan had only 2% of Triad market share in 1985. In contrast, Europe represented about 57% of Triad market share in 1994, up from its 48% 1985 share. The EU's increase in Triad market share was owed to a more than doubling of its nominal consumption of mopeds and motorcycles. In part because the American consumption declined so precipitously in relative terms, it has enjoyed a relative increase in its share of total Triad exports within the sector. In 1985, it had only 2% of Triad exports of mopeds and motorcycles. In 1994, it had 10% of the Triad exports, closing in on the EU. Of course, Figure 4 illustrates Japan's overwhelming trade position within the sector. It should be mentioned that since 1991, Japan has had several consecutive years of real declines in production as Figure 5 shows. This slowdown may be due to recessionary effects.

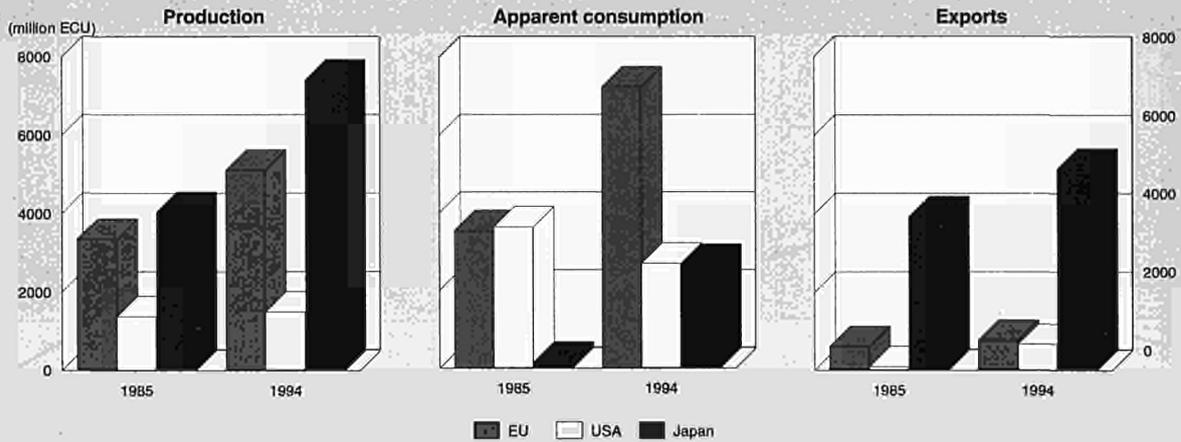
### Foreign trade

Between 1985 and 1994, nominal extra-EU exports have assumed a choppy pattern with a net increase of nearly 30% over the period. Important years of growth in nominal extra-EU exports include 1990, 1993, and 1994 as Table 3 shows. In contrast, nominal extra-EU imports have nearly quadrupled between 1985 and 1994. This has caused a tremendous upswing in the extra-EU trade deficit as Table 3 shows. Indeed, the dependence on imports has increased to the point where Europe depended on foreign manufactured mopeds and motorcycles to satisfy 40% of its demand (in 1994) compared to only 23% in 1985. It is also interesting to note that whereas exports represented about 18% of total EU production in 1985, they represented only 15% in 1994. This implies that as European consumption of mopeds and motorcycles has swelled, it has been satisfied with both extra- and intra-EU production. Indeed, intra-EU trade experienced strong growth during the 1980s and into the 1990s, essential doubling between 1990 and 1994.

It is not surprising that 56% of 1994 imports come from Japan given its stature as a net exporter of mopeds and motorcycles. Still, this figure represents a decline from 1989's figure of 69%. This decline is largely due to the fact that many Japanese companies have transferred productive assets to the East Asian newly industrialised countries (NICs). Japanese companies that have satisfied European demand through indigenous and NIC-related production include Honda, Yamaha, Kawasaki, and Suzuki. Taiwan has consolidated its position as the second largest supplier to the EU with over 16% of 1994 imports, up from about 13% in 1989. Interestingly, the Americans have claimed a significantly larger share of the European market. In 1989, American manufacturers represented only 6% of EU imports. In 1994, that figure stood at 9%. Without question, the main American exporter to Europe is Harley Davidson, which specialises in the 750cc plus market niche.

Between 1989 and 1994, there was a diversification among export markets. In 1989, the then-EFTA countries represented about 44% of all EU exports of mopeds and motorcycles. In 1994, that figure was only about 29%. Over the same time frame, exports to Japan and the United States were stagnant as seen in Figure 6. In fact, the EU's share of the American market stood only at 3% in 1994. The EU's share of the

**Figure 4: Cycles and motorcycles**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

Japanese market was less than 1% in 1994, as much owed to the Japanese anti-import sentiment as to anything else. Exports to the rest of the world increased significantly between 1989 and 1994. Much of these exports targeted Asian markets including China that depend on motorcycles and mopeds as basic transportation to a much greater extent than in other countries.

## MARKET FORCES

### Demand

Within Europe, the demand for motorcycles and mopeds is driven by a number of factors including overall economic conditions, personal disposable income and population trends, and such demographic considerations as the proportion of young men within the population. Demand for motorcycles and mopeds should also be helped by increased restrictions on automobile access to sections of certain European city centres as a way to ameliorate problems of congestion and pollution. In this regard, motorcycles and mopeds, not gen-

erally covered by such regulation, will be perceived as an attractive alternative.

On the other hand, increased traffic volumes may have a negative effect on demand as discussions surface as to the safety of such vehicles in dense traffic. Moreover, more stringent safety requirements for drivers of motorcycles and mopeds such as helmet requirements, training, testing and licensing, serve to diminish the uninhibited appeal that is often associated with their use.

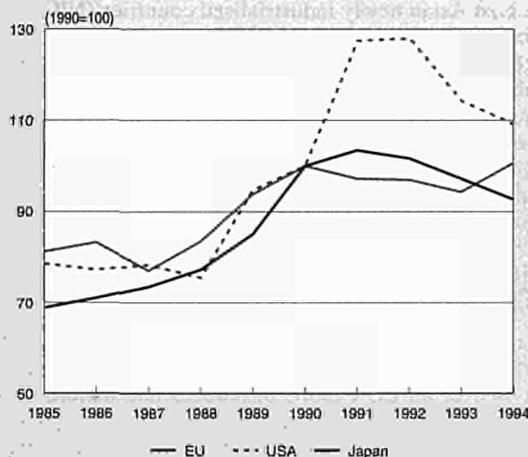
Over three-quarters of all motorcycles operating on EU roads are, not surprisingly, registered by owners from Italy, Germany, the United Kingdom, and France. All but the United Kingdom have enjoyed double-digit annual growth in the number of motorcycles in use in recent years. Indeed, Italy maintains the highest density of motorcycles in Europe with 43 in use per 1 000 inhabitants.

### Supply and competition

As was seen in Figure 3, Italy is the dominant supplier of mopeds and motorcycles within the EU, a position it has maintained for years. In 1994, it accounted for no less than 50% of mopeds and 70% of motorcycles produced within the EU. Extra-EU export of motorcycles and mopeds represented about one-third of Italian production in 1994, considerably larger than the overall rate of 13%. Such underscores the importance of foreign markets to Italian manufacturers. Sector employment has fallen more slowly in Italy than in Europe as a whole.

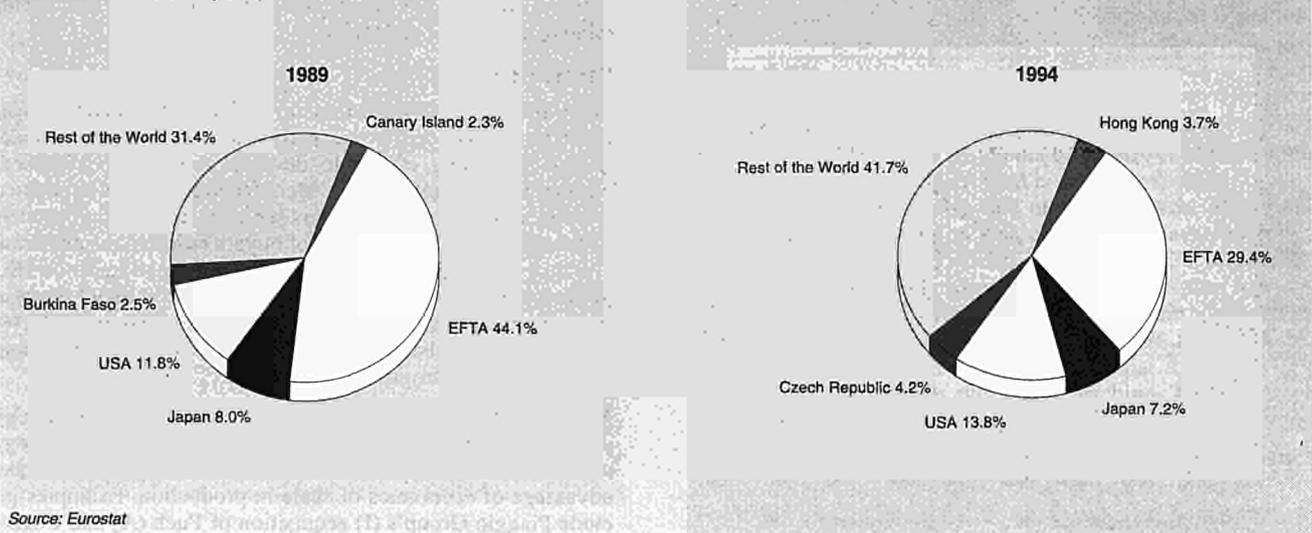
More generally, EU labour productivity has risen steadily since 1991, largely owed to declines in employment. At the same time, however, unit labour costs have declined only slightly resulting in nearly no change in total unit costs. This resistance in reducing production within Europe has helped impel a migration of productive assets to the East Asian NICs. EU producers also do not enjoy the cost advantages and the vertically integrated production structure that their Japanese counterparts enjoy. In fact, for certain key components, EU manufacturers are entirely dependent upon non-EU suppliers whose main customers are the Japanese. This presents a critically weak link in the production chain within the EU. To compound matters, most component suppliers within the EU are relatively small firms that do not benefit from the efficiencies of production that larger firms do. The consequential higher prices are passed on to end manufacturers, damaging their global competitiveness. It is often for this reason that moped and

**Figure 5: Cycles and motorcycles**  
International comparison of production in constant prices



Source: DEBA GEIE

**Figure 6: Cycles and motorcycles  
Destination of EU exports**



motorcycle producers seek non-European component suppliers even when an EU alternative is available. It is widely believed that the sector that supplies components to the downstream moped and motorcycle manufacturer will require development and restructuring if dependence on foreign suppliers is to be reduced.

The moped and motorcycle sector has also been hurt by tariff and non-tariff restrictions in certain world markets, particularly the growth markets of Asia. These restrictions particularly affect the up-scale segment of the motorcycle product offering, a niche where European brands' reputation for design and technical quality often give them an important competitive advantage. Such restrictions, in turn, retard these firms' ability to derive the benefit of economic scales and lower unit costs.

**Production process**

Notwithstanding the challenges affecting European competitiveness within sector mentioned earlier, manufacturers have greatly improved their competitive position. Between 1985 and 1994, for example, the labour productivity index increased by about 81%, as seen in Table 4, largely the result of falling employment levels. Such improved productivity has enhanced competitiveness. Moreover, improved competitiveness has also emerged from the Single Market as major manufacturers

endeavour to seize the advantage from opportunities offered in a new, unified environment. Such opportunities include the fruit that may emerge from trade talks with Japan regarding the opening of its market and easier access to its distribution network. Common production standards adopted by the EU will lead to further rationalisation and automation of manufacturing processes and, thus, enhanced competitiveness.

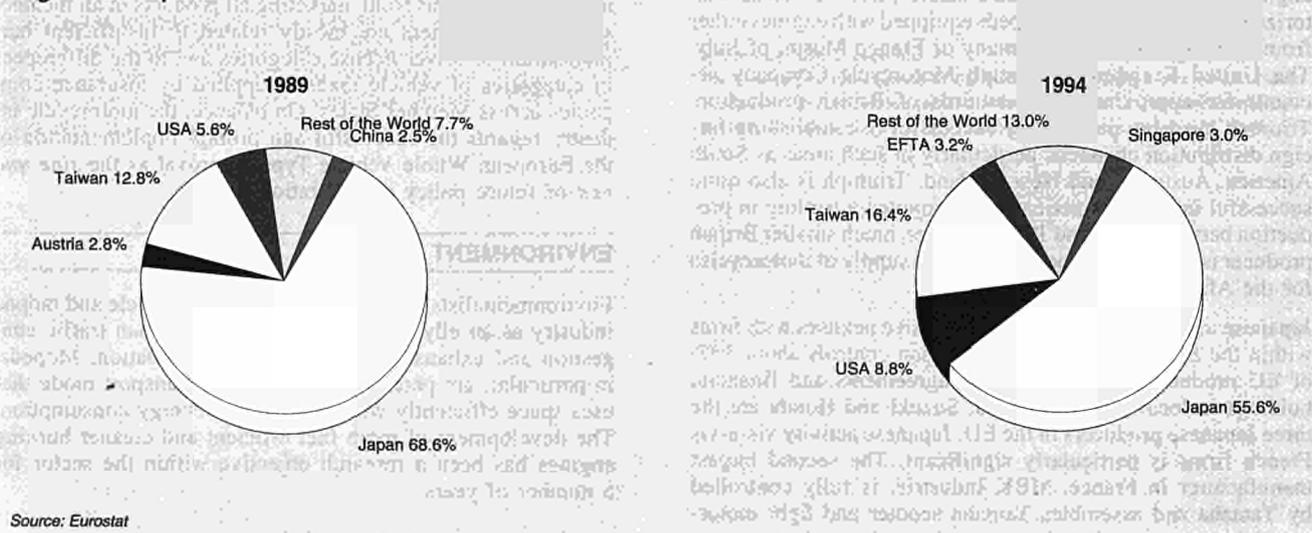
A variety of new technologies have found a place within the moped and motorcycle sector. The use of CAD/CAM and robotics, laser cutting machines, improved painting systems and more sophisticated quality control systems are inducing productivity improvements. Within the large motorcycle segment, European producers have found such technology as anti-lock braking systems to be particularly important.

**INDUSTRY STRUCTURE**

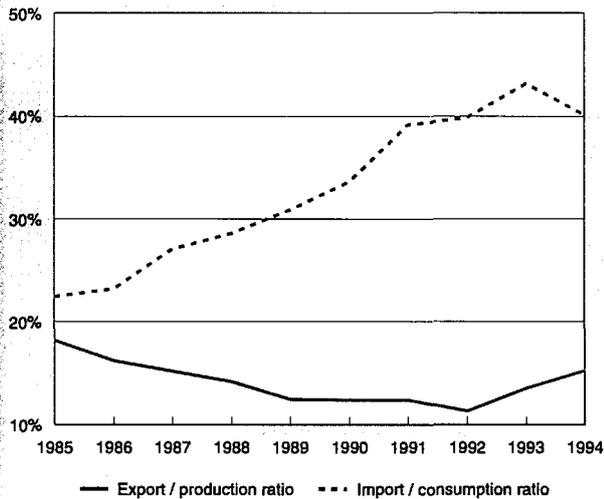
**Companies**

The moped and motorcycle sector can be viewed as a two-tiered structure. The upper tier is comprised of three corporate entities that account for approximately 60% of EU production of mopeds and motorcycles: Piaggio Group (I), Peugeot MTC (F) and MBK (F). The other 40% of EU production is ac-

**Figure 7: Cycles and motorcycles  
Origin of EU imports**



**Figure 8: Cycles and motorcycles  
Trade intensities**



Source: DEBA GEIE, Eurostat

completed by about 30 small and medium-sized firms, including assemblers, as well as Japanese owned or controlled producers. By global standards, even the large EU firms are considered only moderate-sized, particularly in comparison to Japanese firms.

Italy's largest producer, the Piaggio Group, includes Piaggio (I), Gilera (I), Puch (A), and Spain's largest producer, Moto Vespa (E). Other important Italian producers include the Cagiva Group, Aprilia, and the Moto Guzzi Group. Ducati and Moto Guzzi specialise in the large capacity motorcycles from 750cc to 1100cc in direct competition with the American producer Harley Davidson. Italy also has a large number of smaller producers.

France's largest producer is Peugeot MTC, which is primarily engaged in the manufacture of mopeds and scooters (50cc-80cc). Some Peugeot scooters and 50cc engines are built under license by Honda (JPN). Moto Vespa and Derbi account for some 59% of Spain's output of mopeds and motorcycles. The assembly operations of three Japanese companies, Honda, Yamaha and Suzuki, account for one-third of local Spanish production.

BMW, Germany's largest producer, focuses exclusively on the manufacture of premier motorcycles with large capacity engines. Portugal's largest manufacturer, SIS Vehiculos Motorizados LTDA produces mopeds equipped with engines either from Fichtel & Sachs of Germany or Franco Morini of Italy. The United Kingdom's Triumph Motorcycle Company accounts for approximately two-thirds of British production. Triumph has been particularly successful in establishing foreign distribution channels, particularly in such areas as South America, Australia, and New Zealand. Triumph is also quite successful in North America. It has enjoyed a tripling in production between 1992 and 1994. Another, much smaller British producer is BSA which specialises in the supply of motorcycles for the African market.

Japanese manufacturers maintain extensive nexuses with firms within the EU. It is estimated that Japan controls about 15% of EU production through license agreements and financial holdings in local plants. Yamaha, Suzuki and Honda are the three Japanese producers in the EU. Japanese activity vis-à-vis French firms is particularly significant. The second largest manufacturer in France, MBK Industrie, is fully controlled by Yamaha and assembles Yamaha scooter and light motor-

cycles and manufactures mopeds under the Motobecane design. Honda owns a 25% share of Peugeot MTC.

Table 5 underscores the Italian dependence on this sector relative to the EU generally.

### Strategies

Since the late 1980s, manufacturers have undertaken investment programs to improve production facilities and model design, including efforts to develop new, more advanced, cleaner burning motorcycles. Manufacturers have also pursued a niche strategy in recent years whereby they design models to satisfy the individual tastes of buyers rather than emphasise a strategy of mass production in the Japanese tradition. EU producers have been successful in this regard largely because their relatively small size enables them to manufacture vehicles on a specialised basis. This strategy has also enabled them to rely on the European fashion sense.

Manufacturers within the sector have also pursued a strategy of intra- and extra-EU merger and acquisition. Such a strategy was pursued mostly to let firms buy market share and take advantage of economies of scale in production. Examples include Piaggio Group's (I) acquisition of Puch (A) and Cagiva Ducati's (I) merger with Moto Morini (I) and Husqvarna (I). Extra-EU merger and acquisition activity within the sector has been dominated by Japanese companies interest in securing a European base. Examples include Suzuki's purchase of Avello-Puch in 1986 and Yamaha's purchase of Banesto in 1987. Both investments have shown a positive return.

Some EU manufacturers have pursued a strategy of international co-operation, both within and without the EU. For example, BMW (D), Rotax (A), and Aprilia (I) jointly agreed to develop and produce the F650. BMW's role involves the concept, testing and marketing of the model. Rotax has provided engine design and engine production. Aprilia's responsibility includes the sourcing of components and assembly. Other examples include Minarelli's manufacturing 50cc engines under license from Yamaha and Franco Morini production of 50cc engines under license from Suzuki. The overarching goal of international joint ventures is to achieve scale and competitive strength.

The defining moment in achieving a truly unified market will occur with the implementation of a European Whole Vehicle Type Approval, expected at the end of the decade. The strategies adopted by manufacturers within the sector in anticipation of this moment have already borne fruit in greater efficiency and competitiveness. Expectations of a truly unified market have induced a series of mergers and joint co-operations as mentioned above, as well as a greater sense of vertical integration. Still, even after the adoption of the European Whole Vehicle Type Approval, there will remain a number of barriers preventing all firms from marketing all products in all member states. Such barriers are mostly related to insufficient harmonisation of driver license categories and to the differences in categories of vehicle taxes as applied by insurance companies across Member States. On balance, the motorcycle industry regards the successful and prompt implementation of the European Whole Vehicle Type Approval as the *sine qua non* of future policy consideration.

### ENVIRONMENT

Environmentalists generally regard the motorcycle and moped industry as an ally in their efforts to fight urban traffic congestion and exhaust emissions through regulation. Mopeds, in particular, are perceived as a flexible transport mode that uses space efficiently with relative low energy consumption. The development of more fuel efficient and cleaner burning engines has been a research objective within the sector for a number of years.

**Table 5: Cycles and motorcycles  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	0.5	0.6
Ellada	N/A	N/A
España	1.0	1.0
France	1.3	0.9
Irland	0.0	0.0
Italia	2.5	3.0
Luxembourg	0.0	0.0
Nederland	0.9	1.2
Portugal	1.2	1.0
United Kingdom	0.3	0.3

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

To the extent that motorcycles and mopeds are seen as substitutes for automobiles, the adoption of Directive 94/12/EU should benefit the sector. The Directive is designed to limit the level of pollutant emissions from private cars as well as set conditions under which Member States may give tax incentives for new vehicles sold. The introduction of broader government restrictions on traffic circulation in the larger cities may also stimulate demand for mopeds and motorcycles.

## REGULATIONS

Beyond those regulations already discussed, a number of Community Directives are directly relevant to the moped and motorcycle sector. In June of 1992, for example, the Council of Ministers adopted a framework Directive (Directive 92/61/EU) relating to the type-approval of two- and three-wheel motor vehicles. This Directive provides conditions associated with the granting of vehicle and component type-approval and also contains a comprehensive list of components and characteristics to be approved in conformity with specific requirements articulated in ten separate Directives.

Under Directive 87/56 EEC, manufacturers must conform noise levels for newly-built motorcycles with an engine capacity of more than 175cc to a reduced ceiling of 80dB(A). Related limits on exhaust emissions are in line with those of existing regulations and are already met by EU manufacturers.

Certain safety regulations, such as the 1986 Italian crash helmet requirement and moped registration laws, are unlikely to have significant long-term effect as consumers adjust accordingly. Tough new regulations in the United Kingdom on training before motorcycle licenser and relatively low moped speed limits have taken a toll on consumer demand. Even there, however, this effect is seen as transient.

Although true regulatory harmonisation has not yet been achieved, serious efforts to achieve rationalisation of standards are well underway within the EU. This would increase economies of scale and, in turn, instigate further rationalisations.

## OUTLOOK

The future health of the moped and motorcycle sector depends on the continued vitality of the major consumer markets. Particularly important in this regard is the manufacturers' ability to reach the higher growth rate markets of Asia. Within the EU, apparent consumption was expected to have reversed a downward trend in 1995 with a 3.5% increase in nominal terms, still considerably lower than the 9% that was forecast. It is believed that growth in nominal apparent consumption within the EU will be more vigorous in 1996 and 1997, exceeding 6% per year. It is also thought that there will be a shift in demand towards the bigger machine. To this extent, value of apparent consumption will grow faster than volume.

Manufacturers' nominal production will sustain the growth that it enjoyed in 1994 with robust prospects through 1998. As EU apparent consumption picks up, production will be progressively less export-oriented, continuing a trend that has occurred for the past decade. Still, exports will be important to the sector, particularly to the Asian markets as mentioned above.

The achievement of a truly unified market through rationalisation of standards and norms will unquestionably redound to the benefit of manufacturers. Such benefits will include the kind of economies of scale in production and research and development that derive from increased co-operation. Standardised parts development could help reduce costs and encourage continued restructuring within the sector. To the extent that regulatory controls affect the automobile sector, the moped and motorcycle sector should reap gains.

Written by: DRI Europe Inc.

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# Bicycles

## NACE (Revision 1) 35.42

Bicycle consumption continued to suffer from recessionary effects in 1994 with a decline of 6.5% from the year before, extending a trend that began in the early 1990s. Production jumped by about 13% in 1994, thanks largely to Italy's roughly 25% increase in output. Imports declined substantially between 1992 and 1994. More importantly, in 1994, European consumers turned to cheap products from Asian countries to a lesser extent than in recent years due largely to aggressive anti-dumping measures enacted by the European Commission. However, imports from Asia and the Pacific Rim still represent the overwhelming source of foreign product that enters the EU.

### INDUSTRY PROFILE

#### Description of the sector

Bicycles have historically been included in the NACE 1970 group 36.3 along with motorcycles and mopeds. With the NACE Rev.1 classification, however, bicycles are now separately categorised in class 35.42.

The bicycles sector can be segmented along lines of intended end-use: sports/touring bicycles (light weight), conventional adult bicycles, All Terrain Bicycles (ATB, or mountain bikes), hybrid bicycles (a cross between mountain and touring bicycles), small wheeled bicycles (short distance, commuter-oriented bicycles), and children's bicycles.

#### Recent trends

According to the European Bicycle Manufacturers Association, EU manufacturers produced approximately 13.7 million bicycles in 1994, a jump of about 13% over 1993's production level. Increased production levels were seen in France and, particularly, Italy, which enjoyed a nearly 25% jump due mostly to a currency devaluation and its corresponding beneficial effect on imports.

Consumption dropped another 6.5% in 1994, continuing a trend that began in 1992. Between 1991 and 1994, EU consumption of bicycles declined by 15%. Particular declines in consumption occurred in Germany, Spain, and France, offset somewhat by increases in the United Kingdom, the Netherlands, and Italy.

#### Foreign trade

Notwithstanding overall declines in consumption, the EU still consumes more bicycles than it produces, rendering it a net import region. In 1994, the EU imported some 4.4 million bicycles, down about 20% from 1993's figure of 5.5 million, which in turn was a drop from 1992's figure of 6.1 million. Most of the decline took place in imports from China. In 1991, imports from China stood at 2.2 million bicycles. In 1994, Chinese imports were only 50 000 units. This decline was due to the application of anti-dumping legislation. There have also been significant declines in imports from Thailand, Taiwan, Vietnam, and Indonesia. Such declines contrast with extra-EU imports from India, the Czech Republic, Poland, Turkey, and Lithuania. In 1992, those countries produced 8% of extra-EU imports, while by 1994 their percentage of extra-EU imports had risen to 26%. Imports from the United States and Japan have represented only about 3% to 4% of total extra-EU imports over recent years.

### MARKET FORCES

#### Demand

Much of the growth in bicycle sales prior to 1992 was due to the burgeoning popularity of mountain bikes, especially among younger people. Since 1992, sales of mountain bikes have levelled. This fact, in combination with recessionary conditions in general, and a drop in sales of adult bicycles in particular, have caused a significant decline in overall EU bicycle sales.

The demand for bicycles is driven by recreational and utilitarian considerations: leisure, the desire to keep fit, and fashion all drive the demand for bicycles. The use of bicycles has also become an important alternative source of transportation for many people, particularly in the larger cities, where traffic congestion interferes with a good quality of life. Some towns and cities have designated certain portions of their streets as bicycle lanes, exclusively for two-wheeled traffic.

#### Supply and competition

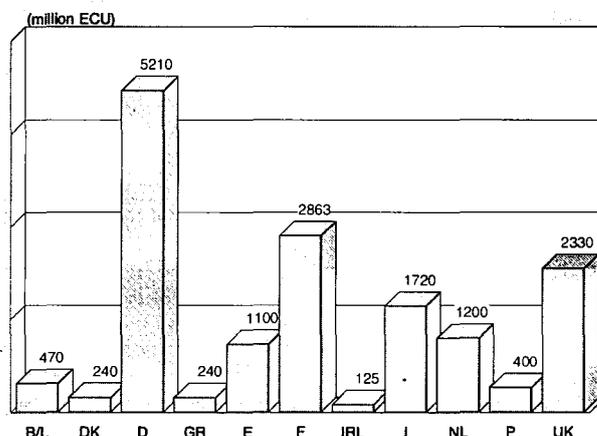
Traditionally, the two largest European producer-countries have been Italy and Germany. In 1992, for example, the combined output of the two countries was 8.0 million units or roughly two-thirds of total EU output. In 1994, Italy and Germany had a combined output of 9.2 million units, again about two-thirds of total output. Over the two year period, however, Italy supplanted Germany's leadership role. Whereas Germany produced about 30% more bicycles than Italy in 1992, Italy produced about one-third more than Germany in 1994. France, with a significant upswing in production in 1994, is the third largest producer of bicycles, followed by the United Kingdom in fourth place.

Producers from certain countries, such as Taiwan, have served as fierce competition within the European market. In general, Far East producers enjoy significant labour cost advantages that enable them to undercut EU producers. As a means to counteract this advantage, some EU manufacturers have relocated productive assets to cheaper labour countries. In turn, consumers have "imported" back the finished products from these ostensibly foreign producers.

The Japanese company Shimano dominates the component market in the EU. Its specialty is gear and brake mechanisms. Taiwanese component manufacturers also present a formidable source of competition.

The increasing, low-cost Asian competition has forced European producers to migrate toward the expensive end of the

Figure 1: Bicycles  
Breakdown of EU bicycle consumption, 1994



Source: EBMA

**Table 1: Bicycles  
EU production and consumption**

(thousand units)	Production			Consumption		
	1992	1993	1994	1992	1993	1994
Belgique/België, Luxembourg	91	160	170	533	480	470
Danmark	188	145	160	340	310	340
Deutschland	4 550	4 100	3 900	6 000	5 750	5 210
Ellada	30	44	60	280	240	240
España	505	410	430	1 850	1 570	1 100
France	1 035	943	1 275	2 878	3 192	2 863
Ireland	N/A	N/A	N/A	140	120	125
Italia	3 500	4 200	5 285	1 854	1 550	1 720
Nederland	882	740	770	1 100	950	1 200
Österreich	97	93	75	660	586	660
Portugal	413	400	470	425	380	400
Suomi/Finland	120	125	160	230	222	210
Sverige	120	130	140	400	410	430
United Kingdom	1 180	1 100	1 150	2 270	2 100	2 330

Source: EBMA

value-added product spectrum. Still, EU producers have increased R&D expenditures in pursuing a path of product differentiation.

Moreover, there has been a gradual transformation in distribution channels within the European bicycle sector. Whereas in the past, bicycles were distributed largely through specialty shops, today an increasing share of bicycles is sold in large department stores, hypermarkets, or by mail order. Indeed, the prevalence of mass-distributors within the sector is becoming more pronounced within the EU. Already, large distributors account for three-quarters of all bicycle sales in France and Spain; in Germany, that figure stands at about one-half. Only in the Netherlands have mass-distributors failed to make significant inroads.

## INDUSTRY STRUCTURE

### Companies

The market leaders within EU countries are the traditional manufacturers. The specialist-manufacturer tends to be a smaller producer, often catering to a particular niche such as children's bicycles. The following companies represent the market leaders within their respective countries: Kynast (D), Derby Cycle Werke (D), Bianchi (I), Rizzato (I), Peugeot (F), MBK (F), Gitane (F), Raleigh (UK) and Dawes (UK), BH (E), Orbea (E), Gazelle (NL) and Batavus (NL).

### Strategies

As mentioned above, manufacturers face strong competition from the Far East. In order to counteract these forces, many EU companies have engaged in joint ventures and other forms of alliances. The main purpose of these alliances is to rationalise resources and to enjoy the economies of scale that often accompany the pooling of productive assets. An example of these co-operations include the announcement by BH, the largest bicycle manufacturer in Spain, of the creation of a consortium with Peugeot and Gitane under the name of Cycleurope. Other major intra-EU consortia include the Derby Group (formed by Raleigh, Gazelle, and Derby) and the ATAG group (formed by Batavus and Dawes).

A characteristic of the European bicycle sector is that manufacturers largely produce for their own market; intra-EU trade is not very well developed. Thus, the lowering of trade barriers that accompanied the creation of the Single Market did not bestow the same degree of benefit upon this sector as it did upon other sectors. Still, the bicycle sector should experience an upswing in intra-EU trade as the region moves closer to

a truly unified market. The most important remaining internal obstacle to trade is the harmonisation of technical requirements among the EU countries. A more favourable investment climate for small- to medium-sized enterprises, a by-product of the Single Market, will rebound to the benefit of the components portion of the sector.

## REGIONAL DISTRIBUTION

The largest market for bicycles within the EU is unquestionably Germany. Nearly one-third of all bicycles sold within the EU are sold in Germany. France comes in second with about 18% of the market and the United Kingdom places third with about 15%. Between 1992 and 1994, only the Netherlands and the United Kingdom marked any increase in bicycle consumption within the EU. All of the other countries saw either stagnation or a decline in consumption. Spain, which saw its consumption more than double between 1990 and 1992, has since experienced a decline of more than one-third.

## ENVIRONMENT

The bicycle has traditionally been perceived as the most environmentally friendly means of transportation. It has played a very important role in improving the problem of traffic

**Table 2: Bicycles  
Significant bicycle imports to the EU**

(thousand units)	1992	1993	1994
Taiwan	2 308	2 272	1 724
Malaysia	344	489	416
Thailand	522	419	343
China	1 681	388	50
India	121	374	492
Indonesia	360	311	266
Vietnam	93	295	101
Czech Republic	163	244	257
Poland	190	173	286
USA	128	118	136
Slovenia	49	101	61
South Korea	104	190	182
Japan	46	27	11
Turkey	N/A	16	30
Lithuania	N/A	71	60

Source: EBMA

congestion within many European cities. Certain governments, particularly in North European countries, have encouraged the use of the bicycle through the provision of such devices as special traffic lanes and parking facilities. The absence of such provisions makes the use of the bicycle quite hazardous in some South European cities.

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## REGULATIONS

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The dumping of cheap products within EU markets has been a source of great concern to bicycle manufacturers. Accordingly, anti-dumping regulations have earned a high place on the list of European Commission priorities. In September of 1993, for example, the European Commission proposed a council regulation which imposed a definitive anti-dumping duty on imports into the EU of bicycles originating in China. The European Council subsequently adopted the regulation with a rate of duty at 30.6%. The effectiveness of the regulation is shown in the near-absence of Chinese imports into the EU. Such actions on the part of the EU authorities are also expected to reconcile the price gap which has characterised the difference between prices of EU and Asian bicycles.

More recently, the European Commission investigated complaints by the European Bicycle Manufacturers Association of dumping by Indonesian, Malaysian, and Thai producers.

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## OUTLOOK

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As the EU economy generally improves, sales of bicycles should pick up. Still, this is a highly elastic sector, driven in part by considerations of fashion. What may affect future sales has as much to do with *le dernier cri* as it has to do with economic vitality. Aggressive actions by the European Commission have sharply reduced the profusion of cheap Asian imports, a trend that benefits EU producers and one that should continue.

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# Shipbuilding

## Nace (Revision 1) 35.1

The EU shipbuilding industry experienced another declining year in 1994. As world production increased, its market share fell to an 8-year low of 20.5%, continuing a trend begun in 1992. The EU demand for new ships also fell, reversing the gains enjoyed in 1993. Korea has become a considerably more formidable competitor within the EU market as about 14% of total import demand was satisfied by Korean shipbuilders in 1994, compared to only 8% in 1989. In 1994, the Japanese also satisfied 14% of EU import demand, down from 26% in 1989. Certain European shipyards have specialised in repair, and at the premium end of the product spectrum, as a way to counteract the recessionary environment that has burdened this industry for years.

### INDUSTRY PROFILE

#### Description of the sector

NACE (Rev.1) 35.1 comprises the building and repair of ships and boats (NACE 35.11); and the building and repair of pleasure and sporting boats (NACE 35.12).

#### Recent trends

The EU nominal production was stagnant in 1994. As world production increased, its market share declined to an 8-year low of 20.5%, continuing a trend begun in 1992. Even more dramatic was the decline in market share experienced by the Association of West European Shipbuilders (AWES) countries, which consists of the EU-12 Member States in addition to Finland, Norway, and Sweden. In 1992, AWES countries had about 28% of world shipbuilding production. In 1994, their share was 23%.

Between 1992 and 1994, new orders in world shipbuilding nearly doubled. The EU shipbuilders' share of those new orders declined from 19.9% in 1992 to 17.2% in 1994. Over the same period, AWES countries' share of new orders declined even more markedly, from 24.1% in 1992 to 20.4% in 1994. Such declines stood in sharp contrast to the gains made by the Japanese and Koreans whose combined market share of these new orders increased from 49.4% in 1992 to 58.3% in 1994. Both EU and AWES countries experienced declines in their respective share of total orders booked at year end between 1992 and 1994. Korea was a winner in this regard as its share of these orders increased from 13.3% in 1992 to 20.3% in 1994.

New vessel prices fell somewhat in most categories, with particular drops in the larger motor tanker category. Such declines were partly impelled by a depreciated Korean currency as well as an asserted sales drive by Korean shipyards. The dry cargo ship remains the most produced vessel when

measured in compensated gross tons or CGT. Since 1992, the bulk carrier has also become an important vessel of production. Fishing vessels are no longer a major factor in world production. Of those ship categories whose world production exceeds 1 million compensated gross tons, the EU is a leader only in the manufacture of full containers. Japanese producers, on the other hand, lead in a number of ship categories.

In recent years, the sluggish oil market has dampened interest in increasing world stocks. This, in turn, has hampered world demand for new ships. To this end, world production has slowed such that, between 1991 and 1994, aggregate production by weight increased by only 9% compared to 34% between 1988 and 1991. Since 1991, however, world capacity has increased markedly largely as a result of improved efficiencies (e.g., better work planning, standardisation, and automation). Conversion of naval ship facilities into merchant facilities, especially within the United States, has only further expanded capacity. The relatively low capacity utilisation rates will be exacerbated by planned construction of new shipyards in Korea, anywhere in the range of 5 to 9 CGT of additional capacity.

#### International comparison

Japan is the unquestionable leader in production of new ships with a 41% world market share in 1994. That figure represents an increment from 36% in 1992. The Koreans have also emerged as an important competitor to the European producers. In 1993, they represented slightly under 15% of world production. In 1994, the Koreans had 17% of world production. For its part, the AWES countries have lost considerable market share in recent years. In 1988, they represented slightly under 30% of world production. In 1994, that figure was 23%. The EU countries enjoyed leading market shares in a number of ship categories including combined carriers (100%), passenger ships (53%), fishing vessels (47%), and other non-cargo vessels (40%). In 1994 the Japanese were leaders in bulk carriers (62.6%), LPG carriers (77%), car carriers (72%), and LNG carriers (65%). At the same time, the Koreans were leaders in chemical carriers (23%) and were prominent in crude oil tankers (28%), LNG carriers (25%), and car carriers (23%).

Although Japan represents a formidable competitor on the international scene, its influence within the European market has recently lessened. In 1989, Japanese shipbuilders satisfied 26% of EU import demand. In 1994, this share stood at 14%. The Koreans, in contrast, increased their share of the EU import market. Whereas in 1989, they accounted for only 8%, they represented 14% in 1994. The source of the European imports has also diversified. In 1989, the five largest source-countries represented 66% of all EU imports. In 1994, this figure was only 53%. In recent years, imports have satisfied between 10% and 20% of total European demand.

Important exporting EU countries include Germany, Spain, Denmark, the Netherlands, and the United Kingdom. Export destinations tend to be the smaller, "flag" countries such as Liberia, Cyprus, and the Bahamas. Between one-quarter and one-third of total European production has been targeted for foreign markets within the last few years.

**Table 1: Shipbuilding  
Main Indicators**

(thousand CGT)	1985	1990	1991	1992	1993	1994
Production (1)	2 958.5	2 703.4	2 651.3	2 843.0	2 592.0	2 584.5
% of World production (1)	20.9	23.2	23.0	23.5	21.0	20.5
Employment (thousand units) (2)	109.2	68.9	78.4	77.2	68.0	66.9

(1) Completed and includes former East Germany.

(2) Includes jobs in naval and para-naval building in France from 1986; includes East Germany from 1991.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Information Services (production), DG III (employment)



**Table 2: Shipbuilding**  
World development of merchant shipbuilding by type of ship

(thousand CGT)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Dry cargo ships	4 457	3 891	3 062	2 885	2 523	3 192	3 456	3 775	3 369	4 160
%	31.5	32.1	33.1	33.6	25.5	27.4	30.0	31.2	27.2	33.3
Bulk carriers	4 991	3 555	2 093	1 099	1 909	2 536	1 816	1 603	2 006	3 245
%	35.2	29.3	22.6	12.8	19.3	21.8	15.8	13.2	16.2	26
Oil tankers	486	830	646	787	1 138	1 163	1 624	2 588	2 486	1 514
%	3.4	6.8	7.0	9.2	11.5	10.0	14.1	21.4	20.1	12.1
Other tankers	1 934	1 557	1 193	1 530	1 795	1 906	2 291	2 146	2 322	1 970
%	13.6	12.8	12.9	17.8	18.2	16.4	19.9	17.7	18.8	15.8
Fishing vessels	669	791	890	1 150	1 117	1 027	734	560	598	390
%	4.7	6.5	9.6	13.4	11.3	8.8	6.4	4.6	4.8	3.1
Other	1 632	1 515	1 362	1 148	1 399	1 833	1 604	1 445	1 599	1 209
%	11.5	12.5	14.7	13.4	14.2	15.7	13.9	11.9	12.9	9.7
Total	14 169	12 139	9 245	8 598	9 881	11 656	11 526	12 118	12 380	12 488

Source: Lloyd's Register of Shipping, DG III

## MARKET FORCES

### Demand

In 1994 demand within the sector declined both in the EU and the AWES countries. Such represented a reversal of the gains that consumers from these countries enjoyed in 1993. Still, both AWES and EU-12 countries are well ahead of 1992's nadir. On the other hand, their market share are both well below 1992's figures as new orders nearly doubled over that time periods on a worldwide basis. The EU maintained a consistent share of Triad apparent consumption between 1985 and 1994, at slightly over one-third when measured in millions of ECUs. Japanese apparent consumption increased markedly over the period while that of the Americans declined.

### Supply and competition

Over three-quarters of the world's shipbuilding is performed by Japan, Korea, and EU countries. As mentioned, European producers were leaders in such areas as combined carriers, passenger ships, fishing vessels, ferries, full containers, and other non-cargo vessels. Again, the Japanese were leaders in bulk and LNG carriers, and tanker shipbuilding while Korea was a leader in chemical carriers. The leading EU country in terms of number of ships completed in any given year has traditionally been Germany. Indeed, in 1994, Germany completed twice as many ships as its closest European rival, Italy.

Other important European producers include the Netherlands, Denmark, Spain, France, and the United Kingdom. While EU production remained essentially constant as a percentage of Triad production between 1985 and 1994 at about 32%, USA Triad production share decreased from about 38% to about 26% while Japanese Triad production share increased from about 30% to approximately 42%. Such underscores the declining role of the United States' shipyard.

Within the EU, shipbuilding production declined by about 22% between 1990 and 1994. By comparison, total manufacturing production increased by about 5% over the period. When measured in constant prices, production in 1994 is seen to have fallen faster relative to its 1990 levels than 1994 production levels in Japan and the United States relative to their 1990 levels.

Notwithstanding relative declines in their production levels, European shipbuilders have achieved some successes in penetrating the upper segment of the market. For example, the French shipyard, Chantiers de l'Atlantique, recently won an order for a series of five LNG carriers, a high-end portion of the market which the Japanese dominate. The same French yard also beat Japanese competitors for two steamship contracts.

A shipyard serves three main functions: manufacture, repair, and scrapping. In Europe, there are hundreds of yards that

**Table 3: Shipbuilding**  
Ships completed by Member State

(thousand CGT)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EU (1)	2 955	2 388	2 088	2 020	2 346	2 707	2 651	2 843	2 591	2 585
Belgique/België	124	45	26	47	36	72	22	98	5	66
Danmark	440	351	194	277	287	306	351	414	354	307
Deutschland (1)	1 143	1 067	765	885	847	1 002	810	958	853	961
Ellada	44	25	7	12	13	46	6	0	7	0
España	400	230	328	326	306	365	301	428	365	233
France	164	145	208	63	199	114	171	182	65	103
Ireland	0	0	0	0	0	0	0	0	0	0
Italia	124	61	225	120	285	328	424	289	496	440
Nederland	310	263	146	153	172	264	357	271	236	319
Portugal	40	61	26	23	46	65	39	64	62	17
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	191	123
United Kingdom	164	142	162	113	157	145	170	139	148	139

(1) Including former East Germany.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Informations services, DG III

**Table 4: Shipbuilding  
Employment in new shipbuilding**

(units)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 (1)
EU (6)	109 242	96 145	79 904	72 460	69 738	68 875	78 424	77 152	67 988	74 221
Belgique/België	3 923	2 995	2 548	2 270	2 307	2 377	2 418	2 391	1 665	1 655
Danmark	10 200	7 000	7 000	7 300	7 900	8 400	8 600	8 300	7 300	9 000
Deutschland (2)	22 260	18 184	12 875	14 845	14 732	15 297	27 763	28 146	24 143	22 894
Ellada	2 000	1 709	1 621	1 855	1 535	550	0	0	0	0
España	18 000	18 000	17 300	14 000	12 550	11 940	11 440	10 735	10 085	9 400
France (3)	15 053	13 700	8 940	6 850	6 800	6 600	6 100	6 040	5 880	5 910
Ireland	0	0	0	0	0	0	0	0	0	0
Italia (4)	12 000	11 570	9 500	8 428	9 675	9 840	8 299	8 200	7 100	8 273
Nederland (5)	6 236	5 400	3 600	3 500	3 500	3 900	4 000	4 000	4 000	4 000
Portugal	5 370	5 087	5 020	4 412	4 245	3 845	3 820	3 520	3 150	1 632
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7 284
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
United Kingdom	14 200	12 500	11 500	9 000	6 494	6 126	5 984	5 820	4 665	4 173

(1) Including the new member states.

(2) Excluding jobs in ex-GDR's yards in 1990; including 11700 jobs in ex-GDR's yards in 1991, 12441 in 1992 and 9000 in 1993.

(3) From 1986 on, the figure covers jobs in new shipbuilding, naval and para-naval building.

(4) 700 unemployed should be added in 1992, representing the structural capacity and 1160 currently inactive should be added in 1993.

(5) From 1975 to 1984 including naval dockyards.

(6) EU (1994) figure, includes Finland.

Source: European Commission, DG III

are capable of serving these three functions. Only a small minority of them, however, can manufacture and repair ships in excess of 5 000 CGT. In recent years, dozens of shipyards were forced to close for many reasons including recession and currency fluctuations, among others. Among these newly closed shipyards were a number capable of repairing large vessels. A problem that faced these larger shipyards was the inefficiencies accompanying a more complex, bulky operation. Another problem that faced all shipyards was the increasing tendency by owners to reduce costs and to pursue the absolute minimum level of maintenance required by law, despite the fact that the median age of the world's fleet is increasing.

#### Ship repair

The European shiprepairing business continued its decline. Beyond the cost-cutting measures on the part of ship owners mentioned above, shiprepair yards were confronted with fiercer competition from the Middle East and Asia, particularly in the repair of tankers and bulk vessels. Indeed, the burgeoning strength of Chinese shiprepair facilities is particularly worrisome to European yards largely because of the lower prices that flow from considerably lower Chinese labour costs. Asian competition also exists in Singapore which recently has undergone an aggressive expansion programme at home and has engaged in investments in shipyards in such countries as Korea. New areas of competition were also found in such

Eastern countries as Albania, Croatia, and Poland. In recent years, Americans have begun to promote their shiprepair facilities. Yet, the Americans face certain disadvantages from the European perspective including a considerably higher labour cost structure. The reduction in new vessel contract prices also made repair a less attractive alternative for owners.

In the EU, certain shipyards have specialised in repair as a means to avoid the recessionary effects that have hit the shipbuilding business generally. Examples of these yards include Soaciete Bretonne de Reparations Navales (Sobrena) in Brest, the 25 container repair companies in Antwerp, and certain companies in northern Europe dedicated to ferry refits.

#### Scrapping

Scrapping is effectively the retirement of a ship at the end of its useful life. A number of factors help determine the appropriate time to scrap a ship including the vessel's operating profit margin, changes in environmental legislation, quality considerations and market psychology, that is, the expected return on a vessel. A more difficult economic environment has caused a significant reduction in shipping activity relative to the 1980s. Such, in turn, has left ships idle in shipyards. Whereas 5 to 10 years ago, a ship owner would be inclined to use an older ship in order to meet the demands of the market, today that owner may find scrapping a more eco-

**Table 5: Shipbuilding  
Development of new merchant shipbuilding by region**

(thousand CGT)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EU (1)	2 959	2 388	2 088	2 020	2 346	2 703	2 651	2 843	2 592	2 585
AWES (2)	3 591	2 927	2 537	2 510	2 781	3 285	3 158	3 396	3 010	2 902
Japan	6 498	5 085	3 795	2 953	3 664	4 456	4 417	4 379	4 854	5 177
South Korea	1 633	1 971	1 194	1 505	1 389	1 564	1 730	1 995	1 835	2 104
Rest of the World	2 447	2 156	1 719	1 630	2 047	2 351	2 222	2 348	2 681	2 453
Total	14 169	12 139	9 245	8 598	9 881	11 656	11 526	12 118	12 380	12 636

(1) Includes former East Germany.

(2) Association of West European Shipbuilders: EU plus Finland, Norway and Sweden.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Information Services, DG III



**Table 6: Shipbuilding**  
**World shipbuilding production**

(million CGT)	1993	share (%)	1994	share (%)
AWES	3.01	24.3	2.90	22.9
Other European countries	1.20	9.7	1.08	8.5
Japan	4.85	39.2	5.18	41.0
South Korea	1.84	14.9	2.10	16.7
USA	0.09	0.7	0.04	0.3
People's Republic of China	0.45	3.6	0.48	3.8
Taiwan	0.26	2.1	0.30	2.4
Brazil	0.17	1.4	0.17	1.3
Rest of the World	0.51	4.1	0.39	3.1
Total	12.38	100.0	12.64	100.0

(1) Association of West European Shipbuilders: EU12 Finland, Norway and Sweden.  
Source: AWES, DG III

nominally attractive alternative. In terms of dead-weight-tons, scrapping activity increased seven-fold between 1989 and 1994. With the increased level of "scrapped" ships on the market, prices paid for the remnants have declined in most categories. One exception are the types of vessels containing stainless steel such as chemical carriers. Such scrap is highly coveted by some buyers.

#### Labour

In 1994, employment within the European shipbuilding industry was less than one-third of what it was in 1975. It was only two-thirds of what it was in 1986. A number of factors account for this decline. During the 1970s, the shipbuilding industry underwent vast expansion resulting in a sharp increase in employment levels. Such expansion led to a problem of overcapacity which, in turn, led to a drop in employment from which the shipbuilding industry has not fully recovered. Another factor was the shift in the world centre of production from the United States and Europe to Japan and Korea. As an example, in 1972 Korea launched one ship out of every thousand. Twenty years later, this figure rose to one in every six ships.

The year 1994 witnessed a third consecutive year of decline in employment in the European shipbuilding industry. Particular declines were seen in Germany, Portugal, the United Kingdom, and Spain, whose employment levels in 1994 stood at about half of what it was in 1986. Even though French shipbuilding saw a slight increase in 1994, employment levels were less than one-fifth of what they were in 1975. In 1994, one-third of all EU-12 shipbuilding employment took place in Germany. In 1994, nearly two-thirds of employment in the EU shipbuilding industry occurred in Germany, Spain, and Italy.

In the United Kingdom, the picture is particularly bleak. In 1975, more than one-fourth of all EU shipbuilding employment

took place at British shipyards. In 1994, the share was only one-sixteenth. In absolute terms, British shipbuilding employment has declined by more than 90% between 1975 and 1994. In recent years, the United Kingdom's largest remaining shipbuilder, Swan Hunter, underwent significant financial difficulties.

#### Production process

Over the past 10 years, the European shipyards have undergone a transformation from relatively labour-intensive operations to relatively automated production facilities. Such a transformation has been impelled, in part, by the low-cost Asian competition that has compromised the ability of European shipbuilders to compete on a global basis. To this end, the EU shipbuilding industry has had to invest in such automated technology as computerised sheet-cutting and automated welders. Part of the transformation that has occurred in that industry has been the adoption of eastern-style management techniques, multi-skilled work practices as well as the purchases of complete systems and sub-systems from external suppliers. Unfortunately, a tangible consequence of the move toward automation has been a sharp reduction in the level of employment.

### INDUSTRY STRUCTURE

#### Strategies

As economic circumstances have not been positive in recent years in Europe, shipyards have sought ways to compete strategically. Some yards have pursued the classically European approach of product differentiation. To this end, shipbuilders have endeavoured to distinguish themselves from their Asian competitors through construction of ships within the relatively high value-added part of the product spectrum. In contrast to the Asian standard commodity, such as dry-bulk vessels

**Table 7: Shipbuilding**  
**New orders in world shipbuilding**

(thousand CGT)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EU (1)	2 583	2 550	2 310	2 485	3 220	3 143	2 170	1 758	2 919	2 884
AWES (2)	2 887	2 948	3 158	2 719	3 792	3 595	2 432	2 125	3 687	3 423
Japan	4 440	3 432	3 121	3 361	5 880	6 116	4 433	3 268	4 681	6 688
South Korea	807	1 352	1 943	1 203	1 671	2 169	2 278	1 085	3 673	3 088
Rest of the World	2 187	1 751	1 518	1 844	2 222	2 425	2 772	2 342	2 485	3 554
Total	10 321	9 482	9 740	9 126	13 564	14 304	11 915	8 820	14 526	16 753

(1) Including former East Germany.

(2) Association of West European Shipbuilders: EU12, Finland, Norway and Sweden.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Information Services, DG III

**Table 8: Shipbuilding  
Production by type, 1994**

(thousand CGT)	World	EU (1)	share of World total (%) Japan	South Korea
Crude oil tankers	1514	12.8	42.2	28.0
Chemical carriers	1291	14.9	22.1	23.4
Bulk carriers	3199	2.5	62.6	18.4
Combined carriers	46	100.0	0.0	0.0
General cargo ships	1042	30.5	38.3	3.5
Reefers	202	24.2	28.5	0.0
Full containers	2456	36.4	29.1	19.3
Roll on/off vessels	75	0.0	36.4	0.0
Car carriers	410	0.0	71.8	23.0
LPG carriers	120	5.8	76.6	17.6
LNG carriers	625	10.4	64.7	24.9
Ferries	407	39.6	32.9	0.0
Passenger ships	380	53.2	0.3	0.0
Fishing vessels	400	47.4	14.4	0.1
Other non-cargo vessels (2)	469	40.0	14.5	2.0
Total	12 636	20.5	41.0	16.7

(1) Including former East Germany.

(2) Excluding naval vessels.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Information Services, DG III

or oil tankers, European firms tend to produce a more elaborate ship such as dedicated refrigerator vessels, dedicated container vessels, gas tankers, chemical tankers and cruise ships.

Although a number of shipyards have gone out of business in recent years in Europe, many new yards have been "created" through a privatisation process in the former East Germany that was run by Treuhandanstalt, the German agency responsible for privatising former East German industries. Most of these new firms have been acquired by the German shipping company, Bremer Vulkan. Other formerly state-owned East German shipping firms were purchased by the Norwegian firm, Kvaerner.

In recent years, a number of shipyards that ordinarily maintain adversarial relationships have engaged in joint bidding part-

nerships for major contracts of fleet development programmes. Such partnerships have been encouraged by the clientele since such arrangements are perceived to diminish the risk of incomplete performance. Such arrangements also tend to promote further joint activity. For example, the E3 collaboration among five of the biggest European shipyards resulted in the innovative VLCC design proposals. Yet, it also yielded a firm contract for Spanish partner AESA as well as a deal between the Italian E3 participant Fincantieri and the well-regarded Danish shipbuilder Burmeister & Wain Skibsværft. Joint ventures have occurred with non-EU firms as well. For example, Germany's HDW and Korea's Daewoo Shipbuilding paved the way for collaboration with an American boxship programme. European shipbuilders eagerly anticipate other European-Asian alliances.

**Table 9: Shipbuilding  
Total order book by country at year's end**

(thousand CGT)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EU (2)	3 710	3 827	4 451	5 006	6 176	6 850	6 153	5 058	5 313	5 514
Belgique/België	62	60	75	82	148	154	213	117	134	118
Danmark	442	430	474	460	590	928	877	674	698	596
Deutschland (1)	1 119	1 282	1 426	1 429	1 974	1 955	1 530	1 471	1 600	1 591
Ellada	120	103	122	117	114	69	73	42	44	104
España	492	528	636	838	854	1 004	757	476	475	668
France	383	371	235	380	362	397	557	411	569	678
Italia	346	466	865	904	1 189	1 298	1 191	1 036	1 040	1 029
Nederland	300	196	142	365	415	443	388	322	386	443
Portugal	94	67	108	114	156	182	153	97	46	76
United Kingdom	353	325	370	317	377	419	414	412	321	212
Norway	148	147	137	114	423	464	382	284	371	411
Suomi/Finland	544	484	991	963	652	589	494	467	791	961
Sverige	182	138	94	39	115	64	24	24	0	0
AWES (2)	4 584	4 595	5 673	6 122	7 366	7 967	7 052	5 833	6 475	6 886
Japan	5 915	3 916	2 919	3 474	5 697	7 495	7 622	6 483	6 256	8 000
South Korea	2 579	1 909	2 639	2 343	2 813	3 501	3 924	3 012	4 793	5 867
Rest of the World	5 486	5 226	5 325	5 735	6 092	6 683	7 482	7 321	7 268	8 204
Total	18 564	15 646	16 556	17 673	21 968	25 646	26 080	22 649	24 792	28 957

(1) Including former East Germany.

(2) Association of West European Shipbuilders: EU12, Finland, Norway and Sweden.

Source: World Shipbuilding Databank based on data supplied by Lloyd's Maritime Informations services, DG III



**Table 10: Shipbuilding**  
**Development of end year contract prices for new vessels (1)**

(million US dollars)	shiptype in thousand dwt	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
motor tanker	30	13.0	14.0	20.0	27.0	31.0	30.0	30.5	27.0	28.0	28.0
motor tanker	80	18.5	21.0	29.0	38.0	43.0	44.0	44.5	40.0	N/A	N/A
motor tanker	130	25.0	26.5	34.0	46.0	54.0	55.0	55.5	49.5	N/A	N/A
motor tanker	250	37.0	42.5	54.0	73.0	82.0	86.0	90.0	85.0	N/A	N/A
motor tanker	400	44.0	50.5	60.0	88.0	101.0	120.0	125.0	119.0	N/A	N/A
motor tanker	40 DH (2)	N/A	N/A	N/A	N/A	N/A	36.0	37.0	33.0	31.0	30.0
motor tanker	95 DH (2)	N/A	N/A	N/A	N/A	N/A	51.0	52.0	47.0	44.0	40.0
motor tanker	130 DH (2)	N/A	N/A	N/A	N/A	N/A	68.0	70.0	62.0	56.0	50.0
motor tanker	280 DH (2)	N/A	N/A	N/A	N/A	N/A	110.0	115.0	100.0	90.0	80.0
oil/ore/bulk	96	22.5	25.5	32.0	44.0	55.0	62.0	64.5	56.0	52.0	48.0
bulk carrier	27	10.0	11.5	14.0	20.0	22.5	21.5	22.0	20.0	20.0	18.5
bulk carrier	38/45	11.3	12.7	16.2	22.3	25.0	24.8	25.3	23.5	25.0	23.0
bulk carrier	60/70	14.0	15.0	20.5	27.0	30.0	31.5	32.0	28.0	29.0	27.0
bulk carrier	120/145	20.5	23.0	30.0	39.0	45.0	46.0	50.0	44.0	45.0	41.0
roll-on roll-off	5	9.0	10.0	13.0	16.0	19.0	21.0	22.0	19.0	19.0	18.0

(1) Japanese/Korean yards' prices are used as basis. From 1992, the type size have changed for representative bulk carrier sizes, which explains the blanks in the table.

(2) DH = double hull.

Source: Feamleys

## ENVIRONMENT

To the extent that environmental issues have impact on the shipbuilding industry, they generally reside in the area of oil spills. Although the prevention of oil spills is critically important, as evidenced by the IMO regulation that new tankers be constructed with double hulls, it is not the only environmental issue confronting the industry. In recent years, there has been considerable emphasis on the painting of ships, particularly with respect to paint and coating substances and abrasive blasting. In this regard, a number of anti-fouling substances have been placed under intense scrutiny by environmentalists. Such substances include red lead (Pb3O4) and zinc chromate (ZnCrO4), as well as tin compounds. They are expected to be banned along with previously discontinued substances such as cadmium and other heavy metals.

Moreover, the development of environmentally correct tin-free antifouling has broadened the choice for operators. Unfortunately, no tin-free antifouling is presently available that has achieved the same standard as the best self-polishing copolymer (SPCs) antifouling. As such, most operators are competing for SPCs, with the notable exception of Japan as the only country to have adopted the tin-free antifouling widely.

Other substances used within the industry that are suspected of causing specific health risks include carbonates, silicates, coal tar, organic chloride compounds and polyurethanes. Abrasive blasting presents a particular concern because of the vast amounts of hazardous dust which result from the preparation of metal or concrete surfaces before painting.

## REGULATIONS

Like a number of global industries, the shipbuilding industry is subject to market distortions that result from differing levels of government subsidy. Within the EU, levels of subsidy to shipbuilding fall within the rules of the 7th Directive on Aid to Shipbuilding. Each year, the Commission determines the common ceiling for state aid, which is based on the difference in costs between the most efficient EU yards and their major competitors, typically from Asia. Between 1992 and 1994, the subsidy allowance in Europe was 9% of contract value.

In recent years, there have been discussions within the OECD to reduce or eliminate subsidies and their market distorting effects. Such discussions have been met with particular disagreement from countries like France that thought the elimination of subsidies would benefit those countries that already had strong internal markets. Generally, however, EU countries see the OECD discussions as critical in their effort to phase out national shipbuilding subsidies within the sector worldwide. The accord would effectively end all forms of governmental subsidies, allow for anti-dumping duties and cap the tonnages covered by the Jones Act, an American initiative that requires that a fixed proportion of cargo passing through American ports be carried in US-registered vessels. Most importantly, the agreement is designed to eliminate the possibility of a subsidy war among the regions.

In environmental regulatory matters, the EU and the United States are leading the global industries with a series of legislative reforms that are designed to reduce solvent emissions resulting from particular paint substances. Such legislation is expected to be similar to the German TA Luft legislation. Member States such as Denmark and the Netherlands have already initiated programmes designed to reduce solvent emissions.

Recent regulatory efforts to improve maritime safety may provide benefit to the shipbuilding industry, depending upon the level and degree of legislation that is applied. Such is particularly true in the shiprepair area since certain forms of safety regulation require add-on features that only shiprepair facilities can outfit.

## OUTLOOK

While the EU shipbuilding industry has suffered setbacks in recent years, there is some reason for optimism. Tougher, more universally applied ship surveys to ensure the improvement of sub-standard tonnage should impel an increase in repair demand. In a broader sense, over half of the current fleet will be over 25 years old in the year 2000, inducing a spurt in demand for new ships, a good portion of which should emanate from EU yards. The global realisation that safer, better built ships make economic and ecological sense should increase demand for ships within the premium part of the product spectrum, in which the European shipbuilding industry is specialised.

Still, the EU shipbuilding industry has been badly hit by a number of factors. Excess capacity led to contraction and job loss. After the growth of 1993, the disappointing demand figures in 1994 cast an uncertain cloud over the future. Perhaps where the industry's best hope rests is in product differentiation. What European shipbuilders can do is what the Asian competitors cannot do well: build a better ship, more costly perhaps, but one justified by intrinsic utilitarian and design advantages. It is here that the EU may preserve what was once a great, leading industrial force.

Written by: DRI Europe

The industry is represented at the EU level by: Committee of EU Shipbuilders Associations (CESA). Address: Juan Hurtado de Nendoza, 13-7-9, E-28036 Madrid; tel: (34 1) 345 7078; fax: (34 1) 359 9336.

# Railway rolling stock

## NACE (Revision 1) 35.2

Both consumption and production of railway rolling stock in the EU grew strongly over the last decade, apart from a temporary downturn in 1994. The prospects are also good for the medium term with demand being driven by the expansion of urban railway systems, the development of Trans-European High Speed Rail Networks and the upgrading of conventional systems. The industry is highly concentrated, despite the recent spate of merger activity. Recent EU Directives relating to public procurement and to technical harmonisation have increased the degree of competition within the sector. Innovations and the ability to provide complete systems and total life cycle maintenance are the key competitive factors.

### INDUSTRY PROFILE

#### Description of the sector

The railway rolling stock sector includes the manufacture of standard large and narrow gauge railway and urban transport railway equipment. With the revision of NACE 1970 to the new NACE Rev. 1 there are no changes in the components of the sector - the NACE 1970 code 36.2 is now classified as NACE Rev. 1 code 35.2 and includes:

- locomotives;
- heads of motor coaches, and motor coach trains;
- mainline passenger coaches, metro cars, and tramways;
- goods wagons;
- rolling stock equipment;
- fixed track equipment;
- electric signalling, safety and control devices for railways.

It should be noted that the NACE classification is not completely correct given that fixed track equipment and also electrical signalling should not be considered as part of the railway rolling stock sector.

Production of passenger coaches includes coaches for regional services and for additional services such as mail vans, restaurant cars and sleeping cars.

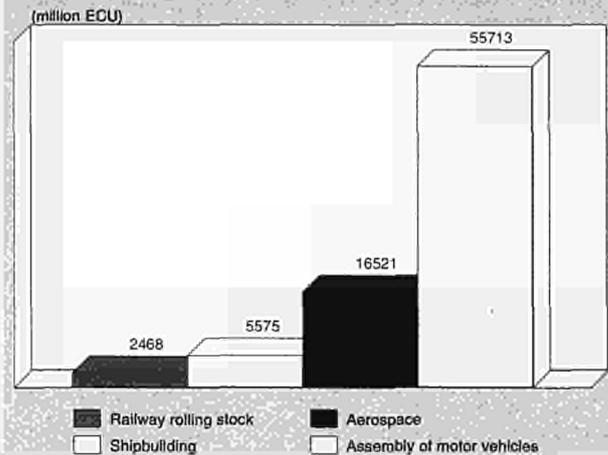
Transportation needs and public policies on railway development and purchases determine the industry's performance. In 1994 the railway rolling stock industry generated 2.4 billion ECU which represents about half that created by the shipbuilding industry.

#### Recent trends

After a period of stagnation in the mid to late 1980s, there was rapid growth in demand and production from 1991 until 1994. After a slight decline in both production and consumption in 1994 (4.7% and 1.7% respectively), the 1995 production fell 16.5% and consumption by 13.9%, both falling below 1992 levels. The decline in consumption followed the largely positive growth since 1987 (1991 was an exception) and the 1994 level still represented an 82% increase over the decade since 1985, an average annual growth rate of 8.2% for the period.

Much of the 1994 decline was due to Germany. The value of German production of locomotives fell by 48%, passenger coaches fell by 30% and production of goods coaches decreased by 52%, leading to an overall decline of 45%. While Germany was the largest EU producer in value terms in 1993, she was overtaken by France where production grew by 25%

Figure 1: Railway rolling stock Value added in comparison with related Industries, 1994



Source: DEBA GEIE

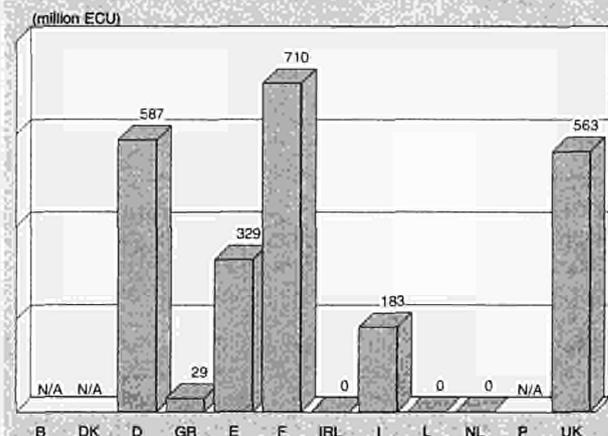
and 9% in 1993 and 1994 respectively. Indeed, France accounted for 17% of the value of EU railway rolling production in 1994, with the largest increases occurring in the production of goods wagons which increased 37%. The share of railway rolling stock production value in total manufacturing had increased strongly in France over the last decade, while it only increased slightly in Germany and decreased slightly in Italy and the UK.

Falling production in the 1980s, increased competition and further productivity gains underpin a decline in employment, to 68 400 in 1994. 1994 employment represents a 7.8% decrease from 1993, partially due to decreasing production and partly to labour productivity gains. The largest decrease in employment in 1994 was in Germany, largely due to rationalisation of the industry in former East Germany. The sector now employs over 20% fewer people than in 1985.

#### International comparison

The EU is a more important producer, consumer and exporter of railway rolling stock than either the USA or Japan, and its dominance has increased over the last decade. The share of Japanese production has also increased. In current price

Figure 2: Railway rolling stock Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Railway rolling stock  
Breakdown by product line**

(million ECU)	Year	Locomotives	Passenger coaches	Goods wagons
Belgique/België	1992	4.1	216.4	N/A
	1993 (2)	2.5	199.9	N/A
	1994	N/A	136.8	N/A
Deutschland	1992	326.5	849.0	379.0
	1993	363.2	649.5	273.7
	1994	187.9	381.6	133.2
España	1992 (3)	4.2	64.9	7.6
	1993	41.5	57.4	6.7
	1994	52.8	122.8	20.9
France	1992	430.3	350.0	91.0
	1993	535.2	378.2	182.3
	1994	513.0	429.2	251.5
Italia	1992	171.2	50.1	63.3
	1993	54.7	27.6	193.6
	1994	79.7	6.4	70.8
Portugal (1)	1992	N/A	N/A	7.4
	1993 (2)	9.1	12.1	10.5
	1994 (2)	10.8	N/A	10.7

(1) Data for passenger coaches includes bodies.

(2) Data for locomotives includes only electric locomotives.

(3) Data for locomotives includes only diesel shunting locomotive and diesel loco production.

Source: UNIFE

**Table 2: Railway rolling stock  
Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	3 4601	4 592	4 062	5 461	6 409	6 298	5 482	6 917	7 500	8 150	8 880
Production	4 303	3 902	5 041	6 671	7 178	6 842	5 890	7 581	7 960	8 300	8 650
Extra-EU exports	980	840	1 363	1 568	1 144	1 116	927	1 138	1 190	1 240	1 270
Trade balance	842	672	980	1 209	769	544	408	665	460	150	-230
Employment (thousands)	87.5	68.2	69.7	79.4	74.2	68.4	65.8	78.9	80.0	80.0	80.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

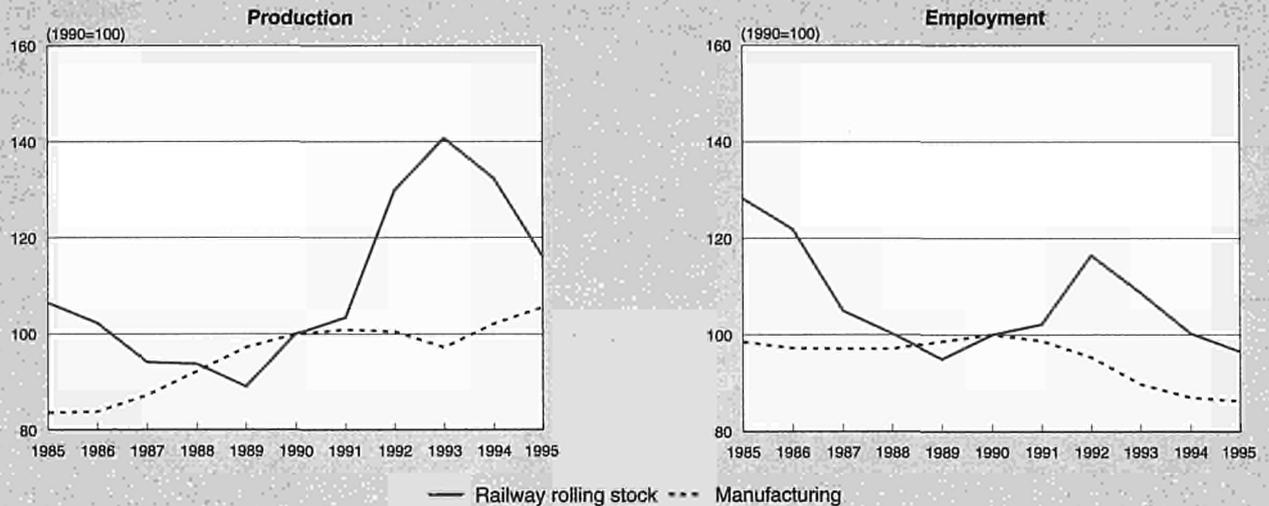
**Table 3: Railway rolling stock  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	2.0	6.8	4.1	-3.3
Production	-1.2	7.3	2.5	-5.9
Extra-EU exports	-17.8	15.7	-4.3	-14.2
Extra-EU imports	-1.5	17.0	6.3	23.7

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Figure 3: Railway rolling stock  
Production and employment compared to EU total manufacturing industry**



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

terms the EU now accounts for 49% of total production, 46% of consumption and 61% of total exports. From 1985 to 1990 EU production declined while USA and Japanese production increased in real terms. Since 1990 EU production has increased by 32% in real value terms while Japanese production increased by 21% and USA production decreased by 19%. While Japanese production has grown, exports have fallen sharply, largely reflecting the strength of the Yen.

**Foreign trade**

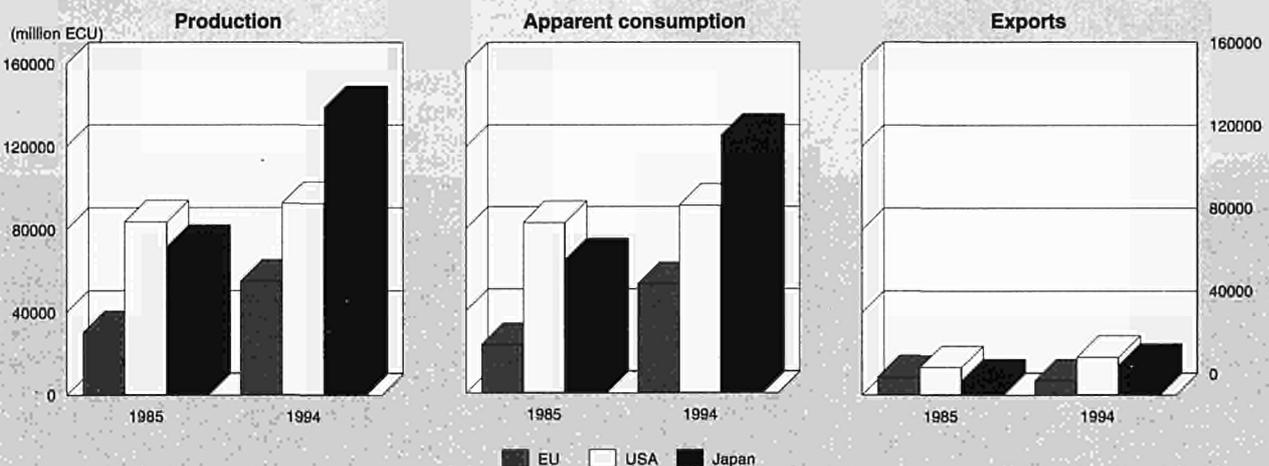
Extra-EU exports reached 1.1 billion ECU in 1994 nearly three times the level of exports in 1989. The ten year period to 1995 has seen strong positive growth in the value of both extra-EU exports and imports which increased by an average annual rate of 12.3% and 20.1% respectively. Extra-EU exports have been highly variable reflecting the importance of large projects. They peaked at 1.57 billion ECU in 1992 having been as low as 0.41 billion ECU in 1989. Extra-EU imports on the other hand, while well below exports, have grown fairly steadily over the same period, accelerating during the 1990s. The trade surplus was 544.5 million ECU in 1994

relative to the 1985 trade surplus of 842.2 million ECU and is mirrored in a strong decline in the exports/imports ratio. The addition of the three new Member States increases EU production and extra-EU exports, though not significantly so.

There has been a considerable shift in the destination of EU exports of railway rolling stock since 1989. The share of extra-EU exports accounted for by the former EFTA countries fell from 28% in 1989 to 20% in 1994. Russia, Hungary and Mexico have emerged as important export destinations since 1989, accounting for 18%, 8% and 6%, respectively, of exports in 1994.

The composition of extra-EU exports and imports has also changed. The proportion of total exports accounted for by exports of locomotives has declined significantly since 1985, only representing 4% of the total in 1994, while the export share of passenger coaches increased from 30% in 1985 to nearly 50% in 1994. While the importation of parts comprises the largest component of total imports, imports of goods wagons have increased in importance and represented 51% of the total in 1994.

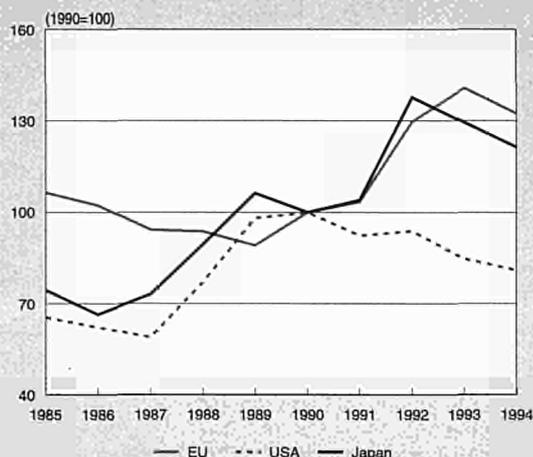
**Figure 4: Railway rolling stock  
International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 5: Railway rolling stock**  
International comparison of production in constant prices



Source: DEBA GEIE

## MARKET FORCES

### Demand

Demand in the industry is relatively concentrated among a small number of customers: national and regional railway companies, urban transport companies, private rental and leasing companies and industries with their own railway rolling stock. The demand for railway rolling stock is dependent upon long run transport and infrastructure policies which are in turn influenced by the political and economic climate. The latter also influences the phasing and size of orders and affects the railway companies' ability to generate short term investment funds.

Key supply side determinants are:

- the development of Trans-European High-Speed Rail Networks
- growth in the use of rail-based public transport as a means to solving congestion and pollution in urban areas

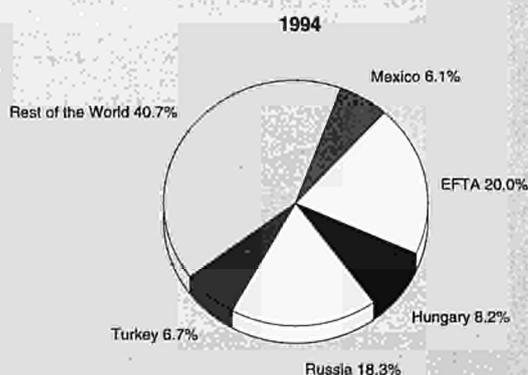
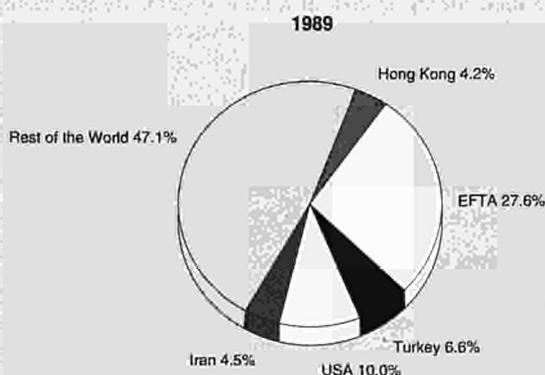
- the continued upgrading of conventional rail systems as an alternative to air transport

New product innovation and high-speed rail technology has developed in response to growing demand for faster rail transport and has resulted in new high-speed networks across Europe, the USA and Japan. European countries are currently upgrading their rail networks in anticipation of the Trans-European High-Speed Rail Network planned for 2010. This high level of activity will continue to have a favourable impact on the activities of rolling stock manufacturers. France is increasing the network of its Train à Grande Vitesse (TGV), Germany is expanding its InterCity Express (ICE) network from Berlin to Hamburg and to Vienna, Spain has completed the AVE between Seville and Madrid and is now extending the network to Barcelona and Valencia, with high speeds link to Madrid from Lisbon and Porto in Portugal. Italy has completed the Florence/Rome sector of its High Speed Project which includes in the first phase Turin/Milan/Naples to be into operation in 2003 and later on Milan/Venice/Trieste.

The proposed Trans-European High-Speed Rail Network will require an estimated investment of 111 billion ECU for the basic network to be completed by 2010. It is estimated this investment would increase rail traffic volumes by over 50%, between 285 and 305 billion passenger-kilometres. Completion of the key links requires further investment of 42 billion ECU and could increase rail traffic by 70% in volume terms. The European Commission has identified fourteen priority projects, the Christopherson proposals, due to commence in the short run and costing 90 billion ECU. The Paris-Brussels-Cologne-Amsterdam-London HST (high speed train) is the costliest of the priority projects, linking the heart of northern Europe at a projected cost of 13 billion ECU, with the completion of the Channel tunnel being one of the initial steps already taken.

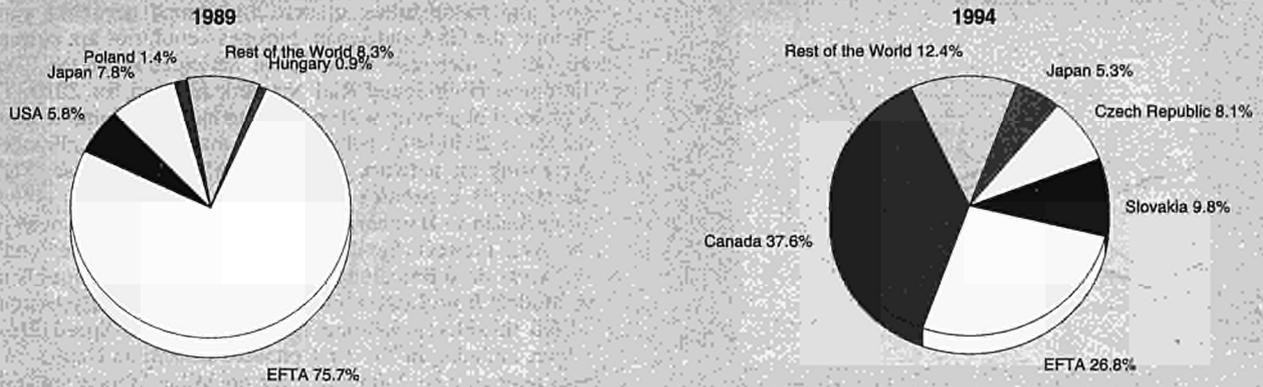
Clearly, the development of a high-speed network depends upon the availability of finance. Taking the Netherlands as a case in point, by 2003 the high speed network will halve the current six-hour train journey between Amsterdam and Paris and it is estimated could then capture two thirds of airline passengers on the Amsterdam-Paris route. The Commission has a designated budget of 1.8 billion ECU which is to be used to lever public and private investment, as opposed to the provision of grants. It is anticipated that this fund will be augmented by allocations from the Regional Funds as well as EIB loans.

**Figure 6: Railway rolling stock**  
Destination of EU exports



Source: Eurostat

**Figure 7: Railway rolling stock  
Origin of EU Imports**



Source: Eurostat

If European high-speed rail links are to become a reality, trains must be able to deal with a host of electricity voltages, signalling systems and safety standards on different national rail systems. At present, there are acute technical incompatibilities throughout the EU. However, the EU Directive on Interoperability should help initiate harmonisation of technical specifications through mandatory standards.

Despite the high profile of the new high-speed rail, it is in fact the demand for urban and suburban rail links that is expected to account for the highest proportion of future railway equipment demand. Faster and more efficient rail-based public transport solutions are increasingly viewed as the most efficient solution to the problems of heavy road traffic congestion and pollution in many European cities. The demand for rail transit systems should show continued growth as such systems provide improved mobility in expanding cities and urban areas.

The share of rail in EU passenger transport fell substantially in recent decades from 18% in 1970 to 7% in 1990, but this long term decline should reverse as services improve, travel times decrease and roads become more congested. In absolute

terms the total number of rail passengers carried in the EU between 1981 and 1991 increased by 8% to over 4 billion. This is a result of steady growth in urban and suburban traffic and a sharp increase in national intercity trains, counterbalancing losses in traditional medium distance services. Other important markets are Spain and the Netherlands both of which showed strong growth in derived demand which primarily depends on rail transport usage. While the larger Member States will remain the main EU markets for railway rolling stock, new markets are emerging in Asia, particularly South Korea, Taiwan and China, and in North America.

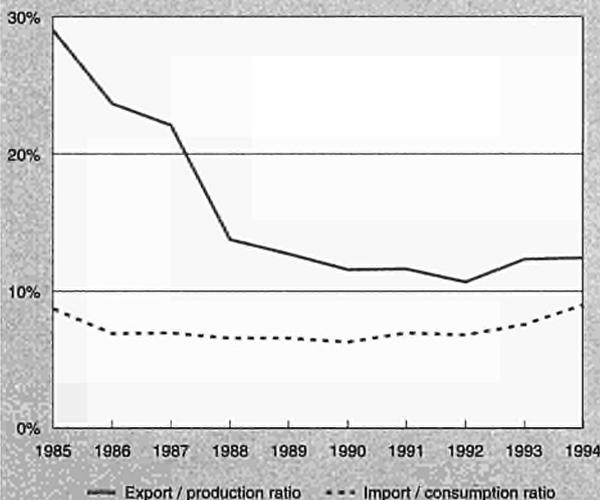
Rail's share of the freight market within the EU has fallen, particularly due to the deregulation of road freight. Increased combined rail/road haulage may stall this decline as it offers an environmental and energy saving solution as goods can be transported by rail for long distances and dispatched to their final destinations by trucks. Quick loading and unloading systems are essential for the success of combined rail/road traffic. Germany and France currently have above-average usage of rail freight services and the Netherlands may follow suit: investment in a new 120 km freight-rail line linking Rotterdam with Germany's industrial Ruhr heartlands has recently been approved by the Dutch government.

The role of the railway operators has changed from a generalist's role to the current concentrated provision of services. Thus, the function of designing rolling stock has transferred from the railway operators to rolling stock suppliers. Similarly, maintenance operations, the cost of which may represent half of the total life cycle cost of a train system, are increasingly being taken over by the suppliers. Hence, demand from railways is expanding beyond that of rolling stock equipment to include the complete system supply i.e. rather than focusing solely on the initial capital cost of equipment, the demand is for overall package covering the total cost of the rolling stock over its life cycle. The traditional long life cycle of rolling stock demand of 30-40 years has shifted towards equipment with a much shorter life cycle of 15-20 years.

### Supply and competition

While the prospects for demand appear healthy, competition to supply rail contracts, and in particular high-speed rail contracts, remains fierce. The market for railway rolling stock is comprised of a relatively small number of clients with large projects which arise infrequently and generally last several years. For railway rolling stock manufacturers this time lag makes each contract critical. The experience acquired and the economies of scale obtained by winning several contracts

**Figure 8: Railway rolling stock  
Trade Intensities**



Source: DEBA GEIE, Eurostat

**Table 4: Railway rolling stock  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	980.4	856.1	840.3	722.8	408.2	459.5	1 363.5	1 567.8	1 144.5	1 115.9	927.1	1 137.6
Extra-EU imports	138.2	112.2	168.5	155.7	139.7	191.5	383.9	358.4	375.3	571.4	519.2	473.0
Trade balance	842.2	743.8	671.8	567.1	268.4	268.0	979.6	1 209.3	769.2	544.5	407.9	664.6
Ratio exports / imports	7.1	7.6	5.0	4.6	2.9	2.4	3.6	4.4	3.0	2.0	1.8	2.4
Terms of trade index	119.7	114.3	105.7	112.7	100.9	100.0	92.6	96.7	92.1	85.0	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

is critical in determining the strength of the manufacturer's next bid for a contract.

Decades of cross-reliance between railways and suppliers has created a recognised excess capacity in supply resources which has only been partially offset by exports to non-EU countries. With greater separation of rail services for infrastructure provision, as seen recently with the privatisation of British Rail, there should be an increasing trend towards cross border purchasing. In the past, there have been few cross-border orders from countries with indigenous railway rolling stock manufacturers with the exception of the Netherlands, Spain and more recently the UK. If warnings of over-capacity in the European industry are valid, some of the national suppliers may disappear.

The leader of the world high-speed train market is GEC-Alsthom (F, UK) who took orders of 570 high-speed trains in 1994. The comparable figure for the German Siemens-AEG consortium was 120 trains in 1994 and High Speed Train (HST) sales revenue of 500 million ECU in 1995.

As the industry is becoming more specialised, most railway rolling stock manufacturers are increasingly becoming system suppliers or integrators. Thus, railway operators tend to deal with companies that are able to supply a full life cycle train system rather than dealing with a large number of vendors, maintenance companies, etc. Thus, the pricing of train systems and components is being replaced by total life cycle costs. A pyramidal organisation is emerging in the railway rolling stock industry with a few large system suppliers at the top end. These firms interface with the railway operators and are taking over the design, procurement of subsystems and maintenance over the life cycle of the rolling stock. Subsystem suppliers are becoming more specialised. At the bottom of the pyramid is a competitive, pure supply industry, making parts and components at the request of subsystem suppliers.

New technology is allowing rail systems to overcome their traditional weaknesses in the lack of information provided to

the public and insufficient intermodal connections. In this way, rail systems are becoming more market and innovation driven. For instance, multimedia information systems are in place, or will soon be operational, in many trains and stations. Electronic timetables are already available in disk format and on the Internet. Traffic disturbances and other real time information are increasingly announced over radio and television. Multilingual announcements are becoming common practice and upcoming "tele"-pay-card systems will open a new spectrum of services (payment, ticket, telephone). Emphasis is also being placed on passenger comfort as the railways compete for Club class air passengers.

Employment in the railway rolling stock industry has proven more volatile than that of total manufacturing over the last decade. From 1985 to 1990 employment in the industry fell at a faster rate than total manufacturing. Despite job losses in 1993 and 1994, employment rose slightly since 1990 against a background of falling manufacturing employment. Since 1990, railway rolling stock industry output grew by nearly a third compared to much more moderate growth in total manufacturing output. Labour productivity also grew by around a third between 1990 and 1994.

Depending on the pace and level of technological transfer, any long-term threat to the European rail industry will come from countries with lower labour costs. However, improving labour productivity is currently helping to mitigate this threat. Also joint ventures with East European companies can turn this threat to opportunity as in the case of the joint venture between Siemens (D) and CKD (Czech Republic) for the Berlin-Vienna HST line portion running through the Czech Republic.

Competition between high-speed rail and air transport is increasing in Europe. For journey times of under three hours, railways largely replace air transport as the favoured travel mode, as witnessed in France by the collapse of the Paris-Lyon air market following the introduction of the TGV. However, for train journeys exceeding three and a half hours, air transport

**Table 5: Railway rolling stock  
EU trade by product in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports										
Locomotives	153	94	212	266	32	50	53	145	93	49
Passenger coaches	309	254	189	83	41	26	611	845	576	572
Goods wagons	61	141	76	75	63	100	357	221	123	121
Parts	527	422	423	348	343	358	412	453	409	431
Extra-EU imports										
Locomotives	4	13	11	14	19	25	36	3	5	36
Passenger coaches	24	18	38	2	0	10	30	6	35	47
Goods wagons	30	27	45	68	51	80	153	162	125	302
Parts	81	61	80	78	77	87	193	222	223	207

Source: Eurostat

**Table 6: Railway rolling stock  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	83.0	83.8	89.7	93.4	93.7	100.0	101.2	111.4	129.4	132.1
Unit labour costs index (3)	84.4	88.3	90.7	89.5	96.9	100.0	102.6	102.4	88.6	90.3
Total unit costs index (4)	78.8	83.9	84.7	86.9	93.0	100.0	99.7	104.1	99.1	101.4
Gross operating rate (%) (5)	8.9	4.9	2.6	5.3	5.3	4.2	3.4	4.6	6.6	5.9

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

has the competitive advantage and is the preferred mode of transport. In the future, rail transport and railway rolling stock suppliers as well as airlines will face increased competition from improved telecommunications in terms of 'communication' opportunities. Competition is also taking place beyond products and services, and increasingly includes financing. Leading industrial groups involved in the provision of rail systems may follow aircraft manufacturers and set up financial structures to assist operators in acquiring equipment. IT6

### Production process

Since the industry has a small number of clients, it works very closely with its customers and suppliers to develop new equipment. The Single European Market and harmonisation of technical standards contained in the recent EU Directive on Interoperability should make cooperation easier.

Innovations in the industry are mainly driven by efficiency and/or environmental concerns. With the polycyclic aromatic hydrocarbons present in diesel fume emissions directly linked to cancer, manufacturers have developed propulsion systems run on electricity using heat pipe cooling systems which emit no exhaust fumes and use no toxic cooling fluids. Much of the demand for the recently developed tilting train systems derives from the fact that they offer significantly increased speeds with only limited modifications to existing infrastructure and allow slower passenger and freight trains to use the same lines, which is an important consideration in high population density and environmentally sensitive areas. Other innovations include multi-micro processor control equipment, and three phase drives which have become standard in various countries.

Demand has increased for high quality equipment to cope with the faster and heavier traffic on railways. Rail manufacturers have had to respond with a range of technical developments to meet these tougher requirements to maintain a safer, more efficient, cost efficient and compact mode of transport. A new generation of rail steels has been developed to replace conventional pearlitic steels which are inherently brittle with low fracture toughness. The use of new materials such as light alloys, composites and carbon fibres to replace traditional steel transformers have reduced vehicle weights significantly and increased power efficiency. Other recent technological developments affecting the sector include: information and telecommunication technology-based improvements to signalling and safety systems; advanced telematics that allow identification and localisation of vehicles; software applications aimed at total predictive maintenance; satellite-oriented control and communication systems; integrated transport systems for passengers; radial steering wheel sets to minimise lateral forces on track and wear of rail and wheel flange; innovative aerodynamic and sound-proved trains; and automotive train control systems for mass transit transport. Low-floor and advanced propulsion systems are also being used more widely in urban transport vehicles such as the newly developed diesel-electric articulated low floor railbus.

## INDUSTRY STRUCTURE

### Companies

In the past there have been few cross-border orders from countries with indigenous railway rolling stock manufacturers, the latter formed close working relationships with their customers through understanding the specific requirements of their individual railways. As a result of selective buying and technical incompatibility among different rail systems, the main industrial group have developed their own systems and there has been a lack of standardisation which the recent EU Directive on Interoperability attempts to resolve. Access by an individual supplier to new national markets tend to have been achieved through the process of acquisition, part ownership or via a consortium. In the late 1980s, the industry became much more concentrated with much of the mergers and acquisitions occurring between suppliers of specialised rail technology. Despite increased concentration, there remains a large number of suppliers within Europe. The industry comprises approximately 100 locomotive, coach, and wagon builders, and a small number of railway equipment manufacturers.

Firm size varies greatly, from less than 100 employees to several thousand workers, depending on what is being produced. Locomotives tend to be produced by divisions of large industrial groups engaged in other industrial activities, typically electrical engineering. Passenger coaches and goods wagons are usually the primary product of smaller firms. Some firms work in niche markets producing only one or two types of products.

The industry is characterised by a number of large companies that are divisions of very diversified multi-national groups who produce in many fields other than transportation (e.g. equipment for the production and distribution of energy, telecommunications and transportation materials). These include GEC-Alsthom (F, UK), Adtranz (a 1996 amalgamation of ABB (S, CH) and AEG Daimler Benz (D)), Siemens (D) Fiat Ferroviaria (I), Ansaldo (I) and Breda (I).

Two major all-German groups have been formed since 1988. Siemens has a 60% interest in rolling stock manufacturer Duewag and a 25% stake in the Krauss-Maffei locomotive plant. Daimler-Benz joined the railway activities of AEG (D) with the USA company Westinghouse and has merged the railway building activities of MBB with those of MAN. In early 1996 Adtranz evolved from a 50:50 merger of AEG Daimler Benz (D) and ABB (S,CH), thus creating the largest rail equipment supply company in the EU employing 23 000 people, with design, marketing and manufacture bases in 40 countries and branches in another 50 countries world-wide. Adtranz currently has a world-wide railway market share of 11%. ABB originally resulted from an amalgamation of ASEA (S) and Brown-Boveri (CH) in 1988. Although transportation represents only a small part of ABB's total revenue, it's transportation business comprises companies in Denmark, Germany, Italy, the Netherlands, Portugal, Spain and the UK, as

**Table 7: Railway rolling stock**  
**Evolution of employment in the railway industry**

	1 985	1 986	1 987	1 988	1 989	1 990	1 991	1 992	1 993	1 994	1995 (1)
Belgique/België	4 405	2 894	1 771	1 820	1 800	1 950	2 050	2 200	2 300	2 000	2 000
Danmark	876	695	737	820	804	830	850	943	752	687	684
Deutschland (2)	8 562	8 227	7 939	N/A	7 518	10 300	31 057	26 057	25 576	22 679	N/A
España	9 850	9 200	9 190	8 629	8 580	8 580	8 580	9 800	8 601	7 190	7 190
France (3)	17 400	16 120	14 940	12 490	12 240	12 225	13 275	13 693	13 021	12 442	N/A
Italia (4)	13 939	13 618	13 479	13 866	13 148	12 666	12 248	11 825	10 219	13 936	13 072
Portugal (5)	800	580	510	492	496	453	461	711	901	889	889

(1) Estimates for Belgium, Denmark and Portugal.

(2) Excluding traction from 1985 to 1989 and including former East Germany from 1991.

(3) Excluding repairers, signalling and track.

(4) For 1994 and 1995, includes both mechanical and electrotechnical parts.

(5) 120 employees in wagon manufacture in 1993 and 105 employees in 1994 and 1995.

Source: UNIFE

well as in Norway, Sweden, Austria and Switzerland. ABB acquired a 40% interest in BREL (UK) when it was privatised and separated from British Rail.

Non-EU companies involved in the EU market include the Canadian railway supplier, Bombardier Inc. of Montreal. They acquired ANF-Industrie (F) and a controlling interest in BN (B) and set up Bombardier Eurorail which had a strong involvement in manufacturing double and single deck wagons for the Channel Tunnel.<sup>18</sup>

### Strategies

Innovation is the key to competitiveness and research and development is very important among the leading firms. On the average these firms reinvest 10% of total revenue in R&D. This has increasingly led to increased market concentration as corporations seek to combine technological specialities, share national market expertise and exploit economies of scale. The major rolling stock suppliers have formed consortiums to develop and supply the new high-speed trains. GEC-Alsthom for the TGV (and its derivatives, the Trans Manche Supertrain, and Paris-Brussels-Cologne-Amsterdam); AEG and ABB (now merged) for the ICE; Ansaldo, Breda, ABB Tecnomasio, Fiat and Firema for the ETR 500, and most recently AD Tranz (D) has entered into a joint venture with GE (USA) to develop a new generation of lightweight transmission electric-diesel locomotives.

With European integration adding impetus to investment in rail systems of all descriptions and the supply trend towards complete systems and their total life cycle maintenance, it is

**Table 8: Railway rolling stock**  
**Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	0.5	0.7
Ellada	1.2	0.8
España	1.5	1.4
France	1.1	1.8
Ireland	0.0	0.0
Italia	1.6	0.5
Luxembourg	0.0	0.0
Nederland	0.0	0.0
Portugal	N/A	N/A
United Kingdom	1.5	1.4

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

likely that increasing market concentration will continue. The specialised nature of rolling stock does not currently enable large economies of scale, but knowledge of different standards and client requirements does give European firms an advantage over non-European firms. This advantage may be reduced as standardised European norms are introduced. Technical harmonisation at the European level may enable manufacturers to apply standardised specifications and increasingly benefit from improved economies of scale. This should also improve the overall competitiveness of rail transport as the costs associated with specialised and diversified production are removed and more economic production methods can be employed. Joint ventures feature widely in the industry as competitors pool technical and national knowledge to develop new technologies, enter new markets and exploit economies of scale. For example, a public and private sector consortium headed by Thyssen (D) developed, tested, and marketed the Trans-Rapid high speed train system which will connect the 480 km line between Hamburg and Berlin in 50 mins by 2003.

### REGIONAL DISTRIBUTION

The major companies and many of their sub-suppliers are located in the more developed Northern EU Member States, with few in the less developed Member States.

### ENVIRONMENT

The EU has taken the view that transport systems will not be efficient in the full sense until the traffic volumes they support and stimulate are also environmentally sustainable. Quoting economic and ecological reasons, the EU has pledged to promote modes of transport such as rail, inland waterways and short sea shipping, as well as new interlinking combinations of road, rail and waterborne transport which make it possible to shift more freight traffic off the roads for long distances.

Both urban and high-speed rail transport offer a number of environmental benefits in comparison to road and air transport. Rail transport ensures more rational land utilisation, in that it is more land efficient and offers higher capacity levels. On comparing a motorway's capacity of 1 500 private cars per hour per lane, to that of a high speed rail line carrying 15 high speed trains per hour in each direction, the capacity of the high speed rail line matches that of motorways with four lanes in each direction. Increased use of high-speed trains on shorter journeys should also reduce air traffic congestion. According to the OECD, the cost of traffic congestion in Western industrialised countries is already around 2% of GDP and rising. In areas where congestion is principally caused

by regional and freight traffic, the gains will be minor, unless an integrated road/rail transport system is realised.

Reduced energy consumption is another reason for developing sustainable transport. High speed trains, in comparison with rival modes, boast a much lower mean primary energy consumption per passenger-kilometre. Railway's supporters claim that by 2010 cars and aeroplanes respectively will consume 2.3 and 3.0 times more energy than a high speed train per passenger-kilometre. It is estimated that the completion of the Trans-European High Speed Rail Network will translate into an energy saving of some 4% due to the drop in energy consumption of alternative modes of transport.

Environmental impact studies of the proposed Trans European High Speed Rail Network estimate that if completed by 2010, the network will reduce emissions of CO, CO<sub>2</sub>, Nox and HC by 8, 7, 15, and 7% respectively. CO<sub>2</sub>, Nox, HC and aerosol emissions are directly harmful to human health. CO<sub>2</sub> and Nox contribute to the greenhouse effect. In addition, Nox and HC actively destroy the ozone layer. Other international comparisons of the emissions of the different forms of atmospheric pollution per passenger kilometre show that the rail remains the cleanest mode of passenger transport despite an increase in emissions of dust particles and SO<sub>2</sub> as a result from the increased electricity consumption associated with future rail use.

The noise and vibration impact of high-speed rail links has already slowed down development or altered the alignment of proposed routes in France, Germany and the UK. As environmental concerns in Europe grow, EU railways will have to adapt to stricter measures. It will be increasingly important for manufacturers to develop and employ light weight-saving materials; become more energy efficient; increasingly design cooling systems with recyclable components; and research technologies which minimise environmental impacts from noise, and vibration. In designing and constructing new rail links, particular attention will be paid to the environmental impact of such projects in terms of cutting longitudinal lines through the countryside, the effects on the flora and fauna and possibly on water flow. There will also be a need to reduce the negative environmental impact of high-speed rail projects during construction.

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## REGULATIONS

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The Council Resolution of December 1990 (91/C33/1) identified fourteen priority European high speed rail links for the Trans European network, and although not binding, has given impetus to the commencement of work on developing these links. A further Council Decision was made to propose future high speed network priorities. However, this is unlikely to have any impact on the industry until the earlier list of priority projects commences development.

The implementation of the amended EU Directive 90/531 (which updates Directive 93/38) on public procurement in previously excluded markets, including transport, has created new business opportunities for European suppliers after years of restricted access to national markets. The Directive imposes four requirements to the public contracting entities: information, non discriminative specifications, transparency and fairness. Changes have already occurred in procurement practices among European railway companies as purchasing departments have enlarged their vendor lists. However, the impact will depend upon the ability of new entrants to provide more competitively priced and higher quality products than incumbent suppliers if the close relationships between the national supply industry and the national railways are to change substantially.

Under the Directive on the Development of the Community Railways (EEC 91/440), the financial structures of European railways have been reformed. This involves the separation

of the management of railway infrastructure from the operation of rail transport services, with compulsory separation of accounts. The physical or institutional separation of the infrastructure and service provider is optional. Under this new structure the railway undertakings which provide the rail services will be charged a fee by the manager of the infrastructure to cover the cost of the railway infrastructure. The Directive also provides the right of access to each Member State's railway infrastructure for any authorised operator, whether it is another national railway or a new private enterprise.

This separation of rail infrastructure and operators should enable private operators to enter the rail transport business and lead to railway services being provided on a more competitive and commercial basis. It is likely that the denser and more profitable routes will attract private operators and may increase demand for railway rolling stock. However, on the "thinner" routes, railway service providers may reduce services and delay fleet expansion. This Directive has already led to changes in the structures of several national railway companies and will be a major influence on the future developments of the European railway industry. In Germany, the Bundesbahn and Reichsbahn have been transformed into commercial businesses and in the UK, privatisation is currently underway.

The draft Directive on the Interoperability of the European High-speed Train Network proposes that a regulatory framework for high-speed trains be created to ensure the establishment of a cohesive and interoperable network. National regulations and technical specifications relating to rolling stock will be harmonised. Upon the introduction of this draft directive, the European railway networks (represented by UIC and UITP), and the industry (represented by UNIFE) established the "European Association for the Interoperability of High-speed Trains" (AEIF). Its Board of Directors comprises 12 members, half appointed by the European operators and half by the industry. AEIF will approve the technical specifications of interoperability under preparation in eight working groups, through the 80 experts appointed on an equal basis by operators and manufacturers. These specifications are being prepared under a mandate to be delivered to the EU. The harmonisation of rolling stock specifications should have the effect of opening up contracts in previously excluded sectors.

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## OUTLOOK

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The outlook for the industry looks promising with continued consumption and production growth of approximately 7% to 10% per annum in the medium term. Consumption growth is expected to rise somewhat more rapidly than production.

However, the future of the railway rolling stock industry is largely dependent upon external and often unforeseeable factors. For example, changes in a country's political climate or budgetary situation may lead to the cancellation of long-standing contracts. Future demand is expected to come from growth in urban rail transit systems, resulting from concerns with road congestion and motor vehicle pollution, and the increased focus on high-speed lines as an alternative to air travel. In addition to suppliers' ability to produce innovative and less expensive equipment, much depends upon the railway operators' ability to attract public and private financial support. This is very pertinent in relation to Trans European High Speed Network where EU funds will be used to lever funding as opposed to grant funding.

Employment growth will be very low, reflecting productivity improvements, increased concentration within the industry and the elimination of overcapacity as competition increases. An important factor affecting market development will be the reorganisation and restructuring of European railway operators into infrastructure and service providers. There may be a delay in infrastructure and rolling stock investments in several EU countries as this process continues. The opening of public

procurement in previously excluded markets is likely to lead to increased competition in the medium term. The former Soviet Union offers EU manufacturers a potentially vast market assuming that funds are available. The primary risk facing the industry is the availability of finance and the ability of rail infrastructure projects to compete with other infrastructure projects, namely telecommunications and roads, for limited funds.

The three priorities for the sector are:

- an accelerated technical harmonisation procedure;
- the liberalisation of financial services and capital markets leading to a cheaper access to credit;
- the establishment of a fairer fiscal policy between the different modes of transport, which could take into account factors such as security, and the environmental damage from production and use of equipment.

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# Aerospace equipment

## NACE (Revision 1) 35.3

Growth in the EU aerospace industry has been cyclical. Between 1985 and 1990, EU aerospace production, in constant prices, enjoyed growth of 30%. However in the period that followed, the sector suffered a decline of 24% in production between 1990 and 1994. This recent decline is due to both the recessionary environment within the airline industry and the cuts in military budgets felt by the defence sector. Without question, the main competitors to the EU aerospace companies are the US producers. In order to compete against them, the EU aerospace industry must continue to rationalise its production through mergers and cooperative ventures.

### INDUSTRY PROFILE

#### Description of the sector

The EU aerospace industry consists of four distinct segments: complete airframe systems (representing 47% of non-consolidated turnover in the EU in 1994), engines (17%), components (26%), and space systems (10%). All of these segments represent both civilian and military operations. Civilian products mostly consist of large commercial jets, regional aircraft (turboprops and small commercial jets), helicopters, and commercial space hardware (satellites and launchers). Military operations include the manufacture of aircraft, helicopters, missiles and space hardware.

Because of the changing world dynamic, EU military sales have declined in recent years. Indeed, according to the Commission's publication, "The European Aerospace Industry - trading position and figures" (EAI), sales of civilian aerospace products overtook sales of military aerospace products for the first time in 1992.

#### Recent trends

During the 1980s, the EU aerospace industry enjoyed good growth. Such growth was fuelled in part by a strong demand, especially in the civil aircraft segment. Between 1985 and 1990, EU aerospace production, in constant prices, increased by approximately 30%. Between 1990 and 1994, EU aerospace production, in constant prices, declined by 24%.

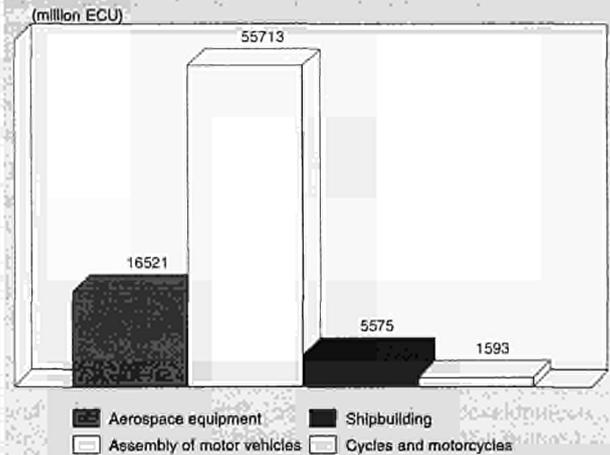
Downward pressures on demand for military products had already been felt by 1990 and the break-up of the Soviet Union at that time only served further to reduce demand. On the civilian side, after a large number of orders for aircraft placed in the 1980's, the early 1990's saw a tremendous number of these orders cancelled due to over-capacity. Now that the airlines are starting to recover, they are once more starting to order new aircraft.

The reduced demand for both civil and military equipment over the period 1990-94 has resulted in major structural adjustments within the industry and significant declining employment levels.

#### International comparison

Certainly, the EU has made important progress within the sector in the past 10 years. The Airbus Industrie consortium and its constituent members - Aérospatiale (F), British Aerospace (UK), DASA (D), and CASA (E) - have improved the competitiveness of the EU civil aircraft industry. Still, the formidable aerospace presence in the world resides in the USA. In 1994, American producers enjoyed 61% of Triad production, compared with the EU producers share of 33%. Measured in current prices, the 1994 production figure puts EU producers in significantly better position than the corre-

Figure 1: Aerospace Value added in comparison with related industries, 1994



Source: DEBA GEIE

sponding 1985 situation in which the Americans enjoyed a Triad production share of 72%, compared with 24% for the EU. Between 1985 and 1994, Japanese producers increased their Triad production share from 5% to 7%.

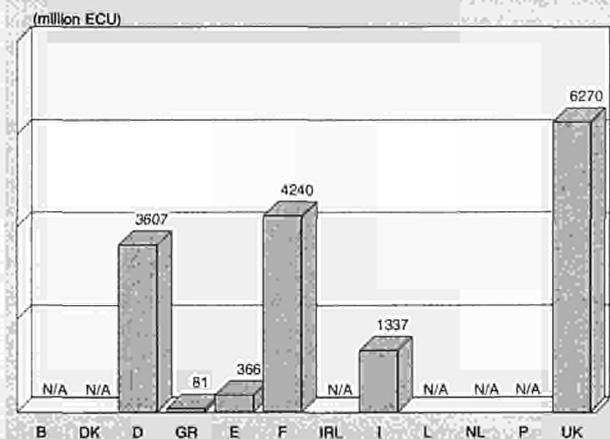
Outside of the Triad, aerospace infrastructure is emerging in such places as the Far East and the Pacific Rim; Indonesia is particularly notable in this regard. Many of these aerospace industries are helped by strategic alliances with established Western concerns.

The former Soviet Union has also emerged as a potential competitor, particularly in the components market and it is thought that Eastern European countries maintain particular competencies in aerospace technology. Yet, while these industries still suffer from the bureaucratic inefficiencies it maybe some time before the Eastern European aerospace industry starts to compete on a global scale.

#### Foreign trade

Exports of aerospace products and services (both new and second-hand) represents approximately 3-4% of total EU exports and 7-8% of total US exports, showing that exports of

Figure 2: Aerospace Value added by Member State, 1994



Source: DEBA GEIE



**Table 1: Aerospace**  
**Main indicators in current prices (1)**

(million ECU)	1985	1989	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	28 777	42 753	47 310	49 848	42 725	38 835	38 294	44 013	46 554	49 710	52 180	54 690
Production	30 858	42 377	46 527	47 883	45 736	42 571	41 734	41 836	44 064	46 610	48 660	50 760
Extra-EU exports	7 401	12 572	12 435	15 122	17 188	19 392	19 589	13 721	13 723	15 420	17 470	19 480
Trade balance	2 081	-376	-783	-1 965	3 010	3 736	3 440	-2 178	-2 490	-3 100	-3 520	-3 930
Employment (thousands)	395.8	412.7	428.6	426.6	409.7	381.6	361.2	345.8	361.5	370.0	380.0	380.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Aerospace**  
**Breakdown of EU overall non-consolidated aerospace turnover in current prices, 1994**

(million ECU)	B	D	E	F	UK	I	NL	S	Total (1)
Aircraft & missiles	194	4 994	684	7 213	5 179	2 000	961	530	21 754
Engines	152	863	101	2 551	2 839	704	0	325	7 535
Equipment	69	2 459	11	3 580	4 931	643	101	137	11 932
Space	68	984	61	2 669	224	570	52	54	4 681
Total	483	9 300	857	16 012	13 173	3 916	1 114	1 047	45 902

(1) Only including these 8 Member States.

Source: DG III, National associations

**Table 3: Aerospace**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	6.2	-5.2	1.0	-5.4
Production	5.0	-4.3	0.7	-4.0
Extra-EU exports	10.5	2.8	7.0	-0.5
Extra-EU imports	17.1	0.0	9.2	-4.7

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 4: Aerospace**  
**External trade in current prices**

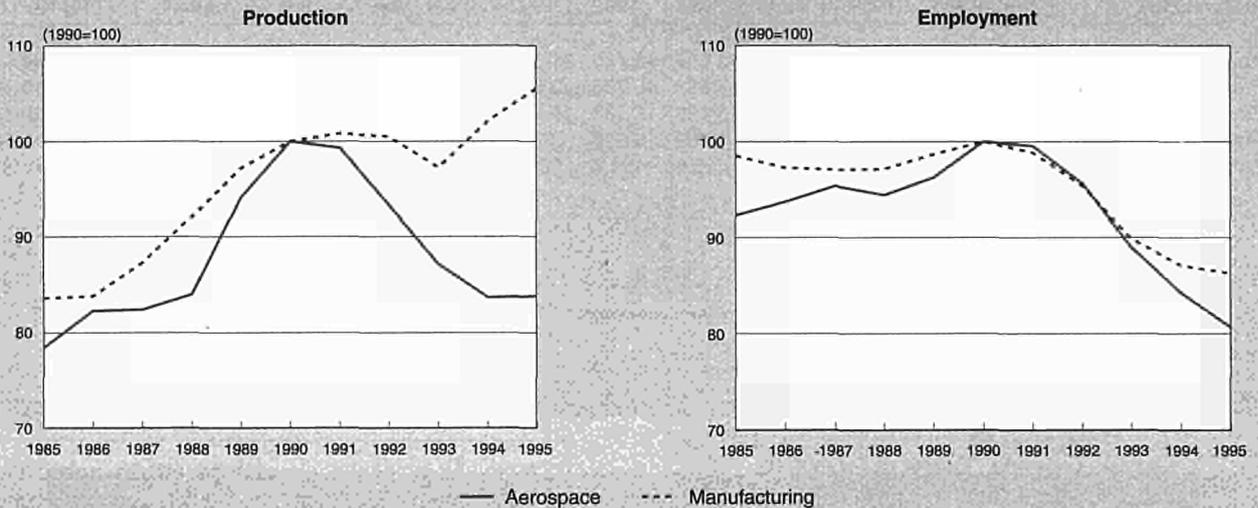
(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	7 401	5 883	5 686	9 365	12 572	12 435	15 122	17 188	19 392	19 589	13 721	13 723
Extra-EU imports	5 320	5 301	5 176	9 076	12 948	13 217	17 088	14 178	15 656	16 149	15 899	16 213
Trade balance	2 081	583	510	290	-376	-783	-1 966	3 010	3 736	3 440	-2 178	-2 490
Ratio exports / imports	1.4	1.1	1.1	1.0	1.0	0.9	0.9	1.2	1.2	1.2	0.9	0.8
Terms of trade index	110.8	97.3	88.2	89.9	91.1	100.0	126.3	144.3	123.0	115.4	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Figure 3: Aerospace**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

aerospace equipment are relatively more important for the US than for the EU.

However, trade data for the aerospace industry must be regarded with care, as it must be noted whether the data used include the sales of secondhand or used aircraft, since different conclusions can be drawn depending upon the data used. In addition, trade flows within the EU often involve unfinished products that are to be finished in another EU Member State. Unconsolidated trade data include all the trade between aerospace companies within the EU, which mainly consists of engines and components, while consolidated figures exclude these trade data.

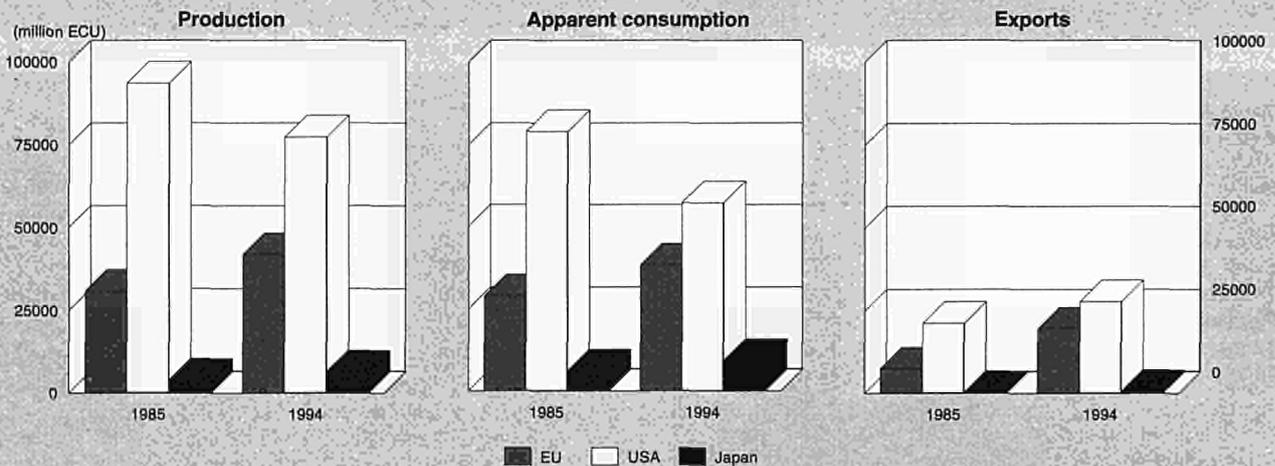
Figures from Eurostat indicate that the Triad production is becoming more export-oriented. In 1994, 38% of Triad production was destined for exportation, compared with 22% in 1985. In addition these figures show that, in 1994, 47% of EU aerospace production was exported, compared with 24% in 1985.

These figures seem to indicate that there is a growing percentage of extra-EU exports. However these export figures

include the sales in the secondhand aircraft market, and complex financial and leasing packages connected with aircraft purchases can create misleading statistics. As figures from EAI, which do not include secondhand products and are limited to the 9 major aerospace producing nations of the EU, show, the EU export share of turnover has been relatively constant at one-third of unconsolidated turnover.

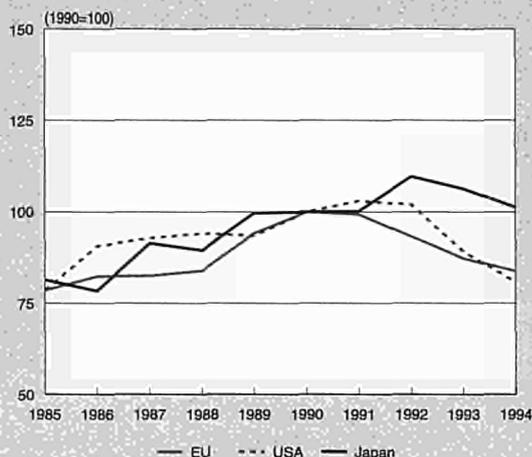
Although aerospace trade occurs with many regions of the world, the EU's predominant trading partner is the USA. In 1994, a little over one-third of all EU aerospace exports were destined for the USA. That same year, slightly over one-half of total EU import demand was satisfied by US aerospace production. Still, the EU's effort to diversify its import sourcing is evident in the fact that dependence on American production has declined from slightly over three-quarters of total import demand in 1989. Because the United States figures so strongly in EU aerospace trade, the EU aerospace trade balance is largely influenced by the relative strength of the US dollar vis-à-vis the European currencies. In this regard, the EU ran a negative aerospace trade balance between 1989 and 1991. In subsequent years, the trade balance rebounded

**Figure 4: Aerospace**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Aerospace**  
International comparison of production in constant prices



Source: DEBA GEIE

to assume a positive position. Between 1992 and 1994, the trade balance has remained essentially stable. Between 1986 and 1994, the ratio of EU aerospace exports to imports has deviated only slightly from 1.0.

## MARKET FORCES

### Demand

A large segment of the EU aerospace industry depends upon the government sector through military procurement and research and development programmes. Indeed, figures from the EAI show that the government sector represents 33% of the sector's unconsolidated overall sales. It is clear, therefore, that changes in governmental policy can drastically affect the health of this sector, like the defence industry. The trend in government military cutbacks began as far back as the mid-1980s. Subsequent geopolitical events only served to accelerate this process. The diminution in government defence spending resulted in cancellations or postponements of new or existing military programs.

Airline companies - the other large component of aerospace consumption - have suffered significant financial hardships in recent years. Since 1990, such hardships have stemmed from powerful competitive forces and an over capacity flowing from major infrastructural investments in the mid-1980s. The result has been cancellation of new plane orders. Smaller commuter airlines have particularly suffered because of their inability to absorb extended periods of financial difficulties.

Historically, the military and civilian aerospace sectors have behaved asynchronously. When one was thriving, the other was hurting, and vice versa. For the first time in the EU aerospace industry, both military and civilian aerospace sectors have suffered the adverse consequences of simultaneous weak demand - the confluence of substantial cuts in defence spending and weakness in airline services.

### Supply and competition

The USA has a dominant presence in the aerospace market. There are many reasons explaining this relative strength. The USA enjoys a huge domestic market, which leads to the advantages of economies of scale and wide range of models. Aircraft are also sold worldwide in US dollars which puts EU aerospace manufacturers at the disadvantage of being exposed to fluctuations in exchange rates.

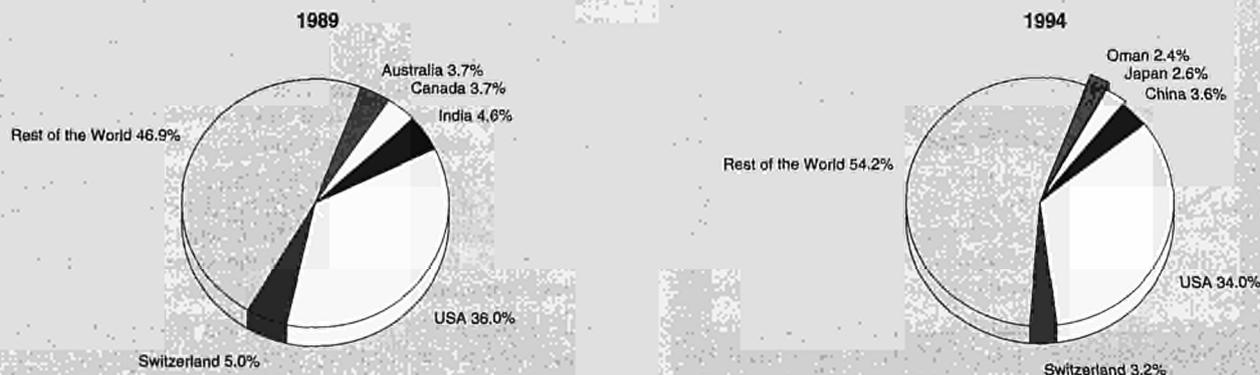
In addition, the aerospace industry is a high risk industry. Risks stem from the enormous funds needed to be raised to develop an aircraft and the very long lead-times until return on investments can be realised.

There are many ways to reduce risks, including using risk sharing partners, economies of scale, etc. However useful these methods are, the major risk-reducing method is the use of government support; for this reason there is some kind of government support in all aerospace nations. However, there is a fundamental difference in the type of government support offered in the USA as compared with the EU, in that there is more direct support offered in Europe, while in the USA support tends to be indirect.

### Direct support

Direct support programmes in Europe were used to help meet the prohibitively high costs that the new European Airbus Industrie consortium faced. As a new entrant in aircraft manufacturing, with no track record, competing with already highly entrenched companies with a lock on 90% of the market, securing funds through traditional sources was exceedingly

**Figure 6: Aerospace**  
Destination of EU exports



Source: Eurostat

**Figure 7: Aerospace  
Origin of EU Imports**



Source: Eurostat

difficult. The response was to seek direct government help, to persuade them to invest in the launch of the aircraft programme.

Launch-aid for projects has been in the form of repayable loans which are essentially used for research and development work, one of the most costly elements associated with an aircraft programme

The development of the first Airbus model, the A300, was funded entirely this way, with subsequent programmes less and less so. Indeed, the consortium's most recent addition to its family, the A321, was already funded entirely by internally generated cash-flows and external commercial sources.

Each of the four Airbus partner companies is responsible for funding its share of a given aircraft programme. It establishes its own commitments as to the terms and repayment schedule of the loans obtained.

Then, from the proceeds of sales of each aircraft and after charges for production and overhead costs, Airbus Industrie repays its partners a levy, calculated to amortise fully the research and development costs associated with a given pro-

gramme over a given number of sales. This levy enables each partner, in turn, to meet its commitments on the loans obtained as launch-aid.

#### Indirect support

The USA has had a long and continuing tradition of non-repayable, indirect government support; and many commercial aircraft developed in the USA have been underwritten to a some extent by government funds in the form of parallel military aircraft contracts.

The indirect support provided in these government-industry schemes helped propel the USA into a globally dominant position, and US companies today continue to enjoy the fruits of government/defence programmes, through contracts from NASA, DoD, DoT, the FAA, that have acknowledged spillover effects into the commercial programmes of the jetliner companies.

#### Production process

One of the bright spots in the EU aerospace industry has been the significant improvements in productivity achieved during the 1980s. Space appears to be the segment which has reported the largest productivity gains among aerospace divisions.

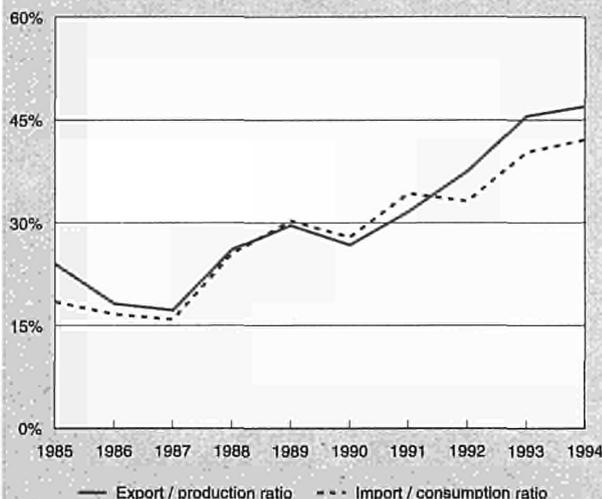
It is also worth noting that the aerospace industry enjoys unique synergies between military and civilian sectors. Such synergies originate in the research phase of the product. Civilian adaptation of what was seminally military technology is a common occurrence within the aerospace industry.

Economies of scale play a critically important role within aerospace production and research. R&D start-up costs within the sector are among the largest of any industry, risks are high and there are long lead times between design and production.

Economies of scale can also be achieved on the demand side by holding maintenance and training costs in check. EU aerospace manufacturers benefit from what is termed "family economies", for example using the same designed cockpit, saves on training costs.

The existence of a learning curve and production overheads also provides manufacturers with a cost advantage when developing and producing new models of the same family. This actually gives manufacturers a strong incentive to produce a full range of models and has proved a successful strategy.

**Figure 8: Aerospace  
Trade intensities**



Source: DEBA GEIE, Eurostat

**Table 5: Aerospace  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	84.9	87.8	86.4	88.9	97.8	100.0	99.8	97.6	97.9	99.3
Unit labour costs index (3)	91.0	90.1	95.6	99.1	95.4	100.0	108.5	116.2	119.5	121.3
Total unit costs index (4)	85.0	83.9	87.0	91.3	95.3	100.0	106.2	112.1	112.9	114.4
Gross operating rate (%) (5)	10.8	12.1	10.1	11.5	13.1	11.6	9.5	4.1	5.4	6.1

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

Sub-contracting and risk/revenue sharing are an important part of system manufacture and occur on a global basis. The prime contractor, i.e. the aircraft manufacturer itself, delegates the production and often even the initial design, of complete systems to large suppliers which, in turn, out-source parts of the operation to a third and, sometimes, fourth level of sub-contractor.

In response to the intense competition, the EU aerospace industry has increasingly shifted towards automation in an effort to shorten production cycles and cut costs. At the same time, new forms of organisation and management have been introduced that are aimed at producing in faster, less expensive ways. A number of EU aerospace firms have introduced Just-In-Time management tools. Airbus Industrie has implemented simultaneous engineering in an effort to manage a wide range of activities efficiently. A tangible manifestation of these changes has been a substantial reduction in the number of component suppliers.

## INDUSTRY STRUCTURE

### Companies

The EU aerospace industry is segmented geographically. In large measure, this phenomenon is owed to the autonomous, country-oriented development that has taken place within the EU aerospace industry - a result of efforts to preserve the national defence and industrial capability within each country. Despite efforts to remove barriers, the industry is still composed mostly of small companies. Indeed, EU aerospace companies are significantly smaller than their US counterparts, a source of serious competitive disadvantage in an industry where economies of scale are important.

The three largest aerospace companies in the world are American: Lockheed Martin, Boeing, and McDonnell Douglas. The next two largest in size are from the EU: DASA (D) and British Aerospace (UK). The next five largest include four American companies (United Technologies, GM Hughes, Northrop Grumman, and Raytheon) and one French company (Aérospatiale).

Within the large civil aircraft market, Boeing, McDonnell Douglas, and Airbus are the only contenders. Airbus Industrie has rapidly gained market share in recent years to a point where its products are considered to be the major alternative to Boeing.

On a segment by segment basis, the aeroengine industry is dominated by four main players: General Electric (USA), Pratt & Whitney (USA), Rolls-Royce (UK) and SNECMA (F). Important military aircraft manufacturers include Lockheed Martin, McDonnell Douglas, Northrop Grumman, and Boeing, among others. In turboprops, the EU is the leading regional production base. Yet, that production base is segmented over

a few companies, all proposing models that are often direct competitors with one another.

There has been much consolidation within the industry. For example, the Dutch aircraft manufacturer Fokker which was taken over by Daimler-Benz in 1993, stopped manufacturing as a result of bankruptcy in 1996. British Aerospace has joined ATR (a joint venture between Aérospatiale and Alenia) which is now named AI(R). A merger between the French companies Aérospatiale and Dassault Aviation is being discussed.

### Strategies

Airbus Industrie is at the heart of the European aerospace industry. To strengthen its competitiveness is, therefore, a vital undertaking. The restructuring of Airbus Industrie aims to increase market share and to reduce costs. Two main means to achieve these goals are currently proposed:

- The change of Airbus Industrie's corporate structure from a GIE (Groupement d'Intérêt Economique), which had helped the consortium in the beginning to allow intra-European cooperation, to a fully integrated company enabling it to have complete cost-control and authority to reduce redundancies among the then former Airbus divisions of the partners.
- New programmes: a 600-800 seat aircraft, a 100 seat aircraft and the military transport aircraft FLA are all under study.

Many observers believe that monopoly profits made on the 747 allow Boeing to conduct an aggressive pricing strategy on smaller aircraft.

As far as the 100-seater is concerned, it could help European industry to secure alliances with emerging competitors in Asia in order to maximise the potential customer base since it has been forecast that one of the largest growth areas will be the Asia/Pacific/China region. China has proposed a new 100 seat aircraft programme in which Europe wishes to participate.

New aircraft programmes would not only increase the potential customer base and, thus, market share, but could also increase the number of Airbus Industrie partners and associates to include other European, Chinese and maybe Russian and Korean companies in order to share development costs.

New aircraft would also extend the commonality already provided by the Airbus family. Airlines increasingly prefer to stay with one manufacturer for their whole range of aircraft for reasons of economy to be gained from commonality. Commonality, therefore, also increases market share.

The future, large military transport aircraft (FLA) is expected to be associated with Airbus Industrie and is, therefore, seen to be an integral part of its strategy, closely linked to civil aircraft production and a key element in strengthening the European civil aircraft industry.

**Table 6: Aerospace**  
**The 15 largest companies in Europe, 1994 (1)**

(million ECU)	Country	Turnover	Employment (thousands)
Daimler-Benz Aerospace Group	D	9 038	75.6
British Aerospace PLC	GBR	7 840	45.7
Aerospatiale	F	7 377	39.6
GEC-Marconi Ltd.	GBR	3 540	N/A
Finmeccanica SPA	I	3 095	N/A
Snecma Group	F	2 875	23.1
Rolls-Royce PLC	GBR	2 529	22.7
Thomson-CSF	F	1 610	13.1
Matra Hachette (Lagardere Groupe)	F	1 610	8.5
Dassault Aviation	F	1 550	9.5
Eurocopter SA	F	1 398	10.1
Hunting Aviation Ltd.	GBR	772	12.2
CASA (INI)	E	729	8.3
Lucas Aerospace Ltd.	GBR	692	7.5
Groupe Labinal	F	612	N/A

(1) These figures refer to aerospace activities only.

Source: DG III/D/4, Survey on Company Turnover and Employment 1995

The defence segment of the EU aerospace industry has undergone dramatic changes in the last few years. In reaction to shrinking defence budgets, EU defence firms have sought mergers and other forms of rationalisation. A number of companies have been involved in talks aimed at collaborating. For example, France's Matra and British Aerospace have recently pursued opportunities of joint venture between certain missile and space systems divisions. Still, due to political and national defence issues, cross-border agreements have been more difficult to achieve in the area of defence and there remain obstacles to consolidation within EU aerospace defence activity.

In fact, given the strength of the US aerospace industry, it is not surprising that the EU has established cooperation with the USA in certain areas within the industry. While the USA and the EU remain fierce competitors in both the civilian and military segments, collaboration still exists, particularly in the case of engine production and space where strong links have been established between European and American manufacturers.

The impact of the Single Market on the EU aerospace industry has been modest. As a result of the GATT Civil Aircraft code, civilian aerospace products already enjoy zero tariffs and an absence of barriers and effectively operate in a global market. The trade flows are largely extra-EU oriented and an important number of mergers and acquisitions occurs with companies from outside the EU. The aerospace industry sees advantage in a multi-national procurement policy, replacing the largely nationalistic policy in place, which would go a long way in rationalising and improving the EU aerospace industry.

## REGIONAL DISTRIBUTION

The EU aerospace industry is highly concentrated in the following countries: the United Kingdom (38% of 1994 industry value added), France (26%), Germany (22%), and Italy (12%). Other EU countries with appreciable value added in aerospace include Belgium, Greece, the Netherlands, Spain and Sweden. In recent years, the United Kingdom has lost market share while Germany has gained market share.

## ENVIRONMENT

The world economies' backbone is mobility which, to a very large extent, is fulfilled by air transport. Although the eco-

logical impact of aviation, compared to other pollution sources, is very small, the industry is well aware of its responsibilities, regarding a cleaner environment. Since the early 1970's, noise pollution has been the primary concern of aviation. This, however, has been reduced dramatically. Aircraft manufacturers, airlines and international authorities are working on possible new rules which will fix noise limits below the present ICAO Annex 16/Stage 3 regulations.

In parallel, major environment efforts are directed towards the reduction of gaseous emissions of aircraft engines, therefore contributing to a world-wide reduction of environmentally harmful gases. Steps taken by aircraft and engine manufacturers since the 1970's have helped already to reduce the relative fuel burn per seat by nearly half, whilst improvements of thermodynamic processes have resulted in reductions in pollutant emissions of up to 80%. The reduction in nitrogen oxides, which has not kept pace, is now a major target. Research programmes, such as MOZAIC (Measurement of Ozone on Airbus In-Service Aircraft), a combined effort of the European aerospace industry, European airlines and with the support of the European Commission, are established to gain further insight into different parameters which contribute to the greenhouse effect. This will lead to an improved scientific understanding and provide reliable inputs for further future product improvements for the benefit of the environment.

Engine technology is not the only sector of activity which contributes to reduced environmental pollution. The industry is working to further improve fuel burn related pollution through reduced airframe weight and drag by applying advanced materials and utilising advanced aerodynamics. One example in the latter area is research in developing a laminar flow vertical fin for large civil aircraft.

As a result of all these additional improvements, the aerospace industry has identified potential for a further 30% reduction in specific fuel consumption over the next 20 years.

The contribution of technology to civil aviation during the last 50 years has been evolutionary as well as revolutionary. By introducing the two-crew cockpit and fly-by-wire aircraft control systems, the European aviation industry has played a major role in this development.

Through their research programmes, the aircraft manufacturers in Europe hope to stay in the forefront in the application of cost-effective advanced technologies in the future.

**Table 7: Aerospace  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	N/A
Danmark	N/A	N/A
Deutschland	0.4	0.6
Ellada	N/A	0.4
España	0.1	0.2
France	2.0	1.7
Ireland	N/A	N/A
Italia	0.5	0.6
Luxembourg	N/A	N/A
Nederland	N/A	N/A
Portugal	0.0	N/A
United Kingdom	2.1	2.2

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

The planned research topics, which focus on the three themes of economy, ecology and energy, include carbon fibre technology/wing design; drag reduction through aerodynamic as well as aircraft flight control systems optimisation; new fuselage designs; increased cabin/passenger comfort; aircraft life extension and alternative aircraft fuels such as hydrogen.

## REGULATIONS

The aerospace industry tends to be regulated by international standards. For example, the aircraft industry is subject to specific rules in the World Trade Organisation agreement on support and countervailing measures covering such matters as R&D subsidies and royalty-based loans. Negotiations on updating the 1979 GATT Civil Aircraft Code have been continuing.

Mergers are subject to Council Regulation (EEC) No. 4064/89 dated 21 December 1989. All mergers within the EU jurisdiction are normally evaluated vis-à-vis the world market. Thus, a merger that brings together most of the supply capacity of the EU, in certain sectors of the aerospace industry, is not necessarily incompatible with the guidelines set forth within the regulatory requirements of the EU's governing authority.

Moreover, government subsidies for the aerospace industry are subject to articles 92-94 of the EEC Treaty. Presently, there are no sectoral aid frameworks on record that offer any special directives for Member States in granting assistance to the aerospace industry.

## OUTLOOK

The outlook for the EU aerospace industry is good. Within the commercial sector, the recent upturn in world air traffic and cargo volume has proved a source of optimism for EU suppliers. The renewed profitability of the airline industry, however, has yet to translate into a complete recovery for the civilian aviation sector; because of the large number of aircraft delivered during the period of unprofitability in the airline industry, the relatively large number of planes on order and the long lead time between order and delivery, as well as the increased amount of interest rates still to be paid on debts accumulated during the recessionary period.

Still, the industry believes that the turnaround in airline travel will continue, led by growth in China and the Pacific Rim countries. New civil aircraft orders equivalent to around 151 billion ECU are expected for the 1995-1999 period, of which Europe is expected to increase its share.

Defence budgets will continue to be squeezed, barring some unforeseen development. Sales of military aircraft and missiles by EU defence firms are expected to fall further. A number of EU governments have adopted the policy of "off the shelf" in defence procurement, replacing the technology-content-at-any-cost mindset. The extent that the EU defence sector can be competitive with the Americans will depend on its ability to transcend long-standing nationalistic concerns, and become competitive through mergers and cooperation.

Written by: DRI Europe

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NACE (Revision 1) 36.1

The furniture industry is one of the largest manufacturing industries in the EU. This industry is very fragmented and the small and medium-sized enterprises (SMEs) play an important role. Concentration is increasing to maintain the competitiveness with respect to foreign suppliers and the high level of concentration in the furniture retailing sector. The furniture industry was particularly hit by the recession but the consumption should revive and have a positive impact on the industry in the near future.

INDUSTRY PROFILE

Description of the sector

The furniture industry has been traditionally regarded as a local business dominated by small companies. 91 000 enterprises in the EU are manufacturing furniture (93 400 including the new Member States).

It is a considerable sector which employs 830 000 persons in the EU (870 000 including the new Member States) or 2.1% of the total industrial workforce of the EU.

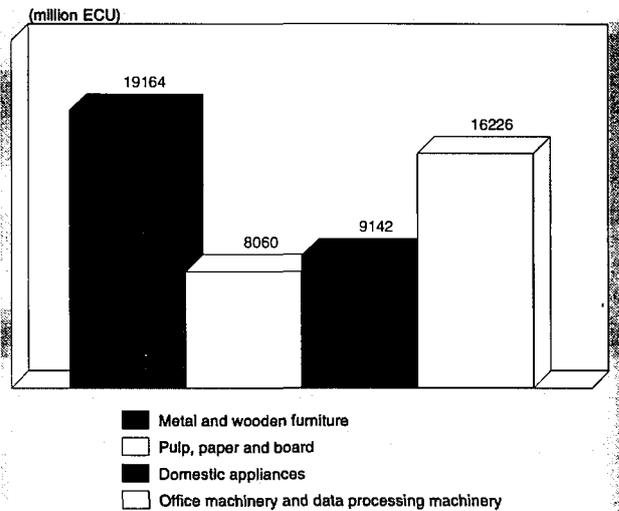
Household furniture is defined as consumer durable goods such as electrical equipment (TV sets, videos, appliances, etc.) and cars. Office and contract furniture are considered investment goods of enterprises and administrations. Consumer expenditure on these goods reflects the state of the economy and the level of disposable income available to consumers in each country. Certain factors affecting furniture consumption (population, the number of marriages or households, the activity in the housebuilding industry, unemployment, confidence in the economy and in the future) vary widely from year to year.

The total production of furniture amounted to 60.8 billion ECU in 1994. Economic recessions do not affect the furniture industry. Germany remains the largest furniture producing country with almost 20 billion ECU worth of production value (32.1% of the total). Germany is followed by Italy (22.2%), France (13.1%) and the U.K. (13%). The weight of each country in the production of the enterprises with more than 20 employees is quite different with Germany responsible for 37.5% of the production, Italy for 18%, the U.K. for 14.5% and France 12.8%.

In NACE 1970, furniture was classified according to the raw materials used. In the NACE Rev.1, the code 36.1 encompasses all types of furniture. Although the majority of furniture is still fabricated using wooden materials, increasingly furniture parts are produced from metal, plastics or a mixture of different materials. Wood and wooden products still account for more than 25% of the total consumption of materials. Furniture parts (mainly in wood) represent 16% of the input of materials and metal and metallic products represent 12%. The furniture industry is also an important client of the hardware industry, the textile industry, the chemical industry and the tanning industry. About half of the production value consists of purchases of raw materials and goods for the production of furniture. The furniture industry is a diversified piece-goods industry in which technology and labour skills are of great importance.

The value added created by the manufacturers represents 38% of the production value. In constant terms, the productivity of each employee, calculated as the value added per employee, has increased by 23% since 1985. The advance is more im-

Figure 1: Metal and wooden furniture Value added in comparison with related industries, 1994



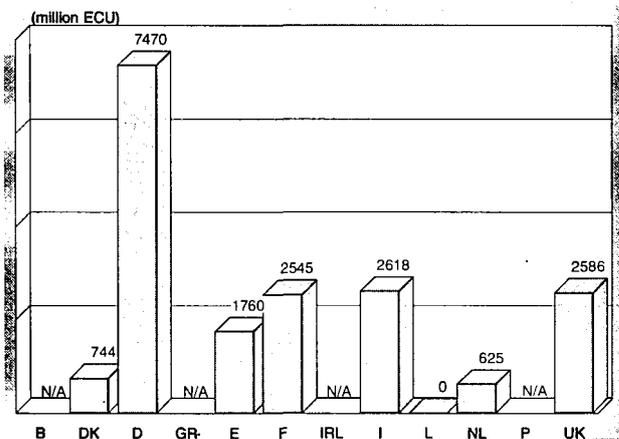
Source: DEBA GEIE

portant in countries in the south of Europe where automation began later, and in the metal furniture industry where the majority of production is office furniture produced by larger than average manufacturers.

The furniture industry has been labour intensive for a long time. In the 1960's, the wage share of company turnover was still at about 50%. Today mechanization has advanced so far that wage share is 28% and even less in highly automated factories.

But even if raw materials such as wood, metal and glass are clearly suitable for automation in terms of processing features, diversity in the shape of furniture would not allow for the introduction of processes based on continuous production flow such as those of the automotive industry for instance. Furniture making will always place demands on craftsmanship.

Figure 2: Metal and wooden furniture Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Metal and wooden furniture  
Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	28 082	45 788	48 855	50 147	48 794	49 150	50 700	56 573	59 930	63 540	67 350
Production	30 551	47 627	50 188	51 087	49 585	50 587	52 603	58 315	61 850	65 650	69 670
Extra-EU exports	3 966	4 359	4 313	4 262	4 559	5 141	5 688	5 034	5 460	5 930	6 430
Trade balance	2 453	1 839	1 333	940	790	1 437	1 903	1 742	1 920	2 110	2 320
Employment (thousands)	568.2	624.9	626.4	613.1	589.6	582.0	586.5	649.4	660.0	670.0	680.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DFI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Metal and wooden furniture  
Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	6.09	-0.57	3.08	-0.07
Production	5.16	-0.53	2.59	1.49
Extra-EU exports	-1.36	3.48	0.77	12.75
Extra-EU imports	8.11	5.59	6.98	-4.54

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Metal and wooden furniture  
External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	3 966	3 747	3 681	3 774	4 295	4 359	4 313	4 262	4 559	5 141	5 688	5 034
Extra-EU imports	1 514	1 439	1 670	1 991	2 303	2 521	2 980	3 322	3 768	3 704	3 785	3 292
Trade balance	2 453	2 308	2 012	1 783	1 991	1 839	1 333	940	790	1 437	1 903	1 742
Ratio exports / imports	2.6	2.6	2.2	1.9	1.9	1.7	1.4	1.3	1.2	1.4	1.5	1.5
Terms of trade index (3)	96.6	97.3	96.9	97.5	98.4	100.0	96.0	94.3	88.0	85.2	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

(3) Nace 4670 (Nace 70).

Source: Eurostat

**Table 4: Metal and wooden furniture  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	85.5	87.8	91.7	96.0	97.6	100.0	100.6	101.6	102.2	105.1
Unit labour costs index (3)	90.2	92.0	91.6	93.1	97.0	100.0	106.8	111.6	113.2	112.3
Total unit costs index (4)	83.7	85.8	88.2	91.5	96.5	100.0	104.6	107.7	108.2	108.4
Gross operating rate (%) (5)	8.4	8.9	9.5	10.2	9.6	9.4	9.3	9.1	8.9	9.3

(1) Some country data has been estimated.

(2) Based on Index of production / index of employment.

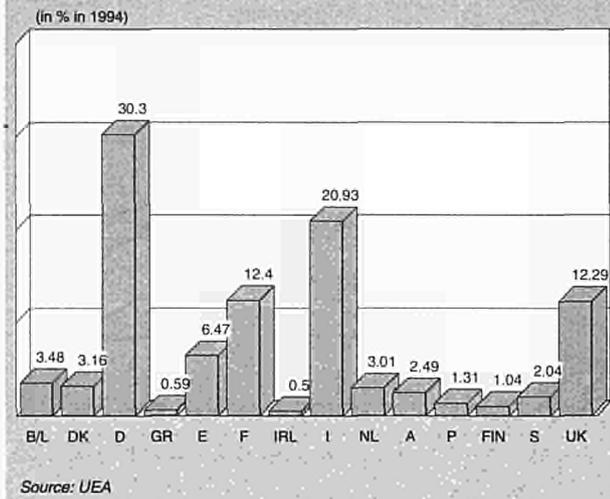
(3) Based on Index of labour costs / index of production.

(4) Based on Index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Metal and wooden furniture**  
**Production of furniture by Member State, 1994**



The furniture industry embraces very different sub-sectors. The furniture manufacturers are generally specialized in one or two types of furniture. The largest sub-sector in terms of production value is that producing upholstered furniture (14.3% of the total production value). It is closely followed by the kitchen furniture sub-sector (13.3%). The bedroom, dining room and office furniture subsectors represent respectively 9.8%, 11% and 10.2%. Other important sub-sectors include the chair industry (3.8%) and the mattress industry (4.4%).

The production of upholstered furniture amounted to 8 672 million ECU, an increase of 0.3%. The situation was quite different in EU countries. In Germany, the production value fell by 6.8% if compared with 1993 (9.6% in volume: the demand of the new Länder has weakened). There is a difference between the evolution in the old Länder and the Eastern Länder (+20%) where a lot of enterprises from the west have invested. In Italy, thanks to booming exports, production rose by 13% (10.2% in volume). In France, production value stagnated (-0.5%) whereas in the U.K., production increased by 7.7% (+6% in volume). The total volume of production is estimated

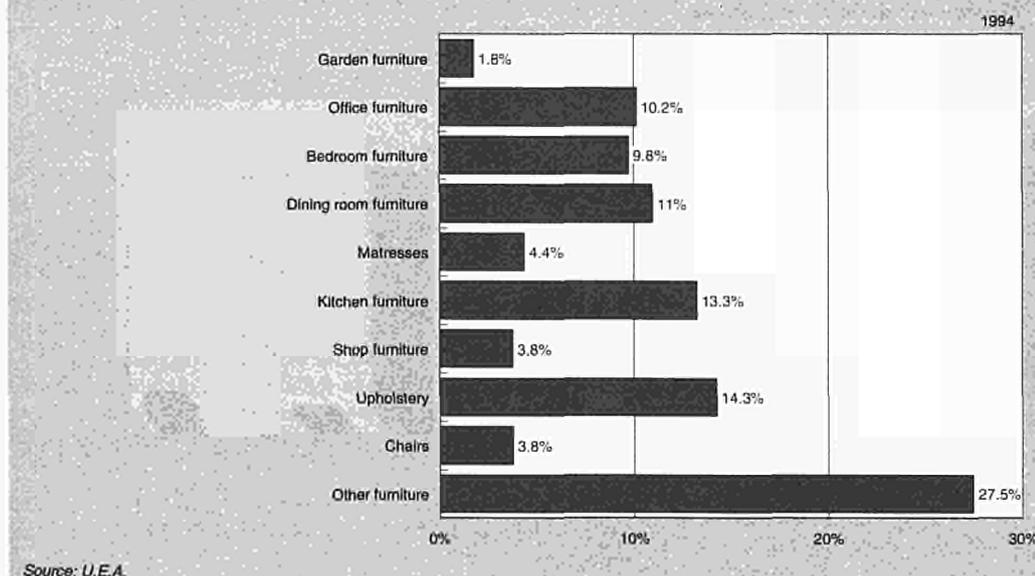
at 36 million armchair-equivalents. Provisional figures for 1995 do not show improvements in the different countries.

In 1994 the kitchen furniture industry at European level presented diverging performances. Globally the production of kitchens in the EU rose by 5% to exceed 8 billion ECU (8 112.8 million ECU). Because of a growth in prices (+3% on average in 1994), the production volume rose by 2% in the EU. Increases in production prices were mainly due to increases in the costs of materials. The EU kitchen furniture industry is dominated by German manufacturers (3 539 million ECU worth of production; 1.5 million fitted kitchens) and a growth in their production value (+9.2% on annual average/+7% in volume since 1992) helped this sector remain outside the recession of 1992 and 1993. The reasons for this boom were a demographic expansion and a thriving building trade. In Italy, production volume stagnated after 6 years of non-stop growth (+4.1% in value to 1 484 million ECU). In France, reduction in the production volume reached 1% in 1994 (+1.3% in value: 889 million ECU): flat-pack (ready-to-assemble) kitchen furniture is growing thanks to the increasing number of sales to young households. In the U.K., due to a recovery in private demand, production rose by 6.2% in value (823 million ECU). In 1994, the Dutch and Danish kitchen furniture sectors recorded the highest growth rates of all EU countries reflecting improved conditions in the housing market and increasing disposable incomes. This sub-sector is very concentrated with the top 50 manufacturers producing half of the production.

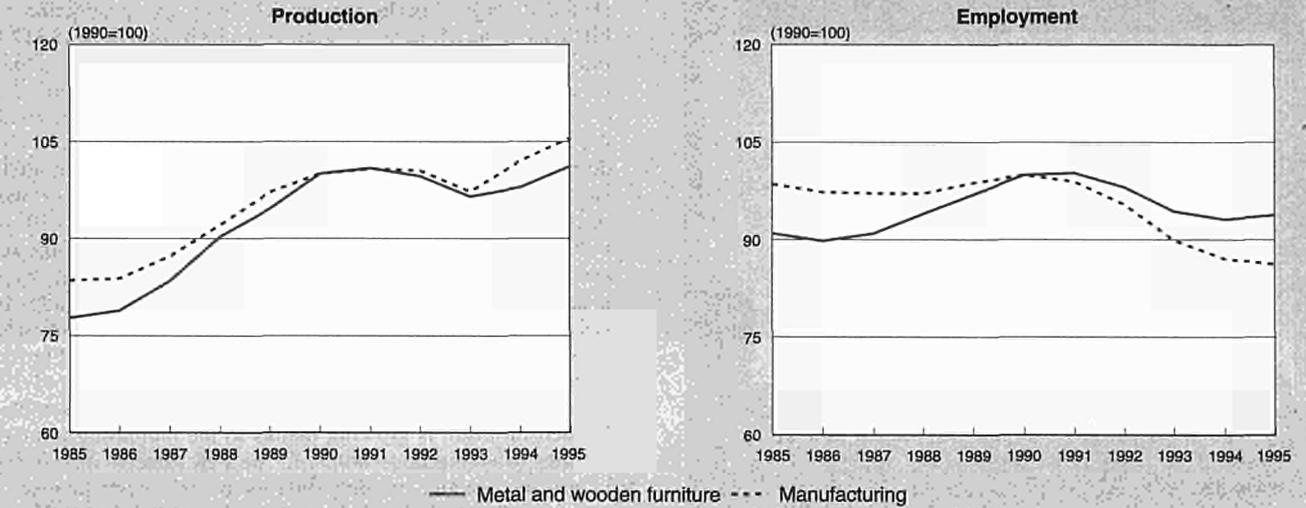
The total turnover of the furniture industry reached 6 218 million ECU in 1994, increasing by 1.3% when compared with 1993. The office furniture industry revived itself after two disastrous year (-17% in total) except in Germany where the situation remains worrying. The largest producing country is Germany with 37% of the production (-7.1% compared with 1993), followed by Italy (17.3% of the production; +5%), France (13.3% of the production; -1%) and the U.K. (12.2% of the production; +12.8%)

In 1994, the production of dining room and bedroom furniture decreased by 1.2% and by 1% respectively (3% in volume). Italian manufacturers (who generally produce both dining room and bedroom furniture) saw their production increase by 1.6% in volume (+4.8% in value: 3 364 million ECU). The production value of their German counterparts declined by 3.4% to 3 550 million ECU (1 755 million ECU for the bedroom furniture sub-sector). France produced 1 402 million

**Figure 4: Metal and wooden furniture**  
**Share of production by major product, 1994**



**Figure 5: Metal and wooden furniture**  
**Production and employment compared to EU total manufacturing industry**



(1) Eurostat estimates.  
 Source: DEBA GEIE, Eurostat

ECU worth of bedroom and dining room furniture (-4.1%). Globally, these sub-sectors manufactured 13 million wooden wardrobes, 6 million chests of drawers, 5 million wooden beds for adults, 3 million bedside tables, 600 000 wooden beds for children and 500 000 metallic beds.

The production value of furniture parts amounted to 6 billion ECU or 10% of production. That is an important indication for the important sub-contracting existing in the industry. The production value of mattresses amounted to 2 710 million ECU in 1994. Three countries (France, the U.K. and Germany) are each producing 20% of total EU production. In terms of volume, 22 million mattresses are annually produced in the EU of which 14.6 million units were spring mattresses, 5.8 million units were polyurethane foam mattresses and 1.6 million units were latex foam mattresses.

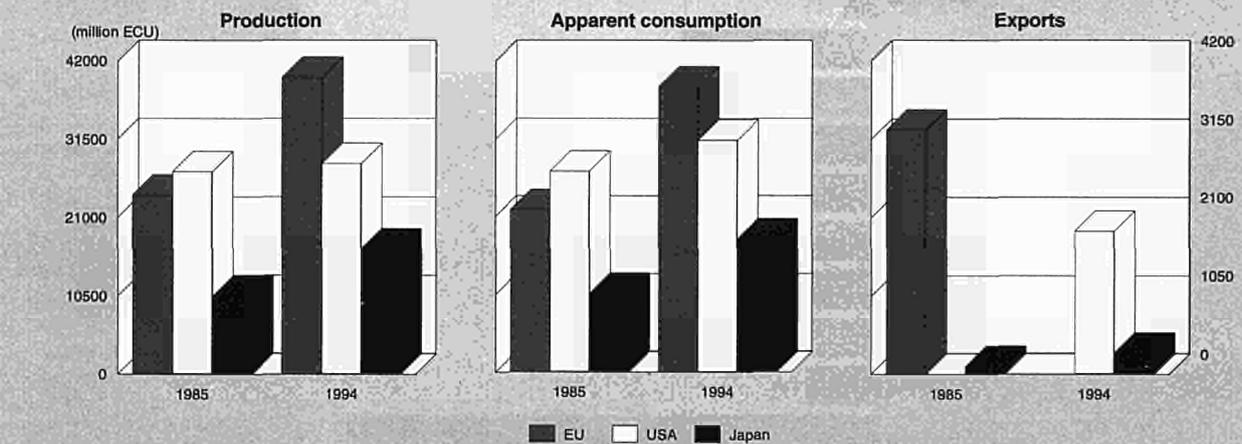
About 35 million domestic chairs were manufactured in the EU in 1994 for a total value of 2 300 million ECU.

**Recent trends**

The production of furniture grew by 4.3% on annual average real terms during the 1987-1991 period (outperforming the total manufacturing industry by 1%). The situation in the furniture industry improved due to the increasing competitiveness of furniture manufacturers and the economic recovery. The furniture industry has been in recession since 1992. The years 1994 and 1995 have been very low key years for the furniture industry - the only countries that had good results were export-oriented countries, in certain cases strongly assisted by weak currencies.

Despite optimistic forecasts at the beginning of each year, the industry continues to suffer from a lack of consumer confidence in their economy. The prudence of their purchase decisions has led to a postponement of furniture purchase. Moreover the competition from goods such as cars and electrical household appliances often implies a trade-off to the detriment of furniture consumption. Globally, the production of furniture increased by 1.6% in 1994 (-0.5% in volume).

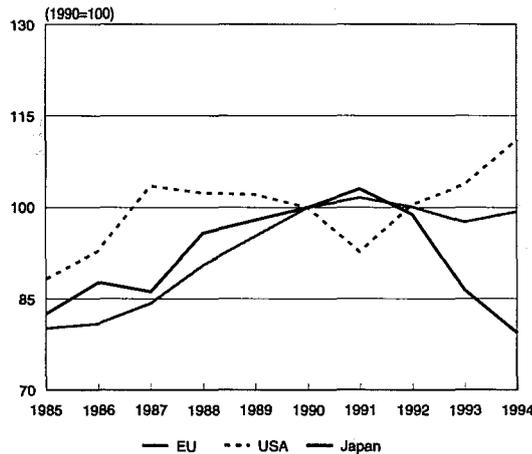
**Figure 6: Wooden furniture**  
**International comparison of main indicators in current prices**



Source: DEBA GEIE, Eurostat



**Figure 7: Wooden furniture**  
**International comparison of production in constant prices**



Source: DEBA GEIE

The furniture industry still lost more than 12 000 jobs in 1994 but 1995 seems to have been a job-creating year. The furniture industry employed 830 000 persons in 1994 (572 852 in enterprises with more than 20 employees). About 15.7% of total employees work in the upholstered furniture industry, 9% in the kitchen furniture industry and 7.8% in the office furniture industry. Until 1993 most countries followed a similar evolution. Over the past two years, the situation varied from country to country.

In Germany, France and Belgium, production declined dramatically since 1992 due to a reduction in domestic consumption, especially of durable goods like furniture. The manufacturers who suffered the least were those who export a large part of their production. According to data already available, the growth in production has been positive again in France for 1995 (+2.5%). In Italy, after the recession recorded in 1993, when recovery was largely hampered by a crisis in domestic demand, the furniture industry was on the way to recovery in 1994. The excellent export performance and the buoyant domestic market resulted in positive trends for the industry. According to provisional figures, the recovery process has continued.

Recovery took off in the UK in 1993 after four years of recession during which the volume of production fell by 18%. 1994 was the year in which recovery was confirmed thanks to healthy demand. However the production volume fell sharply at the beginning of 1995 compromising the continuation of the recovery.

Danish manufacturers also benefited from a recovery in their national market and from increased competitiveness on German and Scandinavian markets. Their production increased by 17.5% in 1994 and by 14.1% in 1995.

### International comparison

The EU furniture industry is the leading industry in comparison with the furniture industry of other industrialised countries. In 1994 its total production of 60.8 billion ECU outperformed the total production of the USA and Japan. In the USA, the production value of furniture has risen by 10% on average of current prices since 1992. This was due to a strong private consumption and to a net increase in new housing construction.

The production of wooden furniture increased from 20 873 million ECU in 1991 to 28 208 million ECU in 1994. As far as metal furniture is concerned, production value amounted to 11 000 million ECU in 1994.

In 1995, growth was still considerable (+7.4% in value). The turnover of the top 25 household furniture manufacturers climbed 10.6% to just over 9 billion US dollars (45% of the production of household furniture), racing ahead of the industry's growth pace. Stable employment and sustained housing markets allow optimistic forecasts for 1996 with growth rates superior to 5%. US imports of furniture exceeded 4.6 billion ECU (+17% in USD terms). Shipments from Asia once again led the import growth parade.

In Japan, the production value has dramatically fallen since 1991 when the Japanese economy entered the worst recession since World War II. The volume of the production sharply declined by 28.6% in the 4 years up to 1995. In 1994, the production value of wooden furniture amounted to 16 796 million ECU and the production value of metal furniture amounted to 6 900 million ECU. Available figures for 1995 show an aggravation of the situation (decline of 8% in constant prices). The anaemic demand of the Japanese households and enterprises is not the only cause of this series of bad years. An increasing number of imports mainly from Asian countries and the de-investment of the Japanese furniture manufacturers to the benefit of neighbouring low-income earning countries also explain this negative evolution. EFTA countries are important furniture countries with a total production of 4 970 million ECU in 1994. Austria was the largest furniture producing country (33% of total production), followed by Sweden (27%) and Switzerland (14%). Recovery in these countries has allowed the furniture industry to reach high growth rates since the end of 199

Poland with furniture production worth 1 billion ECU (of which 75% is exported) and Romania with production of 486 million ECU (333 million ECU of export) are the most important producing countries among Central and Eastern European countries (CEECs). Taiwan (1 500 million ECU worth of exports of furniture or 40% of production), Indonesia (800 million ECU - 70%), Malaysia (600 million ECU - 50%), Thailand (400 million ECU), the Philippines (400 million ECU) and China (400 million ECU) are the major furniture producing and exporting Asian countries.

### Foreign trade

Total world exports are estimated at 24 billion ECU including the intra-EU exports. Exports of EU manufacturers account for 65% of this total (15 570 million ECU). Globally, EU furniture manufacturers exported 25.6% of their total production in 1994 (15 570 million ECU). The average annual export effort rate has been 23.5% since the beginning of the 1980's. Extra-EU exports accounted for 39.3% of total exports and represented an increase of 19.4% in comparison with 1993. The rise in the extra-EU imports continued in 1994: extra-EU imports rose by 8.5% if compared with the previous year.

In 1994 Italy was the largest furniture exporting country with 5.6 billion ECU worth of exports (+15.3% or 41% of the total production). The exports of German manufacturers amounted to 3.2 billion ECU. France and Denmark's furniture exports totalled 1.5 billion ECU each. Germany remains an attractive market for exporters of furniture. In 1994, Germany imported 5.7 billion ECU (+18%) worth of furniture mainly from Italy, Poland and Denmark. France, the Netherlands and the UK are other important furniture importing countries with imports respectively equalling 2.4, 1.6 and 1.5 billion ECU.

Imports by the Netherlands and Belgium represented almost 60% of national apparent consumption.

Exports of upholstered furniture (the item most exported by furniture manufacturers) amounted to 2 532 million ECU in 1994 or 17% of the total exports. For the first time, exports of dining room furniture exceeded 2 billion ECU in 1994 (+20%). Other types of furniture with high levels of exports

**Table 5: Metal and wooden furniture  
Number of enterprises and employees in furniture industry  
by Member State, 1994**

(units)	Enterprises	Employment
EUR15	93 413	867 511
Belgique/België, Luxembourg	1 505	22 029
Danmark	490	18 050
Deutschland	2 550	198 010
Ellada	10 000	24 000
España	10 999	84 338
France	18 247	106 000
Ireland	400	6 200
Italia	33 500	189 000
Nederland	4 455	25 600
Österreich	400	13 000
Portugal	3 500	37 000
Suomi/Finland	1 400	10 500
Sverige	317	12 784
United Kingdom	5 650	121 000

Source: U.E.A.

are bedroom furniture (1.5 billion ECU: +19%), office furniture (1.3 billion ECU: 10.7%) and kitchen furniture (almost 1 billion ECU: +17%). Extra-EU exports boomed in 1994. In 1994 the main trade partners for the extra-EU exports were the EFTA countries, USA (958 million ECU), Russia (337 million ECU), Japan (224 million ECU) and Saudi Arabia (164 million ECU). Among the EFTA countries, Austria, Sweden and Finland imported 1 152 million ECU together. Switzerland remained the number one extra-EU market for EU manufacturers who exported almost 1 billion ECU worth of furniture.

Industrialised and rich countries are still the best clients for EU furniture, but the 16 Central and Eastern European countries (CEECs) are becoming important markets: globally, EU manufacturers shipped 870 million ECU worth of furniture to these countries (an increase of 63% in comparison with 1993). This accounted for about 15% of the total extra-EU furniture exports (2% of the of the total imports of the CEECs).

As far as extra-EU imports are concerned, Eastern European and Asian countries are the main suppliers of furniture if Sweden and Austria are excluded (new member states since

1995). The furniture industry of the 16 CEECs exported 1.6 billion worth of furniture in 1994 (+24% if compared with the previous year). The most important suppliers were Poland (38% of total: +35%), Romania (16%), the Czech Republic (14%: +40%), Slovenia (11%: +32%) and Hungary (7%). Germany imported 72% of the total, France only 9% and the UK 5%.

Among the Asian countries, Indonesia exported 226 million ECU worth of furniture, Taiwan 180 million ECU, China 131 million ECU and Thailand 82 million ECU. Other important supplying countries are Switzerland (264 million ECU), USA (227 million ECU) and South Africa (173 million ECU).

Due to increasing exports to traditional markets, in recovery, and the boom of exports to CEECs, the export/import ratio improved in 1994.

## MARKET FORCES

### Demand

The recent recession in Europe demonstrated that furniture is the perfect example of a durable good whose purchase may be postponed to better times by both households and enterprises. Furniture represents high value, long-life goods that demand a (relatively) important capital outlay from the consumer.

The demographic variables play an important role: an increase in births, marriages, life-expectancy has repercussions on the level of demand. Social mobility and improvements in wealth also offers stimulus to the demand. The demand for furniture is an elastic demand. The elasticity of the demand toward disposable income is close to 1.5.

The demand is also influenced by the level of activity in new building construction. A thriving housing market often implies a boom in the purchase of furniture. In EU countries with high living standards, households are well equipped and the market is saturated. It is estimated that less than a third of the demand is an incompressible demand occasioned by births, the formation of new households or the replacement of tattered furniture. Furniture in particular, being a consumer durable, followed a path of modest growth compared to the long demographic and social post-war boom and, as far as families were concerned, lost ground to other goods (especially cars, consumer electronics, health and tourism).

**Table 6: Metal and wooden furniture  
Largest furniture producers in the EU, 1994.**

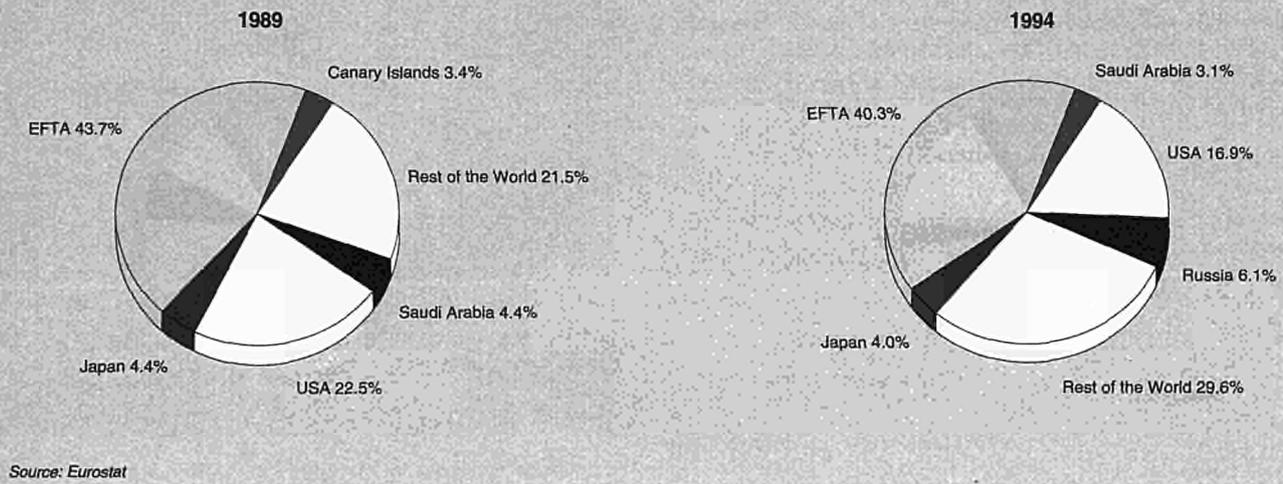
(million ECU)	Country	Turnover (1)	Types of furniture (2)
Schieder Gruppe	D	800-1000	b,d,u,k
Welle Gruppe	D	800-1000	b,d,u
Steelcase-Strafor	F/USA	600-800	o
Samas Groep	NL	600-800	o
Wellmann	D	400-600	k
Aino	D	300-400	k
Groupe Parisot	F	300-400	b,d,u,k
Steinhoff Gruppe	D	300-400	u
Nobilis	D	300-400	k
Natuzzi	I	300-400	u
Skandinavisk Gruppe	DK	200-300	o
Christie-Tyler	UK	200-300	u,m
Skane-Gripen	D/S	200-300	k
Klaussner Gruppe	D	200-300	u
Voko	D	200-300	o
Snaidero	I	200-300	u

(1) estimated range.

(2) b: bedroom; d: dining room; k: kitchen; o: office; u: upholstery; m: mattresses.

Source: U.E.A.

**Figure 8: Wooden furniture  
Destination of EU exports**



The general economic situation (level of interest rates, growth of the GNP, level of unemployment, consumer and business confidence in the economy) can affect positively or negatively the demand. Finally, as for goods and services in general, the intensity of advertising and of marketing of both manufacturers (catalogues, participation in fairs, press, direct mailing) and retailers are also determining factors.

### Supply and competition

The production of furniture and the distribution of furniture are two separate fields. Some furniture manufacturers have their own distribution networks or sell directly to consumers. However the majority sell to retailers or buying groups who sell on to end consumers. Office furniture manufacturers often sell their products directly, either through franchises or their own agents. About 40% of the market is controlled by manufacturers.

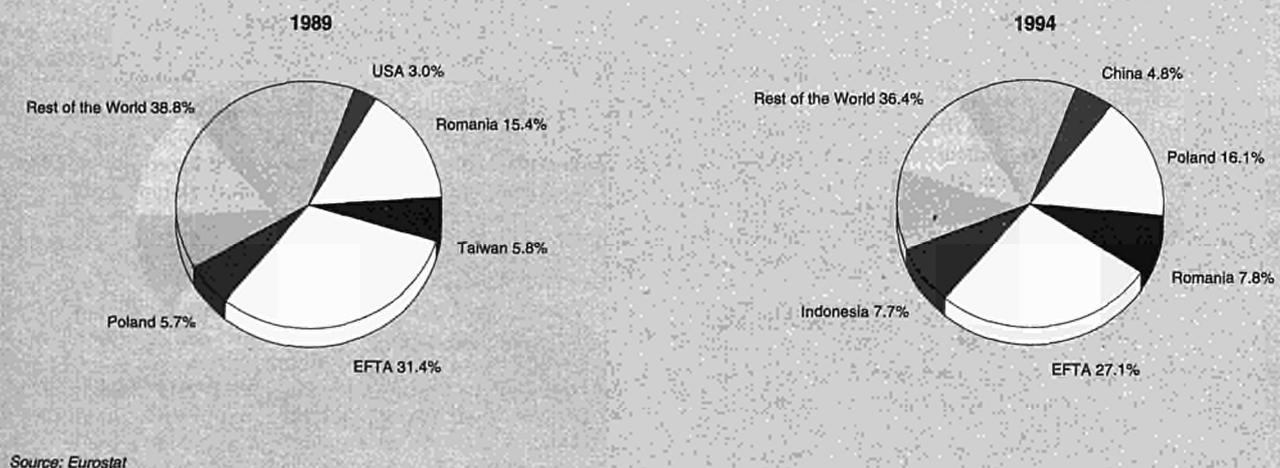
Household furniture is sold in specialised stores (selling exclusively furniture). There are more than 100 000 furniture sales outlets employing 500 000 persons in the EU. In the furniture sector, distribution is highly complex, involving a wide variety of retail outlets selling furniture. The consumer can choose from a wide variety of furniture products offered

by a large part of manufacturers. The furniture distribution is concentrating at national level. Large-scale retailing has played an important part in rationalising sales networks in Germany, France and the UK. A similar process started in Spain a few years ago. In the 5 large EU countries where 85% of sales are recorded, 49% of the household furniture sales are produced by operators in large-scale retailing.

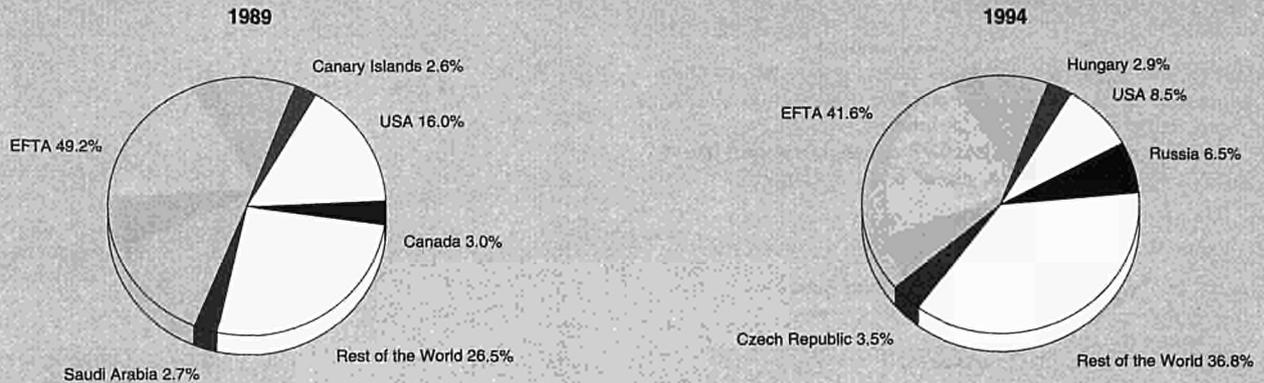
The do-it-yourself stores and the hypermarkets (3% of sales) and the mail-order firms are increasing their market shares mainly in the lower segments and in the ready-to-assemble furniture market. In Germany and France, sales networks are more modern and structured with larger outlets and higher levels of efficiency. About 30 buying groups and their affiliates are responsible for two thirds of sales in Germany. The top 10 groups hold 45% of the market.

In France the concept of franchising is well developed (30% of sales) and the large-scale distribution accounts for 15% of the sales. The top 10 groups control 42% of the sales. In Italy, more than three quarters of sales are achieved by small to medium independent family-owned outlets. Direct sales to consumers represent 15% of sales. In the UK, the non-specialised channels (also selling other goods) account for a third of the market (do-it-yourself and department stores). The independent retailers are often specialised in one type of furniture

**Figure 9: Wooden furniture  
Origin of EU imports**



**Figure 10: Metal furniture  
Destination of EU exports**



Source: Eurostat

providing specific services. The top 10 companies hold 27% of the market. In Spain the situation is similar to the Italian one (61% of furniture is sold by independent retailers) but 10 recently-formed buying groups have gradually captured a significant share of the market (15%).

### Production process

The EU furniture industry is the strongest in the world with respect to competitiveness. The EU predominance was consolidated during the 1980's when heavy investments were made. Many enterprises are well-known and have their own trademarks. But the majority of companies often produce generic products.

Furniture manufacturers are relatively highly specialised. The unit size of the companies is rather small but it is clear that both the opening up of markets and technical developments imply a challenge to the smallest companies in the business to increase the unit size, unless of course they are companies in possession of unique craftsmanship and collection. Specialisation in the furniture industry also explains why family enterprise and entrepreneurship play a vital role.

The SMEs of the sector are open to co-operation and to communication both with partners and customers. They are in-

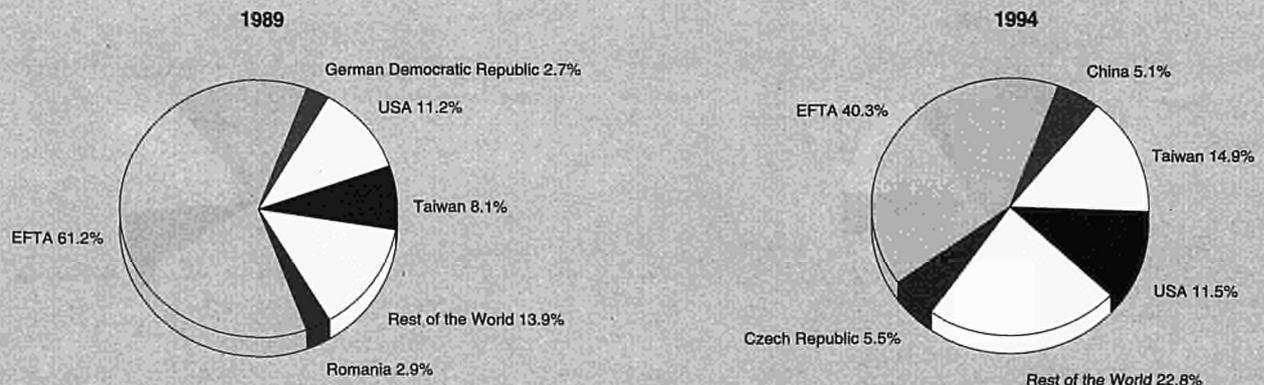
vesting in quality at all levels. Production technology is the basis for the quality and computer technology can be utilised to improve organisation and the capacity to react to the market. The chances of applying computer aided manufacturing (CAM) are considerable in the industry. Through CAM even complicated furniture components in small series can be manufactured automatically. But the investment required for CAM is so great that the size of the smallest efficient furniture company should be around 50 employees. The pressure to invest in environmental protection may increase the unit size of the smallest efficient company.

## INDUSTRY STRUCTURE

### Companies

Currently there are 91 000 small and medium-sized enterprises in the EU employing 830 000 persons. Among them, 7 902 enterprises with more than 20 employees employ 572 852 persons. In 1994 there were only 18 enterprises or group of enterprises in the EU furniture industry with a turnover exceeding 200 million ECU. Except for some multi-product groups such as Schieder, Welle (including Himolla and R.

**Figure 11: Metal furniture  
Origin of EU Imports**



Source: Eurostat

**Table 7: Metal and wooden furniture  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.99	N/A
Danmark	2.08	1.89
Deutschland	1.11	1.17
Ellada	N/A	N/A
España	1.21	1.17
France	0.72	0.68
Ireland	N/A	N/A
Italia	1.28	1.25
Luxembourg	0.00	0.00
Nederland	0.51	0.66
Portugal	N/A	N/A
United Kingdom	0.98	0.89

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

Benz both exceeding 200 million ECU worth of turnover), Parisot, the large majority of these enterprises specialise in the production of one or two types of furniture. The Samas Groep controls the Schärf Gruppe, Natuzzi's turnover recently boomed and Snaidero controls Rational in Germany. Out of the 18 groups, 10 are German (including the Swedish-German group Skane- Gripen), 3 are French (including the French-American Steelcase-Strafor), 2 are Italian, 1 is Dutch, one British and one Danish.

Thirty enterprises reached a turnover of between 100 and 200 million ECU. These enterprises (except some Italians) are situated in north European countries. This is the result of late industrial development in south European countries. The unit size is far greater in the office furniture and kitchen furniture sectors than it is in the other furniture sectors. In the office furniture sector the top 100 business are responsible for two thirds of the production and the top 50 firms are responsible for more than 1 billion in exports. In the kitchen furniture sector the 50 largest EU manufacturers produce 50% of the production and are responsible for 50% of the exports.

The distribution of the SMEs and the large enterprises depends on the country. In Germany, enterprises generally employ more than 20 persons. The average number of employees in a German firm is 77. In Italy or in France, smaller enterprises are common: 189 000 Italians work in 33 500 furniture enterprises whereas 106 000 French work in 18 247 companies.

### Strategies

Today, two organisational models exist in Europe. The medium-large enterprises whose competitive abilities are based on scale economies and the SMEs highly specialised in a segment of the market.

The furniture industry has to take up 4 challenges: to satisfy demanding EU consumers and to position itself in emerging East European and Asian markets, to stay competitive compared with East European and Asian industries even in the lower segment of the market (mass-production), to make investments to protect the environment and to benefit from the Information Society (including training of personnel) and to face an increasing concentration in the furniture retailing sector.

In a saturated EU market, the manufacturers have to be imaginative and design-oriented to succeed. The development of a brand image and investments in advertising and in promotion (3% of turnover) are the preferred marketing tools. The East European and Asian countries are becoming important markets for furniture. The improvement in the purchasing power of parts of the population has created a growing demand for European furniture renowned for its quality and design.

In the furniture industry, distinguished by a fragmentary market and fully developed technologies, to stay competitive implies to being more innovative technologically and regarding management and product quality but also to maintain competitive prices, to adopt higher and higher quality standards and to integrate design in the production process. The large investments made in technologies and in economies of scale, the great production specialisation and the flexibility in the sector are also considerable assets but the sector is investing in environment protection and is positive towards the new information technologies (Electronic Data Interchange, Internet).

Although a concentration process is underway in the furniture industry, it is well below the average of other industrial sectors. However, the continuously ongoing distribution concentration process, which is far from finished, forces EU enterprises to use defence strategies and so to larger sizes, and, mainly in the case of Germany, to relocating part of the production in extra-EU countries.

### REGIONAL DISTRIBUTION

Furniture enterprises are relatively concentrated in the different EU countries. In Germany, the enterprises are concentrated in 3 Länder: the North Rhine-Westphalia, Bavaria and Baden-Württemberg. In Italy about two thirds of the enterprises and employment are situated in the northern part of the country. In France, the greatest concentration of firms and of employment is in the Ouest/Vendée/Bretagne regions, in the Ile-de-France and Normandie regions and the Rhône-Alpes region. In Belgium, almost all of the firms are in the western part of the Flemish region.

### ENVIRONMENT

The furniture sector is particularly attentive to the protection of environment. Under the EU's Eco-Management and Audit Scheme (EMAS), furniture companies may start carrying out environmental audits on an industrial site and prepare internal environmental management systems (including evaluations and statements). EMAS implies a totally voluntary participation by companies. It is a pro-active approach to establish and implement environmental policies and objectives. Some enterprises in the sector have already registered under the scheme.

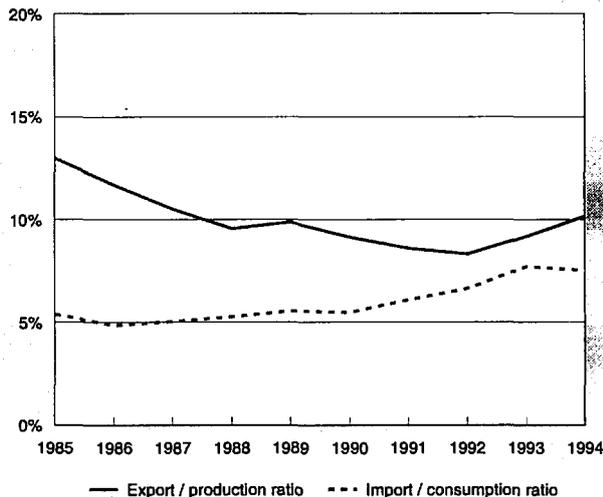
The Integrated Prevention and Pollution Control directive requires that industrial installations may only be operated if they receive a permit granted by a competent authority. This directive provides measures and procedures wherever practicable to minimise emissions from industrial installations, so as to achieve a high level of protection for the environment. The public must be informed about the operation of installations and the potential effect on the environment.

The furniture industry is an important consumer of coatings (about 10% of the total industrial coating consumption). The Commission is preparing a draft directive to limit emissions from the use of organic solvents in processes and industrial installations. The last draft directive required that installations using organic solvents in their processes and which exceed a threshold set in a specific annex to the directive and which are not already required to have a permit under the IPPC (Integrated Pollution & Prevention Control) Directive, shall be registered or authorised so far as concern that process.

### REGULATIONS

Since the signing of the Uruguay Round agreement, import duty rates have decreased by 15% per year. They should reach 0% in the signatory countries by the year 2000. For 1996, with regard to furniture imported from signatory countries,

**Figure 12: Metal and wooden furniture Trade Intensities**



Source: DEBA GEIE, Eurostat

the level of duty ranges from 2.2% (for the majority of furniture types) to 5.6% (rattan furniture).

European countries have their own national labelling requirements and their own quality and performance standards. They are trying to harmonise them to common European standards. In the framework of the European standardisation, the CEN/Technical Committee 207/Furniture has already discussed and adopted eight standards: EN 597, Parts 1 and 2 on the assessment of the ignitability of mattresses and upholstered bed bases; EN 716, Parts 1 and 2 on the safety requirements for children's cots and folding cots for domestic use; EN 747, Parts 1 and 2 on the safety requirements for bunk beds for domestic use; EN 1021 Parts 1 and 2 on the assessment of the ignitability of upholstered furniture; EN 1116 on the co-ordinating sizes for kitchen furniture and kitchen appliances; EN 1129 Parts 1 and 2 on safety requirements for fold-away beds; ENV 1178 Parts 1 and 2 on safety requirements for high chairs for domestic use and EN 1153 on safety requirements and test methods for built-in and free standing kitchen cabinets and work tops. Various other draft standards are under discussion.

EUFAC is a voluntary industry labelling system which identifies cigarette resistant upholstered furniture fabricated with a combination of materials that makes it so. It began as an alternative proposed by the furniture industry to a draft directive on the fire resistance of upholstered furniture. An increasing number of manufacturers have been adopting this labelling and the system is also supported by fabrics, leather, foams manufacturers and by furniture retailers. This voluntary initiative has been welcomed by the European Commission which has not envisaged the presentation of a directive on this matter.

The furniture industry is an important user of packaging. A lot of enterprises have already invested in order to use less packaging or reusable packaging anticipating the implementation of the EU waste directive.

Design protection is important to Europe in particular. The industry has been closely consulted during the preparation of the regulation on the creation of EU models and designs. The proposed regulation outlines the creation of a registered and an unregistered design for the EU which may be registered with the EU office of Designs and Models (in Spain) for either twenty-five years offered by the registered design option

or five-year protection under the unregistered design alternative. A proposed directive should harmonise national legislation on the protection of design.

The directives on the minimum safety and health requirements at the workplace are applicable to the furniture industry. One of these Directives directly concerns the (office) furniture industry: the Directive on working with Visual Display Units which details specific requirements for the equipment in the office (desks, chairs, computers, etc.), the environment and the computer/worker interface at the workplace.

## OUTLOOK

The recession in the European Union particularly hit the furniture industry between 1992 and 1994. In 1995, some countries saw positive growth rates whereas others continued to suffer from a general decline in their economy or in their private consumption (Germany, France, Belgium).

The main problem is consumer confidence. This remains very low in many countries because of unemployment and the reduction in budget deficits. Consumers are increasing their savings to the detriment of the purchase of durable goods and this process is continuing. Export oriented countries, especially those with devaluated currencies, are already profiting from the recovery in certain countries (improving their positions) or from the competitiveness of their products. Italy, Denmark and Sweden have recorded important real growth rates and the forecasts for these countries are optimistic. In France, the recession may be over but consumption is still very low. It is forecast that over the next two years consumption should show more sustained growth and should have a positive impact on the furniture industry, whose real growth rate should therefore be positive. In Germany, some minor signs of improvement have appeared. The more optimistic scenarios show positive growth rates after three years of decline.

Markets with bright opportunities for the future are the Eastern European countries where the wealth of an increasing part of the population is improving. Other markets where EU manufacturers will try to gain market shares are the emerging Asian countries. The concentration process in the industry should continue either through external investments or acquisition activities. The large groups of enterprises are reinforcing their positions in their respective countries.

An increasing number of joint ventures are organised either with Eastern European or Asian manufacturers. For instance, in China alone, there are 160 joint ventures in the office furniture industry and the process is developing.

In general, there is a trend towards a dualism among enterprises: some companies have very good results despite recessions and do not closely follow business cycles, but there is also a high mortality rate among firms (not specifically small enterprises) even during a period of economic recovery.

Written by: UEA and FEMB

The industry is represented at the EU level by: European Furniture Manufacturers Federation (UEA). Address: 109 rue Royale, B-1000 Brussels; tel: (32 2) 218 1889; fax: (32 2) 219 2701; and Fédération Européenne du Mobilier du Bureau (FEMB). Address: Boerhaavelaan 40, PO Box 190 NL-2700 AD Zoetermeer; tel: (31 79) 53 12 80; fax: (31 79) 53 13 65.

# Jewellery

## NACE (Revision 1) 36.2

The recovery from the economic recession has positively affected the market for jewellery. The demand for jewellery is increasing, due to a rise in disposable income. Imports of jewellery from the Far East have caused an intensifying competition in the jewellery industry. Two different developments in demand can be distinguished. Firstly, demand has been shifted towards the higher end of the market, partly because of demographic changes. Secondly, a contrasting trend, fashion and costume jewellery at the lower end of the market has been growing. A moderate increase of demand for jewellery is expected in the coming year.

### INDUSTRY PROFILE

#### Description of the sector

In comparison with the old NACE 1970 classification no significant difference has been found in the new classification, except that the former code has been changed from NACE 491 to the new group code 36.2.

The jewellery sector can be divided in the following subgroups:

- precious metal or precious plated ware;
- goldsmiths' and silversmiths' wares;
- costume (or "fancy") jewellery;
- industrial diamonds;
- pearls, precious and semi-precious stones;
- coins and medals.

The difference between precious and costume jewellery is sometimes difficult to determine. An article made of base metal and coated with precious metal set with imitation stones would be regarded as costume jewellery, but high-quality plated metals may be set with natural stones, and the designation of costume versus precious jewellery is unclear. The industry includes articles made of precious metals (particularly silver) that are not worn on the person. It is estimated that the share of precious jewellery is somewhat less than 80%, and that costume jewellery account for more than 20% of total consumer demand for jewellery.

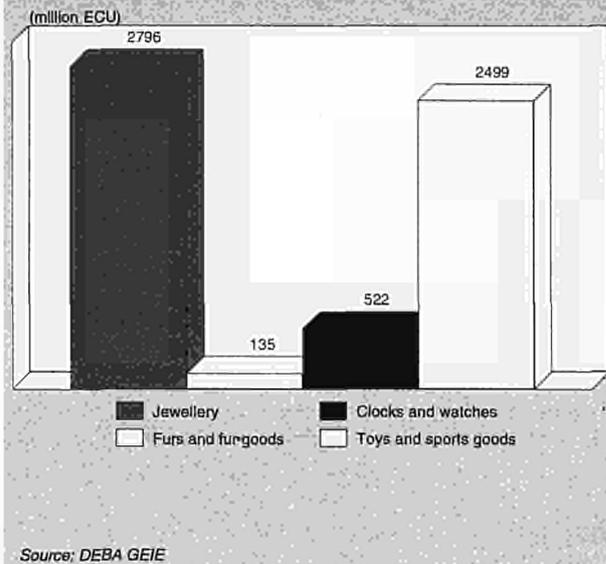
It should be noted that Eurostat data on production and employment show the relative volume of the industry in each country and the trends in production and employment. However, the absolute figures are underestimating the importance of the industry, as units employing less than 20 people are not taken into account by official statistics. Small firms can account for more than 40% of production for a country. In Germany, for example, among the 715 companies existing in the sector 525 have less than 20 employees.

#### Recent trends

In 1994, the world production of gold has declined by 1% to a total amount of 2268 tonnes. The largest decrease took place in South Africa, the largest producer of the world, where the production declined by 10% to 523 tonnes. On the contrary, demand for gold has increased, in particular demand from the jewellery industry. The consequence of this growing gap between demand and supply is a rise of the gold price.

The diamond industry shows a development to the opposite direction. The production has grown faster than demand for diamonds. Botswana is the largest producer of diamonds, accounting for nearly 60% of the 27 million tonnes of carat

Figure 1: Jewellery  
Value added in comparison with related Industries, 1994



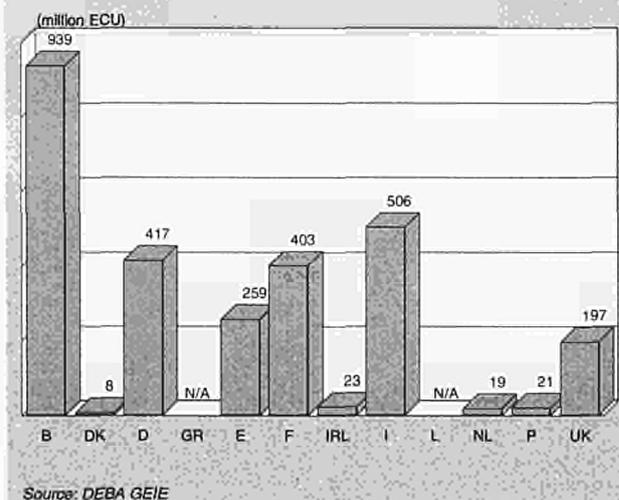
globally produced in 1994. The increase in production is an indication of a recovery of the market for diamonds.

The overall industry's employment in the EU-12 has been decreasing since 1990 which is partly due to the economic recession. Prospects however are positive. For 1996 a small increase of employment in the EU is expected in the beginning of the 90's. Employment in this country dropped by 10% during the period 1989-1992, but started to increase in 1993. This trend has continued in 1994.

European gold fabrication in carat jewellery has not changed in 1994 in comparison with the year 1993. The total European gold production has remained 642 tonnes, which is nearly 25 % of the total world production.

Despite low value growth in the jewellery industry, volume sales of fashion and costume jewellery have grown at a much higher rate during the last five years. Since jewellery is becoming a main part of the broader fashion market it will increase the demand for cheaper jewellery items. In Germany, for instance, fancy jewellery represents 15% of total market demand.

Figure 2: Jewellery  
Value added by Member State, 1994



**Table 1: Jewellery**  
**Main Indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	1 261	2 976	3 219	2 983	4 765	5 034	4 706	5 348	5 200	4 980	4 750
Production	4 821	6 994	7 510	7 358	7 488	7 916	7 696	8 208	8 500	8 750	9 010
Extra-EU exports	9 397	10 716	10 733	10 744	12 994	13 919	14 202	14 062	14 940	15 870	16 860
Trade balance	3 560	4 019	4 291	4 374	2 723	2 882	2 990	2 860	3 300	3 770	4 260
Employment (thousands)	56.4	63.9	62.9	60.8	56.7	55.2	54.8	58.6	60.0	60.0	60.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15, for exports and trade balance; NEI forecasts for EUR15 for production and employment.

Sources: DEBA GEIE, Eurostat

**Table 2: Jewellery**  
**Gold fabrication in carat jewellery - production (including scrap)**

(tonnes)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
EUR15 (1)	361.8	349.4	341.9	401.2	504.7	561.6	590.1	628.4	603.0	597.5
EUR12 (1)	356.9	344.1	336.1	395.4	498.1	554.7	583.6	621.1	596.1	591.2
Belgique/België	1.9	1.7	1.6	1.8	2.0	2.2	2.1	2.1	1.9	1.8
Danmark	0.8	0.9	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1
Deutschland	29.5	30.3	33.9	38.3	44.1	49.8	51.0	45.4	44.5	41.8
Ellada	11.5	11.0	10.7	10.7	10.5	10.5	10.0	9.3	9.0	9.8
España	15.7	15.6	17.0	24.0	30.0	34.0	32.5	30.0	26.0	27.0
France	17.6	19.9	20.9	22.9	25.7	31.0	31.3	32.2	32.1	28.7
Italia	253.0	238.0	222.0	262.0	345.0	381.0	415.0	461.0	441.0	440.0
Nederland	0.8	0.9	1.0	1.1	1.3	1.5	1.6	1.6	1.5	1.4
Österreich	3.0	3.2	3.3	3.4	3.6	3.8	3.5	4.1	3.7	3.4
Portugal	3.5	3.5	4.0	4.5	5.5	7.5	9.1	11.4	13.8	12.8
Suomi/Finland	0.7	0.8	0.9	1.0	1.2	1.2	1.0	0.9	0.9	1.0
Sverige	1.2	1.3	1.6	1.4	1.8	1.9	2.0	2.3	2.3	1.9
United Kingdom and Ireland	22.6	22.3	24.2	29.3	33.2	36.3	30.1	27.1	25.3	26.8
Rest of Europe	35.2	35.3	33.4	40.9	49.9	57.9	49.5	43.2	39.0	44.8
Total Europe	397.0	384.7	375.3	442.1	554.6	619.5	639.6	671.6	642.0	642.3
North America	121.9	126.3	127.5	135.7	146.2	135.7	129.9	140.7	149.8	157.0
of which, USA	111.1	116.0	117.8	125.6	135.8	126.6	121.2	132.1	140.0	146.7
Latin America	30.5	43.4	34.3	35.2	44.7	45.0	51.5	54.2	58.4	71.0
Middle East	240.4	238.1	230.9	243.4	309.9	382.2	397.7	504.7	481.0	394.2
Indian Subcontinent	199.9	175.9	190.2	222.5	258.9	277.8	268.9	338.8	306.2	394.3
Far East	201.3	198.0	253.0	431.8	573.5	561.5	613.6	733.3	642.3	653.2
of which, Japan	60.7	80.7	84.0	95.0	112.5	109.5	106.7	104.0	88.0	85.0
Africa	17.8	21.0	22.4	31.6	35.4	42.8	43.3	43.5	32.7	30.5
Australia	3.2	4.4	4.2	4.0	5.1	4.7	4.0	3.9	5.5	6.8
China and former Soviet Union	33.6	34.0	34.2	35.1	71.5	82.1	163.2	219.5	199.1	227.0
World total	1 246	1 226	1 272	1 581	2 000	2 151	2 312	2 710	2 517	2 576

(1) Excluding Luxembourg.

Source: Gold 1993, Gold Fields Mineral Services Ltd.

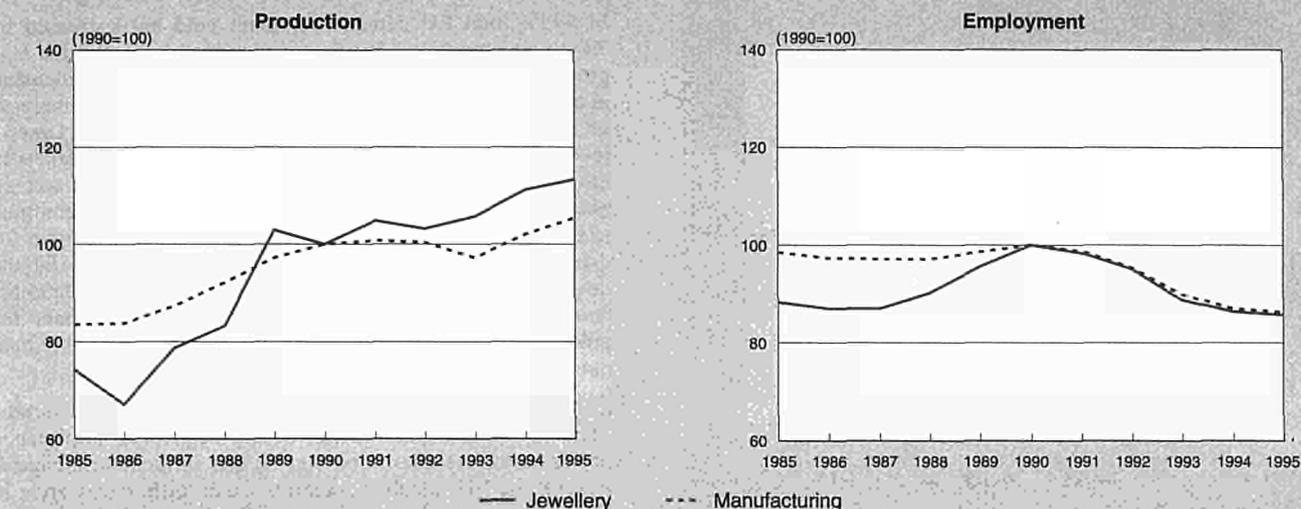
**Table 3: Jewellery**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	-4.07	42.73	14.46	19.49
Production	6.16	2.70	4.61	5.21
Extra-EU exports	15.29	-10.37	3.08	-11.13
Extra-EU imports	12.38	14.43	13.29	7.12

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Figure 3: Jewellery**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

### International comparison

The European production of gold fabrication in carat jewellery is mainly concentrated in Italy. The greater part of the global production, however, is located in the Far East, Indian Sub-continent and the Middle East. These regions constitute nearly 56% of global production. The inclusion of Finland, Sweden and Austria in the European Union has no major implications on the EU-15 production. In these three countries production amounts to 6.3 tonnes, which is only 1% of the total EU-15 production.

The production of jewellery in current prices have been bouncing up and down in the EU, the USA and Japan during 1985-1994 period. Since 1991 the US production has grown by 22% which is much higher than the growth rates in the EU (5%) and Japan (2%).

The USA is the largest producer of jewellery. Despite this fact, the USA has the lowest production/employment ratio when compared with Japan and the EU. Japan and the EU

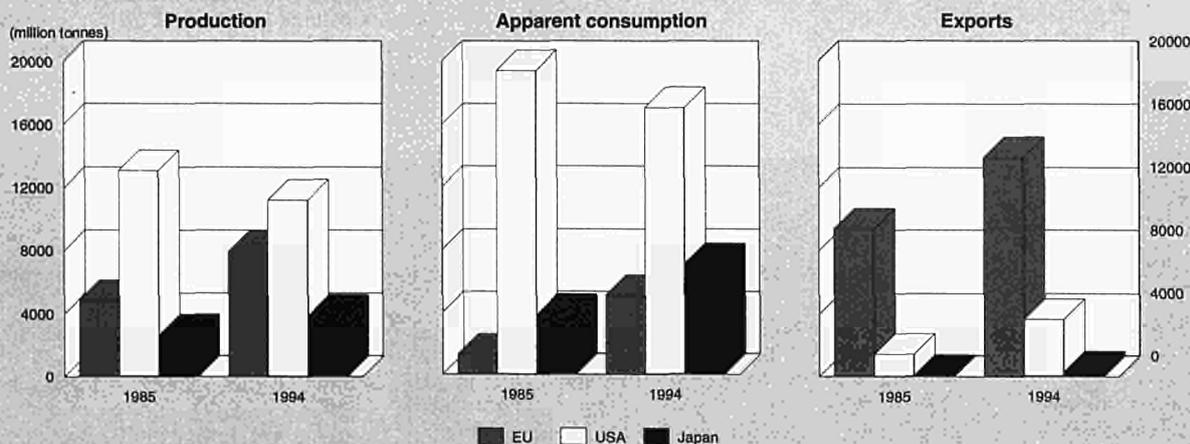
have a productivity ratio of 152 181 ECU and 143 284 ECU respectively, while the corresponding figure for the USA is only 107 914 ECU. These values, however, are strongly influenced by fluctuations in exchange rates.

Value added in current prices has undergone the same bouncing development as the production in the period 1985-1994. Between the EU and USA on the one hand and Japan on the other hand some differences exist. In the USA and the EU the value added increased by around 6% during the 1992-1994 period. In Japan the appreciation of the Yen has negatively affected its value added in ECUs during the same period.

### Foreign trade

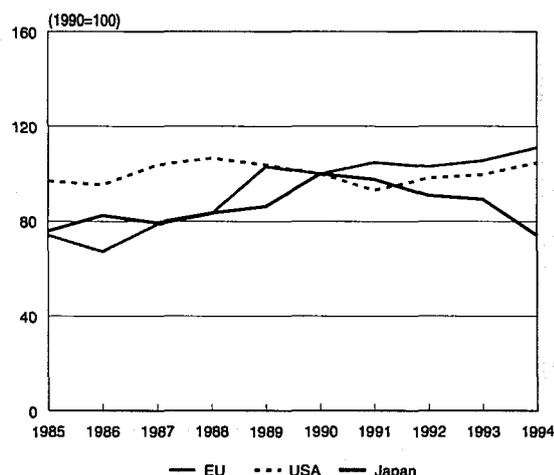
One of the characteristics of the jewellery industry is that trade is quite intense, resulting from the cross-border trade involved by the elaboration of raw materials and the production of end products.

**Figure 4: Jewellery**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Jewellery**  
International comparison of production in constant prices



Source: DEBA GEIE

During the period 1985-1994 the extra-EU exports in current prices demonstrated an increase of almost 50%, but in comparison with the extra-EU imports in current prices, which increased by nearly 90% during the same period, this growth was relatively small. Still the EU remains a net exporter of jewellery.

Italy, the largest producer in Europe, is also responsible for a major part (19.4%) of the total EU exports. The United Kingdom, however, is the largest exporter accounting for 24.7% of total EU exports, which represents 18.6 billion ECU. They can be split into intra-EU exports (remaining in the EU) for 25% and extra-EU exports (which will be shifted overseas) for 75%. The largest buyers of the EU jewellery are the USA, Israel, India and Switzerland. Exports to these countries have increased during the period 1989-1994, except for exports to India which have dropped by 4%.

The main non-EU suppliers are the USA, Switzerland, Israel and India and to a less extent Thailand and Russia. These countries together account for nearly 30% of the total extra-EU imports. The increase of the imports from Russia is significant, as they raised from zero in 1989 to an amount of more than 500 million in 1994. Belgium and the United Kingdom are the major destinations for imported jewellery. Both countries account for more than 50% of the total EU imports.

**Demand**

In 1995, total EU demand for plain gold has increased by 7% to an amount of 361.5 tonnes, which is partly due to a growing demand for gold jewellery in Europe. In 1995, demand in the EU for jewellery totalled 301 tonnes, which is an increase of 3% with respect to 1994. Except for Germany and Greece, jewellery purchases increased in almost all major markets in the EU and continued to account for over 80% of overall gold demand in the region. Gold dominates and will continue to dominate the jewellery market, followed by the market for diamonds. In the UK, for example, plain gold is by far the largest sector of the jewellery market in value terms and accounted for 55% of the total sales in 1994. The demand for golden coins (mainly stemming from Germany) has more than doubled in 1995 to an amount of 31.4 tonnes.

Demand for jewellery is only partly led by fashion trends. The increase in disposable income and the growing importance of aesthetics are also important factors influencing demand. Among the EU member countries, some differences arise in the evolution of demand. In the UK, jewellery demand increased by 13% in 1995, whereas demand for jewellery in France and Italy only grew by 3% and 5% respectively. In Germany demand even decreased in 1995.

Women are the most important purchasers of jewellery, but the percentage of men buying jewellery is rising. Most of these purchases are intended as gifts for adult females. The leading purchasers in the population are the younger people between 15 and 24 years old. Jewellery purchases and particularly purchases of precious jewellery normally reach a peak in December with sales for Christmas and New Year.

The demand for precious jewellery is depending on disposable income. Households with substantially higher income spend more on precious jewellery, while lower income households especially buy cheaper costume jewellery. In the UK, for example, on average the lower income households are only spending 0.28 pounds on jewellery in comparison with 1.97 pounds expenditure by the households with higher disposable income.

**Supply and competition**

Despite the variety of stores selling jewellery, specialist jewellers have managed to hold onto a large percentage of the sales. In France, for example, the retail distribution has been dominated by speciality stores with a share of 71% in value. In 1994, jewellery specialists accounted for 65% of total sales in the EU. This high share of speciality stores can largely be attributed to the traditional high quality of jewellery. The majority of speciality jewellers place themselves at the upper end of the market. Costume jewellery is mainly sold through a variety of outlets, such as department stores, clothing shops, chemists and jewellers.

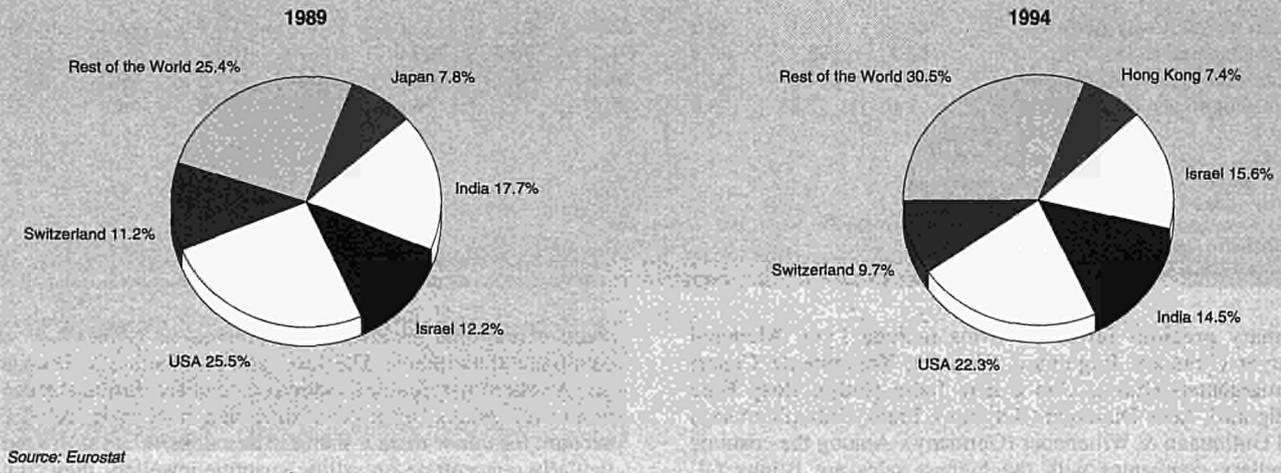
**Table 4: Jewellery**  
External trade in current prices

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	9 397	8 739	8 756	10 054	11 854	10 716	10 733	10 744	12 994	13 919	14 202	14 062
Extra-EU imports	5 837	5 948	4 388	6 014	7 255	6 697	6 442	6 369	10 271	11 036	11 212	11 202
Trade balance	3 560	2 791	4 368	4 040	4 599	4 019	4 291	4 374	2 723	2 882	2 990	2 860
Ratio exports / imports	1.6	1.5	2.0	1.7	1.6	1.6	1.7	1.7	1.3	1.3	1.3	1.3
Terms of trade index	114.3	109.0	126.2	89.1	104.7	100.0	118.1	140.0	174.3	209.5	N/A	N/A

(1) Eurostat estimates.  
(2) Eurostat estimates for EUR15.  
Source: Eurostat



**Figure 6: Jewellery  
Destination of EU exports**



There is little or no branding in the precious jewellery sector. Thus, it is more significant to determine competition at the retail level consisting of manufacturing for costume jewellery as well as precious jewellery. The market is highly fragmented, and is composed by many small companies often with less than 20 employees. In the UK, for example, the jewellery market is highly fragmented with around 2,000 manufacturers and many importers and distributors. Branded jewellery accounts for less than 5% of the sales.

Average prices of costume jewellery have been steadily falling due to the increased competition from imported products. This competition in the costume jewellery especially comes from low-wage countries in the Far East such as Hong Kong, South Korea, Taiwan and Thailand.

**Production process**

Following trends in demand, manufacturers of fashion jewellery are urged to produce up-to-date designs. In theory, new collections are introduced 2 to 4 times per year, but in practice new ranges appear much more frequently. This makes short distribution lines necessary, giving local EU producers an advantage over overseas manufacturers. Much costume jewellery is shipped by air because of the need for quick delivery.

In view of the high frequency in new collections high mark-ups are necessary to compensate for the risk of goods becoming unsaleable. The manufacture of costume jewellery includes a broad variety of products: brooches, ear-rings, necklaces, bracelets, rings, hair ornaments, hat ornaments, shoe ornaments, cuff-links, tie-clips, etc.

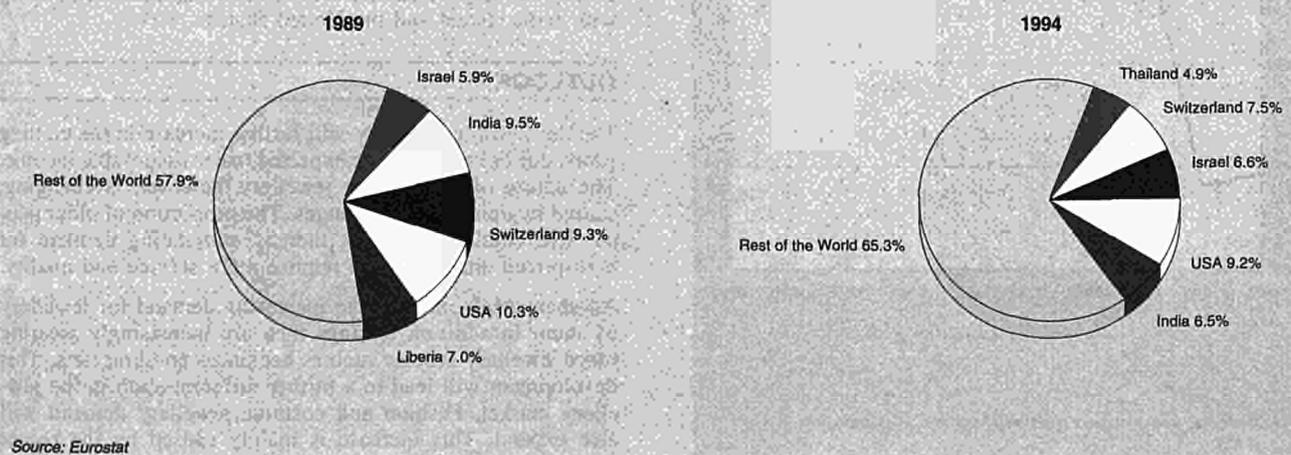
**INDUSTRY STRUCTURE**

**Companies**

The market of jewellery manufacture, for both precious and costume jewellery, is highly fragmented. For example, in Italy the industry includes 6,500 businesses, employing 40,000 people (estimated). The largest are all privately, generally family, owned and managed.

Most of the enterprises in the precious jewellery industry are of an artisan character. Therefore it is difficult for the industry to keep up with fast growing demand, as was the case in the 1980s. In comparison with costume jewellery, however, the precious jewellery industry has the advantage of not being under the influence of fashion trends. Thus, designs last much longer.

**Figure 7: Jewellery  
Origin of EU imports**



**Table 5: Jewellery**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	84.1	77.1	90.3	92.4	107.7	100.0	106.6	108.5	119.1	128.6
Unit labour costs index (3)	93.1	108.7	95.6	97.2	88.4	100.0	100.7	103.1	94.5	88.8
Total unit costs index (4)	102.6	102.0	90.7	98.5	96.2	100.0	101.3	100.8	99.2	97.9
Gross operating rate (%) (5)	7.0	7.5	18.9	13.4	17.2	14.4	14.7	14.1	14.9	15.9

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

Primary precious jewellery firms include Lyon Alemand Louyet (France), Engelhard (France), Trattamente Ceneri Auroargentari (Italy), Uno a Erre Italia (Italy), Rosy Blue (Belgium), Lens Diamond (Belgium), Franz Golz (Germany) and Guthmann & Wittenauer (Germany). Among the costume jewellery companies with the highest sales are Bijoux GL (France), Moranduzzo Dario (Italy), Modern Creation München Reisegepack (Germany), and Rudolf Zenner (Germany), among others.

### Strategies

Within the EU, the independent jewellers have been losing share since the 1980s. They have been badly affected by falling demand and rising overhead costs. However, they still account for a substantial part of all jewellery sales, which is often higher than in many other retail sectors. This is mainly caused by the fact that these traditionally family-run jewellers are often located in the middle to upper end of the market, and are distinguished from the large multiples by their level of service. They are able to retain their position, because jewellery goods are still viewed as luxury goods. Thus, price does not play a dominant role in a consumer buying decision, in contrast with other goods. In the purpose of reducing costs, most of the independent jewellers are organised in buying groups in order to gain preferential buying terms. Precious jewellery is mainly sold through speciality jewellers, but there is a growing number of multiple and non-specialist outlets. The

share of multiple jewellers is increasing, as is the share of catalogue showrooms. The last retailers operate a discount policy which has enabled them to gain share during the economic recession. Department store and mail order retailers account for minor market shares. Since department stores particularly concentrate on selling costume jewellery they compete with specialist fashion jewellery outlets. For costume jewellery sales outlets are much more diverse, with special emphasis on the tax and duty free shops. Until the year 2000, EU citizens will still be allowed to buy jewellery in duty free shops when travelling among the EU member countries.

The use of brands is rare in the jewellery industry. The few existing brands tend to be active in the costume jewellery sector, mainly originating from enterprises well established in other industries such as cosmetics or clothing (Kenzo, Moschino, Fiorucci) which branch out into jewellery. Distribution, therefore, plays an important role in competition and strategy.

### REGIONAL DISTRIBUTION

The industry needs specialists and therefore remains concentrated in places where the infrastructure has been built over many years. Through further specialisation, some locations lend themselves to higher-quality jewellery, some to quantity production, and some to production of larger silver articles.

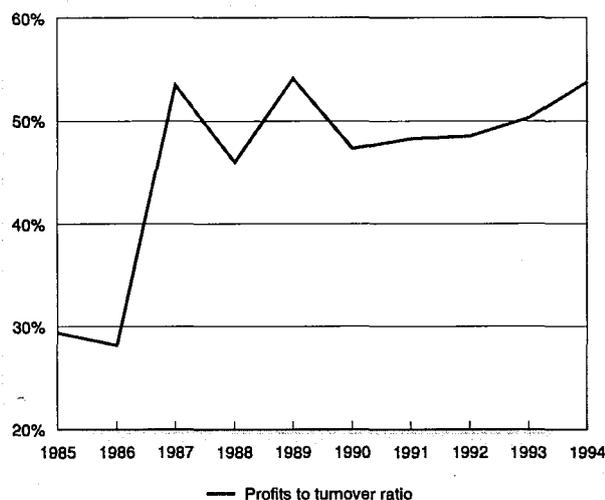
The main manufacturing centres in Italy are Arezzo, Vicenza and Piedmont. In Germany about 75% of the trade is based in Pforzheim, with Idar-Oberstein being an important centre of the gemstone industry. Other centres are Schwabisch Gmund, Hanau and Kaufbeuren. In France, Paris and Lyon account for a major part of the industry, as does St. Amand. In the United Kingdom the main centres are London, Hatton Garden, Birmingham and Sheffield (the centre for cutlery and a large portion of the table-silver industry). In Belgium, Antwerp is the centre of the jewellery industry. Belgium ranks among the major diamond cutting centres in the world, along with India, Israel and the United States.

### OUTLOOK

The demand for jewellery will further increase in the coming years, due especially to the expected rise in disposable income. The nature of demand for jewellery, however, is changing, caused by demographic changes. The proportion of older people will continue to grow, thereby stimulating demand for high-priced articles which require more service and quality.

Another development is the increasing demand for jewellery by men. In addition to rings men are increasingly wearing other jewellery articles such as necklaces and bracelets. This development will lead to a further differentiation in the jewellery market. Fashion and costume jewellery demand will also expand. This increase is mainly caused by the recent

**Figure 8: Jewellery**  
**Pre-tax profits to turnover ratio (1)**



(1) Estimated as a percentage of non-labour income in value-added.

Source: NEI

**Table 6: Jewellery  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	3.72	5.98
Danmark	0.17	0.12
Deutschland	0.50	0.41
Ellada	N/A	N/A
España	0.59	1.24
France	0.77	0.66
Ireland	0.73	0.48
Italia	2.91	2.51
Luxembourg	N/A	0.00
Nederland	0.12	0.10
Portugal	N/A	0.47
United Kingdom	0.50	0.44

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

trend among consumers to trade down from real jewellery to acceptable-priced fashion jewellery items. As a consequence, total sales volume will increase, while the value of sales is likely to decrease. Moreover, fashion trends such as piercing will further stimulate demand for the cheaper jewellery.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: International Confederation of Jewellery, Silverware, Diamonds, Pearls and Stones (CIBJO); Address: 78A Luke Street, London, EC2A 4PY United Kingdom; tel: (44 171) 613 4243; fax: (44 171) 613 4450.

# Musical instruments

## NACE (Revision 1) 36.3

The European market for musical instruments is showing a slight recovery after the economic recession of the early 1990s. Production as well as consumption increased in 1994 by 5.8% and 3.4% respectively. The market for musical instruments is highly fragmented. The European manufacturers are mainly specialised in the production of high quality, more expensive traditional instruments, which puts them in the higher end of the market. The increasing imports of cheaper productions from low-wage countries is intensifying competition among manufacturers and causing a downward pressure on the price of musical instruments.

### INDUSTRY PROFILE

#### Description of the sector

The chapter is written according to the NACE (Rev.1) classification. No significant changes exist between the old NACE and new NACE classification, except that the old NACE code changed from 492 to the new group code 36.3.

The market for musical instruments is highly fragmented and can be divided into the following subgroups:

- keyboards: electric pianos, accordions, harpsichords, pipe organs, electric keyboards, portable keyboards, synthesizers, organs, pianos (upright and grand pianos);
- woodwind instruments (saxophones, oboes, flutes and clarinets);
- brass wind instruments (trumpets, trombones);
- string instruments (violins, cellos, violas and bases);
- fretted instruments (acoustic guitars, mandolins, banjos);
- percussion instruments (drums, cymbals, orff-instruments);
- other instruments (rhythm machines, harmonicas);
- accessories and parts (for example, bows, strings, bridges, components for electronic music).

Musical instruments include both traditional instruments, whether early or modern, and electronic instruments.

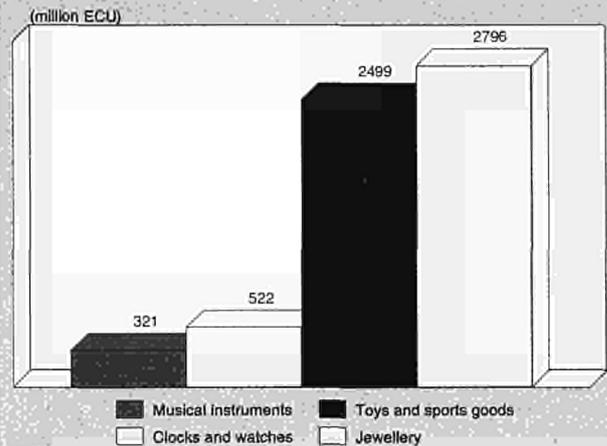
Within the EU, Germany and Italy are the largest manufacturers of musical instruments. With production values equalling 305.1 million ECU in Germany and 208.5 million ECU in Italy together account for 74% of total EU production. These countries are followed by France and the United Kingdom with respective production of 84.5 and 52.1 million ECU. The four countries together account for nearly 94% of total EU production (694 million ECU). These countries are also the main markets for musical instruments. With 313 million ECU or 32% of total EU consumption, Germany has the highest apparent consumption. France, the United Kingdom and Italy have consumption of 17% (165.9 million ECU, 15% (145.4 million ECU) and 14% (135.4 million ECU) respectively.

The statistics covered in this chapter do not include companies with 20 employees or less. As a consequence, the figures do not provide a complete picture of the developments in all market segments.

#### Recent trends

Over the 1985-1990 period, the EU production of musical instruments (in current prices) recorded a growth of 11% or 2.2% per annum. From 1990 to 1993, the EU production (in current prices) decreased by 20%, from 777.8 million ECU in 1990 to 622.1 million ECU in 1993. During this period,

Figure 1: Musical instruments  
Value added in comparison with related industries, 1994

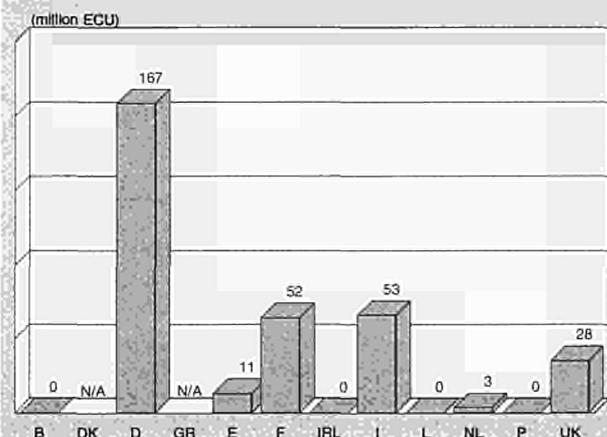


Source: DEBA GEIE

Germany and Italy were hardest hit with respective production declines of 17.2% (from 344.7 to 285.5 million ECU) and 34.5% (from 249.1 to 163.2 million ECU). The main cause of this decline has been the economic recession, reflected in a weak EU demand. The economic recovery which started in 1994 has resulted in a production increase of nearly 6%. The development of EU production in constant prices has been very different compared with the development of the EU production in current prices. In constant prices, EU production declined from 823.1 million ECU in 1985 to 613 million ECU in 1994 (-25%).

Demand for musical instruments (in current prices) has demonstrated a similar development as EU production (in current prices), except that demand has demonstrated much higher growth during the period 1985-1990 and a smaller decline in the early 1990s. In 1990, EU demand for musical instruments equalled 1145.9 million ECU compared to 871 million ECU in 1985 (+31.6%). After a drop of demand to 936.2 million ECU in 1993, a small recovery of demand has taken place

Figure 2: Musical instruments  
Value added by Member State, 1994



Source: DEBA GEIE

**Table 1: Musical instruments**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	871.0	1 145.9	1 129.1	1 079.9	936.2	967.6	923.9	1 017.2	1 050.0	1 100.0	1 140.0
Production	699.9	777.8	755.9	726.2	622.1	658.0	693.4	739.5	760.0	790.0	820.0
Extra-EU exports	255.1	281.8	288.4	286.9	301.1	341.7	374.5	360.0	380.0	410.0	430.0
Trade balance	-171.1	-368.1	-373.2	-353.7	-314.1	-309.6	-230.5	-277.6	-290.0	-310.0	-320.0
Employment (thousands)	16.1	13.6	13.0	11.9	10.7	10.4	10.2	10.9	10.0	10.0	10.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Musical instruments**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	3.38	-9.10	-2.37	-2.10
Production	-1.13	-5.78	-3.22	4.48
Extra-EU exports	4.66	4.09	4.41	11.95
Extra-EU imports	11.81	-6.33	3.35	-1.53

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Musical instruments**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	255.1	233.6	230.7	230.4	268.6	281.8	288.4	286.9	301.1	341.7	374.5	360.0
Extra-EU imports	426.2	463.8	563.6	616.6	661.5	649.9	661.6	640.6	615.2	651.3	605.0	637.6
Trade balance	-171.1	-230.2	-332.9	-386.2	-392.9	-368.1	-373.2	-353.7	-314.1	-309.6	-230.5	-277.6
Ratio exports / imports	0.60	0.50	0.41	0.37	0.41	0.43	0.44	0.45	0.49	0.52	0.62	0.56
Terms of trade index	99.2	102.3	101.9	97.8	96.6	100.0	93.8	94.9	84.1	79.3	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Musical instruments**  
**Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	89.2	95.7	99.4	106.8	88.1	100.0	97.4	99.8	96.0	103.1
Unit labour costs index (3)	81.4	83.4	83.0	83.2	101.4	100.0	108.9	112.5	120.2	116.6
Total unit costs index (4)	83.5	86.5	89.5	93.1	95.4	100.0	103.7	105.8	109.3	108.9
Gross operating rate (%) (5)	9.2	9.6	10.8	9.5	7.6	6.7	7.3	7.8	4.3	6.1

(1) Some country data has been estimated.

(2) Based on index of production / index of employment.

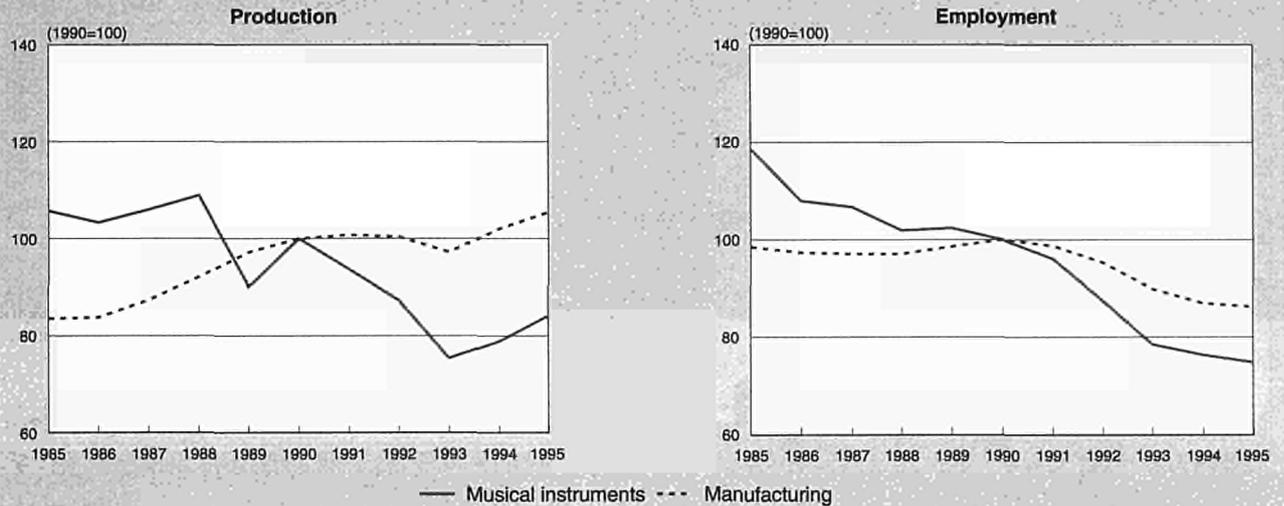
(3) Based on index of labour costs / index of production.

(4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.

(5) Based on (value added - labour costs) / turnover.

Source: DEBA GEIE, Eurostat

**Figure 3: Musical Instruments**  
Production and employment compared to EU total manufacturing industry



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

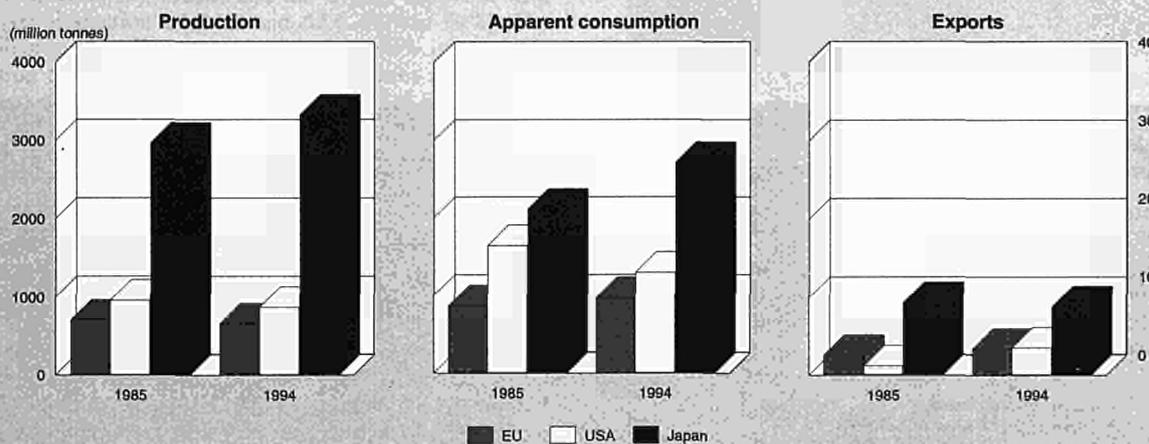
(+3.4%) in 1994. With an increase of 12%, the United Kingdom recorded the highest growth in 1994, reaching a consumption level of 145.4 million ECU. Consumption expenditures increased in Italy and France with 6% and 4% respectively. Germany has not shown a significant consumption change in 1994. In absolute terms, however, Germany remains by far the largest consumer of musical instruments with demand equalling 313 million ECU compared to 165.9 million ECU for France and 135.4 million ECU for Italy.

The number of people working in the EU musical instrument industry has declined drastically in the last ten years; from 16 097 employees in 1985 to a number of 10 168 people in 1995 (-36%). This evolution varies from country to country. The greatest job losses since 1985 occurred in Germany (-2638 or -36.1%), Italy (-1625 or -48%) and the United Kingdom (-641 or -31%). These three countries together accounted for 48% of the decline in employment during the 1985-1995 period. The decreasing trend was slower for France which even showed a small increase of 4.4% in 1994. As a result, total

employment in France only decreased from 1 691 employees to a number of 1 527 people in 1995. Although Spain is a small producer of musical instruments with production reaching 24.6 million ECU in 1995, it is the only European country where the employment rate has not declined during the period 1985-1994. Spanish employment has increased by 15% and has stabilised during the last two years at a total number of 599 employees. With respect to the employment figures it should be noted that they do not provide a complete picture as many countries only report employment for firms with 20 employees or more. In Germany alone, for instance, 30% of the work force is employed in firms with less than 20 employees.

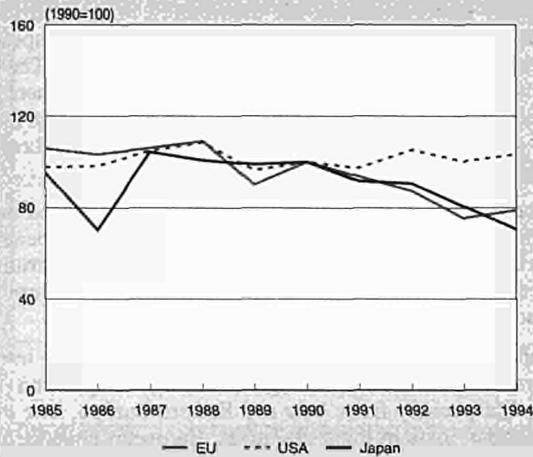
During the 1989-1994 period, the European trade balance improved due to an increase of the extra EU exports by 27%; from 268.6 million ECU in 1989 to 341.7 million ECU in 1994. The EU as a whole, however, still has a trade deficit which reached 309.6 million ECU in 1994. All major EU markets for musical instruments have trade deficits, except

**Figure 4: Musical Instruments**  
International comparison of main indicators in current prices



Source: DEBA GEIE, Eurostat

**Figure 5: Musical instruments**  
International comparison of production in constant prices



Source: DEBA GEIE

for Italy which recorded a positive trade balance of 42.6 million ECU in 1994. The Italian trade surplus is caused by an internationally oriented large Japanese manufacturer (Roland) which has a production facility in this country.

#### International comparison

Compared with the US and the EU, Japan is the largest producer of musical instruments. In 1994, the Japanese production amounted to more than 3 300 million ECU, far ahead of the US-production (868 million ECU) and the corresponding figure for the EU (658 million ECU). The Japanese production of musical instruments has been dominated by electronic musical instruments with Yamaha as the main manufacturer, commanding 55% of total production in 1994.

With an average of 65 000 ECU per employee, the labour productivity ratio has been rather low for the US and the EU compared to Japan. Despite the fact that the Japanese labour productivity has decreased with nearly 5%, the production value of 175 000 ECU per employee is still remarkable high.

#### Foreign trade

The EU is a net importer of musical instruments like many other goods. In 1994, Germany was the largest importer of musical instruments. With a value of 250 million ECU Germany commanded 29% of the total intra and extra EU imports. A sharp recovery of demand in the United Kingdom pushed up total imports to this country by 15%; from 140.6 million ECU in 1993 to 161.6 million ECU in 1994. Due to this increase, the United Kingdom accounted for a share of 19% of total intra and extra EU imports, equal to the French share. The Netherlands and Italy both command 10% of total EU imports with a value 83 million ECU.

The EU faces stiff competition from Japan and from other Asian countries like South Korea, China and Taiwan, mainly in the electronic musical instrument and piano sector. Japan's share in EU imports has declined 27% during the period 1989-1994, which is caused by the weakening demand for electronic instruments and pianos and the increasing competition from South Korea and the US. Exports from the other Asian countries, as well as those from the US, has grown during the same period. Japan has remained the largest source of imports of musical instruments to the EU, though declining.

The largest EU manufacturers of musical instruments, Germany and Italy, are also the largest exporters of musical instruments with respective values of 234.9 million ECU and 126.5 million ECU. Both countries together accounted for 61% of total EU exports in 1994. Other major EU exporters were France (77.8 million ECU), the United Kingdom (73.1 million ECU) and the Netherlands (38.8 million ECU). These three countries together command 32% of the total EU exports.

The two leading purchasers of EU musical instruments are the US and Japan with shares of 25% and 21%, respectively. Other major destinations of the EU exports are Switzerland (12%), Austria (6.5%) and South Korea (5.2%).

#### MARKET FORCES

##### Demand

Due to the economic recession in the early 1990s, demand for musical instruments has declined. Disposable income has a major influence on the expenditures on musical instruments, as these products are often regarded as luxury items and long term investments. A more favourable economic climate will stimulate sales, which has been the case in 1994, where apparent consumption in the EU increased by 3.4%.

**Figure 6: Musical instruments**  
Destination of EU exports



Source: Eurostat

**Table 5: Musical instruments  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	N/A	0.00
Danmark	N/A	N/A
Deutschland	1.48	1.46
Ellada	N/A	N/A
España	0.26	0.50
France	0.42	0.66
Ireland	0.00	0.00
Italia	2.08	1.88
Luxembourg	0.00	0.00
Nederland	N/A	0.20
Portugal	N/A	0.00
United Kingdom	0.59	0.58

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.  
Source: DEBA GEIE

The consumption of musical instruments in the EU remains low compared to the United States and Japan. This is mainly due to the fact that the school systems in these two countries stress the importance of music education and offer more possibilities for such musical instruction.

During the last ten to fifteen years, demand for electronic instruments has increased drastically. The main reason for this increase was that these products were new and offered new sounds and additional possibilities for the expression of musical ideas. Due to the innovative and dynamic nature of the electronic instrument sector, the range of musical instruments has become wider. From 1990 on, however, the growth rates have started to decline which is due to the fact that the rate of new innovations and new ideas was slowing down.

The increase in leisure time stimulates the interest in playing a musical instrument and, as a consequence, results in a growing demand for musical instruments. Demographic developments have opposing effects on the musical instrument market. The decreasing number of 5 to 20 year old people could lower total demand for musical instruments in the longer term and in the shorter term lower growth of demand for easy electronic instruments like portable keyboards. A stronger promotion of music education in schools, however, may especially lead to a higher demand for orchestral instruments among young people. The increasing number of 30 to 40 year old

people means more purchasing power and possibly more interest in acoustic instruments in the future.

### Supply and competition

Specialty stores dominate the distribution of musical instruments in the whole EU. In France, for example, specialty stores accounted for 90% of total turnover in 1994. The high involvement level in the purchase for which consumers generally desire specialist knowledge is the main reason for the high sales through specialty stores. These shops will continue to account for the majority of sales.

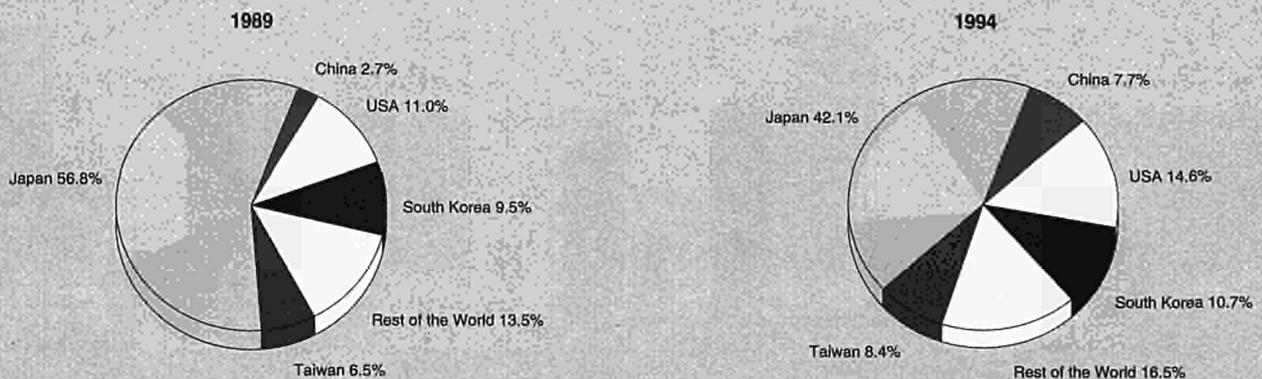
EU production of musical instruments is concentrated on the traditional instruments. Japan, on the other hand, has benefited from the growing demand for electronic and digital instruments in the 1980s. Keyboards, for example, have gone through a period of high growth rates during this period.

Competition in the market for musical instruments is intense. EU manufacturers are facing increasing competition from abroad, especially from Asia and Eastern Europe. Due to the low labour costs in these countries, European manufacturers of musical instruments have to compete on price which is very difficult. In quality of acoustic instruments, the European manufacturers are far ahead of their main competitors due to the fact that these European manufacturers are highly specialised. The cheaper non-EU products, however, increasingly demonstrate improvements in quality. As a result, the pressure on the EU manufacturers to reduce operating costs continues.

### Production process

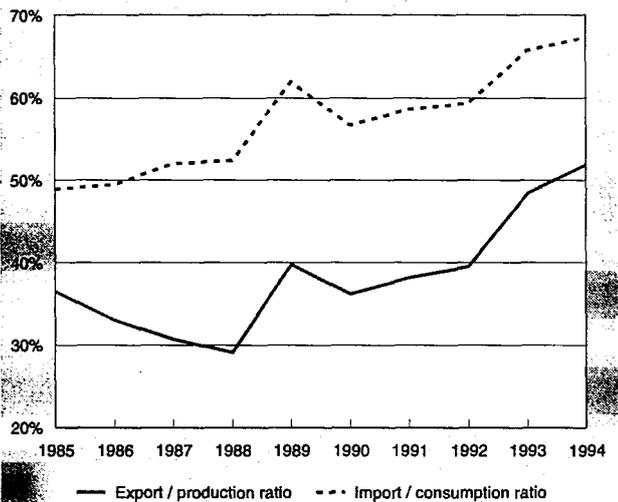
European firms concentrate on products in the top of the market range. The high-quality production implies smaller production runs or even single custom-made instruments. The EU industry, with its specific national features, also plays an important role in transmitting European musical culture through the instruments it manufactures: all kinds of instruments in Germany, with emphasis on piano's, wind instruments, violins, accordions and mouth organs; besides a variety of other instruments the manufacture of electronic instruments in Italy; some wood-wind instruments in France; guitars in Spain; and brass wind instrument and some piano manufacturing in the United Kingdom.

**Figure 7: Musical instruments  
Origin of EU imports**



Source: Eurostat

**Figure 8: Musical instruments  
Trade Intensities**



Source: DEBA GEIE, Eurostat

## INDUSTRY STRUCTURE

### Companies

The EU musical instrument industry is fragmented, with many small and medium-sized highly specialised firms. In contrast to the United States and Japan, there is a lack of multinational firms in the EU. The increasing competition has led to a restructuring of the EU industry, characterised by cost reduction, diversification, and by some concentration.

There are only a few large companies operating within the EU. They include:

- in Germany: Hohner, Steinway and Sons, Schreiber & Söhne and TA-music;
- in Italy: Bontempi, GEM and Roland Europe;
- in France: Selmer, Buffet-Crampon and Vandoren;
- in the UK: Boosey & Hawkes.

It should be noted that Steinway Hamburg in Germany and Roland Europe are subsidiaries of non-EU companies. Boosey & Hawkes is a UK company which is owned by the US Carl Fisher Publishing company. Boosey & Hawkes has production facilities in Germany (Schreiber & Söhne and Höfner) and France (Buffet-Crampon).

The world largest company, Yamaha (J), faces stiff competition from its Asian rivals. It has been losing market share to its competitors in recent years. This competition is depressing operating margins.

### Strategies

Several structural factors influence the industry's operations. Firstly, high and increasing labour costs are a major handicap for an industry that has to compete with foreign companies which are sometimes larger. Non-EU competitors (Japan, Korea, Taiwan, other Far East countries as well as Eastern European countries) produce more efficiently or have lower labour costs.

In order to join forces against the stiff competition a concentration process is going on among German small and medium-sized companies. The larger company size attained through mergers and acquisitions enables companies to operate world-wide by starting up distribution facilities in other countries. The larger size also eases the way to attract financial

sources and enhances the negotiating and buying power of these companies.

## REGIONAL DISTRIBUTION

Some local regions have gained world-wide reputations. These include Bayern, Hessen, Sachsen (Vogtland) and Baden-Württemberg in Germany, the region of Castelfidardo in Italy and the Vosges in France.

## ENVIRONMENT

The musical instruments industry is relatively non-polluting, when compared with the chemical industry or the transport sector. There is, however, an environmental issue which play a minor role in the musical instruments industry. Modern electronic musical instruments use plastics which may have a negative environmental impact. The production of these plastics, however, is of greater concern to the plastic processing industries. Given the long life of instruments, the problems are less significant. All in all, the musical instruments sector could be called a clean industry.

## OUTLOOK

After a small recovery of the economy in 1994 due to the economic upturn within the EU, the outlook for the future is rather positive. Production as well as consumption are expected to increase in the next few years. The estimated growth rates of EU production and EU consumption, however, will be moderate. Furthermore, demand is likely to reflect a gradual return to acoustic music, which can be a positive development for the European musical instrument market. The competition in the musical instrument industry is expected to further intensify, resulting from increasing imports from Asia and Eastern Europe. EU employment may therefore show a further decline in the short term.

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# Sporting goods

NACE (Revision 1) 19.3, 36.4, part of 18.2

Sports clothing is the largest sub market within the market for sporting goods, comprising an estimated share of 50% of total EU sales. The respective markets for sports footwear and sports equipment have a similar size. The EU production of toys and sporting goods is concentrated in France, Germany and the United Kingdom. These countries are also the main exporters together with Italy. Despite a shift of EU production capacity to low wage countries in the Far East, EU production has increased during the 1985-1991 period. Due to the economic recession, a slight decline occurred in 1992 and 1993, but the industry's production recovered itself in 1994 and in 1995. For the sporting goods market, as a whole, the performance of the economy is a driving force. In the coming years, a moderate economic growth is expected which will stimulate demand and EU production.

## INDUSTRY PROFILE

### Description of the sector

Three main categories can be distinguished in the sporting goods sector: sports goods (Group 36.41), sports footwear (Category 19.31.1) and sports clothing (part of class 18.21). In comparison with the former NACE 1970 classification no changes in the coverage of these three categories have occurred. As has been the case in former editions, the tables and figures in this chapter do not only refer to the three previously mentioned sporting goods categories, but to sporting goods and toys.

The composition of the sporting goods market is difficult to assess as it is nearly impossible to distinguish a sport from a general leisure activity. Nowadays, sporting goods are not only used for practising sports, but also used in leisure time. Furthermore, the sporting goods market consists of a series of different types of sports.

Sports clothing is the largest sub market within the market for sporting goods with an estimated share of 50% of total EU sales. The respective markets for sports footwear and sports equipment have a similar size for the EU as a whole. Between the different Member States, however, differences do exist in the market composition. In France, for instance, the equipment market is twice as big as the market for sports footwear. In the United Kingdom, in contrast, the sports footwear market accounts for 30-40% of total sales, followed by a share of around 20% for sporting equipment.

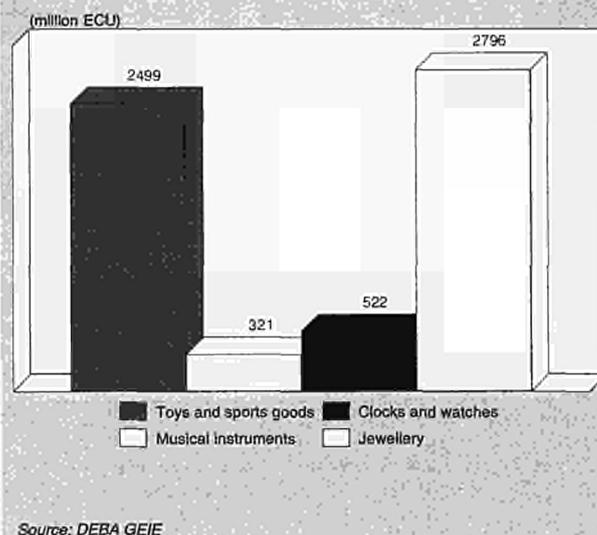
The EU production of toys and sporting goods is concentrated in France, Germany and the United Kingdom. These three countries together account for over 65% of total production. Denmark and Spain follow at a distance with shares of 18% each. In terms of value added, Germany is the largest producer of sporting goods followed by France. Both countries are also the main exporters of sporting goods and toys, together with the United Kingdom and Italy.

The EU manufacturers of sporting goods employed around 60 000 people in 1994. This number is 20% lower than the employment figure for 1985. Due to the continuing rationalisation within the industry a further decline in the industry's employment is expected in the coming years.

### Recent trends

In recent years, sports footwear has recorded the highest growth rates, followed by sports clothing. Since 1994, how-

Figure 1: Toys and sports goods  
Value added in comparison with related industries, 1994



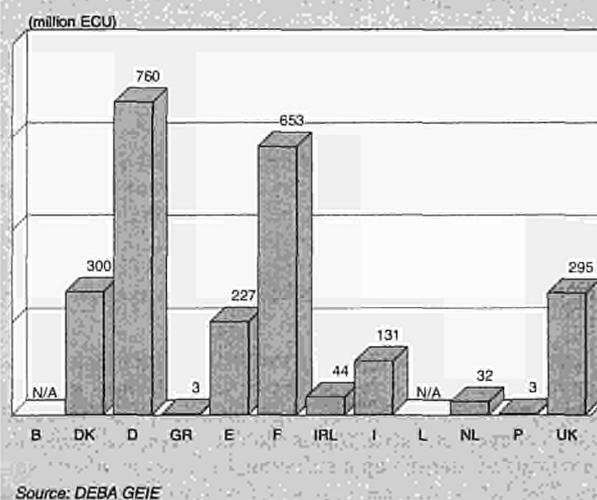
ever, market growth of sporting footwear has been lagging behind growth rates in the sports clothing market. The latter market has been stimulated by the increasing influence of fashion trends which enhance overall demand. Equipment sales, in contrast, has suffered drastically from the growth of individualistic sports like walking, swimming and aerobics which can be performed without any equipment.

Key factors in the development of the sporting goods market are the increased interest in healthy, sporting activities and the increase in leisure time. Also, trends in fashion and sports styles are increasingly influencing demand for sporting goods. New sports like aerobics, snowboarding and roller skating have created new market segments.

### International comparison

Despite a shift of EU production capacity to low wage countries in the Far East, EU production increased during the 1985-1991 period. Due to the economic recession a slight decline occurred in 1992 and 1993, but the industry's production recovered itself in 1994 and in 1995.

Figure 2: Toys and sports goods  
Value added by Member State, 1994



**Table 1: Toys and sports goods**  
**Main indicators in current prices (1)**

(million ECU)	1985	1990	1991	1992	1993	1994	1995 (2)	1995 (3)	1996 (4)	1997 (4)	1998 (4)
Apparent consumption	4 875	7 896	9 469	10 305	10 062	9 967	6 646	7 084	7 360	7 640	7 910
Production	4 208	5 629	5 778	5 712	5 743	6 282	6 545	6 980	7 240	7 510	7 760
Extra-EU exports	1 068	1 423	1 470	1 577	1 814	2 081	13	14	20	20	20
Trade balance	-667	-2 267	-3 691	-4 592	-4 319	-3 686	-101	-104	-120	-130	-150
Employment (thousands)	75.6	71.4	68.8	64.5	61.4	60.8	60.1	64.3	60.0	60.0	60.0

(1) Some country data for apparent consumption, production and employment have been estimated.

(2) DEBA GEIE and Eurostat estimates.

(3) Eurostat estimates for EUR15.

(4) Rounded DRI forecasts for EUR15.

Source: DEBA GEIE, Eurostat

**Table 2: Toys and sports goods**  
**Average real annual growth rates (1)**

(%)	1985-90	1990-94	1985-94	1993-94
Apparent consumption	8.38	2.13	5.56	-0.35
Production	3.27	0.82	2.18	8.39
Extra-EU exports	3.26	5.67	4.33	12.68
Extra-EU imports	16.76	5.37	11.55	-5.82

(1) Some country data for apparent consumption and production have been estimated.

Source: DEBA GEIE, Eurostat

**Table 3: Toys and sports goods**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1995 (2)
Extra-EU exports	1 068	1 066	1 074	1 126	1 332	1 423	1 470	1 577	1 814	2 081	13	14
Extra-EU imports	1 734	1 873	2 354	2 934	3 552	3 690	5 160	6 169	6 132	5 767	114	118
Trade balance	-667	-807	-1 280	-1 807	-2 220	-2 267	-3 691	-4 592	-4 319	-3 686	-101	-104
Ratio exports / imports	0.62	0.57	0.46	0.38	0.37	0.39	0.28	0.26	0.30	0.36	0.11	0.12
Terms of trade index	86.4	94.6	98.4	95.6	93.2	100.0	94.4	98.0	90.7	92.5	N/A	N/A

(1) Eurostat estimates.

(2) Eurostat estimates for EUR15.

Source: Eurostat

**Table 4: Sporting goods**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	695.3	655.8	631.1	619.7	691.0	717.6	715.6	748.2	884.0	1 025.2
Extra-EU imports	674.4	701.0	816.0	1 001.6	1 142.6	1 083.4	1 268.1	1 330.2	1 400.2	1 566.6
Trade balance	20.9	-45.2	-184.8	-381.9	-451.6	-365.7	-552.5	-582.1	-516.1	-541.5
Ratio exports / imports	1.0	0.9	0.8	0.6	0.6	0.7	0.6	0.6	0.6	0.7

Source: Eurostat

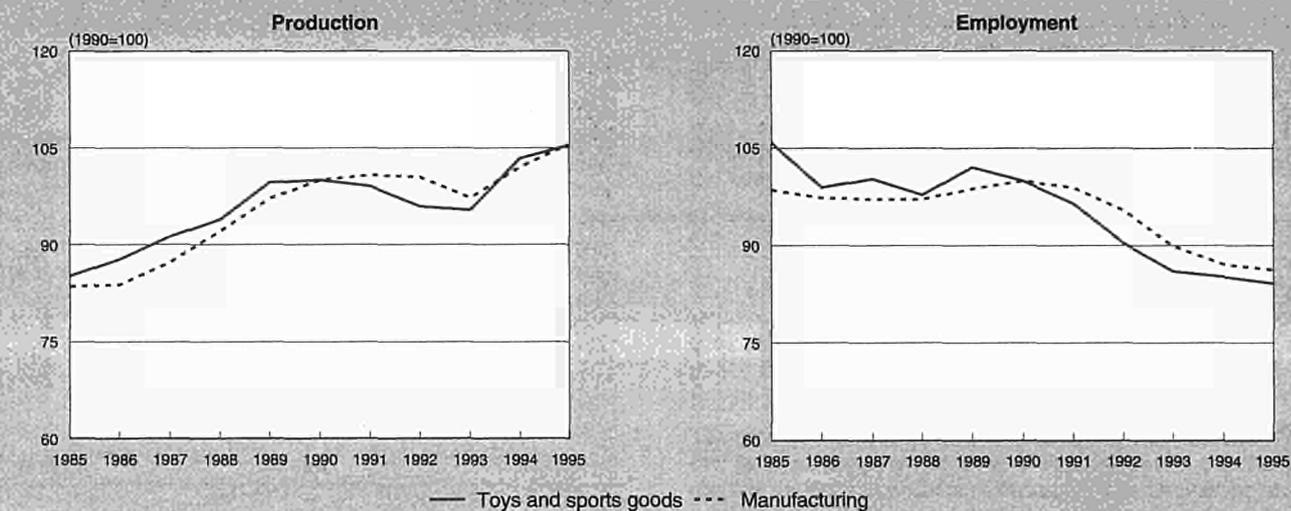
**Table 5: Sports footwear**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	486.2	485.9	437.3	450.6	568.8	546.7	508.6	522.7	555.7	549.3
Extra-EU imports	612.9	600.4	701.3	737.4	780.8	843.4	1 127.7	998.0	873.7	955.7
Trade balance	-126.7	-114.5	-264.0	-286.8	-212.0	-296.8	-619.1	-475.3	-318.0	-406.4
Ratio exports / imports	0.79	0.81	0.62	0.61	0.73	0.65	0.45	0.52	0.64	0.57

Source: Eurostat



**Figure 4: Toys and sports goods**  
International comparison of main indicators in current prices



1995 are Eurostat estimates.  
Source: DEBA GEIE, Eurostat

The development of the Japanese production in constant prices shows a different development; production of toys and sporting goods increased from 1987 1993, but decreased by more than 34% during the last two years. The USA shows a stable production figure in value, fluctuating around 11 billion ECU. The US production, however, is still higher than Japan's (7.1 billion ECU) and EU production (6.5 billion ECU).

In terms of productivity a different picture exists. The production/employment ratio for the EU amount to about 109 000 ECU/employee. This ratio is relatively low compared to the productivity ratio in Japan (141 000 ECU), but higher than the same ratio for the USA (95 000 ECU).

### Foreign trade

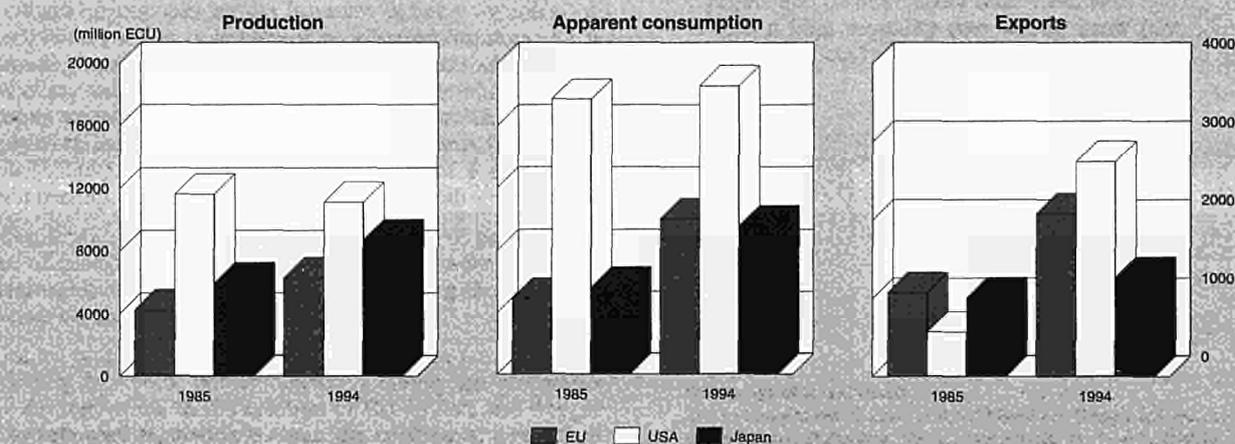
Extra EU imports of sporting goods exceeds extra EU exports in value, thereby making the EU a net importer of sporting goods. In recent years China has become the major non EU supplier of sporting goods, commanding a share of 15.20% of total extra EU imports. Other important non EU countries suppliers of sporting goods are the USA, Taiwan and South

Korea. Austria used to be one of the major exporters to the EU, but as a Member of the EU it has become one of the most important EU manufacturers of sporting goods, and of skiing equipment in particular.

Germany, Italy, France and the United Kingdom are the largest exporters. In 1994 these four countries accounted for 83% of the total extra EU exports. During the period 1987 1994 total EU exports more than doubled. The most important destinations for the EU exports are the USA, Japan and Switzerland.

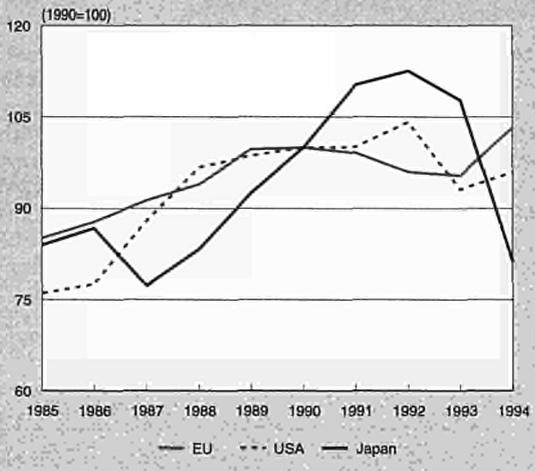
With respect to sports footwear, Indonesia, South Korea and China are the largest non EU suppliers on the EU market. Imports from China and Indonesia have grown fast since 1989. In 1994, extra EU imports from China were five times higher than the corresponding value for 1989. Indonesian exports to the EU increased by 400% over the same period.!

**Figure 3: Toys and sports goods**  
Production and employment compared to EU total manufacturing industry



Source: DEBA GEIE, Eurostat

**Figure 5: Toys and sports goods**  
International comparison of production in constant prices



Source: DEBA GEIE

**MARKET FORCES**

**Demand**

Demand for sporting goods as a whole is not only influenced by the rising income per capita but also the increase in leisure time. Actual demand is increasingly affected by the popularity of sports and sports styles, and by trends in fashion. In France, for example, one fifth of the total sales in sportswear is fashion led. Also, changes in demographic patterns, such as the ageing population in most EU member countries lead to shifts in demand.

Trends play an increasingly important role within the sporting goods sector; new sports are created and become popular while people lose their interest in other sports. The increase in outdoor sports, like walking and golf, and the rise in individualistic sports have been important trends in the late 1980s and early 1990s. Since walking and jogging require little or no equipment, the sports equipment market has been negatively affected by their rising popularity. The gaining popularity of golf, fitness and mountain biking, however, have stimulated sales of sports equipment.

Winter sports are probably the best example of a market which has been the subject of a substitution effect due to a changing popularity of sports styles. In 1994 and 1995, some ski manufacturers recorded falling turnover in alpine skiing equipment, while the sale of snowboards increased significantly at the same time. Compared with demand for skiing equipment, however, snowboards are still of relatively minor importance.

Sports footwear and clothing are the fastest growing markets in the sporting goods sector. This growth is especially stimulated by the fashion led multi purpose use of sportswear for daily and recreational activities. This changing pattern in demand has forced the manufacturers to pay growing attention to style and design. In most cases, sports equipment does not have alternative applications. Therefore, growth of this market solely depends on the growth of sports activity.

**Supply and competition**

The highly fragmented, fashion led demand for sports goods has forced manufacturers to specialise in one or more market segments. Within each specialisation many other smaller market segments exist. The sports footwear market, for instance, has been divided into many segments according to sport, leisure use, age, sex and price. Adidas, Reebok and Nike are the largest suppliers of sports footwear. They are also the largest manufacturers in the sportswear business.

In order to retain or improve their market positions, manufacturers of sports footwear and clothing must respond quickly to fashion trends and the resulting changes in demand. A fierce competition in these markets necessitates a strong brand image, which manufacturers try to create by promotional activities.

Another characteristic of the sports equipment market is that competition is fierce. In the market for skiing equipment, the intensifying competition has resulted in a downward pressure on prices. Some ski manufacturers have lowered their prices, others have increased their R&D efforts in order to maintain their respective market positions.

**Production process**

The largest EU manufacturers of sporting goods rank among the world leaders in product and in production technology. Through constant R&D expenditure these manufacturers endeavour to use state of the art materials and technologies.

The major companies, in particular those which are active in sports clothing and footwear have shifted production to the

**Figure 6: Sporting goods**  
Destination of EU exports



Source: Eurostat



**Figure 7: Sporting goods  
Origin of EU imports**



low wage countries in the Far East. In these cases, the manufacturing is usually carried out by independent companies while design, quality, control, distribution and marketing are controlled and carried out by the respective brand companies. Most of the companies within Europe concentrate on the development work. Adidas, for example, no longer owns the factories that produce its shoes. Although some sports equipment is still manufactured within the EU or in other European countries, production of this equipment is, to an increasing extent, shifting to low wage countries.

## INDUSTRY STRUCTURE

### Companies

The major product groups and brand manufacturers in the EU are:

- Adidas/Puma (D): sports clothing and footwear;
- Rossignol/Salomon (F): skiing equipment;
- Benetton (I): sportswear, skiing equipment, rollerblades;
- Wilson (UK) and Fisher (D): golf and tennis equipment;
- Lacoste (F): sport and leisure equipment;
- Bogner (D): leisure clothing;
- Dunlop/Slazenger and Pro Kennex (UK), Donnay (B): tennis equipment and clothing;
- Kettler (D): sports and fitness equipment.

A considerable number of sporting goods manufacturers are located the new EU Member Countries like Austria, Sweden

and Finland. In Austria, Kastle (part of Benetton), Fisher, Blizzard, Kneissl and Head are important ski manufacturers. In 1994, the Finnish Amer group took over the Austrian ski manufacturer Atomic. Amer also owns companies which are operative in other segments such as the US based Wilson and MacGregor (golf equipment). Besides the EU companies, some large non-EU companies are operative in the European Union. US based Reebok and Nike, for instance, are large internationally operating manufacturers of sports clothing and footwear, which have a strong foothold in the EU market.

The Far Eastern countries do not only export from the Far East to the EU. Some sports equipment manufacturers have invested in production plants within the EU. The Taiwanese bicycle manufacturer Giant for instance will invest 15 million ECU in a new production plant which will be located in the Netherlands. The major reason for investing was the logistical problems in the old situation. By producing in the EU, delivery times of bicycles, destined for EU Member countries, can be reduced to four weeks.

### Strategies

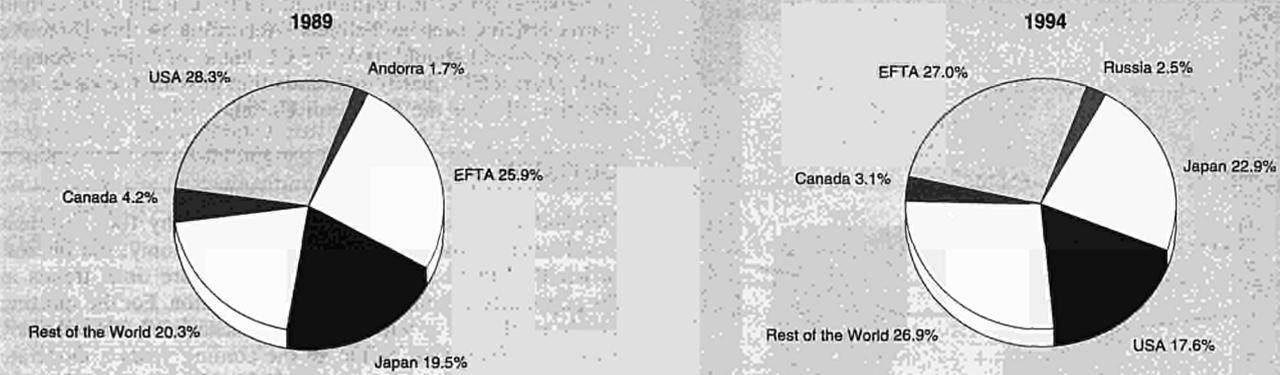
Rationalisation in the industry and the globalisation process has resulted in numerous mergers and acquisitions within the sporting goods industry. Nike, the world's largest sports footwear producer, recently took over the world's largest hockey equipment manufacturer, Canstar Sports. For the large internationally operating companies, mergers and acquisitions are a relatively fast way to increase market shares or to penetrate into new markets. Diversification is another growth strategy, which has been and is still applied by both sporting goods as well as non sporting goods manufacturers. The Italian cloth-

**Table 6: Toys and sports goods  
Labour productivity, unit costs and gross operating rate (1)**

(1990 = 100)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Labour productivity index (2)	80.4	88.8	91.1	96.1	97.8	100.0	102.8	106.2	110.8	121.4
Unit labour costs index (3)	94.6	91.0	93.5	92.3	95.4	100.0	105.3	106.8	107.6	101.2
Total unit costs index (4)	88.8	87.3	88.3	91.0	96.4	100.0	103.9	104.7	105.3	104.5
Gross operating rate (%) (5)	12.2	13.4	13.7	14.3	13.1	13.0	12.2	13.6	13.7	14.9

(1) Some country data has been estimated.  
 (2) Based on index of production / index of employment.  
 (3) Based on index of labour costs / index of production.  
 (4) Based on index of total costs (excluding costs of goods bought for resale) / index of production.  
 (5) Based on (value added - labour costs) / turnover.  
 Source: DEBA GEIE, Eurostat

**Figure 8: Sports footwear  
Destination of EU exports**



Source: Eurostat

ing company Benetton, for instance, has diversified into the sporting goods industry by acquiring companies like Prince (rackets, tennis and squash apparel), Kastle (skis and bikes), Killer Loop (sportswear and snowboards) and Rollerblade (rollerblades). Smaller niche manufacturers often maintain a specialisation strategy in order to acquire strong positions in a particular segment of the market.

As brand competition continues to intensify, large internationally operating companies are enhancing their marketing efforts. As a result, television advertising expenditures have risen significantly. Since 70% of sporting goods are bought by young people, TV commercials are especially directed to the youth, a group which has become more and more interested in fashionable rather than functional sportswear.

### REGIONAL DISTRIBUTION

The interpretation of whether or not a company is considered to be a part of the sporting goods industry is one reason why it is difficult to give an indication on the number of manufacturers that exist in the market. Another problem is the heterogeneity of the sporting goods sector. This is especially relevant in the sportswear market.

For the production of skis, ski boots, snowboards and other wintersport related wear and equipment, a clear regional pattern can be observed. The main ski manufacturers are located in wintersport areas. For Austria, this market segment is of vital importance to the country's economy and employment. Most watersport related sporting goods, in contrast, are manufactured in the low lands near the seashore.

### ENVIRONMENT

Outdoor sports and leisure activities are often discussed by environmental groups. The arguments of these environmental groups are that some of these activities such as alpine skiing and golf could have a damaging effect on nature. Following this argumentation, national and local authorities are taking environmental effects of new projects to an increasing extent into consideration.

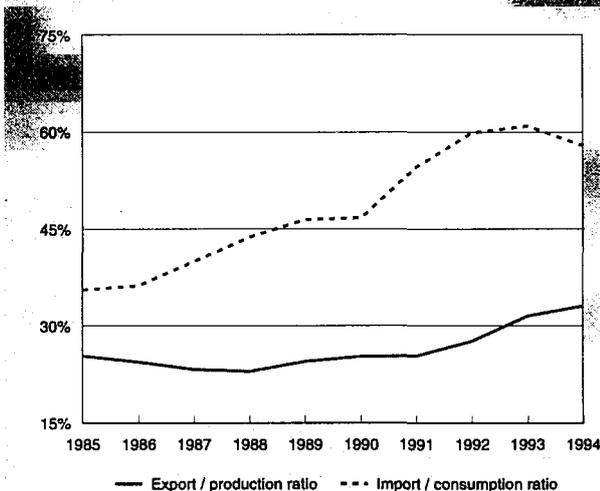
Following the high reuse rate of sports clothing, NIKE has started a new initiative in the USA to recycle worn out sporting shoes. This innovative Reuse A Shoe program tries to encourage consumers to become active participants in environmental responsibility. The collected shoes will be used in the construction of basketball court surfaces. Along similar lines,

**Figure 9: Sports footwear  
Origin of EU imports**



Source: Eurostat

**Figure 10: Toys and sports goods  
Trade intensities**



Source: DEBA GEIE, Eurostat

the French sports goods industry has recently tested in selected places a system for ski recycling, which is intended to be generalised later on.

Meanwhile, consumers are increasingly becoming aware of environmental matters, and the legislation on waste disposal is becoming increasingly strict. An idea was developed by Valerco, a company which is actively involved in the automotive industry, that ski equipment could be transformed into energy without harming the environment or leaving any waste. Plastics and fibers will be burned without emitting toxic gasses.

## REGULATIONS

What is of great importance to sporting goods manufacturers, are the harmonisation of standards, intellectual property rights and competition policy. Imports of sporting goods from a number of developing countries are admitted duty free or granted preferential access under the Generalised System of Preference (GSP). A revised four year scheme began in 1995 which replaced the quotas and ceilings of the previous system by a modulation of tariffs and preferences for the various country/product group combinations.

**Table 7: Toys and sports goods  
Production specialisation (1)**

(ratio)	1985	1994
Belgique/België	0.66	N/A
Danmark	4.52	5.42
Deutschland	0.85	0.89
Ellada	1.20	0.26
España	1.43	1.29
France	1.53	1.53
Ireland	0.92	1.39
Italia	0.60	0.52
Luxembourg	0.00	0.00
Nederland	N/A	0.31
Portugal	0.04	0.08
United Kingdom	0.86	0.85

(1) Ratio of production in the sector compared to manufacturing industry for each country, divided by the same ratio for the EU. Estimates.

Source: DEBA GEIE

Product liability laws increase the responsibility of producers and importers in the EU markets. These laws deal with such aspects as design and construction standards, production or assembly defects, false advertising and misleading or inadequate user instructions. The EU Directive, concerning the use of personal protection equipment (PPE) also apply to certain sports articles such as helmets. According to this Directive this equipment should have the CE mark, in order to comply with general EU quality standards that provide the same item security all over the European Union.

## OUTLOOK

Demand for sporting goods is influenced by four different developments; the performance of the economy; the interest in health, fitness and the increase in leisure time; trends in the popularity of sports; and trends in fashion. For the sporting goods market as a whole the performance of the economy will be an important factor. In the coming years a moderate economic growth is expected which will stimulate demand for sporting goods. Furthermore, the positive influence on the sales of sport clothes and sport footwear due to an increase in interest in health, fitness and the increase in leisure time is expected to continue.

The other two developments, however, might also lead to an overall growth of market demand through substitution effects between sports and other activities, and between sportswear and normal clothing and footwear. The fact that sportswear will not only be used for practising sports but also will be used as casual or leisure clothing will contribute to the increase in demand for sporting goods.

Within the market for sporting goods, changing demographic patterns will lead to substitutions effects among sporting activities. By the end of the 1990s the sports core market of 15-35 year olds will decrease by around 11%, while the higher age categories will have grown considerably by then. This is expected to lead to major adjustments in the sporting goods industry.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by:

Federation of the European Sporting Goods Industry (FESI), Avenue de Janvier 5, B 1200 Brussels; tel (32 2) 762 86 48; fax (32 2) 762 75 06.

# Toys and games

## NACE (Revision 1) 36.5

In the recent years, the market for toys and games has shown a significant growth, followed by a decline in 1994 and 1995. This follows the trend set by the dominant segment of video and computer games. The toys and games industry is highly fragmented. The market is still facing an intensified competition caused by rising imports from low-wage countries. Due to the increase in competition, the structure of the toys and games industry is changing towards more concentration and globalisation.

### INDUSTRY PROFILE

#### Description of the sector

Except that the former NACE-code has been changed from 494.1 to the new group code 36.5, the scope of this chapter has not changed when compared with the previous editions. It should be noted that most of the figures and the tables in this chapter refer to the old NACE code 494, which covers both toys and sporting goods. The toy and games industry is highly fragmented and can be divided into ten sub-categories which include: electronic toys (e.g. video and computer games, radio-controlled vehicles), dolls and figures (e.g. dolls and accessories, action figures, plush toys), indoor toys (e.g. games and puzzles), pre-school toys (e.g. toys for 2 to 36 months), outdoor toys (e.g. riding vehicles, outdoor toys), creative toys (e.g. arts and crafts, scientific/educational, musical), construction toys (e.g. construction sets, model kits), model wheeled toys (e.g. non-riding vehicles, car and train sets), adult imitation toys (e.g. play houses, kitchen sets), other toys (e.g. activity toys).

With an estimated share of 30%, electronic toys constitute the largest part of total EU-demand for toys. This share is still growing due to the rapid growth of market demand for video and computer games. In France, for example, video games have experienced a dramatic growth of nearly 400% during the period 1990-1994. The Japanese companies Sega and Nintendo are two major producers of video and computer games.

The EU-countries with the largest production of toys and sporting goods are France, Germany and the United Kingdom, followed by Spain and Denmark. The latter country is the home base of a large internationally operating toy manufacturer.

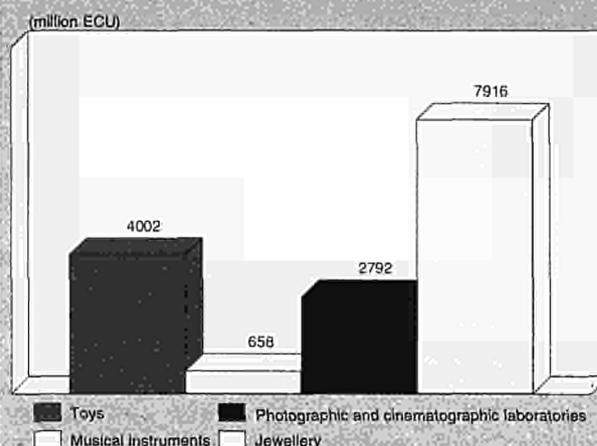
#### Recent trends

Over the last five years, production at current prices of the toy and sporting goods market increased by nearly 12%. The growth in the market for toys and games is especially stimulated by growing sales of video and computer games. However, in 1994-95, the growth in value of the electronic toys market has slowed down, as increased competition has resulted in lower prices. Also, the demand for pre-school toys has grown, due to an increase in the number of children aged 0-5 years.

Due to the highly competitive nature of the toy industry, rationalisation for cost reduction, mergers and acquisitions continued and is characterised by a further shift of production to low-wage countries. A consequence of this rationalisation and globalisation process is a further reduction in European employment.

The toy and games market is characterised by highly competitive pricing policies. This increasing price competition is caused by the volume of low-priced toys which are manu-

Figure 1: Toys  
Production in comparison with other industries, 1994



Source: TME, DEBA GEIE

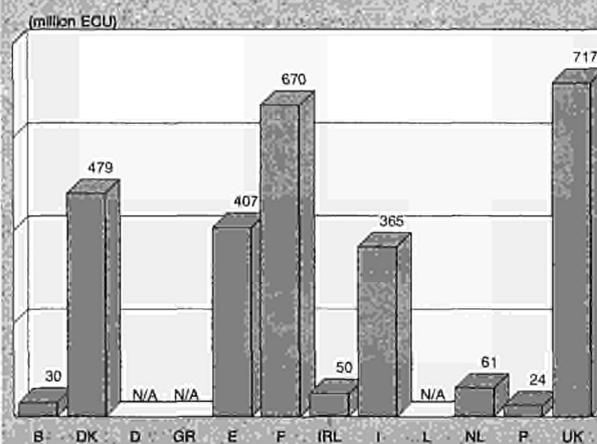
factured in the Far East. In fact, toy manufacturers with a sufficient size have moved their production facilities to these low-wage countries.

#### International comparison

In 1994, the USA had the highest figures for employment and value added in comparison with Japan and the EU. The value added/employment-ratio for the USA, however, only amounted to about 47 000 ECU per employee in the same year. This ratio is higher than the corresponding value for the EU (41 000 ECU per employee), but is relatively low when compared with the corresponding ratio for Japan (72 000 ECU per employee). During the period 1989-1994 employment had been declining in the EU and Japan by 17% and 11% respectively. The USA in contrast demonstrated an increase in 1994.

While Japanese production (at current prices) of toys and sporting goods had been bouncing up and down during the period 1985-1994, production in the USA and the EU (in current prices) has increased in recent years. The EU remains

Figure 2: Toys  
Production by Member State, 1994



Source: TME

**Table 1: Toys**  
**Main indicators in current prices (1)**

(million ECU)	1988	1989	1990	1991	1992	1993	1994 (2)
Apparent consumption	4 684	5 166	5 208	6 197	7 301	7 329	6 785
Production	3 310	3 590	3 493	3 327	3 566	3 883	4 002
Extra-EU exports	617.0	704.7	767.1	830.8	884.4	990.3	1 122.1
Trade balance	-1 373.8	-1 576.0	-1 714.8	-2 870.1	-3 735.0	-3 446.1	-2 783.0

(1) EUR12, excluding Luxembourg.

(2) EUR12, excluding Greece and Luxembourg.

Source: TME, Eurostat

the smallest producer of toys and sporting goods in comparison with Japan and the USA.

### Foreign trade

The EU is a net importer of toys and games. The EU trade deficit in 1994 amounted to 2 800 million ECU, which is an increase of 75% in comparison with the trade deficit in 1989. Despite the Chinese import restriction since March 1994, China has become the most important foreign supplier of toys to the EU-market. Chinese exports to Europe command around 47% of the total Extra-EU imports of toys and games alone. Other major exporters to the EU are the USA, Switzerland, Hong Kong and, to a lesser extent, Thailand and Taiwan. The USA and EFTA were the main destinations of extra-EU exports in 1994. In the same year, almost 38% of these exports found their destination in EFTA-countries and the USA.

Nearly 65% of the EU toys and sporting good imports find their destination in three countries: Germany (29.4%), the United Kingdom (22.8%) and France (12.7%). The Netherlands and Belgium together account for 15.1% of total EU-imports. Germany, Italy, France and the United Kingdom are the largest exporting countries of toys and sporting goods. During the period 1985-1994, the World-EU exports of these EU countries have doubled. Intra- and Extra-EU trade is expected to increase further in the coming years.

## MARKET FORCES

### Demand

The recovery of the economy has resulted in a growing demand for toys and games. Another development, which stimulates demand for toys, is the fact that children have more money to spend. In the UK, for example, the average child's weekly income in 1993 was £3.90, an increase of 36% in comparison with 1988.

Advertising is an important factor which affects demand as well. Due to the increase in the competition in the market for toys and games, advertising expenditures have grown in recent years. The most important medium in advertising is TV with a share of 80%. The press is the second most important medium in the EU. The toy industry is highly fragmented and so are the advertising expenditures. Most of the advertising expenditures have been made by the electronics sector, which is the largest sector in toys and games industry.

**Table 2: Toys**  
**Average real annual growth rates (1)**

(%)	1988-94	1993-94
Apparent consumption	2.70	-6.92
Production	0.61	2.12
Extra-EU exports	6.15	11.28
Extra-EU imports	6.91	-11.84

(1) Some country data for apparent consumption and production have been estimated.

Source: TME, Eurostat

The main consumers in the toy and games market are the children aged 0-14. Although the total number of children in the EU has been decreasing since 1985, the expected increase in child population 0-5 years will moderate this decline. As a consequence, demand for pre-school and plush toys will further increase. Another development in the consumption of toys and games which can be recognised is the fact that more and more adults are purchasing toys and games for their own or for family use. Examples include games like Trivial Pursuit, Pictionary and video games.

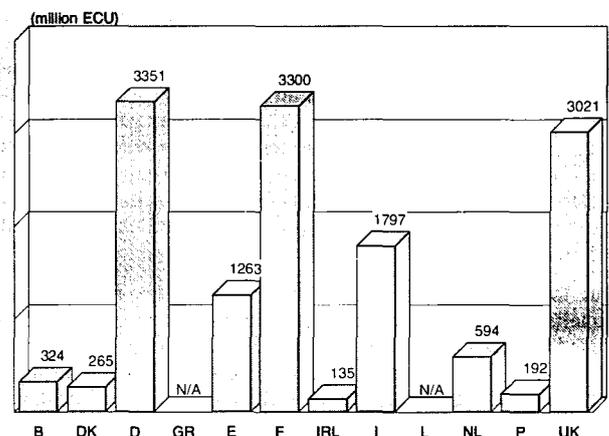
The high level of product development has led to many fashion and promotional type hit products, which has important consequences for the demand for toys and games. The development of new toys can create entirely new categories which may result in an increase of sales. Demand, however, can switch from a hit product to another one over a short period of time. Through the increasing number of new toys, the product life cycle of these products has shortened.

Finally, seasons can play an important role when it comes to the demand for toys and games. Around 60% of total sales are made during the last three months of the year, peaking in the run up to Christmas. Outside the December peak, toys and games are mainly bought for birthdays.

### Supply and competition

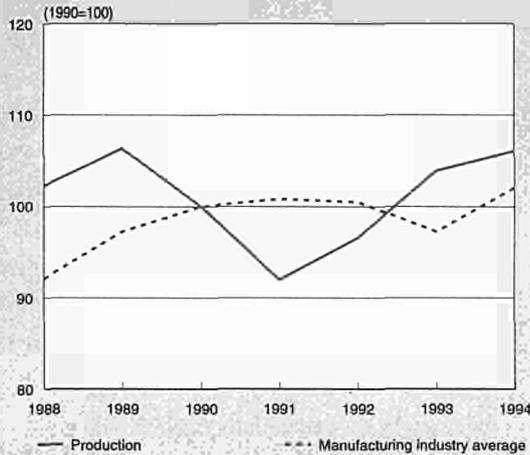
The distribution channels are very diverse in the main EU countries. In France, for example, the hypermarket chains are dominating the distribution of toys and games and accounted for 57% of turnover in 1994. In the United Kingdom the specialist store is the leading retail channel followed by the mail-order catalogue. In Germany most of the sales originate from traditional specialist retailers (22%), followed by department stores (21%) and self service stores (22%).

**Figure 3: Toys**  
**National toy markets at retail prices by Member State, 1994**



Source: TME

**Figure 4: Toys  
Production in constant prices compared to EU  
manufacturing**



Source: TME, DEBA GEIE

It is worth mentioning that over the last few years, the presence in Europe of the American toy retail chain Toys 'R' Us has increased the competition among specialists retailers, hypermarkets and superstores. The Toys 'R' Us chain offers a comprehensive assortment of toys throughout the year. The shortening product life cycle of toys is not only threatening the specialist stores, but also the larger retail chains. Due to the shortening life cycle, stocks lose value more rapidly, which is especially problematic for the large assorted toy stores. As a result, Toys 'R' Us recently announced the closure of 10 of the 222 outlets in Europe.

The growing importance of hypermarkets and superstores for toys and games has resulted in an intensifying price competition. In Germany, for example, the sales of traditional toy specialists dropped by 69% between 1982-1994 due to the fact that these specialist could not compete with the low price levels of the larger stores. Foreign competitors originate mainly from the US and the Far East. To compete on a worldwide basis, the Far East has now become more and more a sourcing location for European manufacturers.

Toy manufacturers in Europe are also facing unfair competition, which in particular takes the form of piracy and imitation of design, trade marks and models.

### Production process

The lower labour costs in the Far Eastern countries have attracted manufacturing plants. However, some successful companies still manufacture in Europe as well, e.g. LEGO (DK), Playmobil (D), BRIO (S), Hasbro (US), Meccano (F), Waddington (UK), Ravensburger (D), Jumbo (NL), Majorette (F), Mattel (US). For some of these, the European share in the production is sometimes up to 100%. Although the labour costs in Denmark and Switzerland are especially high, the LEGO group continues to produce in these countries because of the high level of automation and the need for high precision manufacturing.

Licensing is, apart from the development of manufacturing in Europe or in the Far East, a key element to the success of the EU companies. International companies, armed with appropriate distribution networks, are able to benefit from the licensing system. However, majority of the EU companies lack a proper international system of distribution.

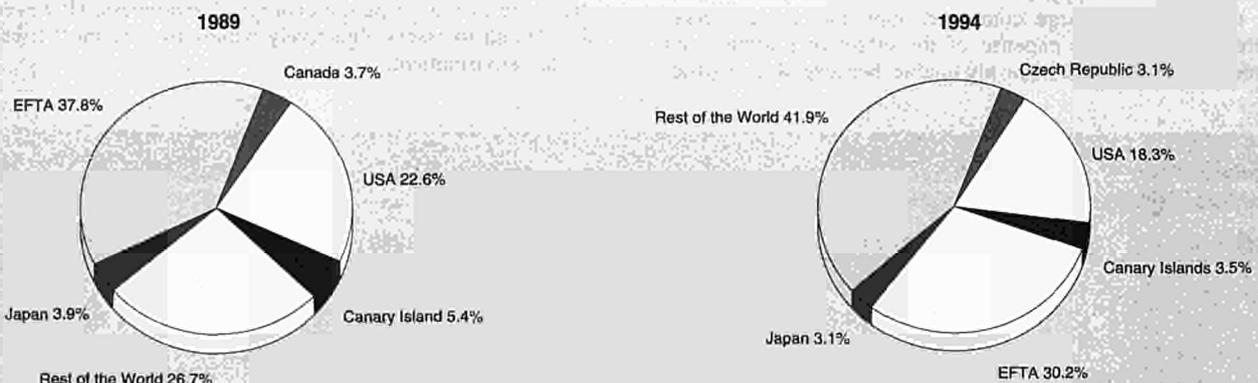
## INDUSTRY STRUCTURE

### Companies

The most important manufacturers in the EU toy and games market are the following:

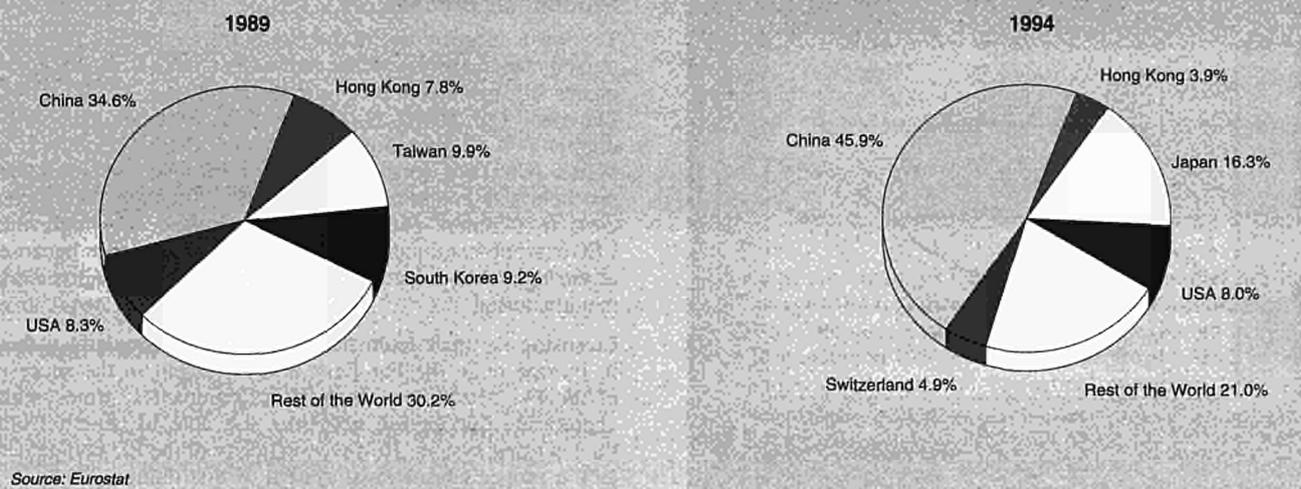
- Mattel (US): fashion dolls (Barbie), pre-school toys (Fisher Price), indoor games (Spear), die-cast vehicles (Corgi);
- Hasbro (US): indoor games (MB, Waddington, Parker), fashion dolls (Sindy) and pre-school toys (Playskool);
- Nintendo (J): video and computer games; Nintendo Entertainment System (NES), Gameboy;
- LEGO (DK): construction sets; Duplo, LEGO System, LEGO Technics;
- Sega (J): video and computer games; Master System, Game Gear;
- Superjouet Group (F): plastic toys (Berchet-Favre, Charton, Clairbois);
- Geobra Brandstätter (D): plastic figures and accessories (Playmobil);
- Tomy (J): indoor games, ride-on vehicles, pre-school toys;

**Figure 5: Toys  
Destination of EU exports**



Source: Eurostat

**Figure 6: Toys**  
**Origin of EU imports**



- Idéal Loisirs (F): dolls, figures and accessories, pre-school toys and die-cast vehicles (Majorette, Solido);
- Tyco (US): vehicles and accessories (Matchbox);

Other important enterprises in the EU toy and games market are Ravensburger (D), BRIUO (S), Meccano (F), Hornby (UK), Clementoni (I), Burago (I), Jumbo (NL), Märklin (D), Jeux Nathan (F), Brio (S), Famosa (E), Smoby (F), Chicco (I), Steiff (D), Schmidt (D) and Bandai (J).

The EU toy and games industry consists of a wide spectrum of companies of different sizes: from small privately owned domestic manufacturers to large international toy companies. Multinationals can be found in Japan and the US. In the EU, the average firm size is relatively small; 80% of the toy and games manufacturers in the EU employ fewer than 20 salaried workers. With the exception of LEGO (DK), Playmobil (D) and Idéal Loisirs (F), multinational firms comparable to American and Japanese groups are absent in the EU.

### Strategies

The EU toy and games industry has undergone a restructuring phase over the last decade, mainly through mergers and acquisitions, in order to face-up to international competition. An example of this process concerns Fisher-Price, one of the world's largest producer of infant and pre-school plastic toys, which merged in 1993 with Mattel to create a Fisher-Price Mattel empire. This move has far-reaching consequences for the entire toys and games industry.

Furthermore, there appears to be a process of polarisation. On the one hand, large companies gain increasing market shares mainly at the expense of the effective middle sized domestic manufacturers who are unable, because of their struc-

ture, to respond quickly to changes in the market place. On the other hand, niche manufacturers acquire strong positions by focusing on particular segments of the market.

In January 1995 four French toy and games manufacturers (Berchet, Charton, Clairbois and Favre) merged and formed the French Superjouet Group. The group was mainly formed for export purposes and has become a leader in the French market. Recent mergers (1996) in the toys and games market are the Atari Corporation, one of the pioneers of the video games market, which is to merge with a disk drive manufacturer-JTS and the games publisher and playing cards manufacturer FX Schmid Vereinigte Muenchener Spielkartenfabriken GmbH & Co KG of Prien, which is to become wholly owned by Ravensburger Spieleverlage GmbH.

### ENVIRONMENT

The toy industry is not regarded as a polluting industry, but has proved to be pro-active in the face of the increasing environmental consciousness among consumers. There are three areas in which environmental protection is relevant to it, i.e. packaging waste, environmentally friendly production, and removal of used products. The "Green Movement" has led national governments, followed by the EC, to prepare rules designed to ensure the reduction of packaging waste. The toy industry has taken an active part in these debates and favours a single EC system aimed at reducing packaging waste. In terms of the products themselves, wooden toys, considered by consumers as environmentally friendly, have benefited the most from the increased public ecological awareness. However, it is difficult to assess objectively which toys are most friendly to the environment.

**Table 3: Toys**  
**External trade in current prices**

(million ECU)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	569.2	584.3	593.6	617.0	704.7	767.2	830.8	884.4	990.6	1 126.0
Extra-EU imports	1 130	1 275	1 655	1 991	2 281	2 482	3 701	4 619	4 453	3 946
Trade balance	-561	-691	-1 062	-1 374	-1 576	-1 715	-2 870	-3 735	-3 446	-2 820
Ratio exports / imports	0.50	0.46	0.36	0.31	0.31	0.31	0.22	0.19	0.22	0.29
Terms of trade index (1)	86.4	94.6	98.4	95.6	93.2	100.0	94.4	98.0	90.7	92.5

(1) Nace 4940 (Nace 70).  
Source: Eurostat

**Table 4: Toys****Share of video games in extra-EU trade (1)**

(share in%)	1988	1989	1990	1991	1992	1993	1994
Share in extra-EU exports	1.1	1.4	1.8	2.1	4.1	4.9	4.5
Share in extra-EU imports	2.8	3.7	9.1	18.6	27.9	20.1	11.4

(1) Video games for use with television.

Source: Eurostat

**REGULATIONS**

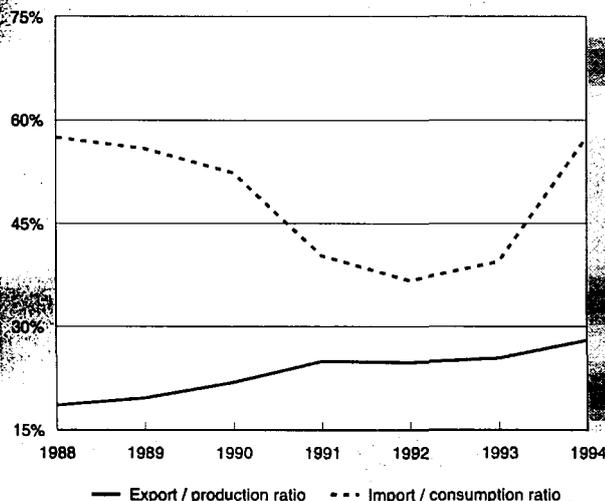
The EU Toy Safety Directive, adopted on 3rd of May 1988, contains essential physical, mechanical, chemical, electrical and flammability requirements, which if fulfilled by toy manufacturers, allow them to affix on their products (or packaging) the CE mark. This sign is an indication to surveillance officers that the product conforms to relevant EU safety regulations and can therefore freely circulate within the Internal Market. The Toy Safety Directive refers to a set of harmonised standards (elaborated by CEN and CENELEC), which are being constantly revised and extended.

Advertising regulations (misleading information) and regulations relating to intellectual property (trademark protection, design protection) also affect the toy and games industry. Toy manufacturers in Europe suffer from a lack of harmonised enforcement of European safety regulations.

The European toy industry is increasingly affected by trade measures (GATT rules, specific regulations). As a result of the GATT negotiations, custom tariffs on toys will be lowered over the next five years. On the other hand, a set of regulations with major consequences for the EU toy and games industry was adopted on 7 March 1994: Council Regulation (EC) No 519/94 on common rules for imports from certain third countries and repealing Regulations (EEC) Nos 1765/82, 1766/82 and 3420/83 and Council Regulation (EC) No 520/94 establishing a Community procedure for administering quantitative quotas, apply to imports of products covered by the Treaty and originating from 20 third countries of Eastern Europe and the Far East (People's Republic of China, Vietnam, and North Korea). Of particular relevance to the toy industry are the quotas on three categories of toys imported from China. As a consequence, some production has shifted to other low cost countries in the Far East.

**OUTLOOK**

A further increase of disposable income will stimulate demand for toys and games in the coming years. The total European toy and sporting goods market is expected to grow at a moderate rate. The electronic sector will remain an important sector in the toy and games industry, though the growth rates in turnover will be negatively influenced by falling prices. As the growth in the electronic sector slows down, the more traditional toys are likely to receive a small boost. The old fashioned board games, dolls and figures especially based on movie and film characters are making a comeback in their battle with the modern technology and individualism. In Germany, for example, the sales of board games are expected to account for 10% of the total sales in 1999. A considerable increase in the child population 0-5 years will have a major influence on the growth rates of the pre-school and plush toys. The development of Internet might have consequences for the toy and games market in the future, as the interactive games on Internet might have a strong negative impact on the industry's turnover. The EU-15 employment is expected to further decline in the next few years as the rationalisation process continues.

**Figure 7: Toys  
Trade intensities**

Source: TME, DEBA GEIE, Eurostat

Written by : Netherlands Economic Institute.

The industry is represented at EU level by: European Federation of Toy Industry (FEJ). Address: O'Donnell 4-P, E-2800g Madrid; tel: (33 1) 43 80 60 7; fax: (33 1) 42 27 82 7; and Toy Manufacturers of Europe (TME). Address: Avenue de Tervueren 13A, B-1040 Brussels, Belgium; tel: (32 2) 732 7040; Fax: (32 2) 736 9068



## Overview

### NACE (Revision 1) 37.1 and 37.2

The most widely and long established European recycling industries include the collection and reprocessing of ferrous and non-ferrous metals, paper, glass and textiles. Within the metal recycling industry, the automotive parts and electronic waste recycling sectors are seen as growth areas. Furthermore, the increased use of electric arc furnaces which demand high levels of ferrous scrap is expected to continue. Of the non-metal waste recycling industries the highest growth rates are expected in plastics recycling.

### INDUSTRY PROFILE

#### Description of the sector

The recycling industries have developed specific terms to describe various aspects of the recycling process. In order to avoid confusion, to assist in the comparison of the different industries and to aid the transfer of information between the recycling industries, standardised terminology should be introduced. Here, we use the recommended standard terminology of Coopers & Lybrand (September 1994):

- recyclable materials: materials which are suitable for recycling;
- collection: the collection of recyclable materials;
- processing: any processing of collected recyclable materials, prior to reprocessing (such as sorting, baling or simply bulking-up);
- reprocessing: the industrial processes in which the form of recyclable material is changed (for example paper pulping);
- secondary raw materials: recyclable materials which have been recycled to produce a raw material rather than a finished product (for example, metal ingots or plastic regranulate);

- recycled products: recyclable materials which have been recycled to produce a finished product (for example recycled paper or glass bottles); and
- recycled materials: a general description embracing both secondary raw materials and recycled products.

Recycling is one method of waste treatment. Alternative methods of waste treatment consist of landfill, incineration and re-use (in terms of environmental impacts).

#### Recent trends

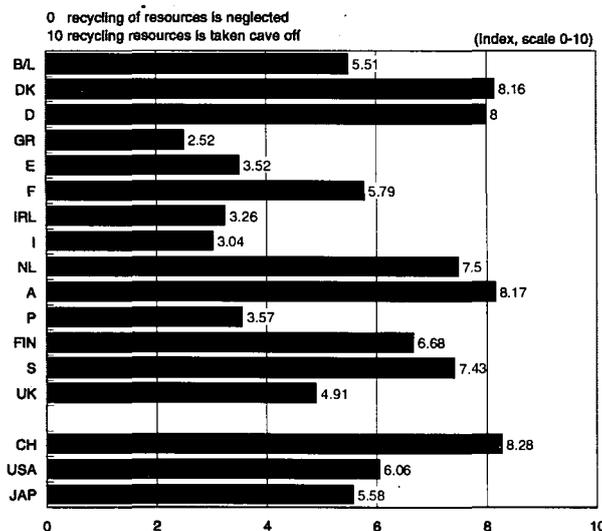
The most widely and long established European recycling industries are the collection and processing of ferrous and non-ferrous metals, paper, glass and textiles. The recycling of plastics and composite materials is developing rapidly in those EU countries which have developed the most advanced post-consumer packaging recycling initiatives, such as in Germany and the Netherlands. The recycling of ceramics and timber is, however, restricted to the processing of construction and demolition waste, and wooden pallets by the distribution and logistics sector. The recycling of chemicals is localised within the more industrial regions of the EU and generally restricted to the original product manufacturer accepting contaminated or unused chemicals for reprocessing. There is minimal recycling of leather, rubber and cork; subsequently very little information is available about the nature and structure of the industry.

#### International comparison

According to the World Competitiveness Report of 1995, the recycling of resources on a scale from neglected (0) to well taken care of (10) is slightly better taken care of in the US (6.06) than in Japan (5.58). The EU average amounted to 5.57. Five European countries scored between 8.17 and 7.43.

The US and Western Europe are areas with an abundance of ferrous scrap. Both countries are therefore net exporters in the recycling industry of ferrous metals. Japan, on the other hand, is a net importer.

**Figure 1: Recycling of resources**  
Evaluation of the recycling of resources, 1995



Source: IMD and The World Economic Forum, World Competitiveness Report 1995.



**Table 1: Recycling of metals**  
**External trade of metal scrap as a percentage of the total value**

(%)	1988	1989	1990	1991	1992	1993	1994
<b>Extra-EU exports</b>							
Iron and steel	67	66	64	58	53	67	64
Aluminium	11	9	10	10	13	11	15
Copper	7	8	10	20	23	16	12
Lead	1	1	1	0	0	0	0
Chromium	3	2	3	3	1	1	2
Nickel	7	7	6	5	6	3	3
Cadmium	1	2	1	0	0	0	0
Zinc	3	5	5	4	3	2	2
Total metal scrap (million ECU)	750	859	668	998	940	1 423	1 389
<b>Extra-EU imports</b>							
Iron and steel	45	42	44	45	32	41	44
Aluminium	23	22	18	14	11	12	14
Copper	25	30	32	35	45	38	36
Lead	1	1	2	1	1	0	0
Chromium	1	1	1	1	1	1	1
Nickel	4	3	2	3	9	8	4
Cadmium	1	1	1	1	0	0	0
Zinc	0	0	1	1	0	0	0
Total metal scrap (million ECU)	1 140	1 499	1 061	955	1 184	1 087	1 425
<b>Trade balance</b>							
Total metal scrap (million ECU)	-390	-640	-393	43	-244	335	-36

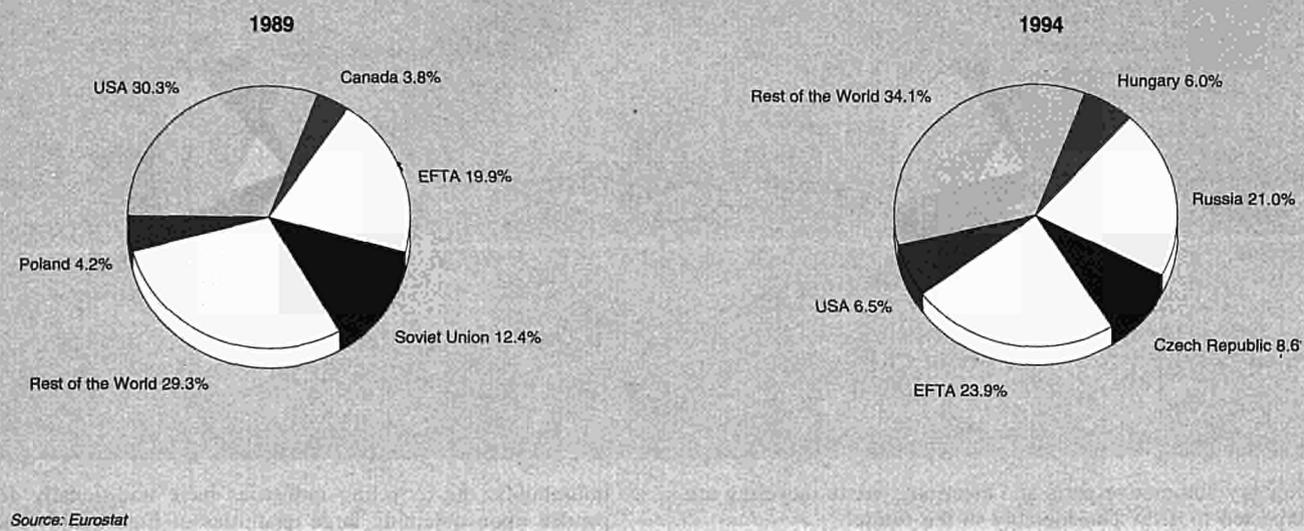
Source: Eurostat

**Table 2: Recycling of metals**  
**External trade of metal scrap as a percentage of the total volume**

(%)	1988	1989	1990	1991	1992	1993	1994
<b>Extra-EU exports</b>							
Iron and steel	94.7	94.4	94.2	94.1	92.9	94.8	93.8
Aluminium	2.1	1.7	2.1	2.0	2.7	2.3	3.2
Copper	1.1	1.1	1.3	2.2	2.8	1.9	1.8
Lead	0.5	0.8	0.4	0.4	0.2	0.2	0.2
Chromium	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Nickel	0.4	0.4	0.5	0.3	0.4	0.2	0.3
Cadmium	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zinc	1.0	1.5	1.4	1.0	0.9	0.5	0.7
Total metal scrap (thousand tonnes)	4 083.6	3 949.4	3 625.9	6 030.7	6 257.3	9 985.8	8 397.5
<b>Extra-EU imports</b>							
Iron and steel	87.5	86.5	87.3	88.5	83.3	85.2	84.9
Aluminium	5.6	6.1	5.0	4.1	4.9	5.0	5.2
Copper	5.0	5.9	5.9	5.7	9.9	8.2	8.3
Lead	1.3	0.9	1.2	1.1	0.8	0.6	0.7
Chromium	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Nickel	0.3	0.3	0.2	0.3	0.8	0.7	0.5
Cadmium	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zinc	0.2	0.2	0.3	0.3	0.3	0.2	0.2
Total metal scrap (thousand tonnes)	4 086.8	4 353.9	4 190.9	4 517.5	4 512.3	4 424.2	4 876.0
<b>Trade balance</b>							
Total metal scrap (thousand tonnes)	-3.3	-404.5	-565.1	1 513.2	1 745.0	5 561.5	3 521.5

Source: Eurostat

**Figure 2: Recycling of metals**  
**Destination of EU exports of metal scrap**



### Foreign trade

Net imports were reported for some non-ferrous metals, recovered paper and waste and scrap glass. Ferrous metals and plastics recorded net exports. However, these EU figures mask significant variations between EU countries.

In 1994, the trade deficit for non-ferrous metals, recovered paper and waste and scrap glass amounted to 210 000, 640 000 and 110 000 tonnes, respectively. The ferrous metals trade surplus amounted to 3.73 million tonnes in 1994, while the surplus for plastics totalled 440 000 tonnes.

Extra-EU exports were mainly directed to Asian countries, while imports originated from East European countries and Russia. The US and EFTA countries were major trade partners, particularly in the non-metals recycling.

### MARKET FORCES

#### Demand

The main consumers of recycled materials are the iron and steel industries, the paper mills, the textiles manufacturing industry, the packaging industry and glass manufacturers.

About 44% of the steel and 45% of stainless steel produced in the Western world is derived from reclaimed material. Furthermore, reclaimed metal accounts for 36% of copper, 45% of lead and 24% of aluminium produced. About 23% of total consumption of zinc is derived from a wide range of secondary sources.

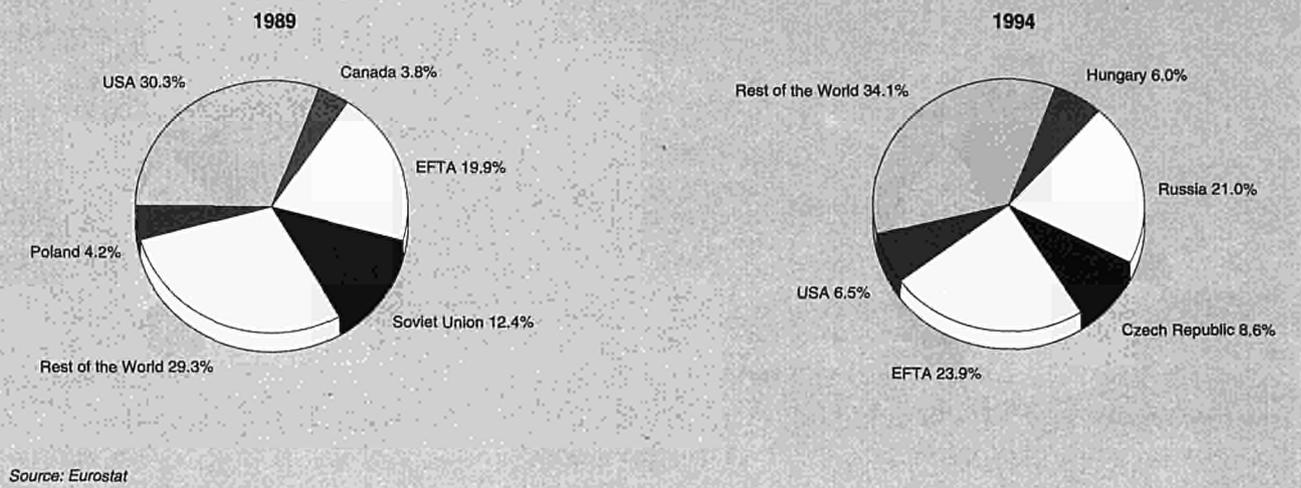
The development and widespread use of electric arc furnaces world-wide has led to and will continue to lead to enhanced levels of demand for high quality ferrous scrap as an important feedstock material. Within the non-ferrous metals recycling

**Table 3: Recycling of non-metal recyclable materials**  
**External trade of non-metal recyclable materials as a percentage of the total volume**

(%)	1990	1991	1992	1993	1994
<b>Extra-EU exports</b>					
Recovered paper	96.0	95.6	94.8	93.8	90.2
Glass	0.1	0.7	0.6	0.5	0.3
Rubber and plastics	3.9	3.6	4.7	5.7	9.5
Total non-metal recyclable materials (thousand tonnes)	4 140.6	4 924.1	5 141.3	5 067.8	6 229.5
<b>Extra-EU imports</b>					
Recovered paper	96.0	96.4	96.4	95.4	95.8
Glass	0.7	1.0	1.3	2.3	2.0
Rubber and plastics	3.3	2.6	2.3	2.3	2.2
Total non-metal recyclable materials (thousand tonnes)	5 144.5	5 467.5	6 062.7	5 460.3	6 535.0
<b>Trade balance</b>					
Total non-metal recyclable materials (thousand tonnes)	-1 004.0	-543.4	-921.4	-392.4	-305.4

Source: CEPI, Eurostat

**Figure 3: Recycling of metals**  
**Origin of EU imports of metal scrap**



industry automotive parts and electronic waste recycling are expected to grow considerably in the future.

Recycling accounts for about 30% of the fibrous raw material used to make paper and board, and 13% of all textiles materials used world-wide are recycled textiles. The market demand for recycled plastics will remain limited so long as such recycling is carried out mechanically. However, significant market developments may occur as a result of the development of feedstock-recycling, in which the recyclable plastics will be identical to virgin plastics, thus allowing such materials to compete in all plastics markets.

#### Supply and competition

The flatter organisational structure and less sophisticated technical operations which are characteristic of the European glass, paper and textile processing industries reflect the lower value of these materials compared to ferrous and non-ferrous metals.

An important area of development, which has to a large extent been driven by an increasing demand for recyclable materials, has been the widening of the established sources for collection and recovery of materials. The single most important newly established source has been the recent increase in the recycling of post-consumer metals, paper and plastics from domestic

households. The recycling industries have traditionally depended upon obtaining large quantities of high quality and largely pure recyclable material from industrial sources.

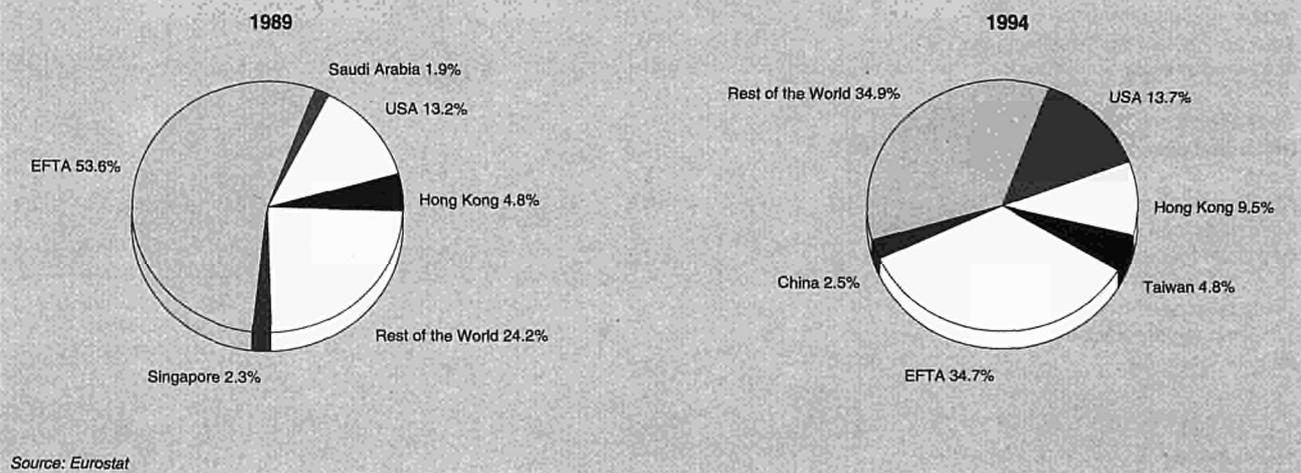
The largest impact arising from new entrants to the recycling or recyclable material processing industries have been experienced by the merchants who collect and process paper, glass and textiles. Various national and local authorities recycling initiatives in the EU have resulted in opportunities for private waste management companies, and to a lesser extent the voluntary sector, to provide recyclable material collection and processing services on a contract basis.

#### Production process

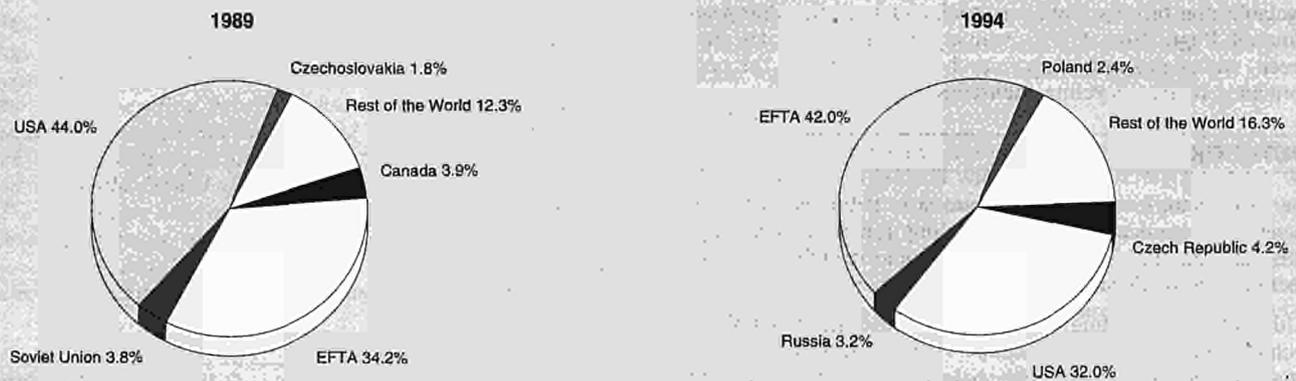
The process of recycling consists of three stages: collection, processing and reprocessing. After the collection of recyclable materials, i.e. materials which are suitable for recycling, these materials are processed (such as sorting, baling or bulking-up). The reprocessing includes the industrial processes in which the form of the recyclable material is changed (e.g. paper pulping).

Energy and raw materials savings vary depending on the specifications that secondary raw materials must meet, which are influenced by the market. The energy savings diminish as

**Figure 4: Recycling of non-metals**  
**Destination of EU exports of non-metal recyclable materials**



**Figure 5: Recycling of non-metals**  
**Origin of EU imports of non-metal recyclable materials**



Source: Eurostat

extra stages of processing and reprocessing are necessary to meet specifications. The reprocessing of recyclable paper varies according to the intended final product so that recyclable paper to be used in newsprint undergoes a different range of processes to recyclable paper destined for use in high quality grades.

## INDUSTRY STRUCTURE

### Companies

Recycling is, in general, vertically integrated within each material sector with collectors and processors of recyclable materials usually being owned or controlled by the material reprocessors. The exceptions to this are non-ferrous metals and textiles where processors are generally independent of reprocessors.

However, one change which is being seen, particularly with regard to recyclable material arising from domestic and commercial sources, is the increasing involvement of waste management companies in the collection and processing of recyclable materials.

Organisations such as Duales System Deutschland (DSD) in Germany, which fund the recycling of waste packaging have been established in several countries. The establishment of these organisations is normally driven by legislation or the threat of legislation which places the responsibility for action on a part of the chain of material use. For example, France with Eco-Emballage.

### Strategies

Three major trends can be defined in the recycling industry:

**Investment:** in order to meet increasing demands the larger European recycling companies have invested in new technologies will help maintain their position within a competitive market.

**Globalisation:** for example, in the metals recycling industry, European, Asian and American mills have formed relationships.

**Co-operation:** to reduce investment expenditures, and in the context of internationalisation, companies cooperate to assist production, technology and distribution.

## ENVIRONMENT

Environmental benefits arise in two ways:

- reductions in the consumption of energy resulting from the reprocessing of recyclable materials especially ferrous and non-ferrous metals and glass; and
- reducing levels of demand for the extraction, transportation and processing of virgin raw materials as a result of their substitution with secondary raw materials.

An estimated 60% to 95% savings in energy is obtained due to using recycled materials. Since the savings in raw materials depend on the technologies employed no estimation is available. The savings are highest for metals where the need to extract metal from virgin raw materials is avoided by using recyclable material.

The cost of manufacturing a product from secondary raw material may be less than the cost of using virgin materials, thus improving the economic feasibility of recycling. The production savings are often related to reduced energy requirements, this is particularly true for ferrous and non-ferrous metals, but also for glass. For ferrous metals an estimated 62%, for aluminium 93% and for glass 20% (80% for recycled cullet) of the energy requirements are saved. For plastics, however, there are no significant energy savings available.

## REGULATIONS

Two main types of legislation can be distinguished which potentially have an impact on the levels of recycling, i.e. legislation intended to increase the levels of recycling and legislation designed to protect the environment, without reference to recycling.

The first type of legislation is designed specifically to promote recycling, for example the EU Packaging and Packaging Waste Directive. The second type of legislation includes the setting of emission limits and improved waste regulation. This type of legislation alters the situation within which recycling occurs and may have the effect of either constraining or promoting recycling. There are a number of examples of both types of legislation, both current and proposed at national, European and international level.

The actual and anticipated future impact of environmental legislation on merchant operations and in particular the increased regulation of waste activities have affected all of the established recycling industries. Operational restrictions, particularly those concerning the international movement of recyclable non-ferrous metal materials, such as, the European Council Regulation 259/93 which classifies materials into green, amber and red waste, may have an effect on the performance of the recycling industries.

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## OUTLOOK

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Increases in the level of recycling are expected for all materials except for chemicals. Plastics recycling, ferrous metals recycling and automotive parts and electronic recycling are expected to grow during the next five years.

Although the recycling of most post-consumer materials is technically feasible, the economic viability of recycling continues to depend primarily on the balance of supply and demand for each material. The variation between materials in economic viability of recycling is due to the cost of recycling, the markets for recycled materials and, for example, the costs of using recycled materials.

Written by: Netherlands Economic Institute

The industry is represented at the European level by: European Ferrous Recovery and Recycling Federation (EFR) & EUROMETREC c/o Bureau of International Recycling (BIR). Address: Rue de Lombard 24 -bte 14, 1000 Brussels; tel (32 2) 514 21 80, fax (32 2) 514 12 26

# Recycling of metals

## NACE (Revision 1) 37.1

The EU recycling industry of ferrous and non-ferrous metals has become one of the most widely and long established European recycling industries. The operational performance of the metal recycling industries has been impressive, both in terms of the economic importance of the sector within the EU and the extent to which manufacturing industries throughout the world depend upon recycled secondary raw materials. The increasing use of electric arc furnaces requiring high levels of ferrous scrap is expected to continue. Within the non-ferrous metal recycling industry, the automotive parts and electronic waste recycling are assuming greater importance.

### INDUSTRY PROFILE

#### Description of the sector

This monograph concerns the recycling of metals, defined in NACE 37.1.

Ferrous metal scrap includes iron & steel and stainless steel scrap. Secondary non-ferrous metals include:

- aluminium scrap from domestic utensils, windows, doors, cables, food containers, etc.;
- copper scrap from automobiles, water pipes, cables, heavy electrical and electronic material, ships, etc.;
- lead scrap from batteries, roofing construction and cable sheathing;
- tin scrap from tinsplate and solder;
- zinc scrap from automobiles, roof cladding and galvanising of steel;
- precious metals scrap from computers and electronics, dental and X-ray film, jewellery, etc.; and
- nickel bearing scrap from aircraft, automobiles, cutlery, sinks, etc.

Reclamation of used materials is the first step in recycling, comprising of collection, sorting, processing and upgrading

in order to render a product or material suitable for remelting in the case of metal, or any other process of conversion. The second step in recycling is reprocessing, i.e. the industrial processes in which the form of the recyclable material is changed.

Recycling is the whole process of reclaiming, refining or re-processing redundant products and materials, and converting them into new, perhaps quite different, products.

#### Recent trends

Non-ferrous and ferrous metals are materials for which there is a well established and widespread recycling industry. The level of recycling is measured through different ways and the term recycling rate can thus be misleading. Most of the recycling industries have therefore developed key ratios for measuring the level of recycling, which cannot be compared. The three following types of ratios are used in the metals recycling industry.

The diversion rate indicates what proportion of recyclable material that is potentially available is actually collected and processed. The diversion rate for recycled Cd from Ni/Cd batteries increased from 6.6% to 8.0% during the period 1992-1995. During this period the Ni/Cd batteries collected increased by 45% to more than 5 000 tonnes in 1995. The Cd recycled increased by less 20%.

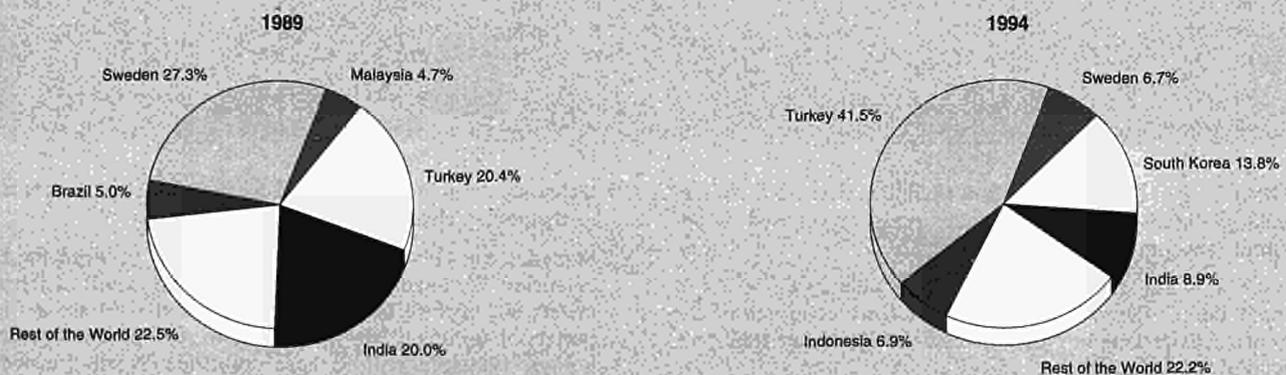
The utilisation rate indicates the amount of potential recyclable compared to the amount of new material produced, i.e. the scrap ratio. It is calculated in both production and apparent consumption.

The scrap ratio for non-ferrous metals based on production, i.e. the rate which assesses the quantity of reprocessed material that is included within the production of a new product, amounted to 57% during the period 1988-1990. Reclaimed metal accounts for around 36% of the copper, 45% of the lead and 24% of aluminium produced.

Since the Second World War the processing of iron and steel scrap has rapidly evolved into a full-scale industrial activity. Processed ferrous scrap accounts for 30% of world-wide steel production, and in some countries up to 60%. Also, approximately 44% of the steel produced in the Western World and 45% of the stainless steel is derived from reclaimed material.

The scrap ratio for non-ferrous metals based on apparent consumption amounted to 35% during the period 1988-1990.

**Figure 1: Recycling of iron and steel**  
**Destination of EU exports of scrap iron and steel**



Source: Eurostat

**Table 1: Recycling of metals**  
**External trade of scrap of iron and steel in current prices**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	503	569	429	576	495	955	896
Extra-EU imports	508	629	470	426	383	447	631
Trade balance	-5	-60	-41	150	113	509	265
Ratio exports / imports	1	1	1	1	1	2	1
Terms of trade index (1)	93	90	100	97	97	102	99

(1) Nace 2210 (Nace 70).  
Source: Eurostat

**Table 2: Recycling of metals**  
**External trade of scrap of iron and steel in volume**

(thousand tonnes)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	3 869.1	3 729.6	3 414.1	5 673.2	5 814.3	9 468.3	7 873.2
Extra-EU imports	3 574.1	3 764.8	3 658.7	3 997.5	3 759.1	3 768.2	4 141.3
Trade balance	295.0	-35.2	-244.6	1 675.7	2 055.2	5 700.0	3 731.9
Ratio exports / imports	1.1	1.0	0.9	1.4	1.5	2.5	1.9

Source: Eurostat

**Table 3: Recycling of metals**  
**External trade of scrap of other metals in current prices**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports							
Aluminium	83.6	73.9	66.1	99.1	117.6	153.7	213.7
Copper	54.3	67.1	68.7	197.4	219.4	224.6	170.5
Lead	4.4	6.9	3.8	4.7	2.1	3.2	3.8
Chromium	21.3	21.2	19.4	28.1	13.9	17.5	23.3
Nickel	55.3	59.4	41.0	51.8	58.2	42.2	48.2
Cadmium	4.8	15.5	4.5	3.2	2.0	1.9	1.2
Zinc	23.2	45.9	35.3	37.2	31.5	24.4	33.1
Extra-EU imports							
Aluminium	262.5	336.1	192.2	130.9	133.0	126.6	196.0
Copper	286.1	444.4	337.2	334.7	535.8	412.8	515.3
Lead	14.0	10.8	16.1	10.7	7.5	3.8	6.4
Chromium	8.1	9.7	11.6	11.3	8.7	7.5	15.0
Nickel	40.1	44.3	19.8	28.8	107.7	84.0	55.1
Cadmium	17.0	18.4	7.0	6.5	3.2	1.4	2.4
Zinc	4.3	6.7	7.6	6.2	5.6	4.5	4.7

Source: Eurostat

About 23% of total consumption of zinc is derived from secondary sources. The ferrous metals scrap ratio based on apparent consumption was 43% in 1992.

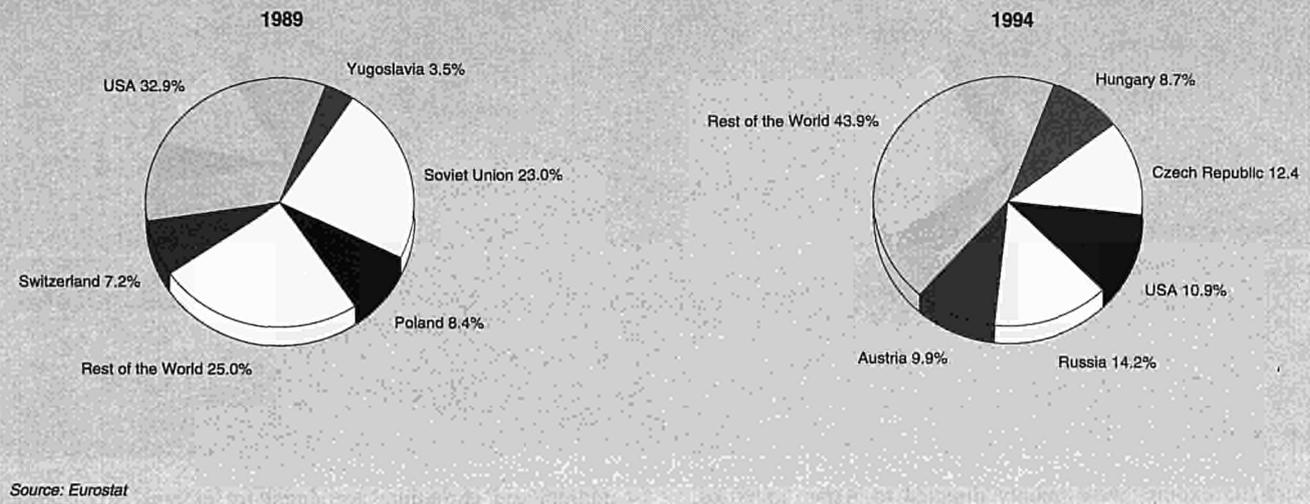
In 1994, world steel production figures were down by 7.4%, partly due to the reduction in output from countries of the former Soviet Union. Nevertheless, the European steel production increased by 3.1%.

The steelmaking industry include two main streams of technology: the oxygen steel making technology and the electric arc technology. As far as the recycling industry is concerned, interest is focused on the latter technology. This scrap intensive

technology has increased world-wide and will doubtless lead to temporary changes in the ferrous market.

Statistics can conceal substantial variations between the EU countries. For example, while there is a net export of ferrous metals out of the EU, South European countries are net importers of ferrous scrap. This is due to steel production technology available within these countries. North European countries have a high percentage of oxygen steel making technology which has a lower capacity to accept recyclable material than electric arc technology which predominates in the South European countries.

**Figure 2: Recycling of iron and steel**  
**Origin of EU imports of scrap iron and steel**



When a recycled material substitutes the use of the original material, it will compete directly with virgin material in terms of price and quality.

An example of a recycled material used as a substitute for a virgin material is that of scrap to make steel in place of iron ore. Scrap has many advantages other than the vital consideration of cost; it is nearly 100 per cent metal and is generally available within easy reach. Because of a strong increase in scrap demand from steel-makers and its limited supply at that moment, prices in this industry rose in 1994.

### International comparison

The US and Western Europe are areas with an abundance of ferrous scrap. Both countries are therefore net exporters in the recycling industry of ferrous metals. Japan, which was traditionally a net importer, is expected to become a net importer in the near future.

In the recycling industry of non-ferrous metals the picture is more differentiated. In nickel, for example, the EU exports to the US. And aluminium is exported to Japan by the EU.

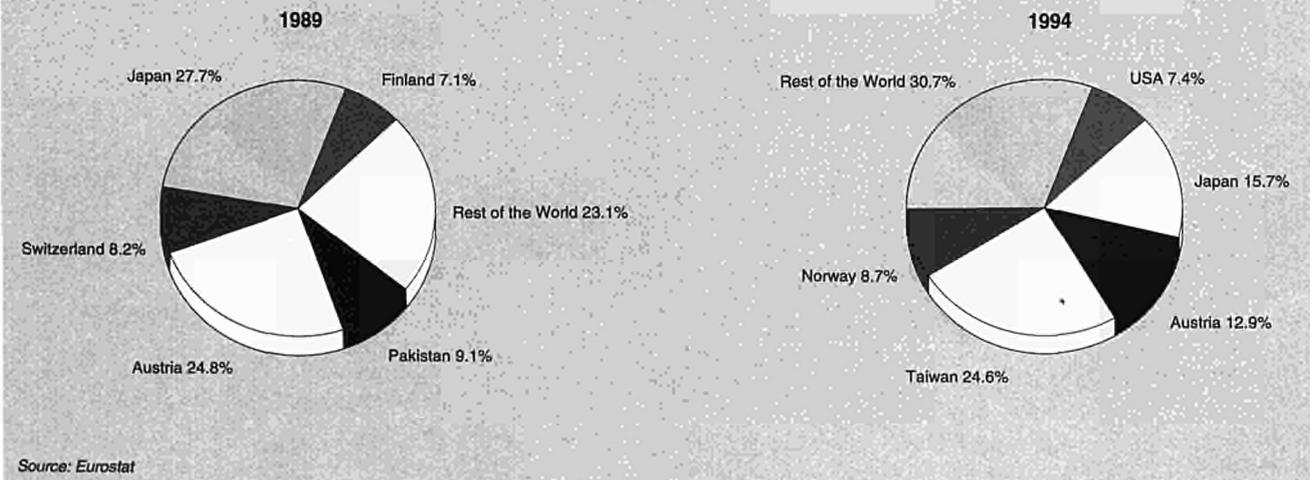
### Foreign trade

World-wide movements of non-ferrous metals fluctuate according to many variables, such as: consumer demand, existing production capacities, price of primary metals and ores, quotations on the metal exchanges in London or New York, currency exchange rates, processing and labour costs, freight costs, export quotas or import duties. The broker plays a key role in the marketing element of recycling and will often be involved in trading metals between one part of the world and another.

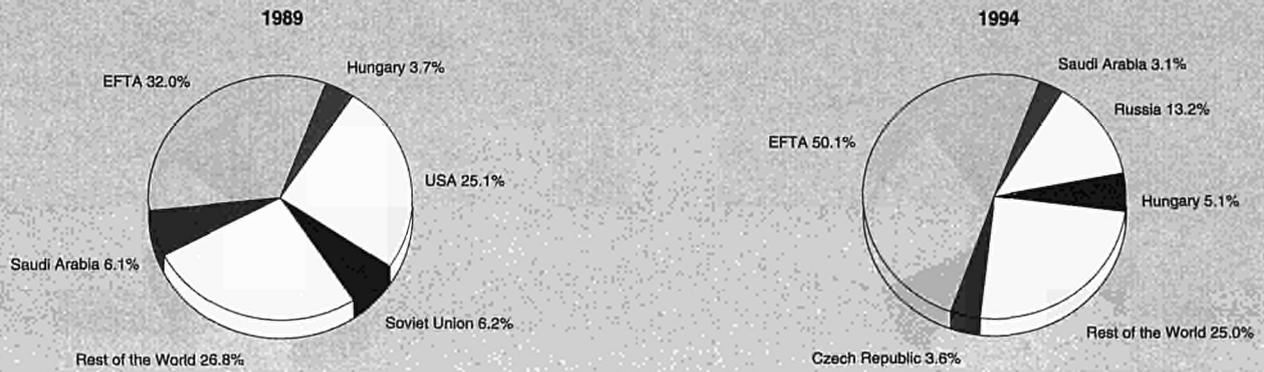
Like any other material, non-ferrous metal scrap is traded world-wide following the rules of supply and demand. Though traditional European mills are the most regular customers, since they have the necessary technical know-how and facilities, these commodities are also shipped to other OECD and non-OECD countries capable of recycling in an environmentally sound manner. In turn, these countries supply the European metal sector with other types of scrap.

External trade figures for the 1988-1994 period show the globalisation trend of the recycling industry of metals. In 1994,

**Figure 3: Recycling of aluminium**  
**Destination of EU exports of scrap aluminium**



**Figure 4: Recycling of aluminium**  
Origin of EU imports of scrap aluminium



Source: Eurostat

extra-EU exports were mainly directed to Asian countries, while extra-EU imports originated primarily from East European countries and Russia. Recyclable material is only exported if a substantial margin can be obtained.

Because ferrous metal scrap is not available uniformly throughout the world, it has become an international commodity, being transported from scrap-abundant areas such as the United States and Western Europe to countries which have a traditional shortage. These include Turkey, South Korea, India, Indonesia, Sweden, Italy, Japan, Spain, Taiwan and many developing countries. Therefore, in 1994, the EU had a trade surplus of 3.7 million tonnes for ferrous metals (i.e. iron and steel). About 41.5% of extra-EU iron and steel exports went to Turkey, and almost 14% went to South Korea. The extra-EU iron and steel imports originated mainly from Russia (14.2%), followed by the Czech Republic (12.4%).

In contrast, for the non-ferrous recycling industry imported recyclable material is a very important source of raw material. There is a net import of all types of non-ferrous metals except for zinc, aluminium and chromium. In 1994, non-ferrous metals such as copper, lead, nickel and cadmium accounted for trade deficits of 257 000, 16 000, 2 300 and 600 tonnes, respectively. Other non-ferrous metals, for example zinc, alu-

minium and chromium accounted for external EU trade of approximately 49 000, 15 800 and 700 tonnes, respectively.

## ANALYSIS OF MARKET FORCES

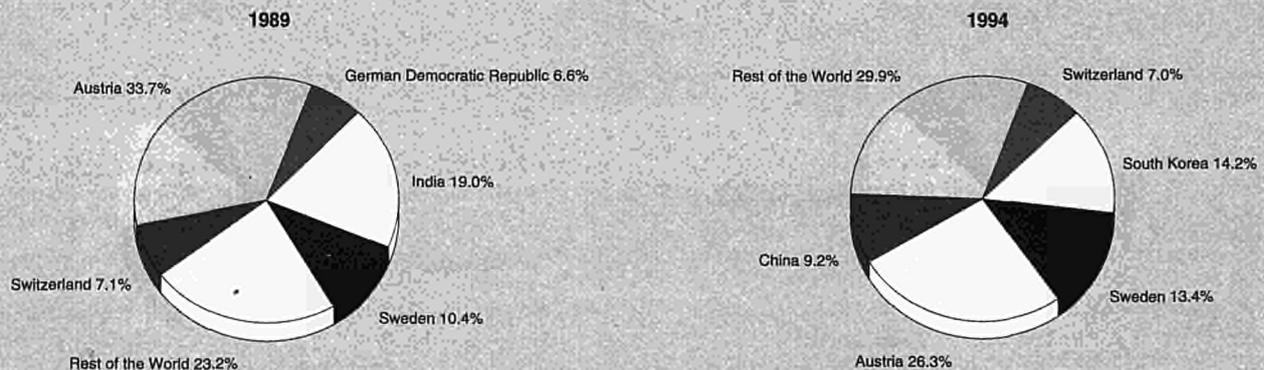
### Demand

The iron and steel industries are major consumers of the recycling industry of ferrous metals. World demand for all primary and secondary metals increased in 1995. The principal driving force is, in most cases, increased consumer demand for housing, motor vehicles and other durable goods. The main buyers and users of non-ferrous scrap are primary and secondary non-ferrous metal smelters, refiners and fabricators. Non-ferrous scrap is in strong demand.

As mentioned before, the markets available to a merchant of ferrous scrap are the larger merchants and the iron and steel manufacturing industries. Ferrous recyclable material is converted into a form identical to the virgin raw material. Access to consistent suppliers of ferrous scrap is increasingly being seen by EU countries as a strategically important issue to protect or develop local competitive advantage.

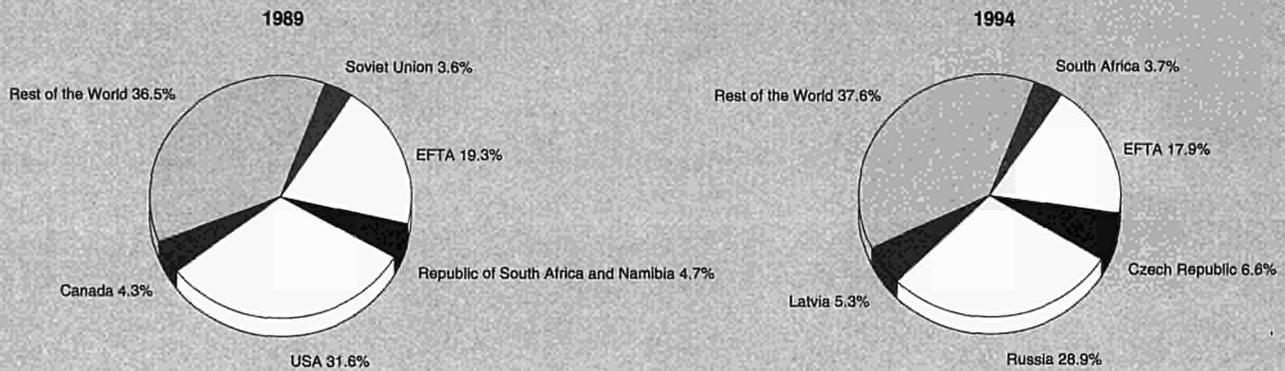
Scrap has become indispensable as the most economic raw material available to steelmakers. It now accounts for about

**Figure 5: Recycling of copper**  
Destination of EU exports of scrap copper



Source: Eurostat

**Figure 6: Recycling of copper**  
**Origin of EU imports of scrap copper**



Source: Eurostat

45% of all steel produced world-wide. In addition, iron and steel foundries depend on a steady intake of highly competitive scrap to provide the major proportion of their furnace feed. Using scrap to make steel in place of iron ore has many advantages other than the vital consideration of cost. Scrap is nearly 100% metal and is generally available within easy reach. The use of scrap, in comparison with iron ore, gives a dramatic energy saving, significantly reduces the amount of water needed and causes less air pollution.

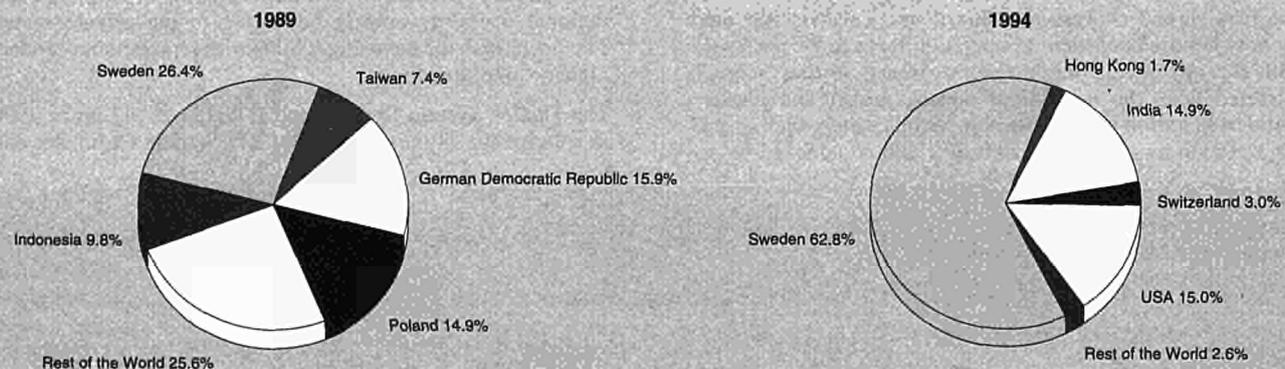
High quality steel scrap demand increased, confirming the important role of shredder operators who produce high grade scrap from mixed materials. Moreover, the development and widespread use of electric arc furnaces world-wide has led to and will continue to lead to enhanced levels of demand for high quality ferrous scrap as an important feedstock material.

### Supply and competition

The ferrous metals and non-ferrous metals recycling industries are dominated by the private sector with any involvement of the public or voluntary sectors being limited to local authorities who are increasingly taking responsibility for the collection and initial processing of household/packaging waste prior to selling the recovered material to either the larger regional merchants or directly to reprocessors. Nevertheless, the local recycling initiatives resulting in a higher involvement of larger waste management companies, has intensified competition for both the ferrous metals and the non-ferrous metals recycling industries.

The extent of integration between ferrous metals processing and ferrous metals reprocessors varies across the EU. Generally in the non-ferrous metals recycling industry there is minimal vertical integration; ferrous and non-ferrous metals recycling sectors are hardly integrated with their customers due to, for example, the wide-ranging marketability of the

**Figure 7: Recycling of lead**  
**Destination of EU exports of scrap lead**



Source: Eurostat

**Table 4: Recycling of metals**  
**External trade of scrap of other metals in volume**

(thousand tonnes)	1988	1989	1990	1991	1992	1993	1994
<b>Extra-EU exports</b>							
Aluminium	87.3	66.9	77.8	120.3	168.9	233.5	271.5
Copper	43.1	43.4	47.4	130.7	177.7	186.6	147.2
Lead	21.0	29.9	13.6	22.6	13.6	22.2	19.9
Chromium	3.5	3.5	3.5	4.5	2.6	3.3	4.6
Nickel	17.8	15.5	16.4	19.1	23.9	20.1	22.0
Cadmium	0.5	1.6	0.8	1.1	1.2	1.9	0.8
Zinc	41.3	59.0	52.2	59.2	55.0	49.9	58.3
<b>Extra-EU imports</b>							
Aluminium	229.4	265.1	208.9	183.1	220.2	219.3	255.7
Copper	203.9	256.3	245.9	258.8	445.3	363.0	404.2
Lead	51.7	39.5	49.6	48.6	36.2	28.8	35.9
Chromium	1.6	2.3	3.7	3.1	2.2	1.8	3.9
Nickel	14.1	14.6	9.9	12.7	36.2	32.2	24.3
Cadmium	2.0	2.0	2.0	2.0	1.8	1.2	1.4
Zinc	10.1	9.2	12.3	11.8	11.4	9.7	9.3

Source: Eurostat

materials, the large number of local merchants and the reluctance of the reprocessing and manufacturing industries to invest in what are regarded as fairly volatile markets with generally poor margins.

One of the most sophisticated areas of metals recycling involves high-performance, corrosion-resistant and high-temperature alloys. These special combinations of metals are used for purposes in which great resistance to wear, staining or corrosion are important, as in jet engine parts, storage tanks for chemicals, furnace components, medical equipment, engineering tools and many household products including cutlery. The essential ingredients of these valuable alloys may be nickel, chromium, tungsten, cobalt, and titanium, among others, used in various combinations or proportions and reacting to provide specific properties. These metals are expensive and occur in limited quantities in only few parts of the world, recycling is therefore of key importance, without it many of these metals would be even more costly.

### Production process

Since the Second World War the processing of iron and steel scrap has rapidly evolved into a full-scale industrial activity. Even the medium-size scrapyards now use hydraulically powered equipment exerting thousands of tonnes of pressure to compact thinner material into neat cubes, or to cut heavy steel such as girders, rails or ship-plate into furnace-size chunks of scrap.

The first shredders were introduced in the 1960s and there are now hundreds of them in operation throughout the world. With the aid of rotating magnetic drums, ferrous scrap is extracted from the mixture of metals, rubber and plastics. Further separation of valuable non-ferrous metals such as copper and aluminium is then necessary and is achieved by so-

phisticated methods using forced air or liquid sink-float systems allowing light metals to float and heavier types to sink. One of the latest developments is the eddy-current method by which non-ferrous metals are separated in terms of their different conductivity levels in electromagnetic fields. Most of these modern methods of scrap processing are carried out automatically with computers often being used to maintain the highest levels of operating efficiency.

The most highly developed technical processes used in the recycling of non-ferrous metals have been aimed at enhancing the purity of shredded and granulated fragments. The use of oxidation techniques to remove contaminants such as paints, solvents, as well as density and air classification systems to remove non-metallic materials, is widespread amongst the larger regional operations operating within the EU. In reply to furnace emission control regulations, metal processors have introduced technologies aimed at removing potential atmospheric pollutants from their furnace feedstock products. This initiative enhances the value added of metal processor and enables furnace operators to meet new emission targets without investing in the costly installation of higher specification flue gas equipment.

## INDUSTRY STRUCTURE

### Companies

The industry structure is of a large number of local and few regional operators, mostly belonging to the private sector. The operators who have direct links with reprocessors conduct higher value operations.

The Duales System Deutschland (DSD) was set up in 1990 in anticipation of the government's Packaging Ordinance and

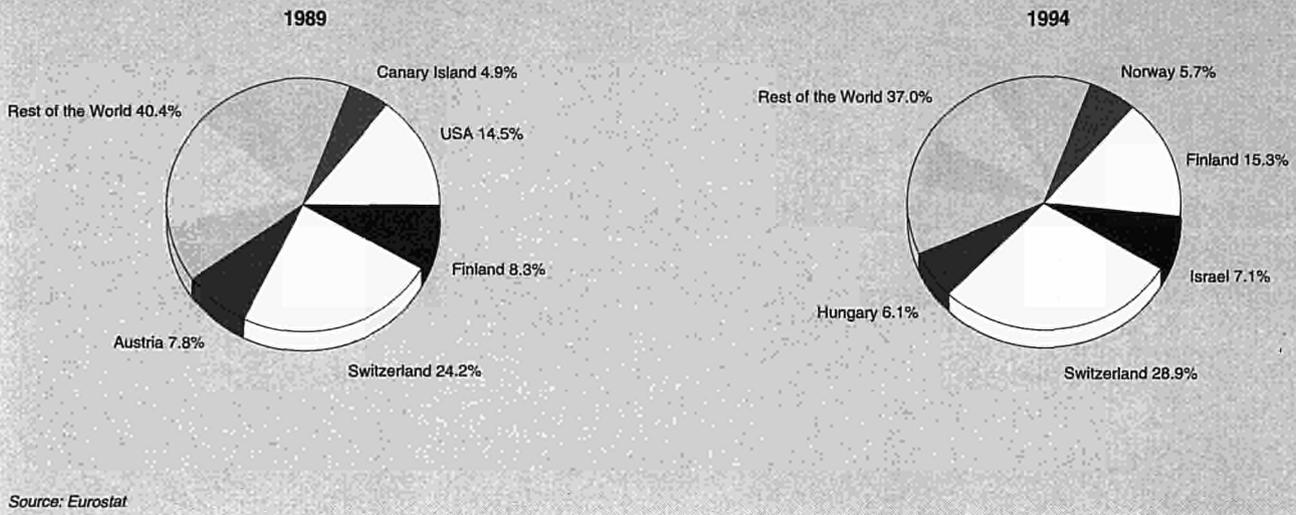
**Table 5: Recycling of metals**  
**Recycling of Ni/Cd accumulators (1)**

(tonnes)	Accumulators Ni/Cd collected	Cd recycled
1992	3 479.0	524.0
1993	3 919.0	530.0
1994	4 446.0	543.0
1995	5 056.0	628.0

(1) EUR15 plus Norway and Switzerland.

Source: SNAM, SAFT, Eurostat

**Figure 8: Recycling of lead**  
**Origin of EU imports of scrap lead**



acts as a waste sorter and distributor to a series of guaranteed recycling companies. Key players for the recycling of metal waste are Friedrich Krupp AG Hoesch-Krupp, Thyssen Stahl and the Deutsch Aluminium Verpackung Recycling.

In France, the two diversified groups CGE and Lyonnaise are active in the recycling of metals. In the United Kingdom, Aluminium Can Recycling Association Ltd. (ACRA) is a key player in this industry. The ACRA is funded by five major can sheet producers and was founded to encourage can separation by type at consumer level.

**Strategies**

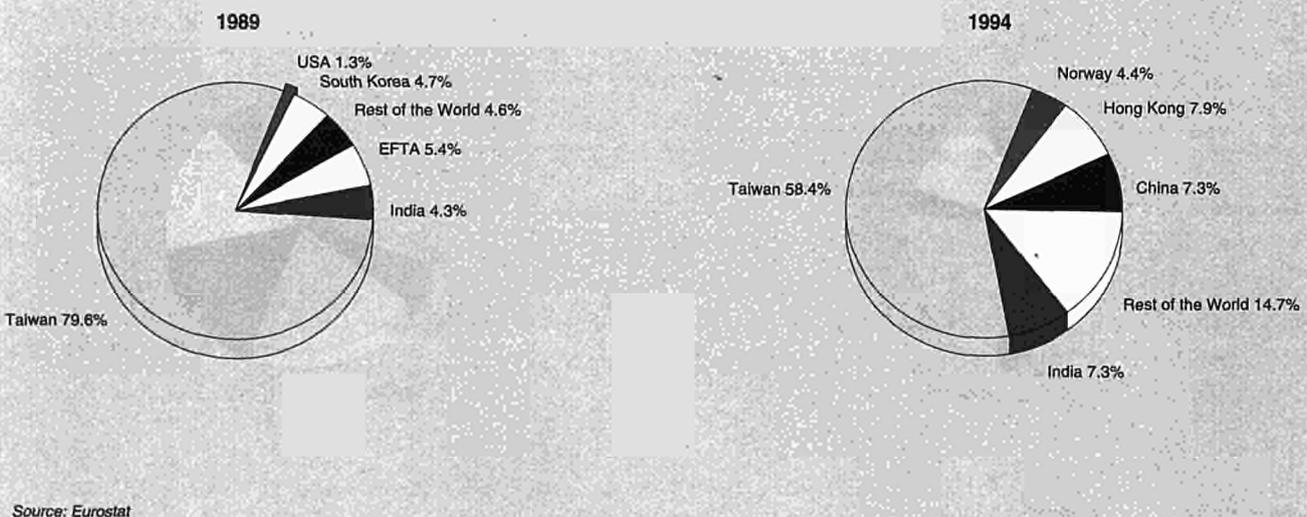
In order to meet increasing demands related to material quantity, consistency and purity imposed by metal reprocessors, the larger European scrap metal merchants have invested in technologies which are capable of maintaining their position within a competitive market. For example, ferrous scrap processors have invested very heavily to ensure that the world's

steel industry has ample supplies of the quality-controlled furnace feed it requires.

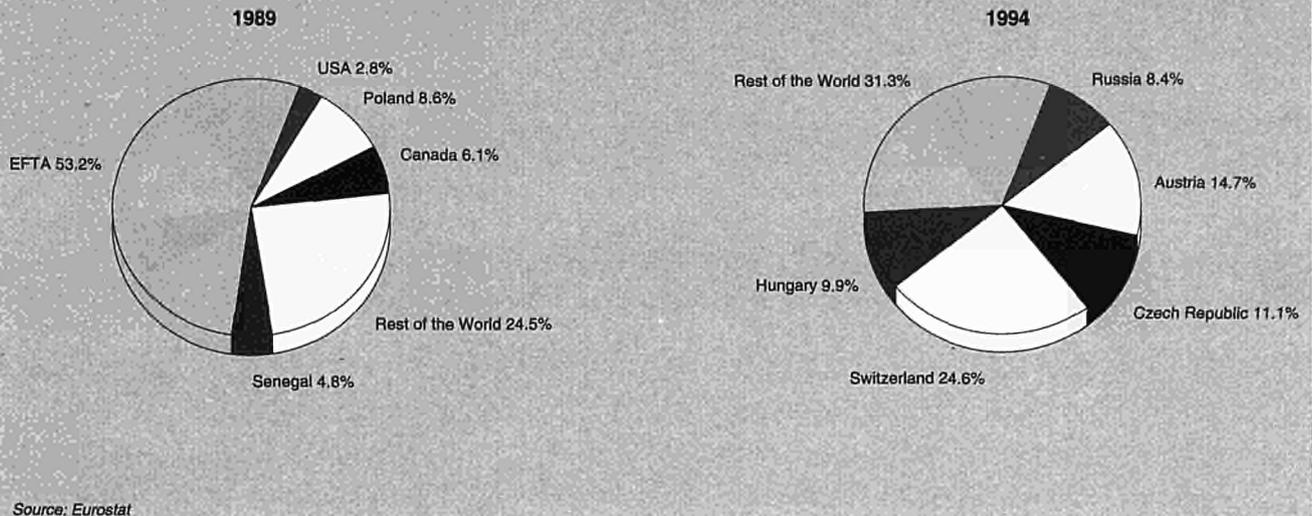
Despite low operating margins in the metals recycling industry, companies have invested continuously. Under pressure of legislation, BMW, Daimler Benz, VW and others have invested in automotive parts and electronics waste recycling, which is now a growth area. The car manufacturers do not operate the recycling businesses but participate and set-up collection sites. There has been no investment in improving separation processes.

The globalisation of the stainless steel industry becomes more and more evident. European, American and Asian mills have formed relationships to assist production, technology and distribution. Imports and exports of both primary and secondary products are shaping the future of the industry. As prime product is exported, the scrap generated from manufacturing and utilisation is also being exported.

**Figure 9: Recycling of zinc**  
**Destination of EU exports of scrap zinc**



**Figure 10: Recycling of zinc**  
Origin of EU imports of scrap zinc



Source: Eurostat

## ENVIRONMENT

An estimated 60% to 95% savings in energy is obtained due to using recycled materials. Since the savings in raw materials depend on the technologies employed little estimation is available. The savings are highest for metals where the need to extract metal from virgin raw materials is avoided by using recyclable material.

The savings gained through processing and reprocessing of recyclable materials followed by the use of reprocessed materials in new production, depend on the technology used. Energy and raw materials savings also vary depending on the specifications secondary raw materials must meet, which is influenced by the market. The energy savings diminish as extra stages of processing and reprocessing are necessary to meet specifications. The specifications for ferrous recyclable materials, for instance, to be included in steelmaking become more stringent. By contrast, in precious metals recycling, the

number of processing stages varies according to the demands of the customer. Thus, the reprocessor carries out the minimum amount of processing in order to achieve the same price.

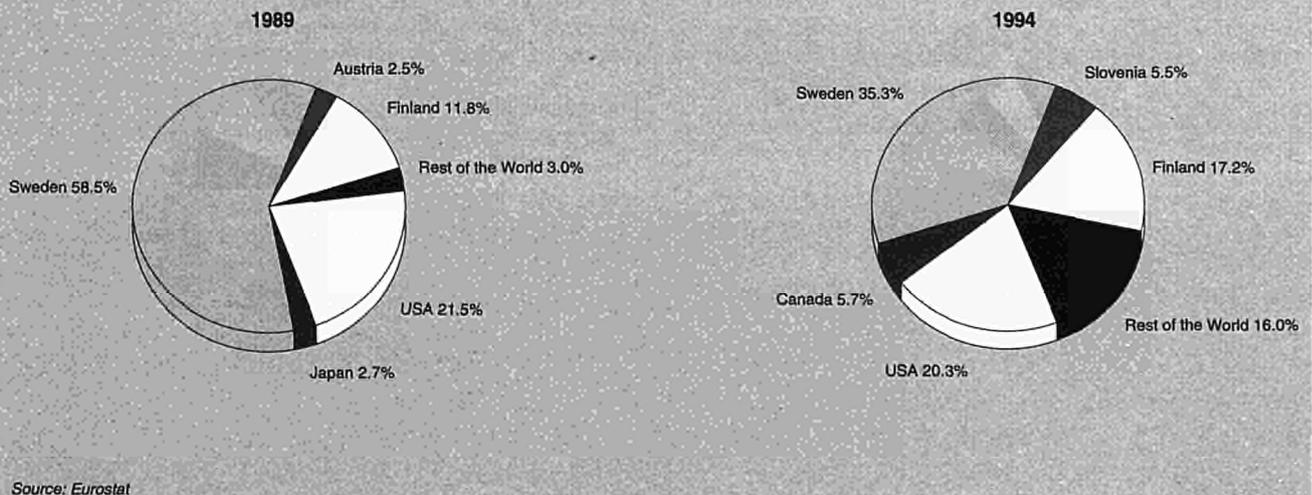
## REGULATIONS

There are two main types of legislation which potentially have an impact on the levels of recycling: legislation designed to protect the environment, without reference to recycling; and legislation intended to increase the levels of recycling.

There are a number of examples of both types of legislation, both current and proposed at national, European and international level.

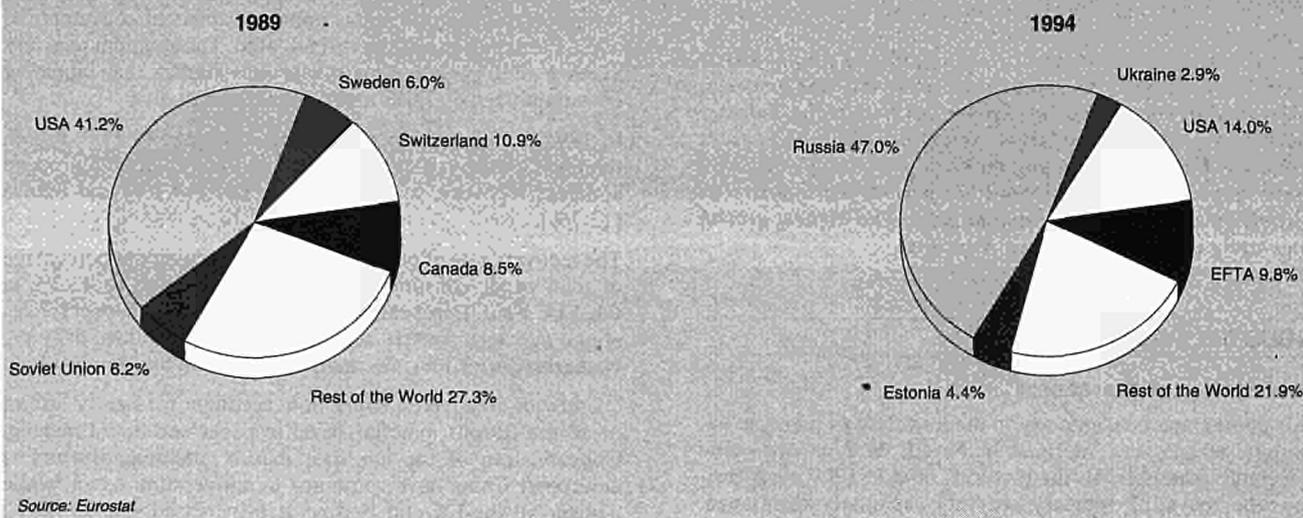
The framework for EU environmental legislation is set out in the Environmental Action Programmes. The following five factors are related to this subject: the definition of "waste"; the restricted use of certain virgin materials; the disposal of recyclable material; the reprocessing of recyclable material;

**Figure 11: Recycling of nickel**  
Destination of EU exports of scrap nickel



Source: Eurostat

**Figure 12: Recycling of nickel**  
**Origin of EU imports of scrap nickel**



and the movement of recyclable materials across national borders.

Although waste management legislation now makes a distinction between waste intended for recovery and waste intended for disposal, "secondary raw materials" are not clearly defined. Secondary raw materials, diverted from the waste stream, are prepared and processed according to strict physical and chemical specifications for further environmentally sound recycling and production of recycled materials.

Operational restrictions, particularly those concerning the international movement of recyclable non-ferrous metal materials will have an effect on the performance of the recycling industries. The European Council Regulation 259/93 applies to the movement of waste and covers, through its definition, all secondary metals. Some difficulties for free movement of these have been reported within the EU but should not have a major impact on the industry. For trade to some major customers in the Far East, bilateral agreements are necessary when concerning materials listed as "amber" and even "green waste".

## OUTLOOK

Although the recycling of most post-consumer materials is technically feasible, the economic viability of recycling continues to depend primarily on the balance of supply and demand for each material. The variation between materials in economic viability of recycling is due to the cost of recycling; the markets for recycled materials and, for example, the costs of using recycled materials. Thus, in some markets, such as the recycling of lead batteries, the profit margins are very small.

Increases in the level of recycling for steel and non-ferrous metals are expected, due to the increased use of electric arc technology, which can process much higher levels of scrap than conventional technology. The challenge for the merchant sector is to collect a greater proportion of ferrous metal from the non-industrial sources, in order to increase the level of supply.

Within the non-ferrous metal recycling industry, the automotive parts and electronic waste recycling is defined as a growth area.

Written by: Netherlands Economic Institute

The industry is represented at the European level by: European Ferrous Recovery and Recycling Federation (EFR) & EUROMETREC c/o Bureau of International Recycling (BIR). Address: Rue de Lombard 24 -bte 14, 1000 Brussels; tel (32 2) 514 21 80; fax (32 2) 514 12 26.

# Recycling of non-metal recyclable materials

## NACE (Revision 1) 37.2

The EU recycling industry increased significantly in the 1990s in the fields of paper, glass, plastics, textiles etc. The progress, however, differed among the subsectors within the industry and between countries. Glass recycling has the highest rates within the European recycling industry, followed by paper & board recycling. For the 1996-2000 period, the industry as a whole is expected to continue to grow. The highest growth rates are expected for plastics recycling.

### INDUSTRY PROFILE

#### Description of the sector

This monograph concentrates on the recycling of paper, glass, plastics, textiles etc., defined in NACE 37.2 as non-metal recyclable materials. In the previous NACE 1970 classification, the recycling industry was not separately mentioned. Non-metal recyclable materials include: paper, plastics, chlorinated solvents (chemicals), glass, ceramics, composites, leather, textiles, rubber, wood and cork.

The materials fall into three groups:

- materials for which there is a well established and widespread recycling industry, comprising: paper, glass and textiles;
- materials for which there is a small scale but developing recycling industry, comprising: plastics, rubber, wood, chlorinated solvents and beverage cartons (composites); and
- materials for which there is currently little or no recycling industry comprising: ceramics, leather and cork.

The recycling industry focuses on collecting, sorting and/or preparing materials according to strict specifications for the further production of "recycled" materials. The focus of this monograph is on recycling as an industrial and commercially driven activity.

#### Recent trends

The recycling rate varies between 7% for plastics and 63% for chlorinated solvents.

#### Paper

During the 1990-1994 period, apparent recovery (i.e. consumption plus exports minus imports), apparent consumption, extra-EU exports and imports increased. The apparent recovery average real annual growth rate was higher than apparent consumption, i.e. 7.0% and 6.5%, respectively.

In 1994, European paper recycling amounted to 27.7 million tonnes. Germany accounted for one-third of total European apparent recovery, followed by the UK (14.1%) and France (12.7%).

The recovery rate of paper (i.e. apparent recovery as percentage of total paper consumption) in 1994 amounted to 43.3% in the EU. Four European countries had paper recovery rates above average; Austria accounted for 66%, followed by the Netherlands (63.1%), Germany (60.3%) and Sweden (60.1%).

Worldwide, recovered paper now accounts for nearly a third of all the fibrous materials used in paper and board making. Consolidation of the Far East market and requirements of newcomer China have combined to enliven this sector, while demand in the US and Europe also increased.

#### Glass

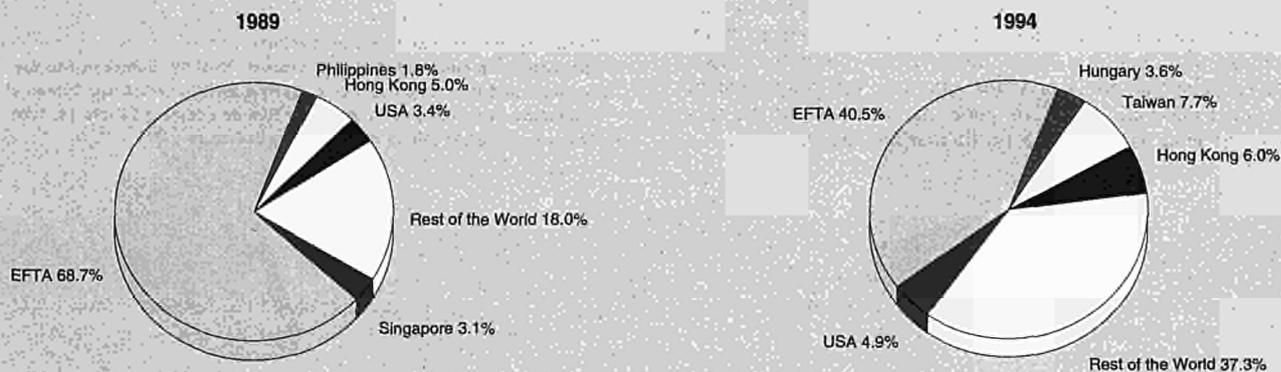
European glass recycling grew by almost 10% (in tonnes collected) in 1994, to more than 7 million tonnes. Germany accounted for more than one-third of total tonnage collected, followed by France (18%) and Italy (12%).

The national glass recycling rates (i.e. recycled glass as a percentage of national glass consumption) of all EU countries increased significantly during the 1989-1994 period. The Netherlands accounted for the highest glass recycling rate (77%), followed by Austria (76%) and Germany (75%) in 1994.

#### Plastics & Rubber

As plastics are fairly recent materials, the experience with them is not as broad as that gained with materials such as glass, paper and metal. Nevertheless, some successful plastics recycling loops are already in operation. Production scrap from the manufacture of plastics products has always been fed back into the production process. Other examples of this

**Figure 1: Recycling of paper**  
Destination of EU exports of recyclable paper and wastepaper



Source: Eurostat

**Table 1: Recovered paper**  
**Main indicators in volume (1)**

(thousand tonnes)	1990 (2)	1991 (2)	1992	1993	1994
Apparent consumption	22 101	22 887	24 676	25 652	28 375
Apparent recovery	21 139	22 326	23 706	25 195	27 735
Extra-EU exports	3 975	4 709	4 873	4 753	5 618
Extra-EU imports	4 936	5 270	5 843	5 210	6 258

(1) EUR15 excluding Luxembourg.  
(2) EUR15 excluding Greece and Ireland.  
Source: CEPI

**Table 2: Recovered paper**  
**Average real annual growth rates**

(%)	1990-94	1993-94
Apparent consumption	6.45	10.62
Apparent recovery	7.02	10.08
Extra-EU exports	9.04	18.19
Extra-EU imports	6.11	20.12

Source: CEPI

**Table 3: Recovered paper**  
**External trade in volume (1)**

(thousand tonnes)	1990	1991	1992	1993	1994
Extra-EU exports	3 974.6	4 709.3	4 873.0	4 753.4	5 617.9
Extra-EU imports	4 936.4	5 270.4	5 842.9	5 209.8	6 257.8
Trade balance	-961.8	-561.1	-969.9	-456.4	-639.9
Ratio exports / imports	0.8	0.9	0.8	0.9	0.9

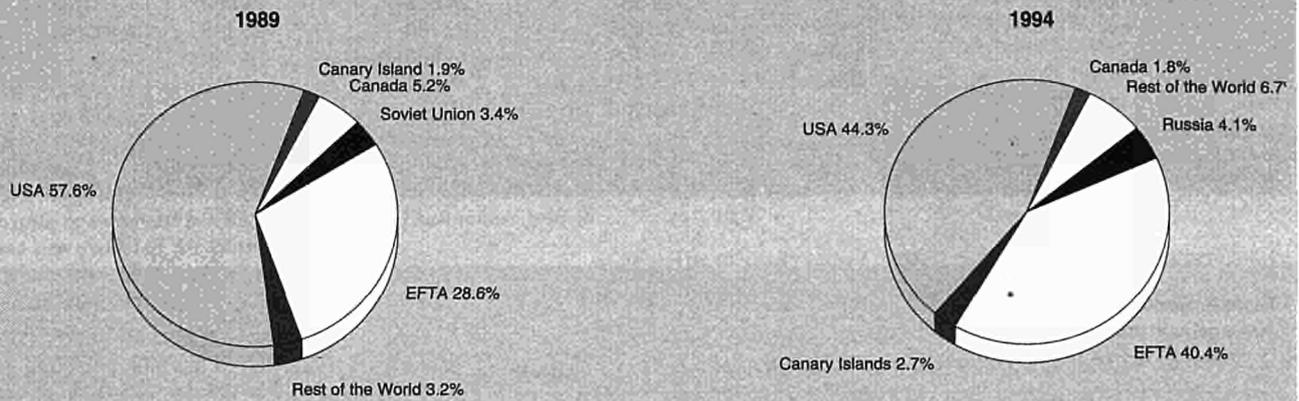
(1) EUR15 excluding Luxembourg.  
Source: CEPI

**Table 4: Recovered paper**  
**Main indicators in volume by Member State**

(thousand tonnes)	B	DK	D	GR	E	F	IRL	I	NL	A	P	FIN	S	UK	EUR15 (1)
Apparent consumption	340	388	8 160	167	2 435	4 075	45	3 310	2 137	1 405	270	566	1 408	3 668	28 375
% of total paper production (%)	27	125	56	48	70	47	1223	49	71	39	28	5.2	15	63	41
Apparent recovery	865	504	9 689	166	1 816	3 517	45	2 295	2 202	984	276	4 723	991	3 913	27 735
Recovery rate (% of total paper consumption)	35	42	60	26	356	36	12	267	63	66	37	43	60	34	43
Extra-EU exports	620	211	2 248	12	25	670	0	35	1 074	81	26	29.5	166	419	5 618
% of total paper exports (%)	71	N/A	36	26	3	18	0	2	52	3	5	0.3	2	33	15
Extra-EU imports	96	96	719	12	644	1 228	0	1 050	1 001	503	20	122.2	583	174	6 258
% of total paper imports (%)	5	9	9	4	27	26	0	29	40	67	6	58	N/A	3	19

(1) EUR15 excluding Luxembourg.  
Source: CEPI

**Figure 2: Recycling of paper**  
**Origin of EU imports of recyclable paper and wastepaper**



Source: Eurostat

include plastic films in agriculture, automotive parts such as bumpers, and window profiles in the building industry.

As a result of the growing awareness and current environmental laws and regulations, the quantity of plastics waste collected is now increasing dramatically. Plastics recycling, as one of the waste management options, is thus required now more than ever.

Investments in rubber tyre recycling plants, such as those in Sheffield and Belgium, will not entirely eliminate Europe's tyre mountain. But a mixture of technical progress and greater use of existing technologies, such as retreading and grinding, should make a sizeable dent. New chemical compounds are under constant analysis. Some new tyres are being developed in which a percentage of the weight comprises of recycled rubber "crumb" from scrap tyres. This percentage is expected to increase to 10% within the next five years.

### Textiles

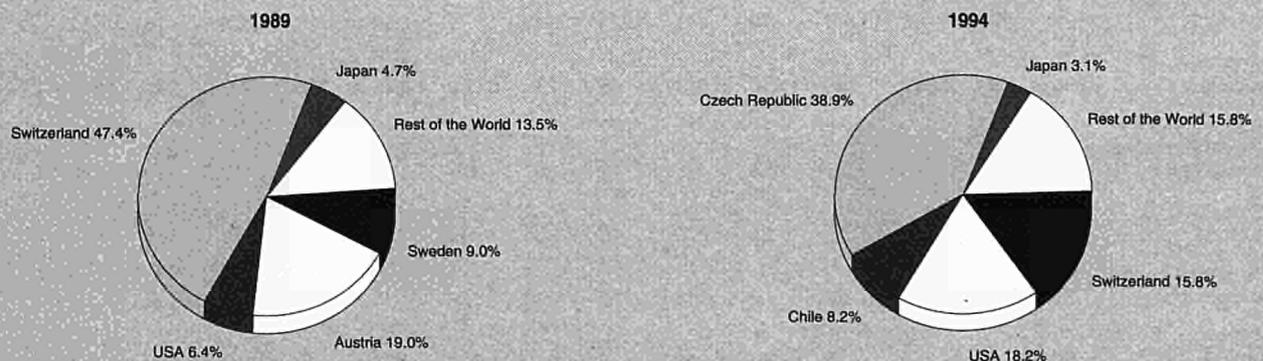
Recycled textiles account for 13% of all textiles material used worldwide.

### International comparison

In 1994, the glass recycling rate of the USA was approximately 40%. At least 9 of the 15 EU countries had higher recycling rates in 1994, i.e. between 48% and 77%. The recycling rates of Greece, Spain, Ireland, Portugal and the UK amounted to between 28% and 32%.

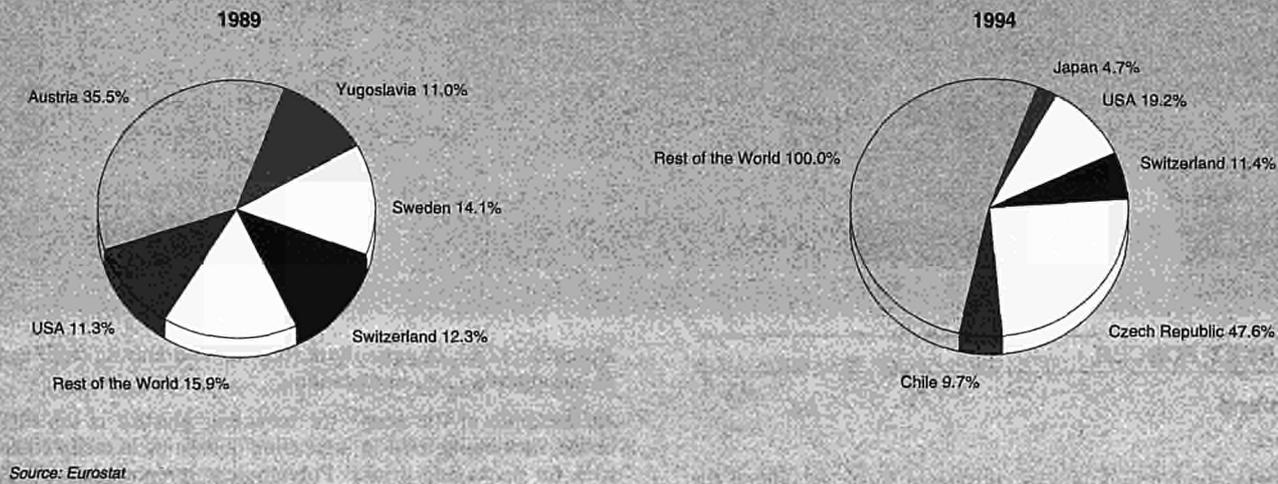
According to the World Competitiveness Report of 1995, the recycling of resources on a scale from neglected (0) to well taken care of (10) is slightly better taken care of in the US (6.06) than in Japan (5.58). Of the European Union, Austria, Denmark, Germany, the Netherlands and Sweden perform best on this scale, i.e. between 8.17 and 7.43.

**Figure 3: Recycling of glass**  
**Destination of EU exports of recyclable glass**



Source: Eurostat

**Figure 4: Recycling of glass**  
Origin of EU imports of recyclable glass



Source: Eurostat

### Foreign trade

Plastics and rubber extra-EU exports rose significantly in 1994, while paper and glass develop the import market. Where export level is low, as in the case of rubber, there is a 1% net export of used tyres. By contrast, large quantities of recyclable textiles are exported to secondhand clothing and textiles markets in developing countries.

#### Paper

During the 1990-1994 period, extra-EU exports increased by 9%, while imports increased by 6%. The EU is a net importer; the trade deficit amounted to 640 000 tonnes in 1994. Total imports were more than 6.0 million tonnes.

More than 40% of the extra-EU exports were directed to the EFTA countries in 1994. Taiwan and Hong Kong together accounted for more than 15%. Imports originated mainly from the US (44.3%) and the EFTA countries (40.4%).

#### Glass

Since 1991, the EU trade deficit of waste and scrap glass has increased, to more than 110 000 tonnes in 1994. Imports increased over the last three years, while exports decreased. In 1994, exports amounted to 18 000 tonnes.

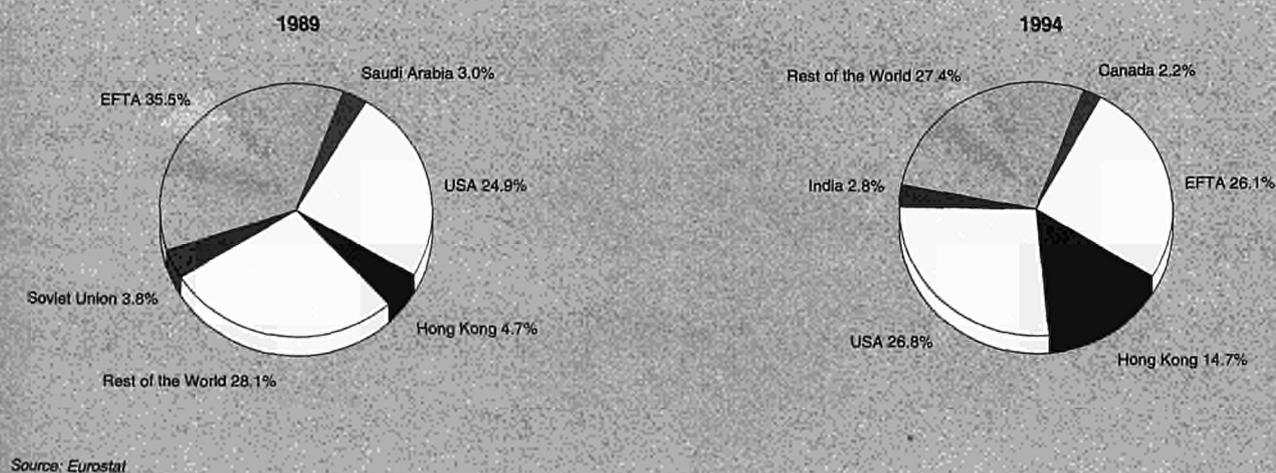
Waste and scrap glass was mainly exported to the Czech Republic (38.9%) in 1994. The US and Switzerland accounted for 18.2% and 15.8%, respectively. Imports originated mainly from the same countries: Czech Republic (47.6%), the US (19.2%) and Switzerland (11.4%).

#### Rubber & Plastics

In 1994, the EU trade surplus for plastics and rubber amounted to almost 500 000 tonnes. During the 1990-1994 period, exports increased to 143 300 tonnes. In 1994, imports increased as well, although much less than exports. Rubber recycling including regenerated rubber and retreaded tyres accounted for a trade surplus of less than 5 000 tonnes.

The USA and the EFTA countries accounted for 26.8% and 26.1% of extra-EU exports, respectively. Almost 15% of the exports were directed to Hong Kong. The imports originated mainly from three EFTA countries.

**Figure 5: Recycling of rubber and plastics**  
Destination of EU exports of recyclable rubber and plastics



Source: Eurostat

**Table 5: Recovered paper  
Consumption in volume by major product (1)**

(thousand tonnes)	1991 (2)	1992 (3)	1993 (3)	1994
Old newsprint	5 092.0	5 645.5	6 622.0	7 524.6
Corrugated	6 891.6	8 294.5	8 963.6	10 676.0
Woodfree	2 561.9	2 190.6	2 185.6	3 870.5
Others	6 082.4	5 668.9	5 308.2	6 304.0
Total	20 627.9	21 799.5	23 079.4	28 375.1

(1) EUR15 excluding Luxembourg.

(2) EUR15 excluding Greece, Ireland and Spain.

(3) EUR15 excluding Spain.

Source: CEPI

## MARKET FORCES

### Demand

#### Paper

In 1994, the consumption of corrugated waste accounted for 38% of total recovered paper, followed by old newsprint (26.9%), others (21.8%) and woodfree (13.3%). Of these four grades, old newsprint increased the most in 1994 (by 15.3%). Apparent recovery of recycled paper (i.e. consumption plus exports minus imports) in the EU increased by around 1.5 million tonnes to almost 25.0 million tonnes.

Germany is the largest consumer of recovered paper (27.8%), followed by France (13.9%), the UK (12.5%) and Italy (11.2%). The EFTA countries account for 14.9% of total European recovered paper consumption. In 1994, Germany increased consumption by 16.7%.

Utilisation rates differ among sectors. The largest utilisation rate (44.3%) in 1993 was accounted for by the case materials sector, second largest was the newsprint sector (14.3%) followed by the wrappings, other packaging paper sector (11.0%). The utilisation rate is defined as the total use of recovered paper in a sector, as a percentage of total production.

#### Plastics

In Germany, around 73% of all plastics recycled are used in industrial packaging. Recycled plastics are also used in con-

struction (12%), in agriculture (6%), post-domestic (6%) and in automotive (3%) applications.

An example of the scope for recycling plastics is the PET bottle, now being used in increasing quantities in many countries for packaging drinks. Polyethylene terephthalate (PET) is a sophisticated material of great strength which is used very efficiently. As a beverage container its recycling potential is therefore considerable because the reduction in mechanical attributes associated with reprocessing still leaves the possibility of use in a very wide range of applications. It is already being made into filling and insulation materials and can be transformed into products as diverse as toys and aerosol caps.

#### Glass

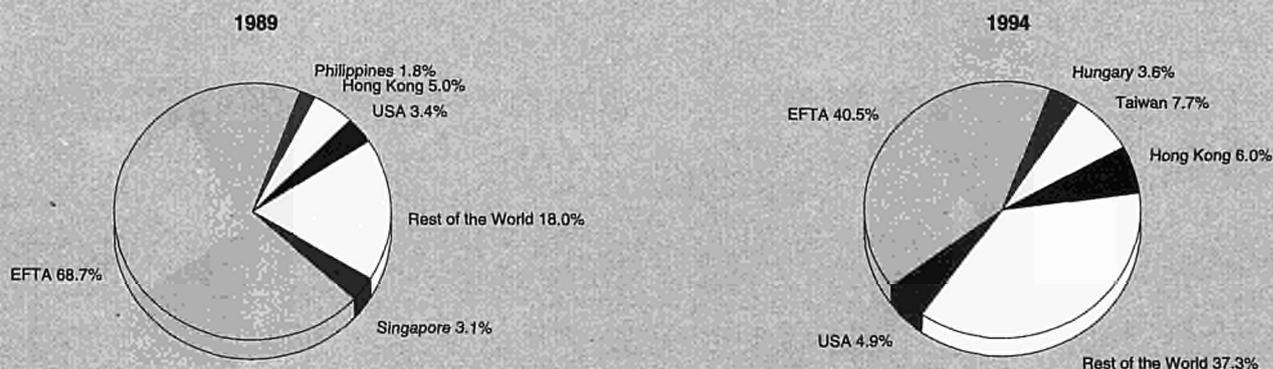
Processed cullet is a recycled raw material replacing virgin raw materials. Glass can be recycled indefinitely, without loss of quality of the glass produced. In Europe some glass furnaces are able to use 100% cullet.

#### Textiles

Demand should continue as there is a world shortage of primary raw materials, creating a demand for secondary products. In 1995, raw wool and raw cotton prices were very high.

Rag and textiles wastes provide an important source of raw materials for the textile and paper manufacturing industries. Textile recycling provides raw materials for upholstery, for filling mattresses, for wading and other absorbent products,

**Figure 6: Recycling of rubber and plastics  
Origin of EU imports of recyclable rubber and plastics**



Source: Eurostat

**Table 6: Recycling of glass**  
**External trade of recyclable glass in current prices**

(thousand ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	1 393.0	801.0	493.0	1 061.0	1 441.0	2 358.0	1 679.0
Extra-EU imports	1 750.0	888.0	1 463.0	3 581.0	3 800.0	8 133.0	5 870.0
Trade balance	-357.0	-87.0	-970.0	-2 520.0	-2 359.0	-5 775.0	-4 191.0
Ratio exports / imports	0.8	0.9	0.3	0.3	0.4	0.3	0.3
Terms of trade index (1)	97.5	97.6	100.0	98.3	100.2	97.6	95.2

(1) Nace 2470 (Nace 70).  
Source: Eurostat

and for the manufacture of felt as well as fibre from which new cloth can be made. In this way, primary sources are conserved and, because the recycled materials always have a price advantage, the cost to the consumer is held in check.

### Supply and competition

Concerning the degree of integration with related consuming industries, in the case of textiles, and to a limited extent paper, the voluntary sector (charities) have for many years collected recyclable materials for onward sale to reprocessors or established end markets. For the European paper, plastics and chemicals recycling industries, the extent to which the collection and processing of recyclable materials is integrated with the processing and manufacture of related products is very high. The commodity-based recycling sectors, such as textile and glass, are generally less well integrated than related industries. The greatest impact arising from the activities of new entrants to the recyclable material processing industries have been experienced by those merchants which collect and process paper, glass, textiles.

#### Paper

The pulping and screening of post-consumer paper is a technologically intensive process, which until the early 1990s, has been carried out solely by the larger paper manufacturers. For example, in France post-consumer paper pulping plants have been established independently from recycled paper mills. The operation of post-consumer paper pulping plants outside the EU may result in the import of ready pulped recycled paper, from the US for example, thereby affecting the EU recycled paper processing industry.

In the case of paper there is a high degree of integration between merchants/processors and reprocessors. However, with recent increases in the involvement of the larger waste municipal companies in the provision of contracted recycling services on behalf of municipal authorities, reprocessors, like paper mill operators, are taking advantage of the lower recyclable material prices being charged by the waste companies, and sourcing an increasing proportion of their recycled ma-

terial needs from organisations other than their in-house merchants.

#### Plastics

Since processors have largely been established by plastics manufacturers, the extent of integration is very high. The competition from new entrants is minimal due to technical barriers, except for collection.

#### Glass

Especially in Northern Europe, the extent of integration between the glass processing and reprocessors is high. The waste management companies and local authority recycling contractors increase the competition especially in Germany, France, Belgium, the UK, the Netherlands and Denmark.

### Production process

Recycling is the whole process of reclaiming, refining or reprocessing redundant products and materials, and converting them into new, perhaps quite different, products. Reprocessing consists of the industrial processes in which the form of recyclable material is changed.

#### Paper

Although the current level of technological development in the European paper reprocessing industry is considered high in relation to other recycled materials, the complexity of the processes involved is still increasing. In general terms, the larger European paper manufacturers have developed technologies which allow a greater quantity and variety of lower quality post-consumer paper (such as newsprint, magazines and other printed papers) to be recycled.

#### Plastics

The high technology based reprocessing of recyclable single polymer plastic materials is well established with the main European chemical and oil industries, especially in Germany, Italy, the Netherlands and the UK. The industry is generally seen as technology intensive in regard to reprocessing, but in the area of collecting and processing recyclable plastic

**Table 7: Recycling of glass**  
**External trade of recyclable glass in volume**

(tonnes)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	11 697.0	6 588.0	6 120.0	35 677.0	28 628.0	26 649.0	17 963.0
Extra-EU imports	43 745.0	21 523.0	36 719.0	53 920.0	81 756.0	123 612.0	130 676.0
Trade balance	-32 048.0	-14 935.0	-30 599.0	-18 243.0	-53 128.0	-96 963.0	-112 713.0
Ratio exports / imports	0.3	0.3	0.2	0.7	0.4	0.2	0.1

Source: Eurostat

**Table 8: Recycling of glass**  
**Recovery of glass, 1994**

(thousand tonnes)	Collected glass (1)			Percentage of national glass consumption (%)		
	1989	1993	1994	1989	1993	1994
EUR15 (2)	4 344.0	6 380.0	6 988.0	43.8	54.6	60.2
Belgique/België	208.0	218.0	235.0	60.0	55.0	67.0
Danmark	58.0	103.0	108.0	36.0	64.0	67.0
Deutschland	1 538.0	2 390.0	2 763.0	53.0	65.0	75.0
Ellada	14.0	34.0	37.0	13.0	27.0	29.0
España	287.0	328.0	371.0	24.0	29.0	31.0
France	760.0	1 200.0	1 300.0	38.0	46.0	48.0
Ireland	11.0	21.0	28.0	13.0	29.0	31.0
Italia	670.0	836.0	890.0	42.0	52.0	54.0
Nederland	279.0	385.0	367.0	57.0	76.0	77.0
Österreich	115.0	187.0	203.0	54.0	68.0	76.0
Portugal	34.0	71.0	71.0	14.0	29.0	32.0
Suomi/Finland	18.0	24.0	28.0	36.0	46.0	50.0
Sverige	42.0	82.0	95.0	34.0	59.0	56.0
United Kingdom	310.0	501.0	492.0	17.0	29.0	28.0

(1) Collected from the general public and the bottle fillers.

(2) Excluding Luxembourg.

Source: FEVE

from post-consumer sources, further developments are required.

#### Chemicals

The reprocessing of chemicals can also be characterised by complex technologies. The high operation costs imply that only the larger manufacturers based in Northern Europe have established reprocessing operations due to economies of scale.

#### Glass

The reprocessing of post-consumer glass uses relatively simple, yet highly automated technologies which were originally developed in the mineral processing industry. At this moment, two of the most significant factors affecting the level of glass recycling are the need to obtain on the one hand colour separated used glass in countries where colour sorting is necessary, and on the other hand high quality cullet particularly in countries achieving high glass recycling rates.

#### Textiles

The relatively low level of technological developments in the recycling of textiles when compared to metals, paper, plastics and even glass, is a reflection of the high level of dependence which is placed upon the skill and experience of the sorting staff employed within the sector.

## INDUSTRY STRUCTURE

### Companies

#### Paper

Most paper processors operate on a regional basis with close links to paper mills. At the local level there is some voluntary and public sector involvement.

#### Plastics

The structure of the plastics recycling industry is of few processors closely associated with the reprocessors of recycled plastic. Processing is dominated by the private sector. The involvement of public (local authority) and waste management companies in collection is considerable. In contrast to paper and glass, the collection, initial sorting and removal of contaminants is carried out by recycling operators likely to have closer links with the larger waste management companies or local authorities than with established recycling merchants. The next stage of processing is usually undertaken by specialist companies which are closely associated with, or owned by, reprocessors who have access to the necessary technologies.

The organisations involved in the processing of recyclable plastic packaging materials also have a close relationship with plastic reprocessors and product manufacturers. This situation has developed as a direct result of the packaging manufacturers being the main driving force behind recent developments in the recycling of post-consumer plastics. These industries are not widely established outside Germany, France, Belgium, the Netherlands and the UK because there is a direct link

**Table 9: Recycling of rubber and plastics**  
**External trade of recyclable rubber and plastics in current prices**

(thousand ECU)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	103.3	108.6	97.5	98.4	107.0	120.2	143.3
Extra-EU imports	61.3	71.0	67.9	56.6	55.9	47.7	59.6
Trade balance	41.9	37.6	29.7	41.9	51.1	72.6	83.7
Ratio exports / imports	1.68	1.53	1.44	1.74	1.91	2.52	2.40
Terms of trade index (1)	110.5	107.1	100.0	90.7	88.0	94.0	97.7

(1) Nace 4800 (Nace 70).

Source: Eurostat

**Table 10: Recycling of rubber and plastics**  
**External trade of recyclable rubber and plastics in volume**

(thousand tonnes)	1988	1989	1990	1991	1992	1993	1994
Extra-EU exports	177.7	162.1	159.8	179.1	239.7	287.8	593.7
Extra-EU imports	127.4	145.0	171.4	143.1	138.1	126.9	146.5
Trade balance	50.3	17.1	-11.6	36.0	101.6	160.9	447.2
Ratio exports / imports	1.4	1.1	0.9	1.3	1.7	2.3	4.1

Source: Eurostat

between plastics recycling and the larger chemical companies based in Northern Europe.

#### Chemicals

The reprocessing of chlorinated solvents in Europe is generally carried out by the chemical companies which were originally responsible for their production. The industry is dominated by the private sector. Some waste management companies are involved in collection.

#### Glass

Most recyclable glass or cullet suppliers operate on a regional basis with close links to glass manufacturers. The industry is dominated by the private sector. The local authorities are in some cases involved in glass collection and colour separation throughout the EU.

#### Textiles

In this industry, regional textile processors link directly to buyers in the EU and worldwide. The structure is very flat. In Germany, the UK and France, substantial voluntary sector operations are present. The local authority is involved in collection.

#### Strategies

Most companies in the recycling industry are locally, regionally or nationally oriented. However, as in most other industries, there is a trend towards globalisation. In this respect international cooperation has increased.

Furthermore, firms are cooperating to reduce investment expenditures. For example, Bayer, BASF and Hoechst have jointly formed EWvK GmbH as a recycling development corporation.

#### ENVIRONMENT

An estimated 60% to 95% of energy is saved when recycled materials are used. Since the savings in raw materials depend on the technologies employed no estimation is available. In some cases, savings in energy or raw materials may be reduced by the requirement for additional reprocessing stages. For

example, where recyclable paper is de-inked, additional energy is required to achieve this process.

While there will be an energy saving, resulting from the use of the recycled material compared to the virgin material, there may be significant energy and transport costs involved in collecting and processing the material. The savings gained through the processing and reprocessing of recyclable materials followed by the use of reprocessed materials in new production, depend on the technology used. The plastics industry has been investing considerable amounts investigating the energy and raw materials required to produce different types of virgin materials, as the basis for future life cycle analyses. These "ecoprofiles" will, in the long term, provide an informed basis for the evaluation of the relative environmental impacts of different products and processes and the benefits or otherwise of recycling plastics.

#### REGULATIONS

With the adoption December 1994 of the EU "Packaging" Directive, Europe acquired a single legislative framework regulating the handling of all used packaging in the Union. Although several important aspects of this legislation still require interpretation and clarification at both national and EU levels, for the first time all countries will, as from mid-1996, be aiming for broadly similar targets in recovering and recycling packaging waste. In all EU countries, glass already far exceeds the minimum recycling percentage required of each material (i.e. 15%) and, many of them, even exceed the maximum global recycling target (45%) stipulated by the Directive.

#### OUTLOOK

Except for the market for recycled chlorinated solvents, which is likely to diminish, the markets for other recycled products are expected to increase.

Increases in the level of recycling for glass and paper could be achieved within the capacity constraints of the existing markets, however any significant increase in the levels of

**Table 11: Recycling of rubber and plastics**  
**External trade by products, 1994**

	Extra-EU exports		Extra-EU imports		Trade balance	
	Value (million ECU)	Volume (tonnes)	Value (million ECU)	Volume (tonnes)	Value (million ECU)	Volume (tonnes)
Recyclable plastics	80.0	530 725.0	33.2	88 301.0	46.8	442 424.0
Recyclable rubber	10.0	29 788.0	11.0	45 720.0	-1.0	-15 932.0
Regenerated rubber	6.3	8 013.0	2.7	4 655.0	3.6	3 358.0
Retreaded tyres	47.0	25 143.0	12.7	7 802.0	34.3	17 341.0
Total	143.3	593 669.0	59.6	146 478.0	83.7	447 191.0

Source: Eurostat



paper recycling are subject to an increase in reprocessing capacity.

The market demand for recycled plastics will remain limited so long as such recycling is carried out mechanically. However, significant market development may occur as a result of the development of feedstock-recycling, in which the recyclable plastics are chemically and thermally treated to reduce them to the monomers which were used in their original manufacture. Feedstock recycled plastics will be identical to virgin plastics thus allowing such materials to compete in all plastics markets.

Written by: Netherlands Economic Institute

The industry is represented at the European level by: European Ferrous Recovery and Recycling Federation (EFR) & EUROMETREC c/o Bureau of International Recycling (BIR). Address: Rue de Lombard 24 -bte 14, 1000 Brussels; tel (32 2) 514 21 80; fax (32 2) 514 12 26; and Comité Permanent des Industries du Verre (CPIV). Address: Avenue Louise 89, B-1050 Brussels, Belgium; tel (32 2) 538 44 46; fax (32 2) 537 84 69; and Fédération Européenne du Verre d'Emballage (FEVE). Address: Avenue Louise 89, B-1050 Brussels, Belgium; tel (32 2) 539 34 34; fax (32 2) 539 37 52.





# Overview

## NACE (Revision 1) 45

Construction is one of the largest sectors of European industry with gross output accounting for 10-12% of GDP in the EU; value added is about half that. Construction also represents about 60% of gross fixed capital formation. The sector is a major employer with around 9 million employed by contractors. It also generates direct employment for 3 to 4 million in construction products. This is around 10% of civilian employment. It probably generates as much again in indirect employment.

Construction is mainly a local activity, with few large firms and little export activity. However, EU firms are successful in world markets. Intra-EU activity is increasing on large projects and there is extensive use of migrant labour.

Future markets are highly uncertain because they depend on economic growth rates and levels of public expenditure. EU infrastructure needs are expected to boost demand. Privatisation is generally reducing the share of public sector financing, which is approximately half of total demand.

Technology and the use of materials is rapidly changing. Research and development, training and quality management are key factors for future developments in the sector.

major components and sub-assemblies (e.g. structural steelworks, curtain walling, heating and ventilation systems). There are also specialists in site preparation. These groups are not entirely separate, however, as some major construction enterprises have invested in quarrying and the manufacture of construction products, and also have established or acquired specialist contracting businesses for site preparation, installation and completion operations.

Mention should also be made of the contribution of independent practices of construction professionals responsible for design, measurement, etc., including architects and construction economists classified under NACE 74.2 and described in Chapter 25. The contribution of these construction professionals, in terms of economic significance, is relatively small, accounting for only 6-10% of total construction output. However, the quality of work of European architects and consulting engineers is a major factor raising the competitiveness of the European construction industry.

Construction has traditionally been divided, in the thinking of construction enterprises and also in official statistics and regulations, between the two broad categories of building and civil engineering. This was reflected in NACE 70, where building engineering occupied category 501 and civil engineering category 502.

Below this level, commonly used sub-divisions of construction activity were defined in terms of the nature of the final product (e.g. housing, non-residential building) and/or the client to whom the product was supplied (public or private), and/or whether the product was the result either of new construction or of repair maintenance or improvement of existing buildings or structures.

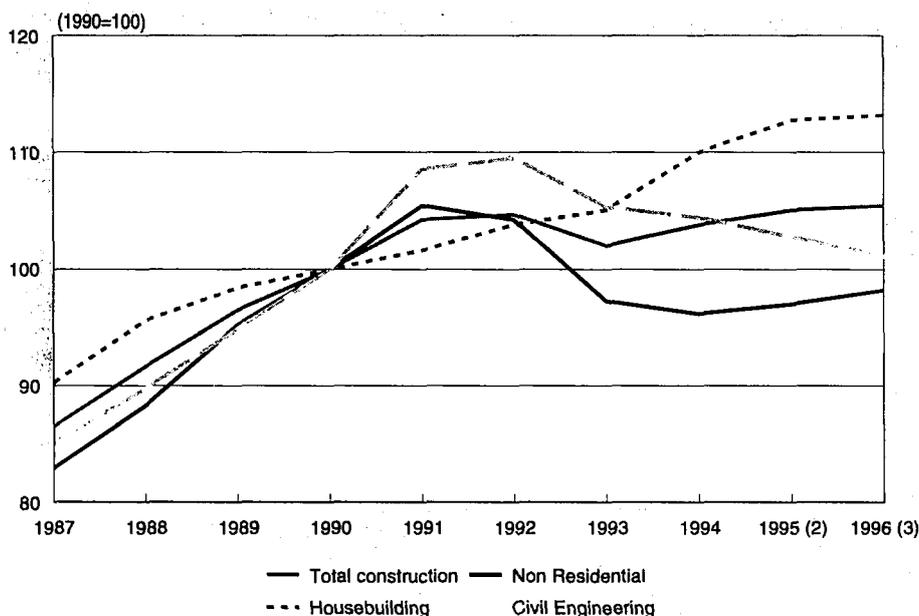
The revised NACE, however, sees construction in a very different way, dividing the industry's activities not by product or market sector, but according to the stages of the construction

### INDUSTRY PROFILE

#### Description of the sector

At the simplest level, the construction sector has two main constituents: constructors of buildings and works, and producers of construction materials. More recently, a growing part has been played by specialists who manufacture and install

Figure 1: Construction Index of investment in construction in the EU (1)



(1) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards.

(2) Estimates.

(3) Forecasts.

Source: FIEC (12/95)



**Table 1: Construction**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR 15 (3)	6.9	5.9	5.3	3.7	4.2	0.4	-2.6	1.8	1.2	0.4
Belgique/België	3.0	14.9	6.5	8.4	3.3	5.4	-2.6	1.1	2.3	1.3
Danmark	1.8	-4.3	-5.6	-3.7	-9.0	0.8	-3.7	4.1	4.6	4.3
Deutschland (4)	0.0	4.4	5.2	5.0	18.9	10.1	3.8	8.0	2.7	-0.5
España	6.9	10.0	13.0	9.0	4.0	-6.0	-7.5	1.2	4.5	3.2
France	3.6	5.8	4.2	2.5	1.3	-2.8	-5.1	-1.5	-0.7	-0.3
Ireland	-3.5	-4.3	7.4	16.8	-0.3	-2.1	-2.3	4.2	NA	NA
Italia	-0.7	2.3	3.6	3.5	1.4	-2.1	-6.3	-5.2	-1.8	0.7
Nederland	2.7	10.1	2.9	0.5	0.6	-0.2	-2.5	3.1	2.5	1.4
Österreich	3.3	2.5	0.7	4.8	7.5	4.5	-0.9	4.1	-0.5	-1.2
Portugal	9.7	10.4	3.7	5.3	4.5	2.5	0.0	1.0	6.5	6.8
Suomi/Finland	1.0	10.3	15.4	-1.1	-14.4	-17.2	-17.1	-4.5	5.4	0.0
Sverige	9.3	4.5	8.4	3.9	-3.9	-8.1	-10.2	-5.8	5.3	-0.1
United Kingdom	39.5	9.7	5.4	1.0	-6.8	-4.0	-2.0	3.2	-0.1	-0.3
Switzerland	3.0	6.9	5.7	-0.2	-5.6	-2.4	-2.0	2.6	-4.5	-0.8
Norway	6.4	-0.9	-10.9	-9.7	-4.7	0.9	-3.8	8.7	8.1	1.3
Poland	NA	3.9	-3.7	-10.7	1.3	-2.6	2.8	2.0	4.1	6.1
Romania	NA	-3.9	-3.1	-37.6	-22.5	0.2	0.4	41.5	5.2	8.6
Hungary	NA	-2.7	0.0	-8.9	-19.3	-3.8	-2.4	14.2	3.2	1.4
Iceland	13.7	-8.4	1.3	-2.4	5.0	-4.9	6.5	-4.6	4.7	NA

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

process: site preparation, including demolition (451); general construction (452), installation (453), and completion (454). A further division at the three-digit level (455) includes the renting with operator of construction equipment. This may be described as an 'horizontal' view of the industry, whereas its traditional divisions were 'vertical'.

By reference to NACE 70 it was always necessary to point out that most large construction enterprises were not confined to one segment of the industry or market sector, but were involved in both building and civil engineering, and had specialised subsidiaries to support their general contracting operations. By reference to the new classification it is now necessary to state that not only large construction enterprises, but also many medium-sized firms, operate at all the different levels in the industry. There are however a large, and indeed growing number of specialist firms, who work mainly as sub-contractors in respect of new construction projects but often as main contractors for repair, maintenance and improvement work.

Whilst it is easy to describe the activities of individual enterprises in terms of the revised NACE, statistics for construction activity have previously been collected on the basis of the traditional product- and/or client-oriented division of workload, and historic data cannot easily be broken down and reassembled by reference to the new classification. New series must be established.

This problem has been recognised by Eurostat who, in their September 1995 *Methodological Handbook for the Construction Sector, Version 4*, not only describe the problem of transition but also state that certain historic divisions not incorporated in NACE Revision 1 have continuing value for analytical purposes. They say, for example, that the continued provision of separate statistical series for each sector - building and civil engineering, public and private - "is necessary to provide adequate industry data to Union and national policy makers as well as to other users of construction statistics", and have therefore proposed an *additional* classification of buildings and civil engineering works, to be followed by na-

tional statistical organisations in compiling future data for construction, to which historic data may more easily be related.

Whilst subsequent chapters describe in general terms the different construction activities in each NACE category at the 3-digit level, and the factors affecting recent trends and prospects for each, there are for the time being no data for these divisions. In this chapter, however, are included full data for trends in workload in the main market sectors served by the construction industry.

Meanwhile, producers of construction products are mainly classified under NACE 14 (Other Mining and Quarrying), NACE 20 (Manufacture of Wood and Wood Products), NACE 25 (Manufacture of Rubber and Plastic Products), NACE 26 (Manufacture of Other Non-Metallic Mineral Products, which includes glass and bricks), NACE 28 (Manufacture of Fabricated Metal Products), NACE 29 (Manufacture of Machinery and Equipment N.E.C.), NACE 31 (Manufacture of Electrical Machinery and Apparatus N.E.C.).

#### *Distinct technologies*

Modern buildings and structures make use of a multitude of specialised technologies. In recent years, there has been rapid technological progress in the industry with respect to better construction methods and the manufacture of construction products. However, the need to repair, maintain and alter the existing built environment means that the industry needs to retain a competence in older technologies as well. Consequently, the construction industry's technologies range from traditional, labour intensive, site-based crafts to sophisticated, industrialised technologies in, for example, control systems in intelligent buildings.

Many construction firms specialise in one technology or in a small group of related technologies. Because clients frequently require one-off designs, many projects bring specialised firms together to form a unique project team. Therefore, in addition to individual specialised technologies, the industry uses general contractors, with or without independent design consultants, to create an overall design and management framework for individual projects.

**Table 2: Construction**  
Annual real production growth rates by country (1)

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (2)	1996 (3)
Building, of which:	6.0	6.0	5.0	3.2	3.4	0.5	-2.4	2.2	1.8	0.8
Housebuilding, of which:	1.5	5.9	2.9	1.7	1.6	2.2	1.2	4.8	2.4	0.4
New	0.2	8.2	1.9	0.2	1.6	2.4	0.1	4.3	2.4	-0.2
Rehabilitation and maintenance	5.1	3.4	3.0	2.6	1.9	2.6	2.8	5.1	2.4	1.1
Non-residential, of which:	13.6	6.4	7.8	5.1	5.5	-1.2	-6.7	-1.1	0.8	1.2
Private	13.5	7.7	8.7	5.4	5.8	-1.9	-7.9	-1.7	1.4	2.1
Public	8.3	3.8	3.2	4.3	6.2	1.5	-3.5	-0.1	-0.8	-1.0
Civil engineering	16.8	5.5	5.7	5.4	8.5	0.9	-3.8	-0.9	-1.6	-1.6
Total construction	6.9	5.9	5.3	3.7	4.2	0.4	-2.6	1.8	1.2	0.4

(1) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards.

(2) Estimates.

(3) Forecasts.

Source: FIEC (12/95)

Specific technology trends are affecting the construction industry. For example, computer-aided design (CAD) systems are gradually integrating traditionally fragmented processes. Prefabrication is moving work away from construction sites into factories; at present, this is mainly 'light prefabrication' of sub-components, such as building frame members and modules like toilet pods. However, discredited large scale building systems may again become viable using CAD and flexible manufacturing technology. Electronic control and communication systems are providing a basis for intelligent buildings and infrastructures that are linking the industry's products with its processes in ways that were previously impossible. The industry is also developing answers to the challenges of new environmental criteria and providing solutions for repair of environmental damage and constructions that respect the environment.

#### Types of clients

The sector is also fragmented because of the requirements of different types of clients.

- Most clients are small firms or individuals who have a problem that can be solved by simple construction work; e.g. repairs, maintenance or alterations. This creates an industry with many small firms serving local markets.
- Firms or public bodies, another type of client, need more substantial construction work. They are not expert in construction matters and require professional advice that they can trust. They also want to be involved in determining the design, price and schedule. This type of client tends to use medium or large construction firms working with independent architects or consulting engineers.
- A third type of client needs construction work but is experienced in employing an appropriate mix of consultants and contractors. These clients tend to determine contract conditions to suit their own way of working and buy specific services to suit the needs of the project. This category includes many clients in the public sector and utilities who are required, by the Public Procurement Directives, to organise competition among suppliers and contractors.

Market developments also show a tendency towards more integrated services, combining design and construction and, sometimes, maintenance, operating, etc. in varying degrees.

In addition, in a growing number of countries, public sector clients are looking to transfer to the private sector the responsibility for financing investment in buildings and works required for the provision of public services. Construction enterprises are responding positively to these developments by expanding their range of services.

#### Recent trends

As shown in tables 1 and 2, according to the latest FIEC figures, total construction output in the EU-15 fell by 2.6% in 1993, compared with an increase of 0.4% in 1992. In 1993, activity in Germany grew with investment in the new Länder, but was static or fell in all other EU countries. In 1994, total EU output increased by 1.8%, with continued growth in Germany and recovery in most other Member States, more than compensating for reduction in construction output in a few countries resisting the declining trend.

FIEC estimates that in 1995 total construction output in EU-15 was increased by around 1.2%, as output growth slowed in Germany and there were small reductions in activity in France, Italy and the United Kingdom. In 1996 output is expected to grow only by 0.4%, with Italy being the only major country resisting the declining trend.

Forecasts for 1996 show stagnation in house building and further recovery in private non-residential building. Cuts in government spending lead to an ongoing decline both in public non-residential building and in civil engineering.

#### International comparison

As shown in table 3, the EU, USA and Japan are presently the largest construction markets in the world. However, future construction growth may accelerate in China and, somewhat later, in the former Soviet Union and Central Europe. Construction output in Japan is about the same value as the EU, but prices are generally believed to be higher, indicating a lower physical volume of output. Deliberate government policies have increased Japanese gross construction output from 15% (1985) to 19% (1993) of GDP, and average output per head to 4 500 ECU, twice as high as the EU average.

There are reported to be several Japanese companies present in Europe. These firms, which principally work on behalf of Japanese investors, sub-contract most of their work to indigenous contractors, thus their net share of the European construction market is relatively small. Japanese construction companies also compete with EU firms in: Africa, the Middle East and mainly South East Asia, where they have a strong presence. In Japan, they operate through a pyramid of sub-contractors, specialists, suppliers and designers. It is an industry which is dependent on an interlocking system of patronage and non-contractual relationships.

Specialised construction contractors, who have been pioneers in the field of industrial manufactured products for construction, might compete with these general construction companies but, even here, the construction industry is characterised by complex inter-relationships between these actors.

The US market is the third in size, slightly smaller than those of Japan and of the EU. The Japanese and the US markets

**Table 3: Construction**  
Construction markets in the EU, USA and Japan, 1992

	Size (billion ECU)	Average output per head (ECU)	Share of GDP (%)
EU	550	1 600	10
USA	510	2 000	11
Japan	520	4 200	18

Source: Atkins Management Consultants

have the benefit of a common language, currency, economic policy, culture and education system. The US market also benefits from a significant number of highly competitive manufacturers of materials and components based on common standards. It is also true, however, that regulations and market conditions differ in the 50 states, creating distinct local construction industries. US firms are particularly renowned for their construction management expertise. For European contractors, the main competitors are those overseas contractors with special engineering experience that are present in the EU, as well as, in the Middle East and South East Asia.

### Employment

Table 4 shows the total number of persons employed in construction. In 1994, employment was around 9.8 million in the EU, which corresponds to 1989 levels. Employment has naturally followed construction activity levels, which have been cyclical, but with an underlying downward trend linked to rising productivity and increased off-site assembly of components.

While there is no single definition of "self-employment", FIEC estimates that there are approximately 2.2 million self-employed workers in construction in the EU (Table 5). This represents around one quarter of total employment. The UK has the largest proportion of self-employed persons with around 600 000.

### MARKET FORCES

#### Demand

The construction industry serves a highly cyclical market, suffering from the normal 4 to 5 year business cycle. Indeed, its own demand variability is greater than that of most sectors because private sector demand for construction is dependent on investment by other sectors and therefore highly sensitive to the state of the business cycle generally and to interest rates. In addition, there are long period fluctuations in demand which have an obvious effect on output levels. In Europe, a peak of activity was reached in 1974, after which the oil crisis caused a slump in European construction for a period of 10 years (and a corresponding boom in OPEC countries). Recovery accelerated in 1987, coinciding with the signing of the Single European Act and the accession of Spain and Portugal. However, a downturn followed in 1991. This was partly a cyclical reaction to the inflationary pressures of the boom and to the stock of new empty properties in the EU. It also coincided with major structural changes in world trade, caused by the end of the cold war, the break-up of COMECON and the collapse of the centrally planned economies.

As always, the future for construction is uncertain. Within the EU, future growth will depend on, among other things, the success of policies to increase growth, employment and competitiveness. However, the speed of convergence towards monetary integration and the constraints that this convergence is imposing on public spending on construction in many EU

**Table 4: Construction**  
Total employment

(thousands)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR 15 (3)	9 230.7	9 559.9	9 866.0	10 132.3	10 135.6	10 301.7	9 925.9	NA	NA	NA
Belgique/België	198.0	208.0	219.0	229.0	235.0	237.0	231.0	232.0	233.0	231.0
Danmark	190.6	186.0	174.8	167.8	157.3	163.4	160.6	169.9	175.5	179.5
Deutschland (4)	1 739.0	1 843.0	1 849.0	1 913.0	1 984.0	2 512.0	2 557.0	2 672.0	2 672.0	2 672.0
España	925.9	1 020.3	1 133.8	1 220.4	1 273.5	1 196.3	1 088.5	1 058.7	1 033.3	1 129.2
France	1 588.0	1 612.3	1 649.5	1 662.2	1 651.3	1 606.9	1 519.2	1 460.0	NA	NA
Ireland	71.0	70.0	70.0	76.0	78.0	74.0	71.0	NA	NA	NA
Italia	1 615.0	1 610.2	1 598.5	1 633.8	1 680.9	1 699.9	1 669.4	1 611.3	1 563.0	1 563.0
Nederland	371.0	382.0	386.0	389.0	389.0	388.0	382.0	379.0	387.0	389.0
Österreich	124.0	122.0	124.0	130.0	134.0	136.0	135.0	137.0	134.0	133.0
Portugal	354.2	362.1	365.4	361.1	363.6	346.2	340.2	330.8	340.7	351.6
Suomi/Finland	184.0	188.0	201.0	205.0	179.0	149.0	125.0	117.0	117.0	117.0
Sverige	278.0	279.0	289.0	313.0	312.0	273.0	237.0	220.0	215.0	240.0
United Kingdom	1 592.0	1 677.0	1 806.0	1 832.0	1 698.0	1 520.0	1 410.0	1 384.0	1 370.0	1 355.0
Switzerland	167.6	175.8	170.8	166.4	158.0	143.2	135.4	132.9	131.6	129.0
Norway	172.1	171.7	154.8	146.4	136.2	126.2	119.2	122.8	122.8	122.8
Poland	1 137.4	1 139.8	1 102.7	1 035.1	984.0	939.3	843.8	758.9	750.0	787.5
Romania	610.6	603.2	622.6	550.4	363.1	358.1	346.5	327.5	345.0	360.0
Hungary	391.0	377.0	363.0	324.0	286.0	254.0	255.0	260.0	260.0	260.0
Iceland	12.3	11.8	12.3	11.4	11.0	10.7	10.7	10.6	10.4	NA

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

**Table 5: Construction  
Self-employed workers**

(thousands)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR 15 (3)	2072.5	2145.0	2258.0	2302.3	2293.9	2279.5	2247.7	NA	NA	NA
Belgique/België	42.0	43.0	43.0	44.0	45.0	45.0	45.0	45.0	45.0	45.0
Dänmark	30.9	30.2	28.7	26.7	24.8	25.4	25.9	27.7	28.6	29.3
Deutschland (4)	193.0	199.0	200.0	206.0	213.0	236.0	242.0	250.0	250.0	250.0
España	231.6	246.1	244.1	257.3	278.8	289.7	279.0	271.6	271.7	277.1
France	315.5	315.9	314.3	310.3	303.3	294.8	276.2	325.0	NA	NA
Ireland	11.0	11.0	12.0	13.0	12.0	12.0	12.0	NA	NA	NA
Italia	525.9	518.0	518.2	523.6	550.4	561.4	579.0	570.6	NA	NA
Nederland	43.0	44.0	44.0	45.0	45.0	46.0	48.0	51.0	52.0	52.0
Österreich	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Portugal	73.6	70.8	74.7	77.4	86.6	94.2	91.6	92.4	96.6	101.4
Suomi/Finland	25.0	28.0	32.0	34.0	30.0	28.0	26.0	25.0	25.0	25.0
Sverige	44.0	45.0	47.0	48.0	46.0	48.0	50.0	47.0	46.0	51.0
United Kingdom	535.0	592.0	698.0	715.0	657.0	597.0	571.0	604.0	620.0	630.0
Switzerland	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Norway	30.0	28.9	26.1	23.8	20.8	20.6	20.4	20.5	20.5	20.5
Poland	125.0	139.8	160.5	168.7	181.7	189.3	161.8	143.9	140.0	140.0
Romania	101.1	95.9	95.4	88.7	54.5	50.2	45.0	31.8	33.0	40.0
Hungary	125.0	118.0	128.0	98.0	97.0	113.0	119.0	120.0	120.0	120.0
Iceland	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

countries are in the meantime reducing the industry's workload.

The cyclical nature of construction demand has a tendency to depress the profitability of construction enterprises as they compete to win orders when demand shows signs of falling. There is also pressure on profitability from procurement practices of public and private sector customers, who award contracts solely on the basis of the lowest price. The industry is seeking to raise its profitability by promoting measures designed to stabilise demand and procurement systems, which give more weight to quality criteria and total lifetime costs of the projects.

## INDUSTRY STRUCTURE

### Companies

The structure of the contractors' sector is similar in most countries. As a general rule, markets are local or regional, with few national firms, and even fewer operating on a European or international scale. There are a small number of large firms in each country, a relatively less significant band of medium-sized firms, and then a mass of small firms which are either specialists or work in extremely local markets.

Some large firms are expanding by acquisition of medium-sized specialists or by taking interests in firms in other EU countries. Some medium-sized firms are disappearing, either as a result of acquisition by larger firms or by bankruptcy or break-up; in which case, they may spawn a larger number of small specialist firms set up by individuals. The number of small firms and self-employed increased in the late 1980s, but fluctuates with the cycle. There is also a high turnover of entrants and wind-ups.

### Small firms

Construction is characterised by a large number of SMEs, with a large group of very small businesses. Data for the number of firms and employees in construction indicate that 97% of enterprise units have less than 20 employees, and 93% have less than 10. The data also include some self-em-

ployed persons, but not all, depending upon whether they are considered to be one-person enterprises or casual employment. However, it is difficult to record the true number of self-employed persons. Many workers may in fact be temporarily employed and then move on or become self-employed. Thus, their employment pattern has the characteristic of self-employment. It is also probable that the number of self-employed varies with the business cycle. Workers made redundant in a recession may change to self-employment or set up a small firm to carry out repair and maintenance, or short term contract work. Such enterprises may then be wound up when employment conditions are better.

Statistics on the number of SMEs among contractors disguise the fact that there are a number of distinct types of small firms:

- small contractors, active in building or civil engineering (or both) working in a local market or a specific market sector, e.g. house building. They may work as a main contractor using a network of subcontractors and self-employed craftsmen. Many of these are family firms and have a limited life based on the life of their proprietors;
- specialist contractors, ranging from piling contractors to painters and decorators, mainly in the finishing trades, who may operate over a wide geographical market. These, if successful, will grow and may become quite large, or be taken over by larger groups; in which case, they may continue to trade as independent companies;
- self-employed craftsmen who may be registered as small firms and work with family members or casual help;
- opportunistic start-ups by individuals, or partnerships, who are made redundant or seek more independence than working for a larger firm, or craftsmen expanding their range of activities. In some countries, these firms have been strongly favoured by advantageous social security and other wage related costs for independent workers; and
- one-off companies, set up for financial or fiscal reasons by larger firms to develop a single project. There may be a very large number of these in existence which cease to

**Table 6: Construction  
Breakdown by size of enterprise, 1992 (1)**

(%)	Number of enterprises (units)	Share of number of enterprises	Share of employment	Share of turnover
Less than 10 employees	1 854 295	92.2	43.5	34.2
10-19 employees	95 512	4.8	13.7	13.3
20-49 employees	43 788	2.2	13.9	14.0
50-99 employees	10 297	0.5	7.5	8.3
100-499 employees	5 591	0.3	11.0	14.4
500 or more employees	691	0.03	10.4	15.8

(1) Estimates for EUR15.  
Source: Eurostat Enterprises in Europe

have any life after the end of a project. These are not in any real sense SMEs, yet appear as such in statistics on the number of firms.

The fragmented nature of the industry is somewhat reduced by long-term networks of firms or quasi-firms. This is a well developed feature in Japan and becoming increasingly significant in the USA and Europe. Many firms work regularly with the same subcontractors, while in some countries some small firms collaborate to share common administration and sales services.

It is also increasingly common for major clients to develop groups of consultants and contractors that undertake all their work on a more or less regular basis. Franchising is also relevant in this context, especially in repairs and maintenance. The parent franchising firm ensures the competence of the small firms who buy into the franchise.

#### Large contractors

Europe has some very successful large contractors. As reported by "Building", Table 7 shows Europe's top 20 in 1994. These are mainly based in the larger EU countries: France (8), Germany (5), the UK (2) and Spain (2). However, lists of top contractors in other publications show some differences. Nevertheless, despite contractors appearing in different positions on various lists, and some 10 major contractors not appearing at all, the general picture is consistent. The EU has about 45 large contractors, or firms with an annual turnover in excess of 1 000 million ECU (1992 prices). None of the large EU contractors has a turnover (which includes payment to subcontractors and suppliers, often 80% of their turnover) which reaches 5% of their national market.

Many of the EU's largest contractors are part of groups of companies that work in several industries of which construction is just one. In many cases, these groups engage in work in several construction subsectors; e.g. manufacturing materials and components, providing various services (such as transport, water, waste treatment) and owning property-related businesses.

The EU does not have any contractors as large as the largest US and Japanese contractors, such as Fluor Daniel (turnover around 17 000 million ECU), Bechtel (around 15 000 million ECU) and Shimizu (around 26 000 million ECU). However, it should be noted that the very large US contractors are specialists in engineering construction and infrastructure work and operate as turnkey contractors. They mainly provide design, procurement, finance and project management services in-house, while subcontracting nearly all site and manufacturing work. In comparison, the largest Japanese and EU firms tend to be more directly involved in actual construction work on site.

It is felt in some quarters that Europe would benefit from having larger contractors, better equipped to compete with US and Japanese firms. They could also play a leading role in shaping the image of the industry, and take the lead in

R&D. However, this would not change the overall structure of the sector which will always reflect the structure of demand.

Within the EU, it is increasingly common for several contractors to join in bids for major construction projects in close co-operation with financial institutions. For example, the construction and financing of the Channel Tunnel involved some 10 contractors and over 200 banks and other financial institutions. Many contractors believe that new opportunities are to be found through joint-ventures, strategic alliances, mergers, acquisitions and co-operation. These strategies generally spread risk, provide access to a range of technical knowledge and experience not possessed by any one contractor, and may well provide access to a wide range of sources of finance.

Some contractors in EU countries such as Germany, Spain and France, have formal links with industrial banks. This can provide important advantages in access to finance and allow contractors to take a long-term view in developing their business.

In general, it can be observed that large contractors come from large countries. This leads to the conclusion that with the completion of a single EU construction market becomes a reality, some of the leading European contractors will increase their size. This has already happened to some extent in anticipation of the forthcoming Single European Market. Growth in size being achieved in part through cross-border mergers and acquisitions. In 1993, the French construction industry continued to hold the largest number of foreign interests (with 284 active holdings), followed by Germany (132), Austria (85) and the Netherlands (61). The highest level of foreign participation in domestic companies is to be found in Germany (190), followed by the UK (81) and Belgium (80). (Source: EIC: "Mergers and Acquisitions in the European Construction Industry - 1995", Feb. 1996).

#### Impact of the Single Market

The creation of the Single European Market, rather than the actual legislative measures implementing it, continues to have a generally positive impact on the construction sector. This overall effect is evidenced through the gradual approximation of construction procedures and the regulatory framework in which the sector operates, as well as in regional economic development. Owing to the nature of construction, this impact has not yet extended to the entire sector. Construction is by nature a local or regional activity, in which a majority of firms do not usually move far from their local geographical base. Consequently, transnational activities do not usually result in exports of goods as such, but rather take the form of exports of capital or services through international mergers, acquisitions and joint-ventures. European legislation in the areas of the opening up of public procurement markets, the free movement of goods and the free movement of persons has facilitated transnational activities. This is, however, only relevant to the fairly small number of enterprises that engage in such operations. The practical implementation of the Single Market has only just started and therefore is still far from

**Table 7: Construction**  
**The twenty largest companies in Europe, 1994**

(million ECU)	Country	Turnover	Change in turnover 1994/93 (%)	Employment (thousands)
Bouygues	F	11 174	5.2	91.2
SGE (Generale des Eaux)	F	7 069	5.9	63.3
Philipp Holzmann	D	6 948	N/A	43.2
Hochtief	D	5 550	30.6	35.3
Eiffage	F	5 065	-1.1	43.0
GTM-Entrepose (Lyonnaise des Eaux)	F	4 767	7.3	68.2
Billfinger & Berger	D	4 054	13.5	47.0
Dumez-GTM (GTM-Entrepose)	F	3 820	6.0	33.9
Skanska	S	3 431	11.9	28.8
Strabag	D	3 229	20.9	23.3
Tarmac	GBR	3 018	-7.6	NA
HBG	NL	2 755	11.2	19.1
Colas (Bouygues)	F	2 632	3.2	27.3
SPIE Batignolles (Schneider)	F	2 630	-6.6	27.6
Cegelec (Alcatel Alsthom)	F	2 533	2.5	23.4
Dragados y Construciones	E	2 427	17.5	21.4
FCC	E	2 400	4.7	34.2
AMEC	GBR	2 360	-10.2	NA
Dyckerhoff und Widmann (DYWIDAG)	D	2 231	0.1	17.3
Fintecna (IRI)	I	2 182	-30.7	NA

Source: *Le Moniteur*, November 1995

being accomplished. The sector considers as main priorities for the future the timely realisation of the Trans-European Networks, and a further simplification of the regulatory framework.

#### REGIONAL DISTRIBUTION

The EU Structural Funds will continue to be a main determinant of future regional patterns of growth and construction demand. Without regional policy, however, it is likely that disparities would increase. As long as the Structural Funds increase, they should assist construction growth in less advantaged, Objective 1 regions. However, the outcome heavily depends on individual national infrastructure policies.

The total volume of financing from EU funds is significant. For 1994-99, 141 billion ECU have been allocated to the Structural Funds, of which 96 billion ECU will go to Objective 1, less advantaged, regions. One-third will be for infrastructure projects. The Edinburgh growth initiative provides a further 8 billion ECU. The Cohesion Fund, agreed to by Member States as part of the Maastricht Treaty, adds a further facility. Between 1990 and 1994, EIB loans related to infrastructure within the EU amounted to 26 billion ECU. It can be assumed that around 20 billion ECU/year will be available for infrastructure from EU funds. If it is assumed that the average EU component is 50% of total project funding, the EU funds will, in effect, influence about 40 billion ECU per year, or about 30% of the 125 billion ECU/year of civil engineering expenditure.

The accession of Austria, Sweden and Finland to the EU in 1995, has brought in countries which are making a net contribution to EU funds and hence helping to increase regional development.

The European Commission's 1994 White Paper on Competitiveness, Employment and Growth emphasised the importance of infrastructure, and reaffirmed Community priorities for Trans-European networks and support for infrastructure investment.

These Trans-European networks are being extended to include the new democracies of Central and Eastern Europe, several of which intend to join the EU in the future. The new political and economic freedoms in these countries have exposed the

need for infrastructure investment, including transport links with Western and Northern Europe. Other principal construction needs, which will require substantial financial assistance from outside, include housing and the treatment of pollution. These countries have a large capacity to carry out construction work, with ample experience in managing large projects, but their technology is not fully up to date by Western standards. Likewise, productivity of the labour force is relatively low, as are wages. In the short to medium term, they may provide an additional market for western enterprises competing on quality or technology, however, they will be powerful competitors in low-cost building and basic infrastructure.

Despite efforts to reduce disparities in regional development, the main construction markets will continue to be in the backbone of Europe (the banana-shaped region from SE England, through western and southern Germany, to northern Italy) and the growing sunbelt region from the northern Adriatic along the Mediterranean coast of France and Catalonia. There is some evidence of convergence of per capita incomes in EU regions, but recent evidence shows that overall disparities have not changed much.

#### ENVIRONMENT

The construction sector faces enormous challenges and market opportunities from the emphasis on protecting and improving the environment. In response, the industry is providing solutions to environmental problems by developing new services and products, something which has provided positive contributions to the environment.

For example, in many countries concern has been expressed over the impact that major infrastructure works, such as roads, railways and dams, may have on the environment, in particular where construction of the Trans-European Networks are concerned. Following the necessary environmental impact assessments there is much that industry may do by way of design and choice of materials to reduce any adverse effects on the environment. The completed works may then generate considerable environmental benefits due to reduced traffic congestion.

The internal environment of buildings is an emerging area of concern, which requires more research and development

of standards relating to air quality, microbiology of buildings, allergenic and toxic effects of materials, and emissions from land and buildings.

Energy conservation remains a priority issue, as about half of Europe's energy consumption is related to buildings. Designers and contractors are responding to the need for more energy efficient buildings, including the use of passive thermal principles, which in some countries are required by law. The existing stock of buildings has potential for refurbishment to conserve energy. There is also likely to be increased use of less energy-intensive materials. These changes will be accelerated if energy prices rise through a carbon tax or other macro-economic energy conservation measures.

Energy and eco-labelling of buildings and products is beginning to be promoted and will create a market mechanism favouring these changes. The analysis of the environmental impact of specific projects is also increasing through development of techniques and enforcement of impact assessment requirements.

In some parts of the EU, there is growing concern over the availability of natural resources for construction and the consequences of meeting future demand. This focuses attention on making more effective use of materials. Waste management and the recycling of construction materials are subjects of extensive research and development. This is leading to changes in site practices and design principles, in order to minimise the use of materials which are damaging or not recyclable, and to facilitate ultimate demolition and recycling.

The built environment is to a large extent synonymous with our cultural heritage. It is difficult to exaggerate the importance of this heritage, and conservation is a major task for the construction industry. It is also worth emphasising the importance of local building practice in creating the diversity which is such an attractive feature of Europe's towns and villages. Small firms of designers and craftsmen continue to have a valuable role in maintaining this cultural dimension.

## REGULATIONS

In many respects, the construction sector is subject to different policies and legislative treatment from other sectors of the economy. At national levels these include: land use plans and planning controls (which affect land prices), building regulations and standards, planning permits, building inspection, registration of contractors and professions, regulated fee rates, and so on. Governments also directly control a large share of construction work and provide research, training and information services.

Some major EU regulations affecting the industry are:

- Public procurement directives. There are a full set of directives covering the award of contracts by public sector clients, including the Works Directive (93/37) and the Utilities Directive (93/38), which set out procedures for procurement of construction work for projects over 5 million ECU. The directives require advertising of calls for tender, use of specified selection procedures, and the use of European Technical Standards. In addition, the "Remedies" Directives (92/13 and 89/665) establish a system of judicial review of procurement procedure.
- Construction products directive (89/836). Interpretative documents enabling the Construction Products Directive to be implemented were adopted at the end of 1993. CEN and CENELEC (the European Standards bodies), working under a Commission mandate, are drawing up new harmonised EU Standards for construction products and new procedures for technical approval of innovative products.
- Liability and guarantees. There have been changes in legislation on liability and insurance requirements in some

countries over the past decade. Experts from various segments of the construction sector have been discussing proposals for possible harmonisation of liability law and arrangements for guarantees and insurance ("GAIPEC").

- Health and safety. A variety of health and safety measures affect the construction sector, including the Temporary and Mobile Construction Sites Directive (92/57) which has defined new responsibilities for designers and contractors and requires a safety plan to be produced for each construction site.
- Posted workers. The proposal of a directive currently under discussion requires all workers to be employed under the labour legislation and collective agreement terms of the host country. This would have an important impact on the construction sector, which, in some EU countries is a major employer of migrant labour.
- Pre-qualification. The possibility of a system of proof for pre-qualification of construction firms has been studied by CEN and the Commission has elaborated a mandate for CEN/CENELEC to develop standards in this area. These rules are intended to provide a basis for the mutual recognition of nationally acquired proof of qualification, in particular, pre-qualification procedures for public procurement. If adopted, it might also have an important impact on marketing by contractors and on selection procedures by private sector clients.

## OUTLOOK

Because construction demand is closely linked to total demand for investment, the industry's future depends largely upon the success of the EU and national governments in stimulating economic growth. European integration and socio-economic changes are generating increasing needs, but demand is constrained by public expenditure constraints and the financial capacity of the private sector and households.

There has been fear in some countries that there might be a long-term or a once-and-for-all drop in construction demand as population stabilises or declines, and as major infrastructure and housing needs are satisfied. However, the EU's construction sector strategy study ("SECTEUR"), carried out for the European Commission in 1992/93 and published in 1994, argued against that view. Social and economic changes, as well as the upgrading of environmental standards, are generating increasing construction needs. The problem will be to satisfy these needs. The share of GDP invested in construction needs to increase. However, this will be difficult to achieve, because it implies increasing macro-economic savings rates, at the same time as public expenditure is constrained by tax and public deficit restrictions and more expenditure is needed to meet the needs of an ageing population and long-term structural unemployment. Furthermore, pressure will be placed on public spending by Member States aiming to meet the convergence criteria for EMU.

### *Demand scenarios*

The "SECTEUR" study suggested three future scenarios:

- An optimistic, but attainable, high growth scenario shows construction output doubling by the year 2005, with employment rising rapidly at first and then more steadily, creating 5 million new jobs in construction and 15 million throughout the EU by the year 2000. This scenario promises continual improvements in housing, cities, and infrastructure enabling Europe's industry to restructure and become increasingly competitive.
- A more conservative scenario, with GDP growth and construction's share of GDP returning to historic levels of the 1980s, shows a return, after about 4 years' growth, to the output levels attained in the boom of 1990/1, and then

steady growth in construction output, averaging 3% per year. This scenario would create 2 million jobs in construction by the year 2000 and 6 million in total throughout the EU, reversing the decline in employment which took place over the 1980s.

- A pessimistic scenario, with low growth, a lower share of construction in GDP, and low innovation and productivity growth, shows construction output continuing to fall for several years, followed by slow growth, but never returning to the levels of 1992, let alone the boom levels of 1990/1. Here, 2 million construction workers and 6 million workers in total would become unemployed, despite continuing labour intensive technology. In this scenario, the living and working environment will deteriorate, European industry will become increasingly uncompetitive, and the standards of construction would be likely to decline.

Continuous rationalisation of industries is leading to plant closures, re-investment, and relocation which will be accelerated by EU integration. The EU is also becoming a more attractive target for inward investment by global firms; particularly Japanese. Changes in economic structure and consequent migration will stimulate new construction needs. In the future, more sophisticated EU regional policies and free market industrial policies should permit more rapid and efficient responses to such changes and help to convert construction needs into construction demand.

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# Site Preparation

## NACE (Revision 1) 45.1

*Site preparation, including demolition of existing buildings and structures to make way for new construction, and earth moving work, is of growing importance within the area of new construction activity. This is because the construction industry's clients come under growing pressure both to re-use previously occupied sites and, particularly when designing major new infrastructure works, in order to lessen the impact of the works on the environment. Recent trends in and the outlook for site preparation activity generally reflect those for new construction of buildings and civil engineering works that have been described in the preceding chapter entitled "Construction - Overview".*

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### INDUSTRY PROFILE

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#### Description of the sector

Site preparation, as defined in the revised NACE, includes a relatively wide range of activities, using both simple and more advanced technologies. These services range from test drilling and boring, to determine ground conditions, through demolition of existing buildings and structures, site clearance, ground stabilisation, excavation, earth moving, and trench digging, to landscaping. Site preparation work for mining is also included.

Site preparation services are provided both by separate undertakings, which are mostly SMEs, commonly working as sub-contractors, and specialist divisions of large construction enterprises. There are, for the time being, very few indicators of the relative importance of site preparation work in the total construction process. However, examples exist where site clearance and earth moving have accounted for as much as one third of the total cost of major infrastructure projects. Site preparation may also account for as high a proportion of the cost of building projects where sites are being re-used, especially where it is necessary to remediate land that has been contaminated by previous uses. In some cases land remediation is achieved by stripping contaminated soil, and its removal for safe disposal to landfill, but there is increasing use of newly developed techniques of in site decontamination.

Whilst the demand for site preparation services is derived mainly from, and, therefore, varies with, the demand for new construction of buildings and civil engineering works (there is additionally an element of demand for the 'greening' of derelict land without subsequent construction work), there is a tendency for the value of site preparation services to increase relative to the total value of demand for new construction. This tendency is the result mainly of the actions of governments which, responding to concern over the impact of construction on the environment, are introducing regulations designed to discourage development of so-called 'greenfield' sites, and encourage the revival of the centres of towns and cities by redevelopment of previously or currently occupied sites, including 'brownfield' sites where the land has been contaminated by previous occupations.

With regard to the development of infrastructure networks for transport, energy distribution, water supply and disposal of wastewater, the same concerns for protection and improvement of the environment are putting increasing emphasis on landscaping to lessen the visual impact of the works on the landscape and, in the case of roads and railways, increased use of excavated material not only for that purpose but also for the construction of noise mounds.

These trends are expected to continue or, indeed, to intensify.

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# General Construction

## NACE (Revision 1) 45.2

The general construction sector, which accounts for the greater part of total construction activity, is influenced by the overall economic situation in terms of current trends in economic activity and expectations of future trends, and also by EU and national government policies towards public investment in buildings and civil engineering works. Demand for buildings comes mainly from the private sector, but may be influenced by governments, not only by variation of their own demand, but also by changes in credit and fiscal policies. Demand for civil engineering works, to form parts of the infrastructure networks needed for transport, energy and public health, comes mainly from governments, regional and local government authorities, and public enterprises, though pressures on public finances are influencing a growing number of countries to look to the private sector to assume responsibility for funding investment and for operating these networks.

### INDUSTRY PROFILE

#### Description of the sector

The category of general construction, the full title of which is "works for complete construction or parts thereof; civil engineering works", encompasses the construction work, both building and civil engineering, except site preparation, installation and completion work, and the value of services obtained by renting construction and demolition equipment with operators; It is estimated that around 60% of all construction work falls into this category which, at the 4-digit level of the NACE Rev.1, is sub-divided into: 45.21 (General construction of buildings and civil engineering works); 45.22 (Erection of roof covering and frames); 45.23 (Construction of highways, roads, airfields and sport facilities); 45.24 (Construction of water projects); 45.25 (Other construction work involving special trades).

For the purpose of tracing the trend of the industry's activities, however, Eurostat has produced a complementary "classification of constructions", which takes as its basis the division of construction activities between the two broad categories of building and civil engineering and the sub-divisions of the market for construction, no longer identified in the NACE, by reference to which data for construction have traditionally been collected (refer Table 1)

#### Recent trends

Using the traditional division of construction activity, total building output rose by 2.2% in 1994, whereas civil engineering fell by 0.9%. There was growth in housebuilding and repair and maintenance of housing stock, but reductions were experienced in public and private non-residential building. For 1995 FIEC, figures show growth in the entire housing sector, recovery in private non-residential building, and a further decline in civil engineering.

#### Housebuilding

The housing stock may be broadly divided into three categories: social housing, the construction of which benefits from the support of public authorities; the private rental sector; and, owner-occupied housing. The relative importance of these sectors varies from country to country, depending on a variety of factors. For example, the owner-occupied sector is influenced by: income levels; the availability of house purchase loans with varying percentages of the purchase price; differing levels of transfer costs (4.5% - 22%) when buying and selling houses; and, different government policies with regard to home ownership, including tax treatment (e.g. VAT between 0% and 20.5% on new housing construction).

For the EU as a whole, and for most Member States, statistics show a small excess in the number of dwellings over the number of households. Yet, in practical terms, there is a shortage of housing which has become a pressing political problem. There are large numbers of households suffering from poor housing conditions who wish to be re-housed in new or refurbished dwellings, and others whose housing expectations have been raised by increases in their incomes. In addition, changes in the structure of the economy, and completion of

**Table 1: Building  
Eurostat construction classification**

Division	Group	Class	Description
	<b>BUILDINGS</b>		
		1.1	Residential buildings
		1.1.1	One and two dwelling buildings
		1.1.2	Three and more dwelling buildings
		1.1.3	Residence for communities
		1.2	Non-residential buildings
		1.2.1	Hotels and similar buildings
		1.2.2	Commercial buildings
		1.2.3	Industrial buildings and warehouses
		1.2.4	Complex constructions on industrial sites
		1.2.5	Buildings for public entertainment, education or hospital and institutional care
		1.2.6	Other non-residential buildings
2	<b>CIVIL ENGINEERING WORKS</b>		
		2.1	Highways, streets, roads, railways, airfield runways
		2.2	Bridges, elevated highways, tunnels and subways
		2.3	Harbours, waterways, dams and other waterworks
		2.4	Long distance pipelines, communication and power lines
		2.5	Local pipelines and cables
		2.6	Construction for sport and recreation
		2.7	Other civil engineering works

**Table 2: Building**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	6.0	6.0	5.0	3.2	3.4	0.5	-2.4	2.2	1.8	0.8
Belgique/België	5.9	17.4	9.8	9.1	2.2	4.7	-6.5	-0.6	1.8	0.9
Danmark	3.6	-5.6	-9.1	-7.2	-7.8	-1.8	-2.2	4.5	6.0	6.6
Deutschland (4)	0.2	4.5	5.6	5.7	18.7	10.0	4.6	8.6	3.4	-0.3
España	7.7	7.3	8.3	5.1	1.9	-3.3	-5.7	1.3	5.4	4.4
France	2.5	4.7	3.5	2.5	0.4	-2.3	-4.5	-2.0	0.0	0.5
Ireland	-1.0	-5.0	10.2	19.5	-1.0	-3.0	-6.5	7.8	NA	NA
Italia	-1.3	3.2	3.5	3.6	2.3	-1.4	-5.1	-4.5	-1.8	0.9
Nederland	3.6	11.1	3.5	-0.1	0.8	-0.6	-3.5	3.4	2.2	1.0
Österreich	4.5	7.8	-0.5	5.2	10.1	9.9	-2.1	4.9	1.4	-0.4
Portugal	10.7	8.4	0.7	3.4	0.1	1.6	-2.2	-0.3	3.7	2.9
Suomi/Finland	1.7	13.8	17.8	-1.9	-16.6	-20.8	-19.7	-2.9	7.6	0.0
Sverige	2.9	5.4	8.4	4.3	-4.8	-11.0	-13.6	-10.1	1.9	1.1
United Kingdom	33.4	9.6	5.4	-1.2	-11.2	-5.8	-2.7	6.3	1.7	0.5
Switzerland	3.0	7.1	6.6	-0.9	-7.7	-3.9	-2.3	2.4	-5.0	-1.7
Norway	4.0	-1.1	-8.8	-12.7	-8.5	-4.9	-0.1	16.8	8.9	3.0
Poland	N/A	4.0	-1.3	-8.4	2.4	-3.2	1.3	-0.6	2.8	5.8
Romania	N/A	-3.9	-3.1	-33.2	-22.5	0.2	0.4	41.5	3.8	9.4
Hungary	N/A	-2.5	1.9	-7.7	-21.8	-4.1	-8.5	6.9	1.6	1.1
Iceland	8.8	15.2	-1.4	-1.2	3.2	-3.9	11.6	-5.0	2.0	N/A

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

**Table 3: New housebuilding**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	0.2	8.2	1.9	0.2	1.6	2.4	0.1	4.3	2.4	-0.2
Belgique/België	6.5	29.0	20.5	11.1	-0.7	13.5	-5.4	2.0	1.4	-1.0
Danmark	-3.2	-9.3	-7.9	-14.5	-13.2	-4.8	-4.9	7.1	10.2	9.2
Deutschland (4)	-8.8	4.5	6.5	11.1	20.8	12.6	7.8	15.0	5.0	-1.5
España	4.3	5.3	4.7	0.9	-5.8	-8.1	-4.1	1.0	7.5	2.5
France	1.7	5.1	3.0	-1.8	-4.2	-7.0	-7.4	0.0	2.3	-0.3
Ireland	-15.8	-4.0	27.1	3.9	2.9	7.1	1.4	11.8	NA	NA
Italia	-9.3	4.2	3.3	4.0	1.5	0.6	-5.0	-7.0	-3.5	0.0
Nederland	2.2	13.3	-1.9	-3.3	-7.5	0.9	2.2	16.4	6.0	-1.0
Österreich	3.2	9.1	-2.1	-0.5	6.6	15.9	17.4	22.1	7.8	4.4
Portugal	10.2	6.0	-4.8	0.1	-2.0	0.8	-1.2	0.5	3.5	1.1
Suomi/Finland	0.9	19.2	25.1	-6.0	-24.3	-22.0	-18.1	-3.4	3.6	0.0
Sverige	25.3	43.5	13.5	11.6	3.2	-19.2	-34.4	-48.7	-13.0	0.0
United Kingdom	15.8	11.0	-18.1	-23.0	-12.8	9.7	10.9	8.0	-0.1	-2.0
Switzerland	0.7	2.8	3.4	-6.0	-13.0	-3.2	5.3	NA	NA	NA
Norway	3.7	-4.4	-10.3	-17.5	-19.8	-11.3	-0.7	30.0	9.8	5.2
Poland	NA	2.9	-1.3	-4.7	-2.2	-17.2	-25.8	-9.5	1.5	5.9
Romania	NA	-8.5	-42.8	-39.5	-15.0	-6.4	-17.3	30.6	14.5	4.8
Hungary	NA	3.0	-6.8	-19.8	-22.1	-20.0	-14.6	4.9	2.3	2.3
Iceland	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

**Table 4: Private non-residential building**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	13.5	7.7	8.7	5.4	5.8	-1.9	-7.9	-1.7	1.4	2.1
Belgique/België	8.7	18.0	10.6	7.1	1.1	-5.6	-11.5	-1.0	2.5	3.5
Danmark	17.8	-11.3	-14.3	-0.2	-10.8	-11.2	-21.3	-4.3	15.1	16.7
Deutschland (4)	2.8	5.3	7.5	4.5	25.2	10.3	1.5	3.5	2.0	1.5
España	15.4	12.1	12.6	4.4	6.2	-6.0	-14.1	-3.9	1.7	3.0
France	4.8	8.0	6.3	5.6	3.0	-3.0	-9.2	-8.3	-3.2	0.4
Ireland	13.9	18.3	23.6	60.3	0.5	-20.3	-28.2	-0.4	N/A	N/A
Italia	1.6	3.8	5.5	5.7	2.6	-3.1	-10.8	-7.9	-1.8	2.0
Nederland	4.2	16.2	7.5	3.5	6.4	-5.9	-9.7	-4.7	-0.5	3.7
Österreich	12.8	12.6	1.9	6.8	13.3	7.9	-14.6	-9.4	-6.4	-7.3
Portugal	12.4	11.6	6.1	7.4	0.3	2.0	-6.0	-3.2	4.1	4.0
Suomi/Finland	2.7	5.3	23.2	2.9	-17.5	-26.6	-35.5	-5.1	22.6	0.0
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.1	11.5	6.0
United Kingdom	70.5	12.7	20.0	6.2	-13.8	-15.8	-10.9	7.6	5.0	3.5
Switzerland	6.2	12.5	9.8	2.3	-9.3	-9.7	-12.2	-9.0	-6.0	-2.0
Norway	-6.5	-2.6	-11.5	-13.2	-7.6	-12.4	11.0	12.5	11.4	19.4
Poland	N/A	N/A	N/A	-10.5	7.7	1.5	9.2	1.4	3.7	6.2
Romania	N/A	N/A	N/A	N/A	N/A	N/A	0.4	28.0	8.9	121.2
Hungary	N/A	-26.4	4.7	7.5	6.9	-9.1	-15.7	32.2	1.3	2.5
Iceland	-14.4	23.1	-7.4	5.2	6.0	-0.4	64.3	-16.5	-1.4	N/A

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996. Excluding Sweden for 1987 to 1993.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

**Table 5: Public non-residential building**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	8.3	3.8	3.2	4.3	6.2	1.5	-3.5	-0.1	-0.8	-1.0
Belgique/België	-8.6	-6.9	-28.6	9.9	27.6	9.4	4.0	-11.4	0.5	0.5
Danmark	4.0	7.9	-16.6	-7.1	-2.1	9.2	8.6	5.3	5.6	5.2
Deutschland (4)	0.8	2.4	1.4	-2.3	19.5	6.1	-1.6	0.5	-2.5	-2.5
España	-10.2	0.3	28.0	29.8	6.2	-6.0	-14.1	-0.4	-1.1	-3.9
France	4.1	2.7	2.2	3.2	1.6	3.6	0.0	3.2	0.3	-1.0
Ireland	-1.4	-16.1	-14.8	16.3	-12.4	7.9	11.3	15.1	NA	NA
Italia	-3.4	14.6	4.2	2.4	-3.5	-6.5	-14.4	-10.3	-3.9	0.7
Nederland	9.7	-1.7	4.6	-0.7	4.6	-2.0	3.3	6.4	3.4	-1.1
Österreich	-7.3	-6.0	-6.1	5.1	17.4	-4.9	-0.4	-5.4	2.4	0.5
Portugal	16.5	12.9	11.2	8.9	3.9	3.0	-0.9	0.5	4.0	4.8
Suomi/Finland	3.6	20.7	-10.0	-3.2	8.2	-19.7	-20.8	-21.4	-18.2	0.0
Sverige	NA	NA	NA	NA	NA	NA	NA	15.1	8.2	5.2
United Kingdom	63.2	0.9	7.5	8.4	-1.4	6.8	-0.9	4.5	0.0	-1.9
Switzerland	0.8	6.4	7.0	3.6	3.3	3.6	-2.7	-4.8	-3.8	0.0
Norway	25.2	9.3	-4.8	-7.4	13.2	4.3	-6.5	12.5	6.9	-15.3
Poland	NA	NA	NA	-12.9	-8.2	-8.0	6.8	0.0	3.6	7.0
Romania	NA	-1.5	31.3	-31.6	-22.5	-9.8	0.4	43.0	0.7	-2.9
Hungary	NA	22.2	18.2	-12.8	-41.2	22.5	6.1	-17.3	0.0	-7.0
Iceland	22.0	9.9	-6.0	-8.5	22.9	-8.2	1.8	-2.2	6.4	NA

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996. Excluding Sweden for 1987 to 1993.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

**Table 6: Civil engineering**  
Annual real production growth rates by country

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	16.8	5.5	5.7	5.4	8.5	0.9	-3.8	-0.9	-1.6	-1.6
Belgique/België	-9.7	1.9	-12.8	3.1	11.9	10.1	24.1	9.6	5.0	3.5
Danmark	-3.4	-0.4	4.3	4.7	-11.6	6.7	-6.9	3.2	1.5	-1.0
Deutschland (4)	-1.3	3.4	2.5	0.6	19.9	10.4	-1.4	4.1	-2.0	-1.9
España	3.8	20.3	28.9	19.9	9.2	-12.1	-11.9	1.0	2.0	0.0
France	7.4	9.8	6.6	2.5	4.0	-4.2	-7.0	0.0	-3.0	-3.0
Ireland	-11.2	-2.0	-2.1	6.2	3.0	1.8	14.1	-7.4	N/A	N/A
Italia	2.5	-2.3	4.3	2.4	-3.5	-6.5	-14.4	-10.3	-2.2	-1.1
Nederland	-0.8	6.2	0.2	3.4	-0.4	1.5	1.5	1.8	3.4	2.8
Österreich	2.0	-3.8	2.3	4.4	4.1	-2.8	1.0	3.0	-3.4	-2.4
Portugal	7.5	14.8	9.9	8.9	12.5	4.0	3.4	3.0	10.5	12.0
Suomi/Finland	-1.1	0.0	7.6	2.0	-6.4	-5.8	-10.1	-8.1	0.0	0.0
Sverige	54.1	0.5	8.0	1.7	1.0	6.0	3.4	8.6	14.7	-3.0
United Kingdom	103.6	10.3	5.0	15.8	19.6	4.1	0.9	-8.7	-8.3	-4.5
Switzerland	3.1	5.7	2.1	2.7	2.8	3.4	-0.8	3.2	-2.7	2.0
Norway	12.8	-0.3	-16.0	-1.8	4.3	12.8	-10.2	-6.9	5.9	-3.1
Poland	N/A	3.3	-15.1	-22.9	-5.8	1.9	12.5	17.3	10.5	7.9
Romania	N/A	-3.9	-3.1	-44.5	-22.5	0.2	0.4	41.5	7.9	7.0
Hungary	N/A	-3.2	-5.6	-12.9	-10.8	-3.0	15.6	31.1	6.2	1.9
Iceland	21.0	-40.2	8.3	-5.1	9.4	-7.0	-5.5	-3.6	12.4	N/A

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

the Single Market, are causing considerable shifts in population in Europe. Thus, there are growing regional imbalances between demand and supply of suitable housing.

Trends in the construction of new housing vary between sectors. All are affected by the overall state of the economy and by shifts in the governments' economic and financial policies. In both the owner-occupied and private rental sectors, demand for new housing is influenced strongly by movements in interest rates as well as by national fiscal policies. Demand for new social housing varies with expansion or contraction of levels of public spending.

Following a slow-down in new housing construction in the EU in 1989 and 1990, faster growth was again recorded between 1991 to 1995. However, this was due largely to massive investment in new housing in Germany's new Länder where the number of finished apartments rose from 17 000 to 95 000 over this period. It was also from early recovery from a recession in the UK, whilst in several countries the level of new housing construction continued to fall.

Equally as important as new housing, in terms of value of construction output, is the repair, maintenance and improvement of existing housing stock. Most of this activity is under the new classification attributable to NACE categories 45.3 (Building installation) and 45.4 (Building completion). Housing repair and maintenance offers many opportunities for small construction enterprises and individual craftsmen. There are also SME's specialising in new housebuilding, but many large construction firms also have housebuilding divisions engaged in the construction of large estates and, in some cases, maintenance of existing estates.

### Non-residential building

The non-residential building sector is also sensitive to the overall state of the economy. Manufacturing enterprises and those engaged in distribution and other services vary their demand for construction in response to their assessment of prospects for demand for their own products. However, in the commercial sector (shops, offices) there may be speculative

building on the part of developers or of construction companies themselves. If economic conditions deteriorate, this can exacerbate cyclical fluctuations in construction as demand for office or retail space weakens and newly constructed buildings are left unsold or unlet. If this happens, demand for non-residential buildings may be slow to recover when general economic conditions begin to improve. Large, short-term fluctuations in new non-residential buildings are clearly evident in many countries.

Public sector non-residential building also experiences large variations in output from year to year as governments change their spending plans in response to changing economic conditions. Of growing importance in non-residential building is investment in refurbishment of existing buildings; for example, improving energy efficiency or accommodating modern information technologies for communications.

### Civil engineering

Civil engineering provides the basic infrastructure for transport systems and the utilities. Its traditional market has, in the past, been mainly public sector, but this is changing because of the privatisation policies being pursued throughout the EU. Although plans for infrastructure networks, for all forms of transport, energy and telecommunications are being drawn with increasing precision, problems of public sector deficits and attempts to comply with the convergence criteria for economic and monetary union are severely limiting the availability of public finance for infrastructure investment. As a result, methods are being sought by which to mobilise private capital to help fund construction of these networks. Generally, the financing of infrastructure projects has become more complex and contractors are increasingly expected to help fund the financing for new construction.

Another significant change in the market for civil engineering includes a growth in demand for works to protect and improve the environment. Although some civil engineering contractors see environmental issues more as a threat to their work, e.g. because of the success of environmental pressure groups in

some European countries in delaying major road building projects, others see environmental concerns as offering a major opportunity to expand their activities. In addition to an increasing level of investment to improve water supplies and the treatment and disposal of wastewater, measures to prevent pollution of land and groundwater, and for the remediation of contaminated land, are developing rapidly as sources of water for civil engineering firms. Civil engineers are also exploring ways of making more use of recycled materials, e.g. in road construction. While there is increasing emphasis on major projects, where the work is organised and executed by larger civil engineering contractors acting individually or forming joint ventures or consortia, there is also an extensive range of smaller works and maintenance requirements providing employment for smaller contractors.

## OUTLOOK

General factors influencing the demand for construction have been discussed already in the Overview. There are other factors, however, that are of particular importance for the outlook for particular sectors. These include, for example, demographic factors affecting the medium-term demand for housing. The population of the EU has been growing slowly and is projected to increase by 2% per year to 2000 and then begin to decline. Forecasting is made difficult, however, by uncertainty over the future level of migration, which is expected to increase.

Meanwhile, average household size is likely to continue to fall, thus increasing demand for multi-dwelling buildings and complexes for singles and childless households. More significant, however, is the changing age structure. The number of older people will increase rapidly after the year 2000. This will create increasing demand for sheltered accommodation and for communities which are designed around an urban structure with minimal transport needs as well as a small nucleus of social infrastructure (shops, medical, recreational) in amenable locations.

This type of development is also being encouraged by those who are concerned that urban areas are being developed without sufficient regard to the need to protect the environment; e.g., construction on the edge-of-town industrial estates or, particularly, shopping centres. In some European countries, land use policies have already been revised to discourage such development and to stimulate the regeneration of run-down inner city areas. Urban regeneration is also capable of creating many opportunities for the construction industry.

There is an increasing need for investment in transport infrastructure to cope with increasing trade and movement of people in the single market; reduce the cost of transport to European markets from the peripheral regions; promote development and cohesion in the less developed regions; and, reduce the increasing problems of congestion and air pollution in cities. All modes of transport have urgent needs. Though in political and public discussions the emphasis has shifted towards completion of European rail networks and the development of a high speed railway network, the largest volume of expenditure has to be on upgrading and maintaining the road systems. There are still important missing road links, particularly across the Pyrenees and Alps, and links to Portugal, Ireland and Greece. Major new road corridors are also needed to link up Central and East European centres. In addition, the whole of Eastern Europe has huge road building needs.

The emphasis of energy-related investment for the next two decades will be on energy conservation and reduction of pollution from existing energy sources. There has not been much investment in new power stations in Europe in the past, but investment should continue at a low, increasing level, particularly for replacement of older stations by cleaner energy efficient stations (including gas fired stations). The main energy investment will be in extending the networks of gas

pipelines and power transmission networks and their interconnection. A major source of new construction industry demand will come from the rebuilding or decommissioning of nuclear power stations.

The size of the civil engineering challenge for nuclear waste recycling and radioactive waste repositories, likely to involve deep underground construction, is enormous. In the long term, new alternative energy sources will become important including wind, wave, tidal and solar power, which have not been viable up to now because they have very high capital costs.

It is expected that there will be a rapid increase in telecommunications investment in the next two decades to bring the peripheral regions up to the level of the centre and to cope with the demand for new value-added services, mobile communications and ever increasing electronic data interchange. Currently, most direct investment is in equipment, but it will also generate construction work in towers, cable networks, and in building upgrades.

Recent problems of drought, flood, and past lack of investment in several member states will lead to increasing investment in water collection, transport and storage. Enforcement of EU water quality directives will require increasing construction for water treatment. Environmental legislation and municipal waste water directives will require continuing increases in waste and effluent treatment for at least the next 20 years.

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# Building installation and completion

## NACE (Revision 1) 45.3 and 45.4

Installation work and completion work for buildings occupy positions of growing importance in the total construction process. A number of the key factors underlying this tendency have been introduced already in the chapter entitled "Construction - Overview", particularly in its section dealing with environmental factors affecting the construction industry and demand for its products. Important information is also contained in the section of that chapter dealing with the structure of the construction industry, in terms of the organisation of the enterprises which together make up the industry.

Building installation and building completion are separate categories, at the 3-digit level, within the revised NACE (Rev.1). However, until such time as there are separate data to illustrate their relative importance within the total of construction activity they may conveniently be described together.

### INDUSTRY PROFILE

#### Description of the sector

Installation and completion work for buildings, both residential and non-residential, and for civil engineering works is divided principally into nine categories at the 4-digit level of the NACE (Rev.1), of which the most important are installation work of electrical wiring and fittings (NACE 45.31), insulation work (45.32), plumbing work (45.33), plastering work (45.41) joinery installation work (45.42), floor and wall covering work (45.43) and painting and glazing work (45.44).

Other installation and completion work includes the installation of fencing, and of lighting and signalling systems for roads, airports and harbours (45.34), and the ornamentation and exterior cleaning of buildings (45.45).

Several of the installation categories described here contain important sub-divisions. In particular, the principal divisions of electrical work for buildings include, as well as the generality of electrical wiring and fitting, the installation of equipment for communications and for security of buildings, and the installation of lifts and escalators. Meanwhile 'plumbing work' is defined as including all heating and ventilation work as well as the installation of water services, drains and gas services.

The businesses which carry out these activities include both separate specialist firms, most of which are SMEs, and also specialist divisions of larger construction enterprises, which may work either as main contractors or as subcontractors. When working on new buildings or works, they are more likely to be employed as sub-contractors, but for refurbishment and improvement work they are commonly employed directly by the client.

#### Recent trends

Whilst there is at present little data to show the relative importance of building installation and completion work within the total construction sector, there is clear visual evidence that their importance is increasing, in response to a number of favourable influences

Some of these influences relate to technical developments, both in construction and in client industries. For example, as already noted in the chapter "Construction - Overview", there is growing use of major components and sub-assemblies manufactured off-site and installed by specialist firms. On the demand side, both industrial and especially commercial enterprises are requiring the installation of increasingly sophisticated communications systems, of high value, and are showing a growing interest in research into the possible development of so-called 'intelligent buildings'.

Meanwhile there are powerful environmental pressures having a very positive effect on the demand for building installation and completion services. One such area is the growing pressure on the construction industry's clients, through land use planning, to refurbish existing buildings, both residential and non-

**Table 1: Rehabilitation and maintenance**  
**Annual real production growth rates by country**

(%)	1987	1988	1989	1990	1991	1992	1993	1994	1995 (1)	1996 (2)
EUR15 (3)	5.1	3.4	3.0	2.6	1.9	2.6	2.8	5.1	2.4	1.1
Belgique/België	20.7	2.0	2.7	7.8	1.3	10.9	0.8	1.0	2.4	0.0
Danmark	2.1	-0.7	-4.4	-4.1	-2.3	3.3	6.9	5.9	0.0	1.1
Deutschland (4)	10.7	7.3	5.4	4.9	5.2	3.9	0.9	5.0	7.0	8.0
España	10.7	7.3	5.4	4.9	5.2	3.9	0.9	5.0	7.0	8.0
France	0.5	2.0	1.7	3.0	1.5	0.0	0.7	0.2	1.0	2.0
Ireland	12.0	-18.5	-7.5	5.2	-3.6	2.1	-1.7	8.3	N/A	N/A
Italia	9.5	-2.8	1.0	0.9	5.5	-0.4	5.3	4.5	1.0	1.1
Nederland	1.7	8.3	3.8	-1.3	0.1	7.2	-3.3	-1.1	0.4	1.5
Österreich	-1.5	5.8	2.0	15.3	-2.8	22.8	-5.0	12.5	0.5	-0.5
Portugal	2.4	10.1	6.4	3.7	4.7	2.4	0.0	0.7	3.5	6.8
Suomi/Finland	0.0	14.3	7.3	0.0	-6.8	-6.3	4.4	8.5	7.8	0.0
Sverige	-26.3	-5.7	-3.9	2.0	-3.2	-3.3	-2.2	-5.8	-3.2	-5.0
United Kingdom	9.6	9.4	6.3	-1.9	-12.0	-6.7	-1.2	5.1	0.4	0.0
Switzerland	6.7	9.0	7.4	-0.5	-1.7	-0.9	4.6	N/A	N/A	N/A
Norway	4.4	-3.8	0.4	2.1	-22.2	19.4	-7.4	-4.4	3.0	2.0
Poland	N/A	3.4	-1.4	-4.2	-2.5	6.1	6.7	0.4	0.0	3.1
Romania	N/A	12.3	-32.5	-23.0	-58.9	66.9	100.7	66.9	2.5	20.5
Hungary	N/A	2.9	-8.6	9.4	-42.9	10.0	-4.5	0.0	4.8	9.1
Iceland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) Estimates.

(2) Forecasts.

(3) Excluding Luxembourg and Greece. Including former East Germany from 1991 onwards. Excluding Ireland for 1995 and 1996.

(4) Including former East Germany from 1991 onwards.

Source: FIEC (12/95)

residential, rather than building on 'greenfield' sites. Another area is the encouragement, often supported by grants and low-cost loans from public authorities, to invest in up-to-date heating and ventilation systems, and better insulation. The aim of this is to make existing as well as new buildings more 'energy-efficient'.

One area in which there is some statistical evidence of these tendencies is that of repair, maintenance and improvement of residential buildings (there are no comparable data for non-residential sectors). Table 1 shows that, in recent years, growth rates in this sector have exceeded those for total construction and for all building shown in the tables in the chapters 'Construction - Overview' and 'General Construction'.

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## OUTLOOK

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Table 1 also indicates that FIEC expects in the short term that repair, maintenance and improvement of residential buildings will continue to 'out-perform' most other construction sectors. Indeed, this divergence seems likely to be sustained, as all of the positive influences affecting buildings installation and completion work described in this and preceding chapters are likely to intensify.

There may then be an incentive to develop more enterprises specialising in these activities and, as is beginning to happen already in some areas, some of these firms may operate successfully throughout the European market. However, if installation and completion work is to continue to grow in importance relative to total construction, it is also to be expected that major construction enterprises will invest more heavily in capacity to perform these tasks, in part by acquisition of independent specialist firms.

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# Industrial plant construction

European industrial plant manufacturers, with a world market share of 50%, are estimated to have won new orders to the value of about ECU 60-65 billion in 1995.

The industry's high export ratio highlights the need for a reliable and suitable set of export financing and credit insurance instruments which does not distort competition. The European efforts towards coordination of national provisions must be followed by worldwide harmonisation efforts, for instance within the framework of the OECD, in order, in particular, not to lose ground to the competitors in Japan and the United States. This is because fair competition opportunities are essential for this progressive branch of industry, with its 230 000 employees and the boost to employment which it provides for the supplying industries. In view of the already extreme and keen international competition, the industry hopes that there will be no further deterioration of the political background. The European industrial plant construction industry is, on account of the range of products which it offers and its international orientation, one of the industries of the future, and therefore remains confident.

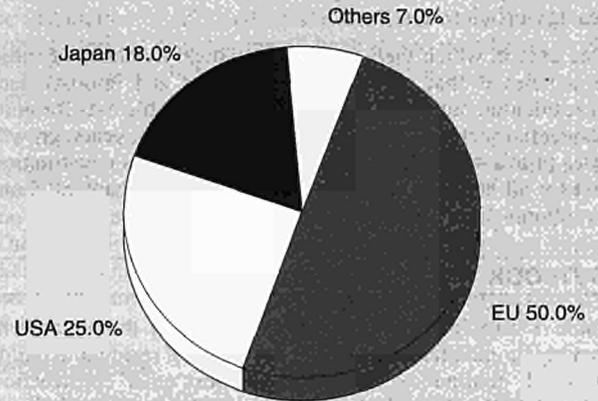
## INDUSTRY PROFILE

### Description of the sector

The European industrial plant construction industry has some 230 000 employees. The sector's international structure and its wide production span of the sector are two main features of large industrial plant construction.

Depending on the formulation of the plant contract, its range covers the supplying of a combination of often functionally independent constructional elements such as machines, apparatus, electrical drive units, control systems, connecting elements (steel framework, pipelines, electrical connecting lines) and also building and civil engineering work relating to the plant. These components together, on the basis of technical production or operating processes, ensure the extraction and preparation of raw materials, the further processing of partially fabricated materials, the making of end-products, the production and transmission of goods and the generation and conversion of industrial energy. The provision of industrial plant is essentially based on comprehensive knowledge of produc-

**Figure 1: Industrial plant construction  
World market shares, 1995**



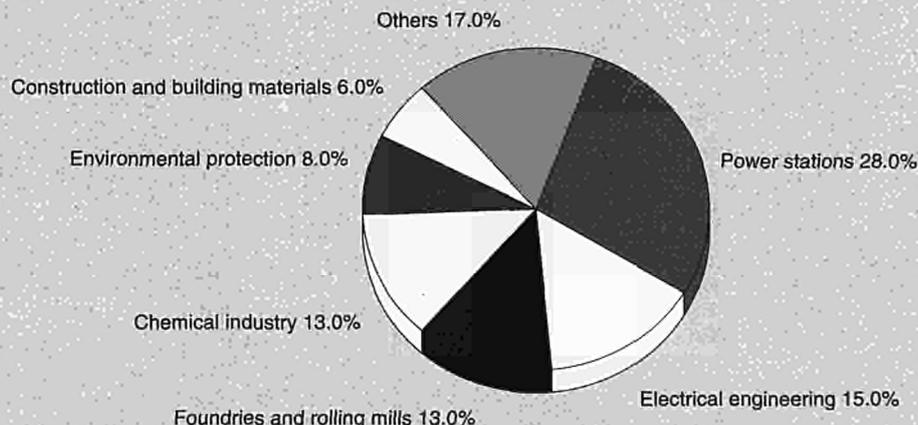
Source: Europlant

tion and operating processes, planning and design, manufacture, procurement and supplying of equipment, assembly and commissioning and also project management.

Financial engineering and the training of the customer's operating personnel are just some examples of the important essential services. With regard to the economic importance of project financing arrangements (for instance BOT models) for the overall volume, expectations are rather low. In the short term, a few operator models, especially in the field of infrastructure, will still be the exception for the industry as a whole. Nevertheless, a close watch must be kept on developments to ensure that European plant makers do not lose touch with market requirements in this respect.

The most important categories are power stations, electrical engineering plants, foundries and rolling mills, equipment for the chemical industry, and protection of the environment and plant for the construction and building materials industry. A clear indication of the international nature of this branch of industry is the fact that the European plant construction sector exports its products to over 100 countries. Although this sector plays an important role, as a measure of the degree of technical development attained by a country, it does not lend itself to

**Figure 2: Industrial plant construction  
Breakdown by type of plant, 1995**



Source: Europlant

uniform statistical recording. The European industrial nations operating in this field all define plant construction in different ways, which makes it a particularly difficult problem when it comes to drawing the line between it and mechanical engineering. The same applies to competitors in Japan and the United States. However, regular exchange of experience within the framework of the European Plant Makers' Committee (EUROPLANT) does provide a soundly based overview of worldwide trends of the business.

### Recent trends

In the early 1980s plant construction companies were still benefiting from an investment boom chiefly stemming from the surplus oil revenues of a few developing countries. The subsequent collapse to an all time low was followed by an average rise of just under 7% per year in the volume of orders. The European plant construction industry thus survived the 1991-1993 slump relatively unscathed. However, new orders are not uniformly spread over the industries represented, but are mainly accounted for by power station construction, electrical engineering and foundries and rolling mills. Furthermore, in the case of some projects, the volume has been achieved with the aid of price concessions which lead to almost ruinous results. The main reasons are distorted exchange rate relationships in favour of important competitors, the emergence of new competitors, the behaviour of customers with regard to putting out to tender and the role of consultants.

### International comparison

According to various rough estimates, the annual amount of major industrial plant projects which put out to tender worldwide is probably between ECU 120 and 130 billion.

Information on the distribution of world market shares in industrial plant construction is chiefly based on estimates. The data available for mechanical engineering, however, do provide reliable reference points. On the other hand, an industrial nation will be more capable of winning a world market position in general mechanical engineering than in plant construction. Worldwide suppliers of industrial plant are to be found mainly in the European Community, the United States and Japan. While more and more serious competitors have recently emerged in newly industrialised countries such as South Korea, India and Mexico, they are not as yet able to offer the same range of products in terms of breadth and continuity. Even so, they accentuate the price war with low tenders.

The European plant construction industry is estimated to account for half the world market. The United States, because of its huge domestic market, has a 25% of the market share, and with Japan's share being 18%.

## MARKET FORCES

### Demand

The various European suppliers concentrate on different fields of operation. This makes the analysis of the sectoral breakdown of orders more difficult. As a generalisation it can, however, be said that the largest market segment, accounting for about 28%, is the building of power stations. Some 15% of the volume is accounted for by electrical engineering equipment, while 13% of orders come from the foundry and rolling mill sector, and another 13% from the organic chemicals sector. The shares of other plant, for instance for environmental protection and the construction and building materials industry, are small by comparison.

For EU tenderisers the export share in the volume of orders is on average at least 50%; a fifth of foreign orders come from the European Community. The Asia-Pacific area has developed into the most important market segment; its relative importance as a customer region has more than doubled in

recent years. The CIS countries, the United States, the People's Republic of China, India and Indonesia have proved to be important customer countries during the last decade.

Customers abroad order state of the art technology only at low prices. Whereas in recent years some customers have divided up projects into smaller order packages in order to gain assumed cost advantages themselves. An unmistakable trend to placing orders for turnkey projects has recently emerged in a number of areas. Customers are however mainly interested in modernisation and rationalisation measures, with more importance being attached to energy saving and environmental protection. The last-mentioned factor does not lend itself to statistical recording, as far as integrated environmental protection is concerned.

### Supply and competition

World competition is characterised by a fierce price war. This is forcing suppliers in the European Community with a high domestic cost level, to look for supplies from trading partners located in less expensive places. While this trend was confined at first to hardware, European plant makers have in recent years been offering engineering services from lower cost countries. This has led to the loss of a considerable number of jobs in the European Community. Conservative estimates put the job losses at several tens of thousands. In addition to the price war, there is the failure to fulfil conditions. The need to maintain the level of orders, based on employment policy, has induced many competitors to make irresponsible promises with regard to guarantee periods, performance undertakings, penalties or the provision of additional items or services.

## INDUSTRY STRUCTURE

### Companies

While, during the last twenty years, the great demands made an industrial plant construction have led to an appreciable thinning out of suppliers, additional competitors, especially in the Asian area, have recently appeared on the market. Constant participation in protracted and expensive tendering procedures is possible only for major companies, which endeavour to cut costs and reduce risks by strategic alliances and international cooperation arrangements. This can adversely affect mobility and creativity, which are essential preconditions for business success in international plant construction. In order to cope better with these opposing trends, some companies are already reorganising themselves in the direction of individually responsible operating companies for which a coordinating holding company performs joint functions. Despite the structural changes, European industrial plant construction still enjoys a high technical standard which, if maintained, will enable this industry to continue to play a leading role internationally.

## ENVIRONMENT

Overriding cost considerations are having a particularly adverse effect on sales of environmental protection equipment. Both public and private investors in most countries regard environmental protection primarily as a factor which makes the products more expensive and thus impairs their competitiveness. Buyers are however only willing to pay a higher price if this produces clear advantages for the customer. The European machinery and industrial plant construction industry is making considerable efforts to change this one sided attitude of potential buyers. For instance, without political support through international agreements or a corresponding orientation of development aid, its efforts will, however, bear little fruit.

In addition there is the difference in standards of environmental protection in the European Union countries, which has a distorting effect on costs. Tenderisers in countries with a pro-

pensity (albeit concealed) to neglect environmental protection are gaining unfair competitive advantages in this field.

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## REGULATIONS

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The European plant construction industry's contacts with the various Directorates-General vary in intensity, but are broadly satisfactory. The industry is, however, constantly observing with a certain degree of anxiety the Commission's tendency to over-regulation and to engage in activities which are irrelevant to the industry's actual needs. Thus, for instance, not much progress is being made in the harmonisation efforts in the field of export financing and export credit insurance conditions. It would be a good thing if the EU authorities could include the industrial plant construction industry and its associations in the discussion at an early stage in connection with all its projects.

The European plant construction industry welcomes in principle all the Commission's measures which contribute to the liberalisation of world trade. This branch of industry is dependent on open markets and must therefore press hard and insistently to ensure that the EU does not become a "Fortress Europe".

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## OUTLOOK

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Owing to worldwide low capital market interest rates, there is hope that overall demand will edge up again. A slackening of economic activity is, however, observable in nearly all industrialised countries. In addition, growth in Western Europe is being slowed down by the race to comply with the Maastricht criteria. The stimuli from major trading partners, especially North America and Japan, are diminishing or failing to materialise. It remains to be seen whether this reflects just a temporary dip in demand. Owing to financing difficulties, Eastern Europe's huge requirement is not, or at least thus far, lead to concrete demand. The Asia-Pacific area continues to import on quite a large scale, but the question remains what shifts will take place in the long run in Europe's shares in comparison with those of the low wage countries (which are also favoured by the exchange rate). But, following the political opening up of this region, opportunities are presenting themselves especially for potential suppliers of industrial plant who are willing to commit themselves in cooperation arrangements and joint ventures.

The European major plant construction sector will continue to be one of the European Union's progressive branches of industry. In view of its wide product range, its international orientation and the potential of its workforce, it is one of the branches of industry which offer prospects of success in the context of global competition and are thus of importance for Europe as an industrial location.

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# Reviews and Forecasts: Services Sectors



## Overview

### NACE (Revision 1) 50, 51, 52

*The EU distribution sector is undergoing considerable restructuring. Changes include concentration, reduction in the number of traditional wholesalers, transformations in the retail sector and a tendency towards diversification and internationalisation. Moreover, the future of the distributive trade sector will be influenced by the increasing integration of the internal market and the EEA, the accession of Austria, Finland and Sweden, and the opening-up of Eastern Europe.*

*The sector represents about 14% of output and employment in the European Union. These figures have remained relatively constant over the last ten years, showing that the distribution sector has grown in line with economy.*

### INDUSTRY PROFILE

#### Description of the sector

The industry is divided into wholesale distribution and retail trade.

Wholesale distribution, NACE (Rev.1) 51, is defined as "units exclusively or primarily engaged in the resale of goods in their own name to retailers or other wholesalers, to manufacturers and others for further processing, to professional users, including craftsmen, or to other major users".

Retail distribution, NACE (Rev.1) 52, is defined as the distribution to final consumers of:

- food, drink and tobacco;
- dispensing chemicals;
- medical goods, cosmetics and cleaning materials;
- clothing;
- footwear and leather goods;
- furnishing fabrics and other household textiles;
- household equipment, fittings, appliances, hardware and ironmongery;
- books, newspapers, stationery and office supplies;
- photographic, optical, jewellery and other retail distribution.

NACE (Rev. 1) 50 covers separately the sale, maintenance and repair of motor vehicles and motorcycles and the retail sale of motor fuels and lubricating oils.

These definitions describe the function and product areas characterising wholesalers and retailers. They do not cover the fact that many organisations perform both functions, or that the ownership of wholesalers and/or retailers may reside in operators from another subsector of the supply chain (such as manufacturers), or that manufacturers in some areas carry out their own wholesaling and retailing and are not thus covered by the statistics for the latter sector.

A further important point is that the definition of wholesalers ignores the increasingly wider role that many operators within the sector are playing. For example, the change in manufacturing to tightly-managed production techniques (such as Just-In-Time) means that the whole distribution chain is becoming more sophisticated, and that wholesalers are also taking on functions such as packaging, quality control and administration. None of these is included in the NACE definition, but

they nevertheless affect the contribution to the economy of the sector as well as the profile of the wholesaler.

### INDUSTRY STRUCTURE

There is great change occurring within and between the sub-sectors of the distribution industry. This change can be summarised as:

- concentration, expressed in terms of a reduced number of larger operators, and closer vertical and horizontal links between manufacturers, wholesalers and retailers, in particular through the creation of networks;
- a general reduction in the number of traditional wholesalers, bearing in mind the fact that the concept of wholesaling seems to have different meanings within different Member States;
- a series of transformations in the retail sector, with significant differences between Member States. Overall a slower increase than before in hypermarkets, a rise in franchising, an increase in cooperation, especially where there already exists a high degree of concentration or further concentration is expected, and a proliferation of forms of distance selling are prominent features;
- a tendency towards diversification of activities into other service areas and some specific moves towards internationalisation.

The concentration phenomenon - the reduction of the number of enterprises - is more evident among both large and small enterprises in northern Member States, including the three new ones, with not only a rationalisation - a reduction in costs - in the direct retail sector, but also the emergence of purchasing groups and voluntary chains to benefit from economies of scale.

There remains a higher number of independent enterprises in the southern Member States although a reduction in their number is almost certain. Also, modernisation strategies continue to bring enterprises together in the form of chains and larger logistical structures in order to make them more competitive.

Wholesaling is often thought of as an activity of the past, in that traditional operators now often find themselves squeezed out either through manufacturers' wish to control distribution themselves or through the large retailer's practice of upstream extension.

However, some forms of wholesaling are on the increase, such as wholesaler-owned voluntary chains and specialist operators who focus on specific end-users (such as schools and hospitals). An increasing number of wholesalers are supplying not only goods and services but in the areas of technical wholesaling and high-value consumer goods, such as home furnishings, are offering complete packages (translated from "Problemlösungen"). In combination with a further expansion of out-sourcing by producers, such complete packages could provide one of the most important long-term opportunities for the survival of wholesaling. "Traditional" wholesaling does survive in raw materials and bulk products because of the logistics involved.

Geographic variance remains of great importance in the structure of the distribution industry. The structure of retailing continues to evolve, with marked differences between the north and the south of the Union. In the north, concentration and larger outlets are the new trends. In the south, smaller shops remain very prominent, although purchasing groups are be-

**Table 1: Distribution  
Main indicators, 1991**

	Wholesale distribution waste	Dealing in scrap and waste	Agents trade	Retail
<b>Number of enterprises</b>				
Belgique/België	50 043	2 035	20 864	123 848
Danmark	18 704	489	1 141	30 116
BR Deutschland (4)	113 192	4 219	72 269	422 629
Hellas (1, 2)	30 623	303	1 424	185 712
España	(2) 46 281	(4) 1 850	N/A	(2) 454 860
France	84 898	4 480	(5) 21 903	399 606
Ireland	3 016	N/A	(2) 344	20 901
Italia (3)	114 056	3 955	130 842	536 846
Luxembourg	1 575	34	209	3 544
Nederland	47 553	1 434	N/A	(7) 98 154
Portugal (4, 6)	7 252	N/A	816	10 869
United Kingdom	120 412	3 776	1 675	(8) 265 828
<b>Turnover (million ECU)</b>				
Belgique/België	110 866	671	5 264	39 530
Danmark	53 643	354	2 128	23 450
BR Deutschland	474 135	5 547	7 505	(4) 259 455
Hellas	N/A	N/A	N/A	N/A
España (2)	62 854	N/A	N/A	76 612
France	302 701	3 292	(5) 23 965	264 105
Ireland	13 179	N/A	N/A	10 734
Italia (3)	270 456	3 083	22 848	236 957
Luxembourg	4 788	41	460	3 553
Nederland	136 788	2 068	N/A	(7) 65 765
Portugal (4, 6)	21 011	N/A	1 537	12 621
United Kingdom	322 139	3 556	1 803	(8) 268 421
<b>Number of persons employed</b>				
Belgique/België (9)	184 579	4 322	3 986	181 111
Danmark	170 784	2 296	5 752	199 406
BR Deutschland	1 077 232	16 442	74 713	2 194 285
Hellas (2)	115 422	577	4 038	337 133
España	(2) 361 808	(4) 6 754	N/A	(2) 1 006 867
France	926 559	23 726	(5) 69 311	1 873 405
Ireland	41 394	N/A	(2) 1 245	109 102
Italia (3)	718 347	13 452	257 146	1 903 632
Luxembourg	10 339	330	633	18 475
Nederland	394 726	7 033	N/A	(7) 664 000
Portugal (4, 6)	147 693	N/A	11 940	149 426
United Kingdom	N/A	N/A	N/A	(10) 2 335 000

(1) Number of local units

(2) 1988

(3) 1989

(4) 1990

(5) 1992

(6) Covers only enterprises with at least 5 employees.

(7) Excluding pharmacies, including also repair of motor vehicles and bicycles.

(8) Excluding retailing of medical goods, cosmetics and cleaning materials.

(9) Number of employees

(10) Excluding retailing of medical goods, cosmetics, cleaning materials, motor vehicles and fuels.

Source: Eurostat; Mercure

coming increasingly important as independent enterprises re-group in order to survive.

An interesting trend is emerging within the retail sector, whereby,

- networks of multi-function distribution centres (reseaux de centrales distributeurs) are the typical operators in food retailing. In northern Member States, such as Germany, Finland, Sweden and France, independent organised commerce is particularly important;

- purchasing groups feature in non-food retailing; and,
- franchises are moving into services (travel, financial services etc.) as well as goods.

Diversification of activities is occurring, whereby producers (typically non-food) set up retail operations, or where retailers offer services such as travel, financial services, restaurants, etc. In several Member States, such as France, the United Kingdom and Germany, discounters continue to grow in importance.

**Table 2: Distribution  
Employment structure, 1992**

(%)	Share of female workers	Share of employees	Share of part-time workers
Belgique/België	47.2	60.8	16.9
Danmark	42.3	85.5	26.8
BR Deutschland	53.7	85.4	21.8
Hellas	34.2	39.5	3.1
España	39.5	56.9	5.2
France	45.4	79.0	12.7
Ireland	38.6	75.0	12.6
Italia	35.6	37.9	6.4
Luxembourg	50.0	86.9	9.4
Nederland	42.1	86.5	35.8
Portugal	37.8	59.6	5.6
United Kingdom	50.0	84.3	34.1
EU	45.2	70.6	18.1

Source: Eurostat: Labour force survey

Internationalisation tends to occur towards neighbouring Member States at first because of cultural similarities. Non-food retailers are the operators most prone to internationalisation. The Euro-consumer does not yet exist, even if consumption patterns are moving closer together.

### REGIONAL DISTRIBUTION

The most obvious influence of geography on the sector is in the different definitions of what a wholesaler is and in the role of the small retail outlet.

In Germany, for example, wholesaling tends to be thought of as the distribution and procurement activity of manufacturers. In France, the tendency of manufacturers to subcontract sales activities and of retailers to subcontract buying, results in wholesaling being seen as a large growth sector. The Dutch import-export agencies, which are major economic operators, contribute to that country having the feeling that the sector is dynamic, while in the United Kingdom, a more restrictive view is taken, namely that of the old-style "middle man" between manufacturer and retailer, now in decline.

Taking these differences of perception into account, the major feature of geographical variance in wholesaling is that the northern Member States exhibit much more evidence of a blurring of activities between manufacturer, wholesaler and retailer than do those in the south.

For retailing, countries in the two main groups - Mediterranean and Northern Europe - may have similar sales formats, but these may not be at the same stage: concentration in retailing is thus correlated with the level of economic development of the Member State, except for Italy, which retains its high number of small shops. Franchising, cooperation networks in general, discount shops and non-shop retailing are also notable for some geographic variance, explained in the monograph on retail distribution.

### ENVIRONMENT

Traditionally, the distributive trades have been seen as purely intermediate functions, only operating in response to supply impulses, and therefore not at all involved in the environmental debate. This view, however, is set to change. Distributors, especially purchasing centres in the retail sector, are increasingly playing a pivotal role in translating trends in consumer preferences into final demand and are thus able to boost the sales and the production of so-called "eco-goods". In some Member States, such as Germany, this is particularly the case.

Moreover, more and more distributors are taking on new functions, including packaging. This activity entails a series of environmental issues which has to be taken into account by the sector.

**Table 3: Distribution  
Volume Index of gross value added at market prices**

(Index, 1985=100)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	107.0	100.0	103.0	103.0	106.0	105.0	107.0	113.0	117.0
Danmark	85.0	100.0	106.0	107.0	107.0	103.0	107.0	111.0	114.0
BR Deutschland	98.0	100.0	102.0	103.0	107.0	111.0	120.0	(1) 127.3	N/A
Hellas (1)	91.1	100.0	102.7	102.8	108.1	112.3	112.9	116.9	N/A
España (1)	95.6	100.0	103.5	107.9	112.9	102.9	N/A	N/A	N/A
France	93.0	100.0	103.0	105.0	107.0	111.0	113.0	113.0	113.0
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italia	91.0	100.0	102.0	107.0	112.0	114.0	117.0	118.0	119.0
Luxembourg	92.0	100.0	104.0	110.0	117.0	129.0	136.0	140.0	139.0
Nederland (1)	98.2	100.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Portugal	105.0	100.0	112.0	120.0	128.0	134.0	125.0	(1) 127.2	N/A
United Kingdom	N/A	100.0	105.0	112.0	119.0	124.0	122.0	118.0	N/A

(1) Estimate

Source: Eurostat: National Accounts



**Table 4: Distribution**  
**Gross value added at market prices**

(million ECU)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	11 433	14 208	16 814	18 345	18 928	19 738	22 597	24 130	25 643
Danmark	5 766	10 075	11 103	11 241	11 011	11 426	12 209	12 760	13 705
BR Deutschland	61 585	81 786	88 432	93 867	98 766	103 089	118 575	130 116	N/A
Hellas (1)	3 308	5 110	4 778	4 640	5 091	5 577	5 739	6 133	N/A
España	21 605	31 024	33 173	35 242	40 233	47 443	54 578	N/A	N/A
France	58 166	85 688	93 278	97 226	102 192	110 449	119 396	121 806	126 591
Ireland	1 152	2 172	2 170	2 254	2 171	2 837	3 528	3 289	N/A
Italia	50 053	89 813	98 507	105 603	112 417	123 118	132 131	143 248	145 317
Luxembourg	471	643	682	736	792	896	990	1 049	1 080
Nederland	14 794	19 969	22 962	24 310	25 213	26 568	28 975	30 498	31 910
Portugal	3 590	5 455	6 010	6 255	6 906	7 889	8 061	(1) 9 525	N/A
United Kingdom	44 293	68 782	69 621	69 512	85 398	85 919	86 820	93 231	89 377
EU (1)	276 211	414 705	447 542	469 219	509 107	544 938	593 591	627 611	660 651

(1) Estimate

Source: Eurostat: National Accounts

## OUTLOOK

The changes inherent to the sector itself (concentration, increased use of technology, segmentation, vertical and horizontal integration and diversification) must be seen together with extraneous developments such as the entering into force of the internal market on 1 January 1993, the potential opening-up of East European markets and changes in consumption patterns as a result of ageing population structures.

While the achievement of an integrated EU market will require a European distribution system (and the Community's actions in the transport, competition, investment, structural funds and enterprise policy areas are helping this to come about), operators in the distributive sector face two conflicting pressures in seeking to meet the challenge. The first is the increased competition from other Member States as the concentration and integration in the sector, encouraged further by cost reductions following the completion of the Internal Market, forces them to broaden their horizons and seek cross-border opportunities. The second feature is the continuing requirement to respect local culture in delivery of services, a feature which reduces the scope for rationalisation and internationalisation.

Accordingly, there is a growing awareness among small, independent enterprises that their position can only be defended by their working together in groups, whatever form such co-operation may take.

Another key element may thus be effective streamlining of operations through technology, enabling the operator to carry out more activities at an overall higher level of sophistication. Electronic Consumer Response (ECR), Electronic Data Interchange (EDI), Electronic Point-of-Sale (EPOS), and Direct Product Profitability (DPP) techniques are used widely as essential tools in upgrading activities. The use of multimedia will also play an increasingly important role.

The problem is, of course, for smaller players, who may find that the required investment in technology is too great for them to support. Again, through cooperation, they are able to benefit from the services offered by the group to which they belong and participate in such technologies.

The opportunities created for logistics planning and management by the abolition of internal frontiers should contribute to expansion in physical distribution activities. Taken together with the liberalisation in road transport, this area should see major change. This will in turn produce a situation where distribution strategies will influence consumption patterns and where marketing activities typically performed by manufacturers may be taken on by distributors and traders.

Lastly, as consumer spending on retail goods has not yet returned to pre-recession levels, the battle for market shares will be reinforced and therefore influence the present structure of the industry. Perspectives for growth of private consumption remain modest because real disposable income might come under pressure from falling employment, continued wage moderation, higher taxes and social security contributions which will constrain output growth of the distributive trades in consumer markets. On the other hand, export orientated wholesales (capital goods) are expected to rebound strongly. Cost structures are forecast to change in the coming years as retailers attempt to reduce costs mainly by improving the efficiency of their operations, perhaps, for example by cutting unit labour costs by removing levels of management. Food retailers are likely to take the lead in the process.

Written by: European Commission, DGXXIII

# Wholesale trade

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The wholesale trade employs almost 6 million people, 4% of the EU-15 working population. The turnover generated by the wholesale trade in the EU is more than ECU 2 000 billion. More than 800 000 businesses are involved in wholesaling. A major share of these businesses are small and medium enterprises. Large companies are responsible for about 15% of the turnover. It is important to distinguish between wholesale trade in consumer goods and industrial products when trends, current threats and opportunities are concerned. Supply chain co-operation in the distribution process of consumer goods by retailers and manufacturers forms a threat to the position of traditional wholesalers. Certain traditional wholesalers in consumer goods are taken over by manufacturers and retailers. The separation between the retail trade and the wholesale trade is furthermore tending to become less clear-cut in a number of cases. Professional wholesalers therefore, have developed new functions in marketing (category management), merchandising, logistics, co-makership and special services. Wholesale of consumer goods as well as in industrial products is still a growing and profitable business. A trend of diversification leads to a gradual disappearance of the traditional distinctions between logistics, wholesale, retail and transport companies. Looking to the future, one can expect a growing European-wide competition in profitable segments among those distribution companies.

### INDUSTRY PROFILE

#### Description of the sector

Wholesale trade operates in food- and non-food consumer goods and in industrial business-to-business products (agricultural products, ingredients, semi-final products, pharmaceuticals, capital goods and construction materials). The distributive trade sector is concerned with a highly differentiated flow of goods. In this sector the wholesaler performs

several functions like marketing, logistics, co-makership and links retailers, manufacturers or other companies. He also adds value in the processes of sourcing and distribution, since concentrating goods flows enables the wholesaler to source products and arrange certain distribution activities in an efficient way.

The wholesale trade in industrial products is at least as important as the wholesale trade in consumer goods.

Nowadays, the wholesale trade employs almost 6 million people, which, approximately, is more than 4% of the EU-15 working population. The turnover generated by the wholesale trade in the EU is more than ECU 2 000 billion, with Germany, the United Kingdom and France accounting for more than half.

More than 800 000 businesses are involved in the wholesaling in the EU, which is more than 20% of all commercial firms.

#### Recent trends

It is important to distinguish between consumer goods and industrial goods. Supply chain co-operation in the distribution process of consumer goods by retailers and manufacturers forms a threat to the position of traditional wholesalers. A variety of reasons painfully exposes the weakness of traditional wholesalers in consumer goods. The distribution process of large internationally operating manufacturers and retailers is complex. The technical complexity goes beyond the capabilities of traditional wholesalers and requires the input of specialised logistics companies. Those retail and manufacturing companies are increasingly dealing directly with one another without any intermediaries. For instance, several manufacturers have chosen to internationalise by installing sales offices in many countries replacing the traditional wholesalers, specialised in import activities.

Professional wholesalers however, have improved themselves to add value to solve the technical complexity of international sourcing. Professional wholesalers in consumer goods as well as in industrial goods have developed new functions in marketing, logistics, co-makership and special services like financing, administration and organisation and also in

**Table 1: Wholesale distribution**  
**Main Indicators, 1993**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België (2)	50 043	(1) 112 992	(5) 184 579
Danmark (1)	36 700	(2) 53 643	166 200
Deutschland	118 200	474 108	1 077 232
Ellada	33 600	13 207	87 900
España (1)	69 600	(4) 124 076	590 700
France (1)	86 400	309 060	912 131
Ireland (2)	3 016	13 179	41 394
Italia (3)	(2) 129 500	270 456	718 347
Luxembourg	1 700	5 683	11 000
Nederland (1)	50 700	141 586	398 400
Österreich	13 257	63 963	180 199
Portugal	25 300	17 658	83 992
Suomi/Finland	14 400	25 626	76 571
Sverige (1)	31 897	70 403	(5) 167 884
United Kingdom	109 862	363 925	(1) 882 000

(1) 1992

(2) 1991

(3) 1989

(4) 1988

(5) Number of employees.

Source: Eurostat; Mercure



**Table 2: Wholesale distribution  
Employment structure, 1992**

(%)	Share of female workers	Share of employees workers	Share of part-time
Belgique/België	32.7	74.7	8
Danmark	32.2	87.5	15.1
Deutschland	37.9	91	12.2
Ellada	27.3	63.5	2.5
España	25	78.7	2.7
France	32.2	92.8	5.1
Ireland	24	84.4	4.8
Italia	29.2	57.9	4.6
Luxembourg	34.7	94.4	5.6
Nederland	25.9	91.6	15.3
Portugal	26.7	72.9	3.5
United Kingdom	31.2	88.9	12.4
EU	31.4	83.9	8.6

Source: Eurostat: Labour force survey

developing retail formats (Schuitema in The Netherlands and Rewe in Germany).

Wholesale is still a growing and profitable business, where wholesale is defined as private business or as a function being part of retailing or manufacturing.

#### International comparison

When comparing the wholesale enterprises in the EU with those in Japan and the United States, several striking differences can be mentioned. In Japan productivity per employee is 555 000 ECU on an annual basis. EU is second best with 350 000 ECU, while annual productivity per employee in the United States amounts to 207 000 ECU. Wholesale distribution by share of trade employment in distributive trades is highest in Japan with 41%, followed by the EU with 32% and the United States with 24%.

Based on data for mergers and acquisitions, wholesalers are actively developing an international strategy. Expansion in European markets is one dimension of this strategy, alongside domestic and world-wide considerations. We find that the internationalisation of wholesalers is less than that of logistic service suppliers and manufacturers, but more pronounced than the internationalisation of retailers (in case of consumer goods). Moreover we find clear differences in the degree of internationalisation among the different subsectors of the wholesale business in consumer goods with a particularly strong outward orientation of wholesalers of household appliances.

#### MARKET FORCES

##### Demand

The growth and internationalisation of retailers and manufacturers, changing sourcing patterns and the increasing capabilities of suppliers of logistics result in declining demand for several traditional wholesale services in consumer goods. There is however an opportunity for new professional services in marketing and co-makership. Consequently, certain traditional wholesalers are being dropped from the distribution chain or they are being taken over by manufacturers and retailers. This allows the latter to absorb the profits that traditional wholesalers typically derive from centralised purchasing, inventory management and so on.

At the same time, the emergence of powerful, internationally operating manufacturers and retailers, together with the rise of buying groups, diminishes the bargaining position of traditional wholesalers in consumer goods and cuts their profit margins. For the professional wholesalers however, investing in new services like category management and merchandising, we observe an increased demand and profitability.

The demand for wholesale services in industrial and electronic goods is still strong and growing. While two-thirds of the sales of the wholesale food trade go to resellers (central purchasing bodies and retailers) and one-third to professional users (producers or collective bodies), the proportion is reversed for the wholesale non-food trade: one-third to resellers and two-thirds to professional users.

An indicator of the supply chain co-operation between retailers and manufacturers, which leads to the exclusion of traditional

**Table 3: Wholesale distribution  
International comparison, 1990-91**

	EU (1)	Japan (2)	USA (3)
Number of enterprises	637 605	475 967	468 700
Share of total number of enterprises (%)	20	24	23
Number of employees	5 069 803	4 773 000	6 073 000
Share of trade employment (%)	32	41	24
Turnover (million ECU)	1 772	2 651	1 260

Source: (1) Eurostat: Mercure (2) Japan Statistical Yearbook (3) US Census of Wholesale Trade

**Table 4: Wholesale distribution  
Who bought the wholesalers?**

	Food & drink	Clothing	Furniture	Household appliances
Wholesalers	11%	8%	11%	17%
Manufacturers	38%	61%	60%	56%
Retailers	33%	17%	15%	19%
Suppliers of logistics services	3%	-	-	-
Other	15%	13%	14%	7%

Source: Coopers & Lybrand, Catholic University Leuven; Single Market Review on Distribution (Office of Publications of the EU)

wholesale services, can be obtained by looking at the mergers and acquisitions in which wholesalers of consumer goods are involved (Table 4). A database combining mergers and acquisitions information, for which the acquiring company has a yearly turnover of 100 million USD or more, from SDC and AM data sources for the period 1981-1995 has been developed, focusing on manufacturing companies, wholesalers, logistics service companies and retailers in furniture, food, clothing and household appliances in all EU countries.

In the majority of cases in the database (10 000 transactions), traditional wholesalers of consumer goods were bought by manufacturers and retailers who were far more active than wholesalers themselves or other general companies. Logistics service companies played a marginal role in food and drink only.

The information furthermore points to a marked variation across subsectors. While manufacturers are leading the mergers and acquisitions of wholesalers in all subsectors, food and drink retailers are the predominant players among retailers. Wholesalers primarily buy other wholesalers in the household appliance sector.

Finally, a detailed analysis of the acquiring companies learns that generally the larger companies are involved in acquiring wholesalers. Those companies are often the ones that are operating on a European scale or have greatly expanded their European operations in the years following the adoption of the Single Act.

#### Supply and competition

Wholesalers are obliged to develop new activities to maintain profitability and sufficient growth potential. The growth per-

formance of individual wholesale companies is diverse. Wholesale activity is heavily dependent on the growth rate of the economy.

There were profound challenges for the wholesale sector during the years of implementation of the internal market program. Wholesalers are slowly responding and reorienting their business strategies. The role of supplying the retail trade remains strong in the fresh produce sector (fruit, vegetables, fish, meat), where it is also accompanied by an internationalisation of export activity. The wholesale trade is also still essential for the perfumery, pharmaceuticals and stationery business. Wholesale trade can also include participation in industrial activities. In the timber sector, wholesalers undertake drying, planning and pre-cutting operations.

While the wholesale trade serving craft undertakings and small businesses consists mainly of small independent businesses, these serving medium-sized or large businesses are much more concentrated. The first case involves short-range trading depending on the local density of the clientele. In the second case the type of distribution involved is more modern and the competitive challenges are more complex.

From the manufacturer's point of view, wholesalers essentially fulfill three functions: a logistics function, a financial function and a marketing function. The logistics function is being eroded: (a) because distribution becomes less complex due to bigger retailers; and (b) suppliers of logistics services offer an alternative way to take care of distribution. The wholesalers' logistic functions are diversifying, to include stock management or procurement for third parties, maintenance and after-sales services. In some fields the wholesaler is the guarantor of the service offered to the final user.

**Table 5: Wholesale distribution  
Labour costs in retail and distribution**

(Germany = 100)	1984	Wholesale 1988	1991	1984	Retail 1988	1991
Belgique/België	107.9	101.8	114.5	99.8	105.1	113.4
Danmark	105.5	108	104	102.7	108	97.9
Deutschland	100	100	100	100	100	100
Ellada	N/A.	33.9	39.8	45.9	35.8	37.9
España	N/A.	49.3	53.8	N/A.	62.7	67
France	95.1	98.6	N/A.	91.8	95.1	N/A.
Ireland	82.6	79.7	N/A.	69.8	64.1	N/A.
Italia	86.8	93.2	N/A.	100	104.1	N/A.
Luxembourg	80.1	81.4	N/A.	72.7	68.8	N/A.
Nederland	104.6	98.2	93.1	86.4	77.1	69.7
Portugal	36.4	27.5	36.1	22.6	25.1	29.7
United Kingdom	78.4	65.8	67.6	66.3	64.6	62.9

Source: Eurostat (1995) Labour costs: updating 1989-1992. The data cover monthly labour cost of manual and non-manual workers. Labour cost consist of wages, social security contributions and other non-wage costs.



**Table 6: Wholesale distribution  
European Top 20 of grocery wholesalers**

Rank	Company	Member State	Sales (thousands of ECU)	Statement year
1	Nestlé World Trade Corporation	CH	38 183 000	94
2	Food Ingredients Specialties SA	CH	38 120 000	94
3	Rewe & Co. Ohg.	D	14 609 000	93
4	Sandoz Nutrition Trading Ltd.	CH	10 651 000	94
5	Casino Guichard Perrachon SA	F	9 502 000	94
6	Coop Valais	CH	7 342 000	94
7	Spar Handels-AG	D	6 886 000	94
8	Edeka Zentralhandelsgesellschaft mbH.	D	6 294 000	93
9	Faellesforenigen for Danmarks Brugsforenigner Fdb	DK	2 952 000	94
10	Booker Belmont Wholesale Ltd.	UK	2 933 000	94
11	SEITA-Société Nationale des Tabacs SA	F	2 369 000	94
12	Nurdin & Peacock PLC	UK	1 988 000	94
13	Merkur AG	CH	1 958 000	94
14	Ramsvita AG	CH	1 953 000	94
15	Emil Tengelmann Ohg.	D	1 829 000	94
16	Hofer & Curti AG	CH	1 724 000	94
17	Système U Centre Regional Ouest	F	1 572 000	94
18	Schuiterna	NL	1 427 000	94
19	Skandinavisk Holding A/S	DK	1 256 000	94
20	Fyffes PLC	IRL	1 101 000	94

Source: Dun & Bradstreet combined with DABLE; Single Market Review on Distribution (Office of Publications of the EU)

The marketing function (acquisition, sales support, giving input for new-product development, marketing and sales) is the next function to professionalise. Two problems are present here: (a) manufacturers often desire increasing control over the marketing channel, i.e. feels he can do these things better, and (b) wholesalers are often rated significantly lower at this second function. There is the opportunity for professional wholesalers of consumer goods to supplement the manufacturer in category management and merchandising for certain products, sales regions or clients.

The separation between the retail trade and the wholesale trade is furthermore becoming less clear-cut in a number of cases. In the case of goods for mass consumption we are witnessing the formation of large groups engaging in both

retail and wholesale trade. Similarly, in the inter-firm wholesale sector, some firms are subsidiaries of industrial groups. The wholesale trade is opening up to individual customers in some countries. Wholesalers of building materials and supplies for the home have opened up significantly to the do-it-yourself market. The same is happening in the sectors where cash and carry firms have developed, initially confined to professional customers and then gradually opened to individual customers (footwear, clothing, equipment for the home).

To get some feeling of the diversity in labour market costs, Table 5 presents information on labour costs in wholesale distribution and retailing. Labour costs include both wage and non-wage costs such as social security contributions. It

**Table 7: Wholesale distribution  
European Top 15 of clothing wholesalers**

Rank	Company	Member State	Sales (thousands of ECU)	Statement year
1	Silkona Tekstil GmbH	D	2 216 000	93
2	Pentland Group PLC (footwear)	UK	816 000	94
3	Wuensche AG (including about 20% groceries)	D	695 000	94
4	Kaufring AG (Apparel, piece goods and notions)	D	669 000	94
5	Levi Strauss Germany GmbH	D	311 509	94
6	Triumph International Vertriebs GmbH	D	270 176	93
7	Jean Pascale AG	D	163 854	93
8	Levi Strauss Continental SA	B	163 641	94
9	Matalan Discount Club (Cash & Carry) Ltd.	UK	163 613	94
10	Levi Strauss Continental	F	159 256	94
11	S. Oliver Bernd Freier GmbH & Co KG	D	134 899	93
12	G. Güldenpfennig GmbH	D	131 122	93
13	Diramode	F	127 001	94
14	Simint Italia SpA	I	118 487	93
15	Vergotex International NV	B	118 053	94

Source: Dun & Bradstreet; Single Market Review on Distribution (Office of Publications of the EU)

**Table 8: Wholesale distribution  
European Top 15 of furniture wholesalers**

Rank	Company	Member State	Sales (thousands of ECU)	Statement year
1	Musterhaus-Küchen Deutschland & Co GmbH	D	1 106 174	93
2	Möbel Großvertriebs Gesellschaft mbH	D	907 500	93
3	IKEA Lager u. Service GmbH	D	703 038	94
4	GFM Möbeleinkaufsverbund	D	647 516	94
5	Kaiser & Kraft GmbH	D	302 714	93
6	SSI Schäffer-Shop GmbH	D	248 214	94
7	MMZ Marken Möbel Zentrale	D	234 724	93
8	IKEA Wholesale Belgium SA	B	203 667	94
9	Möbel-Franz GmbH	D	188 859	94
10	IKEA Trading u. Design AG	CH	157 046	92
11	Trend Möbelhandels-GmbH & Co	D	144 072	94
12	Friedrich A. Flamme GmbH & Co KG	D	134 899	94
13	SB Möbel GmbH	D	134 899	94
14	Metro-Libre service de Gros	F	118 064	94
15	Wohnwelt Pallen GmbH & Co KG	D	105 221	94

Source: Dun & Bradstreet; Single Market Review on Distribution (Office of Publications of the EU)

therefore reflects the full labour cost for the employer of hiring an employee.

The table shows clear differences between groups of EU countries. Retailers and distributors in the core countries Germany, Denmark, Belgium, the Netherlands and to a lesser degree Italy, face similar and high labour costs. Southern European countries like Spain, Greece and Portugal are attractive because of their low labour costs. Luxembourg and the UK take an intermediate position. This picture changes little between 1984 and 1991.

## INDUSTRY STRUCTURE

### Companies

The top 20 grocery wholesalers (Table 6) is dominated by seven Swiss firms and four German firms. The first two enterprises of this list are responsible for about 50% of the total turnover of these 20 companies. From the consumer goods, wholesaling in groceries is the biggest with about ECU 155 billion for the top 20 grocery wholesalers (1994).

The top 15 clothing wholesalers (Table 7) is dominated by eight German firms. The first enterprise of this list is responsible for 35% and the first four enterprises are responsible for 70% of the total turnover of these 15 companies. The total sales turnover of those 15 wholesalers is about ECU 6.5 billion (1994).

The top 15 furniture wholesalers (Table 8) is dominated by twelve German firms. The first four enterprises are responsible for 63% of the total turnover of these 15 companies. The total sales turnover of those wholesalers is about ECU 5.5 billion.

The top 15 household appliance wholesalers (Table 9) is dominated by eight German firms. The second wholesaler in household appliances is a Greek firm. The first four enterprises are responsible for 45% of the total turnover of these 15 companies. The total sales turnover of those wholesalers is about ECU 21 billion.

The top 15 toy wholesalers (Table 10) is not dominated by a certain country. The first four enterprises are responsible for 46% of the total turnover of these 15 companies. The

**Table 9: Wholesale distribution  
European Top 15 of household-appliance wholesalers**

Rank	Company	Member State	Sales (thousands of ECU)	Statement year
1	Rexel (conduct both retail and wholesale and should not be considered as a typical wholesaler)	F	3 216 000	94
2	Kriskou SA	GR	2 170 000	94
3	Promarkt Electronic GmbH & Co	D	2 158 000	94
4	Sony Europe BV	NL	1 869 000	95
5	Komet Electronic GmbH	D	1 510 000	94
6	Sony Deutschland GmbH	D	1 203 000	94
7	Metro Einkaufsgesellschaft mbH	A	1 172 000	93
8	Panasonic Deutschland GmbH	D	1 144 000	95
9	Weltfunk Elektronische Handels-GmbH	D	1 079 000	92
10	Rapho Service AG	CH	1 077 000	92
11	Hitachi Europe Ltd.	UK	1 074 000	95
12	Rüfach GmbH & Co	D	933 503	94
13	Panasonic UK Ltd	UK	844 210	95
14	Grundig Vertriebs-GmbH	D	725 467	94
15	Sharp Electronic Europe GmbH	D	704 354	94

Source: Dun & Bradstreet; Single Market Review on Distribution (Office of Publications of the EU)

**Table 10: Wholesale distribution  
European Top 15 of toys wholesalers**

Rank	Company	Member State	Sales (1994, ECU)	Statement year
1	Sega Europe Ltd.	UK	598 870	94
2	Vedes AG	D	239 798	93
3	Mattel France SA	F	193 492	94
4	Lego GmbH	D	176 448	94
5	Mattel UK Ltd	UK	161 738	94
6	Sega France SA	F	157 750	94
7	Nor-Cargo Bergenske AS	N	157 568	91
8	Lego Spielwaren AG	CH	140 939	92
9	Hasbro UK Ltd	UK	138 110	94
10	Warner Music GmbH	D	134 899	94
11	Linea Gig SpA	I	115 002	93
12	Nintendo UK Ltd	UK	113 553	94
13	Toys 'R' Us Iberica SA	E	92 831	94
14	Bandai SA	F	95 290	94
15	Tyco Distribution	B	92 383	94

Source: Dun & Bradstreet; Single Market Review on Distribution (Office of Publications of the EU)

total sales turnover of those wholesalers is about ECU 2.6 billion.

The total wholesale turnover in above mentioned consumer goods in those lists is nearly ECU 200 billion.

Among the 15 major wholesalers in industrial goods and drugs we observe besides German and French companies also an important share from Dutch and Belgium wholesalers. According to Table 11, the wholesale turnover in drugs (from this list) is about ECU 20 billion and in industrial goods about ECU 80 billion.

These top-15 lists are responsible for about ECU 300 billion. The total wholesale turnover is estimated to be about ECU 2000 billion. So 85% of the total wholesale turnover is the responsibility of companies in size smaller than those top 15 companies. The wholesale is therefore dominated by small and medium enterprises as far as turnover is concerned.

### Strategies

What are the options left for wholesalers in consumer goods? The analysis of mergers and acquisitions reveals a growing internationalisation of wholesalers in household appliances. Even in areas of general wholesale decline, individual professional companies are developing successful activities. What matters is, to put it in fashionable management terms, a re-definition in core competences. Four strategic options are defined which are not mutually exclusive:

- wholesalers reorient their activities towards retailing: basically this means that wholesalers are becoming like retailers with a growing concentration on the marketing aspect of wholesaling. They can communicate their market knowledge to manufacturers (category management and merchandising), develop own-label products, invest in publicity and even develop their own retail format;
- wholesalers supplement their retail focus with a brokerage function in distribution. In this scenario, wholesalers are in charge of the distribution process but outsource this distribution functions to a logistics firm;
- wholesalers reorient their activities towards distribution: basically this means that wholesalers are trying to compete directly with logistics service firms. This implies that they offer a wider range of distribution services and invest in logistics systems. To succeed, wholesalers must raise the reliability of their delivery system such that their clients can reduce their own safety stocks. Wholesalers may fur-

thermore expand in providing supplementary distribution services such as building-in kitchens or designing show-rooms;

- wholesalers reorient their activities towards consultancy; they give advice to retailers on the product range. They advise their clients on internal logistics. Or, in the case of agricultural wholesalers, they may even engage in environmentally consultancy for farmers.

### ENVIRONMENT

Increasingly, environmental issues are reflecting the distributive trade sector. European environmental legislation on waste disposal forms part of EU harmonisation policy. Most often, environmental legislation imposes costs on manufacturers, distributors and retailers alike. However they reflect a growing environmental awareness and a search for sustainable development in the distributive trade sector. Two directives on waste disposal promote the prevention, recycling and conversion of waste. With a "polluter pays" principle, firms have an incentive to reduce unnecessary waste generation. While the directive on packaging and packaging aims at reducing the quantity and at promoting the recovery of packaging waste, parties in the distributive trade sector complain about arbitrary and excessive national measures. Likewise, the distributive trade sector is pleading for a European-wide harmonisation and simplification of environmental labelling.

### REGULATIONS

The EU legislative framework affects the wholesalers. In the following order, we see:

- technical harmonisation and the removal of trade barriers caused by differences in national product regulations;
- elimination of border controls;
- liberalisation of the road transport sector;
- indirect taxation and the transitional VATsystem;
- competition policy.

The elimination of border controls is at the heart of the internal market program and directly affects distribution and sourcing. When border controls are removed transport time declines and transport costs fall. On the other hand, customs-related services offered by wholesalers and logistics service compa-

**Table 11: Wholesale distribution in industrial goods and drugs  
Largest European companies by turnover, 1994**

Rank	Company State	Member (million ECU)	Turnover (million ECU)	Group net income employees	Number of	Sector
1	Preussag AG	D	12 067	147	69 712	Metals and minerals
2	Metallgesellschaft AG	D	10 654	-1 403	26 324	Metals and minerals
3	Italiana Petroli SPA	I	8 326	38	1 648	Petroleum and related products
4	Lagardère Groupe SCA	F	8 060	94	40 326	Publishing
5	Gehe AG	D	7 905	72	11 313	Drugs
6	NV Koninklijke KNP BT	NL	6 097	151	27 811	Paper products
7	Office Commercial Pharmaceutique	F	5 091	34	5 612	Drugs
8	Wolseley PLC	UK	4 252	177	19 073	Hardware
9	Cockerill Sambre SA	B	4 206	20	26 409	Metals and minerals
10	Baywa AG	D	3 426	8	11 952	Lumber and construction materials
11	Poliet SA	F	3 171	125	17 762	Lumber and construction materials
12	Hagemeyer N.V.	NL	2 192	68	9 279	Electrical goods
13	Apoteksbolaget AB	S	2 051	36	11 196	Drugs
14	CEBECO-Handelsraad B.A.	NL	2 012	10	4 698	Farm supplies
15	Computer 2000 AG	D	2 000	3	2 136	Computer and related products
16	Ferrostaal AG	D	1 874	31	1 912	Metals and minerals
17	Andreae-Noris Zahn AG	D	1 786	14	3 361	Drugs
18	Unichem PLC	UK	1 709	38	5 535	Drugs
19	John Menzies PLC	UK	1 646	35	12 261	Publishing
20	Otra N.V.	NL	1 607	36	5 885	Electrical goods
21	Hunting PLC	UK	1 453	19	13 588	Petroleum and related products
22	Gestetner Holdings PLC	UK	1 289	8	10 614	Office equipment
23	Monberg & Thorsen Holding A/S	DK	1 032	8	4 463	Drugs
24	Arus SA	F	940	-16	3 929	Metals and minerals
25	Det Danske Traelastkompagni A/S	DK	918	21	3 439	Lumber and construction materials
26	J. Bibby & Sons PLC	UK	817	-24	7 298	Industrial machinery and equipment
27	Danka Business Systems PLC	UK	673	41	5 945	Office equipment
28	Farnell Electronics PLC	UK	663	50	4 165	Electrical goods

Source: DABLE and Dun & Bradstreet; Single Market Review on Distribution (Office of Publications of the EU)

nies face a declining demand. Those companies, specialised in distribution benefit from the increased opportunities to operate in other EU countries. This contributes to the emergence of pan-European logistics services firms who take care of the distribution activities of manufacturers, wholesalers and retailers, such as warehousing and transport. Traditional wholesalers who only focus on part of the distribution process face increased competition.

In addition, a decline in travel time enhances the scope and reduces the costs of international sourcing. One logistics service company puts the decrease in a travel time from the UK to Italy on half a day for a trip of three days, amounting to savings on travel time of 15-17%.

An evaluation of the elimination of VAT-related formalities show that the replacement of VAT border documents are replaced by a more elaborate national VAT application, imposing

new burdens on companies. By far the largest impact in terms of administration of the single market has been the provision of trade statistics which impose costs on business with little or no perceived direct benefits.

Competition policy constitutes the regulatory framework for undistorted competition in the single market. Mergers and acquisitions have been very common in the distributive trades since the beginning of the eighties. Therefore merger control is most relevant for the development of the internal market in the wholesale trade during the last decades. The Commission's competition policy on dominant positions attempts to avoid that the merger activity of individual companies reverses the pro-competitive effects of a integrated market. The Merger Regulation came into force at the end of September 1990 and is aiming specifically at larger international mergers. The new merger regulation has been applied intensively to the

distributive trade. Of the 140 cases that were decided under this regulation in the period September 21, 1990 to March 25, 1993 nine cases directly dealt with retail distribution, two with wholesale distribution, one with trading companies and another one with advertising.

In principle, wholesale franchising agreements are ruled out by Article 85(1) since they reduce competition between distributors of the same goods.

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## **OUTLOOK**

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Under pressure of vertical and horizontal co-operation of the distribution chain, we expect for the future wholesalers to choose one of the options mentioned above, or create a mix of these options.

A trend of diversification leads to a gradual disappearance of the traditional distinctions between logistics, wholesale and transport companies. More and more, companies are doing the same things coming from different backgrounds. They are becoming distribution companies in the broadest interpretation of the word, offering a range of distribution services while building up special expertise in some areas. Looking to the future, one can expect a growing European-wide competition in profitable segments among those distribution companies.

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# Retail trade

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*Retail trade is a vital element in the economy of the European Union and in the service sector. In 1993 it comprised over three million enterprises. The sector's turnover was more than 1.4 million ECU. The number of employees counts for nearly 13 million persons. EU markets of consumer goods are among the most integrated and show a clear tendency towards retail price convergence. Supply chain co-operation between retailers and suppliers in the European Union is of major attention now to reduce operational costs and increase consumer service levels. Retail in general in the European Union is a mature sector with no obvious significant changes in growth rates in the long run. Competition and concentration will continue to increase and new retail formats and other forms of distribution will emerge with technological components and will be used by retailers as an integral part of their strategy.*

### INDUSTRY PROFILE

#### Description of the sector

The distributive trade sector brings goods to consumers and is therefore concerned with a highly differentiated flow of goods. The value added of the retailer is to operate a retail format that efficiently brings goods to the consumer, to source these goods from wholesalers or directly from manufacturers, and finally to carry out a part of the distribution of the goods from the supplier's warehouses to the retail outlets.

The retail format has become more important by increased European market integration. The retail format is the set of strategic decisions relating to the organisation of retail stores, involving considerable sunk (non-recoverable fixed) costs and is therefore subject to economies of scale and learning effects. A retailer benefits when he can apply this retail format repeatedly in domestic and international markets.

There are four main aspects of the retail format. The first aspect is the relation with the consumer. Consumer preferences

are still very local and marketing differs therefore from country to country, even for fairly standard chains such as Aldi, Lidl or Blokker. The retailer can achieve economies of scale in promotion and in repeating its quality concept within one country.

The second aspect is the choice of store format, requiring decisions on the characteristics of the product assortment, concerning the number of product categories, variety offered at the chosen product categories, price and quality. The retailer can benefit from economies of scale and learning effects by applying the store format to new sales outlets.

The third aspect is the choice of location. Town planning permits is the main issue nowadays for retailers to select their retail location. A more secondary issue is about the closeness to customers where two principles determine retail location, maximum differentiation far away from competitors and gravity towards the sites with the highest consumer density close to competitors.

The fourth aspect is multi-store management and co-ordination to design a profit-maximising strategy for their entire retail group. Retailers may prefer to operate through fully-controlled subsidiaries or based on franchising and co-operatives.

The retail trade is a vital element in the economy of the European Union and in the service sector. Nowadays it comprises more than 4 million enterprises. The sector's turnover is more than 2 billion ECU. The number of employees counts for approximately 15 million persons.

Subsectors with their retail market share in value within the EU are:

- food & drink, 43%;
- clothing, 14%;
- household appliances, 5%;
- furniture, 5%;
- toys, 1%.

Those various subsectors (68% of total retail market) are of different importance and the developments are different in the different subsectors.

**Table 1: Retail trade (excl. fuel & cars)**  
**Main indicators, 1993**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België	123 848	46 763	181 100
Danmark (1)	47 600	(2) 23 450	198 600
Deutschland	388 400	259 606	2 194 300
Ellada	198 600	22 089	363 300
España (1)	511 400	(4) 76 612	1 537 000
France (1)	391 889	277 128	1 874 786
Ireland (2)	20 901	10 734	109 102
Italia (3)	(2) 888 300	233 464	2 389 000
Luxembourg	3 400	4 174	19 600
Nederland (1)	95 500	65 765	669 500
Österreich	36 588	34 517	249 975
Portugal	132 100	10 417	149 400
Suomi/Finland	48 545	24 125	175 286
Sverige (1)	44 387	43 402	206 355
United Kingdom	275 400	258 841	(1) 2 604 000

(1) 1992

(2) 1991

(3) 1989

(4) 1988

Source: Eurostat: Mercure, Fedis (B)



**Table 2: Retail trade**  
**Changes in retail sales volume (1)**

(%)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	0.7	-1.8	2.6	3.1	3.5	4.7	2.2	1.1	-1.8	0.6
Danmark	1.1	2.6	-3.3	0.6	-0.7	0.5	2.3	-1	0.7	5.3
Deutschland (2)	N/A	2.5	3.6	2.9	1.8	8.9	5.1	-0.8	-4.2	-2.1
Ellada	-2.5	-2.7	5.3	17.5	-0.7	-2.1	-6.2	0	-3.5	0.7
France	0.8	3.7	2.7	4.7	2.9	1.9	0.3	0.2	1.3	2
Ireland	1.8	-0.5	-1.4	2.1	4.8	2.7	-0.2	3	1.8	4.2
Italia (3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4	-1.1	-1.8
Luxembourg	-0.3	2.8	4.9	2.9	2.4	1.7	2.3	-2.5	2.6	-0.1
Nederland	0.4	2.5	3.2	1.7	4.3	4.9	2	0.7	0.2	-0.1
United Kingdom	4.6	5.3	5.9	6.3	2	0.8	-1	0.5	3.5	4.6
EUR 12 (4)	N/A	N/A	N/A	N/A	2.3	3.8	1.4	0.1	-0.6	0.5
USA	N/A	N/A	N/A	N/A	2.6	-0.9	-1.4	5	4.1	N/A
Japan	N/A	N/A	N/A	N/A	5.5	6.6	0.6	N/A	N/A	N/A

(1) Based on gross index: not seasonally adjusted.

(2) Data does not include former East Germany.

(3) Includes only enterprises with at least 10 wage and salary earners.

(4) Weighted average of countries with comparable indices.

Source: Eurostat: Monthly bulletin on Services and transport, Fedis (B)

**Table 3: Retail trade**  
**Retail price convergence in selected consumer goods for EU12 countries**

(Coefficient of variation in %)	1980	1985	1990	1995
Food	24.2	20.9	22.4	20.8
Beverages	36.9	37	33.2	26
Clothing and footwear	24.3	14.5	18.8	17.9
Durable goods of which:	23.3	20.8	20.7	16.4
- furniture	16.7	10.1	11.9	7.7
- fridges, freezers and washing machines	20.2	17.2	15.5	11.7
- toys & sports	17.9	11.3	14.4	12.6
Other Manufacturers of which:	24.4	23.7	23.2	19.1
- domestic electrical accessories	18.3	27.6	25.9	21.7

Source: DRI et al. (1995); Single Market Review on Distribution (Office of Publications of the EU)

**Table 4: Retail trade**  
**Employment structure, 1992**

(%)	Share of female workers	Share of employees workers	Share of part-time
Belgique/België	58.1	55.6	33.3
Danmark	55.4	85.6	38
Deutschland	64.3	84.5	27
Ellada	41.6	30.5	3.3
España	50.2	49.6	6.4
France	54.3	73.3	16.8
Ireland	47.5	73.6	16
Italia	37	33.7	6.8
Luxembourg	58.5	83	11.3
Nederland	57.5	83.5	52.2
Portugal	47	54.4	6.4
United Kingdom	59.5	85	42.9
EUR 12	53.3	66.2	22.3

Source: Eurostat: Labour force survey, Fedis (B)

**Table 5: Retail trade  
International comparison**

	EU (1)	Japan (2)	USA (3)
Number of enterprises	2 552 913	1 519 186	1 529 700
Share of total number of enterprises (%)	80	76	77
Number of employees	10 971 842	6 936 000	19 527 000
Share of trade employment (%)	68	59	76
Turnover (million ECU)	1 261	682	1 350

Source: (1) Eurostat; Mercure (2) Japan Statistical Yearbook (3) US Census of Trade

### Recent trends

The evolution of consumption between countries shows a similar trend (see Table 2). From 1985 until 1988 most countries faced an increase in retail sales volume. From 1988 until 1993 most countries faced a decrease in retail sales volume. Since 1994 in Denmark, Ireland and UK definite improvements are visible. Germany and Italy remain strongly on their negative trend in 1994. The Benelux countries remain still slightly in their negative trend. France and Greece are recovering slightly in 1994.

Retail in general in the European Union is a mature sector with no obvious significant growth percentages in the long run. On average the growth percentage in France, Germany, Ireland and the Netherlands is about 2%, in Denmark, Greece and Belgium about 1% or less and in the UK about 3%.

Among services, energy, construction and equipment goods, consumer goods show the most pronounced reduction in price dispersion over time in the EU and show (together with equipment goods) the lowest degree of price dispersion. Hence, EU markets of consumer goods are among the most integrated and show a clear tendency towards price convergence. Price dispersion in consumer goods is smaller for the EU-6 countries than for the other country groups and is the highest for the full country sample. Price convergence though is the fastest in the EU-12 and the slowest in the EU-9 group.

The convergence in consumer goods is not uniform and hides substantial cross-sectional variation as shown in Table 3.

For food products and beverages we observe a decline in price dispersion between 1980 and 1995.

Prices of clothing and footwear converged substantially (by nearly 10%) from 1980 to 1985; in the period 1985-1995 price differentials widen again.

In furniture, prices converged markedly from 1980 to 1985 and again from 1990 to 1995. The message for household appliances is similar in many respects with price dispersion of fridges, freezers and washing machines and for domestic electrical accessories declining significantly in recent years.

In short, during the period 1985-1995 the concept of a single market with integrated prices comes close to full realisation in furniture and household appliances. As could be expected, this does not hold for all durable goods and other manufactured products. In spite of the convergence, price differentials in beverages remain, together with those of food products, higher than for any of the other product groups considered here.

From 1986 onwards there is a stronger increase in the share of EU deliveries in domestic euro-consumption from the Southern countries, than for the EU-15 average. This is particularly true for electrical household appliances in all three countries, food in Portugal, clothing in Greece and Spain, and furniture

**Table 6: Retail trade  
The world's top 20 retailers, by sales in 1994**

Companies	Main type of trade	Home country	Sales 1994 (billion USD)	Annual average % change 1988-93
Wal-Mart	Discount	United States	82.5	26.7
Metro Int.	Diversified	Germany	55	19.1
Tengelmann	Supermarket	Germany	36.5	8.2
Kmart	Discount	United States	34	5.6
Edeka Zentrale	Supermarket	Germany	32.4	8.2
Sears, Roebuck	Department	United States	29.5	-0.5
Rewe Zentrale	Supermarket	Germany	26.3	13.2
Ito-Yokado	Diversified	Japan	(1) 26.0	19.4
Aldi	Supermarket	Germany	25	23.9
Daiei	Diversified	Japan	24.9	10.5
Carrefour	Hypermarket	France	24.6	16
Kroger	Supermarket	United States	22.9	3.3
Leclerc, Centres	Hypermarket	France	22.5	11.1
Intermarché	Supermarket	France	21.8	12
Dayton Hudson	Discount	United States	21.3	9.5
J.C. Penney	Department	United States	20.4	4.2
Ahold (+Stop&Shop)	Supermarket	The Netherlands	18.9	14.5
American Stores	Supermarket	United States	18.4	0.3
J. Sainsbury	Supermarket	United Kingdom	17.5	12.2
Promodès	Hypermarket	France	17	15.6
Karstad	Diversified	Germany	16.7	

(1) 1993 figure

Source: Goldman Sachs Global Research



**Table 7: Retail trade  
Internationalisation inside and outside the EU**

Internationalisation method	All countries	EU members	Non-EU members
Merger and acquisition transactions	36%	30%	45%
Joint ventures	26%	31%	18%
Organic growth developments	38%	39%	36%

Source: 'Europe's Top Retailers', Corporate Intelligence [1993]; 'European Fact File', IGD [1995]; Single Market Review on Distribution (Office of Publications of the EU)

in Greece and Portugal. For Portugal and Spain this evolution took place right after their accession to the European Community and reflects as part a wider integration process with EU countries.

The four Mediterranean countries Italy, Greece, Spain and Portugal count for 56% of the total number of retail enterprises, but only for 34% of the EU-15 total number of persons employed in the retail sector. The share of part-time workers in those Southern countries varies from 3.3 % in Spain to 6.8 % in Italy, while this share in Western Europe varies from 16 % in Ireland to 52.2 % in the Netherlands (Table 4).

The grocery sector can be seen as a sector running ahead of other subsectors in consumer goods. Buying groups (horizontal integration) are well organised for the majority of the grocery retailers. International sourcing is increased to a level to satisfy current consumer preferences. Supply chain co-operation between retailers and suppliers in the European Union is of major attention now to reduce operational costs and increase consumer service levels. In modern management terminology this is known as Efficient Consumer Response. To expand the retail business, opportunities are identified and exploited towards the markets with the highest growth potential (Eastern Europe and Asia).

Another recent trend is the focus of consumers on convenience, entertainment and on the quality of fresh assortment (meat, fish, fruit and vegetables) in retail shops. Of course, price remains important. But because of good competition, prices are already competitive.

### International comparison

Among the world's top 10 retailers (measured by sales) four are of US origin, four are of EU origin and two are Japanese (Table 6). From those four EU retailers, three are German and one is French.

In recent years a growing internationalisation of retailing in especially the grocery sector is observed in the European Union. For most of the internationally orientated European retailers however, the domestic market still accounts for 2/3 or more of total turnover. Differences in demand, taste differences and remaining national legislation makes the share of foreign retailers in total retail sales relatively limited in most cases,

although internationalisation is undoubtedly taking place. This is caused by the adjustments in the retail format and the distribution process.

There is an equal spread in internationalisation methods between organic growth, mergers and acquisitions and joint ventures, each accounting for approximately one third of all international moves. The companies in most countries like to stay close to home and acquire companies in the surrounding countries. In addition to the closeness factor, companies tend to expand in a North-South fashion. After 1985 the internationalisation process accelerated and even intensified from 1987 onwards.

When differentiating between internationalisation inside and outside the EU (Table 7), we observe that mergers and acquisitions are more often used for expansion outside the EU while joint ventures are a common tool for intra-EU internationalisation. Companies of several countries including France, Netherlands, the UK and to a lesser extent Italy and Spain show a considerable interest for expansion outside Europe. From 1991 onwards, a growing interest in Eastern Europe and the Pacific Rim emerges.

From 1985 to 1992 we observe a switch from domestic to EU sourcing in all product categories. This is seen in the rising share of EU deliveries in domestic consumption of EU12 products in those years (see Figure 1). In this period, EU countries are increasingly trading with suppliers from other EU countries instead of domestic producers. This period coincides with the economic expansion that accompanied the creation of the single market although the starting point for this evolution was given as early as 1985. The recession of 1993 reverses (part of) this rise in EU sourcing.

There are clear sectoral differences in this evolution. The shift towards intra-EU sourcing is pronounced for electrical household appliances where the share of internationally sourced products in the consumption of EU-made products rose from 23% before 1985 to 36% in 1992 while showing virtually no variation in the years before.

**Table 8: Retail distribution  
Product and brand availability in 17 European Countries**

(% share of total number of companies with production of a specific product)	Sales in domestic country only	Sales in 2-5 countries	Sales in 6-9 countries	Sales in 10 countries or more
Mineral water	90	8.57	0	1.43
Ice cream	87.38	6.8	2.91	2.91
Marmalade & jam	82.35	14.71	2.94	0
Breakfast cereals	57.14	33.33	0	9.52

Source: Computations based on company and brand data from Food for Thought by Coopers & Lybrand and The Catholic University of Leuven, Single Market Review on Distribution (Office of Publications of the EU)

**Table 9: Retail trade**  
**Large food stores - Number of hypermarkets and superstores of 2500 m<sup>2</sup>+**

(units)	1981	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	79	88	88	N/A	98	98	98	98	98
Danmark	N/A	13	13	14	13	14	14	N/A	N/A
Deutschland	821	952	956	N/A	982	996	1 004	1 115	1 185
España	31	59	69	79	86	102	116	130	157
France	433	599	651	687	743	790	849	914	945
Ireland	3	N/A	4	N/A	5	N/A	N/A	N/A	N/A
Italia	12	N/A	43	49	64	86	103	118	(1) 165
Luxembourg	39	35	N/A	36	N/A	40	N/A	N/A	N/A
Nederland	4	6	7	8	16	18	20	N/A	N/A
United Kingdom	279	432	457	500	578	644	733	798	861

(1) 1994  
 Source: IRS

## MARKET FORCES

### Demand

A fundamental characteristic of the European marketplace is the wide divergence in demand conditions. Differences in demand across Europe are explained by a variety of economic, cultural, demographic and sociological factors. Those differences determine size, income level and growth potential of the market which are key factors in retailing. Any retail format is deeply influenced by demand conditions. Hence, retail formats cannot be uniformly applied in all EU countries.

So far one does not observe a global harmonisation of consumption patterns across Europe. Depending on the product category considered, consumers are more or less exposed to locally or nationally sourced products and brands. In view of the national barriers and local demand conditions, this does not come as a surprise.

While there are unmistakably a growing number of pan-European brands, sourcing by retailers of local brands and products should not be ignored. It is true that the local character of grocery products is more marked than household appliances, toys, furniture and clothing. But even there domestic sourcing should not be underestimated.

This finding does not rule out the contribution of the internal market programme to a growing international sourcing. International sourcing patterns are likely to be situated with the recognised brands and the major retailers. In other cases, sourcing from manufacturers in domestic or surrounding countries will most often prevail.

Actually, the rise of private labels at major retailers is increasing the competition with leading brands (e.g. private labels in the UK count for about 40%).

### Supply and competition

The degree of market concentration of grocery retailers varies across countries throughout Europe. The trend in France, Sweden, Spain, Germany and the UK points towards growing concentration over time.

The message for competition is analogous to the one for concentration. The market share of multiples, hypermarkets and supermarkets varies across countries with the Southern countries, Spain, Portugal and Italy showing a smaller penetration for the store formats of the larger retailers. The evolution between 1981 and 1993 is towards a growing role of multiples, hyper- and supermarkets (Table 9), limiting the share of independent retailers selling in traditional stores and mini-markets. Small retailers increasingly become part of cooperations.

The larger market share for multiples, hyper- and supermarkets does not limit the importance of the variety in retail formats regarding price, quality and product choice, across Europe.

A most significant trend is the supply chain co-operation of retailers and manufacturers. In the grocery industry this is officially called Efficient Consumer Response (ECR). ECR is a 'strategic initiative' working closely together to overcome traditional barriers between trading partners to fulfil consumer wishes better, faster and at less cost.

Coopers & Lybrand executed about 15 value chain analyses among top manufacturers and retailers in Europe. With those value chain analyses the potential benefit is estimated for supply chain co-operation by using Efficient Consumer Response for product replenishment and category management. The potential cost reduction for operations between manufacturers and retailers is 5.7 % of the retail sales (consumer prices) in Europe. The potential for inventory reductions is 42% in Europe.

In this supply chain co-operation process, a substantial number of retailers and manufacturers seek to take control of distribution formerly carried out by traditional wholesalers, and subsequently outsource the physical component of these activities to suppliers of logistic services.

This is, for example, illustrated by figures on market shares of consumer goods distribution in France. The shares for retailers and manufacturers have changed only slightly between 1985 and 1992, from respectively 25.5% to 27.2% and 25.5% to 24.1%, but figures for wholesalers and logistic service suppliers show a significant shift from wholesalers, 43% in 1985 but 31.3% in 1992, to logistic companies from 6% to 17.6% during the same period. In addition to these indicators, figures show an increase in mergers and acquisitions activities, where wholesalers were bought by larger often European operating manufacturers and retailers.

Market integration creates an appropriate environment for international co-operation in sourcing. International buying groups (Table 10) are one form of co-operation of this type. Retailers associate with 'colleagues' in buying groups but without losing autonomy and control over their activity. It is remarkable that not a single association includes an American retailer.

Increased market integration was felt to strengthen the internationalisation and concentration among manufacturers which weakened the position of retailers. Consequently, the logical next step was the creation of as many alliances as necessary to provide a similar 'protection' to all players wishing to 'regain' their competitive advantage. Another advantage for retailers is that they can keep in touch with the developments taking place in the sector on an international basis.

Labour costs, including wages, social security contributions and other non-wages costs, are of strategic importance for the distributive trades. Clear differences appear between groups of EU countries. Retailers and distributors in the core

**Table 10: Retail trade**  
**Major retail alliance and buying groups by chronological order of creation**

Retail alliances / Buying groups	Members	Date of creation
Spar International	Numerous independent retailers and wholesalers in 25 countries (Europe: NL, B, D, A, DK, F, GB, I, E, SF, IRL, Gr, P, N, CH; Slovenia, Hungary, Slovakia, Czech Republic; Australia, Korea, Japan, South Africa, Zimbabwe, Argentina)	1940
NAF International	A subsidiary of the Inter-Coop buying group co-ordinating food purchasing. Konsum (A), FDB (DK), SOK (SF), Tradela (SF), CWS (GB), SIS (IS), Co-op Italia (I), NKL (N), KF (S)	1971
INTER Coop	Co-operative Societies in 14 European countries plus Israel and Japan	1971
Markant	Numerous small and medium-sized private and independent retailers and wholesalers from 8 European countries (A, F, D, I, NL, P, E, CH) - since 1992 incl. Spar Handels (D)	1987
SODEI	GIB (B), Docks de France (F) -- stopped 1990	1988
Eurogroup	GIB (B), Vendex (NL), Rewe Zentrale (D), Coop Schweiz (CH), Paridoc (F)	1988
AMS (Associated Marketing Services)	Koninklijke Ahold (NL), Groupe Casino (F), Allkauf-Gruppe (D), Edeka (D), Mercadona (E), Rinascente (I), Argyll Group (GB), Kesko Corporation (SF), Superquinn (IRL), ICA (S), Hakon (N), Jeronimo Martins Retail (P)	1989
EMD (European Marketing & Distribution)	Markant Handels (D), Markant (NL), Selex (E), Nisa Today's (UK), Selex Gruppo Commerciale (I), Uniarme (P), ZEV (A), Musgrave (IRL), Super Kob (DK)	1989
ERA (European Retailing Alliance)	Royal Ahold (NL), Argyll Group (GB), Groupe Casino (F), Rinascente (I)	1989
Buying alliance in Far East	Rinascente (I), Metro international of Switzerland (CH)	1990
BIGS (Buying International Group Spar)	Spar Osterreich (A), Unidis (B), Bernag Ovag (CH), Dagofra (DK), Spar (GB), Hellaspar (GR), Despar (I), BWG/Spar (IRL), Unil (N), Unigro (NL), Spar International (NL), DAGAB (S), Tukospar (SF)	1990
Deuro buying alliance	Carrefour (F), Metro International (D & CH), Makro-SHV (NL), NAF International (NL)	1990
Buying group Intermarché	Leclerc (F), Eroski (E) -- stopped in 1992	1991
Buying alliance in UK	Buying arrangement w/ Italian Sisa (volunt.chain) for Intermercado chain	1991
Collaboration agreement	Carrefour (F), Netto (UK operations of DK group), Marinopoulos (Gr), Continent Hellas (Promodes, (F)) (Gr)	1992
GDE	7 regional coop members of Coop-Italia, Eroski (E): devt. of 20 hypermarkets in the Basque region of Spain	1993
Promodes World Trade	Central purchasing office for Promodes outlets across Europe, based in Geneva	1993
Trading alliance	Dansk Supermarked A/S (DK), Spar Handels AG (D)	1993
SEDD	Delhaize Le Lion (B), Docks de France (F), Esselunga (I), J Sainsbury Plc (GB)	1994

Source: 'Europe's Top Retailers', Corporate Intelligence [1993]; 'European Fact File', JGD [1995]; Single Market Review on Distribution (Office of Publications of the EU)

countries Germany, Denmark, Belgium, the Netherlands and to a lesser degree Italy, face similar and high labour costs. Southern European countries like Spain, Greece and Portugal are attractive because of their low labour costs (although labour productivity differentials should be taken into account to get

the full picture). Luxembourg and the UK take an intermediate position. This picture changes little between 1984 and 1991.

**Table 11: Retail trade**  
**Number of EAN scanning stores**

(units)	1981	1983	1985	1987	1989	1991	1992	1993	1994
Belgique/België	N/A	12	115	278	648	1 147	(1) 2 250	(1) 3 000	(1) 3 500
Danmark	N/A	N/A	14	107	530	1 300	1 800	2 000	2 659
Deutschland	23	69	290	966	2 252	7 260	9 773	12 187	14 900
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	4	16	37
España	N/A	2	36	188	912	5 039	8 180	8 953	11 505
France	2	37	420	1 626	3 471	6 650	10 000	15 000	20 000
Ireland	N/A	N/A	N/A	10	30	101	169	203	282
Italia	9	13	20	550	1 250	3 690	5 500	6 100	6 800
Luxembourg	N/A	N/A	N/A	17	18	20	-1	-1	-1
Österreich	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 490	4 670
Nederland	1	36	137	386	740	1 100	1 750	2 400	3 000
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2 590	3 200
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4 000	6 000
Portugal	N/A	N/A	N/A	N/A	83	269	N/A	4 000	4 400
United Kingdom	7	42	160	793	2 792	6 043	9 000	16 142	18 000
EUR 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80 081	98 953

(1) Luxembourg is included under Belgique/België.  
Source: EAN

### Production process

The retail format is influenced by the developments in information technology. Efficient Consumer Response has identified enabling technologies in supply chain co-operation such as product replenishment and category management. The availability of Point-Of-Sale data on a daily basis per retail outlet give manufacturers and retailers together the shared fundament to introduce, promote and replenish products and to tailor the product assortment much more efficiently and effectively. This is highlighted by the growth in the number of points of sale equipped with terminals with bar-code readers (Table 11). Real-time data exchange gives the basis for cross-docking. Open technologies support systems integration between manufacturers and retailers.

Additional to enabling technologies, technologies will also go from supporting a retail strategy to being at the very heart of that strategy. New electronic in-store retail formats are interactive kiosk retailing, electronic merchandise attractions and electronic relational retailing. New electronic out-store

retail formats are interactive TV retailing, the electronic cafe and the virtual mall.

### INDUSTRY STRUCTURE

#### Companies

From the Top-40 leading European retailers (Table 12) five German companies are in the top-10, of which four lead the chart.

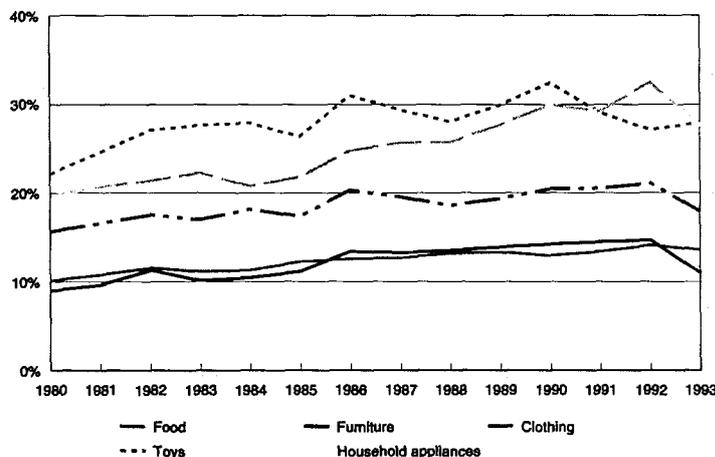
#### Strategies

##### Sourcing

In their sourcing decisions, retail companies carefully compare conditions from domestic, EU and non-EU suppliers. They will buy outside the EU if products meeting the necessary quality standards can be purchased cheaper from non-EU suppliers.

Another noteworthy strategic move by retailers was the renewed interest in international buying groups, in particular

**Figure 1: Retail trade**  
**Share of Intra-EU imports in apparent consumption of EU 12 countries**



Source: DEBA

**Table 12: Retail trade**  
**Largest European companies by turnover, 1994**

Rank	Company	Member State	Turnover (million ECU)	Group net income (million ECU)	Number of employees	Sector
1	Metro Group2	D	39 800	N/A	13 000	N/A
2	Tengelmann Group	D	27 788	N/A	209 370	Food stores
3	Edeka Zentrale AG	D	23 445	N/A	N/A	Food stores
4	Rewe Group	D	21 637	16	161 000	N/A
5	Carrefour SA	F	20 722	328	90 300	Food stores
6	ALDI	D	18 090	N/A	N/A	N/A
7	LeClerc	F	16 281	N/A	N/A	N/A
8	Intermarche	F	15 775	N/A	N/A	N/A
9	J Sainsbury PLC	UK	14 819	699	131 298	Food stores
10	Promodès SA	F	14 394	137	51 476	Food stores
11	Koninklijke Ahold NV (incl. Stop&Shop)	NL	13 356	189	127 668	Food stores
12	Tesco PLC	UK	13 120	494	108 113	Food stores
13	Karstadt AG	D	12 575	21	108 286	General merchandise stores
	Kaufhof Holding AG	D	11 486	37	69 147	General merchandise stores
	SHV Holdings N.V.	NL	11 435	171	57 400	General merchandise stores
16	Pinault-Printemps Redoute SA	F	10 763	184	60 843	Mail-order
17	Asko Deutsche Kaufhaus AG	D	9 835	159	65 906	Food stores
18	Etablis. Delhaize Frères & Cie Le Lion	B	9 612	101	83 805	Food stores
19	Bertelsmann AG	D	9 564	282	51 767	Record & tape stores
20	Marks & Spencer PLC	UK	8 882	814	63 331	General merchandise stores
21	Matra Hachette	F	8 058	123	40 314	N/A
22	Argyll Group PLC	UK	7 607	122	66 187	Food stores
23	ASDA Group PLC	UK	6 914	234	69 366	Food stores
24	Spar Handels-AG	D	6 637	21	23 017	Food stores
25	Docks de France SA	F	6 626	77	32 794	Food stores
26	Kingfisher PLC	UK	6 303	222	73 067	General merchandise stores
27	GIB SA	B	5 756	54	46 504	Food stores
28	Boots Company PLC	UK	5 081	860	75 322	Drug stores
29	Vendex International N.V.	NL	4 796	177	78 500	Food stores
30	ICA Handlarnas AB	S	4 489	18	11 449	Food stores
31	Galeries Lafayette SA	F	4 481	2	29 069	General merchandise stores
32	Kesko OY	FIN	4 378	75	5 701	Food stores
33	Comptoirs Modernes SA	F	3 914	61	18 820	Food stores
34	AVA Allg. Handelsges. d. Verbraucher AG	D	3 898	24	25 305	General merchandise stores
35	Deutsche SB-Kauf AG	D	3 819	34	25 065	Food stores
36	Kwik Save Group PLC	UK	3 644	115	22 502	Food stores
37	Great Universal Stores PLC	UK	3 476	484	31 659	Mail-order
38	Faeriesforeningen for Danmarks Brugsfor.	DK	3 355	9	19 442	Food stores
39	Centros Comerciales Continente SA	E	3 273	114	13 918	General merchandise stores
40	Lewis (John) Partnership PLC	UK	2 995	66	39 600	General merchandise stores
41	Sears PLC	UK	2 764	148	42 783	Apparel & accessory stores

42	IFIL-Finanziaria di Partecipazioni	I	2 753	148	18 951	Food stores
43	La Rinascente SPA	I	2 751	51	18 920	Food stores
44	Harrisons & Crosfield PLC	UK	2 596	247	25 404	Building materials
45	The Burton Group PLC	UK	2 479	39	37 337	Apparel & accessory stores
46	Standa SPA	I	2 402	-59	16 004	Food stores
47	WM. Morrison Supermarkets PLC	UK	2 294	94	17 521	Food stores

Source: DABLE and Goldman Sachs Global Research; Single Market Review on Distribution (Office of Publications of the EU)

in grocery and furniture retailing. In principle, the main objective is to co-ordinate international sourcing and to exploit price differentials in European markets. Equally important is to establish contacts with other retailers and to build up a counterweight to the growing power of manufacturing companies that are operating on a European scale.

#### Internationalisation

Larger retailers are establishing their presence outside their domestic market. Retailers in household appliances and, even more, in grocery retailing were most involved in this internationalisation process.

In spite of the growing internationalisation, most retail companies maintain an essentially domestic focus and retail markets in the EU are not fully integrated yet. In many countries and subsectors, domestic retailers occupy a dominating position in their own market. Seldom they realise a major part of their turnover from their foreign operations. Their mergers and acquisitions are, compared to other distributive operators, more often directed to the domestic market.

#### Distribution

Internationalisation seriously complicates the logistic operations of major retailers. Retailers reacted to this challenge in several ways. They evolved to centralised distribution systems with regional distribution centres insofar as demand differences and required proximity to the retail outlet would allow them to. Other companies, in particular grocery retailers, integrated part of the distribution chain by organising their own transport and taking over several wholesale functions. Where necessary, they bought wholesale companies specialised in their area of retailing. Some retailers eliminated any independent intermediaries between the manufacturing site and the retail outlet. They then outsourced the entire national and international distribution process to one or more logistics service companies with whom they developed close ties.

#### Supply chain co-operation

One of the most mature strategies in the grocery sector is the supply chain co-operation strategy called Efficient Consumer Response. In ECR, manufacturers and retailers are working together on product replenishment and category management to reduce operational costs and inventory levels and to increase consumer service levels on product introductions, promotions, replenishments and tailoring assortments to local store level.

## ENVIRONMENT

Environmental issues are increasingly influencing the retail and distribution sector. European environmental legislation on waste disposal and European legislation on packaging is affecting the choice of packaging materials and the techniques of waste disposal. This legislation promotes the prevention, recycling and recovery of waste. It, very often, imposes costs, but also reflects the growing environmental awareness and search for sustainable development in the distributive trade sector.

## REGULATIONS

Diverging product legislation is generally perceived as an important hurdle in the creation of the internal market in the distributive trade sector. EU legislation is aimed at the harmonisation of the mandatory technical specifications laid down in national regulations and at applying the principle of 'mutual recognition'. This principle is generally considered as a breakthrough, although difficulties remain in the food sector, due to detailed national legislation.

Retail development in European member states is restricted by a myriad of national laws and local regulations, like opening hours, authorisation of new stores and national urban planning.

The legislation and practice of EU competition policy covers an extensive domain, like franchising, joint purchasing agreements by buying groups and merger control.

## OUTLOOK

Retail in general in the European Union is a mature sector with no significant growth percentages in the long run. In future years we expect the highest growth percentage to be realised again in the UK economy.

The retail trade in the non-food sector will follow the horizontal strategies (buying groups) and Efficient Consumer Response strategies of the grocery sector. The supply chain co-operation on Efficient Consumer Response will break through from the top retailers and manufacturers to the medium sized enterprises. This will result in significant cost reductions.

While enlargement of retail business is required, an expansion and internationalisation strategy towards the markets with the highest growth potential (Central and Eastern Europe and Asia) will cause a quantum leap in profitability and returns. The integration of the Central and Eastern European countries into the European Union will play a major role in this process.

Mergers and acquisitions will continue towards large megacompanies. In this internationalisation process of companies, transfer of technology will play a major role.

Competition and concentration will continue to increase. New retail formats and other forms of distribution will emerge with technology in the heart of the strategy. Competition from retail formats like fastfood, petrol stations and home shopping will increase significantly.

Consumers will increasingly value other attributes than price alone. Focus on convenience, entertainment and quality and breadth of the produce will become much more important.

International sourcing in most product categories will not grow with significant steps. Local preferences persist.

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## Overview

NACE (Revision 1) 55, 63.3, 92.33

*The EU tourism sector is entering an age of moderating rates of growth, intensified competition among destination regions/countries worldwide, and greater awareness of and attention paid to the growing socio-cultural and environmental impacts of tourism. Consumers are both more knowledgeable about tourism destinations and travel options and more demanding about the tourism services. With more disposable income and leisure time to devote to leisure, increases in both short-break and long haul holidays segments of the tourism market are taking place. Tourism is a "horizontal" industry which comprises a wide variety of services and industries. Although the industry has a high percentage of micro-businesses, a small number of multinational operators, particularly airlines are taking greater market share. Technology is becoming increasingly integrated particularly in respect to computerised and reservations system. While Europe continues to remain the world's most important destination, competition from East Asia and the Pacific Rim is becoming stronger and Europe's future strategies should incorporate greater diversification of tourist products, while continuing to reflect good "value-for-money".*

## INDUSTRY PROFILE

### Description of the sector

Tourism is an economic and social activity characterised by a multi-disciplinary and transversal nature, having inter-linkages with various other activities. The tourism industry produces a wide variety of products and services affecting a wide range of industries.

Tourism is a factor of economic development for rural areas as well as those areas in industrial decline; tourism development if implemented in a sustainable way, provides long-term benefits to local economies. The pervasive impact of tourism throughout the world on local communities is matched by very few other industries. It entails a complex network of businesses engaged in the provision of accommodation, food and drink, transport facilities and services and entertainment for the tourist.

Tourism is a factor of economic development for rural areas as well as those areas in industrial decline; tourism development if implemented in a sustainable way, provides long-term benefits to local economies. In promoting travel and cultural exchange, tourism also helps in the social dimension to spread awareness about different cultures and ways of living.

In the EU, tourism makes a key contribution to the GDP (5.5% on average), to employment (6% of total jobs in the EU) and foreign trade, generating valuable revenue for the trade balance. In Spain and France the relative importance of tourism activities in their economies, is approximately double that of the Community average. Greece, Portugal and Ireland are also above average.

**Table 1: Overview tourism  
International tourist arrivals in Europe**

(thousands)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	2 237	2 460	2 454	2 516	2 700	3 007	3 163	2 944	3 220	3 285	3 304
Danmark	1 300	1 281	1 216	1 171	1 150	1 218	1 275	1 429	1 543	1 569	1 585
BR Deutschland (1)	13 450	14 241	13 458	16 147	16 732	16 115	17 045	15 648	15 913	14 348	14 494
Hellas	5 523	6 574	7 025	7 564	7 923	8 082	8 873	8 036	9 331	9 413	10 072
España	27 176	27 477	29 910	32 900	35 000	38 867	37 441	38 539	39 638	40 085	43 232
France	35 379	36 748	36 080	36 974	38 288	49 549	52 497	55 041	59 710	60 100	60 639
Ireland	2 579	2 536	2 467	2 664	3 007	3 484	3 666	3 535	3 666	3 814	4 232
Italia	23 043	25 047	24 672	25 749	26 155	25 935	26 679	25 878	26 113	26 379	27 276
Luxembourg	594	622	616	645	760	875	820	861	796	831	862
Nederland	3 218	3 329	4 829	4 922	4 876	5 206	5 795	5 842	6 083	5 757	6 178
Österreich	15 110	15 168	15 092	15 761	16 571	18 202	19 011	19 092	19 098	18 257	17 894
Portugal	4 119	4 989	5 409	6 102	6 624	7 116	8 020	8 657	8 884	8 434	9 132
Suomi/Finland	489	543	598	823	877	882	866	786	790	798	833
Sverige	839	853	824	814	830	837	731	623	650	659	673
United Kingdom	13 644	14 449	13 897	15 566	15 799	17 338	18 013	17 125	18 535	19 488	19 705
EUR15	148 700	156 317	158 547	170 318	177 292	196 713	203 895	204 036	213 970	213 217	220 111
Norge	1 745	1 933	1 638	1 782	1 704	1 867	1 955	2 114	2 375	2 556	2 830
Schweiz/Suisse	11 900	11 900	11 400	11 600	11 700	12 600	13 200	12 600	12 800	12 400	12 561
EFTA	13 645	13 833	13 038	13 382	13 404	14 467	15 155	14 714	15 175	14 956	15 391
Other Europe (2),(3)	37 886	41 480	44 595	47 096	57 503	59 652	63 887	66 076	77 194	79 796	84 346
Europe	200 231	211 630	216 180	230 796	248 199	270 832	282 937	284 826	306 339	307 969	319 848

(1) From 1984-1989 excluding former German Dem. Rep.

(2) Includes Albania, Cyprus, Gibraltar, Israel, Malta, Monaco, San Marino, Turkey, former Yugoslavia, Bulgaria, former Czechoslovakia, Hungary, Poland, Romania and former USSR.

(3) From 1984-1989 including former German Dem. Rep.

Source: WTO



**Table 2: Overview tourism**  
**International tourism receipts in Europe (1)**

(million ECU)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	2 109	2 179	2 308	2 581	2 907	2 775	2 920	2 910	3 122	3 477	4 333
Danmark	1 637	1 738	1 787	1 922	2 057	2 099	2 609	2 804	2 915	2 606	3 015
BR Deutschland	5 448	6 222	6 395	6 651	7 145	7 681	8 271	8 412	8 516	8 974	8 961
Hellas	1 664	1 871	1 865	1 965	2 026	1 794	2 032	2 072	2 518	2 848	2 794
España	9 780	10 681	12 252	12 785	14 111	14 680	14 603	15 336	17 087	16 588	18 014
France	9 629	10 408	9 880	10 282	11 659	14 745	15 854	17 250	19 298	19 991	21 085
Ireland	584	696	649	727	843	971	1 136	1 219	1 248	1 400	1 505
Italia	10 893	11 474	10 013	10 545	10 489	10 835	15 721	14 866	16 524	17 524	20 132
Luxembourg	132	193	196	174	201	260	228	230	221	248	245
Nederland	2 147	2 177	2 255	2 334	2 452	2 767	2 856	3 427	4 034	4 005	4 722
Österreich	6 399	6 662	7 066	7 677	8 533	9 727	10 532	11 137	11 190	11 585	11 074
Portugal	1 217	1 490	1 558	1 858	2 031	2 437	2 792	2 994	2 867	3 566	3 786
Suomi/Finland	620	711	608	713	831	923	919	1 006	1 048	1 058	1 106
Sverige	1 429	1 559	1 578	1 761	1 984	2 302	2 290	2 182	2 353	2 263	2 388
United Kingdom	7 755	9 330	8 294	8 857	9 309	10 337	11 734	10 547	10 733	11 485	11 765
EUR15	61 443	67 391	66 704	70 833	76 579	84 334	94 496	96 392	103 675	107 619	114 925
Norge	836	989	1 076	1 087	1 240	1 223	1 233	1 328	1 521	1 579	1 647
Schweiz/Suisse	4 009	4 121	4 295	4 630	4 837	5 031	5 332	5 670	5 749	5 979	6 557
EFTA	4 845	5 110	5 371	5 717	6 077	6 254	6 565	6 998	7 271	7 558	8 204
Other Europe (2)	N/A	7 252	5 900	6 833	7 486	9 064	9 101	9 034	12 604	15 494	18 905
Europe	N/A	79 753	77 975	83 384	90 142	99 652	110 162	112 424	123 550	130 671	142 034

(1) Excluding international transport.

(2) Includes Albania, Cyprus, Gibraltar, Israel, Malta, Monaco, Turkey, former Yugoslavia, Bulgaria, former Czechoslovakia, Hungary, Poland, Romania and former USSR.

Source: WTO

According to the World Tourism Organisation (WTO) definition adopted by the United Nations Statistical Commission in March 1993, a tourist is defined as a visitor staying at least one night and for no more than one consecutive year in a place other than that corresponding to his usual environment. However, when considering the nature of travellers engaged in the various forms of tourism, the term "visitor" represents the basic concept of tourism statistics: there are visitors making pleasure trips for purely tourist purposes or in order to visit friends and relatives as well; and then there are those who make business trips. Another important and growing segment of the market is that of the excursionist or same-day visitor who does not stay overnight away from his usual environment.

The tourism industry is thus better viewed as a market rather than as a sector given the wide range of related industries and services involved right across the economy, the most important of which being the lodging subsection, catering, sports and entertainment, travel services and the transport and crafts industries.

The aim of this chapter is to focus on the following sub-sectors:

- Hotels;
- Other accommodation;
- Travel services;
- Restaurants;
- Recreation parks;

The diversity and fragmented nature of the tourism industry is a disadvantage when collecting and aggregating statistics particularly when making comparisons at the international level. The current work developed by the European Commission is co-operation with EU and EFTA Member States and international organisations such as OECD and WTO aims to harmonise methods and definitions used on tourism statistics

in order to gather reliable and coherent figures at the international level.

### Recent trends

According to the World Tourism Organisation (WTO), of international tourist arrivals were estimated at over 200 million in 1994 in all EU Member States, (EU 15) representing 40.5% of the world market share.

For the same year international tourism receipts, excluding transport expenditure, represented over 110 billion ECU which constitute 41.4% of the world market share. In order of importance the principal international tourist destinations in the Community, are France, Spain and Italy which together receive 1/4 of all international arrivals in the world and 1/5 of receipts.

These figures exclude domestic tourism as well as same-day visitors. The volume of domestic tourism - overnight stays in the country of residence - exceeds outbound tourism considerably. It is estimated that about 2/3 of all holidays generated by the EU population can be classified as "domestic"; 22% is related to international tourism between the EU Members States and 13% of all holidays are spent at destinations outside the Community. Domestic tourism is even more important in the Mediterranean countries (84-87%) and in Portugal where the rate (90%) is the highest of the Community.

The growing importance of same-day visits as part of tourism is confirmed in many industrialised countries. At the international level, it is estimated that day trips to neighbouring countries, constituted in Europe one out of every two trips.

### International comparison

According to WTO estimates the world tourism industry has maintained its rate of growth. The economic recovery has had a positive effect on trends in travel abroad. In 1994 international tourist arrivals increased by 4% in respect of the previous year, reaching 533 million world-wide. The increase

**Table 3: Overview tourism**  
**Nights spent by tourists in all types of accommodations, 1994**

(thousands)	Resident	Non-resident	Total
Belgique/België	14 276	12 813	27 089
Danmark	14 181	10 536	24 717
Deutschland	278 000	34 777	312 777
Ellada (1)	12 537	37 108	49 645
España	56 734	97 719	154 453
France	914 860	430 300	1345 160
Ireland	N/A	378 860	N/A
Italia (1)	169 039	82 594	251 633
Luxembourg (1)	373	2 537	2 910
Nederland	38 180	17 992	56 172
Österreich	30 143	92 216	122 359
Portugal	7 060	25 577	32 637
Suomi/Finland	8 144	2 988	11 132
Sverige	28 118	6 780	34 898
United Kingdom (2)	157 900	180 100	338 000
EUR 15	1708 207	1434 235	2763 582
Norge	9 644	5 035	14 679
Schweiz/Suisse	12 905	19 727	32 632
EFTA	22 549	24 762	47 311
Total	1730 756	1458 997	2810 893

(1) 1993 figures

(2) estimated 1993 figures

Source: WTO Tourism Market Trends

in receipts has been important, being more than the double of the arrivals in terms of growth rate.

In 1994 all Europe registered 320 millions international arrivals (3.9% more than in 1993). Europe, with a world market share of 60% of all international arrivals, still represents the principal driving force of international tourism. However, between 1970 and 1994 Europe has lost 14% of its world market share to new destinations located in third countries particularly in South East Asia and the Pacific area.

At world level in 1994 East Asia and the Pacific area have continued to experience significant progress, with an increase of 7.2% in terms of arrivals and 12.4% in terms of receipts.

The United States continued to lead the world in terms of tourism expenditure (36.6 billion ECU) and tourism receipts (48 billion ECU) in 1994. WTO's estimates indicate for 1994 an increase of the expenditures of 5%.

American tourists coming to Europe in 1994 are estimated as 13 millions in terms of arrivals. The United Kingdom is still their principal destination (over 3 millions arrivals) followed by France, Germany, Italy, and Spain.

With 14 million Japanese travelling abroad, of whom 46% visited other Asian countries. Japan is the third most important spender in the world on travel abroad. It has been estimated that Japanese tourists spend on average four times more than the European tourists and twice as much as American tourists travelling abroad. 1.7 million Japanese visited Europe in 1994 12% more than in 1993, principally in the United Kingdom, France, Italy and Germany.

France continues to maintain its position as the world's leading tourist destination, receiving 60.6 million international tourists in 1994. After the United States, France maintains also second place as a top earner or international tourist receipt, followed by Italy, Spain and the United Kingdom.

### Foreign trade

Even though European long-haul travel almost doubled in the last decade, intra-Community flows still dominate the market. The most important markets for tourism into the EU are the EFTA countries, United States and Japan. Europe is also

important as a source market for most regions: in South Asia, in the Middle East and in Africa.

With 35.1 billion ECU, Germany is the main European spender at world level, second only to the United States. Other main European spenders, the top eight at world level include the United Kingdom, France, Italy and the Netherlands.

## MARKET FORCES

### Demand

The demand for holidays is influenced by a variety of factors which affect the decision whether to take a holiday, what type or length of holiday and where to take it. The most important of these factors include: income, available free time, age and family circumstances, comparative price level, environmental conditions.

Overall European demand, in terms of nights spent by tourists in accommodation establishments of the commercial circuit, is estimated for 1994 to be approximately 2.8 billion, of which 62% is attributable to domestic tourism, the remainder to international tourism.

Domestic demand (in which vacation tourism has the greatest weight) is more sensitive to economic crises as compared to international demand. Domestic tourism also seems to show a close correlation with the devaluation of the currency, even though it is less obvious than in the case of foreign tourism, since it is also more sensitive to other phenomena. The revaluation of currency results in a decrease in domestic nights due to the propensity of tourists in one country to look for more economical offers abroad (particularly in those countries that have witnessed an inverse monetary variation), while the devaluation results in an increase in domestic demand as a response to decreased purchasing power abroad.

Income, linked with education and social status, in particular affect the level of holidays taken. Those with high disposable income tend to travel more frequently and business travel, which is becoming increasingly important, is usually much more frequent than leisure travel.

**Table 4: Overview tourism**  
**World tourism performance, 1994**

	Arrivals (million)	(% annual change		Tourism receipts (million ECU)	(% annual change	
		94/93	93/92		94/93	93/92
Africa	18.3	- 0.5	3.3	5 301	7.0	8.9
America	107.8	3.5	0.3	81 954	7.2	17.9
East Asia/Pacific	74.6	7.2	10.9	49 644	12.4	22.9
Europe	320.1	3.9	0.5	142 150	8.7	5.7
Middle East	8.2	- 5.0	0.3	3 113	-13.2	-13.8
South Asia	3.7	6.6	- 1.4	2 019	7.4	21.9
World	532.7	4.0	1.6	284 147	8.6	11.5

Source: WTO

There are a number of new trends which are characterising tourism demand in Europe: the expansion of the short-breaks market and second holidays as well as growth in outbound travel from the southern Europe markets.

Changes in population age-structure also strongly influence the nature of holidays taken. An emerging fast growing segment market is the "senior travel market" which constitutes the 20% of the trips taken by Europeans.

Mobility of holiday-makers in terms of varying destinations and seasonality and more active behaviour is increasing. Even though traditional tourist products associated with sun, sea and beach resorts still dominate the market, the interest when taking holidays in cultural activities, in a broad sense, is growing and may contribute to the better staggering of holidays.

Another important factor which may strongly influence tourist flows is the emphasis placed on value-for-money. As tourists continue to become more sophisticated they demonstrate willingness to receive higher standards of quality and services.

#### Supply and competition

The tourism industry comprises both a wide range of economic activities and a supply of products which come from a whole range of different types of enterprise. Their common characteristic is the variety of the existing enterprise structures as well as of the huge number of services available. For this reason in this domain there co-exist various forms of ownership from small individual proprietors to multinational corporations. Supply reflects demand, both in terms of structure, and in terms of trends. According to this hypothesis, concentration of the industry within a country will only occur in a sustainable manner, if the aspects of demand encourage and justify it economically in the long-term. The basic factors of demand are very asymmetric across the European market, as they vary significantly from country to country. Government regulation together with the number and size of enterprises determines

the degree of competition which in the main tourist activities seems to be relatively high.

According to Eurostat of over 1.3 million enterprises involved in hotel and restaurant activities in the Community, 96% are made up of micro-enterprises (less than 9 employees). European leadership at world level in terms of accommodation capacity is confirmed. For Hotels and similar establishments, the trend in the Community is towards a reduction in the number of enterprises and a gradual increase in the accommodation capacity in absolute terms as well as in terms of average size in the Community which went up from 43 to 45 beds; the rate is however still low in relation to areas outside the Community. Nevertheless, in this case also, the situation varies from one individual Member State to another:

- lower than EU average in United Kingdom (25 beds per establishment), Germany (34) and Luxembourg (38);
- higher in Denmark (170 beds), Portugal (106), and Spain (101), where the boom in package tourism had led to investment in large hotels.

Tourism represents about 6% of total jobs in the Community, taking into account only jobs directly linked with tourism products and services. Besides these direct jobs, it is also necessary to consider the indirect or spin-off jobs, created in other sectors which are influenced by tourism. Employment generated by tourism is often characterised by high seasonality and precariousness. These characteristics are potential obstacles to the long-term sustainable development of tourism employment based on quality and professionalism.

However, the structural flexibility of this segment may explain the attraction which the sector has for women and young people, often constituting their first employment. Moreover in the services sector, which employs six people out of ten in the Community, tourism also has a high proportion of female employment which varies from 45 to 65% from one Member State to another. The seasonality of employment, another par-

**Table 5: Overview tourism**  
**Market share of tourist arrivals by region**

(%)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Africa	2.6	3.0	2.7	2.7	3.1	3.2	3.3	3.4	3.5	3.6	3.4
America	21.6	20.2	21.1	21.0	20.8	20.3	20.5	20.9	20.6	20.3	20.2
East Asia/Pacific	7.4	9.4	9.9	10.8	11.4	10.8	11.6	11.8	12.4	13.6	14.0
Europe	65.6	64.6	63.8	63.3	62.1	63.1	62.1	61.5	60.9	60.1	60.1
Middle East	2.1	1.9	1.5	1.5	1.7	1.8	1.7	1.5	1.7	1.7	1.5
South Asia	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
World	100	100	100	100	100	100	100	100	100	100	100

Source: WTO

**Table 6: Overview tourism**  
**Market share of international tourism receipts by region**

(%)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Africa	2.6	2.2	2.1	2.2	2.3	2.1	2.0	1.9	1.9	1.9	1.9
America	24.6	28.9	27.1	24.6	25.5	27.7	26.7	28.7	27.6	29.2	28.8
East Asia/Pacific	8.4	11.0	12.2	13.2	15.2	15.8	14.9	15.0	15.3	16.9	17.5
Europe	59.5	52.5	54.6	55.8	53.5	51.0	53.8	52.1	52.7	49.9	50.0
Middle East	3.4	4.1	2.8	3.0	2.6	2.5	2.0	1.6	1.7	1.4	1.1
South Asia	1.5	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.7	0.7
World	100	100	100	100	100	100	100	100	100	100	100

Source: WTO

ticular feature of tourism, is moreover very variable in different branches: low in cafes and restaurants and in travel agencies, medium in hotels and high in holiday camps and open air facilities.

Important new technologies have been introduced into all segments of the tourism industry in recent years. However, the general impact has been on improved quality of service rather than in labour content reduction.

## INDUSTRY STRUCTURE

### Companies and strategies

Estimates by the World Travel and Tourism Council indicate that investments in these areas of activity in the Member States reached 192 billion ECU in 1995 equivalent to 15.5% of total investments.

In 1995, capital investment in tourism in relation to total investments for all the industries, was largest in Ireland (32%), Spain (24%), Belgium and Finland, (21%), and finally France (18%).

The structure of the tourism industry is moving towards rationalisation:

- gradual withdrawal from the market of very small, marginal establishments;
- reinforcement of partnerships in various forms (integrated chains, franchising etc.).

In Europe, as has been the case in the United States, the main trends of market strategies are:

- concentration on niche markets on a world-wide scale;
- differentiation and segmentation.

This approach is being applied in the hotel industry: on the one hand, the major European groups through mergers and acquisitions are trying to compete with US groups which are the leaders in the market world-wide; on the other hand, the early 1990s saw the emergence of associations of small hotel groups and consortia whose aim is to improve market awareness.

The performance of the tourism industry can be better achieved through:

- wider integration between the tourism sector and the other economic activities, especially through planned regional development;
- improved balance between price and quality of services provided;
- rapid response to changing tourist behaviour;
- the further application of new technologies in marketing and managing businesses;

- the improvement of the so called "internal marketing".

Human resources are a key factor to success in the process of change being experienced in the sector. The cross-frontier mobility of manpower is higher than in other sectors. The full implementation of the internal market encourages mobility and offers reinforced guarantees for employees and their families. The mutual recognition of diplomas also contributes to this mobility. Conscious of the importance of vocational training, the European Union will continue to support this field in order to improve the quality and performance of labour in the sector and stimulate exchange of experience at international level between the major "actors" involved.

## REGIONAL DISTRIBUTION

The tourism industry continues to be concentrated in certain regions, generally in seaside and mountain locations. Urban tourism, which takes in historical and cultural cities, is another relevant segment of the tourism market that still continuing to expand. Among the European capital cities, London, Paris and Rome are the principal destinations.

## ENVIRONMENT

The success of tourism relies to a great extent on the quality of the environment where it takes place. While tourism activity is influenced by the environment, the environment is greatly influenced by tourism. While tourism activity is influenced by the environment, the environment is greatly influenced by tourism. Without proper planning and management the industry may damage the resources it depends on for its success. Over the last 20 years the European tourism industry has been characterised by sustained growth which has led to development pressures, both in established tourism resorts and in previously unexplored areas, particularly coastlines. This has led to resource-management problems, both in terms of physical tourism development and the management of facilities and visitors.

The growth in general consumer awareness of environmental problems has led to actions by both the public and private tourism sectors to combat the problems which can be caused by tourism. Development related issues can cause substantial impacts on physical and built environments and tourism in general may cause air, noise and water pollution, congestion, erosion and various social disturbances. The importance of particular locations and seasonal factors may also aggravate these problems while historically the diversity of tourism has made it a difficult industry to plan and regulate. The industry has diversity of tourism has made it a difficult industry to plan and regulate. The industry has responded to the call for better environmental practice in a number of ways, these include:

**Table 7: Overview tourism**  
**Top twenty tourism destinations in Europe, 1994 (1)**

1985	Rank 1994	Country (thousands)	Arrivals 1994/93	% change	% of total
1	1	France	60 639	0.90	18.94
2	2	España	43 232	7.85	13.51
3	3	Italia	27 276	3.40	8.52
8	4	Hungary	21 425	-6.05	6.69
5	5	United Kingdom	19 705	1.11	6.10
4	6	Österreich	17 894	-1.99	5.59
16	7	Poland	17 595	3.50	5.50
(2)12	8	Czech rep.	17 000	47.83	5.31
6	9	BR Deutschland	14 494	1.02	4.53
7	10	Schweiz/Suisse	12 561	1.30	3.92
10	11	Hellas	10 072	7.00	3.15
11	12	Portugal	9 132	8.28	2.85
15	13	Nederland	6 178	7.31	1.93
20	14	Turkey	6 031	2.15	1.88
(3) 13	15	Russian Fed.	4 643	-21.25	1.45
17	16	Ireland	4 232	10.96	1.32
14	17	Bulgaria	4 055	5.96	1.27
18	18	Belgique/België	3 304	0.58	1.03
19	19	Romania	2 998	2.99	0.94
21	20	Norge	2 830	10.72	0.88
		Total 1-20	305 296	3.79	95.38
		Total Europe	320 093	3.86	100.00

(1) Excluding same-day visitors

(2) Former Czechoslovakia

(3) Former USSR

Source: WTO

- the development of sustainable tourism strategies in the public sector and the setting up of environmental associations in the private sector;
- the development of various codes of conduct and self-regulation measures by the private sector;
- a range of joint partnerships at European, national and local level related to research on sustainable tourism and pilot projects which test its applicability;
- the development of new holiday products for certain environmentally conscious market segments.

Alongside these activities broader environment policy at European and national level continues to influence the development of tourism. The increasing (on occasions mandatory) use of Environmental Impact Assessment in tourism may signal a first step towards greater legislative intervention in the industry, particularly in the form of taxation related to energy use and of anti-pollution laws. Tighter planning regimes at a regional level are already in evidence in many parts of the EU. Often environment focused activity enables parts of the industry to come together to tackle a common and fundamental interest. The improved protection of the environment will remain one of the main challenges facing the industry during the next decade.

## REGULATIONS

Given the horizontal nature of the tourism industry, a wide range of local, national and EU regulations impact on the tourism industry, although few are prepared with the specific intention of regulating this particular sector.

Within the framework of the European Union, many measures have had either a direct or indirect impact on the tourism

industry because of the sheer number of activities that the comprises. A full assessment of Community measures affecting tourism has been made by the Commission in its communication of April 1994.

The legislation relevant to tourism can be considered in four main groups;

- measures associated with the completion and functioning of the Internal Market associated with the removal of physical, technical and financial barriers;
- measures aimed at protecting the environment and consumer interests;
- measures intending to bring about social and economic cohesion among all the Member States;
- measures included in the Community Action Plan to Assist Tourism.

Of most interest to tourism firms within the Union, are those Community measures affecting the removal of technical and legal barriers, employment, the promotion of fair competition, the development of a business environment which in particular is more conducive to encouraging small and medium sized enterprises (SMEs) to succeed by promoting transnational co-operation and the use of new technologies and the development of a comprehensive, environmentally-sensitive European transport network linking even the peripheral regions.

The multi-annual action programme, adopted by the Council in 1993, serves to reinforce the main lines of action of Community enterprise policy.

The abolition of tax frontiers and the introduction of minimum rates for VAT and excise duties across the Member States from January 1993 are expected to let market forces pull VAT rates closer together. In the interest of consumers and

**Table 8: Overview tourism**  
**Top twenty tourism earners in Europe, 1994 (1)**

1985	Rank 1994	Country (million ECU)	Receipts 1994/93	% change	% of total
3	1	France	21 035	5.2	14.80
1	2	Italia	20 132	14.7	14.16
2	3	España	18 014	8.6	12.67
4	4	United Kingdom	11 765	2.4	8.28
5	5	Österreich	11 074	-4.4	7.79
6	6	BR Deutschland	8 961	-0.1	6.30
7	7	Schweiz/Suisse	6 557	9.6	4.61
28	8	Poland	5 175	34.6	3.64
9	9	Nederland	4 722	17.9	3.32
8	10	Belgique/België	4 333	24.6	3.05
14	11	Portugal	3 786	6.1	2.66
10	12	Turkey	3 786	11.9	2.66
12	13	Danmark	3 015	15.7	2.12
11	14	Hellas	2 794	-1.9	1.97
13	15	Sverige	2 388	5.5	1.68
15	16	Israel	2 015	11.8	1.42
(2)22	17	Czech Rep.	1 654	24.3	1.16
17	18	Norge	1 647	4.3	1.16
20	19	Cyprus	1 533	28.6	1.08
19	20	Ireland	1 505	7.5	1.06
		Total 1-20	135 895	8.1	95.60
		Total Europe	142 151	8.7	100.00

(1) Excluding transport

(2) Former Czechoslovakia

Source: WTO

enterprises much effort continues to be put in towards achieving a greater level of harmonisation.

Directive 92/77/EEC on the approximation of VAT rates, modifying the 6th VAT Directive (77/388/EEC), set the minimum standard rate of VAT at not less than 15%. However, on products or services of a social or cultural nature - a list of items which includes passenger transport, tourist accommodation provided by hotels and similar establishments, sports and entertainment - the Member States can introduce one or two rates of at least 5%.

Another aspect of VAT which is under review is the simplification of the system in order to reduce the administrative burden placed on businesses. Within the framework of the preparatory work to establish a definitive regime on VAT, the Council has already identified key conditions to be considered.

The implementation of the White Paper on Employment, Growth and Competitiveness includes major initiatives to tackle the long term underlying presence of unemployment in the Community and to stimulate the speed of new job creation, growth and employment. The nature of tourism as an employment sector lends itself well to the issues addressed in this initiative and the potential of tourism in this context has been recognised within the framework of the social dimension. Proposed legislation concerning the regulation of working time and young workers which still under consideration has implications for the tourism industry.

With the use of the new structural funds for 1994-1999 and the new cohesion fund 1993-1999, tourism continues to be an important tool for regional development and the reduction of social and economic disparities between the regions. Within the previous Community Structural Frameworks (1989-1993), measures concerning tourism were focused on improving the supply and geographic spread of tourism, reducing the seasonality of the industry, full exploitation of the cultural and

environmental heritage, developing rural tourism and developing tourism training for employees. The reforms of the objective areas 1-5, taking place with the implementation of the new structural funds are likely to continue to favour tourism development.

With the creation of the Cohesion fund, an extra billion ECU has been made available to assist Ireland, Spain, Portugal and Greece and those regions which are largely rural or suffering industrial decline and thus lagging far behind the richer regions of the Union. This assistance and investment is intended to enable them to achieve a comparable level of development in terms of communications networks while at the same time ensuring the protection of the environment. Both items clearly benefit the tourism industry.

Since the Treaty on European Union, consumer policy has been given clear recognition of its role in establishing the internal market. The removal of barriers to freedom of movement offers fantastic opportunities for the development and exploitation of tourism in Europe. Tourism, by its very nature, enables tourists to move outside of their usual environment both in order to purchase and to take their holiday. This phenomenon can also make tourism consumers very vulnerable and in special need of information and also legal and financial protection. The provision of information about products and services, and the provision of insurance and compensation, in the event of a faulty product or service, may seem burdensome for the entrepreneur but, in the long term these measures are necessary for the full functioning of the internal market. Well informed consumers, safe in the knowledge that wherever they make purchases in the Union they will have access to justice are more likely to take advantage of the opportunities afforded by the internal market, which should in turn lead to increased enterprise activity and competition. In the third Consumer Policy programme adopted by the Commission in 1993, there is a certain amount of proposed leg-

**Table 9: Overview tourism**  
**Top twenty tourism spenders in Europe, 1994 (1)**

1985	Rank 1994	Country (million ECU)	Expenditure 1994/93	% change	% of total
1	1	BR Deutschland	35 132	9.6	27.74
2	2	United Kingdom	15 400	4.5	12.16
3	3	France	11 910	8.9	9.40
7	4	Italia	10 249	-8.1	8.09
4	5	Nederland	9 241	20.6	7.30
5	6	Österreich	7 850	12.3	6.20
8	7	Belgique/België	6 508	19.7	5.14
6	8	Schweiz/Suisse	5 485	10.7	4.33
9	9	Sverige	4 162	9.1	3.29
12	10	España	3 455	-14.1	2.73
10	11	Norge	3 074	0.9	2.43
11	12	Danmark	3 015	9.8	2.38
14	13	Israel	2 437	23.4	1.92
13	14	Suomi/Finland	1 330	-3.7	1.05
19	15	Portugal	1 265	-19.7	1.00
15	16	Ireland	1 089	1.6	0.86
16	17	Hellas	936	9.3	0.74
21	18	Hungary	787	24.3	0.62
17	19	Turkey	770	4.4	0.61
(2)18	20	Czech Rep.	700	56.3	0.55
		Total 1-20	124 797	7.4	98.54
		Total Europe	126 644	N/A	100.00

(1) Excluding transport  
(2) Former Czechoslovakia  
Source: WTO

islation to safeguard the interests of the tourist but also to help to established a level playing field on which firms can compete fairly with each other.

In the field of Computer Reservation Systems, the Council adopted a regulation (3089/93/EEC) on 29 October 1993, modifying the original of 24.07.89 (2299/89) on the implementation and operation of a code of conduct for air transport and air passengers using central reservation systems. The scope of the regulation has been extended to non-scheduled services and bundled products. Also the ranking criteria for the display of information on air transport services have been strengthened and clarified. The aim of the code is to ensure the non-discriminatory and transparent use of such systems and improved information for air passengers.

Of the proposed consumer measures under consideration during 1994, it should be noted that the Directive concerning Timeshare property contracts (94/47/EC) was adopted on 26.10.94 by European Parliament and the Council following modifications to the text by the Consultation Committee. Under this Directive, having signed a contract, consumers will have a 10 day period, in which they can withdraw from the contract should they not wish to go ahead with the purchase. During this period vendors are not allowed to take any advance payments as a means of guaranteeing the commitment to purchase.

The proposal for a Council Directive concerning the protection of consumers when negotiating contracts at a distance, despite undergoing a series of modifications, has still to be adopted in its current form, tourism services are exempted from the majority of the Directives provisions. Monitoring of the implementation of the package travel Directive still continues. At the present time only Ireland, Spain and Greece have not adopted national legislation. A major problem with regard to implementation has been the need to establish a system of guaranteeing the safety and protection of consumers interests. Tourists more than other consumers are vulnerable in gaining access to justice across frontiers. Following the adoption of

the Green Paper on access to Justice, further action is being taken by means of a proposal for a Directive and a recommendation for the development of extra-judicial measures.

On 21.04.94, the Commission adopted a proposal for a Council Directive concerning comparative advertising amending the Council Directive (84/450/EEC), on misleading advertising.

While protection of the tourist as consumer is an essential consideration, a balance has to be struck whereby the industry can still function without being overburdened by excessive regulation.

Since January 1993, the first Community Action Plan to assist tourism has been in operation. The three year action programme, with a budget of 18 million ECU aims to ensure the co-ordination of its own action with actions being implemented under other Community measures and policies. It will be achieved by focusing on three main lines of action:

- ensuring that tourism is taken more into account in Community and Member States' policies;
- co-operation between representatives of the sector and its various professional associations;
- support and development of specific actions.

The first objective seeks to achieve greater consistency in the initiatives taken within the Commission, with other bodies implementing policies or taking measures that might have an influence on tourism, with Member States, to complement their actions in certain fields of tourism, develop actions allowing the broadest possible convergence of their policies, or provide them with the overall information necessary about the activity, in order to direct their actions better, and encourage all forms of international exchanges on tourism.

The second objective will be implemented basically by means of consultation and co-ordination activities with tourism professionals in order to convey the importance of this industry

in economic and social terms, ensure better representation of its interests, and develop information within the industry itself about the policies and measures by the Community with direct repercussions on its business.

The third objective is mainly concerned with actions to guide future policy: to provide better information regarding tourists and those working within the industry, for supporting demonstration projects and which could be transposed to various regions of the Community and for a general improvement in the quality of tourism services.

Promotion is the subject of a pilot projects, to enable distant markets to be explored and tested, and to increase the numbers of tourists from those markets, on the basis of an a single tourism image of Europe as a whole.

The scope of specific measures will be quite broad, covering a very varied number of fields (cultural, rural or social tourism, environmental tourism; vocational training). These actions are directly aimed at the public authorities, industry decision makers and at tourists themselves.

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## OUTLOOK

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The most striking features of the tourism industry will continue to be the socio-demographic changes, in particular the 'ageing' of the populations of industrialised nations; greater use of electronic information and communications systems; a more knowledgeable and demanding consumer; a deregulating market-place; and subsequently a polarisation of travel and tourism operators between global businesses and 'niche' players; capital, infrastructure and manpower constraints and resident and tourist pressure for responsible tourist development.

The World Tourism Organisation forecasts that worldwide arrivals will grow on average by 4.4% per year between 1995-2000 and by 3.8% per year in the decade 2000-2010. The host tourist regions which are expected to experience high growth, include East Asia/Pacific (7.5% growth per year between 1995-2000), South Asia (7.15% growth per year), Africa (5.5%), the Americas (5%). Meanwhile, Europe is forecast to have 3.2% growth per year in arrivals between 1995-2000.

The overriding cause of Europe's relatively low percentage rates of growth are the high base volumes of tourist activity into and out of Europe.

Intraregional tourism in Europe (travel by residents of European countries to other countries in the continent) will grow at an average of 2.7% per year between 1995-2000, bringing total intraregional arrivals to 311 million by the year 2000. Arrivals from North America will grow at an average rate of just over 3%, with arrivals from Australasia and Japan 4.5%.

While Europe will still be the main tourist destination, its market share world-wide shows a steady downward trend which is threatening its lead position in the long-term. If measures to target niche markets and develop innovative products to encourage both leisure and business travellers are not taken, Europe may continue to lose market share to East Asia and the Pacific area.

Written by: European Commission - DG XXIII

# Restaurants

## NACE (Revision 1) 55.30

The restaurant sector includes a diverse range of establishments from fast food take away to haute cuisine. Throughout the 1980s, changing tastes, rising levels of disposable income, greater female labour force participation and increases in tourism expenditures contributed to a steady increase in restaurant revenues. The industry is very susceptible to economic conditions and in also in the recent years the turnover has declined in some of the EU Member States. Entry and exit barriers are very low and the typical enterprise is small independent and often family owned, although chains and franchise outlets, are common in the rapidly growing fast-food subsector. The use of new technology is increasing, while attraction and retention of workers is a growing problem. The outlook for the industry is relatively buoyant and recent growth is forecast over the remainder of the 1990s.

### INDUSTRY PROFILE

#### Description of the sector

Among the most vibrant and visible commercial sectors of the EU, restaurants are present in virtually every local community. In addition to their economic worth, restaurants play a significant social role in most towns and cities throughout the EU. For statistical purposes restaurants are classified as 55.30 under Nace Rev.1, which includes: restaurants, snack bars, cafes, dining car services and other eating places (not providing overnight accommodation). However, the statistics presented in the following tables are based on Nace 1970, 661, which excludes dining-car services but includes contract catering.

There is substantial variation within the restaurant sector, from fast food outlets to high class restaurants, providing very different markets with a variation of the same service, the provision of ready to eat food. Most restaurants are stand alone operations, although some are an integral part of the services provided within other sectors, principally hotels but also recreation parks, public houses, railways, ferries and night-clubs. There are also other service branches specialising in the provision of food including contract caterers, work canteens and messes, and hospitals/convalescent homes. There is a fine distinction at the margin between sub-segments of the restaurant industry. Unlike hotels, most grading of restaurants is unofficial, often relatively subjective and generally only applies to the top end of the market.

#### Recent trends

Official statistics on the restaurant industry are not available on a consistent basis across all EU Member States. Nevertheless, Eurostat data for the 1980-92 period does indicate some common trends:

- there was strong growth in employment across all Member States for which data is collected during the 1980s;
- growth in employment was accompanied by an increase in the number of establishments, although in 1993 the number of establishments in Spain and Italy fell.

The increase in enterprise numbers and employment is in line with growth in restaurant turnover along a well established upward trend over the last decade. There are variations across different Member States and, while growth slowed in the early 1990s, more recently it has increased, reflecting the impact of economic trends and their influence on business, tourism and other leisure demand. Within the overall trend increase, turnover in the fast food and takeaway sector grew most rapidly, although again there are substantial variations across countries.

**Table 1: Restaurants, snack bars, cafés and other eating places**  
Main indicators, 1992

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België	(1) 21 445	2 431	(1,6) 43 878
Danmark (8)	(5) 6 075	(1) 1680	(1) 41 686
Deutschland	(2) 85 311	(3) 9 733	(6) 346 337
Ellada (4)	(5) 19 200	N/A	50 980
España	(5) 53 145	(3) 11 619	(6) 130 223
France	75 091	14 758	343 091
Ireland (1)	2 223	400	15 363
Italia (2)	(5) 91 102	N/A	N/A
Luxembourg (1)	475	203	3 707
Nederland (1, 9)	17 792	3 415	103 000
Österreich	N/A	N/A	N/A
Portugal (7)	3 264	870	44 182
Suomi/Finland	N/A	N/A	N/A
Sverige	N/A	N/A	N/A
United Kingdom	44 724	11 172	N/A

(1) 1991

(2) 1990

(3) 1989

(4) 1988

(5) Number of local units.

(6) Number of employees.

(7) Covers only enterprises with at least 5 employees. Including also canteens messes, sleeping- and dining-car services.

(8) Including also nightclubs, dance halls, etc.

(9) Including also sleeping- and dining-car services.

Source: Eurostat; Mercure

**Table 2: Restaurants, snack bars, cafés and other eating places  
Number of employees**

(units)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	23 201	N/A	N/A	N/A	N/A	29 872	30 666	32 262	40 279	43 116	44 107	43 878	N/A
Danmark (1)	27 031	N/A	N/A	N/A	30 538	33 664	35 003	36 491	35 994	36 965	37 914	N/A	N/A
Deutschland	233 260	235 450	261 180	267 090	262 410	259 710	282 908	288 538	302 582	307 114	323 832	338 849	346 337
España	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	91 248	106 306	110 330	119 010	130 223
France	N/A	N/A	N/A	N/A	164 917	165 197	179 577	179 087	204 870	233 651	237 790	239 683	255 628
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10 682	N/A	N/A	11 882	N/A
Luxembourg	1 500	N/A	N/A	N/A	1 861	2 074	2 188	2 404	2 590	2 864	3 027	3 207	N/A
Nederland (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	60 500	64 000	67 944	74 000	N/A
Portugal (2, 3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33 573	37 341	35 046	38 979	43 601

(1) Including also nightclubs, dance halls, etc.

(2) Including also sleeping- and dining-car services.

(3) Covers only enterprises with at least 5 employees. Including also canteens and messes.

Source: Eurostat: Mercure

The range and quality of restaurant services are an important component of a country or region's tourism image and are often marketed as tourism attractions in their own right. However, except insofar as franchising can be regarded as such, restaurant services are not internationally traded.

## MARKET FORCES

### Demand

Disposable income is the key factor influencing demand for restaurant services, although a variety of other factors, such as demographic structure, changing consumer tastes and the level of tourist activity are also important. Restaurants compete with other leisure activities including cinema, theatre, home video and sports for the discretionary spending of the consumer. Reflecting the strong positive link between propensity to eat in restaurants and increases in disposable income, demand for restaurant services has been growing. The sector has, however, come under new pressure from the development of home-delivered foods and retail sales of high quality pre-prepared meals. Corporate entertainment, important at the upper end of the restaurant market, is also closely linked to the level of economic activity although growth in this area is inhibited in several Member States by tax penalties.

As well as becoming more commonplace, eating out throughout the EU is also becoming relatively less expensive, although less so than in the USA where it is often less expensive to dine in a fast food or family restaurant than to buy equivalent ingredients and cook at home. Overall the proportion of total consumer expenditure spent on eating out, averaging over 5% in the EU, rose over the last decade. This average hides substantial variations

between Member States. In some cases these differences reflect the importance of the tourism sector, while in others they reflect traditional attitudes to eating out.

Tourists are important restaurant customers and the growth of tourism is an important driver of turnover growth. Even when staying in self-catering accommodation tourists tend to eat out, while guests in hotels and similar establishments may have little choice but to frequent restaurants and cafes. In addition, restaurants at the top end of the market are in themselves becoming tourist attractions and gourmet holidays based on high quality restaurants or on regional cuisine are increasingly common. Family restaurants, relying usually on local business, also benefit from tourism growth. Transport restaurants are also susceptible to fluctuations in tourism. A recent trend has been the development of fast food and theme restaurants in airports, rail and ferry terminals and even on the carriers themselves.

Fast food restaurants are the fastest growing restaurant sector, particularly among the younger age-groups and in the Southern Member States where penetration by the major international franchises is relatively low. The ageing of the EU population may dampen the growth of fast food outlets in the medium term, while it is also argued that demand for fast food is approaching "saturation" levels in a number of the Northern Member States.

The recent swing against beef engendered by BSE (mad cow disease), may retard at least temporarily, the growth of fast food restaurants, particularly those centred on hamburgers. On the other hand, the ongoing internationalisation of food cultures, helped by the rapid spread of communications media and growth of international tourism flows will aid the ex-

**Table 3: Restaurants, snack bars, cafés and other eating places  
Number of establishments**

(units)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
B	11 069	11 809	12 919	13 824	14 649	15 107	15 327	15 605	16 282	16 922	17 656	18 231	18 935	19 685
DK	10 170	N/A	N/A	N/A	10 669	11 027	12 314	12 584	13 036	13 266	12 809	11 555(1)	8 753	N/A
D	68 027	N/A	N/A	N/A	71 832	N/A	80 959	N/A	85 810	N/A	90 326	N/A	113 244	N/A
E	27 381	29 812	N/A	N/A	N/A	37 227	39 220	40 038	43 985	49 167	50 047	51 154	53 145	49 657
F	N/A	N/A	N/A	N/A	61 604	66 289	65 935	61 743	68 667	71 223	73 747	68 476	N/A	N/A
I	86 739	87 717	N/A	N/A	N/A	N/A	89 424	88 990	88 119	88 713	90 049	91 102	92 688	91 831
L	313	311	327	341	382	401	420	425	436	460	477	475	N/A	N/A
NL	N/A	N/A	N/A	N/A	N/A	N/A	17 204	17 533	18 044	18 798	19 154	20 120	21 613	22 444
P	1 639	1 714	N/A	N/A	N/A	N/A	2 693	2 889	2 916	3 016	3 504	4 078	4 751	N/A

(1) Excluding cafés and other eating places.

Source: Eurostat: Tourism Yearbook

**Table 4: Restaurants, snack bars, cafés and other eating places  
Turnover**

(million ECU)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	774	N/A	N/A	N/A	N/A	1 124	1 245	1 367	1 505	1 708	1 965	2 268	2 431
Danmark (1)	884	N/A	N/A	N/A	1 286	1 459	1 581	N/A	245	258	266	1 680	N/A
Deutschland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8 766	N/A	9 377	N/A	N/A	N/A
España	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11 619	N/A	N/A	N/A
France	N/A	N/A	N/A	N/A	7 226	8 088	8 663	8 714	10 423	11 909	13 185	13 170	14 758
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	400	N/A
Luxembourg	55	61	64	71	79	91	102	116	126	145	171	203	N/A
Nederland (2)	N/A	N/A	N/A	N/A	N/A	2 135	2 276	2 396	2 545	2 811	3 060	3 415	N/A
Portugal (2, 3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	458	571	606	N/A	870
United Kingdom	4 234	5 086	5 595	5 802	6 381	7 228	6 991	8 358	9 887	10 798	11 302	11 562	11 172

(1) Including also nightclubs, dance halls, etc.

(2) Including also sleeping- and dining-car services.

(3) Covers only enterprises with at least 5 employees. Including also canteens and messes.

Source: Eurostat: Mercure

pansion of USA-type food outlets and ethnic restaurants, with the latter also benefiting from increased confidence and sense of experimentation among consumers. Conventional food service styles, products and concepts are being rendered obsolete by 1990s lifestyles. An exception to these trends is the resurgence of regional cuisine; especially in France, Spain and Germany.

### Supply and competition

The key competitive factors in the restaurant industry are location, food quality, price, service quality and decor. Entry and exits barriers are negligible at most levels of the industry and small, often family-run firms predominate. As a result, and because of the localised nature of competition, there is little danger of monopolistic practices emerging and strong competition is evident both within and across segments of the industry.

All sectors of the industry are now growing, although the most consistent growth has been in the takeaway and fast food sector, with chains providing the driving force. Ethnic and other forms of theme restaurants are also spreading. Like fast food outlets before them, a new set of USA-based theme restaurants are now well established in the UK, such as Tex-Mex, Cajun, and 1950s nostalgia themes, and expanding elsewhere in northern Europe. A more recent development has been the growth of home-delivery food services, preparing pizza and oriental dishes in a central location for delivery within a neighbourhood. This service, coupled with the growth in home video and satellite television is encouraging more Europeans to eat prepared food at home rather than in a restaurant.

Attracting a suitable staff is a critical issue facing the industry across all of the EU, but particularly in the Northern Member States. Traditionally the industry has not been good at giving its employees a sense of worth and is finding competition with other industries to attract school-dropouts and relatively unskilled staff which form the bulk of new entrants into the sector difficult. Furthermore, with high rates of staff turnover and continued growth of good quality staff are becoming harder to locate. Demographic patterns and falling family sizes, particularly in Northern Member States, is also contributing to skill shortages. Already restaurant chains in the United Kingdom, Germany, Benelux, France and Denmark are recruiting part time workers, students and senior citizens as well as immigrants from outside the EU. The problem is not as serious in Southern Member States. However, tourist authorities in the latter have expressed concern about migration of restaurant (and other hotel) workers to fill vacancies in north Europe. Such migration is likely to add to pressures to improve wages and other working conditions.

High staff turnover reflects relatively poor pay and other conditions (towards the minimum in each Member State), often long and unsociable hours and a reliance by employees on gratuities and service charges. The industry is taking some steps towards improving its image. For example, chefs' associations in both France and the UK and the state tourism training agency in Ireland have schemes forging links with schools to improve the sector's image. Working conditions should improve as a result of EU Social Legislation, but this will also raise the cost-base of employers in the sector. Organisations representing European restaurant owners have expressed concern about the impact of the legislation and the ability of Member States to guarantee fair competition through EU-wide enforcement of the legislation.

Competition in the restaurant sector is similar to that in other services dominated by small enterprises. The cost of entry is relatively low encouraging entrepreneurs to enter a local market, particularly when the restaurant business is seen to be growing. The establishment of restaurants is, however, governed by regulations in all Member States. These include the granting of planning permission, the certification of the premises by the local health authority, and in some Member States the granting of a license to sell alcohol. Generally, different regulations governing restaurants are not a barrier to competition. Future mergers to create national or supranational chains are also unlikely to distort competition in the sector.

Competition within the sector is complex and differs across market segments and locations. Price elasticity is lower at the top end of the market where competition is based on reputation, image and a perceived high quality of food and service. These competitive criteria also exist in the broad segment of family restaurants in which marketing and advertising are rarely undertaken. Location is a key factor but ambience, quality of food and personality of the proprietor are also important. Price assumes greater importance when the reputation of the restaurant is largely confined to the local community. Price as a key factor is also particularly evident in "in store" cafeterias and restaurants, in coffee shops and in the fast food sector. Overall the trend has been for prices to move in line with inflation but strong local competition has kept increases below inflation in larger cities throughout the EU.

### Production process

The preparation and service of food has traditionally been a labour intensive exercise and while automation and technology have had a major impact over the last decade or more, this is still largely true. In most restaurants raw materials are supplied fresh, prepared by hand, cooked by traditional methods and served to diners at their tables. Fast-food outlets differ

**Table 5: Restaurants, snack bars, cafés and other eating places  
Ten leading restaurant groups in Europe, 1994**

Rank	Group (Country of origin)	Branded outlets	Turnover (million ECU)		Number of outlets	
			1994	1993	1994	1993
1	Mc Donald's (USA)	Mc Donald's	4 386.01	3 736.80	2 170	1 808
2	Accor (F)	L'Arche, Boeuf Jardinier, Café Route, Courte Paille, L'Ecluse, Pizza del Arte, Traditional sites, Various fast foods + grills, various concessions, Traiteurs Lenôtre Rosell, Railway (WL), Maritime (Costa Paquet)	828.26	878.58	476	455
3	Autogrill / SPA (I)	Alemagna, Amico, Arabesque, Autogrill, Burghy, Cia Motta, Down Town, Duomo Center, La Pergola, La Terrazza, Magic, Procace, Quatre Pentes, Resmar, Spizzico	727.05	619.45	437	409
4	Whitbread (UK)	Beefeater, Berni classic, Churrasco, Maredo, TGI Friday's, Pizza Hut	642.55	598.79	736	701
5	Lufthansa Service (D)	LSG Airline Catering, Partyservice, 29 Airport, Gastronomie	613.37	588.23	N/A	N/A
6	GIB Group (B)	Family Buffet, Lunch Garden, New Motorest, Quick	579.48	515.68	334	308
7	Grand Metropolitan (UK)	Grand Metropolitan	531.91	N/A	603	500
8	Pepsico (USA)	KFC, Pizza Hut, NL, Taco Bell	486.32	N/A	747	N/A
9	Gate Gourmet (CH) Catering	Airport restaurants, Relais la Tour, Museums, Caterers, Airline	462.76	433.93	N/A	N/A
10	Forte (UK)	Happy Eater, Harvester, Little Chef, Relais Sbarro, Welcome Break, Wheelers	454.86	N/A	653	N/A

Source: *Néo Restauration Magazine*

in that raw materials are often semi-prepared and takeaway business is of considerable importance.

However, while the bulk of small independent restaurants remain largely unaffected, technological innovations are making rapid inroads among restaurant chains and larger enterprises, reflecting pressures on the availability of skilled staff and high labour costs. Fast food restaurants and contract caterers have practised bulk preparation of food and storage under frozen or chilled conditions for many years, while "cook chill" and "sous vide" systems, which enable food to be prepared in batches or in bulk and "held", are increasingly popular in all types of restaurants and have revolutionised contract catering. They have also facilitated lower staff requirements, particularly at night or over week-ends. Clusters of restaurants, particularly in the non-hospitality sector, are increasingly investing in central production units (CPUs) from where prepared food is transported to the point of sale for finishing and service.

The impact of electronic technology is evident both inside and outside the kitchen. Electronic hand-held order pads transmit orders direct from waiting staff to the kitchen and also facilitate billing and inventory control, while waiter and patron paging systems improve communications between customers, waiting staff and chefs. Electronic technology also offers greater control over traditional cooking media such as ovens

and gas or electric ranges. The "combination oven" which can cook foods in several ways, is a product of this technology and enables designers to add "cooking cycle programmes" and electronic probes that measure temperature and moisture content of the food during the cooking cycle. Microwave ovens which are now widely used at all levels of the market, are also enhanced by electronic controls. Energy costs in restaurants are relatively high and this has led to greater emphasis on energy efficient cooking.

The principal "stock in trade" of restaurants is food in a raw or semi-prepared state. At all levels of the industry there is increasing demand for conformity to specification and continuity of supply. The "Quality" system, employed informally by the vast majority of restaurant owners over the centuries, still works effectively today. Among corporately-owned restaurants quality is achieved through more formal structures. Detailed specifications are drawn for each food item and there is a greater emphasis on partially processed or prepared foods which are frequently supplied in a frozen state. A growing number of corporately-owned restaurants now operate just-in-time systems similar to those operated by manufacturing industry.

**Table 6: Restaurants, snack bars, cafés and other eating places  
Ten leading fast food restaurants in Europe, 1994**

Rank	Group (Country of origin)	Countries established	Turnover (million ECU)		Number of outlets	
			1994	1993	1994	1993
1	Mc Donald's (USA)	All countries (1)	4 133.73	3 736.80	2 141	1 806
2	Grand Metropolitan (UK)	DK, D, E, F, H, CH, IRL, I N, NL, P, PL, S, UK	531.91	N/A	603	500
3	Quick (B)	B, F, L	482.52	416.44	266	234
4	Pepsico / KFC (USA)	Bg, CH, Cyr, CZ, D, DK, E, F, UK, GR, H, IRL, IS, NL, PL, TR	307.29	279.63	432	383
5	Food Service System Italia SPA / Cremonini Burghy Italy & Italy (I)	I	97.56	80.39	76	65
6	Goody's (GR)	GR	86.17	65.61	81	73
7	Le Duff Restauration Rapide La Brioché Dorée Le Fournil de Pierre (F)	E, F, I, NL, UK	72.94	68.32	181	168
8	Alda Food SA Pokin's Bocatta (D)	E	34.34	22.17	52	34
9	La Croissanterie (F)	GR, E, F, IRL, I, P	31.45	33.18	122	132
10	Relais H / SNC Cafétérias Relais H (F)	F	31.15	26.54	121	111

(1) except Albania, Romania and former Yugoslavia.  
Source: Néo Restauration Magazine

## INDUSTRY STRUCTURE

### Companies

Large chains and restaurant franchises are increasingly in the forefront of any analysis of growth in the industry. However, despite their higher profile and the fact that the fast food and takeaway sector outpace average growth, the industry is still dominated by small independent restaurants. All EU Member States offer an enormous range of family run restaurants and cafes that are central to the appeal and character of the industry. More than 90% of the sector across the EU is family-owned and employs less than ten people, some of whom may be casual or part time employees. Family-owned restaurants span the full spectrum of high quality dining experiences to simple takeaway fast food shops. The local family restaurant often offers dishes based on local or regional cuisine, although regional cuisine are increasingly becoming "brands" in their own right and vying with "national" and "ethnic" cuisine.

The gourmet segment of the market is also dominated by small independent restaurants. In most Member States it is the personality, reputation and skill of the patron, who may be the chef or the maitre d' hotel, on which the success of the enterprise is based. Corporations and chains are rare in gourmet dining, except in the context of hotels. Many four

and five star hotels of Europe offer at least one restaurant serving gourmet food. The scale and variety of the food offered in hotels is also expanding. More hotels are now operating ethnic restaurants in addition to the cuisine of their region, an international menu and informal dining in brasserie and coffee shop styles.

Restaurant chains, often owned and operated by conglomerates, are most evident in the fast-food sector. These chains often operate through local franchises, with McDonalds, the largest catering group in the EU, being a perfect example. Fast food restaurant chains are both multiple retailers and a production enterprise. In both these facets of their activities they have similarities with multinational multiple retailers and with multinational manufacturing enterprises. Like the retailers, expansion across national borders has occurred first and most substantially in the wealthiest EU Member States.

### Strategies

Investment by corporations is most obvious towards the lower end of the market, particularly in the areas of popular catering, transport catering and fast food. Groups like Forte's Little Chef (United Kingdom), GIB (DK), Quick (F), GfnBAB (D) and Autogrill (I) have developed successful chains of restaurants close to motorways and associated restaurants can also

**Table 7: Restaurants, snack bars, cafés and other eating places  
Largest European companies by turnover, 1994 (1)**

Rank	Company	Country	Turnover (million ECU)	Group net income (million ECU)	Number of employees	Sector
1	Whitbread PLC	UK	3 210	266	65 238	Eating and drinking places
2	Cie Int'le des Wagons-Lits et du Tourisme	B	2 043	78	6 912	Eating places
3	Sodexho SA	F	1 702	96	54 967	Eating places
4	Compass Group PLC	UK	1 190	51	36 492	Eating places
5	Greenalls Group PLC	UK	930	73	22 100	Drinking places
6	Mövenpick Holding	CH	592	8	14 283	Eating places
7	City Centre Restaurants PLC	UK	133	12	3 835	Eating places
8	European Leisure PLC	IRL	83	-1	2 371	Drinking places
9	Wetherspoon (J.D.) PLC	UK	61	8	1 101	Drinking places
10	The Pelican Group PLC	UK	42	4	1 215	Eating places
11	PizzaExpress PLC	UK	33	6	731	Eating places
12	The Heavitree Brewery PLC	UK	11	1	138	Drinking places
13	Harry Ramsden's PLC	UK	5	1	139	Eating places
14	Courtyard Leisure PLC	UK	2	0	47	Drinking places

(1) Data covers SIC classification code 58  
Source: DABLE

be found in towns and cities. While a dominant EU-wide restaurant chain has yet to emerge these chains are gradually spreading, mostly by acquisition, beyond their national borders. Activities in other sectors, such as retailing or hotels, is also facilitating international expansion. Forte's "Little Chef" is expanding alongside the hotel group's hotel joint ventures in Italy, Spain and Ireland. Supermarkets and department stores already operate large chains of cafeteria style restaurants in France, Germany, Benelux, United Kingdom and Italy.

Investment from outside the EU has been increasingly important since the early 1980s. This has been confined almost entirely to the fast food sector and been spearheaded by the USA chain McDonalds which had 2 170 outlets in Europe at the end of 1994 and has continued to expand in the interim, e.g. tripling its presence in Italy through the acquisition of the Burghy group. Other chains which originated in the USA like Kentucky Fried Chicken, Burger King, and Pizza Hut have also been making an impact on this segment of the market, although the latter two are now owned by United Kingdom companies.

Popularity of fast food and fast service can be attributed to: European acceptance of American dining culture, particularly among young people; the expertise of the chains in terms of product development, location of outlets, staff training, consistency in quality, and changing living patterns in Europe. Entrepreneurs in each Member State have established national and regional fast food chains which compete with the franchised outlets, e.g. French groups, Quick, La Brioche Dorée, La Croissanterie and Pomme de Pain have achieved considerable success. Investment in the EU restaurant sector has also come from entrepreneurs from outside of the EU opening "ethnic" restaurants.

## REGIONAL DISTRIBUTION

Restaurants are ubiquitous in Europe. In general, concentration and level of competition is related to population densities. Cities and larger towns have more restaurants per capita than do villages and rural areas. An exception is areas of tourism interest which tend to have a large number of competing restaurants, although some may operate on a seasonal basis. However, many restaurants at the upper end of the market are often found in relatively remote rural areas; an aspect which

may improve their "charm". In many cases location is a key factor, both in terms of the ambience it may lend to the overall "dining" experience, as in high quality restaurants, or in terms of the throughput it helps generate.

## ENVIRONMENT

Restaurants are relatively environment-friendly and are becoming more so. Waste is largely biodegradable and in many instances is recycled as animal feed. It is easily sorted for recycling or other methods of disposal, although the extent to which this occurs varies across Member State. Cooking systems are also generally environmentally friendly. Concern about CFC gases has resulted in the development of a new generation of "environmentally friendly" and "CFC free" refrigerators and freezers. On the other hand, packaging from the fast food sector is perceived to be a major contributor to litter problems in many Member States, although some chains have taken steps to ameliorate litter problems, e.g. by using bio-degradable packaging rather than expanded polystyrene.

Some restaurant clientele have also expressed concern about production methods used in the food raw material but this has not adversely affected the sector to any great extent. Some restaurants have capitalised on such concerns by guaranteeing all dishes are prepared from organically-grown produce, and that poultry and fish are not the product of intensive growing systems. Similarly, consumer preference for foods perceived to promote health has led to the creation of new style cuisine based on a healthy diet. Eurotoque, the EU association of chefs, has been active in promoting a positive approach by restaurant owners to the environment.

## REGULATIONS

There are a wide variety of national and EU regulations impacting on the restaurant trade. The most important include compliance with hygiene regulations and certification by local health authorities, regulations relating to working conditions; and, in some cases, the granting of a license to sell alcohol. In some Member States restaurants must also comply with local and national regulations on the protection of the environment. Hygiene regulations across the EU are in the process of being harmonised, and the harmonisation of qualifications

**Table 8: Restaurants, snack bars, cafés and other eating places**

**Expected average annual growth rates in the EU**

(%)	1995-96	1995-98
Turnover	5.0	4.0
Employment	3.0	2.0

Source: Fitzpatrick Associates

is improving worker mobility. In addition, EU labour legislation is constantly impacting on conditions of work.

There are different VAT rates (and excise duties on alcohol) on restaurant (and takeaway) food across Member States and planned harmonisation will have differential impacts across the EU. Restaurants services are not included in the list of goods and services to which Member States may apply a reduced rate of VAT. However, the Member States that were applying a reduced rate to restaurant services at 1 January 1991 are allowed to continue to do so at least until the end of 1996.

## OUTLOOK

The restaurant sector in the EU grew throughout the 1980s, slowed somewhat during the recent recession and is now growing strongly again. Overall growth will continue during the 1990s as a result of moderate growth in disposable incomes, on average, and an increased proportion of disposable income devoted to restaurant meals. While the tendency to spend a growing share of household expenditure on eating out may have run its course in some more developed EU Member States, there remains scope for growth in others. Countries with an emerging youth population will also see more rapid growth in fast service and fast food restaurants, and those with an ageing population will see more growth in health food and leisure style restaurants. Changing demographics, social patterns and tastes will also offer opportunities for restaurants to increase sales for home deliveries, although this may have some impact on traditional sales. As more people move into urban areas there will be fewer family meals, greater consumption of snacks and small meals and more dining in restaurants as a leisure activity.

Growth in tourism flows, and intra-EC travel in general, will also contribute to increased demand for restaurant facilities, while more emphasis on quality and higher value-added tourism is likely to see restaurant expenditure per tourist rise. More short-breaks and second holidays should contribute to increased trips and restaurant expenditure among domestic tourists in Northern Member States, and international tourism revenues in the Mediterranean Member States should continue showing strong signs of growth.

Average growth in restaurant sales is expected to exceed that of GDP growth (approximately 2.5% per year) over the period 1995-2000. Employment growth is expected to be below that of turnover. The level of automation will increase, motivated by cost-cutting, service improvement and problems with attracting staff. Restaurant owners are also likely to seek other service innovations reducing labour usage.

Written by: Fitzpatrick Associates

The industry is represented at the EU level by: Confederation of the National Hotel and Restaurant Associations in the EC (HOTREC). Address: 111 Blvd Anspach Bte 4, B-1000 Brussels; tel: (32 2) 513 6323; fax: (32 2) 502 4173; and European Federation of Contract Catering Organisations (FERCO). Address: Rue Franklin 136, B-1040 Brussels; tel (32 2) 735 0186; fax (32 2) 735 9601.

# Hotels

## NACE (Revision 1) 55.1

*Sectoral indicators point to improved levels of activity throughout the EU hotel trade, although cross-country variations in the rate of recovery remain significant. The recovery trend is expected to continue, albeit at a moderate level due to overcapacity in several sections of the EU hotel trade. As a result, further consolidation is expected among owner-managed hotels and mid-sized chains.*

### INDUSTRY PROFILE

#### Description of the sector

The hotel trade encompasses firms which are primarily engaged in providing overnight accommodation, accompanied or not by catering and other types of services. This provides the basis for the NACE Rev. 1 classification of hotel establishment, namely class 55.11 - Hotels and motels with restaurant; and 55.12 - Hotels and motels without restaurant. The classification has changed at the group level compared to the old NACE '70 classification, which had split the hotel trade into three groups: 665.1 - Hotels and motels, with restaurant; 665.2 - Hotels without restaurant; and 665.3 Guest houses and boarding houses.

Although accommodation and catering services still generate the bulk of hotel revenue in Western Europe (87.7% of revenue on average according to the 1995 Horwath World-wide Hotel Industry Survey), the breadth of services available from the hotel trade has expanded steadily, notably in larger-sized units geared to the business traveller. Such services might include health and leisure facilities, foreign exchange and car rental facilities, shopping facilities, business secretarial services and conference facilities. The number of hotels supplying accommodation only is now relatively small, with a discernible trend towards larger establishments providing a broader range of

services. As a result, the extent to which the business of hotels impinges on other service sectors is increasing.

Comprehensive statistical coverage of the EU hotel industry is hindered by the lack of consistency in national and multilateral (e.g. WTO) definitions of hotels and similar establishments across countries, making aggregations and inter-country comparisons difficult. The collection of harmonised tourism statistics at EU level and the enhancement of existing information tools on tourism are at the heart of current discussions between the European Commission and partner organisations in the travel and tourism sector.

#### Recent trends

Statistical coverage of employment in the EU hotel industry does not allow detailed analysis of cross-country trends in levels of employment nor meaningful comparisons of staff-to-hotel ratios. The time series collated by Eurostat nonetheless indicate that employment has grown substantially during the five-year period to 1992 in most of the EU countries, although employment fell in both France and Spain in 1991/92 and fluctuated markedly in both Denmark and Portugal. More recent data from HOTREC suggests that employment subsequently picked up in the Spanish hotel industry, although there was a decline in the number of self-employed, a trend which can be observed elsewhere in Europe in line with a decrease in the number of small-size owner-managed establishments.

There is a clear pattern of recovery in the EU hotel trade, although cross-country differences are significant. The upturn in hotel activity, which started in the UK in 1993 is firmly entrenched in the British market, as is apparent from the growing number of hotel property transactions registered in there in 1994 and in the first half of 1995. With the notable exception of Denmark, where the hotel trade is still at a cyclical low, the number of guest nights in hotel accommodation picked-up in the other Scandinavian markets and continued to expand at a sustained rate in three of Southern Europe's largest tourist destinations, namely Spain, Greece and Portugal. By contrast, the French and German hotel trade have not fully emerged from recession and witnessed deteriorating levels of occupancy in 1994. According to Horwath Axe Consultants, the number

**Table 1: Hotels  
Main Indicators, 1992**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België	(1) 2 128	885	(6) 14 777
Danmark (1)	851	793	16 995
Deutschland	(2) 38 755	(3) 8 473	(1) 252 686
Ellada (4)	(5) 5 493	N/A	41 116
España	(5) 9 792	(1) 5 188	(6) 112 490
France (7)	29 332	9 907	179 244
Irøland (1)	1 050	635	23 084
Italia (2)	(5) 36 166	N/A	N/A
Luxembourg (1)	326	151	2 890
Nederland (1)	2 531	1 341	35 000
Østerreich	N/A	N/A	N/A
Portugal (8)	630	616	25 307
Suomi/Finland	N/A	N/A	N/A
Sverige	N/A	N/A	N/A
United Kingdom	12 419	8 516	N/A

(1) 1991

(2) 1990

(3) 1989

(4) 1988

(5) Number of local units.

(6) Number of employees.

(7) Excluding guest and boarding houses.

(8) Covers only enterprises with at least 5 employees.

**Table 2: Hotels**  
**Number of employees**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	11 544	10 920	11 216	11 508	12 135	13 032	14 293	14 666	14 777
Danmark	12 428	15 379	16 218	15 747	15 580	16 995	16 871	16 852	16 171
Deutschland	126 990	144 570	148 993	153 287	157 558	160 708	168 781	174 570	179 538
España	N/A	N/A	94 880	N/A	100 434	112 528	113 769	124 370	112 490
France (1)	N/A	121 886	122 420	119 987	129 768	140 692	143 940	148 095	146 209
Ireland	N/A	N/A	N/A	N/A	14 597	N/A	N/A	21 897	N/A
Luxembourg	1 850	2 143	2 134	2 194	2 333	2 347	2 466	2 461	N/A
Nederland	N/A	N/A	N/A	N/A	26 100	28 000	29 877	30 000	N/A
Portugal (2)	26 525	24 209	24 399	N/A	27 399	25 680	25 915	27 212	25 017

(1) Excluding guest and boarding houses.

(2) Covers only enterprises with at least 5 employees.

Source: Eurostat: Mercure

of hotels dropped by 3.2% in France in 1994, despite an upturn in economic activity.

Estimates by Pannel Kerr Foster Consulting on average room rates in the EU's main business cities suggest a significant gap between prices charged in most cities in comparison to average hotel rates in London and Paris. The hotel trade in both cities enjoyed above-average occupancy rates over the period 1994-95, which should allow further increases in room rates in 1996, notably in London. The low levels of room occupancy observed in Berlin and Leipzig are the result of the excess capacity built-up since reunification.. Price competition is keeping room rates down in Europe.

According to the PKFA Eurocity Survey, the metropolitan hotel market remains highly price sensitive in Europe and discounting practices remain prevalent in the industry; as a result, while occupancy rates rose by close to 7% to 67.3% in the 26 European metropolitan areas surveyed by PKFA, average hotel rates were down 1.5% on their 1993 level.

### International comparison

While the decline in the share of Western Europe in world tourism demand is well documented, it is useful to recall that Europe still accounts for some 45% of world-wide hotel capacity. The bulk of hotel investment over the period 1985-1993 nevertheless occurred in North America and in the Asian Pacific Rim, while Europe's share of world capacity declined from 48.1% to 44.8%.

Although cross-country variations are significant, the aggregate performance of the European hotel industry in 1994 lagged significantly behind that of other leading hotel markets, notably the US and East Asia. The pace of recovery of the EU hotel industry is proving to be slow, with regards to occupancy rates and profits posted in other regions of the world. With average occupancy slightly above 62% in 1994, European hotel properties were close to 8% lower than occupancy rates recorded in the US hotel industry and 4.5% lower than the world-wide average; Horwath's 1995 "World-wide Hotel Study" also indicates that, in relation to sales, average pre-tax profits posted by the European hotel trade were below those of other regions of the world in 1994, apart from Latin America and the Caribbean.

### Foreign trade

Eurostat data suggests that non-residents (i.e. foreign business and leisure customers) were the most dynamic source of demand for hotel (and non-hotel) accommodation in the EU in 1994; whereas overnight stays by residents dropped by an estimated 1.8%, the number of bed-nights by foreign tourists and business travellers rose by 10.5%. Data available for 10 of the 15 EU Member States shows that the increase in non-resident bed-nights was most sustained in Finland and in Southern European countries - notwithstanding France, which recorded a mild drop in the number of foreign traveller overnight stays.

**Table 3: Hotels**  
**Number of bed-places**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	87 785	87 863	86 766	89 137	87 175	92 543	93 710	86 472	101 804	108 205
Danmark	68 574	70 960	73 588	79 004	83 973	85 014	88 468	92 524	96 024	97 034
Deutschland	568 038	750 595	748 892	739 258	795 244	811 025	824 546	919 727	922 913	949 462
Ellada	261 105	316 033	324 301	336 506	350 833	370 648	378 421	393 305	404 259	422 272
España	596 874	622 428	637 073	664 839	683 152	707 974	735 749	781 091	817 965	837 641
France	663 440	974 872	993 474	1 013 762	1 036 534	1 082 138	1 087 714	1 101 692	1 198 272	1 178 432
Ireland	42 484	39 351	39 583	40 147	40 873	41 260	41 318	43 924	46 434	48 111
Italia	1 550 1680	1 617 211	1 608 360	1 646 513	1 665 319	1 670 451	1 678 910	1 708 033	1 722 977	1 724 996
Nederland	88 658	98 359	98 888	101 993	100 700	104 043	107 200	112 583	115 841	133 030
Portugal	47 945	54 634	58 060	61 050	62 632	64 606	68 045	71 883	76 427	77 237
EU (1)	3 975 071	4 632 306	4 668 985	4 772 209	4 906 435	5 029 702	5 104 081	5 307 603	5 493 725	5 576 420

(1) Excluding L and UK

Source: Eurostat: Tourism Yearbook

**Table 4: Hotels**  
**Average room prices and occupancy levels in the EU's**  
**leading business centres, 1995**

	Occupancy (%)	ADRs (1) (ECU)
Amsterdam, NL	72	64
Berlin, D	61	73
Brussels, B	66	58
Frankfurt, D	71	73
London, UK	79	145
Madrid, E	67	66
Milan, I	59	66
Paris, F	68	126

(1) Average Daily Rates.  
 Source: Pannel Kerr Foster

## MARKET FORCES

### Demand

#### *Intra-regional vs long-haul*

Intra-regional flows account for the vast majority of international tourist arrivals recorded in the Western Europe. In 1994, they accounted for almost 86% of total international tourist arrivals, compared with 81% a decade earlier. They also tend to be less volatile than tourist flows from long-haul source market. There was a marked upturn in long-haul travel and tourism demand to Europe in 1994; as tourist arrivals from the three major non-EU source markets, namely the USA, Canada and Japan, picked up strongly. The long-haul market is particularly significant to the British hotel industry, since it accounts for close to half of foreign tourist arrivals there. The recovery of inbound tourism from North America and Japan is good news for the EU hotel industry, since long-haul tourists display above average levels of expenditure per overnight stay and tend to stay in hotels rather than in other types of accommodation. To illustrate the first point, the 1994 average tourist expenditure for Austria per overnight stay was \$976 for Japanese tourists, \$644 for US nationals and only \$124 for German residents. Horwath survey data on the French hotel industry indicates that long-haul demand for accommodation is primarily geared to the luxury hotel segment (4 and 5 star); while they accounted for 22.8% of total bed-nights in 3-star hotels, long-haul travellers generated close to 50% of bed-nights in 5-star establishments and over a third of bed-nights in 4-star hotels.

Tourist arrivals are a significant barometer for the tourism industry; however, trends in international arrivals are often not strictly correlated with the performance of the hotel trade, as measured by occupancy rates and total bed-nights. Despite a modest 2.1% increase in tourist arrivals in Sweden in 1994, the Swedish hotel trade reported one of the strongest increases in the number of bed-nights (+11.1%) in Europe, thanks to a marked rise in domestic demand. Given the prominent share of residents in total bed nights in most EU countries, with the notable exception of Austria and Mediterranean destinations (Greece, Portugal and Spain), it is unsurprising to find a good fit between performance indicators for the hotel trade and trends in domestic demand for accommodation.

The recovery in tourist flows was strongest in Southern Europe in 1994, notably Portugal (+8.3%), Spain (+7.8%) and Greece (+7%), in line with the continued depreciation of these countries' currencies relative to the ECU. Finland was also able to attract a growing number of foreign visitors despite registering the strongest currency appreciation in the EU. The Netherlands also performed well, with a 7.3% rise in tourist arrivals. By contrast, tourist arrivals barely budged in France, Germany and the UK.

The bulk of demand is attributed to residents (i.e. domestic business and leisure client base): 88% of all demand for hotel accommodation was domestic in Germany in 1994. The share of foreign nationals is significantly higher in the leading Southern European tourist destinations, notably Greece, Spain and Portugal. In France, Europe's leading tourist destination, non-residents accounted for under 30% of bed-nights in 1994. However, as detailed data on the French hotel industry suggest, the share of foreign nationals and residents varies substantially, by type of hotel accommodation and regionally. Horwath Axe Consultants' 1995 survey of the French hotel industry indicates that while residents accounted for over 48% of bed-nights in provincial 4-star hotels, they generated merely 14% of bed-nights in the Ile-de-France region (i.e. Greater Paris metropolitan area) in 1994.

Business travellers are not treated as a distinct category by the WTO, whose tourism statistics comprise "persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes" (WTO Recommendations on Tourism Statistics, 1993). However, as the following table suggests, an assessment of the share of business/professional travellers in world tourism can be drawn upon to identify the incidence of international business travel to EU countries. Further estimates on the relative size of the business vs. leisure travel market are collated by the European Travel Monitor (ETM); according to ETM, 76% of all European trips abroad in 1994 were related to holidays, 14% to business trips and the remainder to visits to friends and relatives. The number of business trips tracked by ETM declined in 1994 for the fifth year in a row, despite an upturn in economic activity. The number of outbound business trips was down to 29.3 million compared with 34.7 million trips in 1990. Correspondingly, the business-related turnover reported by European hotel companies

Whilst overall business trips decreased in 1994, for the fifth year running according to ETM, some segments of the business travel markets have displayed robust growth: while incentive travel demand is slack, the "small meetings" market aimed at short-haul groups of 15 to 100 people has been a significant growth area for the European hotel trade.

PKFA's Eurocity survey yields interesting insights into the structure of business demand for hotel services in Europe: the bulk of demand is related to "discount" accommodation - as distinct from full-rate accommodation - in connection with business travel (13% of bed-nights in 1994), followed by the conference and exhibition market (10%) and incentive travels (3%). The demand mix varies considerably from country-to-country.

Aggregate demand for hotel accommodation is also affected by consumer attitudes and preferences. In Denmark for instance, the proportion of bed-nights spent in hotel accommodation stood at a mere 18.1% in 1992 according to the Danish Tourist Board. The minor contribution of French tourists to the Spanish hotel trade is another graphic example of consumer preferences for non-hotel accommodation: while they formed the largest tourist contingent with close to 24% of international tourist arrivals, French nationals accounted for only 4.5% of bed-nights in Spanish hotels in 1994 according to the Spanish Hotel Federation. Eurostat estimates for the first 10 months of 1994 vindicate this trend towards non-hotel accommodation: overnight stays in alternative accommodation rose by 13.4% compared with a modest 3.1% increase in the number of bed-nights in EU hotels. Furthermore, growing demand from travellers below 25 (the youth travel market was estimated at 170 million trips in 1993 by the European Travel Commission) and tourist flows from Central and Eastern Europe should boost demand for budget hotel and non-hotel accommodation. Hotel accommodation accounted for just under 41% of total accommodation used by young travellers according to the ETC.

**Table 5: Hotels**  
**Comparative performance of the European hotel industry, 1994**

	Occupancy (%)	Pre-tax income (ratio to sales)
Africa and the Middle-East	60.9	13.1
Asia and Australasia	70.3	4.4
Europe	62.2	1.7
Latin America and the Caribbean	60.1	-1.2
North America	70.5	3.7
Total World	66.5	2.7

Source: Horwath International and Smith Travel Research

One of the major problems facing the hotel industry is the seasonality of demand; calculated on a weekly basis, variations in average occupancy rates are more significant in Europe than in any other region, according to the 1995 "World-wide Hotel Study" by Horwath Consultants: occupancy rates at mid-week were three times as high as Sunday rates for the European hotel industry, although the survey data is most applicable to hotel chains. The long-term trend towards multiple holiday-taking and growth of the "short breaks" market, which hotels and travel operators have actively courted through special packages and discounts, should help smooth the seasonality of demand for tourist accommodation. The average length of holidays taken within Europe nonetheless increased to 9.9 nights in 1994, compared with 9.6 nights in the previous year, according to ETC. Eurobarometer survey data quoted in the Euromonitor report "Tourism 2000" indicates that 73% of EU nationals took their main holiday between June and August in 1993.

### Supply

Four basic sets of indicators are useful to monitor supply trends in the EU hotel industry:

- the number of rooms and bed-places coming on stream;
- the average size of hotel establishments, to monitor trends in the industry structure;
- the relative weights of independent and chain or franchise hotels;
- Operational results (occupancy levels, average daily rates, pre-tax income) are also critical to assess the sector's recent performance.

Improved occupancy rates were achieved at the cost of further discounting in the European hotel industry, as is apparent from trend data on average daily rates from Horwath Consultants: mid-range hotels incurred the sharpest fall in average daily rates (ADRs) in 1994, with rates 6.1% lower than in the previous year, compared with a mild 1.5% drop in average room prices for 4-star hotels and a 4% fall in budget hotel tariffs. However, price competition is particularly keen at the budget end of the market, where services are relatively standardised. Although incomplete, comparative data on occupancy rates in independent vs. integrated or franchise hotels suggest that the latter are often able to secure higher levels of occupancy: in Finland, the average occupancy level in chain and franchise hotels was 43% in 1993, compared with 40% in independent hotels. In Spain, the upper occupancy bracket was 72% for affiliated hotels and 56% for independent ones in 1992. Being affiliated to a well-known hotel group does appear to lend considerable marketing leverage to member companies (brand image, privileged access to company travel accounts) relative to independent hotel operators.

The British hotel trade continued to outperform other continental markets in 1994, with room occupancy levels of 64%

compared with a regional average of 62.2% and the highest levels of pre-tax income in the industry along with Scandinavian hotels. Germany fared worst, due to slack business demand and to the adverse impact of the DM's appreciation on foreign demand for hotel accommodation. In terms of profitability, the Horwath survey indicates that the recovery of the hotel trade is far from complete in France, Germany and the Benelux countries.

The average size of European hotel properties varies in accordance with hotel categories, ranging from 268 rooms per establishment in luxury hotels to 135 rooms in budget hotels. However, it is useful to emphasise that Horwath survey data is primarily based on chain affiliated hotels. Drawing on Eurostat data, it appears that hotel sizes in the EU bear no direct connection to the type of customer base being served: for instance, the German hotel trade, which is mainly geared to the business travel market employed an average of 6.5 employees per establishment in 1992, compared with 11.5 employees per hotel in Spain. Average levels of employment are also to be treated with caution, since a country like Spain is characterised by a high dispersion of hotel size (Eurostat data series do not include establishments with less than 5 employees).

Depressed demand in the European hotel trade combined with high levels of indebtedness in large sections of the European hotel industry have slowed construction but not fully stalled new capacity from coming on stream in the EU since the early 1990s. The number of bed-places rose most strongly in Greece and in smaller-sized tourist and convention venues such as Belgium and Ireland. However, leading hotel groups such as Accor (F) have stated that their priority is to consolidate and improve the market position of existing hotels rather than expand capacity; hence the strategic move towards franchise-based growth observed throughout the industry

One of the features of the recovery of the European hotel industry is the growing number of hotel property transactions registered since 1993. In Britain for instance, the number of significant (i.e. above £5m) transactions rose from 6 in 1993 to 12 in 1994 according to the Hotel Valuation Journal, underpinned by renewed interest on the part of US, Asian and Middle-Eastern investors. However, it is important to stress that, although leading hotel groups take an increasingly global outlook in terms of marketing and international resort development, cross-border transactions involving European and overseas investors are largely circumscribed to premium hotels located in metropolitan areas and hotel chains, due to the lack of publicly available data on small-to-medium sized establishments.

Horwath data indicates that budget/economy hotels are the most profitable hotel category in Europe, due to below-average operating expenses and payroll expenses. The average ratio of staff per room is significantly lower in budget accommodation, as is apparent from survey data on the French hotel

**Table 6: Hotels****Non-resident guest nights in EU hotels, 1993**

	Non-resident guest-nights ( <sup>000</sup> )	Share of total (%)	Variation 94/92 (1) (%)
Belgique/België	7 549	72.7	1.8
Danmark	5 913	51.1	-6.5
Deutschland	26 069	15.5	0.3
Ellada	36 547	75.4	11.6
España	83 132	60.2	17.9
France	55 454	38.1	-1.7
Ireland	9 556	N/A	N/A
Italia	64 574	34.5	16.0
Luxembourg	1 065	90.0	N/A
Nederland	7 973	51.1	-7.1
Österreich	N/A	N/A	N/A
Portugal	16 176	30.3	14.5
Suomi-Finland	2 588	24.5	15.9
Sverige	N/A	N/A	N/A
United Kingdom	N/A	N/A	N/A

(1) Preliminary estimate for 1994.

Source: Eurostat (estimates from Commission Green Paper)

industry: whereas the number of staff per room varies between 0.3 and 0.5 in 3 and 4 star hotels, it ranges from 0.06 to 0.2 in economy hotels according to Horwath Axe Consultants. Productivity, as measured by the ratio of turnover to cost per worker is also highest in budget hotels. There is also evidence of a structural decline in overall staffing levels: staff to room ratios fell most strongly in luxury and mid-price accommodation in France.

**Production process**

Although product innovation is perceived as a means to increase the revenue booked per guest-night and process innovation as a tool towards greater operating efficiency, the revenue base of the European hotel industry remains largely unchanged. Room charges and catering provide the bulk of hotel revenue, while other sources of income generate less than 10% of total revenue on average. The latter may include health and leisure facilities, a variety of business services, shopping, foreign exchange facilities, conference facilities, laundry facilities and touring/car rental services. Alternative

revenue sources (i.e. besides lodging and catering) are most significant at the luxury end of the European hotel trade.

Two major aspects need to be reviewed, in connection with the service delivery process in the EU hotel trade: human resources, since hospitality management is highly labour intensive and new technologies, whose introduction is set to alter significantly the way hotels are managed and client services provided.

One of the main problems in the industry is the high turnover of skilled and semi-skilled personnel and difficulties in attracting high calibre employees. A 1994 survey of hotel management graduates commissioned by the IHA in association with Oxford Brookes University ("Careers and choices in Hospitality Management") highlighted this problem: defection rates to other sectors were significant in a number of countries - e.g. in the UK 42% of respondents had opted for a career outside hospitality management. Employment conditions in the hospitality industry (i.e. hotels and related activities) were perceived as less favourable than in other sectors by one-third

**Table 7: Hotels****International tourist arrivals in the EU and purpose of visit**

	1994 arrivals	93/94 (% change)	Business (% of total arrivals)
Belgique/België	3 304	0.6	22.0
Danmark	1 585	1.0	N/A
Deutschland	14 494	1.0	22.0
Ellada	10 072	7.0	10.0
España	43 232	7.9	12.4
France	60 639	0.9	16.0
Ireland	4 232	11.0	16.5
Italia	27 276	3.4	25.0
Luxembourg	N/A	N/A	N/A
Nederland	6 178	7.3	15.4
Österreich	17 894	-2.0	24.0
Portugal	9 132	8.3	6.4
Suomi-Finland	833	4.4	N/A
Sverige	673	2.1	N/A
United Kingdom	19 705	1.1	26.2

Source: WTO Tourism Market Trends Europe



**Table 8: Hotels**  
**Room occupancy, average room rates and profitability, 1994**

	Occupancy (%)	ADR (1) (ECU)	Pre-tax income (ratio to sales)
Benelux	62.4	74	-13.0
France	62.0	110	-8.5
Germany	58.7	81	-3.4
Iberian Peninsula	61.6	67	1.5
Scandinavia	60.2	75	6.0
UK	64.0	66	5.1
Region average	62.2	76	1.7

(1) Average Daily Rate.

Source: Horwath International and Smith Travel Research

of those who chose not to work in this sector. Furthermore, the proportion of graduates who intended to be employed in hospitality management in 3 years time was below 50% in Austria, Britain and Sweden, mainly owing to the perceived lack of career development opportunities in the hotel trade.

Attracting and retaining entry-level staff is also difficult given the significant number of unskilled and semi-skilled positions available under atypical terms of employment - i.e. either part-time or with fixed term contracts. In a leading tourist destination like Spain, atypical workers account for an estimated 60% of total employment in the hotel trade (59.2% in 1993) according to the Spanish Hotel Federation, whose 1994 annual report also indicates that female workers are less likely to be employed on a full-time basis than their male counterparts.

Technological change pervades all areas of the hotel trade, although it is difficult to assess its impact on EU hotel operators, notably on small-to-medium sized establishments. Apart from Central Reservation Systems, which are a well-established feature of the travel and tourism industry, significant process and product innovations have occurred in five distinct areas:

- operations management (e.g. specific software applications used for yield management, or purchasing, sales and catering management systems);
- reservation systems (on-line access to CRS, dedicated servers such as Minitel in France);
- client interface (in-room services, room check-out, etc.);
- safety and security of hotel premises;
- business services and entertainment (video-conferencing, multimedia, interactive TV communication systems).

Multimedia products are also gaining acceptance in the industry, mainly as promotional and marketing tools. Accor of France will distribute CD-ROM information on 1 200 affiliated hotels to travel agents and companies on a trial basis, as of mid-1996.

EurHotec, the first conference on IT products and services for the European hotel trade was held in March 1996, providing further evidence of the growing interest in new technologies on the part of the hospitality industry.

New technologies will be a driving force shaping the competitiveness of the European hotel industry. Adoption of new technologies should enable hotels to provide better service and more targeted marketing while keeping operating costs from rising. There will be advancements in reservation technologies, as with enhanced connection to airlines' global distribution systems. Bookings through the Internet are also expected to become more significant although most operators seem to take a cautious stance towards this medium. There

are currently an estimated 6 000 hotels listed on TravelWeb, a Web site set up in 1994 and dedicated to the travel and tourism industry. Industry analysts do not expect direct bookings on Internet to contribute significantly to the turnover of the industry in the near future: estimates issued at the IHA annual conference in 1995 range from 73 000 bookings in 1996 to 450 000 bookings in 1998.

## INDUSTRY STRUCTURE

### Companies

By global standards EU hotel groups continue to be dwarfed by the largest US hotel companies, with only three EU firms featuring among the top ten hotel groups at the end of 1994, namely Accor of France, followed by the UK group Forte and Anglo-Swedish entity Carlson/Radisson/SAS. Due to the strong recovery of their domestic market, the leading American hotel groups have also added capacity at a faster rate than their European counterparts in 1994, as is apparent from the following table. However, reflecting the continued importance of smaller-sized independent hotels in Europe the "Hotels" listing of voluntary chains and associations had six EU-based companies, among the top ten in the world.

The factors underlying capacity expansion amongst leading European hotel groups differ: whereas Accor of France and Spain's Sol Melia have expanded primarily through franchising in 1994/95, the Forte group doubled its upscale accommodation capacity by acquiring the Meridien hotel chain from Air France. The merger has bolstered Forte's overseas presence, notably in Southeast Asia.

### Strategies

The current trend towards franchising and contract management of hotels, as distinct from direct ownership, can be explained by a series of factors: firstly access to debt and equity finance for new hotel development has become more restrictive, as European banks tend to scale down their involvement in property-related markets. The scope for new hotel construction is also severely restricted in Europe's key metropolitan areas, both because of the lack of un-built property sites and due to tighter urban planning regulations. It follows that the bulk of new developments taking place has been in new metropolitan areas, such as the London Docklands or in regions with a comparatively low density of hotels such as Germany's New Länder.

The recession of the early 1990s appears to have tilted investors' perception of the risks and returns on investment in the European hotel industry: this was apparent from the low level of transactions in the hotel property market until 1993, compared with pre-recession levels:

Although activity levels remain sluggish in the major hotel property markets, with the possible exception of Britain's,

**Table 9: Hotels**  
**Accommodation capacity in the EU hotel industry**

	Bed-places in 1994	Cumulated growth rate 1985-1993
Belgique/België	108 205	23.2
Danmark	97 034	36.7
Deutschland	1 355 706	25.9
Ellada	486 439	39.7
España	1 185 493	17.0
France	1 178 432	20.8
Ireland	53 989	24.4
Italia	1 720 637	7.0
Luxembourg	14 992	16.9
Nederland	133 030	24.3
Österreich	651 003	-0.4
Portugal	198 862	51.9
Suomi-Finland	119 053	54.4
Sverige	163 312	8.1
United Kingdom	727 204	-27.3
EUR 15	8 193 391	11.4

Source: WTO

recent years have seen a resurgence of large-scale transactions, where US and East Asian investors have featured prominently. Significant deals have included:

- The take-over of German hotel chain Ciga by the Sheraton hotel group.
- The acquisition of 16 Marriott-affiliated hotels by British beverage and leisure group Whitbread.
- The sell-off of Air France's Meridien chain to Forte of the UK in 1994; Aer Lingus, the Irish state-owned airline followed suit by selling its hotel chain Cophorne to the Singapore-based CDL Hotels International group in mid-1995.

The leading British beverage companies (Bass, Whitbread) are diversifying their business portfolio and have emerged as key investors in the hotel industry: e.g. Bass acquired Holiday Inn World-wide in 1994.

East Asian investors have emerged as significant players in the European hotel market in recent years. In line with their stated ambitions of achieving global market leadership, US groups have also been active in Europe - most recently with ITT Sheraton's bid for the Ciga hotel group.

A key development in the hotel industry in recent years has been a reversal of the 1980s trend towards fully-integrated service companies; current phase is one of consolidation and restructuring. In order to finance their international investments and consolidate their existing hotel base, leading hotel

groups, such as Forte of Britain and Accor of France have divested from non-core business areas, notably catering: Accor's thus sold its catering subsidiary Eurest International to the UK contract catering group Compass in mid-1994. Forte of the UK similarly intends to dispose of its non-hotel assets in catering and retail, although this was primarily motivated by the need to consolidate the group's financial position following the hostile take-over bid of Granada.

The budget hotels market is expanding fast, except in France where there is some degree of overcapacity in this market segment pioneered by Accor with its range of "Formule 1" hotels, a concept which the group is now planning to export to the Benelux, Germany and Spain.

One of the factors explaining the success of the franchising formula is that being associated with a well-known national or international brand is often perceived as a key success factor, notably in the business travel market, where quality and consistency of service is a prerequisite. Franchising is a core element in the strategy of companies that expand beyond their home market, be it Spain's leading hotel chain, Sol Melia, intent on strengthening its market presence in France, to HFS (Hospitality Franchise System), the world's leading hotel operator, which stated plans to expand into the European budget and mid-range hotel market through franchising. Branding provides obvious marketing benefits ranging from ease of booking to the delivery of consistent products.

A related trend is the development of partnership agreements between hotel chains, and the emergence of global hotel networks: one of the most recent agreements of this kind was the 1995 agreement between Holiday Inn of Britain and Scandic Hotel AB of Sweden, whereby Scandic's range of hotels will operate under the Holiday Inn brand in Germany, thus acquiring a higher market profile.

The recession of the early 1990s has been acutely felt by small-to-medium sized independent hotels, driving several out of business. There is now growing awareness of the need to pool resources to compete more effectively with hotel chains and achieve economies of scale through centralised reservation systems, grouped marketing and quality enhancement initiatives. As a result, voluntary chains are becoming a significant feature of the independent hotel trade, notably in Germany and France, where the leading voluntary chain of independent

**Table 10: Hotels**  
**Composition of sales, 1994**

(% of total sales)

Rooms	51.6
Food	25.8
Beverages	12.6
Other food and bev.	2.7
Telephone	2.8
Minor operated departments	2.6
Rentals & other incomes	1.9

Source: Horwath International and Smith Travel Research

**Table 11: Hotels**  
**Top 20 EU hotel chains and voluntary groups, 1995**

	Number of rooms	Number of hotels	Rooms added	Status 93/94 (1)
Utell International (UK)	1 360 000	6 800	0	VG
Accor (F)	256 607	2 181	6 288	CC
Supranational Hotels (UK)	93 000	565	-2 000	VG
Forte (UK)	88 153	888	9 472	CC
Keytel SA (E)	80 000	800	10 000	VG
SRS Hotels (D)	75 000	350	0	VG
Logis de France (F)	71 960	4 050	-798	VG
Club Med (F)	65 128	262	0	CC
Inter-Continental (UK)	53 092	141	4 582	CC
Hilton International (UK)	53 052	162	122	CC
Golden Tulip Worldwide (NL)	49 315	247	5 315	VG
Grupo Sol Meliá (E)	46 500	175	3 322	CC
Société du Louvre (F)	29 120	468	1 214	CC
Hôtels & Co (F)	18 939	362	0	CC
Queens Moat House (UK)	15 821	140	-1 275	CC
Scandic Hotels (UK)	15 000	94	2 190	CC
Thistle & Mount Charlotte Hotels (UK)	13 215	93	-1 285	CC
Husa Hotel Groups (E)	12 500	131	2 500	CC
Maritim Hotels (D)	11 700	43	235	CC
Riu Hotels (E)	11 036	48	0	CC

(1) VG: Voluntary group; CC: Corporate chain.  
 Source: Hotels Magazine

hôtelières Logis de France ranks second to Accor, in terms of room capacity with close to 72 000 rooms on offer in 1994.

Finally, a noteworthy trend is the segmentation of hotel properties into branded products each aimed at specific clientele.

## ENVIRONMENT

Tourism is one of the 5 sectors listed in the Fifth Environmental Action Programme of the European Commission, which spans the period 1993-1998. The strategy outlined for sustainable tourism development within the EU calls for better management of mass tourism, notably in coastal areas - a sensitive issue for the hotel trade of members states such as Spain and Greece, where coastal property development is already tightly restricted. The Action Programme also calls for the promotion of new forms of tourism, such as rural and eco-tourism, which should be most relevant to non-hotel establishments. Austria's successful track record in managing rural and mountain tourism could turn this new member State into a showcase for others to follow.

At industry level, the WTTC and IHA have been actively promoting greater environmental awareness in the travel and tourism industry, advocating greater self-regulation and the adoption of codes of good practice. Emphasis is laid on the sustainability of new hotel developments and on environmental monitoring of all areas of hotel operations. An environmental Action Pack was thus produced jointly by IHA, IHEI and the UN Environmental Programme in 1995, to assist hotel operators in their environmental appraisal. A "Green Hotel" award scheme has also been set up by the International Hotels Environment Initiative (IHEI) and the IHA for hotels with a strong environmental management record. As far as environmental management schemes are concerned, at least eight European national associations members of HOTREC have developed such schemes and more than twenty large European hotels or hotel chains are known to implement them.

There are three major pieces of environmental legislation which affect the hotel industry:

The Environmental impact assessment Directive, adopted in 1985 and currently under review for potential amendments,

which is required for large projects; liability for damage caused by waste; and, the obligation to clean up contaminated land.

- The 1993 Council Regulation on a Community-wide Eco-audit scheme. The scheme is primarily aimed at companies in the manufacturing sector but allows for experimental testing in other sectors. Firms participating to the scheme are requested to adopt a company environmental policy, carry out regular environment audits and issue environmental statements to the public.
- The 1994 Directive on packaging and packaging waste, aimed at reducing aggregate levels of waste produced, encouraging recycling and harmonising EU standards. The potential impact of the Directive on the hotel trade is as yet difficult to ascertain; but hotels are encouraged to take pre-emptive steps towards reducing waste and sorting refuse for future recycling.

The latter two are not yet in effect and, in general, their impact will not be excessive. However, there is an expectation that pressure may increase on requirements for improved waste management and consideration to how hotel structures blend in with their surroundings.

The creation of a European "tourism and environment" prize by the European Commission in co-operation with the Member States is intended to help raise awareness throughout the sector of environmental issues either created by, or that have an impact on the tourism industry. The most successful experiences and good practices will be identified as models for widespread promotion in the hope that they will be repeated by others.

## REGULATIONS

The hotel trade is affected by a wide array of regulatory measures, at EU level, ranging from safety in hotel premises to personal data protection. However, of the 100 Union measures identified as significant to the hotel and catering industry by HOTREC, the most substantial ones fall under one of the following categories:

- Social affairs;

- Consumer affairs;
- Taxation and related issues;

EU regulations pertaining to employment and social legislation are of particular significance to the industry, since hospitality management remains both labour-intensive and highly distinctive in its employment structure - with a high proportion of staff employed under so-called "a-typical" terms of employment such as fixed duration and temporary contracts. Although workers employed under these terms have been granted identical rights to safety and health protection as other workers since 1991, no Directive has yet been implemented on working time flexibility for temporary employees. On their part, hotel operators and their representative associations place most emphasis on employment flexibility, which is perceived as crucial given the highly seasonal nature of demand for hotel accommodation, notably for small and medium sized businesses geared to the tourist trade. Another piece of legislation of major importance to the hotel industry is the 1993 Directive on working time, which sets minimum standards for daily, weekly and annual rest periods, setting the maximum working week at 48 hours; the deadline for its implementation is November 1996. Part of the EU social legislation body is primarily applicable to large-scale operators and hotel chains, such as the Directive on European Works Councils, which requires that standard employee information and consultation procedures be set-up in companies that operate in at least two member States with over 1 000 employees.

Regulations relative to taxation also feature prominently in the agenda of the hotel industry. While some aspects of the new legislation, such as the harmonisation of taxation on mergers and asset transfers or exchanges between EU-based companies, are positive for firms which operate in more than one member State, the overriding concern in the industry remains VAT rates. VAT rates applied to different hotel categories are believed to have a distortionary impact, as was clearly apparent in the French hotel trade - where a significant number of 5 star hotels have chosen to be reclassified as 4 star establishments, to reduce levels of indirect taxes paid. Within the framework of the 1992 Directive on value added tax, individual member States have the option to apply a reduced rate to hotels.

Along with the Social chapter, consumer affairs have received substantial attention from the European Commission, with the renewal of a 3-year Consumer Protection Action Plan in 1993, with a focus on information provided to consumers and judicial settlements of consumer disputes within the EU. The regulatory aspects most relevant to the hotel trade include the pending Directive on distant selling, the 1993 Council Directive on unfair terms in consumer contracts, deemed to be transposed into national law by the member States as of January 1995 and current proposals to restrict smoking in public places.

The 1989 European Council resolution on smoking in public places ranks particularly high on the agenda of the hotel and catering industry. Both IHA and HOTREC advocate self-regulation within the industry through the adoption of "Courtesy of Choice" programmes, in order to pre-empt the imposition of legal restrictions. However, the Council resolution, which calls for the imposition of "non-smoking" areas in public places, is non-binding and EU regulation in this respect remains highly heterogeneous.

It is useful to recall that the EU hotels and catering sector is associated to the policy dialogue process engaged on the Social Chapter of the Maastricht Treaty, since HOTREC is part of a restricted number of trade associations granted "social partner" status.

## OUTLOOK

The IHA White Paper "Into the New Millenium" has identified 4 core areas that will drive change in the world hotel industry over the next decade: EU companies must be willing to address these issues and incorporate them into their long-term business strategies:

- **Technology:** the White Paper asserts that technology is set to become the most significant source of competitive advantage for hotel companies, in terms of both operating efficiency and global marketing reach.
- **Assets and capital:** the recession of the early 1990s proved that the EU hotel industry was highly vulnerable to capital rationing; since access to debt and equity finance depends on the ability to generate high and consistent returns, financing new capacity may prove difficult in the short to medium term, as lenders scale-down their property loan portfolios. In the longer term, the globalisation of the financial sector will pitch hotel ventures in the EU against other borrowers in the world-wide hotel trade. Hotel investors can be expected to take an increasingly global view, and capitalise on the growth potential of emerging markets. Alternative sources of finance should also play a growing role, notably Real Estate Investment Trusts (REITs) and acquisition funds which already form a sizeable source of finance for large property ventures in the US hotel market.
- **Capacity control:** bookings of hotel accommodation and services will be increasingly negotiated through global information networks; this trend will be particularly challenging to small and medium-sized operators who will need to pool resources to access these networks cost-effectively.
- **New management:** greater penetration of information technologies in the hotel trade will require new skills on the part of hotel managers and front office personnel. While hotel schools management courses have incorporated this trend, the industry's ability to recruit and retain adequately trained staff will become even more critical.

The recovery of the European hotel trade is expected to gain momentum, although prospects are set to vary markedly from country to country, as the hotel market business cycle: while the UK hotel industry is expected to enjoy further growth, the hotel trade is still at the early stages of recovery in France, Spain and Italy, and has not fully emerged from recession in Austria and Germany. In Scandinavia, Sweden and Finland are labelled as markets with a strong potential, because of their location relative to the Baltic states and Russia. However, the state of local economies have discouraged investment so far.

Given the marked slowdown in new hotel development observed since the early 1990s, overall occupancy performance is set to improve for the existing hotel base. Industry observers do not expect this trend to be matched by a significant rise in average daily rates (ADRs) and revenue booked per room, since the European hotel market remains highly price sensitive and subjected to widespread discounting. This should lead hotel companies to place further emphasis on cost management, notably where labour costs constitute a significant share of total hotel costs.

In terms of supply, the mid-market and budget hotel segments should expand fastest, except in France where the budget hotel concept has been fully exploited and the market is considered mature. The upper end of the market is characterised by widespread overcapacity, but could be revived by sustained growth in demand from long-haul markets which, the WTO predicts, will be growing at a faster rate than intra-regional arrivals to Western Europe. The WTO study on "Tourism Trends to the Year 2000 and Beyond" forecasts that intra-regional tourism in Europe will grow at an average annual rate of 3% between 1995 and 2000, compared with a projected

growth in arrivals from the Asia Pacific region of 4.5% annually. Demand for hotel accommodation should grow in line with this upward trend in arrivals, albeit at a slower rate than demand for other types of accommodation.

Although real GDP growth forecasts have been scaled down for the major EU economies, economic recovery should provide a firm macroeconomic foundation for further growth in resident and intra-regional demand for hotel services. Moderate growth prospects in Europe should nonetheless be contrasted with the bullish outlook for the US hotel industry, where average operating profit margins could reach a record 25% in 1996, according to PKF Consulting projections.

Growth in guest nights should pick-up over the next three years, notably in countries where the hotel trade is still in the early stages of recovery; pre-recession levels should be exceeded.

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# Other accommodation

## NACE (Revision 1) 55.2

The non-hotel or "alternative" accommodation sector encompasses a wide variety of establishments geared to leisure tourism. The services provided by non-hotel accommodation are also widely varied across the industry, with the majority of the establishments lacking technological systems, which reinforces the fact that Member States reflect varying tendencies of non-hotel accommodation availability and preferences. Structural changes in consumer attitudes towards more active and varied tourism products along with growing segmentation of the EU leisure and tourism market should stimulate demand for alternative forms of accommodation.

### INDUSTRY PROFILE

#### Description of the sector

The non-hotel or "alternative" accommodation sector encompasses a wide variety of establishments geared to leisure tourism. Although boundaries between sub-sectors are not always clearly defined, alternative accommodation can be grouped into eight main categories:

- camping-sites and caravan parks - which may or may not provide communal arrangements for meals, sports or other recreational pursuits, in addition to basic sanitary facilities;
- rural tourism establishments - comprising of some establishments exclusively or primarily geared to tourist accommodation and others who provide farmhouse accommodation to supplement their main source income (usually agricultural and livestock production);
- social tourism establishments - supported financially by public or private bodies, that provide lodging and often recreational facilities to eligible holidaymakers;
- youth hostels - which provide accommodation subject to certain conditions such as being affiliated and for a limited period of time;
- integrated resorts - such as tourist villages;

- furnished accommodation - provided on a rental basis or through timeshare arrangements. Owner-occupied second homes are also a significant, difficult to quantify, segment;
- convalescent and rest homes - this sub-group includes profit and non-profit making units which are usually located away from the main urban areas (seaside, spa or mountain-located).

Guest and boarding houses are also featured in the "other accommodation" section of the revised NACE classification.

Services offered by this sector range from simple accommodation with basic amenities in camping and caravanning sites or youth hostels, to integrated resorts with restaurants, bars, shopping malls and health and leisure facilities at the premium end.

#### Recent trends

Detailed monitoring of the non-hotel sector is hindered by discrepancies in statistical coverage across the EU and by the relative dispersion of national trade associations, which make aggregations at EU level, and cross-country comparisons difficult. As a result, official statistics on turnover and value-added generated by alternative accommodation establishments are somewhat dated and limited to a small number of countries. The issue should be partly resolved in the medium term, as the collection of harmonised tourism statistics at EU level and the enhancement of existing information statistics on tourism were one of the issues raised in the 1995 Green Paper on Tourism issued by the European Commission and discussed with representative bodies of the EU tourism industry.

Table one provides a brief caption of the key sectoral indicators available for the EU non-hotel accommodation industry. Germany and the Benelux region stand out as prominent destinations for alternative accommodation, drawing on a resident tourist base geared to this type of accommodation. However, no comparable data is available for France, Italy and the United Kingdom thereby reducing the scope for country rankings.

Eurostat data on employment in alternative accommodation units point to an increasing trend since 1988, although aggregate growth rates have dipped since 1990, with reductions in the numbers employed in Denmark and Portugal.

#### International comparison

Several forms of alternative accommodation have been introduced in the USA, where domestic demand for non-hotel

**Table 1: Other accommodation**  
**Main indicators, 1992**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België (1)	798	(7) 168	(6) 5 309
Danmark	(5) 727	(1) 126	(1) 3621
Deutschland	(2) 4 273	(3) 414	(1) 12 634
Ellada (4)	(5) 7 085	N/A	6 293
España	N/A	N/A	(6) 16 716
Irland (1)	238	27	1 024
Luxembourg (1)	105	N/A	229
Nederland (1)	2 180	709	15 000
Portugal (8)	52	24	1 190

(1) 1991

(2) 1990

(3) 1989

(4) 1988

(5) Number of local units.

(6) Number of employees.

(7) Including also sleeping- and dining-car services.

(8) Covers only enterprises with at least 5 employees.

Source: Eurostat; Mercure



accommodation is sizeable "Ecotourism", which tends to rely on alternative accommodation, has thus become a well-established segment of the US holiday market; according to a study done by Travel Industry Association of America, an estimated 43 million people in the United States alone consider themselves ecotourists. Countryside tourist lodges and eco-resorts have expanded accordingly in recent years. The US touring market is also well-developed. Americans have pioneered the recreational vehicle market and standards, and levels of provision for mobile tourists in the US are very high. Timesharing is also widespread in the "Sun Belt" and Southern States such as Florida.

### Foreign trade

Alternative accommodation caters overwhelmingly to resident tourists and domestic travellers. This can be explained by a variety of factors, notably the fact that access to information and booking of non-hotel accommodation is more difficult for foreign travellers, since the proportion of non-hotel establishments connected to Computerised Reservation Systems is limited relative to the hotel trade. As a result, excluding youth travellers and those visiting friends and relatives (VFR), long distance tourists to Europe are infrequent users of non-hotel accommodation

In the EU Member States for which data is available, residents account for two-thirds to three-quarters of the total bed-night in non-hotel accommodation. In Germany, the proportion of bed-nights generated locally is closer to 95%.

## MARKET FORCES

### Demand

With the notable exception of incentive travel and company-sponsored holiday sites, demand for non-hotel accommodation is almost exclusively dependent on leisure travel and tourism.

#### Overall demand trends

The upturn in resident and international tourism within the EU region has proved highly favourable to alternative accommodation. Based on 10 of the 15 EU Member States, Eurostat estimates of overnight stays in alternative accommodation indicate that this sector largely outperformed the hotel trade, particularly in relation to demand for accommodation by residents: overnight stays by residents rose by 11.1% in alternative accommodation while falling by 1.8% in the hotel trade. Corresponding figures for non-resident tourism also point to higher growth in demand for alternative accommodation, where overnight stays rose by 23.4% in 1994, compared with a 10.5% growth in hotel bed-nights. However, as the following table suggests, demand patterns vary significantly

from country to country, with respect to both growth levels and the relative weight of non-hotel accommodation. While hotels account for the bulk of total bed-nights in Greece, Spain and Italy, consumer choice is largely geared to alternative accommodation in the Benelux, Germany and Denmark.

Demand for other accommodation is usually segmented into two distinct segments: family accommodation and youth accommodation, as the individual traveller is prone to use hotel accommodation. It is therefore essential to understand basic patterns of youth travel in Europe, to explain variations in aggregate demand for alternative accommodation. A detailed study of youth tourism conducted by the European Tourism Council provides a useful insight into accommodation preferences of travellers aged 15 to 26.

One of the most salient features is the significant share of the unpaid travellers for accommodations, which accounted for close to one in four stays by European young travellers. This segment grew rapidly in the second half of the 1980s due to growing access to residential property within Europe. However, the second home market has been depressed since the early 90s. Demand for rented accommodation, which is usually part of inclusive tours, has also been robust in the main Southern and Eastern Mediterranean (and in the Alps during the winter season).

Sales of student travel (ISIC) cards also provide some indication of demand patterns for youth travel within the EU. The greatest Demand for these cards is in Germany and in the United Kingdom, with over 300 000 cards issued in each of these countries in 1991. ISIC sales in Spain (163 000) and Ireland (145 000) also suggest that the student travel market is well developed in both countries.

Demand for non-hotel accommodation on the part of family groups is driven by a mix of factors. Although budgetary constraints preclude the use of hotels in some instances, the main explanatory factor is that alternative accommodation establishments are often specifically aimed at family groups, notably holiday villages and social tourism facilities.

The propensity to use alternative accommodation and the type of other accommodation favoured vary markedly across Europe. At present, British tourists typically do not use non-hotel accommodation when travelling abroad. Holiday villas and apartments are the exception. An article in the Economist Intelligence Unit's "Travel and Tourism Analyst" indicated only 3% of UK holidaymakers travelling abroad used caravan or camping-sites in 1992, while 48% seek hotels, 24% seek villas/apartments accommodation and a further 18% visit homes of relatives. In contrast, a third of West German holidaymakers in 1991/92 used hotels, while nearly 10% used

**Table 2: Other accommodation  
Number of employees**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	4 240	4 430	4 563	4 630	5 087	5 182	5 299	5 309	N/A
Danmark	932	2 863	3 984	3 682	3 748	4 033	4 619	N/A	N/A
Deutschland (1)	N/A	N/A	11 521	11 391	11 924	11 922	12 188	12 634	N/A
España (2)	N/A	N/A	N/A	N/A	14 795	16 589	16 673	14 511	16 716
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	657	N/A
Luxembourg	90	141	143	137	136	145	150	160	N/A
Nederland	N/A	N/A	N/A	N/A	8 000	8 800	11 002	12 000	N/A
Portugal (3)	N/A	N/A	N/A	N/A	1 220	1 555	1 748	1 088	1 166

(1) Number of persons employed.

(2) Including also sleeping- and dining-car services.

(3) Covers only enterprises with at least 5 employees.

Source: Eurostat; Mercure

**Table 3: Other accommodation**  
**Overnight stays in hotel and non-hotel accommodation, 1993**

	Overnight stays in hotels (thousands)	Variation 1994/92 (%)	Overnight stays in non-hotel accommodation (thousands)	Variation 1994/92 (%)	Share of non- hotel in total overnight stays (%)
Belgique/België	9 309	2.6	14 625	-1.9	61.1
Danmark	11 519	-4.6	12 764	2.4	52.6
Deutschland	168 160	9.2	142 915	18.6	45.9
Ellada	48 534	12.1	1 110	53.8	2.2
España	137 751	4.0	18 894	-2.0	12.1
Italia	186 765	5.7	66 761	38.1	26.3
Nederland	15 613	-1.6	40 555	2.2	72.2
Portugal	23 166	8.7	8 123	-8.2	26.0
Suomi/Finland	10 572	-1.2	2 094	1.5	16.5

Source: Eurostat estimates (Commission Green Paper)

camping or caravan sites. Similarly, the Danish Tourist Board collated information as to the type of accommodation favoured by holiday-makers in Denmark: close to 40% of bed-nights were spent in rented cottages, with a further 28% spent in campsites. The growth in the share of continental European tourists in Ireland has resulted in substantial growth in demand for non-hotel accommodation: total visitors to non-hotel accommodation by overseas tourists increased by 26% between 1990 and 1993.

### Supply and competition

Available data shows that Member States reflect varying tendencies of non-hotel accommodation availability and preferences. France, followed by the United Kingdom, Italy and Germany have the largest number of camping and tourist village establishments, while Spain has the largest number of holiday dwellings. However, this figure must be treated with caution as it includes a large number of small establishments. Denmark has the largest number of social tourism establishments.

While the paucity of the data hinders cross sector comparisons, Eurostat data indicates that most of the bed places provided by the non-hotel accommodation sector are located in campsites and tourist villages. France provides the largest number of bed places followed by Italy and the United Kingdom.

### Youth hostel accommodation

Accommodation capacity in youth hostels affiliated to the International Youth Hostel Federation (IYHF) approximates 200 000 bedplaces in the EU-15 region. However, as it is apparent from table 8, the capacity is unevenly spread, with just over 40% of total bed-places located in Germany and close to 20% in Scandinavia. Although Southern European regions remain a prime destination for youth travel according to the European Travel Commission, this type of accommodation is clearly underdeveloped in the region. At the European level, there are no specific measures to promote the Youth hostel sector, although Youth hostels have been able to benefit from a number of Action Programmes (e.g. Leonardo, Youth of Europe, Information for Young People) and from Structural Funds for renovation of YH in some areas. At the national level, Member countries such as Belgium and France actively promote social tourism, including Youth Hostel Associations.

Youth hostel occupancy declined for the second year in 1994, due to a mild drop in overnight stays in Germany and Sweden and to a marked fall in occupancy levels in Spanish youth hostels.

### Social Tourism

Social tourism, which is primarily geared to family and youth travel, groups a wide variety of amenities and establishments some of which operate exclusively on a "social tourism" basis. However, the International Bureau for Social Tourism (IBST) recently released the directory "l'Europe du Tourisme Social" which indicates that in most instances, partner organisations allot rooms in commercial establishments and do not manage accommodation and catering facilities themselves. The sector is most developed in Belgium and France, where it is actively supported by local and national authorities. By contrast, there are no specific public measures to promote social tourism in the UK, an area which is left entirely to private and Charity-sponsored initiatives. As a result, the largest social tourism organisations providing subsidised holiday packages or housing are based in France (Village Vacances Famille, Losir Vacances Tourisme, etc...)

### Camping and caravanning

The European market for camping and caravanning has been characterised by moderate to slow growth according to ETC. As new site development has been increasingly difficult to secure, due to tight restrictions at municipal and regional level and demand has been reallocated to other types of budget accommodation, notably budget hotels and holiday resorts as part of inclusive packages. However, the segment remains significant to youth travellers, as apparent in table The sector's image is hampered by discrepancies in the quality and range of services provided from one site to the other and across Member States.

### Production process

The services provided by non-hotel accommodation vary widely across the industry. At one extreme camp-sites and caravan parks may provide a pitch or area of land, as well as, basic amenities, while integrated resorts often have restaurants, bars, shops, and health and leisure facilities. The variety of facilities and services being provided means that the production process differs significantly throughout the industry.

Camp-sites and caravan parks are the most land intensive. With regard to labour, the industry is generally not as labour intensive as the hotel industry because of the fewer services offered, and they often come with an element of self-catering. Many of the workers tend to be part-time, for example at camp-sites and ski resorts, and in the smaller establishments, such as bed and breakfast, family and female labour is used. The integrated resorts tend to be more labour intensive and the skills are similar to those in the hotel industry.

The majority of the establishments are not technology intensive. Some sectors such as integrated resorts, apartments and villas, which are marketed as part of a package holiday, use computer reservation systems (CRS). Many small operators rely on local advertising or links through tourist agencies. Smaller pensions and bed and breakfasts rely upon guide books and literature rather than depending on travel agents.

## INDUSTRY STRUCTURE

### Companies

Club Méditerranée of France is ranked as the 13th largest hotel corporate chains in the world, and stands as one of the largest integrated resort operators with a total lodging capacity of 65 000 beds in the 262 Club-Med resorts. Other leading players in the European market for integrated resorts include Accor of France and Grupo Sol/Melia of Spain. Other holiday village operators include Valtur in Italy and tour-operator-owned holiday villages. Turistik Union International (TUI) is a prominent player with its Robinson Club and Bauerndorfer chains, but other large German operators are all active in this area. The integrated resort sector is most developed in Northern Europe, notably in the Benelux region and in the UK.

Social tourism initiatives tend to be concentrated in Belgium and France. The VVF (Villages Vacances Familles) in France provides subsidised accommodation and has a capacity of 186 villages with a total of 67 000 beds and an annual turnover of 190 million FF. VVF was largely instrumental in setting up Euro-villages, which now has members in France, Belgium, Germany, Switzerland, Italy, Spain and Portugal.

The majority of timeshare resorts are affiliated with one of the two major exchange companies, RCI (Resort Condominiums International) or II (Interval International).

### Strategies

In view of the fragmentation of the non-hotel accommodation trade, it is awkward to draw global comments as to company strategies, as the latter are best addressed from a sub-sectoral perspective (i.e. camping and caravanning, social tourism, rural accommodation, etc.).

One feature common to different segments of the non-hotel accommodation trade has been a drive towards quality assurance and tentative harmonisation of services and prices, along the lines of the classification system of the hotel trade. The trade association Eurogîtes is currently working on a quality charter that would bolster the image of the trade and its market potential. The aim is to be able to grade rural gîtes on a paneuropean basis; as grading schemes already exist on a national or regional level.

Another trend observed in the rural accommodation segment (farmhouse boarding and rural gîtes) is the formation of regional or county-level groupings, which pool marketing and promotional resources. Such groupings allow economies of scale and, most importantly, help provide a consistent brand image for rural accommodation in given regions.

Access to Computerised Reservation Systems is also a growing area of concern, for firms that try to expand their catchment area (which, traditionally, is a local one). Access to Computerised Reservation Systems is also a growing area of concern, for firms that try to expand their catchment area (which, traditionally, is a local one). In the youth hostel segment, Hostelling International has introduced the first computerised advance booking system "IBN" for youth hostel accommodation. The network of youth hostels using this new system is expanding.

Since demand is increasingly geared to active holidays, alternative accommodation providers have expanded the range of sports and cultural facilities available on site, which may comprise arts and crafts, local tours, and a variety of other activities. This applies particularly to holiday villages and integrated resorts, but is also increasingly true of large campsites.

The strategy in the more sophisticated integrated resorts such as Centre Parks in the Netherlands has been to transfer the ambience and environment of tropical resorts to Northern European locations. These resorts tend to be activity based with numerous sporting and leisure facilities, and most importantly, are independent of the vagaries of the weather. The primary target group is families with small children.

## REGIONAL DISTRIBUTION

The regional distribution of alternative accommodation establishments tends to be far more diverse than in the case of the hotel trade, as the latter tends to be clustered around metropolitan areas. However, timeshare and integrated resorts are geographically concentrated on coastal areas of the Mediterranean as well as the developed areas of the Alps. Second homes and other types of non-hotel accommodation are more scattered.

Alternative accommodation has been prime beneficiary of structural funds allocated to tourism. In the less developed regions of the EU, where rural tourism is treated as a priority area, in view of its potential contribution to supplement farmers' income, protect the environment and generate new activities in economically depressed regions. The EC has demonstrated consistent support for expanding tourism in less-developed regions through its regional development pro-

**Table 4: Other accommodation**  
**Resident and non-resident demand for non-hotel accommodation, 1993**

	Resident guest-nights (thousands)	Non residents guest-nights (thousands)	Ratio res./non-res. (%)
Belgique/België	9 695	4 930	66.3
Danmark	8 191	4 573	64.2
Deutschland	134 252	8 664	93.9
Ellada	478	633	43.0
España	13 634	5 260	72.2
Italia	45 912	20 849	68.8
Nederland	31 351	9 205	77.3
Portugal	6 257	1 866	77.0
Suomi/Finland	1 753	341	83.7

Source: Eurostat (Commission Green Paper)

**Table 5: Other accommodation  
Accommodation patterns in the European youth travel  
market, 1994**

	Number of stays (million)	Share of total (%)
Hotels	18.2	41.0
Private accommodation (unpaid)	9.8	22.0
Rented accommodation	5.5	12.0
Camping	4.4	10.0
Pensions, Bed & Breakfast	1.8	4.0
Youth hostels	1.8	4.0
Others	3.2	8.0

Source: European Travel Monitor (ETM)

grammes: according to the World Travel and Tourism Council (WTTC), some 40% of the LEADER structural fund programme funded by the European Commission have thus been earmarked for rural tourism projects. However, a number of paneuropean trade associations have voiced concerns that these measures may lead to unfair competition against more established types of accommodation, ineligible to community funds (i.e. medium to large scale resorts and hotels). Alternative accommodation is also favoured, to help diversify European tourism away from densely built beach resorts. The paneuropean directory recently issued by the International Bureau for Social Tourism indeed suggests that social tourism facilities tend to be located away from the most developed coastal and mountain tourism zones and are well represented in Central France (Auvergne), Southern Belgium (Ardennes), etc.

## ENVIRONMENT

The alternative accommodation sector comprises segments that are geared to "eco-tourism" and others that have been at the heart of environmental controversy, such as the largest integrated and timeshare resorts on the Spanish coastline or Canary Islands.

The most prevalent forms of non-hotel accommodation, such as camp-sites, rural gîtes, farmhouses and small hostels tend to be less intrusive on the landscape than hotels, and have not been associated with major environmental degradation; although unregulated camping and caravanning have had a

localised detrimental impact. Furthermore, domestic and EU-wide initiatives in favour of rural tourism tend to pursue economic as well as environmental objectives, as they help improve the seasonal and geographical spread of tourism, thereby reducing environmental pressure on mainstream tourist sites. Austria's track record in promoting sustainable tourism in rural areas is considered a blueprint for action in this field and has attracted significant interest.

Under EU legislation an environmental impact assessment is required for large infrastructure projects. Since many of the non-hotel accommodation establishments are either small in nature or not capital intensive they are unlikely to have an impact on these areas of the industry. However, there may be a need to increase environmental awareness in the development of integrated resorts and timeshare resorts. Since the resorts benefit from a clean environment, it is in the interest of developers to ensure that any new developments blend in with their surroundings. The construction of new establishments might also be controlled in terms of density, materials chosen, location and more sensitivity to the regions heritage and natural/historic environment.

## REGULATIONS

The sector shares many of the features of the hotel tradRegulatory issues common to both hotel and non-hotel accommodation include:

- EU regulations pertaining to atypical employment and social legislation, as employment is highly seasonal in campsites, and integrated holiday resorts. This will be less of an issue for farmhouses and gîtes, where staffing requirements are limited. Another piece of legislation of major importance to the industry is the 1993 Directive on working time, which sets minimum standards for daily, weekly and annual rest periods, setting the maximum working week at 48 hours; the deadline for its implementation is November 1996
- Harmonisation of VAT rates on the hotel and catering sector, is an issue of concern to alternative accommodation providers as it may result in higher rates. Under the current transitional regime, Member States are able to apply either a reduced or standard VAT rate on hotel and assimilated establishments, but rates applied may increase in some countries once the VAT regime is harmonised. For example, most Member States charge VAT on campsites of 4-6.5% with the exception of Denmark (25%) and the UK (17.5%). However, from 1996 the minimum level may be 15%, leading to a loss of price competitiveness.

**Table 6: Other accommodation  
Number of bed-places, 1993**

(thousands)	Camping & tourist villages	Holiday dwellings	Social tourism establishments
Belgique/België	365	N/A	100
Danmark	254	N/A	1 024
Deutschland	602	237	295
Ellada	83	N/A	N/A
España	602	419	N/A
France	3 024	220	18
Ireland	7	5	N/A
Italia	1 225	N/A	77
Luxembourg	109	N/A	1
Nederland	486	129	47
Portugal	267	N/A	9
United Kingdom	1 230	392	123

Source: Eurostat: Tourism Yearbook

**Table 7: Other accommodation  
Number of establishments, 1993**

(thousands)	Camping & tourist villages	Holiday dwellings	Social tourism establishments
Belgique/België	629	N/A	597
Danmark	423	N/A	98
Deutschland	2 207	7 168	3 892
Ellada	315	N/A	N/A
España	1 039	N/A	N/A
France	9 251	54 918	271
Ireland	124	1 583	156
Italia	2 279	N/A	1 109
Luxembourg	124	N/A	13
Nederland	989	481	473
Portugal	173	N/A	55
United Kingdom (1)	4 231	N/A	822

(1) 1988

Source: Eurostat: Tourism Yearbook

Consumer protection regulations: three pieces of EU legislation are of particular concern to non-hotel accommodation providers, namely the 1994 Directive on Time Share, the impending Distance Selling Directive and draft legislation relative to overbookinThe former two apply notably to accommodation booked as part of inclusive tours. The Time Share Directive aims to harmonise protection of consumers with respect to the purchase property rights on a timeshare basis. The Directive states that it is prohibitive to ask for a deposit and that the consumer has the right to demand a contract in his/her own language. Procedures for cancellation and withdrawal from time share contracts are also stipulated. The ban on deposit-taking is strongly contested by the time share industry

## OUTLOOK

Structural changes in consumer attitudes towards more active and varied tourism products along with growing segmentation of the EU leisure and tourism market should stimulate demand for alternative forms of accommodation. Assessing the qualitative factors that will drive tourism to the year 2000, the World Tourism Organisation forecast that there will be growing demand for non-mainstream tourist destinations and that new tourist facilities will tend to be activity and theme-baseThis should foster growth in the holiday resort segment and Centrepark-type developments. Self-catering accommodation is also expected to gain momentum, leading to higher demand for timeshare or owner-occupied second homes, depending on national preferences. The number of timeshare owners is forecast to grow from approximately three-quarters of a million in 1993 to around 1.5 million by the year 2000, with the German and Nordic markets having the greatest potential.

**Table 8: Other accommodation  
Accommodation in youth hostels, 1994**

	Number of youth hostels	Number of bed places	Share of total bedplaces (%)	Overnight stays (thousands) (%)
Belgique/België	31	2 862	1.5	407
Danmark	100	11 167	5.9	1 045
Deutschland	622	76 906	40.3	10 525
Ellada	23	1 398	0.7	43
España	157	13 341	7.0	874
France	189	12 325	6.5	1 293
Ireland	43	2 927	1.5	220
Italia	51	4 969	2.6	601
Luxembourg	13	1 330	0.7	114
Nederland (1)	39	5 167	2.7	748
Österreich	109	10 120	5.3	1 400
Portugal	18	1 637	0.9	221
Suomi/Finland	147	8 373	4.4	309
Sverige	294	15 972	8.4	1 008
United Kingdom	335	20 212	10.6	2 539
EUR 15	2 171	190 700	100.0	21 347

(1) 1993

Source: European Travel Monitor (ETM)

The rural accommodation sector should also continue to grow in response to demand for outdoors and nature-bound holidays.

Although medium to long-term prospects are favourable, future growth will depend on the sector's ability to establish recognised quality standards and ranking criteria and on improved connections to Computerised Reservation Systems. Growth in guest nights in the medium term will be strengthened by improved economic conditions and further recovery in the European tourist trade.

As Ecotourism grows, there will be growing scope for product innovations in the alternative accommodation industry. Nature-dependent tourist lodges managed in an environmentally sensitive manner are already well-established in Nordic countries and Austria and are expected to gain momentum in the Mediterranean, where they remain relatively under-developed.

Further growth of alternative forms of accommodation is essential if Europe is to tap the full potential of its less-developed tourist resorts, notably in rural areas. A wider range of accommodation will also boost Europe as a tourist destination for long-haul markets.

**Written by: DRI**

**This industry is represented at the EU level by: Bureau International du Tourisme Social (BITS); and, European Union Federation of Youth Hostels Associations - Rue de la Montagne 36 - 1000 Brussels - tel: 322 5028066 - Fax: 5025578 Eurogites FICC**

# Recreation parks

## NACE (Revision 1) 92.33, 92.53

*The recreation parks sector covers a wide range of, increasingly overlapping, tourist and leisure attractions. This monograph mainly applies to amusement parks. Attendance's are rising as the market matures and new parks come on stream, increasing both the number and the average size of parks. Ownership of large parks is consolidating as a number of firms grow through acquisition, including the expansion of USA firms. Large parks may harm the environment in a variety of ways, from noise pollution and scenic intrusion to attracting a high volume of motorised transport. The impact of technological developments such as virtual reality are currently uncertain, but in the medium term attendance numbers and revenues should continue to increase.*

### INDUSTRY PROFILE

#### Description of the sector

The recreation parks sector includes a wide variety of establishments in terms of size, style and services offered. They vary from theme parks, other amusement parks and water parks, through holiday camps, to zoological gardens and safari parks. NACE Revision. 1 92.33, formerly NACE 1970. 979, covers fairs and amusement parks while NACE Revision. 1 92.53, which directly replaces NACE 1970. 977 covers botanical and zoological gardens and nature reserve activities. An important element of the recreation parks sector is non-permanent or travelling "enterprises" which often offer many of the same attractions as those available at permanent sites. Holiday camps, such as those operated by Pontins in the United Kingdom, and indoor resorts, like Centre Parcs, are addressed in the monograph on "Other Accommodation".

Variety in scale and orientation among individual operations reflects constant evolution within a sector susceptible to rapid changes in both technology and consumer tastes. Key characteristics distinguishing recreation parks include: they constitute visitor destinations in their own right, and they offer a range of attractions which are often, but not always, for a single standard admission fee. Many recreation parks close in off-peak periods, although this is becoming less the norm. Zoos, however, usually remain open year round.

Overlap with other tourism sectors depends on the size of the operation. Sources other than admission fees, such as, restaurant meals, merchandise, accommodation, etc. now account for almost half of total revenue in large amusement parks. While few parks operate hotels or other forms of accommodation (caravan parks, self-catering, etc.) the number doing so is increasing. At the other end of the market, smaller parks do not provide accommodation and generate a smaller proportion of revenue from non-admission sources. Nevertheless, receipts from restaurants and retailing, particularly of park-related merchandise, are still important to the smaller parks. Considerable overlap is evident in the case of Disneyland Paris which is now the largest restaurant owner in France, with sales of over 30 million meals a year, and if developed as planned, the site will have a third as many hotel rooms as the area surrounding Paris.

The geographic distribution of the industry is influenced by park size, with large parks generally located a small distance from major urban concentrations and smaller parks providing an important part of flanking attractions in traditional resorts. While recreation parks are to be found in all EU Member States, the largest parks are in Denmark, France, Germany,

Belgium, the Netherlands and the United Kingdom and more latterly in Spain.

Despite its size no official statistics exist on the recreation parks sector. The information that does exist is patchy and largely based on industry surveys and the records of trade organisations, which only covers particular segments of the recreation parks sector. It is estimated there are around 300 zoos and aquaria who are members of regional and/or national zoo associations in Europe (including non-EU states and some former Soviet Union states) and annual attendance at zoos is around 125 million, approximately one fifth of total global attendance. Within the EU, more than 63 million people attended zoos in 1994 according to EAZA, with zoo attendance most popular in Germany. Both Europarks (European Federation of Leisure Parks) and IAAPA (International Association of Amusement Parks and Attractions) provide data on major theme parks. IAAPA estimate annual attendance at all Western European parks was around 110 million in 1995, but the total is somewhat higher when non-affiliated parks are included. Economic Research Associates, a UK consultancy, estimate that just under 16 million people visited Europe's top two theme parks in 1995 and the top eight parks attracted around 30 million visitors. Employment is estimated to be between 40 000 and 50 000.

#### Recent trends

Side by side with increases in attendance's at theme and other such amusement parks, the popularity of zoos and safari parks among day trippers has fallen considerably in most EU countries over the past decade. Consequently, some zoos have experienced financial difficulties, shut down (particularly in the UK and to a lesser extent in Germany) or diversified, often into theme parks. In general, the number of major amusement parks in the EU and the average size of parks have increased in the last five years. In particular, American style theme parks are enjoying a boom period. IAAPA data indicates an 80% rise in visitor numbers to Western European theme parks over the last five years and while much of this increase is attributable to new affiliations to the organisation, Disneyland Paris being the outstanding example, there has also been organic growth at existing parks. This is reflected in an Economist Intelligence Unit (EIU) survey which indicated attendance s at a selection of major European parks rose by 32% between 1985 and 1992.

**Table 1: Recreation parks**  
**Paid attendance at zoos and aquaria, 1994 (1)**

	Total attendance (millions)
Belgique/België	1.9
Danmark	2.1
Deutschland	26.2
España	3.4
France	6.2
Ireland	0.5
Italia	0.8
Nederland	5.8
Österreich	1.5
Portugal	1.3
Suomi/Finland	0.4
Sverige	2.0
United Kingdom	10.9

(1) EAZA members only.  
Source: EAZA

**Table 2: Recreation parks**  
Attendance at major European theme parks (1)

	Year opened	Attendance (thousands)				Original	Size (hectares)		
		1985	1990	1993	1994		1986	1992	1993
Alton Towers (UK)	1924	1 834	1 900	2 600	3 000	324	202	202	320
Bellewaerde (B)	1969	610	810	820	950	6	50	54	53
Bobbejaanland (B)	1962	600	880	960	950	30	30	30	30
De Efteling (NL)	1951	2 300	2 500	2 700	2 550	65	72	72	72
Duinrell (NL)	1935	1 100	N/A	1 200	1 250	101	110	N/A	110
Europa Park (D)	1975	1 400	1 800	2 300	2 450	20	40	60	60
Heide Park (B)	1978	950	N/A	2 000	1 900	35	94	134	80
Melli Park (B)	1935	700	N/A	600	600	1	30	N/A	30
Panorama Park (D)	1962	350	425	500	N/A	80	80	80	80
Thorpe Park (UK)	1979	1 100	974	1 300	1 000	230	230	230	202
Walibi Wavre (B)	1975	900	1 200	1 300	1 200	36	52	57	50

(1) Survey-based, therefore it excludes some major parks.  
Source: Europarks

### International comparison

North America is the standard reference point for international comparisons of recreational parks and, especially theme parks. However, the most rapid growth is occurring in Pacific Rim countries, as the North American market is close to saturation having expanded very rapidly during the 1970s and steadily throughout the 1980s. Theme parks are a very important element of the USA domestic and international tourism product. Around one in four North Americans visited a theme park in 1993, many of them more than once, and total visitor numbers exceeded those of all major sports events. During the 1980s some major operating companies moved out of the market, with control of major theme parks passing to a smaller number of large companies. Recent initiatives have tended to either concentrate on smaller parks serving niche markets, such as waterparks or extensions or variations to existing products, particularly the addition of new high-profile attractions.

In Europe, the proportion of visitors is much lower as are expenditures per capita in amusement parks and despite recent growth the market is not yet thought to have reached saturation. Admission revenues accounted for over half of all revenues, excluding accommodation, in major European amusement parks, somewhat higher than in other global regions. The difference reflects both higher admission charges in Europe, and a greater reliance on a "pay-one-price" (pop) admission, wherefore all rides are free of charge. However, while European general admission prices are the highest they have much more price differentiation in off-peak period. There is also a lower expenditure on ancillary products in European theme parks, a fact which contributed to Disneyland Paris' initial and well-publicised difficulties.

**Table 3: Recreation parks**  
Average year-end attendance by world region, 1995 (1)

(thousands)	Amusement/ Theme parks	All facilities
Western Europe	1 078.0	1 033.0
USA	752.7	415.5
Pacific Rim	3 712.0	2 923.7
Canada	1 117.0	931.5

(1) Amusement Facility Operations Survey.  
Source: IAAPA

### Foreign trade

Recreation parks are primarily a tourist product, where domestic tourists are more important than their international counterparts. However, the international attraction potential of recreation parks does differ significantly. A number of such parks, Disneyland Paris being the most obvious example, are international attractions which generate substantial cross-border tourism in their own right. Increasingly major European parks are marketing themselves as package holiday, particularly short-break, destinations. Some have added accommodation, others have arrangements with hotel groups, e.g. the recently opened UK Legoland links up with nearby Marriott hotels.

Other major recreation parks could be classified as flagship attractions, meaning that they form an integral part of a group of tourism products which attract tourists to a particular country or area. In many cases these recreation parks also attract international excursionists, particularly in northern Europe. Abolition of border controls is making consumers increasingly willing to make cross-border trips to recreation parks. Smaller types of recreation parks are more common as flanking attractions and are becoming more important at traditional seaside resorts frequented by international tourists. USA theme parks are important in attracting European tourists. In particular, utilising the major flagship attraction of Disneyworld (USA), Florida has developed a critical mass of theme park and other attractions to draw visitors.

Traditionally, the majority of European recreation park owners operated a single park, but recent growth significantly altered ownership profile. The scale of investment required for a theme park in the 1990s means most investments are now financed by large operators and conglomerates who are less adverse to direct foreign investment than the family owners who traditionally dominated the sector. USA-based companies are particularly evident, although EU companies have also begun to expand internationally.

### MARKET FORCES

#### Demand

Consumer demand for recreation parks is volatile. Major factors contributing to this volatility are changing consumer tastes, the weather and economic conditions. Consumer tastes in particular have changed substantially since the beginning of the 1980s. Although demand has stabilised, and in some cases grown, zoos have lost considerable market share in recent decades. Similarly, attendance at safari parks has plunged since the 1970s when they were very popular. Pleasant weather is



generally good news for recreation parks as most of their attractions are outdoors, even though it also increases the popularity of beaches, scenic areas, public monuments and other less expensive leisure pursuits.

Poor economic conditions adversely affect all leisure expenditure, especially the higher priced amusement parks which compete with much cheaper, and often free, competitors such as beaches and scenery. In addition, ancillary expenditure within the "pay-one-price" parks falls during recessions. However, a counterbalancing effect of poor economic conditions is that people tend to skip long distance holidays in favour of short breaks or day trips in the surrounding regions (which increases park attendance).

Traditionally amusement parks were either a day trip attraction or part of an overall package of attractions for visitors at resort destinations, particular seaside resorts. Factors influencing demand for day trips include: the travel distance to alternative attractions; consumer preferences; children's desire to visit a park; climate; and cost. With increasing numbers of larger parks, and the trend towards the short break market, price competition is now more evident, with both discounts and more elaborate pricing structures increasingly evident. Proximity is also particularly important. The catchment area of a park is usually considered to lie within a 150-200 kilometres (or maximum 2 hours of travel) radius of the park itself. The other important demand determinants are: fun-rides; little waiting-time; weather; and family atmosphere.

Changes in the size profile of the industry over the last five years has, however, resulted in some changes from traditional patterns. Europe's major theme parks, following the example of Disneyland Paris, are now positioning themselves as overnight destinations or fully fledged resorts. The recently opened Port Adventura park in Spain is strongly featured by many tour operators alongside the nearby, and reinvigorated, resorts of Salou and Cambrils. Similarly, Legoland in the UK, which opened during 1996, hopes to attract domestic and international visitors for more than one day and has signed a partnership deal with Marriott Hotels. De Efteling in the Netherlands has added an 18 hole golf course and future plans include a self-catering complex and a second theme park.

The central elements of any amusement park are the number, quality and variety of attractions it offers. These attractions are generally united by a common theme or set of themes. Variety is extremely important as clients vary from young children to adolescents through to senior citizens, and there must be a sufficient range to hold the attention of each group throughout the day. The perception that theme parks are primarily for children is somewhat misplaced, although family groups do form the backbone of demand. The proportion of children to adults varies widely across different parks. Parks are also increasingly attracting groups through organised tours ranging from school trips to business conferences. The average

stay at a European theme park tends to be around 6 hours, although this figure varies widely.

Ancillary factors contributing to visitor satisfaction are becoming increasingly important as tourists become more sophisticated and more demanding in relation to quality. These include: landscaping of sites, absence of litter, cleanliness of toilets and other facilities, maintenance of gardens and green areas, simplicity and clarity of information, attitudes and friendliness of staff, and ample provision of rest and picnic areas. Disneyland Paris's attention to quality factors has put increasing pressure on major European parks to do likewise.

While the ageing of the European population has seen emphasis shift from white-knuckle (meaning frightening) rides towards more family oriented entertainment, for most parks bigger and more exciting rides need to be brought on stream and marketed on an ongoing basis. Constantly updating rides and attractions with more recent and more thrilling replacements remains the primary, and increasingly costly, method of freshening the appeal of theme parks. Such is the hype surrounding such rides that Thorpe Park (UK), for example, took three years to develop its 1996 flagship ride and prior to unveiling it would reveal no details other than its codename "X:No Way Out". There is also greater emphasis on combining entertainment and education - through themes such as dinosaurs, simulations (e.g. earthquakes) or participated rides (e.g. a traffic school) - such changes are, however, on the periphery rather than at the core of theme park developments. A notable exception is Futurescope (F), which has grown rapidly based on largely educational and cinematic themes. Customer participation and education are also themes which zoos have focused on and they have become important centres for environmental education, which helps distinguish them from other recreation or theme parks.

European amusement parks experience sharp seasonal variations in demand, although they are still among the most visited of tourist attractions. Disneyland Paris attracted substantially more visitors than any other attraction in the EU during 1995.

### Supply and competition

The number of recreation parks in Europe has increased over the last decade. Indeed, much of the increased demand is supply driven as evidenced at a macro level by parks such as Disneyland Paris and Port Adventura and at a micro level by the strong promotion of new state-of-the-art rides. However, expansion has not been uniform and amusement parks have enjoyed far greater growth than zoos, aquaria and safari parks. In fact, there have been a small number of closures in the latter subsectors, although their prospects have improved with better marketing and infrastructure improvements, such as restaurants, shops, and, in particular, the presentation of animals.

Greenfield investment in amusement parks is a relatively high risk activity. The capital costs of investment are high and

**Table 4: Recreation parks**  
Average charges for all types of facilities by world region, 1995 (1)

	General admission charge (ECU) (2)	Parks charging an admission fee (%)	Average season pass price (ECU)		Facilities with season passes (%)	Attendance due to season pass holders (%)
			Child	Adult		
Western Europe	8.3	63	18.8	34.9	47	9
USA	7.5	79	28.7	33.0	34	12
Pacific Rim	7.5	46	27.0	31.9	40	10
Canada	2.7	67	29.2	32.1	53	13

(1) Covers parks participating in IAAPA survey.

(2) Computed from admission revenue and paid attendance.

Source: IAAPA



demand is difficult to predict. Factors which contribute to demand uncertainty include: the specialised nature of the amusement park business, the wide range of lower priced leisure attractions, the seasonality and weather sensitivity of demand, and the varied age profiles of consumers to whom it must appeal. Reflecting these risks some parks have had financial difficulties in recent years, Disneyland Paris' initial problem being a well-publicised example. Increasing, and unpredictable, environmental pressures are adding further to the risks involved.

The recreation park sector is both land and capital intensive. In addition to the land required for the recreation park itself, space is required for parking. This has also contributed to environmental problems with Greenfield investments. The capital costs of building new parks makes the acquisition and expansion of existing parks more attractive for companies seeking to enter the market or to expand their base of operations. This is already leading to mergers and take-overs with older operators selling out to the new theme park owners. For example, the Walibi (B) has expanded considerably in recent years through the acquisition of new parks in France and the Netherlands, the Tussaud (UK) group has grown substantially in the United Kingdom and entered the Spanish market in a joint venture with Anheuser Busch, while Legoland (DK) having recently opened a new park in the United Kingdom and has a target of a new park every three years (the next is planned for the USA). Overall, there is a trend towards consolidation, although the strength and tight ownership control of many parks suggests consolidation will not reach the levels currently pertaining in the USA.

### Production process

Given the diversity of packages offered to the consumer, the production process varies greatly, depending on the type of park involved. As such there are a wide variety of different ride types, varying from kiddie rides through roller coasters to simulators, live entertainment and mini golf. The majority of parks also rely on return visits, so there is a constant need to update and renew the attractions available. Parks whose main focus is white-knuckle rides and similar attractions are generally obliged to invest in new equipment on a regular basis, usually every two to three years. An approach for smaller parks is to bring in attractions from other operators for a limited period.

Technological progress will effect major changes in the production process over the remainder of the 1990s. Virtual reality machines, which give participants a heightened sensual awareness of a fantasy environment, represent a potential threat to the industry's current structure. These products are considerably cheaper than conventional rides and, once installed, can be readily changed and developed at a lower cost to the park. This could conceivably lead to more parks being built at a lower cost, or the addition of high quality excitement to attractions offered by smaller parks.

Recreation parks are important employers of both skilled and unskilled workers. Permanent core staff are generally well qualified. They include administrative and marketing staff and skilled workers such as carpenters, painters, electricians, mechanics and specialised designers. In the case of zoos and aquaria the requisite qualifications are even higher. However, seasonal staff outnumber permanent staff on around a 4:1 basis and a high proportion of seasonal staff are relatively unskilled.

Professionalism and good park management are also very important elements in the overall mix of factors which produce the recreation park service. With increased emphasis on satisfying more demanding and sophisticated customers, the need for appropriate management standards will increase.

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## INDUSTRY STRUCTURE

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### Companies

In the European recreation parks sector, unlike the USA, comparatively few owners control more than one park and most companies are family-owned. However, this is changing. In the United Kingdom, the Tussaud (Pearson), Granada and Gibb groups continue to expand, while in France, investments in the late 1980s were primarily financed and driven by conglomerates of large leisure companies. Elsewhere in Europe, firms expanding through the acquisition of existing parks or through new construction include Walibi (B), Tivoli (DK), Lego (DK) and some of the major USA companies (Disney, Anheuser Busch and Six Flags). The link between film and other media and the development of parks is also noteworthy for firms holding property rights to leisure "icons" (Disney, Paramount, Time- Warner and Universal Studios) which are all becoming involved in the industry.

The availability of European Regional Development' Fund (ERDF) money through the Structural Funds is boosting investments in smaller scale recreation parks in some areas of the EU. Countries such as Greece, Portugal and Ireland do not have the population density or the required transport infrastructures to justify major theme parks, but have made considerable use of ERDF money to leverage investment for small scale recreation developments.

### Strategies

As with the European tourism market in general, the recreation parks industry in post-war Europe is being shaped by advances in communications and changes in consumer tastes. Some of the older recreation park types such as zoos, safari parks and traditional holiday camps have experienced mixed fortunes during the post-war period. These attractions have adapted to changed circumstances and are currently retaining their market share. Many zoos, for example, are currently expanding marketing activities and enjoying improved visitor numbers as a result. Others have diversified their appeal through the addition of shows and rides, while a number have gone further and re-emerged as full-fledged amusement parks.

At present, most parks are idle throughout the winter, although the increasing popularity of indoor and water-based attractions has widened the possibilities for extending the season. This development is both demand and supply driven. Increased demand for short breaks in the off-season is a recent feature of the tourism sector, coinciding with the aim of park operators to increase levels of utilisation of their investment. In addition to extending the season, some parks have tested the market with Christmas and New Year opening periods. Also, many recreation parks are increasingly turning to the corporate sector to boost demand during off-peak periods.

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## REGIONAL DISTRIBUTION

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While smaller operations are located throughout the EU, larger parks are located in northern Europe, near the major population centres. With the exception of major pier developments in the UK, most large European parks are not located in traditional holiday areas. ERDF funds are helping the less developed southern Member States to capitalise on their drier, warmer climate to invest in small-scale parks, especially water parks. Rural areas are also attracting smaller, culture-based theme parks often with relatively less importance on rides and more emphasis on shows or activities with audience participation.

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## ENVIRONMENT

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The size of most large theme parks and the volumes of car visitors which they attract, may have some negative environmental consequences for the areas in which they are located. For large land areas there is a trade-off between sites which

**Table 5: Recreation parks  
Amusement mix by world region, 1993 (1)**

(%)	Western Europe	USA	Pacific Rim	Americas	Global average
Sit-down restaurant	91	27	88	56	66
Snack bar	78	66	52	68	66
Children's rides	80	44	72	56	63
Carousel	60	30	64	48	51
Adult rides	64	26	68	40	50
Roller coasters	67	25	64	28	46
Live entertainment	69	30	64	36	42
Other water rides	53	20	64	24	40
Ferris wheel	36	25	48	48	39
Miniature golf	33	60	16	48	39
Bumper cars	36	24	44	40	36
Go-garts	29	32	52	32	36
Waterslide	47	19	48	16	33
Bumper boats	16	22	32	32	26
Dark ride	33	11	28	28	25
Animal activity	40	13	20	24	24
Animal show	22	7	28	16	18
Wave pool	11	6	32	12	15
Batting cages	2	27	4	20	13
Other	44	56	52	80	58

(1) Covers parks participating in IAAPA survey  
Source: IAAPA

impact on residential areas and those which are located in green belt areas and may have an adverse impact on natural habitats, local woodlands etc. Similarly, Economic development of any kind will, of course, by definition, have an impact on the local communities in terms of traffic problems, litter, noise and loss of privacy.

Following EU regulations, such developments require Environmental Impact Assessments, although it is also in the interests of major parks to consider the relationship between their park and the local environment. In a market which is increasingly sensitive to quality and to environmental factors, the advantage of a sympathetic landscape in surrounding areas and on approach roads is important. The parks themselves, and their representative organisation, Europarks, are very aware of the adverse impact which heavy reliance on car based visitors can have on the environment. Thus, Europarks has endeavoured to cooperate with national governments to improve accessibility by public transport to their member parks.

While nature themes are common among theme parks in Europe, in particular those which have evolved from zoos or safari parks, strict ecological or environment themes are not common in major theme parks. This may be an area for future development. This trend is current visible in the indoor resort sector, with environmental friendliness and harmony with nature being an important feature of Centre Parcs' resorts.

Greater concern for the environmental impact of major theme parks, particularly Greenfield operations, has pushed outward the time required to move from planning to completion. Extensions of existing theme parks can also be delayed. Indeed, to the extent that some theme parks have evolved through a sequence of smaller planning applications, the environmental problems of sequential increases in the volume of intrusive noise and traffic congestion are greater upon residential areas which were previously unthreatened by the initial small development plans.

## REGULATIONS

All theme parks are the subject of national legislation in relation to safety and local planning laws. As all major parks are also involved in ancillary activities, such as food service, they are subject to relevant legislation in the areas of hygiene, certification by health authorities and, in some cases, licenses to sell alcohol. Employment legislation is also particularly important. Developments at the EU level in a number of these areas and in the areas of environmental policy, consumer protection and competition policy are also relevant.

Concerning zoos, there exists a Commission proposal for husbandry standards in zoos (COM (91) 0177 final) laying down minimum standards for the accommodation and care of animals in zoos.

EU regulations in relation to employment are viewed as particularly important. The general thrust of EU-based proposals has been to improve conditions of work for employees and, in particular, to equalise the entitlements of part-time and temporary workers with those of their full-time counterparts. In a number of northern European Member States work conditions for recreation park employees are already relatively high and there is little concern about the impact of existing and proposed EU legislation, or the principles of the Social Chapter of the Treaty of Maastricht. However, this is not the case in all Member States, particularly in southern Europe and in the United Kingdom.

The Directive on Package Travel, Package Holidays and Package Tours (90/314/EEC) is of considerable relevance to those recreation parks which rely on coach tours and other forms of organised traveller which involve accommodation facilities.

Recreation parks are included on the list of products and services which Member States can levy a reduced rate of VAT. French and Belgian theme parks benefit from relatively low rates of VAT, 5.5% and 6% respectively, in comparison to competitors in Germany, the Netherlands and the United Kingdom, which are all over 15%. Rates in Spain, Portugal, Greece and Italy are also relatively low, but their distance

**Table 6: Recreation parks  
Employment in major European theme parks, 1993**

	Full-time	Number of employees Seasonal	Full-time/seasonal visitors (thousands)
Alton Towers (UK)	N/A	N/A	2 600
ParcAsterix (F)	155	800	1 200
Bobbejaanland (B)	80	450	960
Bellewaerde, (B)	150	550	820
Burgers' Zoo Bush Safari (NL)	100	75	1 210
Blackpool Pleasure Beach (UK)	300	1 000	7 000
Chessington World of Adventure (UK)	N/A	N/A	1 495
Efteling (NL)	260	1 300	2 700
EuroDisney (F)	10 513	1 153	8 800
Europa Park (D)	170	1 050	2 300
Flamingo Land (UK)	N/A	N/A	958
Frontier Land (UK)	N/A	N/A	1 300
Futuroscope (F)	600	1 100	1,950
Holiday Park, Hassloch (D)	120	500	1 250
Lego World (DK)	140	600	1 200
Meli Park (B)	50	200	600
Noorder Deerenpark (NL)	194	N/A	1 800
Phantasialand (D)	250	500	2 200
Panorama Park, (D)	20	150	500
Pleasure Island (UK)	N/A	N/A	257
Pleasureland (UK)	N/A	N/A	2 000
Thorpe Park (UK)	N/A	N/A	1 300
Tussaud's Group (Alton Towers, Chessington, Mad. Tuss. London, Rock Circus Warwick Castle UK, Port Aventura, Spain, Mad. Tuss. NL)	1 000	5 000	9 500
Walibi Wavre (B)	120	600	1 300

Source: Europarks

from the high VAT northern Member States reduces distortive trade impacts.

Safety regulations are dealt with at state or regional levels, although the EU has considered introducing a Directive in this area. However, Member States such as The Netherlands, France and Belgium generally already follow German standards, particularly in the manufacture of machinery. Thus, reasonably uniform standards already exist in northern Europe.

## OUTLOOK

Given the diversity of the recreation parks sector, its prospects for growth are best analysed in terms of its constituent sub-sectors. Rapid growth in attendance's at amusement parks will continue but at a much slower rate, as fewer big parks come on stream over the next few years. As suggested above, the outlook for zoos and safari parks has improved, at least in the sense that they are no longer declining rapidly and that operators are coming up with fresh ideas to enhance their products. They are also making good use of ancillary attractions and shows to enhance their appeal. In addition, the combination of environmental education and recreation has stimulated public interest in zoos.

The overlap between zoos, aquaria, safari parks and theme parks will increase. However, while the trend in recent years has been to expand or re-orient their operations into theme parks, over the medium term, changes are likely to occur in the other direction. Nature themes in attractions will increase together with the emphasis on education and customer participation. This will be apparent through growth in "shows" featuring animals, more children's zoos and botanical gardens. However, the high husbandry standards required for extensive zoological collections will set a ceiling on how far most major parks can diversify. Exhibits of art, live craft demonstrations, dance theatres and other cultural-based attractions will also

become more common. These changes in emphasis will help attract a greater proportion of older visitors, an important consideration in the EU where family sizes have contracted and the population structure is ageing.

The impact of technology on future trends is more difficult to envisage. Virtual reality and simulation technologies are increasingly directed at leisure applications, reflecting a fall-off in demand from military sources. These technologies provide experiences which impact through visual, aural, touch and smell sensations, placing "riders" in a "virtual world" where imaginary adventures closely approximate reality. The potential for revamping the appeal of theme parks through improved attractions will expand as new technologies contribute to equally thrilling but cheaper attractions. Experimental virtual reality arcades have opened in Japan and North America. Some of the existing appeal of the larger theme parks is based on the high capital cost of the most thrilling rides and there is a danger that falling prices, as a result of technological advances, may reduce this competitive advantage. Smaller and cheaper, but equally exciting, rides will also make it increasingly easy for other leisure emporia such as family entertainment centres (FECs) to incorporate theme park style attractions. Technological developments do raise the threat that the theme park bubble will burst but this is unlikely in the foreseeable future.

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# Travel services

## NACE (Revision 1) 63.3

The travel services sector comprises of around 35 000 enterprises employing over 200 000 people. The industry is witnessing strengthening of larger operators, through both merger and acquisition activity and through strategic alliances being formed. Also, new forms of reaching customers are being developed (direct mail, minitel etc.). The current trend towards deregulation in domestic and intra-EU airline traffic should have a major impact on price trends in the industry in the future. The sector is expected to show future growth through the addition of new destinations and through strong growth in long-haul destinations, city breaks and travel by the 55-plus age group. Overall, outbound tourism from and within Europe is forecast to grow by 3.1% annually to the year 2000.

### INDUSTRY PROFILE

#### Description of the sector

Narrowly defined, travel services encompass all firms exclusively or primarily engaged in arranging transport, accommodation and catering on behalf of travellers. In practice, the distinction between the various activities of the travel and tourism operators is often blurred. Operations and activities of the travel services branch are indistinguishable from other related sectors of the industry; e.g. retail travel agencies, tour operators, ground handling services and even car rentals. Furthermore, there is considerable vertical integration in the European travel industry. Hotels, airlines and other transportation companies can and do have their own tour operating subsidiaries, developing either fully inclusive tour packages or partial package arrangements to help fill airline seats or hotel rooms. Travel agencies are being integrated with hotel operations, particularly where the target is the business travel market. In the leisure market, the leading European tour operators tend to be involved in travel retailing and chartered air transport.

Given that travel is primarily domestic or intra-regional in the EU, the majority of travellers do not use the services of tour operators or travel agents to make their travel arrange-

ments. They either travel by private car, the dominant mode of transportation in Europe, or book their transportation directly with rail and air transport companies. A significant share of hotel and other accommodation reservations are also made directly. In addition, other organisations provide part of the services available from companies in the travel services' branch. These include motoring associations, tourist offices and non-profit bodies, such as trade unions, clubs, company staff associations and media groups. In some EU states, there are "social tourism" organisations which provide low cost holidays.

Difficulties in evaluating the core sector activities are compounded by the fact that many companies do not release operating figures, let alone consolidated results. The level of disclosure is improving, although comparisons should still be treated with caution because of underlying differences in accounting principles. Figures on the number of packages sold, of passengers, tickets issued or volume of sales, number of employees or number of agency outlets are all sometimes used as measures of the level of activity, but all have shortcomings. For example, passenger figures in relation to travel agency sales cannot be readily equated with the number of holidays sold by travel agents, since the real value of the agent's sale is only the commission. Employment poses further problems, since employment in the tour operating and ground handling service sectors is highly seasonal and, therefore, fluctuates widely with no common conversion factors for part-time to full-time jobs.

Finally, the distinction between business and leisure travellers is increasingly difficult to make, with the elimination of intra-EU border controls.

#### Recent trends

Airline ticket sales channelled through IATA's (International Air Transport Organisation) Bank Settlement Plan (BSP) are a useful benchmark to track levels of activity in the travel agency sector. BSP sales recorded in Europe in 1994 point to diverging trends within the EU: while ticket sales recovered strongly in the new EU Member States (notably Austria and Finland), there was a marked downturn in sales in Italy and, to a lesser extent, Spain. The UK market, which generates the highest sales volume through BSP in Europe, was static in current terms and declined in real terms in 1994, after recording sustained growth in the previous year. Although the bulk of BSP sales can be attributed to travel agencies, it

**Table 1: Travel services**  
**Sales through IATA's BSP in Europe, Mid 1995 (1)**

	Number of approved locations	Number of participating airlines	Net sales volume 1994 (ECU)	Change 93/94 (%)
Belgique/België + Luxembourg	488	67	706	4.9
Deutschland	4 044	109	5 884	11.1
Ellada	311	43	327	11.0
España	3 687	69	1 771	-2.7
France	2 800	93	2 746	17.7
Ireland	332	32	271	24.3
Italia	3 225	72	2 038	-12.2
Nederland	437	71	1 209	17.8
Österreich	233	72	568	58.2
Portugal	475	33	342	21.4
Suomi/Finland	246	39	358	34.8
Scandinavia/Island	1 157	63	2 847	21.5
United Kingdom	4 769	106	6 020	0.5
Schweiz/Suisse	761	74	1 471	21.9
Turkey	196	40	123	-29.4

(1) IATA = International Air Transport Association, BSP = Bank Settlement Plan.  
Source: IATA

**Table 2: Travel services  
Turnover (1)**

(million ECU)	1991	1992	1993	1994	(1) 1995
Belgique/België	2 476	2 371	988	2 017	2 143
Danmark	528	1 087	1 185	1 379	1 413
Deutschland	8 048	14 742	17 042	20 574	21 354
Ellada	N/A	N/A	N/A	N/A	N/A
España	8 449	7 429	7 712	7 552	7 867
France	8 683	9 993	10 749	10 876	N/A
Ireland	N/A	696	619	N/A	N/A
Italia	8 600	N/A	8 147	8 778	8 625
Luxembourg	N/A	N/A	272	277	303
Nederland	N/A	2 163	1 471	(1) 1 655	N/A
Österreich	N/A	N/A	N/A	2 019	N/A
Portugal	933	1 667	1 356	N/A	N/A
Suomi/Finland	N/A	N/A	N/A	1 337	1 432
Sverige	N/A	N/A	N/A	N/A	N/A
United Kingdom	16 901	15 815	12 179	(1) 12 051	18 831

(1) Estimate  
Source: ECTAA

is important to stress that other travel industry service suppliers such as railways, shipping lines, car rental and hotel companies, participate in the BSP scheme. The data should therefore be interpreted tentatively. A discernible trend in 1994 was the all-round increase in the number of IATA-approved locations in Europe, with the notable exception of Italy. This may partly result from IATA's policy to encourage participation in the BSP scheme by all sections of the travel and tourism industry.

Data collated by the European Community Travel Agency Association (ECTAA) on the basis of information provided by national travel agents and tour operators' associations within the EU, provide one of the most detailed set of statistics available on the industry, although coverage does not extend to all Member States.

Preliminary estimates for 1995 indicate a loss of momentum in the German travel trade, with turnover rising by 3.8% following two years of double-digit growth. Another salient feature was the marked deterioration in the revenue grossed by Italy's travel services industry, which matches trends in BSP ticket sales there. By contrast, the Spanish travel services market showed signs of recovery, after undergoing a period of recession, which led to reductions in aggregate employment in the industry. Despite cross-country variations in revenue growth, the number of businesses involved in travel services is on the increase. The growing market power of large operators and the recent recession have not deterred new entrants; this can be interpreted as a sign of the sector's vitality but also reflects structural features of the travel service industry such as low barriers to entry. Moreover, inconsistencies in time series data available and their variance from trends in tourist and business travel demand in recent years suggest that due care should be exercised when interpreting this information.

The apparent increase in the number of travel agencies and tour operators has led to commensurate growth in employment in the industry. The German travel services industry remains by far the largest employer in Europe, with close to 60 000 people employed in travel services. However, the growing automation of several aspects of travel services delivery should lead to drastic reductions in staffing levels per agency in years to come. Employment prospects are more difficult to ascertain in the tour operating industry.

#### International comparison

The mild growth in the number of travel agents operating in the EU should be contrasted with recent developments in the

US travel services market. The American Society of Travel Agents reported that close to 1 000 independent retail agencies ceased operations in 1995, following the decision by the largest US carriers to cut back on commissions paid to travel agents on domestic travel. The move was initiated by Delta Airlines, who introduced a ceiling of \$50 on commissions paid per ticket irrespective of the value of the ticket. The measure was particularly detrimental to small-sized operators with comparatively low sales volumes. In the US, travel agents are also increasingly bypassed by airlines selling directly to companies and making alliances with car rental companies and hotel chains, to offer a complete travel package.

#### MARKET FORCES

##### Demand

It is difficult to isolate a single set of variables that could explain fluctuations in demand for travel services. Some of the key variables affecting demand for leisure travel and related travel services are airfare prices, outbound tourism trends and aggregate trends in disposable income and economic activity. The latter variables largely explain the slowdown in the number of outbound trips taken by German tourists in 1994/5, with a modest 3% rise in foreign vacation spending compared to 11% growth in 1992 and 7% growth in 1993. The impact of growing unemployment and substantially higher levels of income tax appear to have outweighed the surge in demand for travel services by eastern Germans in recent years. Airfares are particularly significant, given the sector's reliance on travel bookings to medium and long-haul destinations; whereas domestic holidays and the bulk of rail and road transport bookings tend to bypass the travel services branch. The increasing liberalisation of air transport in Europe has been reflected in sharp passenger growth since the mid 1980s; the gradual liberalisation of domestic and intra-regional air transport markets should put further downward pressure on intra-EU airfares in years to come. The Council regulation liberalising access to air traffic routes within the EU is effective since January 1993. Exchange rate fluctuations are also important influences on demand for travel services.

Business travellers are far more liable than other categories to use the services of the travel trade, at least for airline travel booking and ticketing, though it is fairly common for corporations to deal directly with hotel chains and car rental companies when they can get a better deal. The performance of the sector is therefore sensitive to variations in corporate demand for travel services. According to a 1994 survey of

**Table 3: Travel services  
Number of enterprises (1)**

(units)	1989	1990	1991	1992	1993	1994	(2) 1995
Belgique/België	1 030	1 050	1 068	1 700	1 286	1 297	1 353
Danmark	400	360	400	479	479	(3) 565	597
Deutschland	9 250	9 800	9 500	7 200	7 850	7 844	8 199
Ellada	N/A	N/A	N/A	N/A	4 990	(2) 5 313	N/A
España	1 900	1 800	2 270	2 435	2 546	(2) 2 603	2 830
France	2 157	2 300	2 316	2 587	2 400	(2) 2 500	N/A
Ireland	318	330	N/A	277	296	(2) 304	N/A
Italia	4 682	4 890	4 980	N/A	5 900	5 980	5 980
Luxembourg	25	25	N/A	45	65	112	113
Nederland	647	672	N/A	600	550	(2) 580	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	2 383	2 400
Portugal	N/A	666	683	691	692	859	N/A
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	240	340
Sverige	N/A	N/A	N/A	N/A	N/A	167	172
United Kingdom	N/A	4 302	6 093	(2) 5 271	(4) 3 038	(2) (4) 3 093	3 440

(1) Total of travel agencies and tour operators.

(2) Estimate

(3) Including also hotels, evening schools, free-lancers, etc. which act as tour operators.

(4) Companies operating as travel agencies as well as tour operators are doublecounted.

Source: ECTAA

European businesses conducted by American Express Travel Management Services, the revenue generated by individual business trips is in the order of ECU 115 bn and expanding in volume terms, although average spending per trip is falling, due to a concomitant rise in return day trips to intra-European destinations and to tighter monitoring of travel budgets by European corporations. The incentive travel market is also a significant contributor to the revenue base of the tourism services sector, with close to 1.5 million incentive trips generated by European companies annually according to Horwath Axe Consultant ("Business and Conference Tourism in the European Economic Area" Tourism Unit of the European Commission). This segment has become less profitable since the early 1990s, owing to reduced spending on incentive travel by European companies, at the expense of long-haul destinations and premium packages. Conferences and exhibitions also yield significant revenues to travel service companies, hotels and ancillary suppliers. In the UK, a 1995 survey on the conference market by the Meetings Industry Association indicated that companies increasingly turn to business travel agents to organise conferences and find venues for company events. Large-scale travel management companies such as Hogg Robinson or Carson Wagonlit have set-up specialist divisions dedicated to this growing market.

### Supply and competition

Conditions of entry in the travel services industry vary significantly from country to country: in France and Belgium, travel agency/TO licensing is conditional upon previous work experience in that field, whereas UK tour operators are required to obtain an ATOL license from the Civil Aviation Authority. By contrast, no license is required in Denmark and Germany. The amount of capital and guarantee funds required from new entrants also vary, although there is a growing degree of harmonisation implicit in the Packaged Tour directive.

Start-up investments can be substantial (connection to CRS, hardware costs and expenses for dedicated data lines) but relative to other industries the initial cost of tooling-up is still low and barriers to entry are low at the retail end of the travel services industry.

The EU travel services trade faces growing competition not from other sections of the travel and tourism industry, such as hotel chains and airlines, but also from tour operators who sell direct (by mail) and from clubs and associations acting as travel organisers where local legislation allows. Mail order

firms and hypermarket groups have also become more actively involved in the packaged travel market, notably in France, where hypermarket groups such as Carrefour and Leclerc have made minor inroads in the packaged tour market, as have a number of mail-order companies. A number of retail banks have also branched into the packaged tour market, in conjunction with established tour operators.

Vertical integration is particularly marked in the United Kingdom and Germany, but is found in all other major countries as well. In the United Kingdom integration among the largest companies involves travel retailing, tour operating and leisure airline operation. In Germany, there are two models: travel retailing, tour operating and hotel operating or these three together plus airline operation. In France, these models co-exist with the retail travel and hotels model adopted by Accor and its strategic ally, Carlson (USA).

Exclusive distribution arrangements between tour operators and travel agents, which had been the subject of Cartel Office and court scrutiny, ceased in late 1994. In the United Kingdom, no merger in this sector has ever been turned down or constrained. The Office of Fair Trading in the UK looked at vertical integration of tour operators and travel agencies in 1993/94 and concluded that there were no grounds for concern. As of late 1994, it appeared this finding would be appealed to European Union authorities by smaller operators and agents.

### Production process

Information technologies and human resources are the two most significant dimensions of the production process at the retail-end of the travel services industry. The production process is altogether different for integrated tour operators, whose activities may span air/ground transport and hotel property management. When tour operators become their own transport operators, particularly in aviation, the industry becomes capital intensive and the needs of the airline often dominate the strategy of the tour operator.

In the travel trade, desk and back-office operations from data exchange to ticketing and payments rely heavily on computer reservation systems (CRS). It is therefore useful to review recent developments in the European CRS market, a market characterised by sustained growth in CRS travel agency locations (+43% over a 3-year period from end 1992 to end 1995 according to survey data published by the Travel Distribution Report newsletter). CRS markets in Europe are still

**Table 4: Travel services**  
**Number of travel agencies and tour operators**

(units)	Travel agencies				Tour operators			
	1992	1993	1994	(1) 1995	1992	1993	1994	(1) 1995
Belgique/België	1 600	1 145	1 202	1 252	100	141	95	101
Danmark	120	120	135	160	359	359	430	437
Deutschland	6 000	6 600	6 957	7 261	1 200	1 250	887	938
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
España	2 364	2 470	2 507	2 700	71	76	96	130
France	(3) 4 900	1 900	(1) 1 900	N/A	(3) 340	500	(1) 600	N/A
Irland	252	284	(1) 292	N/A	25	12	(1) 12	N/A
Italia	N/A	5 840	5 920	5 920	N/A	60	60	60
Luxembourg	43	63	112	113	2	2	0	0
Nederland	450	400	(1) 420	N/A	150	150	(1) 160	N/A
Österreich	N/A	N/A	(5)	(5)	N/A	N/A	(5)	(5)
Portugal	N/A	684	853	N/A	N/A	8	6	N/A
Suomi/Finland	N/A	N/A	(6)	(6)	N/A	N/A	(6)	(6)
Sverige	N/A	N/A	(5)	(5)	N/A	N/A	(5)	(5)
United Kingdom (4)	(1) 4 600	2 614	(1) 2 482	2 800	(1) 671	662	(1) 611	640

(1) Estimate.

(2) Including also hotels, evening schools, free-lancers, etc. which act as tour operators.

(3) Number of outlets.

(4) For 1993-94, enterprises operating as travel agencies as well as tour operators are doublecounted.

(5) No distinction between travel agents and tour operators.

(6) Since July 1, 1995 there is a law introducing a distinction between travel agents and tour operators.

Both types of activities are estimated to represent approx. 50 % of the total number of enterprises.

Source: ECTAA

fragmented, with a single system dominating the travel agency market in most countries. While most travel agents in France, Germany and Spain are connected to Amadeus, a global distribution system in which Air France and Lufthansa are stakeholders, the vast majority of British, Dutch and Italian agencies subscribe to a rival system, Galileo International. Two other US-based electronic reservation systems have also made significant inroads in the European CRS market, owing to sustained demand from small-to-medium size agencies. Table 6 provides useful indicative data on the structure of the European CRS market and on the number of travel agencies connected to electronic reservation systems within the EU.

The French marketplace provides a salient example of the potential for growth in electronic distribution of travel services. Discount travel and packaged tours are one of the fastest growing services provided on Minitel, the interactive information service developed by France Télécom, whose installed base currently stands at around 6.5m minitel terminals and a potential user base of 14.4 million people, i.e. a third of the adult population. Dégriftour, France's leading operator in this field stands achieved sales of FF 276m in 1995, thus ranking 12th in the French wholesale market for travel services. The company's competitive edge stems from its low operating costs (no retail network, no hard-copy catalogues, quick response to demand trends). Another fast-growth area in Britain and in Benelux countries is travel specialists providing mail order-based services. Leading mail-order companies such as 3 Suisses are also branching into travel services. Direct distribution via teletext services on cable and satellite TV is still marginal but could gain momentum in the years to come.

## INDUSTRY STRUCTURE

### Companies

A distinctive feature of the travel services trade, particularly at the retail end, is that companies operate with less than ten employees on average, ranging from 2.3 employees per firm in Austria to 7.3 employees per firm in Germany and about 12 in Spain. The travel services trade appears particularly fragmented in Austria, Belgium and Italy.

While Germany and Belgium feature relatively high ratios of self-employment relative to total employment in travel services (28% and 48% respectively), self-employment is negligible in Scandinavia and its incidence is limited to around 13% of travel services employment in France and Italy.

The relative share of tour operators and travel retailers also varies significantly within the EU travel services industry: ECTAA data suggests a marked North/South divide, with relatively few local tour operators serving the Italian and Spanish markets. By contrast, the German market is served by over 900 T.O.s.

Vertical integration remains a distinctive feature of the EU travel services industry, as all major European tour operators have stakes in downstream operations, from air transport to travel retailing and tourist accommodation. This is particularly true of Britain's tour operating industry, one of the most concentrated in Europe. For instance, Airtours Plc., the second largest UK tour operator, runs two charter airlines, Airtour International and Premiair, a cruise line, and hotel companies under the Sunwing brand. T

The German tour operating industry has undergone drastic structural change during the 1994-95 business year, following the decision by the Federal Cartel Office to ban exclusive contracts between specific tour organisers and travel agencies, which amounted to full-fledged liberalisation of the travel marketing industry. By stimulating further competition in an over-supplied market, the move led to severe price competition and eroded trading margins. Deregulation appears to have strengthened rather than weakened the market power of Germany's leading tour operators, notably TUI and NUR. By contrast, there was a marked fall in the number of unaffiliated agents, who represented over 55% of travel retail agencies in 1993 compared with 42% at the end of 1994.

The deregulation of the British travel market, which was implemented in the late 80s, has also led to growing concentration and vertical integration in the industry. There, the five leading tour operators have come to dominate 55% of the market, up from 40% in 1990, while the number of travel agents and tour operators registered was halved to around 3440. Similarly, Germany's 5 leading tour operators (TUI, NUR, LTU, DER

**Table 5: Travel services**  
**Number of persons employed (1)**

(units)	1989	1990	1991	1992	1993	1994	(2) 1995
Belgique/België	5 500	5 600	4 800	6 000	5 000	5 250	5 500
Danmark	5 000	4 900	4 800	4 600	4 550	6 000	6 050
Deutschland	45 000	47 000	48 000	53 000	55 000	57 000	59 000
Ellada	N/A	N/A	N/A	N/A	13 500	(2) 15 000	N/A
España	29 000	31 500	34 650	32 650	30 000	32 000	33 000
France	N/A	24 700	26 300	26 920	30 000	30 500	N/A
Ireland	N/A	2 500	N/A	2 600	2 450	(2) 2 610	N/A
Italia	23 878	24 920	29 400	N/A	30 000	35 000	35 000
Luxembourg	100	100	N/A	320	190	(2) 180	N/A
Nederland	7 500	7 500	N/A	7 000	7 500	(2) 7 650	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	5 500	5 600
Portugal	5 100	5 490	5 560	5 023	4 774	(2) 4 858	N/A
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	3 100	3 300
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	30 000	N/A	N/A	80 000	N/A	(2) 35 000	N/A

(1) Total number of persons working for the enterprise; includes active owners, partners, non-paid family members, free-lancers, seasonal workers, part-time workers.

(2) Estimate.

Source: ECTAA

and ITS) are credited with about two-thirds of the domestic packaged tour market and exert dominant market power in Austria, the Benelux but also in the source markets of Central and Eastern Europe.

Independents have responded to the ongoing trend towards vertical integration and strategic alliances between large tour operators by converting to franchise agents or developing more or less structured forms of co-operation, e.g. trademark licensing, pooled purchasing or connections to Global Distribution Systems. Their goal is to retain their independence while achieving economies of scale and reaching the critical mass required to survive in an increasingly competitive industry. The international networks set up by business travel companies are a similar response to the global challenge of the largest international groups.

In the European CRS market, competition has also become increasingly fierce. The European CRS industry remains dominated by the Global Distribution system Amadeus, which currently serves over 22 000 agency locations throughout the continent, although the company is still under-represented in the British market. The company consolidated its market leadership in Southern Europe, following comprehensive distribution the agreements with Air Inter of France and Portugal's second largest airline Portugalia. In addition to participating airlines, State rail agencies and European Passenger Services have also become key partners in the Global Distribution System of Amadeus.

### Strategies

Clustering strategies have been actively pursued by some of the leading travel service companies in Europe, as a means to enhance responsiveness to market trends and control the quality of service throughout the delivery chain. Germany's Touristik Union International (TUI) thus formed a travel and tourism network comprising travel groups Jet Tour of France and Britain's Thomas Cook, as well as hotel establishments in Greece and Spain. Similar networks link travel and tourism operators to Europe's leading hotel group, Accor and its German partner Kaufhof.

Alliances and clustering have not reduced the scope for more aggressive external growth strategies; acquisitions remain a prime vehicle for EU companies that wish to expand beyond their home market. Leading German Tour Operators have come to dominate neighbouring inclusive travel markets (Benelux, Austria) through cross-border acquisitions and extensive local

distribution networks. Cross-border marketing by groups such as TUI or Neckerman is currently directed at Eastern Europe and Scandinavia. This is also true, albeit on a smaller scale, of UK and French companies; the former have made significant inroads in the Scandinavian travel market, notably following Airtours' 1994 acquisition of SAS Leisure and subsequent take-over of a leading Danish tour operator, Spies and Tjærborg.

Business travel specialists have pre-empted the threat of direct distribution by airlines and car rental companies by increasing the range of services they provide to corporate clients. Leading operators such as American Express have re-positioned themselves as travel "management" companies, able to advise clients on their business travel policy by interpreting travel patterns and monitoring travel costs. Customised software applications have been developed with this purpose in mind.

The current remuneration system, whereby travel agents derive most of their revenue from commissions paid by airlines, is gradually changing in Europe. Leading operators such as Hogg Robinson work on a fee-based basis, charging clients a fixed consultancy fee and a variable incentive fee related to performance and savings, while passing back to clients the commissions generated in the course of trading.

According to ABTA, one of the main challenges facing the British leisure travel industry is the growing pattern of late bookings on the part of British holiday-makers, to secure late availability deals and discount holiday packages. This trend is particularly threatening to medium-size tour operators.

### ENVIRONMENT

Sustainable development has become a catchword in the travel and tourism industry. The World Travel and Tourism Council (WTTC) established a policy framework dealing with this issue and has consistently promoted industry environment initiatives through its "Green Globe" scheme. The International Federation of Tour Operators has also addressed the matter by initiating a pilot project in Majorca to assess the incoming tourism capacity of the island. The assessment methodology used should be extended to other mass-tourism resorts at risk from environmental damage in the Mediterranean. The proactive stance adopted by leading German tour operators has been partly driven by growing environmental awareness on the part of the consumer, as demonstrated by the growth in travel packages geared to eco-tourism. The main regulatory

**Table 6: Travel services**  
**Travel agency CRS locations in Europe, 1993-1996**

	AMADEUS		GALILEO		SABRE		WORLD-SPAN		TOTAL	
	1993	1996	1993	1996	1993	1996	1993	1996	1993	1996
Belgique/België	126	222	180	320	96	103	196	460	598	1 105
Danmark	188	347	49	95	24	42	86	118	347	602
Deutschland	10 420	11 428	158	329	539	661	262	474	11 379	12 892
Ellada	0	181	214	477	187	322	135	193	536	1 173
España	2 517	3 235	148	176	75	70	100	87	2 840	3 568
France	0	3 447	154	336	379	375	153	250	3 578	4 408
Ireland	0	0	269	315	19	28	30	83	318	426
Italia	0	492	2 483	2 944	576	920	172	304	3 231	4 660
Luxembourg	16	63	0	0	12	17	0	7	28	87
Nederland	9	27	434	1 277	73	70	189	489	705	1 863
Portugal	33	0	359	486	1	26	155	137	548	649
United Kingdom	9	126	2 217	3 924	671	717	481	2 300	3 378	7 067
Österreich	212	335	368	534	19	21	10	9	609	899
Suomi-Finland	404	529	(1)	(1)	7	8	1	3	412	540
Sverige	504	683	(1)	(1)	85	145	66	111	655	939

(1) Galileo lists all Scandinavian CRS locations under a single heading  
 Source: Travel Distribution Report

pressures inside the EU come from environmental impact assessment or land use requirements for tourist resort developments. Regulations on night flying also affect the industry.

There is evidence that consumers are becoming increasingly sensitive to the impact of travel and tourism on the environment, although this is not yet true in all countries. In Germany, where the package travel markets are well developed and consumers are particularly eco-conscious, it is now common for large companies to appoint executives responsible for environmental policy and for monitoring of the destination hotels' energy conservation and environmental practices. Hotels which do not comply with basic minimum standards can be struck off a tour operator's hotel listing. In addition, the pressure on a number of Mediterranean resorts to improve their ancillary services and infrastructure represented a mixture of direct pressure from stagnating demand and encouragement from tour operators.

Although travellers are more aware of the impact of tourism on the destinations they visit, this has not yet translated into apparent concern over the type of transportation chosen to travel on holiday. Tour operators may also supply clients with guidelines on preserving and protecting the local environment at holiday destinations.

Trade associations are also becoming increasingly active in the environmental field. The new Green Globe concept launched during 1994 by the WTTC (World Travel and Tourism Council) has already attracted widespread support from industry associations and tourism companies. It will provide a universally recognised insignia displayed by tourism enterprises in all industry sectors which become part of the scheme. The aim of the scheme is to raise awareness of environmental issues and to provide advice and training.

## REGULATIONS

One of the main developments in the European policy environment for tourism was the publication of a Green Paper on Tourism by the European Commission in 1995. This led to a wide-ranging consultative process with representatives of the travel and tourism industry as to the future role of EU institutions in European tourism policy-making. The travel services industry was associated to the debate via its major trade federations.

From a regulatory point-of-view, European directives pertaining to Consumer Protection are of particular concern to the EU travel services industry. Consumer protection is a broad chapter covering every aspect of holiday selling, from the accuracy of descriptions in brochures to the fairness of booking conditions and the handling of customer complaints.

- Package Travel: The Directive on Package Travel, Package Holidays and Package Tours adopted in 1993 aims to harmonise Member States's regulations with respect to the legal liabilities of package tour suppliers and sets common minimum standards of protection. The directive requires tour organisers to be insured against business failure. As yet the Directive has not been transposed by all Member States, owing to difficulties over the type of guarantee scheme to be set up to protect consumers' interests.
- Unfair terms in consumer contracts: under the terms of this Directive adopted in 1993, tour operators need to exercise great caution in ensuring that their promotional material and contractual terms are accurate. Contracts deemed unfair are not binding on the consumer and the burden of proof is placed on the supplier
- Distance selling: the Directive sets out the minimum standards of protection for consumers for goods and services purchased by telephone, fax, or TV shopping. The Directive was strongly opposed by the travel industry as it initially sought to include services with reservations such as travel, accommodation and entertainment. Approval for an amended draft Directive is pending with the European Parliament.

With respect to consumer protection, the industry has consistently called for greater self-regulation, through codes of conduct or best practice as is the case in Great-Britain where detailed codes of conduct have been set out by the Association of British Travel Agents, ABTA.

An array of other regulations ranging from environmental limits on resort developments to other aspects of transport policy also have implications for the travel trade and are discussed more fully in the overview chapter. The liberalisation of intra-regional and domestic air travel will have most impact, given that close to 80% of European air traffic is generated by intra-EU flights.

Regulatory measures dealing with competition, mergers and monopolies in the travel services trade have been tackled on a national basis by the various Member States. A Berlin court

**Table 7: Travel services**  
**Density of travel services (1)**

	1989	1990	1991	1992	1993	(2) 1994
Belgique/België	10.4	10.6	10.7	17.0	12.8	12.9
Danmark	7.8	7.0	7.8	9.3	9.2	(3) 11.5
Deutschland	11.8	12.4	11.9	9.0	9.7	10.1
Ellada	N/A	N/A	N/A	N/A	48.2	51.1
España	4.9	4.6	5.8	6.2	6.5	6.6
France	3.8	4.1	4.1	4.5	4.2	4.3
Ireland	9.0	9.4	N/A	7.8	8.3	8.5
Italia	8.1	8.5	8.6	N/A	10.4	10.3
Luxembourg	6.7	6.6	N/A	11.5	16.4	16.7
Nederland	4.4	4.5	N/A	4.0	3.6	3.8
Portugal	N/A	6.7	6.9	7.0	7.0	7.2
United Kingdom	N/A	7.5	10.6	9.1	(4) 5.7	(4) 5.3
EUR 12	N/A	N/A	N/A	N/A	8.7	8.9

(1) Number of travel services' enterprises per 100 000 inhabitants.

(2) Estimates.

(3) Including also hotels, evening schools, free-lancers, etc. which act as tour operators.

(4) Companies operating as travel agencies as well as tour operators are doublecounted.

Source: ECTAA, Eurostat

thus issued an anti-trust judgement against TUI, Europe's largest tour operator, in 1995 - for binding resort hotels in the Balearic and Canary Islands to exclusive contracts. In Britain, the Office of Fair Trade is currently investing whether vertical integration by the largest tour operators restricts consumer choice - since affiliated travel agents promote parent company products. There are also major regulatory differences in conditions of access to the travel services trade, as indicated earlier.

Other potentially important issues are the future of duty-free sales on intra-EU flights and ships and the imposition of VAT on the industry's products. Implementation of the former has been postponed until July 1999. It is still not clear what the eventual outcome will be in relation to indirect taxes, in particular in relation to VAT on intra-EU travel. Furthermore, the dispersion of VAT rates applied to travel services within the EU remains high.

## OUTLOOK

### Demand outlook

There is a clear link between business travel trends and general economic developments, although the correlation is a volatile one, owing to shifts in companies' expectations and levels of business confidence. The growth outlook for the Europe 4 region (France, Germany, Italy, UK), which drives the EU travel services industry, is mildly favourable, although DRI expects the recovery to be low in comparison with previous cycles, at around 2.5% p.a. over the 1996-98 period.

TO sales to the EU leisure traveller will continue to grow through the addition of new destinations and through strong growth in long-haul destinations, city breaks and travel by the 55-plus age group. The ageing of the population in most EU member states should also have a significant impact on travel demand. Overall, outbound tourism from and within Europe is forecast to grow by 3.1% annually to the year 2000, according to the WTO ("Global Tourism Forecasts - Europe").

Growing exposure to travel and tourism has brought about a discernible change in consumer attitudes in Europe, with growing demand for new destinations, and more varied and customised travel products. This trend should stimulate new product development in the European travel industry. Overall, theme-based packaged holidays and bespoke travel arrangements are expected to become more significant, as are packaged tours to long-haul destinations such as the Caribbean or the Asia-Pacific rim and the "short-break" market.

### Supply outlook

Increased economies of scale, technological advances and competitive pressure on the EU travel services industry should limit the scope for significant price increments over the next few years; the current trend towards deregulation in domestic and intra-EU airline traffic should also have a major impact on price trends in the industry.

Changes in real exchange rates are another key variable of interest to the travel service industry, as suggested by the marked decline in outbound tourism from Spain and Italy, following the depreciation of these countries' currencies. In this respect, greater economic convergence within the EU is expected to limit the scope for exchange rate variations in the run-up to 1999.

The future success of individual companies in the sector will depend largely on their ability to meet the need for new products, as well as changing demands from increasingly sophisticated European travellers. This, in turn, is likely to be linked to their ability to stay ahead of technological developments and strengthen their presence throughout the EU. The underlying trend towards horizontal and vertical integration in the EU travel and tourism industry should therefore continue through acquisitions and trading partnerships. However, there will be continued scope for smaller, specialist travel service companies serving a local customer base or well-defined market segments, based on service and market knowledge rather than price.

New technologies can be expected to place further emphasis on the need for continuous enhancement of skills levels in the EU travel services industry and significantly add to on-the-job training requirements in the travel trade.

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## Overview

**NACE (Revision 1) 60, 61, 62, 63, 64**

The transport services industry in the EU, after facing difficult years in the early 1990s, is now benefiting from the recovery of European economies, thus ending a constant declining trend in output growth which began in the late 1980s. Increasing European integration will lead to more interaction between the economies of the Member States and thus to more demand for transport services. However all transport modes will need to adapt to increasing liberalisation, privatisation and stronger competition. In order to expand their access to the markets, EU companies are consolidating by way of mergers and alliances. In addition, the continuing pressure on prices is likely to induce further re-structuring and cost-cutting strategic measures. The development of the Trans-European Network and the spread of new forms of management such as just-in-time have fuelled the need for new services in the framework of multi-modal transport operations and a widespread use of electronic data interchange. In the short term, however, growth in transport will continue to be unbalanced as road will continue to gain market share at the expense of other inland transport modes, both for passengers and freight. To further consolidate integration, large investment is planned to alleviate congestion problems in some major corridors, with emphasis on environmentally-friendly and energy saving modes. Policy measures and advanced technologies can seek both to increase the attractiveness of the individual mode and promote the combined use of different modes in the consideration of the external costs of transport.

### INDUSTRY PROFILE

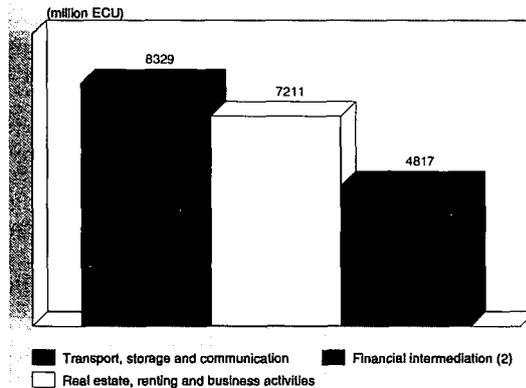
#### Description of the sector

The transport services industry is primarily engaged in the conveyance of goods and passengers either directly or indirectly. Direct involvement relates to the actual conveyance of goods and passengers by various modes of transport. Indirect involvement relates to such services as handling when changing modes, traffic guidance, travel arrangement, freight brokerage, storage, etc.

The transport and communications industry is grouped as:

- NACE division 60: Land transport and transport via pipelines (grouping NACE 60.1: Transport via railways; NACE 60.2: Other land transport, including urban transport, road transport and freight transport by road);
- NACE division 61: Water transport (grouping NACE 61.1: Sea and coastal water transport, including sea water transport and coastal water transport; NACE 61.2: Inland water transport);
- NACE division 62: Air transport (grouping NACE 62.1 Scheduled air transport; NACE 62.2 Non scheduled air transport; NACE 62.3: Space transport);
- NACE division 63: Supporting and auxiliary transport activities (grouping NACE 63.1: Cargo handling, including cargo handling and storage and warehousing; NACE 63.2: Other supporting transport activities, including land, water and air other supporting transport activities; NACE 63.3 Activities of travel agencies and tour operators; tourist as-

**Figure 1: Overview transport services (1)  
Number of persons employed compared to selected sectors, 1994**



(1) Data in NACE/Rev.1

(2) Including auxiliary activities to financial intermediation.

Source: Eurostat: Labour force survey

stance activities; NACE 63.4 Activities of other transport agencies);

- NACE division 64: Post and telecommunications (grouping NACE 64.1 Post and courier activities and NACE 64.2: Telecommunications);

It is important to distinguish statistics related to the transport industry (e.g. value added or employment) from statistics related to transport traffic (generally measured in tonne/km or passenger/km). Statistics related to the transport industry capture transport services marketed to third parties but generally exclude transport services produced by economic units for their own consumption. By contrast, statistics measuring transport traffic in physical units usually cover both types of activity. In the case of road transport, companies active in manufacturing regularly transport on their own account, as they do not want to rely on external transport services, with this representing about a third of road freight traffic in tonne/km. Similarly, in family households, the use of the private car is not in itself an economic activity but it accounts for about 80% of total EU passenger traffic in passenger/km.

Consequently, the interpretation of statistics can sometimes lead to paradoxical results, and the problem should be kept in mind.

Of the subsector 'telecommunications and postal services', NACE division 64, only postal and express services are covered in this chapter, telecommunications being covered in another chapter. However, statistics on communications provided in this monograph cover telecommunications as well and postal and express services.

#### Recent trends

Total gross value added at market prices generated by the EU transport industry amounted to 212 billion ECU in 1992, 4.1% of EU GDP (communications and own account transport not included). This share has remained relatively stable since the early 1980s. In real terms, annual growth in value added has averaged 2.5% since the beginning of the 1980s, which

**Table 1: Overview transport services**  
**Main indicators of the EU transport sector**

(million ECU)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Gross value added at market prices</b>										
Belgique/België	5 327	6 522	6 502	7 064	7 919	8 642	9 460	10 177	10 636	11 080
Danmark	2 739	4 224	4 450	4 763	5 273	5 681	6 118	6 504	6 757 (1,2)	7 239
Deutschland	19 452	26 741	28 057	34 557	31 488	34 068	37 032	39 346	42 381	44 006
Ellada (1)	1 578	2 194	1 934	1 941	2 128	2 331	2 421	2 554	N/A	N/A
España	6 509	8 408	9 101	9 965	11 315	12 676	13 881	(2)14 604	N/A	N/A
France	18 918	26 828	28 719	29 037	31 197	33 066	35 277	36 629	38 955	38 460
Ireland	468	696	789	858	910	896	920	921	N/A	N/A
Italia	13 404	22 216	26 069	27 166	30 084	33 941	36 852	40 417	42 014	38 440
Luxembourg	72	88	98	111	129	153	169	179	N/A	N/A
Nederland	5 393	7 100	7 917	8 236	8 665	9 112	9 556	10 422	10 708 (2)	11 827
Österreich	N/A	3 052	3 294	3 630	4 112	4 508	4 831	5 294	5 806	6 146
Portugal	709	1 452	1 752	1 819	1 950	2 187	1 551	(1)1 832	N/A	N/A
Suomi/Finland	1 962	3 598	3 711	3 835	4 344	5 165	5 439	5 163	4 455	4 051
Sverige	3 886	4 849	5 056	5 284	6 077	6 760	7 183	7 774	7 702	6 017
United Kingdom	16 568	24 619	24 395	27 046	32 626	35 828	36 893	37 821	37 098	39 220
EUR 15 (1)	N/A	142 587	151 844	165 311	178 217	195 013	207 581	219 634	N/A	N/A
(thousands)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Number of persons employed</b>										
Belgique/België	N/A	183	181	185	179	178	186	202	199	189
Danmark	N/A	129	137	129	136	137	133	128	136	126
Deutschland (3)	N/A	1 003	1 015	992	1 015	1 056	1 137	1 121	1 548	1 560
Ellada	N/A	210	197	205	202	198	204	206	203	203
España	N/A	N/A	504	519	516	571	574	562	578	549
France	N/A	822	816	825	824	844	872	860	881	912
Ireland	N/A	40	37	38	37	40	41	40	42	36
Italia (3)	N/A	1 093	1 132	1 137	1 171	1 156	1 143	1 146	844	831
Luxembourg	N/A	7	8	8	8	8	8	9	8	8
Nederland	N/A	239	N/A	268	265	280	289	306	298	309
Portugal	N/A	N/A	132	138	140	144	161	176	165	150
United Kingdom	N/A		978	965	1 083	1 114	1 175	1 133	1 116	1 134
EUR 12 (3)	N/A	4 702	(5) 5 125	5 526	5 606	5 787	5 883	5 872	6 036	6 030
(million tonne-kms)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Goods transport by road</b>										
Belgique/België	17 525	21 044	23 308	24 582	28 186	29 725	31 260	33 425	31 948	N/A
Danmark	10 971	12 264	13 191	13 375	13 220	13 794	14 498	14 899	15 791	N/A
Deutschland	111 498	116 218	122 978	125 520	133 810	137 599	141 600	161 209	183 022	179 498
Ellada	N/A	12 617	14 662	15 070	14 944	16 627	14 604	13 913	(7)12 519	(7)15 369
France	112 030	94 520	100 243	107 988	121 831	126 235	126 766	129 373	132 942 (7)	126 032
Ireland	N/A	4 310	4 983	4 775	4 792	5 147	4 872	4 974	5 081	N/A
Nederland	31 089	35 789	38 310	41 285	45 725	47 384	49 586	52 066	55 737	56 888
United Kingdom	98 942	102 477	107 018	116 668	133 975	142 598	142 637	137 488	134 260	142 905
EUR 12 (6)	N/A	399 239	424 693	449 263	496 483	519 109	525 823	547 347	571 300	N/A
(million tonne-kms)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Goods transport by rail</b>										
EUR 12	195 392	178 771	171 188	171 081	173 721	176 461	174 613	176 393	165 370	152 346
(million tonne-km:s)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Goods transport by inland waterways</b>										
EUR 12 (8)	N/A	94 634	99 941	96 381	101 558	101 977	103 773	104 590	104 756	N/A

(1) Estimate

(2) Provisional data

(3) Data for Germany (1983) and Italy (1983-1991) include communications.

(4) Excluding Spain and Portugal.

(5) Excluding Nederland.

(6) Excluding Spain, Italy, Luxembourg and Portugal.

(7) Not including own account transport for international traffic.

(8) Including countries with international or transit traffic of more than million tonnes in 1992, i.e. Belgium, Germany, France, Luxembourg and Nederland.

Source: Eurostat: National Accounts, Labour force survey, Carriage of goods; UIC

**Table 2: Overview transport services**  
**Transport services gross value added as a share of GDP at market prices**

(%)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	6.3	6.1	6.0	5.8	6.1	6.2	5.7	5.8	6.2	6.2	6.3	6.4	6.2	6.2
Danmark	5.7	5.9	5.7	5.5	5.6	5.5	5.3	5.4	5.7	6.0	6.0	6.2	6.1	N/A
Deutschland (1)	3.3	3.3	3.3	3.2	3.2	3.3	3.1	3.6	3.1	3.2	3.1	3.0	3.0	3.0
Ellada (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
España (3)	4.3	4.5	4.3	4.4	4.3	3.9	3.9	3.9	3.9	3.7	3.6	3.7	3.7	N/A
France	4.0	4.0	3.9	3.9	3.8	3.9	3.9	3.8	3.8	3.8	3.7	3.8	3.8	3.6
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italia	4.1	4.1	4.2	4.0	4.0	4.0	4.2	4.1	4.2	4.3	4.3	4.3	4.5	4.6
Luxembourg	2.2	2.0	2.1	2.0	2.0	1.9	1.9	2.1	2.2	2.4	2.4	2.4	N/A	N/A
Nederland	4.4	4.3	4.1	4.0	4.1	6.2	4.3	4.4	4.4	4.4	4.3	4.4	(4) 4.3	(4) 4.4
Österreich	N/A	N/A	3.6	3.5	3.6	3.5	3.5	3.6	3.8	3.9	3.9	4.0	4.0	3.9
Portugal (5)	3.9	4.4	4.8	5.0	5.4	5.3	5.1	5.0	4.8	4.6	2.9	3.0	N/A	N/A
Suomi/Finland	5.3	5.3	5.1	5.0	5.1	5.1	5.2	5.0	4.9	5.0	5.1	5.3	5.4	5.6
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom (6)	3.3	4.2	4.1	4.0	4.2	4.1	4.3	4.5	4.6	4.7	4.8	4.6	4.6	4.9

(1) German data includes former East Germany. Estimates until 1989.

(2) Estimate.

(3) Estimates until 1984; 1991 and 1992 data provisional.

(4) Provisional data.

(5) Estimates for 1980-85 and 1991

(6) Estimates for 1980-82

Source: Eurostat: National Accounts

is slightly faster than growth in real GDP (2.3%). Spurred by progressive liberalisation and the completion of the Internal Market, the sector experienced particularly fast growth during the late 1980s. The situation deteriorated progressively in the early 1990s, reaching a bottom in 1993 with a slight decrease in real production.

Depending on geographical factors, but also on structural factors such as the degree of liberalisation or the share of own account, the importance of the transport sector varies considerably by Member State and by transport modes. In Germany, Spain, France, Ireland and Portugal transport's share of GDP is below the EU average, whilst for Belgium, the Netherlands, Denmark and Greece the share in national GDP is substantially larger than the EU average. Transport growth has not been spread evenly between modes, with road transport accounting for most of the increase in the freight transport industry.

As table 4 shows, in 1993 the transport services sector accounted for 8.5 million persons (6.03 without communications), which includes 2.4 million persons employed in telecom and postal services. Employment in transport services increased moderately during most of the late 1980s and early 1990s, but this progression owes much to the rapid growth in value-added observed over the period, which more than outweighed sustained productivity gains. The transport sector has consistently improved its productivity since the beginning of the 1980s. Productivity gains have fluctuated considerably from one year to the other, generally following the business cycle, i.e. increasing faster during expansion periods. However, the long term trend is toward a more than 2% annual increase in real productivity, which is quite high compared to most of the other service sectors and which leaves limited room for increases in employment given the sector's long term growth. Consequently, the transport sector, though it does generate employment, has a much poorer record in terms of job creation than most of the other service sectors.

Inland transport services, the total of rail, road and inland waterways, accounts for 62.8% of total employment in transport alone (i.e. excluding communications). Sea and air transport take a share of 9.7%. Indirect transport services, the

supporting services and other auxiliary services have a share in the sector's total employment of 27.4%.

The trend in national and urban/suburban passenger transport has favoured the private car, which has become the primary mode of transport. Since the early 1970s, traffic by private cars has increased continuously, on average by more than 3% annually. This mode now accounts for 83% of total inland traffic, leaving the balance to railways (about 7%) and buses and coaches (about 10%). The continuous loss of market share from rail and bus to private cars is presenting a number of problems for the environment, particularly congestion and atmospheric pollution. Public transport - rail and bus - tends to compete poorly with the mobility advantages of the private car (except in densely populated and congested areas), and suffers from a competitive disadvantage on the price front, insofar as the cost of using a car poorly reflects the environmental and social costs linked to that transport mode.

For international long distance passenger transport, air transport has become the most important mode for both business travel and tourism, particularly as the time wasted on travel represents a very real opportunity cost to the business traveller and as the demand for leisure has favoured longer distances. In spite of a dramatic slump in 1991, passenger traffic by EU airlines has surged by more than 7.5% annually over the past seven years. Fast growth has caused congestion problems in the airways and at airports, which are currently being addressed community-wide within the EU. However high speed rail services are becoming very competitive for medium range distances (around 300-500 kilometres).

The bulk of freight transport is road haulage. Based on 1994 data, road accounts for 76% of total inland traffic measured in tonne/km, the rest being shipped by rail (16%) and inland waterways (8%). Maritime transport accounts for about 30% of goods movements between Member States. Road haulage has benefited significantly from increasing integration within the Union. Since it is highly flexible, it can quickly take advantage of changes in industrial structure and new demand requirements. New forms of production organisation, such as just-in-time, are particularly demanding in terms of transport flexibility and have considerably favoured road haulage. Furthermore, rail and inland waterways have suffered from the

**Table 3: Overview transport services****Gross value added at current market prices in transport and communication in the EU, USA and Japan**

(billion ECU)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Value added</b>														
EU (1)	131.0	146.0	159.0	168.0	184.0	198.0	211.0	228.0	244.0	266.0	284.0	301.0	316.0	N/A
USA	124.5	171.0	202.9	245.0	301.9	328.3	267.8	244.8	254.4	282.2	255.7	272.6	N/A	N/A
Japan	46.9	65.7	70.2	86.3	106.7	116.8	132.8	137.3	159.9	173.1	147.5	171.9	176.0	225.8
(%)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Share of GDP</b>														
EU (1)	6.1	6.1	6.0	6.0	6.1	6.1	6.2	6.3	6.2	6.2	6.1	6.1	6.1	N/A
USA	6.4	6.3	6.3	6.4	6.3	6.2	6.2	6.3	6.2	6.0	5.9	6.0	N/A	N/A
Japan	6.2	6.3	6.3	6.5	6.6	6.6	6.5	6.6	6.5	6.6	6.4	6.3	6.2	6.3

(1) Estimate

Source: Eurostat: National Accounts; OECD: National Accounts Statistics

sluggish growth of their core activity, the transport of bulk goods. These two modes do have opportunities, however, in unutilised cargo (containers).

Another trend is the increasing importance of air freight transport services, albeit its overall market share remains low. Especially in the field of high value goods and perishable goods, air transport has a competitive advantage with its high speed of conveyance. This service is currently being integrated more and more with express service companies.

#### International comparison

Table 3 provides a comparison of value added in transport and communications in the EU, the USA and Japan. The contribution of transport and communications to GDP is fairly similar in the three regions, at about 6%, though the absence of recent data in the case of the US makes such a comparison a little awkward. In 1992, value added in the sector totalled 316 billion ECU in the EU, a considerably higher level than in Japan (177 billion ECU). However, in per capita terms the value added is far higher in Japan (1 427 ECU) than in the EU (910 ECU).

## MARKET FORCES

### Demand

Generally, growth in transport demand tends to depend on economic and social developments within the EU.

Despite regional variations and different developments in the various transport modes, transport demand has experienced virtually uninterrupted growth since the 1970s.

In addition to the general level of economic activity, demand for transport also depends on other factors such as structural changes in the manufacturing sector, the completion of the Internal Market and liberalisation. The relocation of manufacturing (usually to non-urban areas) and the dispersal of economic activity has had a concomitant effect on goods and passenger movements. The trend towards very flexible production methods (JIT) have lead to lower stocks which in turn have required more frequent deliveries and lower volumes. The rapid growth in the services sector has multiplied the demand for professional mobility over all distances. The completion of the Internal Market, by spurring intra-EU trade

**Table 4: Overview transport services (1)****Number of persons employed by mode of transport, 1993**

(thousands)	Land transport (2)	Water transport (3)	Air transport	Supporting services (4)	Communications (5)	Transport total	Share of employment (%)
Belgique/België	121.1	12.7	14.7	40.1	74.8	263.4	7.03
Danmark	66.5	20.7	9.7	29.5	56.8	183.2	7.14
Deutschland	784.9	42.7	57.0	675.1	656.4	2 216.1	6.14
Ellada	107.8	37.4	12.7	45.1	46.0	249.0	6.70
España	424.3	16.7	25.8	81.8	155.1	703.7	5.93
France	635.7	11.0	57.3	207.6	473.1	1 384.7	6.32
Ireland	25.3	2.3	4.9	3.3	17.0	52.8	4.57
Italia	622.6	45.3	42.7	120.6	336.7	1 167.9	5.75
Luxembourg	5.6	0.1	1.5	0.5	2.7	10.4	6.30
Nederland	197.6	13.2	28.6	69.7	114.1	423.2	6.51
Portugal	92.6	8.2	14.4	35.0	55.5	205.7	4.61
United Kingdom	705.5	38.3	71.1	343.3	429.3	1 587.5	6.23
EUR 12	3 789.5	248.6	340.4	1 651.6	2 417.5	8 447.6	6.11

(1) Data in NACE/Rev.1.

(2) Includes transport via pipelines.

(3) Sea &amp; coastal water transport; inland water transport.

(4) Includes activities of travel agencies and tour operators, cargo handling and storage.

(5) Includes post &amp; courier activities and telecommunications.

Source: Eurostat: Labour force survey

**Table 4: Overview transport services (1)**  
**Number of persons employed by mode of transport, 1994**

(thousands)	Land transport (2)	Water transport (3)	Air transport	Supporting services (4)	Communications (5)	Transport total	Share of employment (%)
Belgique/België	122.2	8.7	12.3	37.8	78.8	259.8	6.93
Danmark	64.5	13.9	8.8	31.7	50.0	168.9	6.66
Deutschland	770.7	35.0	58.1	658.0	651.8	2 173.6	6.06
Ellada	107.8	38.9	12.9	47.5	45.0	252.1	6.66
España	405.6	14.1	29.1	79.4	149.6	677.8	5.78
France	637.1	8.0	58.5	212.2	475.4	1 391.2	6.40
Ireland	27.5	2.6	5.0	4.3	16.5	55.9	4.63
Italia	588.8	39.6	33.0	124.2	342.2	1 127.8	5.63
Luxembourg	5.5	0.1	1.4	0.4	2.7	10.1	6.12
Nederland	202.5	13.5	27.9	63.5	107.0	414.4	6.18
Portugal	86.8	8.3	17.3	39.4	55.1	206.9	4.66
United Kingdom	602.7	45.4	29.2	402.8	509.7	1 796.7	7.00
EUR 12	3 621.7	228.1	293.5	1 701.2	2 483.8	8 535.2	6.05

(1) Data in NACE/Rev.1.

(2) Includes transport via pipelines.

(3) Sea & coastal water transport; inland water transport.

(4) Includes activities of travel agencies and tour operators, cargo handling and storage.

(5) Includes post & courier activities and telecommunications.

Source: Eurostat: Labour force survey

and by allowing the restructuring of manufacturing production around larger production units, has also contributed to increased demand for freight transport. As to passenger transport, the urban spread and the reduction of barriers to mobility in the EU have boosted the demand for commuting whereas leisure transport has benefited from the continuous reduction in barriers to mobility due to the growing motorisation.

Demand for transport is usually decomposed by transport modes both for passenger and freight movements. Over the past twenty years, growth in these various segments has been far from uniform. Since the early 1970s, growth in passenger traffic has been slightly faster than growth in real GDP, averaging 3.1% annually between 1970 and 1994. On the other hand, growth in freight traffic has been slightly slower than growth in GDP, averaging 2.1% annually over the same period. Passenger transport is characterised by faster than average growth in traffic by private cars and particularly fast growth in air traffic. As for freight transport, road has increased its share of inland transport markedly at the expense of both rail and inland waterways. Rail has experienced an overall decline in traffic since the beginning of the 1970s while traffic in inland waterways has hardly increased over the same period.

The demand for road transport, both passenger and freight, has been dramatically affected by the demand for increased mobility and flexibility where the door-to-door concept has acted as competitive edge unmatched over shorter distances by any of the other modes. On longer distances, road transport for freight still allows for door-to-door delivery without transshipment that is usually required for rail and inland waterway freight. In addition, the competitiveness of road compared to other freight transport modes has largely benefited from the general liberalisation trend which has taken place in Europe and which has simultaneously improved efficiency and reduced prices in road haulage.

The development and the increasing complexity of transport and logistic operations have led many companies to outsource more of these activities to professional transport operators in order to minimise costs. As a result, the demand for professional transport services has been growing faster than total freight traffic which, as already explained above, also covers own-account transport. Furthermore, professional transport

operators are tending to move out of the simple transport function to supply more complex logistics and warehousing services, a trend which further raises the value added by the sector.

### Supply and competition

The major impacts on aggregate supply are changes in infrastructure, changes in equipment technology, policy measures to encourage one mode over another or with another, and liberalisation.

Infrastructure impacts on all the various modes. For road transport, freight and passenger, the quality and availability of roads is crucial, particularly on inter-city routes for freight and on inner city and urban congestion for both freight and passengers. For all rail, improvements in the network, including both network additions and the viability of high speed networks are key components. For air transport, congestion at some airports at peak loads is a serious problem, which coupled with an air traffic control system that requires substantial investment to operate efficiently, causes a real problem for the sector to supply services efficiently and cost effectively. For inland waterways, there is a real limit to infrastructure investment, although links to East Europe are slated for improvement. Overall, the supply of transport services is increasingly hampered by serious bottlenecks at some points of the European network. Recognising both the infrastructure shortage and the importance of an effective transport system for the EU economy, the European Commission has proposed the development of a trans-European transport network covering all transport modes including combined transport. Corresponding infrastructure investments have been estimated at 400 billion ECU by the year 2010 (COM(94) 106 final).

Changes in equipment technology and infrastructures have had the most impact on air, road and rail transport. In air transport, large strides have been made in supplying efficient air transport at a cost that has in real terms declined on average over the last few years. For road freight, improvements in truck design and efficiency have allowed a real reduction in operating costs and higher volume per load movements. For passengers, the effect has been less noticeable as changes in technology have allowed some efficiency gains, but this has

**Table 5: Overview transport services  
Employment structure in transport and communication, 1993 (1)**

(%)	Share of female workers	Share of self-employed	Share of part-time workers
Belgique/België	17.5	6.0	4.8
Danmark	27.9	10.2	13.0
Deutschland	28.4	5.9	10.3
Ellada	12.6	28.3	1.6
España	12.8	27.3	2.3
France	27.9	5.4	9.7
Ireland	19.6	17.2	6.2
Italia	15.4	17.7	2.1
Luxembourg	22.4	6.4	4.8
Nederland	21.2	5.2	23.3
Portugal	22.2	10.1	1.8
United Kingdom	23.2	11.9	9.8
EUR 12	22.8	11.3	8.4

(1) Data provided in NACE/Rev. 1  
Source: Eurostat: Labour force survey

been outweighed by larger numbers of single occupancy movements. Investment in higher quality track and rolling stock for rail has allowed efficiency gains and also in some cases induced additional traffic, both passenger and freight. The drawback to freight still remains inflexibility and transshipment at point of loading and unloading.

Competition between modes has meant that overall road transport, specifically passenger cars and road freight, have gained share at the expense of other modes. In particular, cars have taken share from rail for short to medium length journeys and share from urban/suburban public transport for short journeys in and between urban and inner city areas. Road freight has taken share from rail, and to a lesser extent from inland waterways. Air travel for leisure and business has gained share from rail and coach for medium to long distances within the Union.

Several segments of the transport sector have traditionally been heavily regulated through price controls and entry restrictions. The increasing recognition of the ensuing losses in efficiency and high prices, together with the necessity to liberalise intra-EU international transport to complete the Internal Market, have fostered a general liberalisation trend. By spurring efficiency and lessening prices of a given transport sector, liberalisation also shifts the relative competitiveness of transport modes.

## INDUSTRY STRUCTURE

### Companies

The sector is characterised by large differences in the importance of state ownership depending on the transport mode considered. Road freight and private cars (including taxi services) are completely dominated by private ownership, with only isolated cases of concentration - typically in a geographical area - and by definition private cars are privately owned. Rail, including urban/suburban services, is dominated by public ownership. Air transport has been dominated by 'flag carrying' airlines that have tended to be owned by the state, and on balance most of the major airlines in the EU still remain in the hands of the state. However, there are numerous medium to small sized airlines that are privately (this includes quoted companies) owned and within this sub-sector there is a low degree of concentration. Inland waterways are dominated by small privately owned firms, often of one barge or ship. Maritime transport is largely privately owned.

### Strategies

Strategies developed by transport companies in the Union are largely dominated by the necessity to adapt to increasing demand, privatisation, and enhanced competition. Due to the forecast of continual increase in demand, the transport industry will face an increase of 25-33% in the next decade, mostly concentrated in the road sector. Besides the elimination of artificial restrictions preventing an efficient provision of transport services, a possible solution is to increase investment in the transport sector, particularly by involving the private sector. In addition, it is essential to examine how under-utilised capacity in the transport system could be brought into service, while respecting the principle of free choice for the user. However these strategies vary according to the mode considered. In road transport, particularly road freight, the move has been to increase competition between firms in different Member States by deregulating intra-EU international transport, by gradually allowing cabotage and by liberalising domestic supply in most of the Member States. In air transport, the liberalisation of the market within the EU in 1993 and the lifting of all restrictions on cabotage by 1997 has meant that many of the flag carriers that still remain state owned will gradually be moved into the private sector and that competition will force more alliances and mergers and acquisitions as companies seek to minimise costs and maximise revenues, and expand their access to markets of critical size in order to compete effectively. Spearheaded by the United Kingdom, a limited number of Member States are progressively moving towards the privatisation of their rail operations. However, changes in the structure of the rail industry will generally take place slowly as rail tends to be viewed as a quasi-public good as the supply of rail services is in the public interest. The EU has introduced limited open-access and the accounting separation of the provision of infrastructure services from the provision of rolling services. Nonetheless, for rail operators, competition essentially stems from other transport modes rather than from other rail operators. As for inland waterways and maritime services, privatisation is a less important issue as these sectors are already largely privately owned. Further deregulation will take place in the coming years but this can only have limited impact as the two sectors have traditionally been quite competitive.

**Table 5: Overview transport services  
Employment structure in transport and communication, 1994 (1)**

(%)	Share of female workers	Share of self-employed	Share of part-time workers
Belgique/België	16.4	7.2	4.9
Danmark	24.5	9.0	12.4
Deutschland	28.1	6.5	10.3
Ellada	12.9	28.1	1.5
España	14.0	26.8	2.3
France	27.7	4.8	9.8
Ireland	20.2	18.1	6.3
Italia	16.0	11.1	2.9
Luxembourg	20.0	2.9	5.9
Nederland	23.7	5.2	25.8
Portugal	20.5	10.7	1.6
United Kingdom	22.3	12.2	10.2
EUR 12	22.7	11.0	8.6

(1) Data provided in NACE/Rev.1  
Source: Eurostat: Labour force survey

## TECHNOLOGICAL PROGRESS

In all subsectors of the transport and communications industry, progress in technology and possible economic and social benefits are substantial. It relates to the following items:

- the development of new information and communications technology ("telematics"), leading to new communication and value added services;
- the application of telematics enables considerable improvements in transport service quality. Key quality items such as vehicle monitoring, goods and parcel tracking, container handling, traffic management, travel information, route guidance, automatic fee collection, fleet management, driver assistance, etc. have improved due to advanced applications of information and communication technology and Electronic Data Interchange (EDI);
- several research programs, such as DRIVE (Dedicated Road Infrastructure for Vehicle safety in Europe), EURET (Research and Technological Development Programme in the field of Transport), both contained in the second Community RTD Framework Programme, telematics Applied to Transport of the third Framework programme as well as activities outside the Community framework such as the Prometheus (1989-94) EUREKA programme examining advanced telematic systems for the motor industry, and EATCHIP (European Air Traffic Control Harmonisation and Integration Programme) of Eurocontrol have been carried out with the purpose of improving traffic safety, the impact on the environment and integrating approaches to increase transport efficiency on a European basis;
- energy efficiency and reduction of exhaust emissions and to a lesser extent other forms of nuisance such as noise.

The potential of the application of these emerging innovative technologies on the creation of value added services and on the stimulation of economic growth is significant, as the various communications of the Commission on the information society and the two European Councils conclusions in Corfu and Essen have highlighted. In addition, the Commission in its communication on telematics applications for transport in Europe (COM(91)469) has set an outline action plan for the best approach to re-deploy telematics systems.

## ENVIRONMENT

Transport is the dominant source of certain types of air pollutants: in particular, transport is estimated to be responsible for about 80% of carbon monoxide emissions in the EU. For nitrogen oxides and hydrocarbons, estimates indicate that transport causes between 50% and 60% of all man-made emissions, and furthermore it produces 40% of all emitted particulates. Another major pollutant is lead, which is discharged by internal combustion engines using leaded gasoline (dominated by cars and light vans). However, lead emissions of transport have strongly decreased in the last twenty years, in many countries to less than 1/6 of the 1970 level thanks to the use of unleaded fuel and fuel with lower lead content.

In 1992, the European Commission published a Green Paper on The Impact of Transport on the Environment: a community strategy for sustainable mobility. This Green Paper was a milestone in attempting to look at the issues of the impact of transport on the environment from a global perspective taking into account the inter-relationship of transport and economic welfare and the relationships between the various transport modes. Although the Paper focused on atmospheric pollution, it also covered, in some depth, the other forms of pollution or nuisance that are often skated over in considerations of transport. In particular, it discussed the impact of noise on the environment, water pollution (inland and maritime) from the effects of transport, soil impacts, vibration, land use and intrusion, congestion and the risks inherent in transporting dangerous goods.

In assessing the impacts of transport on the environment, the Paper concludes that operational pollution is the critical issue for all transport sectors, with the main culprits being the road, sea and air sectors. Land use and intrusion was ranked second in importance (particularly the one caused by the road and rail sectors). Congestion, interestingly, was ranked third although it restricts mobility and contributes to atmospheric pollution. This third place was largely due to congestion tending to be prevalent only in inner-city and densely populated urban areas and in terms of the whole picture had less impact. Bottom of the ranking was the transport of dangerous goods, although politically sensitive, due largely to the small quantities moved within the EU compared to the volumes of other goods.

Recently, environmental issues were emphasised in the EC COM(95) 691, where the Commission adopted a Green Paper

**Table 6: Overview transport services**  
**Evolution of passenger transport in EU**

(million passenger-kms)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Railways</b>											
Belgique/België	6 963	6 572	6 069	6 270	6 348	6 400	6 539	6 771	6 798	6 694	6 638
Danmark	4 314	4 716	4 876	4 860	4 850	4 733	4 855	4 711	4 648	4 700	4 880
Deutschland (1)	40 499	42 707	41 397	39 174	40 959	41 554	43 600	55 300	56 300	58 000	61 300
Ellada	1 464	1 732	1 950	1 973	1 963	2 020	1 978	1 995	2 046	1 726	1 750
España	14 826	17 066	16 866	16 601	16 959	15 999	16 733	16 357	17 577	16 490	16 142
France	54 660	62 070	59 860	59 970	63 290	64 490	63 740	62 300	62 870	58 600	58 900
Ireland	1 032	1 023	1 075	1 196	1 180	1 220	1 226	1 290	1 230	1 274	1 260
Italia	39 587	37 401	40 500	41 395	43 343	44 443	45 513	46 430	48 360	47 101	48 900
Luxembourg	246	229	224	216	223	224	208	227	255	262	289
Nederland	8 892	9 007	8 919	9 396	9 664	10 162	11 060	15 195	14 980	14 788	14 439
Österreich	7 380	7 290	7 332	7 363	7 783	8 444	8 463	9 223	9 501	9 614	9 202
Portugal	6 076	5 725	5 803	5 907	6 036	5 908	5 664	5 688	5 694	5 397	5 149
Suomi/Finland	3 216	3 224	3 170	3 106	3 201	3 208	3 331	3 230	3 057	3 007	3 037
Sverige	6 998	6 803	6 363	6 215	6 289	6 211	6 189	5 745	5 581	5 967	6 051
United Kingdom	30 259	29 684	30 984	32 318	34 412	33 323	33 191	32 466	31 718	30 357	28 655
EUR 15	226 412	235 249	235 388	235 960	246 500	248 339	252 290	266 928	270 615	263 977	266 592
<b>Buses and coaches</b>											
Belgique/België (2)	9 075	8 965	9 309	9 964	10 239	10 509	5 040	4 592	4 494	5 118	5 296
Danmark	7 300	8 800	9 200	8 800	8 800	8 800	9 300	9 200	9 200	9 200	9 500
Deutschland (1)	65 600	54 000	53 500	52 900	52 424	53 000	56 600	69 600	69 900	70 200	67 500
Ellada	5 817	5 789	5 004	4 812	5 090	5 080	5 086	5 084	5 161	5 158	N/A
España	28 099	31 807	34 059	35 146	36 991	37 496	33 358	35 445	35 522	37 090	38 132
France	38 000	37 000	39 500	42 200	41 900	40 300	41 300	42 900	41 800	42 000	42 600
Ireland	3 010	2630	2560	2495	2430	2 750	2 570	2 440	2 840	N/A	N/A
Italia	57 836	68 080	70 811	72 742	74 394	79 840	83 956	85 370	84 564	81 447	N/A
Luxembourg	385	370	390	440	475	419	419	445	470	N/A	N/A
Nederland	13 200	13 000	12 900	12 800	12 800	12 800	13 100	13 600	13 500	13 700	13 900
Österreich	12 450	12 808	12 679	12 844	12 901	13 331	13 620	13 690	13 700	N/A	N/A
Portugal	7 600	9 500	9 700	9 850	10 000	10 150	10 300	10 700	11 400	11 800	12 550
Suomi/Finland	8 500	8 600	8 600	8 600	8 600	8 500	8 500	8 100	8 000	8 000	8 000
Sverige	7 300	9 000	9 000	9 000	9 000	9 000	9 000	9 300	9 300	9 300	N/A
United Kingdom	52 000	49 000	48 000	48 000	48 000	48 000	46 000	44 000	43 000	43 000	43 000
EUR 15	316 172	319 349	325 212	330 593	303 000	339 975	338 149	354 466	352 851	N/A	N/A

(1) Since 1991, including former East Germany.

(2) New series since 1990.

Source: UIC, ECMT

on the real costs of transport, including external costs, emphasising that the real costs of good transport and personal mobility such as atmospheric pollution, congestion, accidents, noise and infrastructure costs, are not always taken into consideration.

## REGULATIONS

A common transport policy, along the same liberal lines that hold for the rest of the economy has been ruled out by the European Court in 1985, but the reality today is of a transport market still relatively fragmented across the EU Member States.

Nevertheless, substantial progress was made in 1995 on the common transport policy, the integration of the trans-European transport networks and interoperability (particularly for the trans-European high-speed rail system). Progress was also made on programmes aimed at traffic safety, reductions in energy consumption, in exhaust emissions and at adding new telematics-based services.

In COM(95) 302, the Commission states guidelines for a future development of the common transport policy for the period 1995 to 2000. Areas covered are: improving quality by de-

veloping integrated transport systems based on advanced technologies which also contribute to environmental and safety objectives; improving the functioning of the Single Market particularly through the harmonisation of technical standards; broadening the external dimension by improving transport links between the EU and third countries and the access of the EU business to transport markets in other parts of the world.

Whilst the desire to create a Common Transport Policy that maximises all requirements is existent, there are a number of regulations and policies that are mode specific and in general these are designed to tie into the master plan. The important regulations by mode are entered into more detail in the following relevant monographs.

However some important and recent regulations are summarised as follows. The major changes in regulations have been aimed at stimulating competition by removing artificial and regulatory barriers. In the context of the trans-European networks infrastructure development and traffic management, the EC Regulation 2236/95 grants substantial financial support for projects of common interest and feasibility studies. The use of telematics in road transport was the subject of a resolution adopted by the Council (OJC 264). Concerning inland

transport, particularly road transport, Directive 95/18/EC lays down the broad lines of a Community licensing system setting out the criteria and procedures for granting licenses, while Directive 95/19/EC concerns the allocation of railway infrastructure capacities and the charging of infrastructure fees. Under the action programme for a common policy on maritime safety, the Council adopted Regulation EC 3015/95 on the safety management of ro/ro passenger vessels to establish an efficient system of clear detailed safety procedures. Air transport continued to be regulated by the third package of liberalisation measures, which entered into force on 1 January 1993; safety issues were the subject of an overall regulatory framework for the safety of civil aviation on the basis of Regulation 3922/91.

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## OUTLOOK

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The prospects for the EU transport industry, in terms of demand, are positive: higher integration among Member States, the opening up of East European economies and the development of economic activity will lead inevitably to a further increase in transport demand, both in terms of volume and quantity. But no single form of transport can fully satisfy these expectations nor be capable of avoiding problems such as congestion, nuisance and insecurity. Generally, in recent years, investments in transport infrastructures have not been enough to satisfy the requirements of speed and quality of services, and so attract many new customers.

Investment in infrastructure is necessary in order to extend the network capacity of the various transport modes, as some existing networks are operating at or above capacity level. This will create new transport possibilities which are necessary for the growing integration of the EU market. This effect can be increased by the deployment of transport telematics, tolls and services. The effective integration of individual modes and public transport operations is an important challenge for the industry's strategy. Particularly, new challenges are the construction of interconnecting infrastructure and the establishment of an information and traffic management system, incorporating the use of transport telematics, which allows for the reassessment of travel choices before and throughout the journey.

The Common Transport Policy, which aims at liberalising and harmonising the EU transport market, will improve the industry's efficiency. This will enhance competition and improve the quality of service offered. In addition, policy measures aimed at internalising the external costs of transport will influence the demand for all modes by increasing the price for individual modes to the extent that these impose costs on society, which are presently not paid for by the respective transport users.

The outlook, however, varies by individual transport mode. Rail transport faces only moderate growth and will continue to lose market share to road, though passenger transport is expected to grow faster than freight transport. Road passenger transport is likely to exceed average growth rates, as private car use and ownership has not yet reached a maximum. Road freight transport will grow much faster due to the liberalised market and new opportunities, although tighter environmental regulations will act as a counter force. Inland waterways transport will maintain its upward trend with small rates of growth. Seabourne trade is expected to grow slowly in the short term, but faster in the medium to long term: recovery in long-term depressed markets such as steel and iron will be very gradual. The outlook for air transport is very positive as advances in managing congestion through improvements in air traffic control and investment in additional airport capacity at the more congested airports takes place. Also the upward trend in real personal disposable incomes will act to buoy the trend.

Written by: DRI Europe

# Railway transport

## NACE (Revision 1) 60.10

The European rail network encompasses 155 000 km of track, and employs slightly over 1 million people. The sector over the last decade has seen a gradual reduction in freight volume, offset by a slight increase in passenger transport over the same period. Employment has decreased consistently and this trend is expected to continue.

There is a move towards a freer, more open market in this sector, aided by recent legislation. Regulations aimed at internalising the societal costs of transport should see benefits accruing to the more environmentally friendly railways, if higher road transport taxes are set. Further, rail should reap the benefits of expanded rail networks in Europe. Rail passenger transport looks to have a promising medium to long term outlook, with sectoral growth expected, led by urban rail transport and long-distance high speed rail services.

### INDUSTRY PROFILE

#### Description of the sector

This sector is covered by NACE Rev.1 group 60.10. It includes activities that are exclusively or primarily engaged in the transport of passengers and goods by rail. It also includes the equipment and facilities required to provide this transport, including private railway lines.

Not included in this sector are: metropolitan rail networks (NACE 60.21), repair and maintenance of rolling stock (NACE 35.20), sleeping car services (NACE 55.23) and dining car services (NACE 55.30).

The European rail network encompasses 155 000 km (46% electrified), with 8 400 km of high speed rail network, and employs slightly over 1 million people. EU railway services are dominated by the EU-4 states (D, F, I, UK), who, together account for three quarters of rail passenger volume and employment and 70% of rail freight transport within the EU.

#### Recent trends

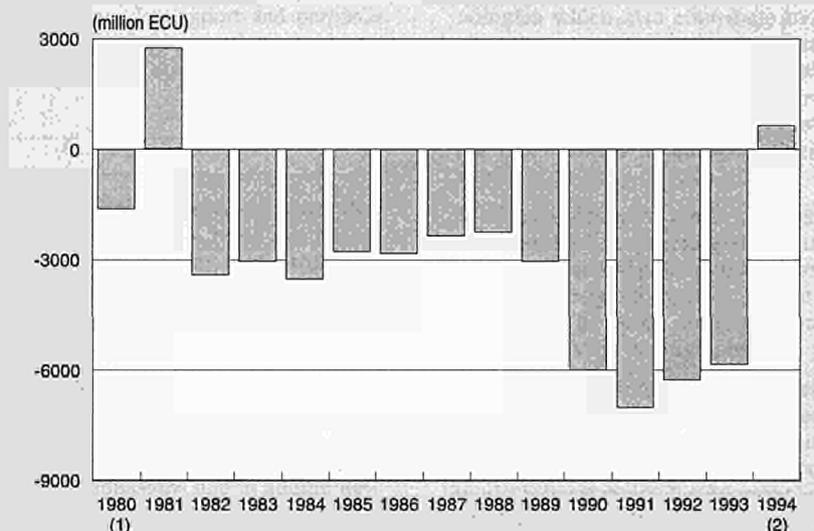
Rail passenger traffic has remained relatively static in the period 1980-1992, yielding an average annual growth of 1.3%. In 1993 recessionary pressures in the EU had a large impact on rail passenger transport, resulting in a 3.1% reduction in traffic. In 1994 there has been a slight (0.6%) decrease in passenger volume in EU-12 countries excluding Germany. Of note were reductions of 3.9% in Spain, 3.8% in Italy, 5.3% in both the Netherlands and Portugal, and 5.6% in the United Kingdom. Increases were seen in Denmark (6.1%) and Germany (28.5%), the latter being due to the inclusion of the Eastern Länder.

For rail freight, a slight reduction in volume was seen in the period 1980-1991, averaging 0.9% per annum. This was followed in 1992 and 1993 by larger decreases of 6.3% and 7.9% respectively. 1994 saw a reversal of these fortunes in EU-12 countries (excluding Germany) with a 5.7% increase in total freight volume. Notable increases were in Denmark (11.7%), Spain (13.6%), France (8.3%), Italy (9.5%), and the Netherlands (5.6%). These were offset by decreases in Greece (-35.6%) and the United Kingdom (-10.7%). The inclusion of Eastern Länder has bolstered Germany's freight volume by 36.2% in 1994.

The overall decline in freight traffic has been somewhat compensated by a partial structural shift in cargo away from low value added dense products to higher value products, often carried in containers or on road units (combined road/rail traffic). Estimates put the recent growth of this latter type of traffic at around 7.5% per year and its share in total rail freight transport increased from 7.5% in 1985 to about 13% in 1992.

Employment in European railways has declined continuously since the beginning of the 1980s, by an average of 2.9% annually, a reduction of close to one-third of the work-force between 1980 and 1993, with this decrease intensifying in 1993 with a 4.3% reduction. 1994 saw a further reduction of 8.2% in non-German EU-12 countries. All of these countries experienced declines, with the United Kingdom having the largest (-16.9%), followed by Portugal (-14.2%) and Italy (-12.1%). Employment statistics for Germany grew 47% due to the inclusion of the Eastern Länder.

**Figure 1: Railway transport**  
Development of financial result in EU railways



(1) Excluding Spain: RENFE  
(2) EUR 15  
Source: UIC

**Table 1: Railway transport  
Traffic and employment by EU Member State, 1994**

Country	Company	Passenger- transport (million pass.-km:s)	Freight transport (million tonne-km:s)	Number of persons employed
Belgique/België	SNCB/NMBS	6 638	8 100	42 729
Danmark	DSB	4 880	2 008	19 178
Deutschland	DB	61 140	70 554	327 076
Ellada	CH	1 399	324	12 006
España	RENFE (1)	14 853	8 582	41 137
France	SNCF	58 674	48 750	185 690
Ireland	CIE	1 260	569	11 219
Italia	FS (1)	48 900	20 575	140 249
Luxembourg	CFL (1)	(2) 289	645	3 289
Nederland	NS	14 439	2 830	26 561
Österreich	ÖBB	9 202	(2) 13 049	63 900
Portugal	CP	5 110	1 635	14 270
Suomi/Finland	VR	3 037	(2) 9 942	17 400
Sverige	SJ	5 906	18 591	14 600
United Kingdom	BR	28 656	12 292	106 748
EUR 15		264 383	218 446	1 026 052

(1) Including empty private-owned wagons

(2) Estimate

Source: UIC

With the inclusion of three new member states into the EU, there has been an addition of 96 000 employees and 22 000 km of track. The three new states comprise 19% of EU-15 rail freight and 7% of rail passenger transport by volume. Rail freight is, in fact, the preferred mode of freight transport in Austria.

### International comparison

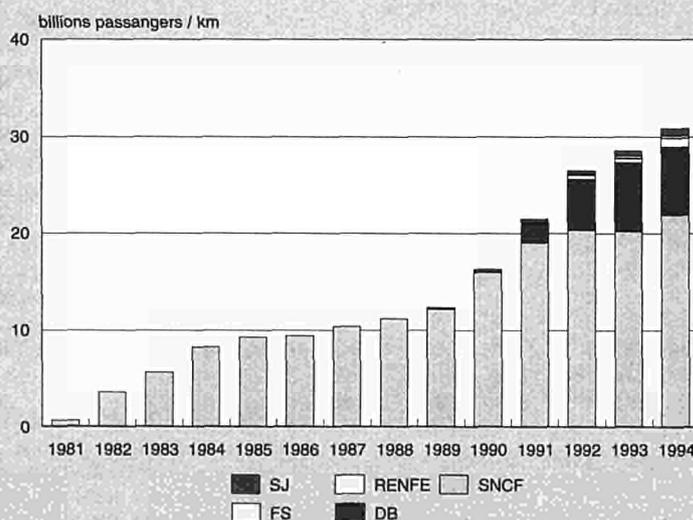
Comparison of EU railways to those of the US and Japan reveals significant differences in orientation. The US railway is heavily dominated by freight traffic (in 1994 the USA transported 1.7 m tonne kms compared to 0.2 m tonne kms in the EU), as freight is moved over a larger geographic area with longer distances between population centres. In contrast, passenger usage of the US railway network is comparatively low compared with the EU. Japan, by contrast, is dominated by passenger traffic, due to the heavy population concentra-

tions in many parts of the country, and extreme road traffic congestion.

The length of railway line available in the EU (155 000 km) is much greater than Japan (20 000 km) and slightly smaller than the US (178 000 km). Given the different nature of the railways in these three countries, it is difficult to use a labour productivity comparison. However, a comparison of the number of workers employed per kilometre of track shows that the differences in structure are enormous. The USA employs less than 1 worker per kilometre, the EU 7 and Japan almost 10. This supports a correlation between employment and the type of traffic, i.e. the higher the passenger share of total traffic the more staff required.

The EU and Japan have higher proportions of electric track, with 46% and 59% of track electrified respectively, whereas

**Figure 2: Railway transport  
Development of high speed rail traffic in Europe**



Source: UIC/MGV

**Table 2: Railway transport  
Main indicators for the EU (1)**

(million passenger -km:s)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Volume of passenger transport	208 069	216 774	218 575	227 530	228 455	233 029	237 097	241 375	233 868	264 383
(million tonne-km:s)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Volume of goods transport	195 392	171 188	171 081	173 721	176 461	174 613	176 393	165 370	152 346	218 446
(units)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number of persons employed	1 291 214	1 117 968	1 077 817	1 022 579	987 575	966 005	938 266	917 908	878 911	1 026 052
(%)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Electrified km:s	34	39	38	39	40	41	42	43	44	46

(1) EUR 15 for 1994.

(2) Includes Eastern Länder in 1994

Source: UIC

the US is notable for its very low (1%) reliance on electrified rail.

## MARKET FORCES

### Demand

Demand for rail services is divided into passenger and freight. Passenger demand is composed of inter-city commuter travel and leisure travel. The demand for commuting places peak load strains on the network services at the start and the end of the working day. Leisure demand does not have the same daily peak impact, but does have seasonal and holiday period fluctuations.

Freight demand does not have the same temporal sensitivity as passenger transport, as freight trains can be run to meet demand during off-peak passenger use times, often at night.

With the development of the European economy, there has been less production of high volume, low value bulk products, such as coal and steel. This has resulted in less tonnage and fewer tonne-km shipped per unit of economic activity. Further, with the shift to higher value commodities, trucks are much more competitive with rail for freight transport. This form of transport is often perceived as being a quicker, cheaper mode of transport.

**Table 3: Railway transport  
International goods transport by traffic relations, 1993 (1)**

(thousand tonnes)	To	B	D	GR	E	F	I	NL	P	UK	EUR 12	Third (2) countries	Total (4)
From													
Belgique/België		-	2 619	2	117	4 599	2 095	2 307	N/A	3	11 741	1 466	13 208
Danmark		5	536	0	N/A	28	407	5	0	N/A	981	N/A	N/A
Deutschland		2 452	-	53	335	3 086	7 818	918	17	109	14 788	14 476	29 264
Ellada		0	10	-	N/A	0	0	0	N/A	N/A	10	1 807	1 817
España		150	352	N/A	-	72	62	15	225	N/A	876	488	1 364
France		4 412	2 700	1	1 117	-	5 778	194	17	246	14 465	1 972	16 437
Italia		1 587	3 161	3	68	1 158	-	512	11	76	6 577	2 703	9 280
Luxembourg		1 216	406	0	47	589	128	59	N/A	0	2 446	N/A	N/A
Nederland		532	3 407	1	12	1 333	649	-	0	54	5 989	1 137	7 126
Portugal		0	2	N/A	119	0	0	0	-	N/A	122	3	125
United Kingdom		34	90	N/A	N/A	76	114	1	N/A	-	315	48	363
EUR 12 (3)		10 388	13 283	60	1 815	10 942	17 052	4 012	271	487	58 309	24 101	77 167
Third countries		647	23 091	773	66	1 120	9 107	570	6	79	35 461	N/A	N/A
Total (4)		11 035	36 374	833	1 881	12 062	26 159	4 582	277	566	93 770	N/A	N/A

(1) International traffic between the Republic of Ireland and Northern Ireland are recorded by the former as national traffic.

(2) Not including Denmark, Ireland, Luxembourg.

(3) Not including Ireland.

(4) Only for data available.

Source: Eurostat: Carriage of goods

**Table 4: Railway transport**  
**Financial result of EU railways by Member State, 1994**

Country	Company	Total operating revenue (million ECU)	Of which, subsidies (%)	Total operating cost (million ECU)	Of which, personnel (%)	Operating result (million ECU)
Belgique/België	SNCB/NMBS	3 249	27.4	3 453	62.0	- 204
Danmark	DSB	1 066	N/A	1 066	58.3	0.4
Deutschland	DB	15 094	0.0	13 913	65.7	1 180
Ellada	CH	129	47.0	385	64.2	- 256
España	RENFE	2 869	30.9	2 417	46.7	452
France	SNCF	12 146	17.0	12 311	54.2	- 164
Ireland	CIE	527	23.2	490	54.0	37
Italia	FS	6 951	16.5	8 311	63.1	- 1 360
Luxembourg	CFL	398	62.6	386	64.1	11
Nederland	NS	1 917	35.7	1 759	48.5	158
Österreich	ÖBB	4 049	17.3	3 898	61.9	151
Portugal	CP	290	23.2	424	47.5	- 134
Suomi/Finland	VR	704	7.0	666	68.1	38
Sverige	SJ	1 326	0.0	1 305	41.7	21
United Kingdom	BR	8 079	32.9	7 343	40.2	736
EUR 15	58 793	16.3	58 127	57.0	666	

Source: UIC

However, this downward trend may be reversed when the Commission implements policies aimed at internalising the external costs of transport, specifically road transport (which accounts for 90% of current external costs). As there are inter-modal cross elasticities of demand, rail freight should benefit from increased charges in the road freight sector.

### Supply and competition

Rail competes with all other transport modes, road (car, truck and bus) for both long and short haul freight and passenger journeys, air for some passenger routes, and inland waterway for some bulk freight. Rail tends to win share in instances where it can complement other modes by providing almost seamless travel, for instance rail to metro, and where road traffic congestion is bad enough to negate the convenience factor of door to door travel. One major goal of the Trans European Railway Network is to improve the complementarity of rail services with other transport services.

Increased private car ownership, with the concomitant ability of car drivers and passengers being able to travel door to door without changing mode, has negatively affected passenger rail traffic. Surveys of travellers have indicated that for business commuting, travelling speed and convenience are rated the most important factors in the mode choice decision.

In competing with air travel, the development of high-speed rail services, such as the Thalys network linking Paris, Brussels, Cologne and Amsterdam, will provide an opportunity to divert traffic from road and air to rail. Air traffic's comparative speed advantage over rail transport is under pressure on some routes in the EU, as the total journey time of rail decreases. The train, which is traditionally less expensive than flying, can become particularly attractive for journeys between 300 and 600 kilometres. For example, on the Paris-Lyon route, air traffic's share of passenger traffic on that route declined from 30% to 9% after the introduction of the TGV.

The opening of the Eurostar service linking Paris and Brussels to London has resulted in the service capturing more than 40% of the cross channel passenger market, though the negative effect on the airline industry has been less significant (a 15% fall in airline passengers on the Paris-London service and a 7 to 9% decline on the London-Brussels route), due to market expansion.

The opening of the Eurotunnel has also created vigorous competition with maritime transport services for freight.

For cargo, rail has the distinct advantage in its ability to move large volumes of freight in a single unit between specific points over short, medium and long distances. However, rail's share of freight traffic has declined over the last two decades. In 1970, the share of freight moved by rail was 32%, but by 1993 it had declined to just over 15%. This loss of share is attributable to the increase in movement of freight by road, as road can move cargo from point to point, whereas rail freight requires modal symbiosis as the many cargoes need to be transported to and from rail freight terminals.

## INDUSTRY STRUCTURE

### Companies

The top four rail companies in terms of network length are the Deutsche Bahn in Germany (40 355 km of track), the SNCF in France (32 275 km), British Rail in the United Kingdom (16 536 km prior to privatisation) and Ferrovie dello Stato in Italy (16 000 km).

In 1994, 10 of the EU-15 state companies yielded operating profits, the largest profit being recorded by DB (D) with a 1 180 million ECU profit, followed by BR (UK) with a 735 million ECU profit. Of the five companies turning in losses for the year, the most notable was FS (I) with a 1 360 million ECU loss. In fact, 1994 was the first time since 1981 that the EU-12 has yielded an aggregate profit in the rail service sector, largely due to the contribution of Germany.

### Strategies

The various European railways, represented by the UIC and the CER, have developed a plan for a Trans-European Rail Network, encompassing all types of rail transport, within the changing EU requirements.

In terms of passenger transport, the focus is on extending the high speed network aimed at both increasing market share of the passenger transport market, and also at expanding the size of the market.

This network also seeks to optimise the co-ordination of the various rail services with other modes of transport. The intention is to integrate the rail network with other transport

**Table 5: Railway transport**  
**Main Indicators for USA and Japan**

(million passenger-km:s)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Volume of passenger transport</b>										
USA (1)	17 695	18 888	19 355	19 875	21 034	21 145	21 979	N/A	N/A	(3) 9 444
Japan (2)	193 143	198 299	204 679	217 584	222 670	237 551	247 031	249 603	250 013	244 376
<b>(million tonne-km:s)</b>										
<b>Volume of goods transport</b>										
USA (1)	1 499 770	1 266 872	1 377 867	1 454 423	1 480 205	1 509 592	1 516 728	1 557 470	1 619 560	1 752 849
Japan (2)	36 483	19 945	20 100	23 117	24 752	26 803	26 770	26 219	25 075	24 100
<b>(units)</b>										
<b>Number of persons employed</b>										
USA (1)	458 300	315 300	290 200	279 800	248 200	236 800	226 400	221 519	217 452	(4) 215 000
Japan (2)	413 594	223 947	199 880	200 639	197 052	193 763	193 251	193 196	193 450	192 000
<b>(%)</b>										
<b>Electrified kms</b>										
USA (1)	1	1	1	1	1	1	1	1	1	1
Japan (2)	39	47	52	55	57	58	58	59	59	59

(1) AAR

(2) JR

(3) AAR-Amtrak

(4) AAR-Class I: 190 000; AAR-Amtrak: 25 000

Source: UIC

systems: metro, trams, airports, as well as private modes of transport.

For freight, this co-ordination is also being pursued, to create flexibility and ease of transfer of rail freight to and from other transport modes. Development of new lines (e.g. channel tunnel) also gives distinct modal advantages to rail freight.

An important goal in the development of a trans-European rail network is the interoperability of trains within the member states, particularly the high-speed passenger trains. Legislation is aimed at achieving this goal through requiring technological progress and developments to occur in Member States.

In order to increase competition and profitability some Member States - Germany, the Netherlands and the UK - are at various stages in the process of privatising their railways. In the UK, the unbundling of British Rail started in 1994. The break-up of the rail monopoly is into a host of private companies including Railtrack the owner of the tracks and stations, Railfreight Distribution handling intermodal and international traffic; three freight operators; 25 franchisee supplying passenger services; three rolling stock companies, as well as a number of rolling stock maintenance companies. The system will be capped by two regulatory bodies, a competition watchdog and an organisation in charge of awarding the franchises.

In the Netherlands, the plan is to privatise the Dutch Railways in 2000. The Dutch railways expect passenger traffic to double by the year 2010 and have been investing in equipment and infrastructure improvements to meet the current growth in demand and future requirements.

Privatisation of the German railways started in 1994 with the transformation of Deutsche Bahn, a department of the German administration, into Deutsche Bahn AG a private-sector holding company. The activities of DB AG will be reorganised into three independent subsidiaries in charge of passenger services, freight services and infrastructure. The infrastructure

company has started charging passenger and freight operators for the use of tracks and access to the network for independent companies is planned in the near future (in order to comply with Directive 91/440). However, the restructuring process of the German railway is only in a preliminary stage and privatisation remains a long term objective.

### The Trans-european transport network

The development of a Trans-European Network (TEN) in the area of transport constitutes the cornerstone of the European policy in terms of transport infrastructure. In 1990, the European Council gave favourable reception to a master-plan for high speed railways. This was followed by the adoption of three new master-plans in October 1993, for combined transport, roads and inland waterways. The Maastricht Treaty, which came into force in November 1993, gave an additional impetus to the European policy with respect to transport infrastructure. Article 129 B of the Treaty states that "the Community shall contribute to the establishment and development of trans-European networks in the areas of transport, telecommunications and energy infrastructure". The importance of transport networks has also been reassessed in the White Paper on Growth, Competitiveness and Employment released in December 1993. In this context, the development of an efficient transport network is seen as a fundamental factor in Europe's competitiveness. The White Paper identifies 26 priority projects in the field of transport. These projects correspond to an estimated 82 billion ECU investment of which rail takes the lion's share (close to 54 billion ECU). In July 1994, the Commission proposed guidelines for the development of a trans-European transport network. Contrary to previous master-plans, these guidelines cover all transport modes.

There are now 22 projects, 10 of which are rail or rail & road transport projects. In the case of rail, the proposal sets out a 26 700 km network for high speed trains (including 12 500 km of new lines for speed exceeding 250 km/h and

**Table 6: Railway transport**  
**Total and electrified kilometrage by EU Member State, 1994**

Cóuntry	Company	Total kilometrage (%)	Electrified kilometrage (km:s)
Belgique/België	SNCB/NMBS	3 396	69.6
Danmark	DSB	2 306	14.1
Deutschland	DB	40 355	42.3
Ellada	CH	2 497	0.0
España	RENFE	12 646	55.3
France	SNCF	32 275	42.6
Ireland	CIE	1 944	1.9
Italia	FS	16 002	63.3
Luxembourg	CFL	275	95.3
Nederland	NS	2 757	72.2
Österreich	ÖBB	5 636	58.7
Portugal	CP	2 699	17.1
Suomi/Finland	VR	5 880	33.2
Sverige	BV	9 661	74.3
United Kingdom	BR	16 536	30.0
EUR 15		154 865	45.7

Source: UIC

12 500 km of upgraded lines for speed of about 200 km/h, together with 1 700 km of interconnection lines) which would provide a link between the main European cities. The proposed total rail network covers 70 000 km, including 47 000 km of conventional tracks of which 23 000 would be essentially used for combined transport services. Projects of interest would be those which remove bottlenecks in centrally-located countries and those which improve access to peripheral countries as well as to airports and seaports.

## ENVIRONMENT

Rail impacts the environment principally through air and noise pollution, and land-use. Pollution into the atmosphere is both directly caused by emissions from diesel engines, and indirectly from the power stations that generate electricity for trains using electrified track. The problem of noise is par-

ticularly acute in urban areas, although track tends to be placed in areas of lowest population density or placed in a way that minimises the noise, for instance in cuttings.

Although rail does cause atmospheric pollution, it is the most environmental-friendly form of land transport, even at comparatively low passenger occupancy. Both rail passenger transport and rail freight transport have less per passenger-km and per tonne-km emissions than other transport modes (even inland waterways). In terms of noise, 1.7% of the population is exposed to day-time noise levels above acceptable levels (65 dB) from railways, compared to 19% of the EU population being exposed to above acceptable noise levels.

## REGULATIONS

In 1991, the EU Transport Ministers agreed upon a directive (91/440) setting guidelines to improve the efficiency of the railways and encourage their adaptation to market conditions by:

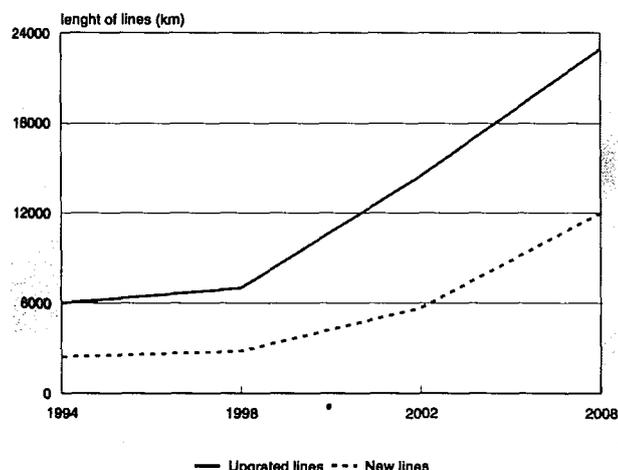
- ensuring management independence of the railways;
- separating the infrastructure management function from the transport operation function;
- improvement of the national railways' financial situation;
- access to railway infrastructure.

Since then progress has been made in all Member States towards meeting these objectives, especially the management independence and separation of infrastructure management and transport operations. The provisions regarding access rights to infrastructure have created the most problems, though Member States have resolved several outstanding issues.

The interoperability of the European high-speed train network has also been an issue, and regulations are aimed at creating a more coherent EU-wide high-speed system with compatible specifications for both the technology and systems utilised.

A 1995 green paper "The Citizens' Network" (COM(95)601) addresses the accessibility of all modes of public transport in Europe, putting citizens at the centre of policy decisions about the provision of transport.

**Figure 3: Railway transport**  
**Development of high speed network, railways of EU countries, 01.01.94, Switzerland and Austria**



Source: UIC/CER

There is a drive towards the internalisation of the external societal costs of transport (such as increasing congestion, environmental consequences and accidents) by way of regulation. This issue was addressed in the green paper "Towards Fair and Efficient Pricing in Transport" (COM(95) 691). This paper looks at these costs and ways of implementing pricing systems to adjust transport behaviour towards more environmentally friendly modes. Any resultant charges will be targeted more at road transport users, with potential benefit to rail networks.

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## OUTLOOK

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The outlook for the rail sector must really be looked at separately for rail passenger and rail freight transport.

Rail passenger transport looks to have a promising medium to long term outlook, with a projected 2.5% annual growth. Stronger growth is expected in urban rail transport and long-distance high speed rail services, while there should be a decline in the regional and inter-regional rail services, covering distances between 50 and 300 km. Improved railway services and increasing congestion in other modes will help favour rail transport. The high-profile high-speed rail services will continue to contribute to positive customer awareness as well as continuing to compete with air traffic on distances between 300 and 600 kilometres.

Rail freight should see benefits as modal substitution takes place, if higher road transport taxes are set. Further, rail should reap the benefits of expanded rail networks in Europe.

The development of efficient transport nodes linking trunk and feeder services is critical, in terms of both timing and cost, to the competitiveness of rail as a mode of transport. Research is being conducted with an aim to reduce the cost per tonne by 50%.

Cost and debt pressures will continue to force rationalisation within the industry, which will have further negative implications for employment. The planned privatisation of the railways in Germany, the Netherlands and the UK will exacerbate this decline.

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# Public transport

## NACE (Revision 1) 60.10, 60.21

*Though the most recent statistics point to a weakening in the use of urban public transport in recent years, the sector's long term prospects remain good. Increasing environmental concern and increasing congestion are leading many countries to consider policies which favour public transport at the expense of the private car. Substantial investments continue to be made to improve public transport services, both in the provision of new equipment and infrastructure and in modernising and improving existing vehicles and infrastructure. The tendency to privatise particular segments of public transport will continue.*

### INDUSTRY PROFILE

#### Description of the sector

Public transport consists of city underground, surface and elevated railways (which are included in NACE Revision.1 60.10), and tramways and regular bus and motor coach services (NACE Revision.1 60.21). Under the previous (NACE 1970) classification system, the sector was categorised as NACE 1970 721.1 - city underground, surface and elevated railways, and NACE 1970 721.2 - tramway, regular bus and motor coach services.

Regular services provide for the transport of passengers on scheduled routes and follow a fixed timetable. Special regular services cater for specific categories of persons to the exclusion of other passengers (e.g. workers, school children and air line passengers).

Public transport can be analysed either by mode (rail, tramways and buses) or by type of services (e.g. city centre, suburban, park-and-ride services). This monograph is restricted to urban transport in a multi-modal approach. Inter-city services are covered in the monographs on rail and road passenger transport included in this chapter.

#### Recent trends

Reliable statistics for the sector are relatively sparse. The tables provided in this monograph are based on several sources. The International Union of Public Transport (UITP) collects

traffic statistics on urban transport (all modes included) for the major urban areas in Europe. In addition, Eurostat provides a set of employment and turnover data. However, these data are based on NACE 1970 group 721 and their coverage is therefore somewhat wider than urban public transport as inter-city regular bus and coach services are also included.

Based on Eurostat data, public transport accounts for about 10-15% of the total labour force in the transport sector.

In 1993, the number of passenger journeys in the largest cities of the EU amounted to about 22 billion. Germany accounted for the greatest number of passenger journeys (close to 5.6 billion), followed by the UK (4.3 billion), France (3.9 billion) and Italy (3.3 billion).

The relative importance of different modes in terms of the share of passenger trips and of the total vehicle fleet is indicated in Table 2. Bus services are the most widespread mode in public transport in the EU and represent more than half the total number of passenger journeys and nearly 2/3 of the vehicle fleet for all modes of transport. Measured in terms of fleet size, route length and number of routes, the larger operating bus systems are to be found in the large European cities like Paris, Athens, Rome, Madrid, and London. Underground railways and light rail increased in 1994 by comparison with 1992, in respect of both the number of journeys and the number of vehicles.

### ANALYSIS OF MARKET FORCES

#### Demand

The principal journey purposes for which public transport is used are: journeys to and from work; journeys between home and education; shopping; personal business; visiting friends and relatives.

The demand for public transport is dependent on the overall state of the economy, the availability and price of alternatives, its own price and service level and quality.

Over the past 30 years, increasing incomes have led to higher levels of private car ownership. Owing to its flexibility, the private car is a very strong competitor with public transport, and many journeys which were previously made by public transport are now being made in the private car. This transfer, by necessitating reductions in service frequency and increasing traffic congestion (which has a disproportionate effect on the reliability and cost of bus operation) has created a vicious

**Table 1: Public transport  
Main indicators, 1992**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België (1)	265	N/A	(6) 17 061
Danmark	(5) 398	N/A	N/A
Deutschland (2)	3 056	2 808	N/A
Ellada (4)	320	N/A	30 250
España	1 148	(1) 2 137	(1) 44 825
France	174	2 588	74 789
Italia (3)	1 117	1 788	117 129
Luxembourg (1)	3	(2) 5	581
Nederland	33	485	26 900
Portugal	97	583	30 218
United Kingdom	3 686	3 343	N/A

(1) 1991

(2) 1990

(3) 1989

(4) 1988

(5) Number of local units.

(6) Number of employees



**Table 2: Public transport**  
**Relative Importance of different modes of public transport, 1994 (1)**

(%)	Proportion of passenger journeys	Proportion of vehicles
Urban and suburban buses	52	63
Commuter rail and local train transport	14	13
Underground railway	24	15
Light rail	9	9
Trolley bus	1	1

(1) Estimates.

Source: Jane's Urban Transport Systems, Edit. 1994/95

circle making public transport still less attractive. Furthermore, increasing personal mobility as a result of the private car has meant that many services and facilities are now located where they are easy to serve by car but not by public transport. This has created a captive market for the car which public transport finds difficult to penetrate. Counting both urban and non-urban transport, travel by private cars now represents more than 80% of total inland surface travel (i.e. rail, buses and private cars) in terms of passenger kilometres travelled.

Increasing traffic congestion and, more recently, increasing concern with the environmental impact of traffic have led many countries to consider policies which would increase the use of public transport at the expense of the car. Overall, these measures, detailed in the Regulations section, should, over the next 10 to 20 years, lead to an increase in the demand for public transport.

As indicated in Table 3, the 118.4 million people living in the EU's largest cities completed close to 22 billion journeys in 1994, a reduction of 11.1% by comparison with the previous year. This reduction appears to result from the stagnation of real household incomes, notably in Germany and France, although the number of passenger journeys has continued to increase in Belgium, Spain, Italy, Luxembourg and the Netherlands.

In providing an estimate for service coverage, Table 3 shows the ratio of passenger kilometres per head of population served in the various EU countries. While they provide a useful broad overview of the level of demand, these ratios should be viewed with some caution as local or national conditions can influence the indicators substantially. The number of public transport passenger journeys per head of population is declining in the larger countries. The lowest number of journeys per head is found in Greece and the highest in Portugal.

### Supply and competition

Table 3 presents some indications of supply of public transportation in the EU Member States. For all modes used in major urban areas, the number of vehicle-kilometres per capita served, which increased in all the countries of the EU in 1993 compared with 1992, reflects a particularly high level of service in countries such as the UK, Germany, Ireland, France and Spain. The figures indicate the population in major urban areas in these countries have over 40 vehicle-kilometres per annum per person. These figures do to some degree reflect differing population densities and should be viewed with circumspection.

The most effective and demanding competition for public transport has for a long period been provided by the private car. However, within the sector, although there has been a measure of competition between modes, operation has traditionally been tightly regulated, whether on the basis of direct provision by local or central government, or of an exclusive concession or contract being granted to an individual operator for a network of routes.

Public transport is now being increasingly subjected to competition as a means of stimulating improvements in services and reductions in costs. Competitive arrangements may range from: (a) at the minimum, the contracting out of individual activities such as cleaning and maintenance, through to (b) "management only" contracts, in which vehicles and installations remain the property of the authorities and (c) contracts under which the operator owns the vehicles and possibly other assets, and where different tenderers compete on the basis of the net or gross cost of providing the service to (d) full "on-the-road" competition, where operators are left free to operate whatever services they wish, without public subsidy, subject only to limited restrictions, in regard to safety.

The number of firms capable of tendering depends upon the risk they are required to bear, the assets they are required to deploy and the scale of operation. It will be easier for small companies to bid for the operation of single routes, in particular an inter-city route, or to attempt to compete "on the road", than to take over the operation of a whole system.

Public transport's ability to compete with the private car, however, depends largely on its ability to provide an effective network to try to minimise its disadvantages, compared with the car, which offers an "anytime, anywhere" service. This demands co-ordination between routes and between modes in ensuring the maximum geographic coverage, in making the best use of the relative speed of rail and the accessibility offered by bus, in co-ordinating timetables to minimise waiting times, and in simplifying ticketing and information arrangements. Forms of competition which disrupt these facilities are likely to be counter-productive.

### Production Process

The supply of public transport is generally analysed by mode:

- bus and coach;
- light rail/tramway;
- heavy rail.

Within each mode a number of distinctions can be made in relation to the type of vehicle and type of service provided. In general buses provide short distance urban services for which average journey length is quite short and peak hour passenger flows are high. Such services are usually operated with high capacity vehicles, with a large proportion of standing capacity (although sometimes - UK, Ireland and Berlin - double-deck vehicles may be used) and multiple entrances/exits.

The traditional street operating tramway with frequent stops is now being supplemented by light rail services which can either run on segregated track like conventional railways or on-street. The light-rail services often have much less frequent stations reflecting their affinity with longer-distance suburban rail services.

There is also a wide variety of heavy rail services. In many conurbations (for example London, Paris) there are extensive

networks of specialist underground metro services. These provide high frequency services using vehicles with similar seating characteristics to bus services, and which are confined to relatively short distance/suburban travel. As well as this, there are many networks of surface railways conveying passengers for up to about 100 kilometres distance from the major conurbation centres. These services are typically used by commuters and have highly peaked demand characteristics. On the longer distance routes the level of comfort and equipment in the trains may approach that offered by long distance trains. Sometimes indeed long distance services (e.g. the TGV serving Lille) may attract such commuting passengers.

Apart from the operation of the services themselves, two other aspects of service provision are critical for the marketing of public transport: information, and fare collection.

#### Passenger information

Public transport operators have to convey information to existing and potential passengers about timetables and schedules. As buses, and to a lesser extent tramways, are susceptible to random variations and deviations from schedule as a result of traffic congestion, and for various reasons similar occurrences can happen on rail networks, there is a growing trend towards provision of real time information to passengers at stops and stations. This has been largely developed on rail systems but is now being extended to bus systems, particularly with the advent of geographical positioning systems which allow the location of individual buses to be accurately determined within a central computer system. There will be major developments within this area over the next 5 years. The rapid development of information technology, the anticipated connection of many homes and most offices to the information superhighway, should make radical improvements possible in the presentation and dissemination of information to potential customers.

#### Fare collection

Other major developments concern fare collection systems. In most Member States the fare structure for urban services is very simple with a flat-fare or a series of zonal fares with substantial discounts for purchasing period passes or multi-journey tickets which are sold off the vehicle. However, such systems can be prone to abuse and there is now a growing trend towards forms of automatic ticket checking using either magnetically encoded tickets or, more recently, smart cards

(i.e. cards with magnetic strips or micro-chips on which a number of "units" are stored). This opens up the possibility of pre-purchasing a given value of travel and using it on service run by any of the operators subscribing to the scheme over a period of time. This will provide greater flexibility for the passenger and allows operators to increase revenue by comparison with the yield from conventional, weekly or monthly, travel passes. Such a system has already been implemented in Hong Kong and Singapore and has been successfully tested in London. London has taken the decision in principle to introduce system wide smart cards.

#### Investment

The ability of public transport to continue to attract passengers depends heavily on investment - investment in extending networks, in improving the quality of service, in carrying out the basic heavy renewal works which are essential to maintain services. Investment requirements are generally far greater for rail than for bus services.

Large investments continue to be made in public transportation. Total investments in urban rail systems (both underground and light rail) through the 1990s is expected to be around 30 billion ECU. Large programmes exist in France (e.g. the extension of the RER network in Paris, new systems in Strasbourg and Rouen), Germany (integrating eastern German networks), United Kingdom (e.g. the extension of the Jubilee Line in London and the Metrolink in Manchester, light rails in Birmingham, Sheffield and Bristol) and Italy (e.g. the underground in Naples). Even in Greece and Portugal (Athens and Lisbon) major metro schemes largely funded by the EU, are under way in a bid to reduce the problems of congestion and pollution.

## INDUSTRY STRUCTURE

In general, the majority of public transport operations are in public sector ownership although there are a number of exceptions - where services are provided by privately-owned companies working under contract either to public sector companies or direct to local authorities, as in France, and, to some extent, the UK.

This situation has arisen for a number of reasons; in particular the perceived need initially to control a de facto private monopoly and subsequently to maintain through the public purse

**Table 3: Public transport  
Production and demand indicators, 1993 (1)**

All modes in major urban areas	Passenger journeys (million)	Vehicle kilometers (million)	Population served (million)	Passenger journeys per head of population served	Vehicle kilometers per head of population served
Belgique/België	397.0	135.2	2.8	141.8	48.3
Danmark	211.0	68.0	2.0	105.5	34.0
Deutschland	5 612.1	1 734.5	37.4	150.1	46.4
Ellada	203.0	23.5	3.6	56.4	6.5
España	2 266.0	435.1	9.8	231.2	44.4
France	3 945.2	795.3	17.8	221.6	44.7
Irland	196.0	50.1	1.1	178.2	45.5
Italia	3 347.4	571.9	15.2	220.2	37.6
Luxembourg	19.0	3.8	0.1	190.0	38.0
Nederland	574.0	156.0	2.3	249.6	67.8
Portugal	1 078.4	121.2	3.5	308.1	34.6
United Kingdom	4 264.6	1 402.8	22.8	187.0	61.5
EU	22 113.7	5 497.4	118.4	186.8	46.4

(1) Estimates.

Source: UITP + Jane's Urban Transport Systems. Edit. 1994/95



**Table 4: Public transport  
Financing of EU bus operations, 1991 (1)**

	Fares journeys (%)	Subsidies (%)
Belgique/België	33	67
Danmark	50	50
Deutschland	50	50
Ellada	N/A	N/A
España	60	40
France	N/A	N/A
Ireland	N/A	N/A
Italia	19	81
Luxembourg	N/A	N/A
Nederland	23	77
Portugal	76	24
United Kingdom	83	17

(1) Fares and subsidies also cover tramway and metro operations where these are associated with bus operations.

Source: Le financement des transports collectifs urbains dans les pays développés, OEST, 1994

a level of service and/or low fares which could not be offered without the intervention of the authorities. Indeed, in some cities, comprehensive utility organisations have been created covering transport, gas, electricity and water supply. This situation has tended to confine operating companies within national and often local boundaries.

Relations between the authorities and the providers of public transport services are now changing radically, with the prime object of reducing the costs to the taxpayer. The changes include:

- introducing or extending competition for the provision of services which is involving private sector operations,
- a more structured and formal contract between public authorities and transport operators, which often means separating the latter into specific legal entities.

These developments have resulted in new private groupings which are, in some cases, operating in several Member States.

Meanwhile, other sources of funding can draw from the benefits which public transport creates for third parties, in particular employers (note the Versement Transport paid by employers in French cities) and property owners (note the tax advocated by the City of London to fund public transport improvements). Meanwhile even direct investment by government is likely to be self-financing if viewed globally, taking account of the effect of transport improvements on earnings, unemployment, and rents, and the corresponding impact on tax revenue.

## ENVIRONMENT

In urban and inner-city areas, congestion and environmental degradation - pollution, noise, visual intrusion - caused by excessive reliance on the private car - are now recognised as major problems. Increasingly public transport is seen as the most cost-effective means of combating these problems.

Although a comparison on a per vehicle basis between buses and private cars shows that a bus produces more NO<sub>x</sub>, HC, CO<sub>2</sub>, SO<sub>2</sub> and particulates (but less CO) than the average petrol-engined car, in terms of emissions and energy consumption per passenger kilometre the bus is considered the most environmentally friendly transport mode. A bus carrying 25 passengers will produce, per passenger kilometre, only 67% of the NO<sub>x</sub>, 8% of the hydrocarbons, and 16% of the CO<sub>2</sub> emissions produced per passenger kilometre for a car carrying a single passenger. Suburban electric rail services are estimated to consume substantially less primary energy

per passenger-kilometre, at any occupancy over 25%, than private cars but marginally more than a bus. In addition, when the transfer of traffic to buses reduces traffic congestion, as with most park and ride schemes, the remaining vehicles operate more efficiently, leading to a further reduction in emissions and in fuel consumption.

National and regional government and the European Commission are all developing strategies to reduce the environmental impact of traffic, and in most cases those policies include the increased use of public transport.

In its Green Paper on Fair and Efficient Pricing the European Commission has advocated the adoption of pricing mechanisms as a method both of controlling environmental damage and of allowing the road system to operate more efficiently. The pricing mechanisms envisaged in the long term would seek to charge vehicles according to both the distance travelled and the extent of the environmental damage different types of vehicle cause. In the shorter term, other measures, include increasing the tax burden on cars and fuel (yielding revenues which could be used for subsidising public transportation operations and investment), providing park-and-ride schemes, charging increased premiums for parking in inner-city areas, and allowing only residential parking in suburban areas.

## REGULATIONS

In recent months policy-making in the EU has moved strongly in favour of public transport. The impact of excessive reliance on the private car in terms of environmental damage and congestion had already been recognised in the 1992 White Paper on the Future Development of the Common Transport Policy. At the end of 1995, the Commission came two Green Papers, on the Citizens' Network and on Fair and Efficient Pricing, with potentially profound implications for public transport.

The first sets out an inventory of initiatives which emphasise the need to increase the quality of public transport, including measures to increase and facilitate interchange between modalities identifies the physical conditions in which public transport can operate more effectively, i.e. through greater use of reserved bus lanes and other priorities for public transport, together with the use of push measures to discourage the use of cars.

Most of the measures will depend upon national governments and the local authorities responsible for providing public transport and the Green Paper also sets out a range of measures which include encouraging the exchange of know-how, improvements in the regulatory framework, realignment of research priorities towards the requirements of the user, the setting of European standards and voluntary targets for the services.

The second Green Paper examines how pricing mechanisms could be used to reduce congestion and environmental degradation in urban areas. It recommends the application of the principle of "the polluter pays" and advocates the use of "congestion charging" in order to reduce traffic jams.

This road pricing would both reduce congestion and permit fares to be increased to cover a larger share of costs, as well as providing a large source of direct income which could be reinvested in public transport. Increasing taxes on motor fuel, coupled with the allocation of some of the proceeds (as in Germany) to funding public transport, could also achieve some of the benefits of road pricing.

By increasing the relative costs per passenger kilometre, for travel by modes using the most road space, greater use of public transport would be encouraged and in a situation where increasing road capacity is often almost impossible, increasing the capacity of public transport provides a good method of meeting future transport demands.

However, though such measures would benefit almost all urban road users in the long term, they are likely to meet strong political resistance and would only be practicable and acceptable, if public transport services are improved through the reinvestment of revenues.

There are a number of other areas in which EC can impact on public transport - social policy, regional policy, competition policy, harmonisation. To be more effective, actions in these areas should be consistent with the goals established in both Green Papers - that of encouraging a shift in demand from the private car to public transport.

*The development of Trans-European rail and air Networks.* For these networks to be efficient, inter-modal transfer hubs should be sited at locations offering excellent access to local public transport systems. Indeed, it will also increase the capacity of the local transport system to meet the additional demands placed on it and to ensure that it offers a sufficiently attractive alternative to making the journey by car throughout.

*Regional policy:* Regional development grants that foster patterns of land use, through the creation of out-of-town shopping centres and industrial estates, encourage the use of the private car. In allocating funds to transport improvements, priority should be given to promoting public transport alternatives.

*Social policy:* As a labour-intensive industry, public transport is particularly affected by any measures which increase the costs of employment and close attention should be paid to the impact of any new legislation on working hours in transport, disabled access, etc.

*Standardisation:* While standardisation can result in reduced costs through mass-production and greater competition, it could also reduce flexibility and impair service. European operators have to respond to a great range of markets and of physical conditions. In short distance operations frequency is of the essence, and higher standards which increase the purchase price or operating cost of vehicles could necessitate a reduced fleet and lower frequency. Areas of particular concern are the bus construction directive (in preparation) and the development of standards for rail interoperability.

*Regulatory framework:* The Citizens' Network Green Paper advocates a review of the regulatory framework for public transport operations. Competition is not viewed as an objective in its own right, and the paper fully recognises the counter-productive effect which open-ended "on the road" competition is likely to have on public transport operations (witness the effect of deregulation in the UK). A thorough review of all the existing forms of arrangement and their consequences for the attractiveness of service needs to be completed before any legislative proposals are brought forward in this area.

The Commission is currently preparing a White Paper on the organisation of the (main-line) rail industry. The impact which such measures can have on urban rail services has been illustrated in the UK, where the separation of rail infrastructure and operations has been accompanied by large increases in the fees charged (typically double) to local authorities for operating rail services, coupled with more cumbersome operational structures.

*Taxation:* The long-discussed initiative to introduce some form of Ecotax or CO<sub>2</sub> tax has met with opposition from some Member States. While such taxes would, on balance, favour public transport, there impact is likely to be small compared with congestion pricing.

The intention to make all local public transport subject to VAT, could mean increases in fares resulting in a further loss of traffic to the private car. This effect would be exacerbated if the subsidies public transport operators receive from local authorities or national governments were also treated as revenue and became subject to VAT.

## OUTLOOK

Despite improvements in the private car to reduce pollution and to increase road capacity, the car will continue to pose mounting problems for society: the delays and waste caused by congestion, the increasing social exclusion of those without access to a car, the pollution of urban areas, increasing sub-urban sprawl, while city centres decline.

However, there is growing support for the environment, against new road building. Indeed, much new urban road construction has become costly and politically difficult. This is coupled with a growing recognition among the public and planners that improved public transport is essential if cities are to become habitable again.

The two Green Papers hold out the promise of a major change in the legislative and political climate in favour of public transport. However, if this is to be realised, radical and politically difficult changes in priorities will be needed at Member State and local level. In particular means must be found of funding the public transport improvements to make public transport attractive to the individual traveller to choose in preference to the private car.

Taxes on fuel or road pricing provide a logical source for such funding as well as greater participation from urban employers or property owners, who derive benefit from greater public transport. Many of the benefits of road pricing can also be achieved simply by controlling and increasing the price of parking in urban areas.

Meanwhile, major steps are being taken to improve the management of public transport, in particular through the rapidly spreading practice of tendering bus services, which can result in savings exceeding 20%. This will complement the impact of new investment: radical improvements in information and simplified systems of payment; an increasing number of cities employing new light rail and metro systems; the upgrade of existing systems with faster and more comfortable rolling stock and modernised stations. Particularly important is the increased integration between public transport systems and other modes of transport e.g. park and ride and new links to airports.

Essentially, as Europe seeks to revive its city centres and urban life, this can only be achieved through greater use of public transport. The techniques exist to provide ease of mobility in cities with a greatly reduced impact on the environment. It will depend on sufficient political will as to whether the right turning will be taken.

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# Road passenger transport

NACE (Revision 1) 60.21, 60.23

*The road passenger transport sector is composed of regular and occasional bus services. This monograph focuses on inter-city services whereas urban bus services are covered in the monograph on public transport. The private car remains the most important competitor for this mode for short and medium distances, followed by rail and air for medium to long distances. In the future, though, policies aimed at a more efficient, safe and environmentally friendly transport system will help in balancing transport demand and supply, both across modes and within. A major implication for the road passenger transport sector is a more appropriate pricing system, better reflecting the full social cost of transport although these can not be quantified in a precise, scientifically undisputed manner. The promotion of collectively transport is very important in enhancing an environmentally friendly transport system. New liberalisation measures have been implemented, and as a consequence, companies are continuing to invest in upgrading equipment in order to attract new business and maintain existing business.*

## INDUSTRY PROFILE

### Description of the sector

In general, road passenger transport refers to bus and coach services provided both within urban areas and between cities. However, both the original NACE categorisation and the NACE Rev.1 categorisation do not cover this sector satisfactorily (in the NACE Rev. 1 system, NACE 60.21 includes all regular road transport, both inter-city and urban, and also tramway services; and NACE 60.23 includes non-scheduled passenger transport). Hence the present monograph will be, as much as possible, restricted to inter-city bus and coach services.

Inter-city bus and coach services are regular and occasional services. Following the EC classification, the sector may be broken down into the three following segments:

- regular services whereby passengers are picked up and set down at specified intervals and at predetermined stopping points,
- shuttle services whereby groups of passengers assembled in advance are carried from a single area of departure to a single area of destination and are carried back to the place of departure,
- occasional services, which cover all the services which are neither regular nor shuttle services.

Regular services also include special services such as the carriage of workers between home and work place, school transport etc. Occasional services essentially fulfil tourist needs whereas shuttle services constitute an intermediate category depending on whether accommodation is included or not. Shuttle services with accommodation are essentially tourism services and therefore close to occasional services whereas shuttle services without accommodation are closer to regular services.

The analysis of recent trends in traffic is based on ECMT data and therefore covers both urban and inter-city bus and coach services.

## Recent trends

Even if transport is a growing activity, and transport by road accounts for about 70% of all EC transport activity, bus and coach services (including urban services) over the 1985/1993 period showed a growth in passenger/km of only 0.78%, compared to about 1% growth for rail and 4.5% for private cars. Therefore the bulk of the increase of total passengers transport, over the 1985/1993 period (about 3.4%), is due to private cars.

During the second half of the 1980s the development of bus and coach transport differed significantly between Member States. Portugal, Belgium, Italy and Spain have all reported growth rates exceeding 2.5% for the 1985/1993 period. Substantial growth rates of 5% for Belgium and 4% for both Portugal and Spain in the 1992/1993 period seem to be related to corresponding equivalent declines in rail transport, pointing to competition among the two modes of transport. Over the 1985/1993 period, growth trends were much less positive in countries such as Denmark and France which reported quasi-stagnation in traffic (less than 1% average annual growth).

Comparing traffic levels across countries, Italy remains unquestionably the European leader with 81.5 billion passenger/km in 1993, more than 15% higher than Germany and about twice as high as the United Kingdom and France. Traffic levels between countries reflects differences in population size, socio-economic factors and development of national policies towards private cars.

According to ECMT estimations, growth in passenger transport for the bus and coach sector in the 1994/1995 period will be particularly relevant for countries of Central and Eastern Europe, expected to reach about 50% of the passenger traffic level of the EU Member States.

## International comparison

The number of buses and coaches per 1 million inhabitants in 1993 was higher in Denmark, the UK and the USA; for Denmark one reason being the unfavourable tax treatment for private cars. However, the EU average of 1% is lower than Japan (2%) and the USA (3%), pointing to the possibility of improvements in terms of efficiency and coverage.

Estimates of the stock of motor coaches, buses and trolley buses show a general slowdown in growth for the EU, USA and Japan, particularly relevant for the EU (-17.5%) in the 1992/1993 period, with further declines into 1995. Over the period 1985/1993, EU stock decreased by 0.4%, whereas USA and Japan growth rates were 1.2% and 0.8% respectively. One important reason in Japan for these negative tendencies is the increasing competition from high speed rail services between major cities. In the USA, on the other hand, due to deregulation and intense price competition, people tend to favour air transport.

## MARKET FORCES

### Demand

In general, the transport industry enjoyed a period of constant growth in demand. But factors contributing to this growth, such as the rising share of the service industry, changes in the structure of manufacturing industry, the increase in net disposable income, and the absence in some countries of adequate alternative public transport, are boosting demand for flexible transport and leisure-time travelling. This has meant that growth in passenger road use has been largely in private cars rather than in other modes. Substantial excise duties on fuel prices have barely influenced car ownership and car use as the user perceives the additional incremental cost as negligible compared to the improvement in mobile efficiency.

The importance of private cars is unquestionable among transport modes, but recent measures aimed at a more efficient

**Table 1: Road passenger transport**  
**Passenger transport by buses and coaches**

(billion passenger-km:s)	1975	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België (1)	9.6	9.1	9.5	10.0	10.2	10.5	5.0	4.6	4.5	5.1	5.3
Danmark	5.7	7.3	9.1	9.2	9.2	9.2	9.3	9.2	9.2	9.2	9.5
Deutschland (2)	58.7	65.6	53.1	53.0	53.2	53.0	56.6	69.6	69.9	70.2	67.5
Ellada	4.8	5.8	5.0	4.8	5.1	5.1	5.1	5.1	5.2	5.2	N/A
España	26.9	28.1	33.5	35.2	37.5	37.5	33.4	35.4	35.5	37.1	38.1
France	28.9	38.0	39.4	42.0	41.8	40.3	41.3	42.9	41.8	42.0	42.6
Ireland	N/A	3.0	2.6	2.5	2.4	2.7	2.6	2.4	2.8	N/A	N/A
Italia	42.3	57.8	70.8	72.7	74.4	79.8	84.0	85.4	84.6	81.5	N/A
Luxembourg	N/A	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	N/A	N/A
Nederland	11.8	13.2	12.9	12.8	12.8	12.8	13.1	13.6	13.5	13.7	13.9
Österreich	N/A	12.4	12.7	12.8	12.9	13.3	13.6	13.7	13.7	N/A	N/A
Portugal	5.2	7.6	9.7	9.8	10.0	10.1	10.3	10.7	11.4	11.8	12.6
Suomi/Finland	N/A	8.5	8.6	8.6	8.6	8.5	8.5	8.1	8.0	8.0	8.0
Sverige	N/A	7.3	9.0	9.0	9.0	9.0	9.0	9.3	9.3	9.3	N/A
United Kingdom	55.0	52.0	48.0	48.0	48.0	48.0	46.0	44.0	43.0	43.0	43.0
EUR 15	N/A	316.1	324.3	330.8	335.6	340.2	338.2	354.4	352.9	N/A	N/A
Japan (2)	110.1	110.4	101.6	102.9	107.2	109.1	110.4	108.2	106.6	N/A	N/A

(1) Break in series from 1990 onwards.

(2) German data includes former East Germany (from 1991 onwards).

Source: ECMT

transport system may shift preferences towards other modes of transport, thus reducing competitive pressure on bus and coaches.

A significant proportion of the sector is coach services for tourism. Tourist coach services in combination with accommodation arrangements (inclusive tours) are popular among lower and medium income households and among senior citizens. Operators, however, are trying to attract other market segments by offering high quality services on long-haul routes. This aspect of public road transport is important for the tourist industry as it provides a convenient and predictable leisure schedule that is extremely cost efficient.

### Supply and competition

Unlike urban buses, inter-city buses and coaches usually have seats for all the anticipated passengers and therefore carry a smaller number of passengers than similar size urban buses. The long distance services typically use luxury coaches with a high level of interior furnishing and amenities.

The cost of entry of new operators into bus and coach services (typically the purchase of equipment and insurance) has historically been low, but due to regulatory hangovers, the number of new entrants is still limited in some EU countries. Also, entry of new operators is subject to EU directives on access to the profession (condition of financial standing, good reputation and professional competence). For non-regular services competition between firms is muted as they provide similar services and there are a low number of competitors for particular holiday schedules. The major competition comes from other modes of transport, namely private cars, rail and air.

Over longer distances, competition from domestic rail networks and the introduction (and extension) of high-speed trains in some Member States threatens road transporters. However, the experience of the TGV in France over the last ten years indicates that high-speed trains slightly stimulate overall demand for transport services and have mainly tended to take market share from regional air services.

In terms of passenger safety, buses and coaches have significantly less passengers and drivers killed or seriously injured (KSI) per passenger-kilometre compared to cars. On average, it works out at about 1 to 18. Nonetheless there are still demands to improve safety for coaches, including such meas-

ures as compulsory wearing of seat-belts and in some Member States improvements in the road worthiness of the vehicles.

The Commission therefore has adopted amendments to three directives which will introduce requirements for 3-point belts in all minibus seats and 2-point belts, together with energy-absorbing seats, for coaches.

### INDUSTRY STRUCTURE

The regular services sub-sector varies considerably between Member States. In general the sector is fragmented with a large number of operators with fleets of varying size and although some very large operators exist, the majority of enterprises are small. In the occasional services sub-sector, differences between Member States are significant, with some Member States having a dominant carrier. Medium and large sized operators tend to work more in the international market, in contrast to smaller companies, which operate in national and regional markets.

Amongst the larger operators in the EU markets are National Express in the UK, De Jong Inratours and Beuk in the Netherlands, ALSA and Iberbus in Spain, GTI in France and Deutsche Touring (subsidiary of the German railways) in Germany. Most of these companies also offer regular services. Also, for international European coach operations some 40 operators of international regular services are members of Eurolines. This consortium allows co-operation and efficiency in arranging and pooling service schedules as well as sharing the costs of marketing. Another such organisation is Europabus, which operates in Germany.

The greater part of investments made by enterprises is for replacement of vehicles. In the longer distance market particularly, intensifying competition and increasing customer expectations of quality standards is forcing enterprises to operate with high-quality buses and coaches with a broad variety of modern features (e.g. air conditioning, air pressure suspension systems, video facilities, catering etc.).

### ENVIRONMENT

A comparison on a vehicle to vehicle basis between coaches and private cars shows that a bus produces more NO<sub>x</sub>, HC, CO<sub>2</sub>, SO<sub>2</sub> and particulates than the average petrol-engined

**Table 2: Road passenger transport  
Stock of motor coaches, buses and trolley buses**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	19 560	16 817	16 449	16 095	15 811	15 831	15 644	15 378	14 930	14 794	14 880
Danmark	7 351	8 010	8 105	8 110	8 093	8 031	8 109	9 989	11 261	12 978	13 564
Deutschland	70 458	69 388	69 345	70 214	70 183	70 181	70 370	69 590	82 573	88 433	88 460
Ellada	18 011	18 237	18 485	18 748	19 173	20 653	21 430	22 080	22 674	23 206	23 968
España	42 631	41 593	41 874	43 002	43 991	45 168	45 767	46 604	47 180	47 028	47 046
France (1)	65 000	71 000	72 000	71 000	72 000	72 000	75 000	77 000	76 000	78 000	79 000
Ireland	2 722	3 295	3 422	3 521	3 701	3 834	4 047	4 388	4 557	5 706	5 975
Italia	58 149	76 296	77 891	74 114	75 820	76 313	77 731	77 700	78 179	N/A	N/A
Luxembourg	647	695	693	717	705	734	760	777	814	850	846
Nederland	11 200	11 550	11 530	11 480	11 700(1)	12 000	12 113	12 427	12 341	12 232	12 000
Österreich	8 980	9 183	9 209	9 267	9 274	9 405	9 402	9 269	9 375	9 483	9 598
Portugal	8 489	10 439	10 631	10 827	11 031	11 572	12 099	12 348	12 961	13 671	14 353
Suomi/Finland	8 963	9 017	9 166	9 233	9 229	9 306	9 327	8 968	8 665	8 255	8 054
Sverige	12 796	13 664	13 779	13 846	14 106	14 530	14 595	14 555	14 252	14 127	14 293
United Kingdom (2)	110 000	148 000	149 000	150 000	155 000	156 000	157 000	154 000	158 533	157 695	158 360
EUR 15 (3)	304 218	475 320	479 425	478 828	489 109	513 558	533 394	535 073	554 295	457 546	413 408
USA	528 801	593 527	593 728	602 055	612 611	625 040	626 987	631 279	644 732	654 432	N/A
Japan	230 905	231 228	232 516	234 137	238 021	241 842	245 668	248 258	248 624	247 794	245 387

(1) Estimate

(2) Estimates until 1991.

(3) For available data only.

Source: Eurostat: Transport Yearbook; IRF: World Road Statistics

car. However, in terms of emissions and energy consumption per passenger and per passenger kilometre the bus is considered among the most environmentally friendly transport modes. According to the Commission's Green Paper on the Impact of Transport on the Environment, during a non-urban utilisation a bus requires on average 13 passengers to one passenger in a petrol-engined car to equate NO<sub>x</sub> emission, 2 passengers to equate HC emission and 7 passengers to equate CO<sub>2</sub> emission. Buses and coaches (both urban and non-urban) are estimated to contribute only 1.6% of the total EU CO<sub>2</sub> emissions, compared to 55.4% for private cars. This small contribution partly mirrors the low share of buses and coaches in total passenger transport but also the superiority of buses and coaches in terms of energy consumption per passenger. When comparing a standard inter-city train with a standard bus at similar occupancy rates, bus and rail services post similar primary energy consumption per passenger kilometre. Both modes consume substantially less primary energy than cars (diesel or petrol) and aeroplanes at similar occupancy rates.

## REGULATIONS

EU legislation has established three types of international bus services: occasional, shuttle and regular services. As far as national bus transport is concerned, the categories of service vary from country to country, and within certain Member States there is no shuttle services category.

International regular services are subject to similar rules as those which apply to national services (timetables, set routes and prices). As for non-regular services, the EU Council of Transport Ministers in 1992 adopted a regulation on the freedom to provide intra-EU international services for road transport by coach and bus. Under this regulation, an authorisation is no longer required for most occasional services and for shuttle services if accommodation is included (inclusive tours). For regular services and shuttle services without accommodation, however, authorisation is still required.

The legal framework concerning intra-community bus transport is established by Regulation 684/92 containing provisions on regular, shuttle, occasional and own-account transport. Freedom to provide services affects regular and non-regular services. In 1992 the EU Council adopted a regulation on

the conditions under which non-resident carriers may operate national road passenger transport within a Member State. Since January 1 1993, freedom of cabotage allows operators to provide certain non-regular services under the same conditions as resident carriers. This was extended to other non-regular services, which were liberalised in January 1996.

The degree of regulation of bus and coach services varies greatly between Member States. Certain Member States, such as the United Kingdom, have a very liberal system, where basically only qualitative controls govern the operation of a service (Transport Act). The Netherlands also have a relatively free system (Passenger Transport Law) for non-regular operations but regular bus services remain strictly regulated. In Spain, the 1987 LOTT legislation prescribes very detailed provisions governing all road passenger transport.

Furthermore, a Directive (on the admission to the occupation of road passenger transport operators in national and international transport operations) came into force on 1 January 1990, strengthening the existing provisions for becoming a passenger transport operator. In particular, it specifies precise minimum financial requirements to ensure the viability of existing and potential operators and it makes the passing of a written examination compulsory for new entrants.

The White Paper produced by the Commission at the end of 1992 on The Future Development of the Common Transport Policy (COM 92/494) has started the ball rolling in terms of a global approach to viewing all modes of transport simultaneously and hence providing a frame work for policy that integrates all modes. One result the White Paper may provide in the long run is to favour public road transport; however, the approach will be cautious so as to minimise the effects of sudden changes in policy and hence mobility.

In general, the road and passenger transport sector will be impacted by the development of policies to ensure that the transport services can take full advantage from the single market's provisions of a transport systems providing services efficiently, safely and in the respect of the environment.

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## OUTLOOK

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Growth in inter-city bus traffic will be lower than overall mobility, mainly because of competition from the private car transport mode; in general investment in high-speed trains is not expected to threaten the road passenger transport in the short term. Initiatives from national and local authorities to discourage private car traffic in order to reduce road congestion and air pollution by cars, are not likely to have significant consequences for the ownership and use of private cars in the short term due to the proved users' tolerance for mechanisms involving increase taxes and fuel excise. In this context improvements in the direction of a better pricing and payment technologies, a frequent, reliable and more effective linking between point of departure to metro or bus stop, to final destination represents a future challenge for the industry.

The opening up of Eastern Europe has and will further expand tourist destinations for coaches.

Written by: DRI Europe

# Road freight transport

## NACE (Revision 1) 60.25

Accounting for approximately 75% of inland transport, road freight is by far the most dominant sector in the movement of cargo within the Union. Even though, the sector has experienced a lengthy recession since 1990, the flow of traffic is further developing. Due to the completion of the Single Market, trade between Member States has increased the level of intra-EU road traffic. In addition, due to the deregulation of international transport and the progressive introduction of cabotage, competition in the road freight transport will continue to strengthen. However, in the coming years, growth in road freight will be hindered to some extent by increasing congestion and a lack of investment in road infrastructure. Public officials are viewing road freight transport more and more in terms of the global impact each mode has on the environment. Other factors which need to be taken into account such as, environmental and other social costs, which they are seeking to internalise within the industry.

### INDUSTRY PROFILE

#### Description of the sector

This sector is described by NACE (Rev. 1) 60.25 - freight transport by road. Under the NACE 1970 classification, the sector was described by group 723 - road haulage. The goods transport sector includes units exclusively or primarily engaged in the transportation of goods by road - as a regular schedule as well as those operating as demand requires - by trucks and vans or similar vehicles e.g. trailers, semi-trailers, road tankers, removal vans, articulated lorries and truck-trailer combinations.

#### Recent trends

After the buoyant second half of the 1980's, during which growth in the tonnage of total road freight traffic averaged 3.5% in the EU, the sector entered into more difficult times in the beginning of 1990's. In 1990-1991 total freight traffic declined by about 2% annually. 1992 saw strong recovery with 5% growth due to the 22% surge in the German domestic traffic, which was a more a matter of statistics methods than corresponding to a real increase. Therefore, if Germany was to be excluded, there would of been a decline of 2.5% in traffic in EU as a whole.

On the other hand, in 1990-1992 intra-EU trade increased by an average of 3%, and extra-EU trade increased by an average of 1%. Thanks to the development of intra-EU trade, international road freight traffic grew faster than the domestic traffic during the 1980's and the early 1990's.

Turning to the performance of individual countries in 1993, most of the Member States reported a drop in total goods transport with particularly dramatic results in the case of Portugal (-34%), Spain (-16%) and France (-8%). One of the few countries which experienced an increase was the United Kingdom.

The National traffic (based on tonne-km) from 1992-1993 increased by 0.4% in Germany and by 0.1% in the United Kingdom, with decreases showing in Spain, France, Netherlands, and Portugal.

### MARKET FORCES

#### Demand

Road freight generally offers an efficient and facile method of transporting and distributing goods to wholesalers, retailers and consumers. The level of economic activity is a major component in the demand for road freight, and there is strong correlation between growth in economic development and growth in the demand for road freight, both internationally and domestically. Road freight's largest customer sectors are machinery and other manufactured goods, manufactured minerals and building materials, and food and beverage products.

The demand for the tonnage transported is expected to decrease due to lighter and the average distance of transport is expected to increase due to the exploitation of scale economies in production and geographical differences in production costs. Based on market studies and actual experience, there seems to be a shift towards higher quality, smaller shipment sizes, greater frequency, larger geographical coverage, increased number of service add-ons, and in many cases shorter lead times and greater flexibility.

The Single Market has proved beneficial for demand for international road freight transport. The removal of trade barriers has increased the proportion of EU production involved in intra-EU trade. The deregulation of international transport is therefore intensifying the competition between European road transport companies, an effect which is amplified by the progressive deregulation of national road transport in many Member States.

A major extra-EU market for road goods transport services is East and Central Europe. However, East European countries

**Table 1: Road freight transport**  
**Total goods transport (1)**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	386 336	335 584	328 108	336 055	375 670	378 271	372 099	396 534	386 927	N/A
Danmark	197 181	211 365	222 367	217 705	232 267	228 829	208 472	193 301	205 342	N/A
Deutschland	2 596 194	2 310 480	2 428 098	2 436 012	2 585 670	2 729 075	2 860 817	3 376 792	3 656 330	3 621 761
Ellada	N/A	159 936	152 836	157 858	142 689	205 799	180 183	189 036	161 267	N/A
España	N/A	N/A	929 402	1 100 747	1 129 730	1 231 594	998 782	713 539	702 966	588 742
France	1 457 060	1 267 345	1 296 774	1 354 695	1 538 018	1 530 162	1 516 653	1 502 860	1 435 240	1 308 884
Ireland	N/A	91 345	95 126	87 570	82 333	83 257	81 285	80 169	83 894	N/A
Italia	N/A	N/A	346 030	N/A	N/A	912 556	937 291	949 606	970 545	N/A
Luxembourg	19 114	17 299	19 623	N/A						
Nederland	404 532	411 495	435 612	440 678	485 491	474 411	487 358	486 711	513 368	491 109
Portugal	N/A	N/A	N/A	192 305	212 867	233 170	243 290	275 075	242 602	234 346
United Kingdom	1 434 173	1 416 413	1 432 702	1 495 276	1 705 523	1 759 050	1 705 175	1 566 101	1 523 596	1 590 789

(1) Including national traffic, dispatch to and received from foreign countries.

Source: Eurostat: Carriage of goods

**Table 2: Road freight transport  
Goods transport by type of traffic, 1993 (1)**

(%)	National traffic	Exports (2)	Imports (3)
Deutschland	96.3	1.9	1.8
España	95.2	2.4	2.4
France	93.3	3.5	3.2
Nederland	79.1	11.0	9.9
Portugal	96.5	1.7	1.8
United Kingdom	99.0	0.4	0.6

(1) Based on tonne-kms.

(2) Dispatch to foreign countries.

(3) Received from foreign countries.

Source: Eurostat: Carriage of goods

have been unable to cope with the resulting substantial increase in road traffic. Estimates put the average additional time required to travel a specific distance in East and Central Europe, compared to the equivalent A road in Western Europe, at 20%. However East European countries are not the only ones who are having problems with the flow of traffic. For example, at the recent annual conference of the UK Freight Transport Association (FTA), it was believed that the traffic on the UK's already congested and main roads could increase by up to nearly 40% over the next decade, which is likely to lead to "chronic congestion" of all motorways and trunk roads. Road maintenance, upgrading and the construction of new motorways will be required to ease congestion and to ensure rapid flows of goods and passengers. Implementation of these measures require both considerable investment and time. The TEM (Trans-European Motorway), prepared and carried out under supervision of UN, has the objective of ensuring the construction of an integrated Pan European road system. However, the TEM project is not expected to be realised before the turn of the century.

### Supply and competition

One of the cornerstones of road goods transport's competitive position vis-à-vis rail and inland waterways is that it is able to supply a flexible range of services that moves a wide range of products over a very broad geographic area. For short haul movement of goods, road goods transport has a distinct advantage. It is typically on long haul point-to-point bulk services, where rail can collect from point of initial loading and deliver to point of final discharge, that rail offers its most competitive threat to road goods transport. Though, few

of the origins and destinations of goods movement (terminals) are linked to the rail or water networks. Therefore intermodal transport may remove trucks from long distance routes, but urban collection and delivery are likely to still require road transport.

In addition to the road goods transport industry, there is "own-account", which is a company transporting its own products in its own fleet. In the last few years, companies using own-account transport have tended to down-size their fleets and move to using third party transportation. The observed increase in the share of "hire and reward" compared to "own-account" is in line with a general trend towards the outsourcing of non-core activities in the European industry.

Competition in the supply of transport services is usually based on quality, costs, and information technology. The trend towards keeping costs down and having smaller shipment sizes with higher frequencies requires the consolidation of shipments. Consolidation without loss of speed and quality in delivery, compared to unconsolidated dedicated distribution, requires sophisticated EDI (Electronic Data Interchange) communication among all parties along the logistics chain. In addition, a radical advancement in hub automation, with automatic loading/unloading, sorting, storage, retrieval, picking and packing, should help to maintain or improve quality.

Liberalisation is another important area of transport policy which will continue to affect the supply side in several ways. First, the trade between Member States, and thus intra-EU road traffic, will continue to increase. Second, the deregulation of international transport and the progressive introduction of cabotage will continue to strengthen competition between hauliers from different countries, pushing freight rates downwards. This in turn will benefit the industry as more cargo will be diverted to road.

A comparison of market shares confirms the strong competitive position which the Netherlands hold in intra-EU road freight, in relative as well as in absolute terms. Belgium also is well placed on the intra-EU market. The intra-EU market shares of Germany and France are also high, but compared to their national traffic their contribution to intra-EU traffic is of minor importance. Spain is the only other country where intra-EU traffic is significant to the sector.

### Production process

The production process is relatively straightforward. Cargo is collected on mass, at point of origin, or it is consolidated by a transport firm. The consolidation may involve collecting small parcels of freight from many different locations using the journey. Delivery of a large single cargo is to the point

**Table 3: Road freight transport  
National goods transport**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	310 711	265 383	257 556	259 480	287 611	287 078	276 870	298 589	288 514	N/A
Danmark	187 584	199 932	210 484	205 679	220 030	215 949	194 452	178 538	190 117	174 596
Deutschland	2 489 566	2 213 709	2 324 081	2 327 222	2 464 162	2 594 829	2 715 148	2 868 215	3 491 852	3 486 368
Ellada	N/A	158 372	151 474	156 432	140 906	203 918	176 596	187 379	158 314	211 666
España	N/A	N/A	913 335	1 082 831	1 108 849	1 207 972	973 708	685 855	673 318	560 326
France	1 384 000	1 197 941	1 220 323	1 273 202	1 442 648	1 419 899	1 404 051	1 394 915	1 322 708	1 221 420
Ireland	N/A	89 731	93 116	85 407	80 130	80 801	78 955	77 998	81 700	N/A
Italia	N/A	N/A	327 555	N/A	N/A	866 619	889 065	900 034	921 563	913 819
Luxembourg	17 016	11 126	13 422	N/A	N/A	N/A	N/A	N/A	N/A	26 849
Nederland	357 611	338 660	358 627	358 822	394 190	378 049	386 940	379 212	401 351	388 225
Portugal	N/A	N/A	N/A	190 554	209 305	228 015	237 946	267 450	235 178	226 115
United Kingdom	1 418 000	1 407 000	1 421 787	1 480 893	1 691 256	1 743 260	1 687 000	1 547 373	1 505 274	1 574 708

Source: Eurostat: Carriage of goods



**Table 4: Road freight transport  
Dispatch of goods to foreign countries**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	N/A	38 402	38 584	42 995	50 395	51 564	55 287	56 370	55 798	N/A
Danmark	5 340	5 789	5 852	5 866	6 038	6 564	7 420	7 791	7 910	N/A
Deutschland	52 245	48 625	53 073	56 134	61 885	68 493	73 644	78 747	80 753	69 894
Ellada	1 078	774	735	756	853	890	958	856	1 487	1 077
España	N/A	N/A	8 858	10 284	10 981	11 720	12 195	13 165	13 856	14 350
France	37 100	35 068	37 229	37 870	45 100	53 036	52 140	51 468	55 312	45 848
Ireland	N/A	642	943	993	980	1 147	1 119	975	1 091	N/A
Italia	N/A	7 750	8 392	9 162	11 060	22 821	25 093	25 302	24 910	N/A
Luxembourg	N/A	3 351	3 563	N/A	N/A	N/A	N/A	N/A	3 061	N/A
Nederland	N/A	35 821	37 937	40 297	44 983	48 631	51 496	55 054	57 863	54 121
Portugal	N/A	N/A	1 112	643	1 755	2 314	2 557	4 017	3 779	3 912
United Kingdom	7 115	3 903	4 513	6 076	6 111	6 934	7 979	8 511	8 060	7 115

Source: Eurostat: Carriage of goods

of destination, where it may be used in its entirety or broken down into smaller parcels for onward delivery. A consolidated cargo is delivered to a point where it can be distributed or it is distributed on by the vehicle used for the major journey leg.

## INDUSTRY STRUCTURE

### Companies

The road freight market is spread out both geographically and by industrial user. It is fragmented by a large number of small transport companies. However, the number of road transport firms is gradually declining in some EU countries, indicating a tendency towards more co-operation between companies and greater concentration in the sector. However, the barriers to entry in road freight are minimal due to low initial capital requirement and also minimal product differentiation; hence, liberalisation is expected to foster further entry into the market and substantial concentration is therefore, unlikely. To some extent the industry will evolve towards a two tier structure with a large number of small companies providing simple transport services while a limited number of larger operators provide more sophisticated logistics services.

There is a degree of inter-relation between country size and the number of companies. The main exception are Spain and Italy, which have an unusually high number of enterprises.

Traditionally, Member States have had different market access rules for long distance and short distance goods transport respectively, however, as harmonisation progresses this will be less apparent.

### Strategies

Investment in expanding road infrastructure has not matched the development in road use. The growth in the number of cars, trucks, and vans has exceeded the capabilities of some road networks. This, in turn, is causing serious problems for road maintenance, congestion, and technical and operational logistics. Article 129 of the Union Treaty offers a new basis for the development of infrastructure policy. In October 1993 the Council of Ministers, in line with Article 129 of the Union Treaty, adopted a trans-European road network (TERN) as the official road network of the Union. There are three main strategies which underlie the TERN:

- The development of an inter-connected network;
- The inter-operability of the network;
- Traffic management on the network.

Of the TERN's 58 000 km, 43 000 km are existing roads that will be upgraded while 15 000 km comprise of new links to be built by 2004. However, the TERN looks somewhat pale when compared to the trans-European rail network which covers 70 000 km and the EU Commission recognises that

**Table 5: Road freight transport  
Goods received from foreign countries**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	N/A	31 799	31 968	33 580	37 664	39 629	39 942	41 575	42 615	N/A
Danmark	4 257	5 644	6 031	6 160	6 199	6 316	6 600	6 972	7 315	N/A
Deutschland	54 383	48 146	50 944	52 656	59 623	65 753	72 025	79 371	83 725	65 499
Ellada	674	790	627	670	930	991	2 629	801	1 466	N/A
España	N/A	N/A	7 209	7 632	9 900	11 902	12 879	14 519	15 792	14 066
France	35 960	34 336	39 222	43 623	50 270	57 227	60 462	56 477	57 220	41 616
Ireland	N/A	972	1 067	1 170	1 223	1 309	1 211	1 196	1 103	N/A
Italia	N/A	8 660	10 083	10 627	12 523	23 116	23 133	24 270	24 072	22 242
Luxembourg	N/A	2 822	2 638	1 378	2 143	2 200	2 228	2 427	3 049	N/A
Nederland	N/A	37 014	39 048	41 559	46 318	47 731	48 922	52 445	54 154	48 763
Portugal	N/A	N/A	1 455	1 108	1 807	2 841	2 787	3 608	3 645	4 319
United Kingdom	9 058	5 510	6 402	8 307	8 156	8 856	10 196	10 217	10 262	8 966

Source: Eurostat: Carriage of goods

**Table 6: Road freight transport  
International goods transport by traffic relations (1) (2)**

(million tonnes)	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992
From EU to EU	144.8	160.2	166.1	189.1	202.5	228.0	256.1	270.8	280.9	289.8
From EU to non-EU	9.5	12.6	13.4	11.7	12.2	15.0	20.5	21.3	23.5	23.9
From non-EU to EU	6.5	9.7	8.9	7.6	7.6	9.0	11.8	12.2	12.9	14.5

(1) 1982-1985 excluding Spain and Portugal.

(2) 1987-1992 excluding Luxembourg.

Source: Eurostat: Carriage of goods

environmental considerations set constraints to the possible extensions of the road network.

Competition from rail may increase even further due to additional investments in the railway transport. Particularly, investment in the improvement of the overall quality of railroad transport.

### Impact of the Single Market

Under a 1992 Council Regulation No.881/92, quota restrictions for international traffic between member States and transit traffic to and from non-Member States were abolished with effect from 1 January 1993 for Union operators. Several Member States have reacted to the prospect of increased competitive pressure, both on the international market and on the domestic market as a result of cabotage, by adopting more liberal policies for their domestic transport market, thereby amplifying the initial effect of the Single Market. By the year 2000, the road goods transport traffic in the European Union will be double the 1975 level. Part of this extra mobility will be due to the Single Market. However, this rise in mobility can also mean an increase in competition as well as an increase in road congestion and air pollution unless efficient trans-European networks are created.

On the demand side, the increased integration of European economies has fostered intra-EU trade and the demand for international road transport services. Only a few barriers remain to be lifted for the completion of the internal market, but existing discrepancies in the enforcement of EU regulations remain a problem.

### ENVIRONMENT

Road goods transport has been under substantial pressure from concerns over the environment. Road traffic is responsible for a large contribution to air pollution. Among the major air pollutants are: Sulphur dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>), Carbon monoxide (CO), Particulates (Aerosols), Lead (Pb) and Carbon dioxide (CO<sub>2</sub>). However, there is great variance in share of transport in total emissions across the Union. As an example, in Greece only 26.9% of total NO<sub>x</sub> emissions is from transport, whereas this share is 52.9% in Portugal and 68.7% in France. Overall, the regulations have reduced the emissions per vehicle-kilometre by some 90% compared to 1970. Concurrently, transport related emissions of carbon monoxide, volatile organic compounds and oxides of nitrogen show a downward trend, while lead emissions from gasoline are gradually being phased out. As an example, NO<sub>x</sub> and VOC emissions are expected to decline by 38% and 54% respectively over the period 1990-2010. However, there will be a continual rise in other air pollutants, especially in Particulates and Carbon Dioxide, due to the growth in motorisation and transport demand.

While, most emissions are produced by private cars, the emission of particulates originate mainly from diesel engines, which are important for freight traffic. The amounts and proportion

of air pollutants that are emitted from an engine depends upon a number of factors, such as, the design and size of the engine, the characteristics of the fuel, and the conditions in which the vehicle is used i.e. how it is driven, its age and quality of maintenance. New EU standards for heavy vehicle emissions, Euro I and Euro II, will reduce emissions of these vehicles by 55-65%, except for CO<sub>2</sub>.

The communication from the Commission in the form of a green paper entitled "Towards Fair and Efficient Pricing in Transport" (COM(95)691), of December 1995, seeks to look at the relationship between prices paid by individual transport users and the costs they cause, both in structure and in level. The Commission has also set up a series of R&D Task Forces and at the same time is reviewing the options on effective allocation of costs, for instance through a proposed tax on energy and carbon. This could be used to stabilise the emissions of the greenhouse gas CO<sub>2</sub> over the coming decade, with emissions 2000 remaining at the level recorded in 1990.

### REGULATIONS

The issue of authorisations, the fixing of tariffs and driving times, the imposing of standards and taxes on motor vehicles, are actions that can affect the supply side of the market, for instance, the number of vehicles on the road. For the most part, professional hauliers operating in the domestic and/or international intra-EU markets must meet certain criteria relating to good repute, professional competence and financial standing. As far as the appropriate financial requirements, there are wide variations between the Member States. For example, the operators in Portugal, must have a registered capital of at least ESC 50 million (ECU 277 290) and also be in possession of ESC 600 000 (ECU 3 335) per vehicle, where as Greece, France, Ireland and the UK require only the minimum of at least ECU 3 000 per vehicle, with other countries falling in between

Another important factor which must be taken into account is that enforcement is regulated at a national level. Since 1985 all vehicles must be equipped with a tachograph for the monitoring of compliance with the social legislation and in November 1988 the Council introduced minimum requirements with respect to such monitoring.

As to cabotage, restricted market access started in July 1990 with the introduction of a limited number of cabotage licences. At the end of 1992, 18 000 such licences, each valid for two months, were in operation. In June 1993, European transport ministers agreed upon an extension of the number of licences to 30 000 beginning of 1994 and an annual 30% increase thereafter. The agreement also includes full freedom of cabotage as of July 1998.

In the past, a major disadvantage in international operations had been the delays caused by border controls. There had been numerous counts where there has been an increase in the haul time as a result of border delays. In total, such physical

**Table 7: Road freight transport  
Stock of goods vehicles (1)**

(units)	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	268 536	319 412	338 785	357 540	386 670	N/A	467 358	487 851	507 943	529 129
Danmark	N/A	516 584	548 803	573 790	591 720	604 334	623 091	643 653	N/A	696 784
Deutschland	1 591 923	1 648 952	1 668 778	1 699 560	1 741 232	1 806 921	1 886 622	3 531 146	3 531 146	4 455 402
									(5)	
Ellada	N/A	618 136	645 770	380 132	N/A	N/A	N/A	N/A	N/A	N/A
España	1 386 329	1 747 744	1 899 075	2 000 468	2 310 237	2 438 541	2 612 520	N/A	N/A	N/A
France	2 664 194	3 221 543	3 342 657	3 468 314	3 599 074	3 732 750	3 856 871	3 850 609	3 791 285	3 779 866
Ireland (2)	N/A	N/A	N/A	118 764	130 020	143 166	148 238	144 798	N/A	N/A
Italia	N/A	N/A	N/A	3 131 959	3 251 295	N/A	N/A	3 245 215	N/A	N/A
Luxembourg (2)	N/A	9 270	9 627	9 951	10 614	11 275	12 078	12 881	N/A	N/A
Nederland (2)	N/A	415 000	437 900	467 800	484 492	506 617	527 146	564 913	N/A	N/A
Österreich (3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Portugal	1 386 329	498 985	544 163	583 534	653 884	710 238	780 998	626 438	542 63	622 078
									(4,5)	(4)
Suomi/Finland	N/A	653 259								
Sverige	N/A	N/A	N/A	N/A	709 246	740 439	780 678	753 922	759 106	769 775
United Kingdom	1 852 000	1 935 000	1 975 000	2 113 000	2 490 000	2 330 000	2 243 000	1 995 000	N/A	N/A

(1) Including goods motor vehicles, trailers and semi-trailers.

(2) Including only goods motor vehicles.

(3) Not including semi-trailers.

(4) Not including trailers.

(5) Break in series.

Source: Eurostat: Transport Yearbook

delays to road hauliers in the EU, used to cost between ECU 415-830 million per annum. However, under a 1991 regulation, a single customs territory was formed, abolishing entirely the need, at internal frontier crossings, for the formalities and controls.

Fiscal harmonisation is another important element of the EU policy towards road transport. In 1993, transport ministers agreed upon a minimum vehicle tax to be introduced in January 1995 and reached an understanding concerning infrastructure charging, by allowing Member States to introduce road tolls or user charges.

Operators from outside the EFTA enter the Union under bilateral agreements with individual Member States. Any third country operator is free to operate to and from a Member State of the Union subject to obtaining an authorisation and meeting weights and dimension and emissions requirements as well as any other previous conditions in a bilateral or multilateral agreements.

Other EU measures that may affect the road transport of goods are associated with the EU policy concerning environment and infrastructure. The communication from the Commission in the form of a white paper entitled "The Future Development of the Common Transport Policy" (COM(92)494), of December 1992 seeks to set out a global approach to transport issues enabling due consideration of all views before the launch of particular initiatives. It recognises the importance of road transport in the global picture, and seeks to balance transport policy in terms of its impact on the environment with sustainable mobility for the Union as a whole. The communication enlarges on the major issues of modal disequilibria, capacity constraints, system and network developments, environmental issues, safety, and social issues.

## OUTLOOK

The liberalisation and harmonisation of the EU transport market, the resumption of positive economic growth and the continuing move towards fast and flexible transport will affect both the volume of total transport and modal choice. Envi-

ronmental regulations, East and Central Europe, are other important aspects.

There will be some general advantages for the road transport operators as a direct result of the Single Market and the removal of the trade barriers. In addition there will be a steady increase in the intra-EU trade, competition, transport volume, and third country transport. Therefore, to remain competitive, the road transport operators are required to offer higher quality, lower costs, work with smaller shipment sizes at greater frequencies, and cover a larger geographical area.

There are two other areas which must not be overlooked, investments in the infrastructure and investments in the information and communication technologies. First, there is still a need for additional investments in the infrastructure, in order to have an efficient expansion in the road goods transport. Second, the changes in transport services are not decided independently. Information and communication technology advances have driven much of the world's technical innovations. The use of new information and communication technologies will act as fillip for the transport companies, as developments in this field will undergo rapid improvements in the coming years.

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# Inland waterways transport

## NACE (Revision 1) 61.2

During the past five years, the EU inland waterways transport industry has been affected by overcapacity problems and structural bottlenecks which have hampered the development of an equilibrium between demand and supply in the sector. Scrapping policies at the Community level have made some progress in improving the situation, in that these measures have been extended and hardened. Together with the present positive trends in demand (inland shipping is considered as one of the most environmentally friendly and cheapest modes of transport), equilibrium between demand and supply will be closer to realisation.

However, support measures guaranteeing the maintenance of this equilibrium in the future are necessary. In this context, the political authorities, by creating a framework within which inland waterway transport, can develop both its existing and its potential traffic flow. In practical terms, such actions could be aimed at the infrastructure, market organisation and the competitive conditions prevailing between different modes of transport.

Moreover, inter-modal price competition should reflect more environmental differences due to the non-internalisation of environmental costs by the most polluting modes such as road. What is more, organisation of the international market is increasingly being based on qualitative rather than quantitative criteria.

### INDUSTRY PROFILE

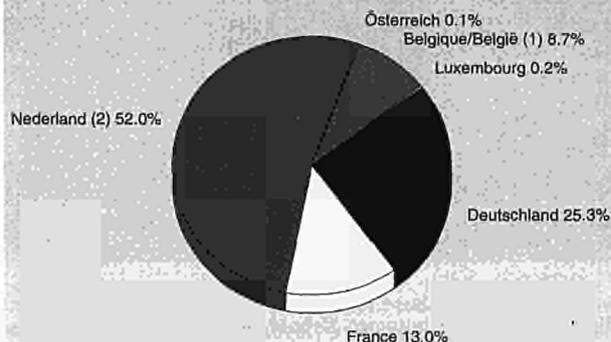
#### Description of the sector

NACE Rev.1 group 61.2 includes units exclusively or primarily engaged in the transportation of passengers and goods on rivers, canals, lakes, lagoons and within river ports. Tugs and push boats operating on inland waterways also belong to this NACE group.

The largest portion of inland waterway transport consists of companies operating ships of various sizes to convey goods throughout Europe on the available inland waterway network. As passenger transportation is limited to a few ferry boats across rivers and boats for river cruises, this part of the sector is very small and will not be considered in this monograph. Most inland shipping operates with unscheduled services, and operations using fixed schedules are very rare.

Inland waterways goods transport is usually divided into liquid or dry cargo, according to the type of goods transported.

Figure 1: Inland Waterways Transport  
Distribution of EU fleet in number of vessels, 1993



(1) Based on 1992 figure.  
(2) Based on 1990 figure.  
Source: Eurostat: Transport Yearbook

Next to companies operating ships as their primary activity (professional transport), there are companies active in manufacturing that operate ships on their own account (own account transport).

The EU inland waterways fleet is dominated by the Netherlands in terms of both number of vessels and carrying capacity. In the first half of the 1990s, Dutch vessels accounted for more than half of ships in the EU, followed by Germany with about one fifth of the total. The same figures are roughly applicable to the two countries in terms of carrying capacity.

#### Recent trends

In the first half of the 1990s, the tonnage transported in the EU has decreased. Thus, over the period 1990 - 1993, it has diminished by 2.8% on average in the EU (excl. Belgium). On a country basis, during that period it has decreased by 4% in the Netherlands, 2% in Luxembourg and Germany, and 0.6% in France. This trend was accentuated between 1992 and 1993. During that period the tonnage transported decreased by 4.7% on average in the EU (excl. Belgium). Moreover, it declined by 8.5% in France, 6.2% in Luxembourg, 5% in Germany and 3.3% in the Netherlands.

Due to the global economic recovery, the amount of tonnage transported has increased in Europe in 1994. However, this recovery has not led to a degree of improvement which would

Table 1: Inland Waterways Transport  
Total goods transport (1)

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	95 758	93 203	94 704	93 812	98 537	97 530	99 438	94 382	88 915	N/A
Deutschland	240 985	222 408	229 493	220 998	233 322	234 774	231 574	229 967	229 924	218 331
France	N/A	64 120	63 118	61 073	64 587	53 111	66 085	70 695	70 900	64 865
Luxembourg	N/A	9 698	9 507	8 817	11 463	11 390	10 847	10 707	10 895	10 223
Niederland	269 269	254 106	270 597	273 103	283 269	291 724	286 147	273 800	261 145	252 529
Total	N/A	643 535	667 419	657 803	691 178	688 529	694 091	679 551	661 779	N/A

(1) Total of national traffic, dispatch to and received from foreign countries and transit.  
Source: Eurostat: Carriage of goods

**Table 2: Inland Waterways Transport  
Total goods transport (1)**

(million tonne-km:s)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	5 853	5 016	5 156	5 055	5 367	5 237	5 389	5 177	5 018	N/A
Deutschland	51 435	48 183	52 186	49 703	52 855	54 041	54 804	55 973	57 239	57 559
France	N/A	8 395	7 765	7 476	7 335	6 088	7 582	8 347	8 631	7 684
Luxembourg	N/A	304	290	270	358	360	336	338	338	323
Nederland	33 479	32 736	34 544	33 877	35 643	36 251	35 662	34 755	33 530	31 894
Total	N/A	94 634	99 941	96 381	101 558	101 977	103 773	104 590	104 756	N/A

(1) Total of national traffic, dispatch to and received from foreign countries and transit.  
Source: Eurostat: Carriage of goods

allow equilibrium between supply and demand to be re-established in the market.

In terms of tonnage transported in 1993, the country with the largest volume was the Netherlands with about 253 million tonnes. Germany ranks second with a total tonnage of about 220 million tonnes (237 million tonnes in 1994). Belgium follows in third place with about 89 million tonnes (in 1992) and France is in fourth position with 65 million tonnes. Tonnage transported in Luxembourg exceeded 10 million tonnes in 1993. In the other EU countries, inland shipping is a marginal activity. In the United Kingdom and Italy, only domestic shipping takes place; in Greece, Portugal, Spain and Denmark, inland shipping is virtually non-existent.

When measuring transport activity of inland shipping in terms of tonne-kilometres in 1993, the ranking changes. Germany takes by far first position (58 million tonne/kilometres) followed by the Netherlands (32 million tonne/kilometres). France ranks third (7.7 million tonne/kilometres) and Belgium fourth (5 million tonne/kilometres). Although the Netherlands has a greater length of navigable waterways in use than Germany, these comprise mostly of canals, whereas Germany has substantial lengths of arterial navigable rivers in use (3 000 kilometres). Also, the majority of inland shipping activity is accounted for by goods transported on the Rhine (622 navigable kilometres in Germany). Nearly 300 million tonnes are transported annually on this main artery of inland transportation for the European continent. Hence, the combination of the traffic density on the Rhine and Germany's greater stretches of arterial waterways provide the higher tonne-kilometre result

for Germany. The river is the most important connection between the large ports in the Le Havre-Hamburg range (e.g. Rotterdam and Antwerp) and the European hinterland.

National differences occur when looking at the distribution of goods transport by type of traffic. In some countries, such as France, domestic transport is overwhelming (about half of inland shipping is composed by national traffic). At the other extreme, about the totality of inland waterways transport in Luxembourg is represented by transit traffic. In the Netherlands, exports dominate inland waterway transport with about 40% of inland shipping, whereas only 20% is represented by imports. In Germany, the situation is reversed, with about 40% of inland shipping due to imports and around 20% is due to exports. In Belgium, imports represent close to 45% of total inland shipping and exports account for 25% (measured in tonnes).

Most of inland waterways transport throughout Europe takes place within the EU. Transport to and from non-EU countries mainly relates to transport links with Switzerland (Rhine) and the East European countries along the Danube and the Elbe rivers.

## MARKET FORCES

### Demand

Inland shipping specialises in the transport of large quantities of bulk products, such as sand, ores, coal, chemicals, and oil. These are clearly divided into dry and liquid bulks. The larger volumes of goods transported are petroleum products

**Table 3: Inland Waterways Transport  
Goods transport by type of traffic, 1993**

	(%)	National traffic	Exports (3)	Imports (4)	Transit
Belgique/België (5)	(1)	21.0	26.7	49.0	3.3
	(2)	28.8	21.5	42.3	7.4
Deutschland	(1)	30.6	20.7	41.4	7.3
	(2)	26.6	19.4	37.9	16.1
France	(1)	40.3	26.3	16.4	17.0
	(2)	45.2	19.0	13.2	22.6
Luxembourg (5)	(1)	0.1	7.4	11.9	80.6
	(2)	0.0	0.9	1.8	97.3
Nederland	(1)	31.4	39.0	18.0	11.5
	(2)	21.0	41.3	20.3	17.3

(1) Based on tonnes.

(2) Based on tonne-kilometers.

(3) Dispatch to foreign countries.

(4) Received from foreign countries.

(5) 1992 data.

Source: Eurostat: Carriage of goods

**Table 4: Inland Waterways Transport  
National goods transport (1)**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	24 766	21 437	20 845	21 988	22 064	20 234	21 134	19 286	18 641	N/A
Deutschland	81 863	63 715	65 063	61 346	62 903	60 861	62 601	69 656	70 412	66 712
France	50 975	30 455	29 747	29 003	29 604	25 613	32 871	32 955	31 286	26 164
Luxembourg	0	0	23	20	20	31	40	55	14	N/A
Nederland	88 725	74 995	82 609	90 174	89 737	88 439	84 032	74 734	66 362	79 374
Total	N/A	190 602	198 287	202 531	204 328	195 178	200 678	196 686	186 715	N/A

(1) Excluding transit

Source: Eurostat: Carriage of goods

(16%), iron ore, iron and steel waste, etc. (13%) and the largest group, crude and manufactured minerals, (33%). In practically all countries, crude and manufactured minerals are the most important cargoes.

Over the years, demand growth in inland shipping had been fairly limited. In other types of transportation, such as road transport, growth rates of demand have been much higher. The major factor underlying this disparity in demand for inland waterway compared to other modes is that demand has been dominated by types of cargoes such as traditional bulk products used as inputs for traditional industries (e.g. refineries, steel industries, chemical plants), where growth rates of industrial activity have been either moderate or declining.

Another factor which has restricted demand for inland waterway transport services over time is undoubtedly the limited possibility of interconnections between national networks. This is mainly due to the limited capacity of some waterways: for example, 60% of the French waterway network is accessible only to vessels of less than 400 tonnes.

The cost structures of these industries have supported the requirement for inexpensive transportation for bulk goods, where the transportation costs can sometimes exceed the raw material costs.

There has been a structural tendency to reduce the volumes of goods to be transported, by transferring the initial processing of raw materials to the origin. As a result, total tonnage of raw materials has declined and the tonnage of processed materials increased. However, this increase of semi-processed and processed cargo has not fully compensated for the decrease in raw materials.

Another problem on the demand side is that there is a tendency for monopsony power: demand is with a limited number of large industries, which are able to exchange information on the inland shipping market. In the Netherlands, for example, the transport of sand and gravel has been controlled by a

cartel of sand and gravel traders and producers. Furthermore, some industries have arranged long-term transport contracts with shipping companies at guaranteed prices. In addition, some industries have their own vessels (own account shipping). They only need to employ additional (independent) vessels to meet peaks in their transport demand.

On the positive side, inland waterway transport can represent a valuable and environmentally friendly alternative to road and rail transport, at least in countries where the network allows it. For example, the car factory Ford-Werke in Cologne has recently announced that about 70% of the cars produced will be transported to distribution terminals by inland waterway ships.

Another tendency is that inland shipping has become important for the transportation of dangerous cargoes, such as highly poisonous or explosive chemical products. These substances require a high level of safety standards from the transporters.

#### Supply and competition

The fleet is characterised by the existence of a large number of private owners mostly operating only one vessel, often with the owner's family living on board. These ships are generally old and of small size, and are not demolished as the owners operate at or below economic cost prices, accepting very little or even negative returns (hence the strong social aspect characterising the activity). Large shipping companies exploiting fleets of 20 to 100 vessels mainly operate on the Rhine and its branches.

The existence of small family-owned vessels which have not yet been scrapped and the introduction of modern large sized vessels has caused a structural imbalance between supply and demand. Overcapacity, therefore, has become a structural phenomenon in inland shipping. During the 1980s, overcapacity was estimated at some 20% of the EU fleet.

**Table 5: Inland Waterways Transport  
Dispatch of goods to foreign countries**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	27 751	28 662	30 638	28 540	28 152	27 809	28 483	27 156	23 789	N/A
Deutschland	52 831	47 742	49 413	50 567	54 981	58 312	54 425	47 301	47 069	45 182
France	21 293	18 566	17 769	17 277	19 477	14 389	18 537	16 156	16 806	17 030
Luxembourg	1 031	787	796	797	909	990	952	874	802	866
Nederland	103 085	105 146	109 311	105 354	110 549	116 397	116 890	118 341	114 589	98 448
Total	205 991	200 903	207 927	202 535	214 068	217 897	219 287	209 828	203 055	N/A

Source: Eurostat: Carriage of goods

Overcapacity has been blamed for its negative impact on the evolution of prices on the free market. Price regulating and cargo sharing systems were introduced, basically to guarantee ship owners a minimum income.

The liberalisation of international transport has led some countries to consider more favourably the liberalisation of their domestic transport market which, strictly speaking, remains outside the scope of EU legislation. Given limited possibilities in terms of product differentiation, competition is essentially on price. Thus, the German domestic liberalisation has triggered cut-throat price competition on the German market entailing large reduction in prices. Moreover, competition from East European companies is progressively intensifying.

Besides, competing modes have lately stepped up their efficiency and lowered their prices, either due to liberalisation (road) or due to the prospect of liberalisation (rail). Thus, generally speaking, liberalisation has lowered the cost of competing modes such as road, therefore enhancing competitive pressures on inland waterways.

Also akin to inter-modal competition is the problem of environmental protection. Inland waterways are a particularly friendly way to ship cargo but this remains presently a dubious competitive asset insofar as inter-modal price competition still fails to reflect environmental differences due to the non-internalisation of environmental costs by the most polluting modes such as road.

Also in the area of competition is the problem of state aids. Distortions to competition due to subsidies can be found within the sector but this type of distortions is considered as much less harmful than those resulting from the subsidies accruing to rail, inland waterways' main competitor.

## INDUSTRY STRUCTURE

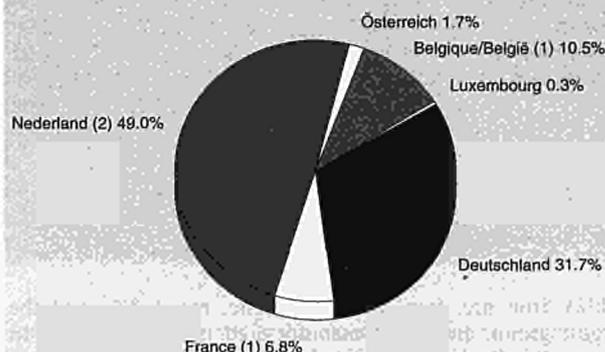
The sector is characterised by an increased atomisation as large operators tend to reduce the size of their fleets and to transfer (outsource) activity to small one-vessel operators essentially because small operators benefit from lower operating costs (no costly work regulations, family work, etc.). The trend is rather general (i.e. independent of the Internal Market) but has been considerably amplified in Germany because of intense competition due to domestic deregulation.

## REGULATIONS

The action of the EU institutions in the field of inland waterway transport has been characterised by two main aims: the liberalisation of the sector and the reduction of overcapacity.

It is important to stress that a large part of EU legislation in the sector of inland waterways is not applied in countries with a closed canal network, i.e. one that is not connected to other EU Member States.

**Figure 2: Inland Waterways Transport  
Distribution of EU fleet in carrying capacity, 1993**



(1) Based on 1992 figure.

(2) Based on 1990 figure.

Source: Eurostat: Transport Yearbook

Concerning liberalisation, the first relevant legislative measure taken at EU level has been the Council Regulation (EEC) 3921/91 of 16 December 1991 on inland waterway cabotage. From 1 January 1993 onwards, companies from one EU Member State can carry out national and international inland waterway transport operations in any other Member State. France and Germany were allowed some restrictions on cabotage until 1 January 1995.

In June 1994 the Commission presented to the Transport Council a report on the organisation of the inland waterway market, focusing in particular on the so-called "tour-de-rôle" (in-turn) tariff and charter system.

Under this system, carriers inscribe themselves in special "availability lists". According to their rank in the list, carriers can choose to undertake a transport service among those which are put on offer and for which they fulfil the requirements. In case of no choice by the carrier, their place in the list does not get lost. The "tour-de-rôle" guarantees minimum revenue to vessel-owners, and at the same time clearly hampers competition in the sector and reduces the commercial freedom of clients of the service.

The "tour-de-rôle" system is used in Belgium, France and the Netherlands, and affects altogether about 11% of total cargo in the EU. However, its incidence is far greater at national level: it is estimated that this system affects about 50% of

**Table 6: Inland Waterways Transport  
Goods received from foreign countries**

(thousand tonnes)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	38 947	39 340	39 823	40 428	45 182	46 629	46 670	44 948	43 539	N/A
Deutschland	92 339	98 944	100 770	95 635	100 680	100 311	98 764	98 236	97 095	90 469
France	12 209	10 332	10 971	10 688	11 259	10 298	12 155	12 043	11 768	10 672
Luxembourg	953	974	1 202	1 105	1 244	1 034	1 140	983	1 296	908
Nederland	49 303	44 261	46 195	45 143	49 246	54 655	52 862	49 408	47 971	45 532
Total	193 751	193 851	198 961	192 999	207 611	212 927	211 591	205 618	201 669	N/A

Source: Eurostat: Carriage of goods

**Table 7: Inland Waterways Transport**  
**EU fleet in number of vessels and carrying capacity**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Number of goods-carrying ships</b>											
Belgique/België	3 001	2 513	2 372	2 214	2 168	2 151	1 778	1 660	1 604	N/A	N/A
Deutschland	3 812	3 143	3 103	3 063	2 989	2 990	2 723	2 574	4 470	4 645	4 597
France	5 224	4 729	4 599	4 565	3 845	3 673	3 292	2 866	2 672	2 374	2 368
Luxembourg (1)	18	17	18	19	24	24	21	20	28	31	29
Nederland	13 431	10 896	10 965	10 842	10 403	10 086	9 555	N/A	N/A	N/A	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	213	210	204	203	178	N/A
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	125	132	140	148	150	153
<b>(thousand tonnes)</b>											
<b>Carrying capacity</b>											
Belgique/België	1 844	1 729	1 715	1 648	1 649	1 680	1 523	1 465	1 475	N/A	N/A
Deutschland	3 672	3 277	3 265	3 250	3 194	3 268	3 056	2 956	3 329	4 445	4 352
France	2 537	2 308	2 229	2 092	1 915	1 739	1 651	1 974	1 953	(1) 749	(1) 722
Luxembourg (1)	12	11	11	11	16	14	18	18	28	37	34
Nederland	6 361	6 571	6 698	6 766	6 872	7 036	6 865	N/A	N/A	N/A	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	257	256	251	250	240	N/A
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	5	5

(1) Self-propelled vessels only.

Source: Eurostat: Transport Yearbook

total cargo in Belgium, 31% in France and 18% in the Netherlands.

On the other hand, the Rhine market which represents about three quarters of total inland waterway traffic in the EU is free. The Act of Mannheim of 1868 guarantees free shipping on the Rhine and its arteries for all ships with flags belonging to countries signatory to the Act (Germany, France, the Netherlands, Switzerland, Belgium, and the United Kingdom).

France already aims at abolishing the system after a six years' transition period. For its part, the EU Commission proposes to gradually make the system more flexible by exempting certain goods, increasing the possibility to conclude free contracts and by abolishing the obligation to use this system.

To remedy overcapacity problems, Council Regulation (EEC) No. 1101/89 of 27 April 1989 (subsequently amended by Regulations (EEC) 3690/92 and (EEC) 3433/93) was introduced to implement structural improvements in inland waterways transport. It created two set of measures:

- the granting of premiums to reduce the capacity of the active inland waterways fleet; and
- curbs on investment in extra vessels in the course of the co-ordinated scrapping scheme.

The European Commission has also been active on the front of the harmonisation of criteria for issuing boatmaster certificates. A proposal for a Directive was presented to the Council on 8 September 1994, and the Council reached a Common Position on 8 December 1995..

On March 1996 the EU's Ministers of Transport reached a political agreement by qualified majority on inland waterways transport. The inland waterways package includes a draft Directive and two Regulations aimed at reducing structural overcapacity in this sector within the framework of a gradual liberalisation. The formal adoption of a common position on each of the three components is expected shortly, after which the texts will be submitted to the Parliament for a second reading as part of the co-operation procedure. The proposed measures involve liberalising the inland waterways market, currently organised into a rota ("tour de rôle") system.

Accompanying measures including breaking up of vessels and aid to investment in river terminals are also provided for. According to the terms of the text approved by the Ministers, the Member States may maintain the rota system and set minimum rates until January 1, 2 000, except transport of certain goods such as hydrocarbons, liquids and containers (the problems caused by the rota system and reduced rates are seen as the main obstacles to making inland waterways transport more competitive with other modes of goods transport in the EU).

Under the "tour de rôle" system, barges receive their orders according to the order of their arrival with an empty hold in a river port. The common position agreed by the Ministers prohibits discrimination in this system between vessels from different Member States. The four main countries in question are Germany, France, Belgium and the Netherlands, which have major inland waterways networks. The Transport Ministers also decided that a yearly budget of ECU 20 million should be allocated in 1996 for aid for barge breaking to reduce capacity by 15% over the next three years.

## THE NETWORK

The network for inland waterway transport in the EU extends itself for about 17 000 km, of which only about the half can be used by vessels of more than 1 000 tons. Moreover, the connections between different national networks is very limited.

In effect, the so-called EU inland waterway network only includes the rivers and canals of Germany, the Netherlands, France, Belgium, Austria and Luxembourg. In the remaining Member States, infrastructure for waterway transport is either absent / insufficient (e.g. the United Kingdom) or disconnected from the European network (e.g. Italy and Spain).

Four major axis can be identified in the European inland waterway network:

First comes the Rhine, being navigable over a distance of 887 km from Basle in Switzerland to the North Sea at Rotterdam. This is the true backbone of the EU waterway system. Furthermore, a coherent network has been created by water-

ways navigable for units with a loading capacity from 1 350 to 10 000 tonnes (pushed convoys on the Rhine and certain other sections) which covers most of Germany, the Netherlands, Belgium, Luxembourg and the northern and eastern frontier zones of France.

This network has been recently extended to Eastern Europe thanks to the opening of the Rhine-Main-Danube Canal, the second major inland waterway axis. The Main-Danube canal extends from Bamberg on the Main to Kelheim on the Danube. It is 171 km long and contains 16 locks, including those needed to traverse the Franconian Jura. The canal is suitable for use by self-propelled craft of up to 2 000 tonnes and pushed convoys of up to 3 500 tonnes. This Rhine-Main-Danube link will improve the hinterland's connections with the North Sea ports, especially those at the mouth of the Rhine, and will provide the technical facilities for an uninterrupted traffic flow to and from the Danubian countries. However, the European inland waterway transport sector, already confronted with considerable overcapacity, fears that additional market problems will arise from the advent of the new Danubian facilities.

Since its opening in 1992, this canal has exceeded initial expectations on volumes, and reached 4.2 million tonnes of cargo in its first year of operation.

The third major axis is known as East-West, and is formed by the rivers Elbe, Weser and Ems. Together with other canals such as the Mittelland canal, the axis basically unites some Northern regions of Germany with the new Länder. The Dutch government has recently expressed interest in the construction of the Twente-Mittelland canal, which would greatly improve inland waterway communications between Germany and the Netherlands, by avoiding vessels a diversion via the Rhine and the Weser-Datteln and Dortmund-Ems canals. On the other side, the German government has announced a programme to finance the restructuring of the Berlin-Spandau canal to improve inland waterway transport to and from the city of Berlin.

The fourth major axis is called North-South and serves the regions of Belgium, the Netherlands and France which are not connected to the Rhine. The main rivers of this axis are the Meuse, the Schelde, the Lys and the Sambre.

Certain bottlenecks remain, such as shallow spots on the upper Danube. Investment in new infrastructure will continue to be necessary. Increasing ship size requires enlargement of locks and canals, the deepening of waterways and adaptation of inland water ports. Modern navigation facilities are also needed along the waterways.

## OUTLOOK

Demand for inland waterway transport is likely to maintain an upward trend at moderate growth rates. In view of economic integration, transport demand among Member States will increase in terms of both volume and distance to the benefit also of inland waterways. In the field of hazardous goods transport and unitised cargoes, inland waterways are likely to gain.

The developments in Eastern Europe will affect traffic in two ways. Firstly, positive developments will emanate from German unification and the opening up of the Eastern European economies. New market opportunities and intensifying trade will occur, but in the short term these effects will be limited. Secondly, negative developments may occur as fleets from East European countries enter West European markets, especially via the Rhine-Main-Danube canal.

Concerning capacity, the EU scrapping system is likely to continue its initial successes. Together with the present trends in demand (inland shipping considered as one of the most environment-friendly and cheapest mode of transport), equi-

librium between demand and supply will be closer to realisation.

However, it is important to note that the restoration of equilibrium in the market should be prolonged by measures guaranteeing the maintenance of this equilibrium in the future. In this context, the fact that inland waterway transport forms an integral part of a transport chain, which is itself often in competition with other transport chains, must be underlined. As a result, more than ever before factors external to inland waterway transport will influence its competitive standing. These factors include:

- the cost and speed of handling and transshipment;
- storage facilities, although the importance of this factor is liable to shrink as the "just in time" principle is applied;
- the flexibility with which the transition between waterway transport and the preceding and follow-on transport modes can be effected and, more especially, the cost of this transport.

The positive points of inland waterway transport - relatively low cost and environmental friendliness - combined with restored confidence on the part of the shipper are not themselves sufficient to guarantee the future of the trade. Positive interventions by the political authorities is also needed.

The political authorities, by creating a framework within which inland waterway transport, can develop both its existing and its potential traffic flow. In practical terms, such actions could be aimed at the infrastructure, market organisation and the competitive conditions prevailing between different modes of transport.

Unfair competition on certain routes between inland shipping and other forms of transport, and the railways especially, is an important element to be taken into account. A movement towards greater transparency which has recently been initiated with regard to the costs of providing transport is promising and will enable many problems to be cleared up.

What is more, the organisation of the international market is increasingly being based on qualitative rather than quantitative criteria.

It follows that a number of general principles should contribute to ensuring healthy competition between the various forms of transport. These include:

- the necessity for permanent monitoring of the market;
- fair policies as far as the allocation of infrastructure costs for all forms of transport is concerned;
- attention to the harmful effects on the community of each mode of transport and adoption at international level of measures aimed at defining these effects and reducing their cost;
- harmonisation at international level of the operational constraints imposed by national authorities.

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# Shipping

## Nace (Revision 1) 61.1

The shipping industry is particularly important to the economic welfare of the EU: over 90% of extra-trade and 35% of intra-trade is carried by sea. The more favourable economic circumstances enjoyed by nearly all countries in 1994 increased the demand for many traded commodities, especially coal and iron ore, thus engendering a strengthening of freight rates. But inefficiency due to over-aged merchant fleets and substantial tonnage overhangs are causing a critical decline in overall vessel productivity, service reliability and freight rates. Developments within the EU show an even higher concentration of large firms in the industry, a better integration of the short sea shipping into the multimodal transport operation, a widespread use of electronic data interchange and an efficient application of regulations. Policies should focus on increasing competitiveness under EC flags and on regulations accounting for the international character of the shipping industry.

### INDUSTRY PROFILE

#### Description of the sector

Shipping services are highly diversified, representing six or more separate industries: the most important are bulk, tanker and liner, both deep sea and short sea, others are passenger ferries, cruise and offshore rigs and support.

Deep sea transport refers to shipping on long sea routes while short-sea shipping covers transport services not involving an ocean crossing of passengers and goods between national or European ports, including those on the Black Sea, the Mediterranean and Moroccan Atlantic.

Within the merchant shipping industry, cargo is usually analysed in sectors, which are bulk, dry and tanker (or liquid) and liner (typically scheduled services with consolidated cargo from many shippers).

These sectors are further subdivided: dry into major dry bulks, iron-ore, coal and grain, and minor dry bulks, such as bauxite; tanker into crude oil and oil products (or dirty and clean) and gas carriers; and liner into container and non-container (or general cargo).

Usually tanker and dry bulk is dominated by tramp (non-scheduled) services.

There are also specialised vessels that do not necessarily fit into any of these categories, such as refrigerated ships, forest product carriers, car carriers, steel product carriers and combination carriers. The situation is further complicated by non-standard operations. For example, it is possible to have a tramp operator moving containers, or a scheduled operator moving bulk coal, and some vessels can be used for conveying more than one commodity type, such as a gas carrier used for 'clean' oil products.

#### Recent trends

At the end of 1995, the Community flag fleet amounted to 5.468 ships of 61 258 597 GT, which represented 13% of the world tonnage. Seen in the context of the European Economic Area (EEA), which includes Norway, the European flagged fleet rises by 1.434 vessels of 20 679 241 GT. The total EEA share of world tonnage is some 17.5%.

Moreover, EU companies beneficially own a large number of vessels registered under third country flags. Following Lloyd figures the total of EU flagged and controlled fleet represented for the same period 10.459 ships of 144 935 000 GT. The EEA flagged and controlled fleet was 12.340 ships of 176 931 000 GT. On basis of the above, it appears that EU interest own 31.2% of the world tonnage and this rises to 38% for the fleet under EEA interests.

The average age of the community fleet remains higher than the world average but more than a quarter of the world ship-building orders in January 1996 have been placed by EU ship owners. These represent 665 vessels of 20 820 million DWT of which 646 vessels - 12 035 million DWT have been directly ordered for EU flags.

Although the total of EU flagged fleet decreased since 1984, the beneficially EU owned fleet remained stable. This indicates the further loss of competitiveness of the European flags. However, the recent introduction of new incentives to support shipping in a number of EU countries (The Netherlands, France) should increase the chances of reversing the flagging out tendency. Furthermore, the industry looks forward to a positive EU approach for the promotion of shipping, following the new Commission Communication on a maritime strategy.

Shipping is vital for the economic growth of the European Union as over 90% of the total trade with third countries and more than 35 % of intra- EU trade is carried by sea. It

**Table 1: Shipping  
Main indicators, 1992**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België	(1) 188	1 737	(1,5) 2 292
Danmark	(4) 544	(1) 3 138	(1) 15 429
Deutschland	N/A	N/A	(5) 33 240
Ellada (3)	(4) 446	N/A	13 953
France	155	3 885	14 396
Italia (2)	273	2 713	20 529
Luxembourg	(1) 16	N/A	N/A
Nederland	486	2 451	10 980
Portugal	21	212	963
Suomi/Finland	61	1 217	8 214

(1) 1991

(2) 1989

(3) 1988

(4) Number of local units.

(5) Number of employees.

Source: Eurostat: Mercure



**Table 2: Shipping  
Seafarers on board EU flag vessels**

		1983	1992	1994	1995
Belgique/België	Nationals	2 551	1 553	1 437	1 259
	Non Nationals	649	614	548	384
Danmark	Nationals	11 235	10 800	10 300	9 471
	Non Nationals	2 109	2 000	2 100	2 194
Deutschland	Nationals	18 574	14 446	12 189	11 388
	Non Nationals	5 881	4 301	4 277	4 707
Ellada	Nationals	36 938	23 516	24 190	N/A
	Non Nationals	5 653	8 390	9 183	N/A
España	Nationals	23 522	11 000	6 077	7 700
	Non Nationals	0	0	0	800
France	Nationals	21 240	10 300	9 500	8 637
	Non Nationals	0	450	900	1 030
Ireland	Nationals	1 583	1 259	1 206	825
	Non Nationals	105	322	123	289
Italia	Nationals	32 000	25 000	23 549	27 730
	Non Nationals	0	2 000	2 274	3 220
Nederland	Nationals	10 746	6 137	5 588	5 600
	Non Nationals	4 844	3 897	4 300	4 300
Portugal	Nationals	5 111	(1) 1 711	992	850
	Non Nationals	0	0	0	300
Suomi/Finland	Nationals	15 800	11 100	10 300	8 200
	Non Nationals	450	70	20	0
Sverige	Nationals	13 915	12 400	9 950	10 045
	Non Nationals	0	0	0	0
United Kingdom	Nationals	17 781	14 495	13 967	12 414
	Non Nationals	5 586	3 353	2 798	4 381
EUR 15 (2)	Nationals	210 996	143 717	128 571	141 709
	Non Nationals	25 517	25 397	25 730	73 588

(1) 1990 figures

(2) Excluding Luxembourg and Austria.

Source: ECSCA

is of particular importance for the maintenance of a wide range of services and industries in the European maritime sector.

The EU shipping business makes almost half of its earnings in cross trades between third countries and contributes with important invisible earnings to the European economy. It employed in 1995 around 200 000 EU seafarers (129 000 on board vessels under the EU flag and around 74 000 on vessels under third country flags). Put in a global context, employment in the broad maritime industries sector in the EU is estimated to around two million people.

The prospects of the European Shipping are directly related to its competitiveness at the world level, where cost efficiency, high quality services and openness of the markets are the key for both liner and bulk services. However, the political awareness in Europe on the need to promote short sea shipping as an environmental alternative to land transport should influence positively the traffic share in the intra-EU trades in the coming years.

After an explosive growth in 1994, world trade showed signs of a relative slow down. OECD estimates a growth figure of 9.2% for 1995 against 9.8% for the previous year. The economic performance in the industrialised countries, lower than

**Table 3: Shipping  
Development of world seaborne trade**

(tonne-miles)	1986	1987	1988	1989	1990	1991	1992	1993	(1) 1994
Crude oil	4 640	4 671	5 065	5 736	6 261	6 757	6 977	7 391	7 350
Oil products	1 265	1 345	1 445	1 540	1 560	1 530	1 620	1 775	1 880
Iron ore	1 671	1 728	1 919	1 983	1 978	2 008	1 896	2 001	2 167
Coal	1 586	1 653	1 719	1 798	1 849	1 999	2 001	1 949	2 014
Grain	914	1 061	1 117	1 095	1 073	1 069	1 091	1 038	992
Other goods	3 780	3 840	4 040	4 250	4 400	4 510	4 650	4 840	5 100
Total	13 856	14 298	15 305	16 402	17 121	17 873	18 235	18 994	19 503

(1) Estimates

Source: Feamleys Review

**Table 4: Shipping**  
Average yearly rate of change of tonne-miles in seaborne trade

(%)	1986/1994	1987/1992	1990/1992	1992/1994
- Crude oil	5.9	8.4	5.6	2.6
- Oil products	5.1	3.8	1.9	7.7
Total oil products	5.7	7.4	4.8	3.6
- Iron ore	3.3	1.9	-2.1	6.9
- Coal	3.0	3.9	4.0	0.3
- Grain	1.0	0.6	0.8	-4.6
Total main bulkproducts	2.7	2.3	0.9	1.8
Other goods	3.8	3.9	2.8	4.7
Total seaborne trade	4.4	5.0	3.2	3.4

Source: *Fearnleys Review*

in 1994, has been the main reason for the down turn in world trade.

For world seaborne trade a new record was reached in 1995, as trade volume increased by 3.8% to reach 4 678 million tons. However, despite the international environment remaining favourable, shipping companies' incomes were negatively influenced by the continuous weakness of the US dollar, the main currency in international shipping services.

The world fleet increased by 2.2% in 1995 to 684 mdwt and the world order book for new buildings rose to 72.6 mdwt from 68.5 in 1994, corresponding to 10% of the existing fleet. Bulk carriers still represent the largest part of the 1995 order book with 31.9 mdwt. Other vessel types in the order book showed a remarkable increase to 40.2 mdwt, mainly for container vessels.

1995 was a good year for bulk trades. In particular dry bulk volumes increased strongly by 5.6% (against 3.5% in 1994) with all the major commodities (coal, grain, iron ore, raw materials) contributing to this rise.

Oil and oil products seaborne trade volumes increased by 1.8% although the tonnes-miles balance has decreased, as shipments have been transported over shorter distances.

After a difficult period in the beginning of the decade, liner shipping saw relatively improved rates in 1995 and higher utilisation levels for the equipment. The market was characterised by two developments: investment in new container-ships and further rationalisation in all the main trade lanes. New operational partnership arrangements among shipping lines were established (global alliances) and rate restoration measures, combined with expanding trade volumes, are expected to further restore confidence in the sector.

#### Dry bulk and tanker trade

The dry bulk and tanker sectors form the largest part of seaborne trade in volume terms. In 1994, liquid bulk's (crude and products) share was 47%; and the three main dry bulk commodities (iron ore, coal and grain) were 26.5% of total seaborne trade. Thus, dry bulks and the tanker sectors account for almost three quarters of world trade in tonne-miles.

In 1994, the dry bulk sector's commodities showed different growth. Iron ore totalled 2 167 and grain 992, respectively 11% and 5% of total trade. Meanwhile trade in coal reached 2 014 tonne-miles, 10% of total seaborne trade.

Over the 1993-94 period iron-ore grew by 8.2%, coal by 3.3% and grain showed a decline of 4.4%.

Concerning tanker vessels, among all other liquid commodities carried, crude petroleum and petroleum products represent the highest share.

In 1994, crude oil trade was 7 350 tonne-miles, while oil products represented 1 880 tonne-miles; with their respective percentages of total seaborne trade 37% and 9.6%.

Over the 1993-94 period crude oil trade decrease by 0.05% while oil products rose by 6%.

SS&Y Research confirms that total dry bulk trade grew strongly in 1995, due to substantially increased iron ore and coal shipments. This increase in demand could be explained by positive growth trends of the steel industry, given that iron ore trade depends on the steel industry, and to a lesser extent so does the coal trade.

In 1995, world steel production rose by 2.5%, improving after the slight decrease of the 1993-94 period. The EU-15 steel output in 1994 of 151.8 tonnes-miles compared with the Japanese steel output of 100 tonnes miles shows the global importance of the European steel market. In Germany, the leading producer, there has been a strong rise in the export market to other EU members with shipments ahead by 29.7%, while export to non-EU countries have fallen by 20.8%. Even if overall the EU-15 steel output has been on an upward trend since the start of 1993, the decline in the non EU-market for exports of steel products and a dip in demand led to a significant drop in prices. This scenario does not auger well for any further increase in steel output in 1996.

Trends in steel production had concomitant effects on iron ore shipments. Australia, the largest iron ore and coal exporter is estimated to gain share, mostly in the Asian market. Europe instead, is tight to Latin America's growth. Concerning the EU, arc furnace production, accounting for nearly 32.7% of the EU-15 steel output in 1994, had a dampening effect on raw material imports. Even so iron ore shipments appear to have expanded significantly with Germany, which is the region's largest importer, increasing its imports by 17% to 42.7 tonne-miles. Coking coal imports in 1994 appear not to have changed significantly from the 30.4 tonne-miles seen in the previous year.

Total world grain shipments (wheat and coarse grain products) will finally reverse the downward trend witnessed over the last three years. DRI forecasted a 0.4% increase in grain shipments that will place total world tonnage levels at 163 million tonnes, still lower than the 1989 peak of 190 million tonnes. For the USA, the world's largest supplier of grain, the forecast is of lower shipments to Eastern Europe, but for growth in Japan the Far East, and Asia. Eastern Europe, including the former Soviet Union, is slowly becoming self-sufficient, as grain production in Poland and Hungary for example has picked up dramatically under the revised farmer ownership rules.

The dry bulk market has been static. The general reduction in freight rates which has characterised the market since the

**Table 5: Shipping**  
**Development of the world fleet by type of vessel (1)**

(units)	1987	1990	1992	1993	1994	1995
<b>Number of ships</b>						
Oil tankers	5 723	5 753	6 035	6 137	6 309	6 496
Other tankers	1 629	1 693	1 896	2 004	2 122	2 196
Total tankers	7 352	7 446	7 931	8 141	8 431	8 692
Bulk/OBO carriers	4 967	4 915	5 043	4 952	4 873	5 581
Container vessels	1 027	1 147	1 273	1 339	1 387	1 590
General cargo vessels	18 108	16 899	17 165	17 313	17 357	17 176
Passenger vessels/ferries	2 614	2 785	2 918	2 998	3 110	3 211
Total fleet	34 068	33 192	34 330	34 743	35 138	36 250
<b>(thousand DWT)</b>	<b>1987</b>	<b>1990</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
<b>Carrying capacity</b>						
Oil tankers	240 744	248 483	263 482	267 491	273 668	270 921
Other tankers	16 489	16 391	18 729	19 651	20 758	21 880
Total tankers	257 233	264 874	282 211	287 142	294 426	292 801
Bulk/OBO carriers	223 185	228 601	240 590	237 423	238 432	245 787
Container vessels	21 105	25 026	29 595	31 578	33 964	38 851
General cargo vessels	108 174	100 621	101 741	102 430	103 721	100 020
Passenger vessels/ferries	3 445	3 621	3 875	3 980	4 193	4 342
Total fleet	613 142	622 743	658 012	662 553	674 736	681 800
<b>(thousand TEU)</b>	<b>1987</b>	<b>1990</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
<b>Carrying capacity</b>						
Bulk/OBO carriers	323	393	413	391	341	244
Container vessels	1 142	1 435	1 734	1 875	2 042	2 355
General cargo vessels	1 032	1 125	1 240	1 342	1 447	1 545
Passenger vessels/ferries	9	14	16	17	19	20
Total fleet	2 506	2 967	3 403	3 626	3 849	4 164

(1) Ships of 300 gt and over, 1st of January.  
Source: ISL Bremen based on LMIS updates

middle of 1994 continued after the first quarter of 1995. There are frequent reports that freight earnings are below the cost of operating ships, and this is ascribed to substantial tonnage overhangs that have developed in many segments of the shipping industry. Further, the apparently slower rate of importing activity by countries in both the European and Asia/Pacific regions, together with the volume of newbuildings entering the fleet, have both contributed to a further slight weakening of the market.

According to DRI's forecast world shipments of liquid bulks in 1995 will increase by 3.4%, reaching 1 277 million metric tonnes. This is the direct effect of strong economic growth in the USA, the largest importer of crude. The USA will import 277 million metric tonnes of crude in 1995, up 1.6% and the recovering economies in Northern and Southern Europe will absorb 364 million tonnes, up 1.6%. Global shipments of crude will push 900 million tonnes, or three-quarter of global tanker shipments. Non-OPEC export have stayed high, especially from European producers.

Oil demand is expected to grow substantially also because of changes in patterns of seaborne tanker trade: the new tendency of importers not to become over-reliant on Middle East oil, the growth of oil demand and imports in developing nations, especially in the Asia/Pacific area, port developments which have altered the standard vessel size used on particular routes.

Concerning oil supply, the additional output and export from the North Sea, Latin America (mainly Venezuela) and West Africa have raised short-haul supply to North America and Western Europe, thereby reducing demand for oil from long-haul sources and so badly affecting the tanker markets. Thus,

since the 1990s, the tanker market continued to remain depressed, a new tendency is towards the surge of interest for modern Handy products tankers which has been evident from the Chilean and Indian markets.

The salient feature of global oil consumption since the Gulf war has been the rapid speed at which it has risen in countries outside the main industrial economies, mainly in the Asia/Pacific region of South Korea and China.

#### Liner trades

The liner trades are dominated by movements of goods in containers, thus an analysis of the container trades is an excellent indicator for overall liner trades. 1994 was one of the fastest growth years for international trade in containersizable goods, up 9.7% worldwide. According to DRI's estimates, because of the economic growth and currency strength, Northern Europe's liner imports, specially from the Far East, are expected to increase by 6.7 % in 1995 to almost 5 million TEUs. Import level from China to Northern Europe will be the highest. Of the total liner trade import, consumer goods and electrical equipment are expected to account for 82% of the liner trade from China to Northern Europe this year. The high value of the yen, even against the Deutsche mark, will keep liner shipments from Japan in a relatively slow growth mode.

Northern European liner exports should improve in 1995, but at a slower rate than in 1994, due to the strengthened currencies in the region, including the British pound.

In Southern Europe, both imports and exports are expected to grow due to the good GDP growth rates of the two most important economies of the region, Italy and Spain. The USA

**Table 6: Shipping**  
**Development of the EU fleet in world perspective (1)**

(units)	1987	1990	1991	1992	1993	1994	1995
<b>Number of ships</b>							
World	34 068	33 192	33 964	34 330	34 743	35 158	36 250
OECD (2)	13 589	12 282	12 485	12 436	12 079	11 689	11 666
EU (2)	6 606	5 414	5 421	5 391	5 121	4 956	5 336
USA	819	544	531	514	502	443	432
Japan	4 062	3 844	3 825	3 833	3 792	3 634	3 635
Other (3)	6 942	7 045	7 015	7 345	7 731	7 970	8 285
Rest of the world (4)	13 537	13 865	14 464	14 549	14 933	15 499	16 299
<b>(thousand DWT)</b>							
<b>Carrying capacity</b>							
World	613 142	622 743	642 651	658 012	662 553	674 736	681 800
OECD (2)	217 722	198 205	213 485	212 547	205 564	204 618	192 501
EU (2)	111 755	91 657	94 499	94 805	93 826	96 856	100 457
USA	24 537	22 365	23 571	23 668	22 435	17 259	15 686
Japan	55 488	39 915	38 796	36 968	36 336	34 037	30 462
Other (3)	202 321	220 183	220 743	237 981	248 639	254 933	266 158
Rest of the world (4)	193 099	204 355	208 420	207 484	208 350	215 185	223 141
<b>(thousand TEU)</b>							
<b>Carrying capacity</b>							
World	2 506	2 967	3 129	3 409	3 626	3 849	4 164
OECD (2)	1 205	1 180	1 286	1 360	1 376	1 401	1 490
EU (2)	753	726	788	848	860	887	1 021
USA	208	222	227	233	234	234	232
Japan	125	82	85	93	88	94	88
Other (3)	494	700	720	849	950	1 087	1 258
Rest of the world (4)	807	1 087	1 120	1 194	1 300	1 301	1 416

(1) Ships of 300 gt and over, 1st of January.

(2) Including former East Germany (from 1991 onwards); Austria, Finland, Sweden (from 1995 onwards).

(3) Includes open registry.

(4) Other except OECD countries and open registry.

Source: ISL Bremen based on LMIS updates

and other Mediterranean countries are the principal suppliers of liner commodities. Concerning liner exports, the Far East will become even more important, in the longer term, growth in shipments to China will grow at double-digit rates.

In the EU, Denmark has one of the of the world's largest container fleets. Nearly 50% of the tonnage is employed in container and ferry traffic. The Danish merchant fleet is active in most shipping markets, but primarily in trades that demand specialised tanker (such as product tankers, chemical and gas tankers) and bulk trades.

### Cruise shipping

Cruise shipping has grown considerably in the last ten years, predominately fuelled by the demand in the United States. However, growth is also expanding in Europe, albeit at a slower pace, with more cruises available to places previously difficult to enter - for instance the territorial waters of the Warsaw Pact.

## MARKET FORCES

### Demand

The economic slowdown of the Japan and the EU restrained sea-borne trade during 1993. In 1994 the recovery and the positive effects of the increase in import demand from the economies in the Asia/Pacific region, particularly the China's steel boom and the South Korean increase in coal imports, boost demand for shipping services. Further, liberalisation of world trade and decentralised production methods is another

reason for the growing demand for specialised shipping services in order to meet demand for increasingly individualised transport product and new trade opportunities.

Regarding major bulk commodities, oil, gas, dry bulk, reefer cargoes there is the propensity for major importers to search for security of supply and to hedge whenever possible. Overall the sector demand is unpredictable because it is susceptible to volatile factors such as the seasonality of trades and the yield of food crops.

### Supply and competition

Due to subsidisation, the shipping industry is suffering from oversupply in ships and a resulting structural overcapacity in bulk shipping markets, with consequently depressed freight rates. On 15 July 1996, the OECD Shipbuilding Agreement was adopted, in order to eliminate competitive distortions; it is not yet in force pending ratification by all OECD Members.

Lower freight rates and competitive pressure have contributed to lower returns on equity and investment, thus creating a tendency in extending the useful life of ships and sometimes reduced maintenance effort and related safety problems.

Related to the liner sector, is the growth of intermodal services. Major carriers both inside and outside liner conferences now offer a comprehensive transport service from factory floor to shop floor to an increasing number of shippers. However, vessels operating multimodal transport operators know that they have to establish and tailor their system to the needs of their customer if they are to survive in an increasingly competitive environment.

**Table 7: Shipping**  
**Development of the EU fleet by Member State (1)**

(units)	1990	1991	1992	1993	1994	1995
Number of ships						
Belgique/België	82	80	31	27	23	24
Danmark	435	466	494	499	511	544
Deutschland	843	850	832	720	650	659
Ellada	1 417	1 398	1 423	1 407	1 451	1 448
España	424	399	368	322	257	223
France	207	202	199	210	219	208
Ireland	63	66	67	62	62	54
Italia	814	850	828	791	736	704
Luxembourg	2	1	48	52	48	44
Nederland	484	495	518	515	497	513
Österreich	N/A	N/A	N/A	N/A	N/A	31
Portugal	70	78	75	69	79	80
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	125
Sverige	N/A	N/A	N/A	N/A	N/A	246
United Kingdom	574	536	508	447	423	433
EUR 15 (2)	5 415	5 421	5 391	5 121	4 956	5 336
(thousand DWT)	1990	1991	1992	1993	1994	1995
Carrying capacity						
Belgique/België	3 017	2 931	50	47	37	37
Danmark	6 890	7 390	7 868	6 739	6 917	7 158
Deutschland	6 400	6 771	6 937	6 206	5 812	6 631
Ellada	37 621	41 039	43 531	46 354	52 094	52 434
España	5 838	5 639	5 059	3 977	2 278	1 443
France	6 214	5 531	5 378	5 553	6 073	6 288
Ireland	161	176	195	189	186	172
Italia	11 373	11 852	10 672	10 132	9 025	8 685
Luxembourg	6	3	2 624	2 608	2 421	1 793
Nederland	3 956	4 154	4 368	4 506	4 222	4 425
Österreich	N/A	N/A	N/A	N/A	N/A	203
Portugal	1 015	1 232	1 342	897	1 539	1 363
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	926
Sverige	N/A	N/A	N/A	N/A	N/A	2 216
United Kingdom	9 166	7 781	6 781	6 618	6 252	6 683
EUR 15 (2)	91 657	94 499	94 805	93 826	96 856	100 457
(thousand TEU)	1990	1991	1992	1993	1994	1995
Carrying capacity						
Belgique/België	22.5	22.5	N/A	N/A	N/A	N/A
Danmark	102.7	128.4	144.8	155.7	165.2	179.2
Deutschland	226.1	259.7	288.0	267.5	277.2	339.4
Ellada	67.8	61.6	69.9	78.7	88.4	93.2
España	15.8	16.0	16.8	15.2	14.7	12.9
France	59.1	53.4	56.1	59.3	58.2	48.1
Ireland	2.9	2.9	3.7	3.8	3.4	3.7
Italia	51.5	57.0	59.8	57.7	55.0	56.8
Luxembourg	N/A	N/A	19.8	17.3	16.4	13.8
Nederland	86.4	95.5	106.9	121.8	122.0	127.1
Österreich	N/A	N/A	N/A	N/A	N/A	3.9
Portugal	3.3	4.5	6.2	5.1	5.4	4.6
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	15.8
Sverige	N/A	N/A	N/A	N/A	N/A	28.0
United Kingdom	87.5	86.8	75.6	78.1	81.0	94.7

(1) Ships of 300 gt and over, 1st of January.

(2) Including Austria, Finland and Sweden from 1995 onwards.

Source: ISL Bremen based on LMIS updates.

### Short sea trades

Short sea trading mainly covers national transport (cabotage) and cross border services, sea-river transport by coastal vessels to and from ports in the hinterland of the EU and the Mediterranean as well as international traffic between the Mediterranean and North African countries. Most vessels employed

in short sea transport have characteristic features which distinguish them from ocean-going vessels. In contrast to deep sea container transport, which is generally carried out with cellular container ships, short sea shipping, for the most part, continues to use multi-purpose dry cargo vessels.

**Table 8: Shipping**  
**Structure of the EUR 15 fleet by Member State, 1995 (1)**

	Tankers (%)	Bulk/OBO carriers (%)	General cargo vessels (%)	Container vessels (%)	Passenger ships (%)	Total number of ships (units)
Belgique/België	45.8	0.0	8.3	0.0	45.8	24
Danmark	18.6	3.3	50.4	11.8	16.0	544
Deutschland	7.4	2.0	57.5	21.2	11.8	659
Ellada	25.9	31.8	23.3	2.2	16.8	1 448
España	22.9	4.9	48.9	8.1	15.2	223
France	29.8	6.3	29.3	8.2	26.4	208
Ireland	9.3	1.9	74.1	3.7	11.1	54
Italia	42.6	5.8	21.7	2.1	27.7	704
Luxembourg	45.5	27.3	22.7	4.5	0.0	44
Nederland	12.9	1.8	74.5	5.7	5.3	513
Österreich	0.0	6.5	93.5	0.0	0.0	31
Portugal	28.8	6.3	56.3	3.8	5.0	80
Suomi/Finland	13.6	4.8	56.8	0.0	24.8	125
Sverige	27.6	3.7	47.2	0.0	21.5	246
United Kingdom	30.9	3.7	35.1	7.9	22.4	433
EUR 15	24.0	11.6	40.5	6.7	17.3	5 336
USA	40.0	4.2	25.5	19.7	10.6	432
Japan	37.3	13.0	36.8	1.2	11.7	3 635

(1) Ships of 300 gt and over, 1st of January.  
Source: ISL Bremen based on LMIS updates

In the short shipping trade markets there is perfect and imperfect competition as well, depending upon the openness to all flags. Mediterranean trade and traffic between the Mediterranean and North African countries is imperfectly competitive, while in the North Sea there is fierce competition between short sea carriers, due to open trade to all flags. Germany, the Netherlands and Denmark dominate the international short sea trades.

Short sea owners dominate specialised trades under European flags because many owners of larger vessels have opted out of the trade under these flags. Specialised trades include chemical vessels, liquid-gas tankers, reefer trade, car carriers, the

carriage of heavy lifts, and chartered containers. Markets for liquid-gas and reefer trades are much less volatile than those for tankers and bulk carriers, because owners either charter their vessels to the traders or join freight pools.

Short sea trade is particularly important in Europe because of its geographical configuration of a network of 25 000 km of inland waterways, of which 12 000 km have been included in the trans-European transport network. In addition, short sea shipping is generally more energy efficient and environmentally-friendly than road and rail transport. In domestic trade and trade between Member States, short shipping carries 35% of goods transported.

**Table 9: Shipping**  
**World merchant fleet by type and area shares, 1995 (1)**

	Thousand dead weight ton (dwt)					Dwt-share of country groups (%)				
	Total fleet	EUR 15	Other OECD	Open registry	Others (2)	Total fleet	EUR 15	Other OECD	Open registry	Others (2)
Oil tankers	270 921	44 948	40 462	121 554	63 957	100	17	15	45	24
Chemical carriers	7 963	1 454	1 908	2 923	1 677	100	18	24	37	21
Liquid gas tankers	13 917	1 621	5 031	4 738	2 527	100	12	36	34	18
Bulk carriers	218 931	26 711	25 944	81 233	85 043	100	12	12	37	39
Oil/bulk/ore carriers	26 857	3 539	3 812	12 717	6 787	100	13	14	47	25
General cargo (3)	78 079	6 846	6 192	21 935	43 106	100	9	8	28	55
Multi-deck	44 921	3 636	2 137	12 500	26 648	100	8	5	28	60
Single-deck	33 158	3 210	4 055	9 435	16 458	100	10	12	28	50
Cellular container	38 851	10 230	4 377	12 053	12 191	100	26	11	31	31
Ferries (4)	3 250	1 262	864	330	793	100	39	27	10	24
Passenger vessels	1 091	204	159	555	174	100	19	15	51	16
Total	659 860	96 815	88 750	258 039	216 256	100	15	13	39	33

(1) Ships of 300 gt and over, 1st of January.

(2) Including state trading.

(3) Excluding Reefer-, Special- and RoRo ships.

(4) Cargo and RoRo passenger ships.

Source: ISL Bremen based on LMIS updates



**Table 10: Shipping  
Fleet by major types and area, 1995 (1)**

	Total fleet oil tankers (thousand dwt)	(%)	Total fleet bulk carriers (thousand dwt)	(%)	Total fleet container ships (thousand TEU)	(%)
EUR 15	44 948.1	22.2	26 711.2	22.5	632.6	64.1
Other OECD	40 462.0	33.9	25 944.1	35.7	290.7	37.3
Open Registry (major)	121 554.2	44.5	81 233.2	28.6	711.6	55.6
Others	63 956.9	23.9	85 042.6	34.3	719.7	50.8
Total	270 921.2	34.3	218 931.1	30.9	2 354.6	54.1

(1) Ships of 300 grt and over, 1st of January  
Source: ISL Bremen based on LMIS updates

The creation of the Internal Market, the recent accession of Austria, Finland and Sweden to the EU and the emergence of new market economies in other States in the Baltic area will create new opportunities for short sea shipping. Further, due to the conflict in the former Yugoslavia, part of traffic carried by land transport to and from Greece has been diverted onto maritime routes. Thus there is a potential for short sea services as an alternative to land transport in North-South trade in the Balkan area.

Within short sea transport, maritime feeder services (connecting smaller ports to the international trans-oceanic traffics of containerised goods) are probably the fastest growing sector. The feeder share of European container flows has increased from 30% in 1982 to 43% in 1992. The reason being a share gain in markets once belonging to road transport and covering the increase in transport flows generated by the decline in the number ports served by deep sea liners.

#### Deep sea trades

Deep sea trades, i.e. general cargo North-South trades with developing countries, liner companies operating on the principal East-West routes, is going through a general restructuring partly due to increasing globalisation and the developments of the Atlantic ports.

To cope with the fierce competition as well as to meet the ever increasing needs of the clients, some carriers are aiming at providing global operations: "one-stop shopping" and "no sweat arrangements". One-stop shopping refers to geographical coverage of the transport service (i.e. door-to-door transport); while no sweat arrangements refer to the so-called value added services (i.e. integrated transport and ancillary services).

#### Fleet and capacity developments

A comparison of fleets by vessel types to carrying capacity reveals differences in growth. Between 1993 and 1995 the average world development in carrying capacity of crude and product dedicated tankers increased by 1.9% in dead-weight (DWT) and 6.7% in numbers of vessels. A decrease in rates compared with the 1990-93 period. For dry bulk products, the dry bulk and combination carrier fleet averaged a 3.5% increase in DWT and a significant 12.7% increase in the number of vessels.

The relative increase in capacity put a downward pressure in freight rates for the dry bulk market, even if this tendency has been compensated by the increase in demand for many traded commodities (especially coal and iron ore).

The rates in the liner trade have also been under pressure from excess capacity. The rapid increase in container capacity in relation to the development of "other commodities" has enhanced rather than relieved the pressure on the rates. Excess capacity is expected to continue in the liner industry with no let up in container over-capacity. The liner fleet is relatively

young and active, so there are no extensive scrapping programmes. Although the older liner vessels are considered too small and inefficient for the main east/west arterial trades, they are useful in feeder trades and in supporting secondary services, thus there has not been a significant withdrawal from the market.

Between 1992 and the 1995, the number of vessels over 300 grt in the world's merchant fleet increased by 1902 vessels, reaching a total of 36 250, or a 5.5% increase in growth. The relative growth of carrying capacity was lower in DWT, 3.6%, and higher in TEU, 22%.

In particular, the growth of container capacity was quite significant, averaging 6.3% per year. During the past two years, the development of both the world fleet and capacity have accelerated and although their development varied considerably, the container fleet increased fastest.

In 1995, the world container fleet stood at 8.1 million TEU, of which 4.4 million was owned by the carriers and 3.6 million by container lessors. Container production in 1993 was down 17.4% to 950 million from 1.15 million TEUs in 1992. Companies adopted an expansive approach as they ordered significant numbers of containers in early 1992 in anticipation of accelerating demand for trade in containerised commodities. In 1993 the owned carriers added more capacity (13.2%) in comparison to leased capacity (11.5%). This was a significant reversal from 1992 where leased capacity increased by 20.5% and owned capacity increased by only 13.7%. The slowdown in container demand has forced price reductions in some container types, with dry containers averaging a 7% drop in prices.

Over the 1987/1995 period EU fleet showed different development compared with the world fleet. While the world fleet vessels increased by 2182, the number of EU vessels, representing in 1995 a 14% of total world fleet, decreased by 1270 units, about 19% decline.

Similarly, while the world capacity in DWTs has increased by 2.4% in the 1987/1995 period, the EU decreased by 10%. 1995 and 1994 though both showed a respective growth in DWTs of 3.7% and 3.2%.

USA and Japan have also faced declines in their merchant fleet over the 1987/1995 period. For example, in the USA, the number of ships declined strongly by 47%, and container capacity also, by 64%.

Contrary to developments in the EU, the USA and Japan, the "other" countries (open registry) flag categories in the 1987/1995 period showed significant growth in both their fleets (19%) and their fleet capacity (31%). Part of the explanation for these figures is the move of some EU carriers to flag out their vessels in order to reduce costs.

**Table 11: Shipping**  
Ships registered in the EU, USA and Japan, 1994 (1)

	Number of ships	Gross tonnage (thousands)	Share of EU total (%)	Bulk liquid	Bulk dry	Fleet structure as share of country total (%)		
						Other dry cargo	Fishing & Offshore	Other (2)
Belgique/België	203	233.4	0.4	4.9	0.0	24.3	8.5	62.3
Danmark (3)	1 042	5 698.6	8.6	28.3	10.0	58.0	2.9	0.8
Deutschland	1 200	5 696.1	8.5	5.8	5.0	85.5	1.7	2.1
Ellada	1 923	30 161.8	45.3	46.7	43.1	9.9	0.1	0.2
Espana	1 806	1 560.0	2.3	33.7	3.8	26.5	31.2	4.8
France (3)	746	2 132.3	3.2	47.2	5.0	36.7	6.2	4.8
Ireland	170	190.3	0.3	8.9	1.5	66.5	13.6	9.4
Italia	1 434	6 818.2	10.2	39.7	22.7	31.0	4.5	2.1
Luxembourg	47	1 143.2	1.7	38.6	48.6	12.1	0.0	0.7
Nederland (3)	1 031	3 349.3	5.0	18.3	2.9	63.1	6.1	9.5
Österreich	31	133.7	0.2	0.0	36.7	63.3	0.0	0.0
Portugal (3)	328	882.1	1.3	64.5	9.6	13.6	10.1	2.2
Suomi/Finland	272	1 403.7	2.1	25.9	5.1	63.1	0.3	5.8
Sverige	597	2 796.5	4.2	22.1	1.6	72.5	1.2	2.5
United Kingdom (3)	1 481	4 430.2	6.6	29.0	1.7	52.5	9.1	7.8
EUR 15	12 311	66 629.4	100.0	36.3	24.8	33.6	3.0	2.3
USA	5 270	13 655.4	-	43.7	11.3	33.9	7.2	3.8
Japan	9 706	22 101.6	-	39.2	29.9	24.9	3.3	2.7
World	80 676	475 859.0	-	35.8	30.5	28.5	3.6	1.6

(1) Propelled sea-going merchant ships of not less than 1000 gross tonnage at the end of year.

(2) Including: research, towing/pushing and dredging.

(3) Overseas countries and territories not included.

Source: Lloyd's Register

With the exception of Denmark, France, Luxembourg and the Netherlands the merchant fleet of all Member States declined over the period 1990/1995.

The substantial increases in the Danish and Luxembourg fleets, 25% and 22% respectively are due largely to formation of a second Danish register - the Danish International Register (DIS) - and the introduction of the Luxembourg register that have allowed cost-effective movements from other flags into these registers.

In particular Belgium's fleet declined substantially (70%) as most of its private fleet was transferred to Luxembourg. Other countries facing considerable reduction in their fleets were Spain (52%) and the United Kingdom (24.5%).

Only two countries, Spain and France had a decline in their container capacity (TEU) for the period 1990 to 1995. In the remaining Member States, TEU increased substantially in Denmark (74%), the Netherlands (47.1%) and Portugal (39.3%). However, aggregate container capacity in the EU registered fleet increased from 1990 to 1995 by roughly 9.6% in thousand DWTs.

In 1995, Greece had the largest share in the EU fleet, 27.1% of the vessels and 37.4% of the DWT, due to the large number of bulkers and tankers owned and operated by Greek concerns. Greece is followed at some distance by Italy with 13.1% of the vessels but only 13.6% of DWT, due to a large number of smaller vessels on their registry.

The differences in the fleet structure of the Member States are clearly presented in Table 7. More than half of the fleet in Belgium, Italy, Luxembourg and Greece is comprised of tankers and bulk carriers; in contrast to Denmark, Germany, Spain, Ireland, the Netherlands and Portugal where general cargo and container vessels account for more than half of their respective fleets. For the EU as a whole and Japan, general cargo vessels hold the greater share. In the USA, tankers are the main vessel type.

National governments and the European Commission want to maintain an EU fleet not only for strategic and commercial reasons but also because of its contribution to Member States' economies in terms of income, employment and balance of payments. Employment of EU nationals made up 85% of the total employed in the EU shipping industry. This share varies considerably by Member State, e.g. it is relatively low in the Netherlands, where it is 67.3%; in comparison with France and Italy where the percentages are 93% and 96% respectively.

## INDUSTRY STRUCTURE

### Tanker and bulk

In the EU, the tanker trades are dominated by time charters of tankers plying specific routes and ships owned and managed by the major oil conglomerates. The bulk trade is formed by three distinct groups, time charters, the single cargo same route and tramp vessels, where the vessel location and voyage depends on cargo availability.

The nature of the trade is such that the structure and organisation of the bulk shipping sector is unlikely to change fundamentally in the long term.

The market of the bulk industry is open and highly competitive with no barriers to entry except access to necessary finance. Due to the bulk trades demand flexibility of response by the carriers, there has been less concentration of expertise and assets than in the liner sector. The move towards the development of cargo space pools has been arrested as a consequence of downward pressure on rates. This has worked against establishing such pools which inherently tie owners to a core rate for an extended period. Operational pools, which were formed to share the cost of administrative and management functions, have not progressed to any extent because their role has been assumed by the growth in specialised ship management companies.

**Table 12: Shipping**  
Ships under construction or ordererd for EU flags, 1st January 1995

	General cargo		Container		Tanker		Bulk		RO-RO		Total	
	(number)	(000 'DWT)	(number)	(000 'DWT)	(number)	(000 'DWT)	(number)	(000 'DWT)	(number)	(000' 'DWT)	(number)	(000' 'DWT)
Belgique/België	0	0.0	0	0.0	1	9.6	0	0.0	0	0.0	1	9.6
Danmark	14	86.5	17	741.0	8	576.8	3	167.0	2	25.0	44	1 596.3
Deutschland	45	225.0	56	934.7	19	154.2	10	317.7	3	5.8	133	1 637.5
Ellada	5	101.0	3	132.0	30	1 844.5	18	1 924.1	0	0.0	56	4 001.7
España	0	0.0	0	0.0	1	9.4	0	0.0	1	4.9	2	14.3
France	0	0.0	1	34.5	6	282.0	2	330.0	1	3.9	10	650.4
Irland	2	6.6	0	0.0	0	0.0	2	14.0	0	0.0	4	20.6
Italia	2	13.0	0	0.0	17	900.3	7	524.5	3	17.1	29	1 454.9
Luxembourg	0	0.0	0	0.0	0	0.0	2	340.0	0	0.0	2	340.0
Nederland	23	144.6	4	63.1	8	41.9	0	0.0	0	0.0	35	249.6
Österreich	6	41.4	0	0.0	0	0.0	1	3.7	0	0.0	7	45.1
Portugal	4	53.1	0	0.0	0	0.0	0	0.0	0	0.0	4	53.1
Suomi/Finland	0	0.0	0	0.0	0	0.0	1	13.2	1	12.2	2	25.4
Sverige	2	11.4	0	0.0	5	125.3	0	0.0	6	82.2	13	218.9
United Kingdom	0	0.0	1	44.7	6	312.2	0	0.0	0	0.0	7	356.9
Total EUR 15	103	682.6	82	1 950.0	101	4 256.2	46	3 634.2	17	151.1	349	10 674.3
Total World	386	2 641.7	308	8 931.7	51030	847.5	486	32 073.3	48	753.4	1 73875	067.5

Source: Fairplay in ECSA

## Liner

The liner industry is moving from the product life cycle stage of maturity to advanced maturity, where customer sophistication is high, product differentiation is low and concentration substantially increases. Hence, in this final stage of the life cycle, the two types of carriers that will survive are the first tier carriers with established multi-modal presence and the niche operators that trade in speciality trades. Most companies in-between these two extremes are likely either to disappear or merge over the coming decade.

Towards the end of the third quarter of 1994 the aggregate capacity in service of the top 20 container carriers totalled 1.8 million TEU, representing 46.2% of the world's total available slots. The share of the top 20 liner companies has been increasing steadily: it was 43.7% in 1993, against 32% in 1982.

Traditionally the Asian carriers have dominated the rankings and continue to do so. However, an EU line, Maersk Line, has remained in first place. The Asian carriers dominate the top 20 with 10 carriers, of which 3 are now in the top 5. These 10 carriers together accounted for 911 762 slots, slightly over half of the top 20 operating capacity. Sea-Land and APL represent the USA in the top 20 with an aggregated operating capacity of 223 643 TEU or 12.4% of capacity (in 1993 it was 13.6%). Apart from ZIM Israel Navigation and the Mediterranean Shipping Company, the remaining operators are from the EU. The EU lines now occupy six places among the top 20 and their aggregate operating capacity was 563 826 TEU or 31.3% of capacity, which is substantial gain in share from the 1993 result of 27%. The two major EU ranking changes from 1993 were DSR-Senator Lines move from 20th position to 8th by adding 15 ships increasing their capacity by 48 455 TEU and the addition this year of Compagnie Maritime d'Affretement from France into 20th position.

## Cruise shipping

Cruise shipping is dominated by the USA, which accounts for some 85% of the world cruise industry. The USA industry has expanded by almost 10% per year for the last few years, with passengers up from 1.43 million in 1980 to 3.86 million in 1991. However, as the industry comes under increasing

pressure to advance safety standards, it will see some structural change in the major players. At least half of the fleet is over 20 years old, and the latest regulations from the IMO will accelerate the division between the major groups with modern tonnage and the 'others'. Also, the demand for cruises has undergone a shift away from longer cruises to those of 3 to 5 days, which should act as fillip to the EU cruise industry which has tended to specialise in short sea cruises. Increasing concentration in the industry will mean a bipolar orientation towards the major players and the much smaller specialist operators.

## Strategies

Globalisation and competition in sea trade is leading towards merger and acquisition. Companies are likely to survive to increasing competitive environment if they plan for retoning and for a wider market-range including: Pacific Rim, Europe/Asia, North Atlantic, intra-Asia.

The tendency is for multimodal transport, for the transfer away from a blue water operation into a through transport operation monitoring an inland carriage which maximises the use of the container, control the use of the containers arriving from separate trades so as to avoid empty positioning/repositioning costs.

Multi-trade carriers will in future become more sophisticated in the use of electronic data processing to handle their paperwork, track the positioning of the container and its cargo, and also to reduce the costs of dealing with an imbalanced trade.

## ENVIRONMENT

Important environmental aspects include the adoption by IMO of the International Convention on Liability and Compensation for damage in connection with the carriage of Hazardous and Noxious substances by sea (HNS) and the Protocol of 1996 to amend the Convention on Limitation of Liability for Maritime Claims.

In the context of the London Convention on the Prevention of Maritime Pollution, a resolution has been adopted concerning phasing out sea disposal of industrial waste; as from

1 January 1996 the sea disposal of waste materials generated by manufacturing or processing operations is forbidden.

From 1 January 1996, Directive 93/75 imposes notification obligations to shippers and shipowners involved in the carriage of dangerous or polluting cargo. In order to create incentives to use more environmentally friendly ships Regulation 2978/94 charges lower fees to tanker with segregated ballast tanks or double hull lower than the ones for tankers without segregated ballast of the same gross tonnage.

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## REGULATIONS

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Problems of low freight rates, ageing and poor maintenance, together with the poor standard requirements of the open registers create the need of stricter regulation. Main measures involving all ships, whatever their flag are from 1 January 1996: the Directive on Classification Societies 94/57 that allow national administrations to safety and environmental inspections to all ships, the Directive 94/58 imposing effective communication requirements on board, Regulation 3051/95 imposing to companies operating Ro-Ro passenger ferries auditing and certification to their Quality and Safety Management System for both shore based and on board activities.

As well as internally to the EU, also concerning external relations, the tendency has been towards free access and fair competitive conditions. Important agreements are the Lome' convention with the African, Caribbean and Pacific countries, the Europe Agreements with several East and Central European countries, the Partnership and Co-operation agreements with former USSR countries, the Association Agreements with countries from the Mediterranean.

Generally, there is co-operation between the International Maritime organisation (IMO) and the Labour Organisation (ILO) in setting international standards for safety and labour rules.

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## OUTLOOK

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Following a good year in 1995, the prospects for the world trade look rather positive. The further development for regional trade organisations (NAFTA, ASEAN, Mercosur) and liberalisation efforts in the World Trade Organisation (WTO) are expected to stimulate international trade in general. OECD has estimated increases of 8.2% in 1996 and 8.3% in 1997.

The prospects for the seaborne trade in 1996/97 are also encouraging. The dry bulk market is expected to be weaker than in 1995, but oil shipments are expected to follow a more positive growth.

However, in the longer term, the demand outlook appears significantly more positive for dry bulk than for the tanker market. Increased need for food supplies and building material to Asian economies should stimulate the dry bulk trades while the liquid bulk trade will face increased competition from coal in the Asian markets and increasing use of available gas reserves.

For liner shipping, the restructuring process initiated in 1995 should continue but fears exist that the high investments in the sector, could again create an oversupply situation in the near future.

Written by: DRI Europe

The industry is represented at the EU level by: European Community Shipowners Association (ECSA). Address: Rue Ducale 45, B-1000 Brussels; tel: (32 2) 511 3940; fax: (32 2) 511 8092.

# Air transport

## NACE (Revision 1) 62.10, 62.20

Air transport is benefiting from favourable market conditions with the industry currently showing significant profits thus ending a constant declining trend in output growth which began in the late 1980s. Besides strong traffic growth, spurring this improved performance is a healthier relationship between industry capacity and demand. The liberalisation of open European skies has created fierce competition within the EU and globally. It will prompt both an increasing number of privatisations of the traditional EU state carriers and allow airlines to consolidate operations through mergers and alliances. The general restructuring is likely to enhance profitability mainly by balancing yields and unit costs without compromising air traffic growth. Higher competition, the recognition throughout Europe of national diplomas, the use of common standards for industrial products and favourable regulations in general, will increase business activity and favour the dispersion of the population within European boundaries, so boosting demand for air travel but also threatening increased congestion.

### INDUSTRY PROFILE

#### Description of the sector

The air transport industry comprises enterprises which are exclusively or primarily engaged in the transport of passengers and goods by air on scheduled services (NACE 62.10) as well as unscheduled services, helicopter and air taxi services and private usage (NACE 62.20). This sector also encompasses the town offices of airline companies.

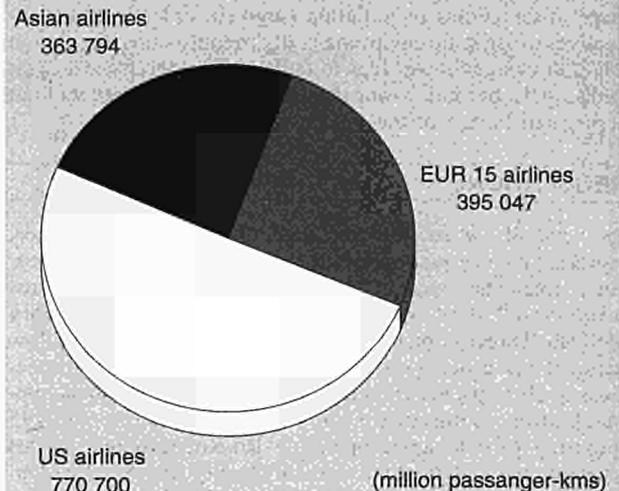
Air traffic (excluding military) is usually divided into commercial and general aviation. Commercial aviation consists of passenger travel, both charter and scheduled, and air freight, which includes air freight on freighter aircraft, combination passenger/freight aircraft and freight in the hold of passenger aircraft, and air courier and mail services. General aviation includes private use of planes and air taxi services.

This monograph will focus on the commercial aviation sub-sector, with particular emphasis on the major airlines of the EU Member States. Unless otherwise specified, statistical information mentioned in the text refers to scheduled traffic for the large EU carriers. These statistics therefore do not cover two important segments of the industry, namely regional airlines and charters.

#### Recent trends

In 1994 passenger-kilometres grew by 8% compared with the preceding years, while tonne-kilometres (freight) and employment were up by respectively 11% and 2% over the same period. 1995 represents, for the airlines industry, a year of recovery after four years of losses. The bulk of the improvement was attributed to higher load factors, which reached record levels, but profits were hampered by a poor performing yield to unit cost ratio. According to AEA (Association of European Airlines) passenger traffic increased by 9.3% in 1994, one of the best annual growth rates since the end of the 1970s, and by 8% in 1995. Monthly growth rates were reasonably steady throughout the two year period 1994 and 1995. In 1994 all route areas benefited, with the exception of a very depressed Europe-North Africa market. The growth was achieved with a capacity increase of 5.3%, which signalled a significant increase in load factor, from 66.3% to 68.8%. On intra-European routes, traffic growth was 10.4%, as passenger journeys increased by over 8 million to a total of 88 million. The newly-enlarged EU dominates the European scene, with 78% of total seat capacity entirely within its

Figure 1: Air transport  
International comparison of IATA members, 1994



Source: WATS: Systemwide scheduled services

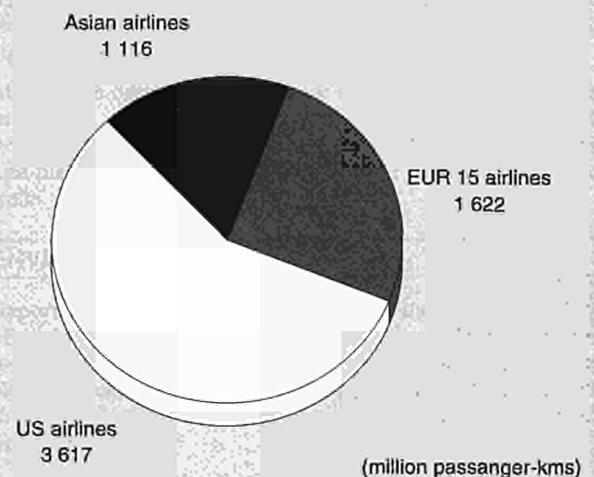
boundaries, and a further 13% between the EU and the rest of Europe. Busiest market was UK-France, with 1862 weekly flights, 133 roundtrips per day, followed by UK to Ireland, Netherlands and Germany.

Taking into account the EU's enlargement, forecasts for 1995 and 1996 are for a very large increase in traffic between Brussels and Helsinki, Stockholm and Vienna., which according to an AEA estimate, in the 1994/1995 period, in aggregate, grew 28% and contributed to an above-average growth in the total Belgian market. In addition, estimates for Europe's largest market, to and from the UK, returned a relatively low figure at plus 2.6%. Affecting this, and indeed the total growth in Europe in 1995, was the first full year of operation of the Channel Tunnel, which opened for through passenger trains in November 1994, and its impact on the London-Paris and London-Brussels markets.

#### International comparison

US airlines, with a total of 770 700 passenger kilometres represent the highest domestic traffic; about twice the size

Figure 2: Air transport  
International comparison of number of jet aircraft, 1994 (1)



(1) Only IATA members  
Source: IATA

**Table 1: Air transport  
Main indicators, 1992**

	Number of enterprises employed	Turnover (million ECU)	Number of persons
Belgique/België	(1) 190	4 205	(1, 7) 8 223
Danmark	(6) 176	(1) 1 124	(1) 11 877
Deutschland	(3) 305	(3) 4 536	(7) 78 748
Ellada (4)	(5) 79	N/A	6 076
France	165	9 773	57 881
Italia (3)	71	3 461	20 659
Luxembourg (1)	56	N/A	2 213
Nederland	144	3 954	30 400
Österreich (4)	75	649	3 579
Portugal	7	999	11 607
Sverige	296	2 257	(7) 12 872
United Kingdom	N/A	N/A	N/A

(1) 1991

(2) 1990

(3) 1989

(8) 1988

(5) Covers only enterprises with at least 5 employees.

(6) Number of local units.

(7) Number of employees.

Source: Eurostat; Mercure

**Table 2: Air transport  
Production indicators (1)**

(million passenger-kms)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Volume of passenger transport	159 361	181 350	182 859	205 730	227 298	243 180	262 211	249 868	284 419	305 311	342 376
(million tonne-kms)	1 980	1 985	1 986	1 987	1 988	1 989	1 990	1 991	1 992	1 993	1 994
Volume of goods transport	7 377	10 347	11 251	12 380	14 037	15 095	15 834	15 381	15 870	17 109	19 447
(units)	1 980	1 985	1 986	1 987	1 988	1 989	1 990	1 991	1 992	1 993	1 994
Number of persons employed	248 938	249 817	253 704	262 400	267 319	280 236	290 065	285 242	265 649	258 926	263 922

(1) For 1994, data include Austrian, Finnair and British Midland.

Source: AEA

**Table 3: Air transport  
AEA scheduled passenger traffic by carrier of Member States, 1994**

Carrier	Passenger-km:s (million) International (1)	Europe (%)	Total (2)
Aer Lingus	4 223	39	4 281
Air France	42 151	15	50 119
Alitalia	24 615	26	26 962
Austrian	3 832	52	3 833
British Airways	81 053	17	86 232
British Midland	1 221	100	2 216
Finnair	5 872	49	6 490
Iberia	17 602	30	22 531
KLM	40 833	12	40 838
Lufthansa	51 665	21	56 536
Luxair	361	100	361
Olympic	7 453	41	8 429
Sabena	7 497	35	7 497
SAS	14 304	49	18 466
TAP	6 616	43	7 586
EUR 15	309 298	23	342 376

(1) Total International: all short/medium haul and long haul International traffic.

(2) Sum of domestic and international traffic.

Source: AEA



**Table 4: Air transport**  
Country to country scheduled intra-European passenger traffic on AEA airlines, 1993

(thousands) To	B	DK	D	GR	E	F	IRL	I
From								
Belgique/België	-	105 814	378 960	64 161	244 566	317 281	44 784	334 974
Danmark	103 997	-	442 634	40 183	116 778	189 781	30 729	131 061
Deutschland	380 076	439 773	-	435 318	737 774	1 161 412	124 260	1 157 768
Ellada	67 602	42 737	458 465	-	64 653	134 972	0	322 624
España	248 113	120 671	739 536	64 074	-	665 420	31 517	667 075
France	319 452	197 668	1 216 491	133 126	669 287	-	98 937	1 211 181
Ireland	44 545	30 645	124 985	0	33 408	98 872	-	31 862
Italia	332 467	138 185	1 163 536	315 188	670 824	1 238 831	32 615	-
Luxembourg	15 185	4 630	0	0	13 028	0	0	0
Nederland	122 368	147 436	591 213	97 937	255 687	453 162	61 388	366 899
Portugal	94 833	28 671	211 306	11 571	251 114	0	6 363	131 702
Sverige	91 891	600 273	248 497	341	41 688	149 672	0	48 687
United Kingdom	589 858	404 477	2 490 648	233 194	930 062	2 295 542	1 150 042	1 168 991
EUR	2 318 496	1 660 707	7 817 774	1 394 752	3 987 181	6 555 273	1 580 635	5 524 137
Norge	35 369	531 130	105 318	491	0	82 561	0	22 075
EU+N+S	2 445 756	2 792 110	8 171 589	1 395 584	4 028 869	6 787 506	1 580 635	5 594 899
(thousands) To	L	NL	P	UK	EU	N	S	EU+N+S
From								
Belgique/België	14 132	123 588	93 004	603 693	2 324 957	34 166	90 727	2 449 850
Danmark	2 650	145 861	27 199	400 644	1 631 517	535 248	603 860	2 770 625
Deutschland	0	595 714	203 498	2 449 935	7 685 528	106 553	242 704	8 034 785
Ellada	0	98 302	11 792	238 594	1 439 741	460	465	1 440 666
España	12 862	258 261	239 235	940 841	3 987 605	0	41 718	4 029 323
France	0	470 651	326 795	2 388 675	7 032 263	79 346	149 903	7 261 512
Ireland	0	59 905	6 405	1 172 481	1 603 108	0	0	1 603 108
Italia	0	369 218	131 126	1 109 413	5 501 403	23 176	44 670	5 569 249
Luxembourg	-	0	9 669	26 338	68 850	0	0	68 850
Nederland	0	-	86 023	724 392	2 906 505	138 464	181 502	3 226 471
Portugal	8 770	85 861	-	437 477	1 267 668	2 536	7 959	1 278 163
Sverige	0	182 499	9 409	374 815	1 747 772	285 718	-	2 033 490
United Kingdom	29 773	718 952	435 967	-	10 447 506	373 787	374 333	11 195 626
EUR	68 187	2 926 313	1 570 713	10 492 483	45 896 651	1 293 736	1 737 841	48 928 228
Norge	0	136 143	2 634	378 312	1 294 033	-	284 260	1 578 293
EU+N+S	68 187	3 244 955	1 582 756	11 245 610	48 938 456	1 579 454	2 022 101	52 540 011

Source: AEA

**Table 5: Air transport**  
AEA scheduled freight traffic by carrier of Member States, 1994 (1)

Carrier	Tonne-km:s (million) International (2)	Europe (%)	Total (3)
Aer Lingus	101.0	9.2	101.2
Air France	4 140.2	1.2	4 227.0
Alitalia	1 352.2	3.5	1 361.2
Austrian	91.8	23.9	91.8
British Airways	3 045.4	3.1	3 108.6
British Midland	2.7	100.0	4.1
Finnair	188.8	14.7	190.5
Iberia	504.3	8.1	566.4
KLM	3 179.4	2.1	3 179.4
Lufthansa	5 356.3	2.9	5 373.8
Luxair	0.5	100.0	0.5
Olympic	126.1	31.9	135.0
Sabena	422.1	5.3	422.1
SAS	430.9	10.9	445.9
TAP	226.0	15.9	240.2
EUR 15	19 167.6	3.4	19 447.0

(1) Excluding mail.

(2) Total International: all short/medium haul and long haul international traffic.

(3) Sum of domestic and international traffic.

Source: AEA

**Table 6: Air transport**  
**Expected annual growth rates of air traffic by country market**

(%)	Average 1995	1996	1997	1998	1999	1995-99
Belgique/België	10.1	6.5	6	5.9	5.9	6.9
Deutschland	8.1	7.5	7.1	7.1	7.1	7.4
Ellada	4.5	5	5.1	5.2	5.1	5
España	8	6.5	6.3	6	5.9	6.5
France	3.6	6.3	6.3	6.2	6.2	5.7
Ireland	6.7	6.3	6.4	6.3	6.2	6.4
Italia	7.6	6.7	6.6	6.3	6.4	6.7
Nederland	7.1	6.6	6.2	5.9	5.8	6.3
Österreich	7.6	7	6.9	6.8	6.7	7
Portugal	8.5	8.2	8	7.4	7.4	7.9
Suomi/Finland	11.8	9.3	7	7.1	7.1	8.4
United Kingdom	5.6	6.6	6.4	6.4	6.5	6.3
Scandinavia (1)	8.9	7.8	6.7	6.5	6.7	7.3

(1) Denmark, Sweden, Norway.  
 Source: AEA

of the EU and Asian airlines traffic. However in 1994 the EU was the best performer, showing a growth rate for the 1993-1994 period of 17.9% compared with an increase of 9.7% and 4.2% respectively for the US and Asian airlines for the same period.

From the ranking of world carriers based on aggregate domestic and international passenger traffic, the top ten world airlines include three EU airlines, Delta Airlines, British Airways and Air France, one Far Eastern carrier and six US airlines of which United Airlines and American Airlines lead the group. From the indications of the importance of international travel demand: the share of international travel was particularly significant for British Airways, 94%; Air France, 84.1%; and Alitalia, 80.8%.

Almost 60% of the AEA traffic is flown either across the North Atlantic or on Far East/Australia routes, emphasising the need for the European airlines to remain competitive with the other two blocs. Each of the three regions, Europe, North Atlantic and Far East/Australia, has its characteristics. In contrast to the other regions Europe is much more compact, with its main airports concentrated in the centre. For internal traffic; average journeys are much shorter: 860 km compared with 1350 km in the Orient and 1410 km in the USA. In comparison the main area of handicap for the European airlines is in costs: on the personnel side, both the Orient and the US airlines have major productivity and number of working hours advantages.

## MARKET FORCES

### Demand

To a certain extent air travel demand for business, leisure and cargo respond to different pressures. For example business travel is necessary to satisfy demands for other goods and services. Accordingly, airline industry demand is cyclical, and traffic trends generally follow economic activity. Rising business activities generally translates into higher personal incomes and more dispersion of the working population running overseas operations for companies expanding into international markets. Leisure travel is dependent on the levels and growth of real personal disposable income and available leisure time allowing for a greater proportion of major holidays, whilst air freight depends largely on international trade.

While air traffic volume reflects economic factors, it is also affected by the cost and convenience of alternative modes of transportation and the average price of an airline ticket. De-

mand for discretionary travel, such as vacations, tends to be more price-sensitive, but in recent years corporate travel budgets have also come under greater scrutiny.

### Supply and competition

Most of the EU 'flag carriers' provide global services, whilst the small to medium sized EU airlines concentrate on predominantly intra-European services (British Midland and Luxair), specific inter-continental services (Virgin Atlantic Airways) or niche point to point routes. However the small to medium sized carriers do have alliances and equity partnerships that allow them access to much larger and global route structures.

A turning point towards liberalisation and competition was the implementation in January 1993 of the third package of air transport liberalisation measures. Since then, air carriers have freedom of pricing, as well as of new services, on national carriers' previously protected routes. The result has been a significant increase in the amount of competition on international flights between Member States of the EU and on domestic EU services. New competition has come primarily from three sources: the expansion by national incumbent airlines commencing or expanding operations in other markets (such as British Airways through TAT and Deutsche BA); the commencement of new routes or the expansion of existing services by existing, but much smaller European airlines; and the entry into the market of new airlines (such as EBA, EasyJet and Spanair).

However, the freedom to adopt measures in order to protect market position from new entrants is restrained by the application of EC and sometimes domestic competition law. Anti-competitive behaviour can be divided into two types. First, airlines facing unwelcome competition may seek agreements with other airlines or companies which provide ancillary air transport services, such as tour operators, travel agents or CRS providers, that favour the incumbent and disadvantage the new entrant. The second type of behaviour does not require any agreement or understanding between companies but concerns airlines or other service providers which occupy a dominant or monopolistic position in a substantial part of the common market. Under the EC competition rules they are prohibited from abusing that position.

**Table 7: Air transport  
ACE members traffic, 1994**

	Country	Passenger-km:s (millions)	Passengers (thousands)
Aero-Lloyd Flug	D	5 597.0	1 200.1
Air 2000	UK	10 700.0	4 200.5
Air Belgium	B	783.6	173.1
Air Berlin	D	1 545.1	1 047.6
Air Europa/España	E	5 077.5	3 436.0
Air Europe SpA	I	2 746.3	182.4
Air Holland Charter	NL	(1) 1 000.0	500.0
Air Liberté	F	3 400.0	700.0
Air UK Leisure	UK	2 045.9	1 145.0
Airtours Int'l	UK	9 550.0	3 520.2
Britannia Airways	UK	18 850.0	7 913.1
British Midland AW	UK	3 611.2	5 173.8
Caledonian Airways	UK	5 969.6	1 911.8
Centennial	E	863.7	575.0
Condor Flugdienst	D	16 188.8	5 500.0
Corsair	F	7 003.0	1 206.0
Deutsche BA	D	(1) 491.2	949.5
Euralair	F	(1) 883.0	678.6
Eurobelgian AL	B	1 453.9	836.9
Excalibur	UK	1 900.0	765.0
Futura	E	2 473.2	1 255.1
Germania	D	3 806.6	1 345.5
Hapag-Lloyd Flug	D	9 450.0	4 031.0
Lauda Air		3 123.0	826.7
LTE Int'l Airways	E	1 195.9	487.9
LTU Int'l Airways	D	10 633.6	3 323.9
LTU-Süd Int'l Airways	D	6 434.8	2 309.8
Maersk Air	DK	1 864.8	1 729.0
Martinair Holland	NL	7 953.0	1 832.3
Monarch Airlines	UK	10 732.0	4 803.0
Oasis AL	E	2 216.2	1 350.8
PremiAir	DK	6 749.0	1 102.5
Sobelair	B	6 208.7	688.0
Spanair	E	5 367.0	2 806.1
Sterling European AL		1 165.6	533.2
TEA Italy	I	(1) 1 000.0	500.0
Transavia Airlines	NL	3 994.7	2 004.9
Transwede	S	3 181.6	2 033.1
Virgin Atlantic AW	UK	12 230.8	1 703.6
<b>Total</b>		<b>199 440.3</b>	<b>76 281.0</b>

(1) 1993 data  
Source: ACE

## INDUSTRY STRUCTURE

### Companies

#### Scheduled passenger services

In the EU there is typically a three tier structure in scheduled air passenger transport defined by numbers of routes and age of operation. The first tier includes those carriers that have been and still are the so-called flag carriers. The second tier comprises of the carriers that operate reasonably large networks, either within the EU or internationally or both (for instance British Midland). The third tier comprises the regional carriers, such as ATI in Italy or Air Inter in France, and the tiny niche point-to-point airlines, i.e. Orient Air, which operates from Waterford, Ireland to Gloucester, England via Dublin. However, in scheduled international and domestic services, the EU air transport industry is dominated by the small number of flag carriers. The table showing the ownership structure for the flag carriers in 1994, indicates that the scheduled EU carriers are dominated by the flag carriers, however, although the industry could be considered concentrated, the number

of EU airlines actually in operation is substantial. IATA lists 35 airlines operating scheduled passenger services. The European Regional Airlines Association (ERA) lists another 20 regional airlines that are not included in the IATA list. The regional airlines account for 1 in 7 of intra-EU passengers on scheduled services. Also, the regionals operate a fleet of over 600 aircraft in the EU. There are also a number of much smaller regional airlines operating that are not members of either organisation. Hence, excluding freight only operators and the non-member airlines there are 109 scheduled passenger airlines operating in the EU.

#### Charter passenger services

The EU hosts 35 specialised charter operators representing the low-cost segment of the air transport industry. These carriers will have great difficulty competing in the scheduled market, as they may not be able to gain proper access to computerised reservation systems (CRS) controlled by scheduled airlines, even if legally entitled to such access. Also they do not have the strong, hub-based route structure that would allow them to concentrate traffic.

**Table 8: Air transport**  
**Employment and fleet of AEA's scheduled carriers by Member States, 1994**

Carrier	Employees	Fleet	Aircraft on order	Employees/airplane
Aer Lingus	5 153	32	0	161.0
Air France	37 500	142	0	264.1
Alitalia (1)	18 676	144	44	129.7
Austrian	3 867	24	15	161.1
British Airways (2)	49 628	253	53	196.2
British Midland	3 917	31	10	126.4
Finnair	7 084	56	0	126.5
Iberia	23 000	112	16	205.4
KLM	23 591	101	13	233.6
Lufthansa	42 268	220	16	192.1
Luxair	1 236	11	0	112.4
Olympic	10 348	54	0	191.6
Sabena	9 750	55	0	177.3
SAS	19 077	155	11	123.1
TAP	8 827	36	2	245.2
EUR 15	263 922	1 426	180	185.1

(1) Aircraft on order include orders for ATI.  
(2) Fleet includes wholly-owned subsidiaries.  
Source: AEA

**Table 9: Air transport**  
**Development of AEA's total scheduled freight traffic (1)**

(million tonne-km:s)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Aer Lingus	89	99	81	75	81	102	118	128	115	109	97	101
Air France	1 545	2 304	2 391	2 632	2 928	3 154	3 261	3 423	3 230	3 284	3 582	4 140
Alitalia	519	681	747	834	901	1 019	1 107	1 159	1 218	1 262	1 327	1 352
Austrian	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	92
British Airways	992	1 135	1 140	1 244	1 410	2 027	2 183	2 291	2 236	2 461	2 734	3 045
British Midland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3
Finnair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	189
Iberia	384	475	510	527	524	589	725	753	614	578	544	504
KLM	944	1 389	1 396	1 497	1 720	1 873	1 990	2 125	2 220	2 394	3 070	3 179
Lufthansa	1 506	2 249	2 413	2 821	3 242	3 479	3 840	4 026	4 093	4 284	4 636	5 356
Luxair	0	0	0	0	0	1	1	0	0	1	0	0
Olympic Airways	61	74	103	92	104	102	103	113	114	107	127	126
Sabena	394	525	565	574	536	651	661	663	486	386	401	422
SAS	403	400	399	402	380	397	419	442	406	390	420	431
TAP Air Portugal	105	116	133	123	125	141	160	171	163	167	171	226
UTA	435	482	467	428	431	503	528	542	485	448	0	N/A
EUR 15	7 377	9 928	10 347	11 251	12 380	14 037	15 095	15 834	15 381	15 870	17 109	19 168

(1) Domestic + International traffic, excluding mail.  
Source: AEA

In the context of increasing liberalisation it remains to be seen whether charter airlines will be tempted into scheduled services even if the distinction between scheduled and charter services is diminishing. Carriers can operate freely scheduled as well as non-scheduled services, and the free pricing for intra-EU scheduled traffic of the so called third EU package on air transport liberalisation will lower the cost-gap between charter and scheduled services. There is a question mark over the long-term future of the EU's charter airlines in a liberalised environment; the US experience showed how charter operations shrunk to a small fraction. However there are differences. First of all, EU's charter airlines are tour operators, offering, apart from low prices, the convenience of making all the hotel and associated arrangements in the tourist's destination country, obviating the language and cultural difficulties that would be encountered if the individual traveller tried to make

its own arrangements. Another difference is that traffic to many holiday destinations in Europe is highly seasonal, because little business travel is involved; there is no real justification for maintaining year-round schedules.

The future of the EU charter airlines will partly depend on whether scheduled costs can ever be driven as low as costs for charter flights.

#### *Air freight services*

Air freight has never had the same economic importance as the scheduled passenger services, the latter being still extremely reliant on the freight forwarders to fill up the cargo holds on scheduled routes. Often, the amount of cargo space is finalised at the last moment when the final number of passengers on is known, usually an hour or so before departure. There are, however, very good early estimates of available

**Table 10: Air transport**  
**Development of AEA's total scheduled passenger traffic (1)**

(million passenger-km:s)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Aer Lingus	2 049	2 474	2 496	2 738	3 284	3 970	4 190	3 786	4 011	3 759	4 280
Air France	25 392	28 583	27 571	31 440	34 333	36 734	36 653	33 711	37 034	43 535	50 119
Alitalia	12 877	14 576	13 994	15 343	15 634	17 619	19 126	18 187	23 586	24 520	26 962
Austrian	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 833
British Airways	40 140	41 103	40 430	46 299	56 939	60 758	66 795	62 835	72 491	80 086	86 232
British Midland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2 216
Finnair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6 490
Iberia	14 818	17 576	18 333	19 402	20 495	21 035	22 112	20 473	23 857	23 265	22 531
KLM	14 058	18 039	19 070	21 801	23 270	24 927	26 390	27 307	31 695	36 807	40 838
Lufthansa	21 056	24 522	26 645	31 771	34 033	36 133	41 903	42 685	48 661	52 658	56 536
Luxair	0	111	120	128	151	138	253	258	286	290	361
Olympic Airways	5 062	7 468	6 382	7 121	7 530	8 015	7 764	6 193	7 262	7 899	8 428
Sabena	4 853	5 663	5 561	5 973	6 528	6 760	7 572	6 223	6 203	6 485	7 497
SAS	10 956	12 063	12 539	13 207	14 027	15 291	16 516	15 416	15 699	18 139	18 466
TAP Air Portugal	3 428	4 240	4 475	4 978	5 640	6 231	6 836	7 025	7 671	7 868	7 586
UTA	4 673	4 932	5 243	5 527	5 433	5 568	6 101	5 769	5 962	0	N/A
EUR 15	159 632	181 350	182 859	205 730	227 298	243 180	262 211	249 868	284 419	305 311	342 375

(1) Domestic + International traffic  
Source: AEA

**Table 11: Air transport**  
**IATA member's ranking - Top 20 scheduled passengers carriers, 1994**

Rank	Carrier	Passenger-km:s (millions)			Rank
		Total	International	Share (%)	
1	United Airlines	173 834	67 391	38.8	2
2	American Airlines	159 039	48 683	30.6	5
3	Delta Air lines	138 876	38 684	27.9	10
4	Northwest Airlines	93 135	40 101	43.1	9
5	British Airways	86 232	81 053	94	1
6	Continental Airlines	66 962	15 444	23.1	19
7	Japan Airlines	62 936	49 084	78	4
8	USAir	61 058	N/A	N/A	N/A
9	Lufthansa	56 536	51 568	91.2	3
10	Air France	50 119	42 151	84.1	7
11	Qantas	48 345	36 834	76.2	11
12	Singapore Airlines	44 947	44 947	100	6
13	KLM	40 837	40 833	100	8
14	TWA-Trans World Airways	40 081	11 849	29.6	27
15	All Nippon Airways	38 522	10 502	27.3	30
16	Cathay Pacific	32 710	32 710	100	12
17	Alitalia-Linee Aeree Italiane	30 259	24 450	80.8	14
18	Korean Airlines	29 269	25 244	86.2	13
19	Thai Airways	25 242	22 619	89.6	15
20	Air Canada	22 774	13 502	59.3	24

Source: WATS: Scheduled services

cargo space based either on maximum passenger capacity and/or bookings for the flight. The scheduled freight carrier, whether independent or a subsidiary of a scheduled airline, typically has a scheduled route for cargo on dedicated freighter aircraft.

Amongst the EU carrier members of the AEA, the air freight sector is dominated by two airlines, Air France and Lufthansa, which together account for almost half of the recorded market. KLM and British Airways follow in third and fourth place. Comparing the revenues for scheduled passenger traffic with freight traffic, freight accounts for just over 14% of revenue.

### Strategies

While the industry in 1994 staged a recovery from the huge losses of previous years, this was achieved by the most rigorous cost control; innovativeness and risk-taking. There has been a flurry of licensing activity. According to AEA from January 1993 to April 1995, 58 new scheduled carriers appeared in Europe (including the EFTA countries which, substantially liberalised in step with the EU), but of these, 21 failed or withdrew from the scheduled market. The great majority of new entrants have been regional airlines with small turboprop aircraft. A few former charter operators have entered scheduled trunkline markets with jet equipment and a low-fare pricing structure.

**Table 12: Air transport**  
**IATA member's ranking - Top 20 scheduled freight carriers, 1994**

Rank	Carrier	Tonne-km:s (thousands)		Share (%)	Rank
		Total	International		
1	Federal Express	3 198	639	20	2
2	Lufthansa	909	857	94.3	1
3	Japan Airlines	778	473	60.8	8
4	Northwest Airlines	754	394	52.3	10
5	Korean Airlines	751	566	75.4	4
6	Air France	647	624	96.4	3
7	American Airlines	638	314	49.2	11
8	KLM	564	564	100	5
9	Singapore Airlines	534	534	100	6
10	United Airlines	523	237	45.3	14
11	British Airways	506	492	97.2	7
12	Delta Airlines	494	164	33.2	22
13	Cathay Pacific	463	463	100	9
14	All Nippon Airways	413	70	16.9	36
15	Thai Airways	339	296	87.3	12
16	Air Canada	315	194	61.6	19
17	Varig	313	124	39.6	25
18	Qantas Airways	287	202	70.4	16
19	Swissair	282	266	94.3	13
20	Alitalia-Linee Aeree Italiane	250	215	86	15

Source: WATS: Scheduled services

Airline strategies will continue to be influenced predominantly by the third package of EC measures seen as the final stage of the EU air transport liberalisation. The largest scheduled carriers will continue to fight for market share and for dominance at new hubs. The present trend toward the formation of very large airline alliances, should continue. The pressure on weaker carriers with insufficient feeder networks will force them to join the stronger players. In parallel, the trend toward privatisation of state-owned carriers should continue, as governments try to keep down budget deficits and find themselves less able to finance the capital needed by their flag-carriers to adapt to a liberalised European market. Government subsidies to flag carriers to cover operating losses are restricted in the new environment. The pace and extent of privatisation will depend greatly on the conditions of stock markets; rising markets would certainly help to speed up the flotation of the remaining state-owned airlines.

#### Pricing

On any given flight it is unlikely that all passengers paid the same price. Generally, the earlier a ticket is purchased, the lower the price. The strategy is to charge a premium price to business travellers who are forced to book flights at the last minute. As the flight date approaches, airlines can more easily judge a plane's load and adjust fares accordingly. In some situations, bookings will be below expectations and the airlines will lower fares to spur demand. Meanwhile, the carriers also charge different round-trip prices depending on the duration of the stay and other variables. This flexible pricing practice is known as "yield management". For many years, larger airlines have used yield management techniques to compete with carriers that are smaller, lower priced and more aggressive. For example, most business travellers can generally pay more than the average holiday maker. The larger airlines succeed in extracting higher fares from business travellers by charging more for those round-trip tickets that do not have flight dates spanning a Saturday night. Similarly, airlines offer senior citizen discounts to encourage the more price-sensitive elderly to fly without losing higher revenues from general travellers. Another technique to maximise revenues for a given flight is to offer different type of service, such as first class, business class, and economy class.

**Table 13: Air transport**  
**Comparison of EUR 15, USA and Far Eastern IATA members, 1994**

	Weight Load-factor (%) employed	Number of persons
EUR 15 airlines	67.3	303 076
US airlines	56	492 655
Asian airlines	63.2	263 780

Source: WATS: Systemwide scheduled services

#### Frequent flyer programme

Frequent Flyer Programmes (FFPs) are used as a competitive tool by airlines to win frequent travellers by providing rewards for flights taken on a particular airline or groups of airlines. These rewards usually take the form of points which count towards free flights, ticket upgrades, leisure travel and holidays, amongst others. Many airlines view FFPs as defensive, in order to maintain competitiveness and existing customer base rather than gain additional custom. The programmes have two advantages for the airlines in that they provide a useful marketing tool for matching customer requirements more exactly and developing new marketing strategies, and since they are usually restricted they enable airlines to balance loads on flights. The major drawback are the costs associated with administering the programmes and providing the rewards. The airlines in the EU have introduced FFPs cautiously and with a large variation in the levels of rewards.

Several changes have been observed recently. More airlines are now rewarding the lowest fare leisure traveller compared to the original requirement of business or fully flexible economy tickets. Hence, airlines are keen to fill up the back of the aircraft on a marginal cost basis. Finally, business travellers seem to be shifting their priorities when joining a FFP, at-

**Table 14: Air transport  
Ownership structure of EU airlines, 1995**

Airline	Country	Ownership-share (%)	Owner		
Sabena	Belgique/België	49.5	Swissair		
		33.81	Belgian State & SFI-FIM		
		16.5	Zephyr-Fin		
		0.19	Other		
			Government interests		
SAS	Danmark, Sverige and Norge, ratio 2:3:2	50	Private investors		
Lufthansa	Deutschland	59.35	Private shareholders		
		35.68	Federal Republic		
		4.97	Public sector institutions		
			State ownership		
Olympic Airways	Ellada	100	State-owned holding company INI		
Iberia	España	99.8	State ownership		
Air France	France	99.3	State ownership		
Aer Lingus	Ireland	100	State ownership		
Alitalia	Italia	86.4	State-owned holding company IRI		
Luxair	Luxembourg	37.3	Private companies		
		36.5	State ownership (incl. share of state-owned bank, 13,4%)		
			Luxair Group and others		
		13.2	Lufthansa		
			Private shareholders		
KLM	Nederland	61.8	State ownership		
Austrian	Österreich	38.2	State ownership		
		51.9	State ownership		
		15	Austrian public shareholders		
		12.6	Private shareholders		
		10	Swissair		
TAP Air Portugal	Portugal	9	All Nippon Airways		
		1.5	Air France		
		100	State ownership		
		Finnair	Suomi/Finland	60.7	State ownership
				25.3	Private institutions
British Airways	United Kingdom	7	State-owned Neste Oy		
		7	Private shareholders		
		100	Publicly quoted company (no major shareholder)		
British Midland		100	Airlines of Britain Holdings (of which 40% SAS)		

Source: AEA

taching more importance to being at the head of the waiting list for overbooked flights than to earning free flights.

Though the number of members of the major EU airlines' programmes is still tiny compared to the US, membership in FFPs are on an upward trend and more than 85% of business travellers now belong to a frequent flyer scheme.

## ENVIRONMENT

The two most important environmental impacts of the air transport industry are noise and air pollution. Noise is particularly important. Estimates included in the Commission's Green Paper on The Impact of Transport on the Environment suggest that the percentage of the population exposed to aircraft noise above 55 db(A) varies from 35% in the Netherlands to 1.7% in Denmark, and above 65 db(A) from 1% in Germany to 0.3% in Denmark. Hence, the location of airports close to residential areas is a key factor in noise pollution. Estimates released by the AEA show that the modern jets generate about the same level of noise as a TGV, but for a comparatively minute distance (some 4 kilometres). However, the discussion about noise continues at full pace, and most services that land or take off at airports near residential areas have strict requirements about night flights and the levels of thrust that can be used. This has a detrimental impact on the airlines costs as it can take much longer for an aircraft to reach optimum

cruising altitude and hence the fuel burn and the time taken for a particular stage length is higher.

Estimates for air pollution put carbon dioxide emissions second only to road transport but the gap is considerable, with road accounting for almost 80% and air taking almost 11%. Other emissions such as nitrogen oxides are still under investigation, however, some figures from the UK indicate that air emissions of NO<sub>x</sub> account for only 1%. Further research is being conducted on the measurement of NO<sub>x</sub> in the troposphere, where it is feared that the effect of the greenhouse gases is greater than at ground level.

An important caveat to understanding the relative pollution of air transport vis-à-vis other modes is that the advances made by modern technology are substantially reducing both air and noise pollution.

## REGULATIONS

The Third Package of European liberalisation measures, introduced in January 1993, is now more effectively impacting the industry. Certain measures though are not yet fully implemented. This is partly the result of group exemptions to competition rules, for example in the area of slot allocation at airports, and in the case of full market access where operation of domestic routes in another country is free from April 1997.

**Table 15: Air transport  
Air freedom rights**

First Freedom	To overfly one country en-route to another
Second Freedom	To make a technical stop in another country
Third Freedom	To carry passengers from the home country to another country
Fourth Freedom	To carry passengers to the home country from another country
Fifth Freedom	To carry passengers between two countries by an airline of a third country on a route with origin/destination in its home country
Sixth Freedom	To carry passengers between two countries by an airline of a third on two routes connecting in its home country
Seventh Freedom	To carry passengers between two countries by an airline of a third on a route outside and completely separate from its home country
Eight Freedom/Cabotage	To carry passengers within a country by an airline of another country on a route with origin/destination in its home country

Source: AEA

Major improvements for the EU are in the direction of an harmonised system of air traffic congestion comparable to the one currently in existence in the United States. In 1986 only 12% of intra-European flights were delayed by more than 15 minutes, for reasons such as weather, airline, airport, etc., but this figure rose to 20% in 1988 and 25% in 1989, mainly because of infrastructure congestion. According to the Association of European Airlines (AEA), the share of flight delays attributable to air traffic congestion in Europe decreased markedly in 1993 but air traffic congestion still represents the major source of delays.

In 1988 it was decided that air traffic flow management activities should be centralised in order to make the most efficient use of the available air traffic control. EUROCONTROL (European Organisation for the Safety of the Air Navigation) contributed to the plan of a Central Flow Management Unit, which has been set up gradually since 1992 and will be fully operational in the summer 1996 when all the national air traffic management activities will have been transferred to it.

One fillip for international airlines, including those of the EU, is the development of satellite navigation system, which if approved by the 33 members of the International Civil Aviation Organisation (ICAO), will move much of the current ground-to-air based navigation and air traffic management to satellite-to-air. Estimates on the savings for airlines reaches as high as ECU 7.8 billion by providing more efficient routing and reducing delays caused by air traffic control.

In order to efficiently support increased liberalisation, following the EATCHIP Work Programme, joint rules, procedures and specifications enhance the interoperability of the various national systems. At the same time, individual countries have agreed to improve the capacity and performance of their national systems in order to meet, by 1995 and 1998, an overall consistency of investment. Details concerning individual Member States are listed in the Convergence and Implementation Programme.

A further issue which would need much closer consideration is a harmonisation of foreign-ownership rules and the creation of substantially free-trade lines between the EU and the USA, being the latter by far the largest EU external traffic flow destination area.

## OUTLOOK

Over the years different factors, such as business activities, disposable income, international trade, safety concerns, fare pricing, effectiveness of marketing, have combined in different patterns more or less favourably to air transport development. The most recent cycle is more interesting than the previous one because it takes place in a period when no major tech-

nological improvements help the airlines to stimulate demand. The air transport industry is relying on its management and marketing skills, as well as on economic, political and regulatory factors, to continue growing. All indications, are that globally the air transport industry is now recovering after a period of losses and poor profitability related to a faster increase in costs compared with yields. The liberalisation of the skies will force continued consolidation within the industry in order for airlines to remain competitive both within and outside the EU. Hence the number of major EU operators is expected to decline in the future, whilst the number of smaller niche point-to-point airlines will increase. Capacity will be closely tailored to demand, some orders for new aircraft will be cancelled, and cost-cutting will become of first priority even if the slow pace of European liberalisation and the particular features of the EU air transport structure could protect the existing high-cost scheduled carriers from competition from new entrants. Gradual liberalisation will constrain any plans that new entrants have for rapid growth, and give the existing major players time to reduce their costs and become more competitive. Poor profitability prospects will inhibit financiers from investing in the formation of new entrants. Competition will very likely be limited to existing players.

Assuming favourable world economy conditions, impediments to growth in the air transport industry are mainly insufficient infrastructures for air transport. Investments are required to harmonise and update Europe's air traffic control in order to avoid congestion.

For the future, a possible threat to airlines growth could be high speed trains, but evidence from the implementation of the Channel Tunnel confirmed that traffic diversion, while measurable, is very small in relation to the wider scale of airlines operations. High-speed rail network could play a significant role for the airlines industry in the provision of appropriate intermodal facilities: in addition to regular rail and metro services, a number of larger airports are looking to position themselves on the evolving high-speed rail network, significantly extending their catchment areas.

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# Postal and express services

## NACE (Revision 1) 64.1

*In general, public postal operators are state owned and have a monopoly on almost all correspondence services. Private operators dominate the express and parcel services. Deregulation and (tele)communications developments are forcing public postal operators to operate more efficiently and to offer market oriented services. As the industry grows, postal and express services operators will have to deal creatively and effectively with the environmental issues that could limit growth. New regulations by the Commission will push the national public postal operators towards a more competitive situation and create new opportunities for them, as well as for the private operators.*

### INDUSTRY PROFILE

#### Description of the sector

The NACE 64 classification includes both Post and Telecommunications and concerns all units engaged in the transmission of documents, packages, sound, images and data. Apart from postal and express services, this NACE category includes telephone, telegraph, telex, network maintenance and transmission of radio and television programmes services.

This monograph exclusively concerns postal and express services of public postal operators and private operators in EU Member States. Financial services carried out by national public postal operators, for example postal giro and postal savings activities, are excluded.

Postal and express services provide the mechanism whereby letters and packages are moved between two different groups of users: Business-to-business, business-to-private and private-to-private. There is a distinction between national post activities and courier activities.

National post activities include:

- pick-up, transport and delivery (domestic or international) of mail and parcels;

- collection of mail and parcels from public letter boxes or from post offices;
- distribution and delivery of mail and parcels;
- mailbox rental, poste restante etc.

In general, more than 90% of 1st class domestic mail is delivered the next day.

Courier activities other than national post activities are provided by public as well as private operators. They are concerned with the pick-up, transport and delivery of letters and mail-type parcels and packages by firms other than the national post operators. One or more mode of transport may be involved and the activity may be carried out with either self-owned (private) transport or public transport. The express service has widened its initial focus on documents, towards the major transfer of packages and freight, carried by fleets of fully owned or dedicated aircraft, trucks, trains and delivery vans. Their business is dominated by guaranteed 24-hour cross-border deliveries.

Within the EU, the state owned, national public postal operators dominate the market for letter services. They provide general letter services, the reserved services, in most cases under a monopoly and have exclusive rights to provide them, which is intended to compensate for their universal service obligations. These services concern collection, sorting, transport and delivery of items of certain areas of domestic correspondence; they are specified at domestic level and the conditions governing its provision vary significantly from one Member State to another; in particular, with regards to quality of service.

Letter services have three product categories:

- standard correspondence services for letters, post-cards, printed papers and small packets or classified according to items with or without priority delivery;
- value-added letter services, which include registered letters, recorded letters, certificate of posting/advice of delivery, special delivery, express, direct bags ("M-bags"), post office boxes and post restante;
- additional specialised letter services, such as postal electronic mail, "hand delivery", city mail, periodics (magazines and newspapers) and direct mail.

Private operators dominate the express services market. Beside parcels, private operators provide non-reserved letter services. The percentage of the express services served by the private

**Table 1 Postal and express services**  
**Postal administrations - Receipts as a share of gross domestic product**

(%)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	1.00	0.93	1.01	0.96	1.00	0.98	0.94	0.90	0.86	0.84	0.80	0.78	0.82	0.89
Danmark (1)	0.80	0.85	0.86	0.96	1.04	1.06	1.08	1.09	0.88	0.87	0.91	0.91	0.95	1.02
Deutschland	0.84	0.98	1.04	1.03	0.98	0.98	0.92	0.92	0.74	0.82	1.16	0.81	0.57	N/A
Ellada	0.28	0.29	0.32	N/A	0.23	0.21	0.24	0.26	0.32	0.30	0.29	0.27	0.26	0.30
España	0.21	0.27	0.24	0.25	0.25	0.23	0.21	0.20	0.17	0.22	0.16	0.20	0.22	0.20
France	1.46	1.46	1.39	1.60	1.51	1.54	N/A	1.44	1.35	1.35	1.05	N/A	N/A	N/A
Ireland	0.61	0.69	N/A	N/A	0.91	0.94	0.93	0.92	0.84	0.78	0.83	0.86	0.83	0.88
Italia	0.40	0.43	0.50	0.57	0.55	0.61	0.64	0.65	0.69	0.67	0.73	0.64	0.66	0.54
Luxembourg (2)	0.54	2.15	2.08	2.33	2.33	0.67	0.79	0.79	0.73	0.64	0.58	0.68	0.64	0.79
Nederland	1.57	1.63	1.68	1.71	1.64	1.56	0.89	0.93	0.88	0.91	0.90	N/A	N/A	1.01
Portugal	0.37	0.42	0.41	0.45	0.44	0.45	0.38	0.38	0.39	0.41	0.50	0.55	0.47	0.52
United Kingdom	1.00	1.05	1.04	0.97	1.00	0.92	0.91	0.90	0.83	0.87	0.86	0.90	0.78	0.92
EUR 12	0.93	0.98	N/A	N/A	1.00	0.99	N/A	0.92	0.84	0.85	0.73	N/A	N/A	N/A

(1) Excluding payments received from and paid to foreign postal administrations.

(2) In 1991-92, including only letter post.

Source: UPU, national postal administrations



**Table 2 Postal and express services  
Postal administrations - Gross investments**

(million ECU)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	29.7	28.4	25.0	25.5	32.3	34.0	44.6	82.3	99.8	87.4	112.4
Danmark	(1) 36.1	41.6	(1) 46.5	29.9	49.6	17.6	22.1	17.2	27.4	33.0	22.5
Deutschland	209.6	322.2	359.8	435.4	459.7	613.2	615.7	664.0	646.9	990.7	N/A
Ellada	1.4	2.1	7.6	5.9	1.3	4.0	4.7	2.6	4.2	6.6	1.3
España	14.0	32.1	32.8	64.6	N/A	11.4	18.1	21.2	11.3	105.6	135.5
France	251.3	400.1	382.9	N/A	453.8	429.8	413.9	461.7	N/A	N/A	N/A
Ireland	2.2	N/A	9.8	7.9	11.2	10.8	16.3	9.1	14.3	17.1	26.5
Italia	179.7	465.0	681.0	866.9	841.8	948.0	758.6	836.6	882.5	N/A	394.0
Nederland	67.2	14.5	123.9	121.0	100.5	89.7	76.7	90.0	N/A	N/A	44.9
Portugal	8.1	17.3	15.6	16.5	13.3	15.5	21.8	24.4	41.1	49.4	34.5
United Kingdom	115.8	N/A	N/A	172.1	216.6	216.7	382.4	330.6	574.9	637.6	502.7
EUR 12 (2)	915.1	N/A	N/A	N/A	N/A	2 390.7	2 374.9	2 539.7	N/A	N/A	N/A

(1) Including telecommunications services.

(2) Excluding Luxembourg.

Source: UPU, national postal administrations

operators over total postal market revenues is approximately 30%. Apart from greater speed and reliability, express mail services feature all or some of the following supplementary facilities: guarantee of delivery by a fixed date; collection from domicile; personal delivery to addressee; possibility of changing the destination and addressee in the course of delivery; confirmation to sender of receipt of the item dispatched; monitoring and tracking of items dispatched; personalised service for customers and provision of an *la carte* service, as and when required.

In July 1995, The European Commission adopted a draft proposal that will commit each Member State to ensure the operation of a universal postal service which should include the collection, transport and distribution of addressed mail items, books, catalogues, newspapers and periodicals up to 2kg and addressed postal parcels up to 20kg.

Parcel services represent approximately 10% and correspondence services around 90% of total public operators' revenues.

### Recent trends

In the EU, the public postal services sector contributes about 0.9% to total GDP. On average this percentage has shown a small decline over the last 10 years. Forms of (tele)communications as an alternative to correspondence by post have had an important influence on the volume of postal services and will continue to do so in the future.

Postal traffic in the EU involves 80 billion items per year, some 3 billion of which are associated with intra-EU trade. There are 15 public postal operators with more than 100 000 post offices (and sub-offices) which employ together around 1.4 million people. Public and private operators together employ more than 1.7 million people. It is estimated that private express operators and private couriers in Europe providing express delivery service employ around 400 000 people.

The parcels and express services market is very competitive. The public postal operators face fierce competition from private operators. They have lost market share and as a consequence will have to operate with more emphasis on providing a more client oriented service. Private operators are trying to expand their range of services into areas which are currently reserved in many countries, for example:

- direct mail, which represents 17% of the volume and 12% of the receipts of the letter services provided by public postal operators revenues;

- the distribution of incoming cross-border mail, 4% of the volume and 3% of receipts of public postal operators revenues for letter services.

While encouraging liberalisation, direct mail and the distribution of incoming cross-border mail could remain reserved services until 31 December 2000 according to the Commissions proposal.

### International comparison

In the United States, a monopoly exists for correspondence up to the cost of 1 USD. Parcels and express services are dominated by private operators. Tariffs for postal and express services are relatively low compared to Japan and Europe. Japan's tariffs are the most expensive while in Europe, where costs of correspondence vary per country, Germany has the highest nominal tariffs.

The amount of mail received per citizen, approximately 650 pieces per year in America, is much higher than in the EU (300 mail pieces) and Japan (about 160 pieces). Naturally, large differences exist in the amount of mail received per capita in the urban areas compared to the rural areas. In Europe, large differences also exist between countries; figures vary from 50 items handled per capita in Greece to 500 in Sweden.

## MARKET FORCES

### Demand

The business sector remains the most important customer (sender) with a market share of about 90% of the postal services, 60% from business-to-private and 30% business-to-business. On the receivers side, the most important segment is the sector of private individuals and its importance is increasing. Only 10% of the mail circulates among domestic households. The business sector also dominates in the parcel services market: approximately 85% of parcels are sent by businesses and organisations. Important customers for the public postal operators are banks, insurance and credit card companies in the financial industry, which sends statements to inform their customers and the publishing industry, which sends periodicals to its readers.

Promising markets are direct marketing/advertising mail and mail order. Direct mail already accounts for a large proportion of the handled items and its importance is still growing; Companies are changing marketing communication strategies and invest relatively more money in alternative marketing activities and channels, such as direct mail, instead of the original marketing channels of TV and radio. Mail order is

**Table 3 Postal and express services  
Postal administrations - Main indicators**

(units)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Number of post offices open to public</b>											
Belgique/België	N/A	N/A	N/A	N/A	1 840	1 838	1 833	1 821	1 822	1 816	1 756
Danmark	5 369	N/A	5 358	5 396	5 459	4 887	4 765	4 873	4 786	4 709	4 596
Deutschland	18 865	18 130	17 967	17 826	17 748	17 642	17 568	29 515	26 135	22 250	N/A
Ellada	1 298	1 227	N/A	N/A	N/A	N/A	N/A	N/A	1 254	1 245	1 262
España	N/A	12 920	12 535	12 938	12 985	12 985	18 582	41 833	44 544	42 081	42 496
France (1)	17 380	17 356	17 223	17 297	17 089	17 028	16 999	16 967	16 945	16 855	N/A
Ireland	2 162	2 182	2 143	2 138	2 118	2 082	2 069	2 046	2 023	2 002	1 971
Italia	N/A	14 315	14 348	14 373	14 461	14 426	14 439	14 464	N/A	14 411	N/A
Luxembourg	105	107	107	106	106	106	106	106	106	106	106
Nederland	2 694	2 833	2 913	2 878	2 624	N/A	N/A	N/A	2 405	N/A	N/A
Portugal	11 578	8 612	7 999	7 932	8 117	7 399	7 198	7 306	7 814	7 532	7 407
United Kingdom	22 480	21 649	N/A	21 211	21 071	21 030	20 871	20 638	20 160	19 958	N/A
(millions)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Number of post items handled (2)</b>											
Belgique/België	3 493	2 959	3 014	2 993	3 111	3 083	2 981	3 378	3 463	3 436	3 442
Danmark	1 513	1 448	1 570	1 698	1 728	1 744	1 758	1 790	1 815	1 904	1 910
Deutschland	14 255	4 711	14 646	15 291	14 849	15 844	15 940	16 318	17 052	N/A	19 200
Ellada	454	443	418	426	433	451	475	438	428	456	455
España	4 861	4 194	4 219	4 538	4 434	(4) 5 026	5 574	5 609	4 714	4 700	4 796
France	13 486	15 844	16 352	16 775	17 915	18 833	20 016	20 746	21 868	22 844	25 523
Ireland (3)	320	415	434	447	456	465	472	482	646	529	573
Italia	6 399	7 162	7 192	7 482	8 086	8 279	8 988	8 912	8 247	7 712	6 930
Luxembourg	114	138	148	159	167	172	173	173	138	141	150
Nederland	4 729	5 021	5 319	5 529	5 695	5 890	6 105	N/A	(4) 6 300	N/A	N/A
Portugal	520	462	505	527	561	606	658	716	815	888	957
United Kingdom	N/A	13 135	14 159	13 035	14 068	14 242	15 803	16 412	16 601	(5) 16 364	N/A
EUR 12	N/A	65 932	67 976	68 900	71 503	74 635	78 943	N/A	82 087	N/A	N/A
(units)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Number of persons employed</b>											
Belgique/België	52 041	48 180	49 373	46 292	46 565	46 022	46 057	45 383	46 133	46 046	46 127
Danmark	30 857	30 110	30 040	35 100	32 000	33 600	34 400	28 235	27 351	25 636	25 221
Deutschland (6)	280 295	273 150	272 577	272 781	273 312	272 571	272 571	277 691	279 990	333 407	362 716
Ellada	9 017	10 072	10 626	10 791	11 384	11 602	11 690	12 020	11 216	11 009	10 926
España	49 624	49 844	49 954	58 675	56 900	56 094	70 389	70 236	66 810	65 589	65 579
France	285 007	305 262	304 667	303 700	300 586	295 300	295 887	299 785	297 428	296 660	292 784
Ireland	12 600	N/A	10 998	10 994	10 701	10 269	9 871	9 812	9 564	9 722	10 410
Italia	182 205	N/A	N/A	N/A	N/A	237 088	230 615	236 922	233 518	226 643	221 534
Luxembourg	1 427	1 443	1 463	1 466	1 474	1 694	1 702	1 704	1 769	1 764	1 776
Nederland	68 593	71 481	72 864	68 485	63 278	64 414	58 894	60 450	61 970	N/A	77 000
Portugal	18 671	16 564	17 067	16 805	16 511	16 277	16 092	15 846	15 057	14 884	13 792
United Kingdom (7)	179 795	183 767	186 100	200 170	210 600	218 000	235 200	235 168	197 000	190 000	187 972
EUR 12	1 170 132	N/A	N/A	N/A	N/A	1 262 931	1 283 368	1 293 252	1 247 806	N/A	1 315 837

(1) Including mobile post offices.

(2) Domestic and international service including dispatch and receipt.

(3) Figures for Ireland 1980-90 include only domestic service.

(4) Estimated by DFI.

(5) Excluding international receipt.

(6) 1980-91 part-time employees converted into full time equivalents; 1992 as head-count.

(7) Excluding part-time employees from 1990 onwards.

Source: UPU, national postal administrations

a promising segment which has developed as a competitor to store retailing services; new technological developments make home shopping more convenient to the benefit of mail order.

### Supply and competition

The competitive environment for public postal operators is changing. Private operators are expanding their services into the correspondence market, specifically into the segments: business-to-private, direct mail and (to a lesser extent) business-to-business direct mail. Harmonisation of the regulations

for national public postal operators will force them to adapt a more liberalised market with quality and technological standards as specified by Community regulations.

The developments in the communication industry continue to have a big influence on postal services. The real threat to all postal operators, public or private, in the medium to long term will come from other communication means (faxes, e-mail, data networks etc.) Electronic mail is a threat for correspondence services, mainly in the business-to-business segment.

**Table 4 Postal and express services**  
**Postal administrations - Receipts and expenditure**

(million ECU)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Receipts</b>											
Belgique/België	849.0	976.6	1 038.8	1 069.1	1 084.8	1 106.8	1 170.7	1 181.3	1 238.1	1 389.9	1 502.8
Danmark (1)	381.3	724.5	811.9	909.9	967.5	808.8	824.9	932.7	936.0	1 040.5	1 119.8
Deutschland	4 924.9	7 668.6	7 988.8	8 316.8	8 871.3	7 483.3	8 785.0	13 662.9	8 732.8	8 543.2	N/A
Ellada	81.4	100.1	92.0	95.6	102.8	144.6	148.9	154.7	151.4	172.6	178.8
España	326.5	486.4	502.5	499.9	520.5	509.2	755.2	833.4	N/A	N/A	874.7
France	6 962.6	9 611.3	10 623.6	N/A	11 060.9	11 007.6	11 836.8	9 866.5	N/A	N/A	N/A
Ireland	84.3	206.6	233.8	250.7	251.2	245.3	253.7	279.4	303.3	320.2	339.8
Italia	1 320.2	2 911.2	3 429.0	3 947.8	4 282.1	4 910.6	5 315.0	6 295.0	5 977.8	6 200.2	5 093.1
Luxembourg (2)	17.6	99.3	30.7	40.3	41.7	42.3	41.9	41.5	51.4	52.6	64.2
Nederland	1 912.7	2 600.8	2 648.7	1 614.4	1 758.3	1 728.1	1 883.4	2 000.9	N/A	N/A	2 496.2
Portugal	66.9	107.4	122.6	131.2	138.5	159.0	192.1	235.5	306.8	351.7	385.5
United Kingdom	3 868.6	5 475.5	5 558.8	5 172.1	5 379.5	5 891.9	6 623.2	6 610.6	7 343.7	6 253.2	7 404.9
EUR 12	20 796.0	30 968.3	33 081.2	N/A	34 459.1	34 037.5	37 830.8	42 094.4	N/A	N/A	N/A
<b>(million ECU)</b>											
<b>Expenditure</b>											
Belgique/België	849.0	964.5	1 016.5	1 035.1	1 020.0	1 044.6	1 165.2	1 200.6	1 283.8	1 384.6	1 489.9
Danmark (1)	443.2	547.5	576.5	N/A	626.9	800.5	806.0	868.7	898.3	950.9	1 024.8
Deutschland	6 661.5	8 446.3	8 880.3	9 341.6	10 132.1	9 584.2	9 454.4	13 662.8	10 578.3	14 724.9	N/A
Ellada	81.4	140.3	159.8	145.8	141.1	163.1	193.4	199.3	217.1	249.4	218.6
España	413.8	557.6	605.9	669.2	760.6	683.8	928.4	N/A	N/A	N/A	1 221.3
France	7 291.4	10 122.3	10 709.1	N/A	10 758.9	11 011.9	11 645.4	9 679.7	N/A	N/A	N/A
Ireland	108.1	N/A	236.3	249.9	247.7	243.1	260.4	290.2	307.2	320.6	330.6
Italia	2 377.3	4 132.5	4 687.5	5 690.9	6 258.7	6 455.3	7 007.9	7 935.2	8 321.4	8 395.0	N/A
Luxembourg (2)	44.3	63.2	76.1	72.2	80.9	87.7	88.2	96.8	54.8	60.9	68.9
Nederland	1 858.4	2 351.4	2 489.9	1 610.5	1 702.6	1 684.6	1 790.4	1 856.2	N/A	N/A	N/A
Portugal	106.5	205.5	170.6	184.2	162.3	157.4	179.7	204.5	240.9	282.1	395.0
United Kingdom	3 817.6	5 224.1	5 301.6	4 966.0	5 136.8	5 718.6	6 535.4	6 188.9	7 014.1	5 944.3	N/A
EUR 12	24 052.5	N/A	34 910.1	N/A	37 028.6	37 634.8	40 054.8	N/A	N/A	N/A	N/A
<b>(million ECU)</b>											
<b>Surplus/deficit (3)</b>											
Belgique/België	0.0	12.1	22.3	34.0	64.8	62.2	5.5	-19.3	-45.7	5.3	12.9
Danmark (1)	-61.9	177.0	235.4	N/A	340.6	8.3	18.9	64.0	37.7	89.6	95.0
Deutschland	-1 736.6	-777.7	-891.5	-1 024.8	-1 260.8	-2 100.9	-669.4	0.1	-1 845.5	-6 181.7	N/A
Ellada	0.0	-40.2	-67.8	-50.2	-38.3	-18.5	-44.5	-44.6	-65.7	-76.8	-39.8
España	-87.3	-71.2	-103.4	-169.3	-240.1	-174.6	-173.2	N/A	N/A	N/A	-346.6
France	-328.8	-511.0	-85.5	N/A	302.0	-4.3	191.4	186.8	N/A	N/A	N/A
Ireland	-23.8	N/A	-2.5	0.8	3.5	2.2	-6.7	-10.8	-3.9	-0.4	9.2
Italia	-1 057.1	-1 221.3	-1 258.5	-1 743.1	-1 976.6	-1 544.7	-1 692.9	-1 640.2	-2 343.6	-2 194.8	N/A
Luxembourg (2)	-26.7	36.1	-45.4	-31.9	-39.2	-45.4	-46.3	-55.3	-3.4	-8.3	-4.7
Nederland	54.3	249.4	158.8	3.9	55.7	43.5	93.0	144.7	N/A	N/A	N/A
Portugal	-39.6	-98.1	-48.0	-53.0	-23.8	1.6	12.4	31.0	65.9	69.6	-9.5
United Kingdom	51.0	251.4	257.2	206.1	242.7	173.3	87.8	421.7	329.6	308.9	N/A
EUR 12	-3 256.5	N/A	-1 828.9	N/A	-2 569.5	-3 597.3	-2 224.0	N/A	N/A	N/A	N/A

(1) Excluding payments received from and paid to foreign postal administrations.

(2) In 1991-92, including only letter post.

(3) Receipts less expenditures.

Source: UPU, national postal administrations

The business-to-private and private-to-private postal services will remain dominated by physical mail and offer growth opportunities as long as the public postal operators operate in an efficient and market oriented manner.

It can be assumed that the public postal operators will only get the strength to face the challenging competitive situation in the long term, if they can adapt their structure to compete with private operators in the short run. This restructuring process will lead to job losses for the postal operators.

### Production process

Collection, sorting, transport and delivery are all part of the production process. Although some (public) postal operators are able to sort 60-70% of the mail volume automatically, other postal operators have still to invest in sorting machines to automate this process. Because the machines are more productive and cheaper than using labour, employment in this process will decline. As most public operators have already developed more efficient processes for collection, transport and delivery, less jobs will be lost in these areas.



**Table 5 Postal and express services**  
**Postal administrations - Annual change of number of items handled**

(%)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Domestic service</b>													
Belgique/België	-6.4	-6.6	-6.2	3.1	4.1	-3.0	2.6	-0.5	-2.2	14.9	3.2	-0.4	1.0
Danmark	-0.3	-1.4	0.8	-1.7	8.5	9.0	2.0	1.0	0.6	2.0	0.5	5.1	1.8
Deutschland	3.2	1.9	-0.7	-1.5	-0.2	4.7	-3.2	7.2	1.3	2.5	5.3	-51.3	132.0
Ellada	0.6	0.0	N/A	N/A	-3.8	8.0	-1.7	2.8	7.4	-9.6	-1.2	3.9	-0.4
España	-8.3	-0.9	0.2	-3.5	1.8	8.3	-5.2	28.4	-0.1	0.1	-16.3	3.8	-4.0
France	3.9	-0.2	5.5	8.7	3.4	3.7	7.3	5.8	6.2	4.0	5.1	4.9	12.1
Ireland	N/A	N/A	N/A	N/A	4.6	3.0	2.0	1.9	1.5	2.2	2.5	-1.1	6.5
Italia	4.0	3.3	-0.4	5.6	0.2	4.7	9.5	5.3	8.2	-1.2	-8.0	-8.7	-3.9
Luxembourg	8.5	4.5	2.8	7.0	5.0	12.4	8.5	2.3	0.4	2.4	3.1	0.6	5.8
Nederland	-1.3	0.8	0.3	5.6	3.3	4.4	5.6	6.0	3.1	N/A	N/A	N/A	N/A
Portugal	-12.6	1.7	3.3	-1.1	9.4	4.7	6.6	9.6	9.4	9.2	13.3	8.9	8.1
United Kingdom	N/A	N/A	N/A	4.1	9.1	-7.6	8.1	1.6	11.5	4.0	0.5	2.4	N/A
(%)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>International service</b>													
Belgique/België	-10.8	-4.0	6.8	-6.0	-11.4	15.1	11.5	-2.9	-9.4	4.0	-2.2	-3.3	-5.5
Danmark	-14.7	-3.0	-5.2	2.9	6.9	-0.8	0.0	0.0	3.1	-0.1	12.5	2.4	-16.5
Deutschland	9.2	-8.3	6.0	1.6	-2.9	1.1	1.2	0.2	-8.5	0.3	-7.1	6.3	-0.1
Ellada	-12.7	-9.4	N/A	N/A	-10.6	-17.8	15.6	9.8	-1.8	-1.3	-6.2	15.4	0.7
España	-7.4	-18.0	3.8	-4.5	-9.2	0.5	26.3	N/A	N/A	5.7	-12.6	-34.2	80.0
France	2.0	0.0	0.3	-4.8	0.4	-17.3	-3.5	-12.2	8.7	-6.1	14.3	-9.6	-2.7
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-4.1	13.3
Italia	1.2	4.4	-4.5	2.5	2.1	-1.0	-3.3	-24.0	12.7	3.7	-1.3	17.5	-62.3
Luxembourg	5.2	-2.4	6.4	8.1	9.3	2.3	2.2	3.5	-0.1	-2.3	-49.0	8.3	7.4
Nederland	0.4	-3.1	-1.7	18.0	25.9	0.9	-13.5	-17.2	8.8	N/A	N/A	N/A	N/A
Portugal	-17.6	2.4	1.7	-7.8	8.8	2.1	5.7	-1.2	2.1	6.6	17.0	3.3	6.2
United Kingdom	-3.8	-2.1	N/A	N/A	-4.9	-11.4	6.0	-3.7	4.5	2.0	10.5	N/A	N/A
(%)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Total service</b>													
Belgique/België	-7.0	-6.3	-4.4	1.7	1.8	-0.7	3.9	-0.9	-3.3	13.3	2.5	-0.8	0.2
Danmark	-1.8	-1.6	0.3	-1.3	8.4	8.1	1.8	0.9	0.8	1.8	1.4	4.9	0.3
Deutschland	3.6	1.2	-0.3	-1.3	-0.4	4.4	-2.9	6.7	0.6	2.4	4.5	N/A	N/A
Ellada	-3.4	-2.5	N/A	N/A	-5.6	1.8	1.7	4.3	5.2	-7.8	-2.4	6.5	-0.2
España	-8.2	-3.1	0.6	-3.6	0.6	7.6	-2.3	N/A	N/A	0.6	-15.9	-0.3	2.0
France	3.8	-0.2	5.1	7.9	3.2	2.6	6.8	5.1	6.3	3.6	5.4	4.5	11.7
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-18.0	8.3
Italia	3.7	3.5	-0.9	5.3	0.4	4.0	8.1	2.4	8.6	-0.8	-7.5	-6.5	-10.1
Luxembourg	6.8	1.1	4.5	7.5	7.1	7.3	5.5	2.9	0.2	0.2	-20.5	2.8	6.4
Nederland	-1.1	0.3	0.1	6.9	6.0	3.9	3.0	3.4	3.7	N/A	N/A	N/A	N/A
Portugal	-13.4	1.8	3.1	-2.2	9.3	4.3	6.5	8.0	8.4	8.9	13.8	8.2	7.8
United Kingdom	N/A	N/A	N/A	N/A	7.8	-7.9	7.9	1.2	11.0	3.9	1.2	N/A	N/A

Source: UPU, national postal administrations

Postal and express services rely on a good network capable of handling all logistics activities. There are two main network systems: the hub-and spoke-system, in which a region is serviced from a central "hub" via "spokes" with local centres; and the spider's web system, in which local centres interact directly with each other. The large, complex networks of the bigger operators are "hub and spoke" type systems. Together with network quality, labour costs and productivity are the important factors that cause variations in tariffs for similar services.

In the express industry, electronic data interchange (EDI) is an essential tool, especially in the transmission of information between the carrier's computer and the customs administration. It will play an increasingly important role in customs administrations; it will assist the use of information for administrative procedures by customs, resulting in increased protection. At the same time it will allow physical clearance

procedures to be accelerated and reduce time-consuming paperwork, vital to achieve fast and reliable services.

## INDUSTRY STRUCTURE

### Companies

All public postal operators are controlled and owned by the various governments, with the notable exception of the Netherlands: where the government sold 55% of its shares, in the PTT Holding company, to the public in 1995.

The public postal operators in Sweden and Finland are the only two companies that, although they are state-owned, operate in an open market. The Dutch, partly privatised PTT, as well as most of the Member States' state-owned national postal operators, have a monopoly on most of the correspondence services. In some countries, like France, Italy, the UK

**Table 6 Postal and express services  
Postal administrations - Legal status, 1994**

	Legal status	Financial authority
Belgique/België	Public corporation	Financial autonomy
Danmark	State administration	Separate budget
Deutschland	Public corporation	Financial autonomy
Ellada	Public corporation	Financial autonomy
España	Public corporation	Financial autonomy
France	Public-law autonomous establishment	Financial autonomy
Ireland	Public limited company	Independent
Italia	Public corporation	Financial autonomy
Luxembourg	Public corporation	Financial autonomy
Nederland	Public limited company	Independent
Österreich	State administration	Separate budget
Portugal	Public corporation	Financial autonomy
Suomi/Finland	Public corporation	Financial autonomy
Sverige	Public limited company	Independent
United Kingdom	Public corporation	Financial autonomy

Source: European Commission, DG XIII

and Spain, the postal administration is not a state owned company but a government department.

Private operators are active on four levels: global, pan-European, national and local. On a global level the leading companies are DHL, United Parcel Services (UPS), Federal Express and GD Express Worldwide (GDEW). Companies that operate on a pan-European level are Khne & Nagel, Jet Services, TAT Express and Securicor. On the national and local level many small companies operate with services from city-to-city transport, to delivery by motorcycle couriers.

### Strategies

Liberalisation is the most important issue in the postal and express services industry. Sweden and Finland, have an open market and because of the image, quality and prices of the incumbent in each country, no competitor has so far been able to seriously challenge their market position. In other Member States deregulation will go step by step. Germany is ahead in proposing a complete opening up of the market, while most of the smaller countries (Belgium, Luxembourg, Ireland, etc.) have no plans to do so.

While, privatisation will open up the market, it will also require the introduction of new regulations for agreements to address new problems such as tariffs, cross-subsidies, consumer protection, universal service guarantee, quality of service requirements, etc.

In the process of adapting to a more market oriented approach public postal operators are improving the quality and efficiency of the services. On one side, investments are undertaken in their production process, more specifically in automatic sorting of mail. On the other side, they are operating with a cost based attitude.

International postal and express organisations, such as PostEurop, UPU (worldwide representation), CERP (which represents most of the EU postal regulators and operators) and the European Express Organisation (representing its private express operators' members) keep up to date on regulatory developments affecting their business, monitor market developments and exchange experience and ideas on developments in the industry.

## ENVIRONMENT

An important factor to be taken into account by postal and express services is distance. These services are dependent on transport and important environmental related issues concern mode and quantity of transport needed. In the conflict between increased movement and public concern for the environment, efficiency is the key to achieving sustainable mobility and growth.

Urban congestion is critical for the express industry, especially in Europe where many cities are over-populated. Noise and other environmental regulations limiting the use of certain airports and aircraft for night-time operations, are an essential feature of express delivery services, which often provide an overnight service. Night flights improve the effectiveness and efficiency of the planes in operation.

## REGULATIONS

Private operators are interested in legislation concerning the criteria in defining reserved and non-reserved services, tariff principles and the transparency of accounts. These rules directly apply to important issues such as the possible unfair competition in the non-reserved services market, through cross-subsidy of non-reserved services from profits derived from the reserved area.

The main problem that the private operators encounter, is that in many Member States, parcel services and mail services provided by the public operators are exempt from VAT, while private operators are not exempt when providing the same services.

## OUTLOOK

Growth is expected for both parcels and express services, and correspondence services. Public postal operators will have to operate and provide services on a more efficient, cost-effective and market oriented basis. For the correspondence services, a cheaper and wider range of services will stimulate demand. This is necessary as, on the other side, electronic mail and other developments in modern communication are a threat to the traditional correspondence services.

The market for parcels will show steady growth, partially triggered by developments in home shopping. Volume and

weight of parcels are declining because of technical and technological developments. Another growth area will be intra-EU direct marketing. In 7 out of the 15 Member States, distribution of addressed mail is totally or partially liberalised. Distribution of catalogues, brochures, etc., is also liberalised in an even larger number of Member States.

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# Sea ports and other sea transport facilities

NACE (Revision 1) 63.22, 63.10

*Ports are the entry/exit point for 90% extra-EU trade and 35% of intra-EU trade and as a central hub, they will further promote integration with other transportation modes, such as road, rail, and inland waterways. EU ports and facilities are different in nature and management philosophies, ranging from full state ownership and control to total privatisation. There is a tendency towards continuous restructuring. Reflecting reactions to a fast changing economic environment, measures enhancing competition include privatisation, commercialisation and improvements in handling technology, in response to customers demands for a briefer stay in ports.*

## INDUSTRY PROFILE

### Description of the sector

The NACE Rev. 1 classification categorises separately 63.10 - cargo handling and storage (for all transport modes), and 63.22 - other supporting water transport activities (including inland waterways). Under the NACE 1970 classification group 763 included all supporting services to sea transport and coastal shipping, that is sea ports and other sea transport facilities. The change in classification has meant that the current NACE classification less adequately describes this sector than the previous system at the four digit level.

The high variety of services offered shows the key role of ports as interfaces between transport modes, but also as important trade and industrial areas, which have impact on a wide range of industrial activities creating value added and employment. Depending on their role in the regional transport system, ports can be import and export ports, transit ports, transshipment ports, ferry ports. Examples of services and facilities are container (LO/LO) and RO/RO facilities, ferry terminals, bulk facilities, tugs at sea, pilotage, lighthouse operations, buoys and other navigation facilities, stowing, stevedoring, loading and discharging of sea-going vessels, and operation and maintenance of sea harbours, piers and docks.

Ports differ in their management of facilities and services, both in investment decision and financing. In general facilities are financed by a port authority, whereas handling services are mostly in the hands of private companies. Investment decision in facilities for containers, RO/RO traffic, ferries, storage, the infrastructure of the port itself, such as deepening the sea canals or extending the quays, change from country to country.

### Recent trends

In 1993, the 317 seaports in the EU15 which reported to the MERC World Ports Database, handled total traffic of about 2 401 million tonnes of cargo. The three top individual country volumes were handled in the United Kingdom, with some 481 million tonnes in 62 ports, the Netherlands with 368 million tonnes in 16 ports, and France with 302 million tonnes in 32 ports. These three countries account together for just below 50% of total traffic volume in seaports in the EU.

In 1994, the top 12 seaports in the EU totalled 902.3 million tonnes of traffic volumes, about 37% of the total. Over the 1989-1994 period these top 12 ports showed different growth patterns. Best performers were ports of Trieste (I), Hamburg (D) and Antwerp (B) respectively with 30%, 18.7% and 14.7% growth over the whole period. Special reference should be made to the major improvements to the Port of Trieste due

to the development of its rail connections with Eastern Europe and to the diversion of traffic carried by land transport to and from Greece as a consequence of the military conflict in the former Yugoslavia. Meanwhile Sullom Voe (UK), Dunkirk (F) and London (UK) all registered negative growth. Compared with 1993, 1994 saw an overall growth in traffic for the 12 EU that offset most of the negative 1992/93 trends. The highest growth between 1993 and 1994 was observed in Antwerp (B), 7.4%, Genoa (I), 6.7%, Rotterdam (NL), 5.2%, while Sullom Voe (UK) and Dunkirk (F) all declined by about 8%.

The breakdown by type of traffic in Table 4 shows that the dominant traffic through the major EU's ports is cargo traffic; in bulk, dry (iron ore and coal) and liquid (oil and products) and liner (container). Rotterdam (NL), Antwerp (B) and Marseille (F) account for the highest total traffic. Only few ports specialise in one or the other commodity, for example in Le Havre (F), Genoa (I) and Sullom Voe (UK), where specialisation exists for liquid bulk.

### Passenger transport

In the sector as a whole, the amount of passenger traffic is relatively small. For some ports, however, it is the main activity. For example, the ports on both sides of the Channel depend heavily on ferry traffic between the United Kingdom and France. Even amidst several logistic difficulties, the opening of the Channel Tunnel in 1994 is perceived as a major competitive threat to the ferry operations on the Channel and as a consequence to the ports along the Channel.

Passenger traffic is also important between mainland United Kingdom and Ireland and Northern Ireland. A number of ports in the Mediterranean have significant passenger facilities for ferry links. Particularly important examples are in the south of Italy, where ferry connections exist with Greece and the countries in Northern Africa. Also, Greek ports generally have passenger facilities providing for domestic inter-island ferry links in the Aegean Sea.

Finally, mention should be made of the Baltic ports. Important ferry links exist between Sweden, Finland, Norway, Germany and Denmark. The port of Copenhagen is currently completing the construction of a new passenger terminal enabling the handling of 10 vessels simultaneously. However, the proposed bridge between the south of Sweden and just south of Copenhagen across the Öresund will have a major impact on traffic currently on ferries between southern Scandinavia and mainland Europe (potentially similar in effect to the Channel Tunnel).

### Container transport

1994 registered an increase in total seaborne trade compared to 1993, particularly concerning container trade. The port range of Northern France, Germany, Belgium and Netherlands (Le Havre-Hamburg) is the centre of the EU container demand, significantly boosted by the opening of Eastern and Central Europe and by the upturn in demand in the Scandinavia/Baltic markets. EPSA estimated that the average annual rate of development for this region since 1986 has been 6.2%. German and Dutch ports account for about 70% of the total, although the latter has seen market share fall from around 40% in 1980 to 35.7% in 1994. By contrast German market share has risen with the expansion of its hinterland, mostly through Hamburg, from 29.1% to 33.8%.

With the establishment of extra capacity at Antwerp and Zeebrugge, from 1990 to 1994 the container market share of Belgian ports has increased to 22.3%. French port's market share, predominantly that of Le Havre, declines due to labour disputes and consequent diversion of traffic.

Concerning the Scandinavian/Baltic region, Sweden remains the largest single source of demand, although with declining market share. Due to early establishments of containerisation,

**Table 1: Sea ports and other sea transport facilities  
Total traffic in EU ports**

(units)	1990	1991	1992	1993
Number of ports				
Belgique/België	5	5	5	5
Danmark	6	8	8	36
Deutschland	14	19	18	18
Ellada	2	2	4	19
España	21	21	36	28
France	18	35	23	32
Ireland	3	7	4	15
Italia	12	23	18	14
Luxembourg	0	0	0	0
Nederland	7	12	10	16
Österreich	N/A	N/A	N/A	0
Portugal	7	8	9	9
Suomi/Finland	N/A	N/A	N/A	35
Sverige	N/A	N/A	N/A	37
United Kingdom	23	39	42	62
EUR 12	118	179	177	254
EUR 15	N/A	N/A	N/A	317
USA	39	53	48	50
Japan	48	64	N/A	14
(million tonnes)				
Traffic volume				
Belgique/België	162.6	164.2	165.6	161.4
Danmark	30.9	38.4	47.0	71.2
Deutschland	181.8	203.5	182.7	185.1
Ellada	24.5	23.8	26.9	70.9
España	217.3	223.7	261.4	228.5
France	290.3	302.5	294.9	302.1
Ireland	19.0	25.4	21.3	35.6
Italia	249.6	327.2	318.6	265.1
Luxembourg	0.0	0.0	0.0	0.0
Nederland	358.0	374.7	368.7	368.1
Portugal	56.3	51.1	55.3	51.0
Suomi/Finland	N/A	N/A	N/A	63.7
Sverige	N/A	N/A	N/A	117.7
United Kingdom	407.9	427.9	443.8	481.0
EUR 12	1 998.2	2 162.3	2 186.2	2 220.0
EUR 15 (1)	N/A	N/A	N/A	2 401.4
USA	901.5	1 156.6	1 151.2	908.1
Japan	1 936.4	1 545.5	N/A	681.8

(1) Excluding Austria.

Source: Maritime Economic Research Centre, Rotterdam.

Denmark has also seen its share decline. Finnish container activity, through the transshipment role for markets of the former Soviet Union, has increased by 183% since 1985, nearly doubling its market share from 11.1% to 21.2%.

The UK/Ireland sector has benefited by the early introduction of containerisation as well as port reform. However, if in 1994 container trade increased in absolute value recovering from 1993, over the 1980-1993, share of the EU market fell from 18.1% to 17.6%.

The Atlantic coast range, ports of the French western coast, the Atlantic coasts of Spain, Portugal and the major Atlantic island groupings declined from a European market share of 5.6% in 1987 to 4.9% in 1994. Although globally there have been developments in ports' infrastructures, some regions showed contrasting patterns. The Canary Islands represent the highest concentration of container traffic in the region at 31.9%, with 27.2% for Spain and 30.2% for Portugal. A considerable amount of investment is currently committed to port development within the region, specially in Portugal and the Canary Islands, and it is likely to have a negative impact on the utilisation rate.

The Western Mediterranean ports are the Spanish and French ports with Mediterranean access, the Western Italian ports, as well as Malta. In contrast to other European regions, the Western Mediterranean is dominated by short-sea operations to other parts of the Western and Eastern Mediterranean/Black Sea. Inter-European movements to the North Continent and the UK/Ireland, recently boosted by the increasing road and rail links with these regions, are also substantial but not of the same magnitude. Due to a better management, the region is now improving its efficiency. Demand for container trades is concentrated in the Mediterranean Spanish and Western Italian ports, accounting for around 43% and 40% of the regional market respectively. Individual ports are distinguished between those orientated towards transshipment and those dealing predominantly in imports and exports. Much of the region's development in container trade relates to the increased use of transshipment operations, motivated by the increase in vessel size.

The Eastern Mediterranean/Black Sea brings together a variety of different ports and supporting national economies. Ports and container developments will depend upon the peace ne-

**Table 2: Sea ports and other sea transport facilities  
Top 10 seaports in the world - Breakdown by major type of goods traffic, 1993**

(million tonnes)	Seaport bulk	Total traffic bulk	Breakdown of traffic by type of goods		
			Dry cargo	Liquid	General
Nederland	Rotterdam	282.5	83.2	135.0	64.3
Singapore	Singapore	273.7	7.6	123.0	143.1
Japan	Kobe	168.7	5.7	4.0	159.0
Japan	Chiba	159.5	46.8	104.0	8.7
China PR	Shanghai (1)	139.6	92.5	15.9	31.2
Japan	Nagoya	134.3	41.2	36.5	56.6
Japan	Yokohama	123.7	14.1	45.2	64.4
Belgique/België	Antwerp	101.8	27.6	27.4	46.8
Hongkong	Hongkong	97.9	20.3	8.1	69.5
Japan	Osaka	(2) 95.1	4.1	0.5	90.5
South Korea	Ulsan	93.4	15.2	71.4	6.8
South Korea	Kwangyang	92.2	35.0	40.1	17.1

(1) 1991

(2) 1992

Source: Maritime Economic Research Centre, Rotterdam

gotiations centred on Israel, on the sanctions against Iraq, on economic and port restructuring and on the economy of the two most important centres of Greece and Turkey. The demise of the former Yugoslavia has hit demand heavily, but at the same time offered the chance for Slovenian ports to enter the Central European market. The market share of ports in the area show different trends since the 1980s: the Adriatic Italian ports have fallen steeply, the shares for Greece and Cyprus are about the same, whereas the Turkish share increased from 6.2% in 1980 to 18.3% in 1994.

#### International comparison

During the 1960s and the 1970s European ports were among the largest in the world; in the 1980s South East Asia and Japan entered in the top ports in the world. In the 1990-1994 period the average growth for Singapore and Hong Kong was 54% and 66% respectively. Japan accounts for half of the top 12, while the EU has three ports, Rotterdam (NL), leading the group with 293.4 million tonnes in 1994, Antwerp (B) and Marseilles (F).

#### MARKET FORCES

##### Demand

Since 1980, according to ESPO, at the world level, total port demand has increased by 250%, to reach 126.7 million TEU in 1994. European port demand during this period increased by 164% to 30.3 million TEU. This implies a fall in proportional world market share from 31.5% to 23.9%, although this share has been sustained over recent years as trade with East Asia has increased.

Demand for seaport facilities and services comes primarily from transportation activities. Transport companies are in need of such facilities in order to move cargoes from origin to destination and from one transport mode to another. The demand for these companies (in effect the demand for transport services) comes from shippers wanting their goods to be transported and thus depends largely on the economic activity in the hinterland of the port.

**Table 3: Sea ports and other transport facilities  
Traffic volume in top 12 seaports in the world (1)**

(million tonnes)		1990	1991	1992	1993	1994
Nederland (2)	Rotterdam (5)	287.7	290.8	291.6	278.8	293.4
Singapore (3)	Singapore (5)	187.8	206.4	238.4	273.7	290.1
Japan (3)	Chiba (4)	170.2	168.3	171.7	N/A	N/A
Japan (3)	Kobe (4)	171.5	174.1	169.6	N/A	N/A
PR China (2)	Shanghai (4)	139.6	146.8	163.0	176.0	165.8
Japan (3)	Nagoya	128.9	136.8	130.9	134.4	137.7
Japan (3)	Yokohama	123.9	121.9	122.5	123.7	128.3
Hong Kong (2)	Hong Kong (5)	66.0	76.4	83.4	96.1	110.9
Belgique/ België (2)	Antwerpen (5)	102.0	101.3	103.7	101.9	109.5
Japan (3)	Osaka (4)	97.4	98.7	95.1	N/A	N/A
Japan (3)	Kitakyushu	95.2	98.7	95.8	93.1	N/A
France (2)	Marseilles	90.3	89.4	90.4	87.3	91.1

(1) Ranked on 1994. Figures for Kobe 1992, Chiba 1987-92 and Hong Kong 1989-92 are revised.

(2) Mass tonnes

(3) Freight tonnes

(4) Ranked on latest available data

(5) Foreign traffic only

Source: ISL



**Table 5: Sea ports and other sea transport facilities  
Traffic volume in top 12 seaports in the EU (1)**

(million tonnes)		1989	1990	1991	1992	1993	1994
Nederland	Rotterdam (3)	289.9	287.7	290.8	291.6	278.8	293.4
Belgique/België	Antwerpen (3)	95.4	102.0	101.3	103.7	101.9	109.5
France	Marseilles	93.4	90.3	89.4	90.4	87.3	91.1
Deutschland	Hamburg	57.6	61.1	65.2	64.9	65.8	68.4
France	Le Havre	52.2	54.0	57.2	53.1	54.9	54.4
United Kingdom	London (2)	54.0	58.1	52.8	48.9	50.9	51.8
Italia	Genoa (2)	42.2	43.6	41.8	42.3	40.1	42.8
United Kingdom	Tees & Hartlepool	38.8	39.7	42.4	43.4	42.4	42.6
Italia	Trieste	29.1	34.2	35.5	36.7	36.6	38.1
United Kingdom	Sullom Voe (2)	40.7	36.0	35.9	41.4	39.4	38.6
France	Dunkirk	39.1	36.6	40.7	40.2	40.8	37.2
United Kingdom	Milford Haven (2)	33.1	32.3	35.8	35.6	35.7	34.4
EU (4)		865.4	875.7	889.0	892.3	874.7	902.3

(1) Ranked on 1994. Figures for Tees & Hartlepool 1992, Dunkirk 1992 and Hamburg 1989-92 are revised.

(2) Ranked on latest available data

(3) Foreign traffic only

(4) Including top 12 seaports in the EU

Source: ISL

### Supply and competition

In general a competitive port has to offer a variety of services able to efficiently assist the transport chain, which has become a production chain. Ports are no longer simply a place for cargo exchange but are a functional element in the dynamic logistics chains through which commodities and goods flow. Some countries have developed distribution or logistics centres in the port area which are used for the storage, preparation and transformation of cargo.

### INDUSTRY STRUCTURE

The port industry is very much diversified, according to the different role played by each port in its region and according to port organisation. Generally, in order to make ports more responsive to the market, the management, development or ownership of basic port functions and assets is being gradually transferred to the private sector.

#### The role of ports

The largest EU ports can be identified as importing ports where incoming traffic is much higher than outgoing. There

are only a few ports where exports exceed imports, such as Calais and Rouen (F) and Tyne (UK). Other ports are transit ports, such as the large German ports on the Baltic Sea catering for transit cargo traffic from the Baltic Region to central Europe. There are also transshipment ports, such as the larger ports in Denmark, southern Sweden and Germany, and ferry ports, serving ferry links on the regional land based transport corridors. Finally, some ports are general cargo ports, such as Zeebrugge (B) and Dublin (IRL).

#### Port organisation

In Germany most ports are owned by the state, sometimes in connection with the federal government. In this case, the administration is responsible for maintenance and improvements of infrastructures, while the operator is responsible for the superstructures. British and most Danish ports are privately owned by companies, statutory trusts or local authorities. Sea access and infrastructures are invariably funded by private sector capital. In the Netherlands and Belgium, the owner of the port is often the municipality, sometimes a public partnership between regional and local governments. The port administration is responsible for the maintenance and improvement of the port infrastructure, while operators, mostly private,

**Table 4: Sea ports and other sea transport facilities  
Top 10 seaports in the EUR 15 - Breakdown by major type of goods traffic, 1994**

Country	Seaport	Total traffic (million tonnes)	Breakdown of traffic by type of goods (million tonnes)				Containers (thousand TEUs) (2)
			Oil products	Oil ore	Iron	Coal	
Nederland	Rotterdam	293.8	97.0	20.0	46.0	18.0	4 475
Belgique/België	Antwerp	109.4	5.1	19.0	12.0	8.1	2 195
France	Marseille/Fos	91.1	49.0	12.0	7.8	3.7	455
Deutschland	Hamburg	68.4	4.6	7.6	5.8	0.5	2 726
France	Le Havre	54.4	31.0	4.8	N/A	0.6	875
United Kingdom	London/Tilbury	51.2	11.4	12.8	0.4	1.0	382
United Kingdom	Teesen Hartlepool	43.0	19.0	5.1	N/A	3.8	134
Italia	Genoa	42.4	18.6	6.6	N/A	N/A	462
United Kingdom	Grimsby/Immingham	40.8	8.7	11.0	6.3	2.8	N/A
France	Dunkirk	37.1	6.6	3.5	11.0	4.8	61
United Kingdom	Sullom Voe	38.6	38.6	0.0	0.0	0.0	0

(1) TEU = twenty-foot equivalent unit

Source: Maritime Economic Research Centre, Rotterdam



**Table 6: Sea ports and other sea transport facilities  
Cargo handled in largest ports**

(million tonnes)	1987	1988	1989	1990	1991	1992	1993	1994
<b>Belgique/België</b>								
Antwerp	91.1	96.9	95.4	102.0	101.4	103.7	101.8	109.4
Brugge-Zeebrugge	17.6	20.1	25.8	30.3	30.8	33.3	30.3	33.0
Ghent	N/A	N/A	N/A	N/A	N/A	N/A	22.0	23.9
<b>Danmark</b>								
Aarhus	6.6	7.3	7.0	6.9	6.9	6.6	6.0	7.1
Copenhagen	9.4	9.4	9.0	9.5	9.4	10.1	9.6	10.8
Frederikia	N/A	N/A	N/A	N/A	N/A	N/A	10.3	11.4
<b>Deutschland</b>								
Bremen-Bremerhaven	30.0	31.1	32.5	30.2	30.7	30.0	28.4	30.9
Hamburg	56.7	58.7	57.6	61.4	65.5	65.1	65.9	68.4
Lubeck	15.8	17.0	17.7	18.0	16.5	17.9	12.8	14.2
Rostock	N/A	N/A	20.8	13.2	10.4	9.9	13.9	14.9
Wilhelmshafen	14.6	15.0	14.6	13.9	17.9	31.6	32.8	34.9
<b>Ellada</b>								
Eleysis	N/A	N/A	N/A	N/A	N/A	N/A	13.9	N/A
Piraeus	8.3	8.9	9.4	9.4	9.8	9.8	8.7	8.7
Thessaloniki	12.8	11.2	14.6	15.1	14.0	15.1	14.2	12.0
<b>España</b>								
Algeciras	N/A	N/A	N/A	N/A	N/A	N/A	27.8	34.7
Barcelona	16.9	18.0	18.1	18.0	18.3	20.4	17.7	20.4
Bilbao	24.0	26.3	27.0	25.2	27.4	29.8	25.0	25.0
Tarragona	23.9	22.8	26.0	24.2	23.7	26.0	23.6	23.5
Valencia	16.2	10.8	N/A	12.0	11.8	13.1	10.4	13.1
<b>France</b>								
Bordeaux	9.4	8.9	9.1	9.6	8.9	9.2	8.8	9.3
Boulogne-sur-Mer	4.3	4.4	4.8	5.4	4.3	3.8	3.0	3.4
Calais	11.4	12.4	15.3	16.0	17.2	18.0	21.2	25.5
Dunkirk	32.4	35.7	39.1	36.6	40.7	40.2	40.9	37.1
Le Havre	51.1	49.9	52.2	54.7	57.2	50.1	54.9	54.4
Marseille/Fos	91.3	95.8	93.4	91.6	89.4	90.4	87.3	91.1
Nantes St. Nazaire	24.6	22.0	23.9	24.9	25.1	24.8	24.8	24.4
Rouen	21.1	20.4	20.9	22.3	23.1	24.0	23.6	19.5
<b>Ireland</b>								
Cork	5.4	5.3	5.7	6.0	5.9	6.3	6.7	7.4
Dublin	6.9	7.0	7.3	7.4	7.7	6.6	8.3	9.5
Greenore	N/A	N/A	N/A	N/A	N/A	N/A	6.9	N/A
Limerick	N/A	N/A	0.7	5.9	6.2	6.4	7.0	7.1
<b>Italia</b>								
Genoa	N/A	41.9	41.3	42.7	42.0	41.4	41.4	42.4
Livorno	N/A	14.3	14.7	11.7	18.4	19.0	18.6	19.3
Naples	17.4	N/A	19.9	19.1	16.5	13.9	13.9	12.8
Ravenna	N/A	N/A	N/A	N/A	N/A	N/A	17.7	18.0
Savona	13.1	12.2	12.7	12.8	12.2	13.6	12.5	N/A
Taranto	32.6	30.1	N/A	32.6	30.0	30.6	N/A	N/A
Trieste	24.9	N/A	29.1	34.4	35.5	36.7	36.6	37.8
Venice	26.2	25.4	25.4	24.2	24.9	24.5	23.4	22.9
<b>Nederland</b>								
Amsterdam	29.6	28.2	28.7	31.3	31.2	33.2	30.6	30.0
Ijmuiden	N/A	N/A	N/A	N/A	N/A	N/A	17.5	17.1
Rotterdam	255.0	272.8	291.9	287.8	290.8	293.1	282.5	293.8
<b>Suomi/Finland</b>								
Hamina	N/A	N/A	N/A	N/A	N/A	N/A	4.2	5.1
Helsinki	N/A	N/A	N/A	N/A	N/A	N/A	7.7	9.7
Naantali	N/A	N/A	N/A	N/A	N/A	N/A	3.5	5.6
Raahe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.2
Rauma	N/A	N/A	N/A	N/A	N/A	N/A	3.7	4.2
<b>Sverige</b>								
Gothenburg	N/A	N/A	N/A	N/A	N/A	N/A	27.1	28.8
Helsingborg	N/A	N/A	N/A	N/A	N/A	N/A	8.2	10.4
Lulea	N/A	N/A	N/A	N/A	N/A	N/A	5.6	5.8
Stockholm	N/A	N/A	N/A	N/A	N/A	N/A	5.3	5.6
<b>Portugal</b>								
Leixoes/Porto	8.8	10.0	11.3	12.1	11.5	11.9	12.2	12.6
Lisbon	13.1	13.1	14.0	14.8	16.5	14.6	13.3	13.1
Sines	N/A	N/A	19.9	22.6	16.1	20.2	17.0	21.9

<b>United Kingdom</b>								
Belfast	7.8	N/A	8.0	8.9	9.4	9.4	9.4	9.9
Dover	10.7	N/A	13.5	10.1	13.0	13.1	13.7	14.1
Felixstowe	12.7	17.0	16.5	16.1	15.9	16.9	20.3	22.1
Forth Ports	N/A	N/A	N/A	N/A	N/A	N/A	26.4	44.4
Grimsby-Immingham	N/A	33.8	36.8	37.6	38.2	39.1	41.3	40.8
Liverpool	10.2	N/A	20.2	23.1	24.7	27.8	30.5	29.2
London-Tilbury	44.2	N/A	54.0	53.9	49.5	44.5	50.9	51.2
Manchester	N/A	8.4	8.3	8.1	7.6	7.4	7.4	7.7
Medway Ports	N/A	N/A	N/A	N/A	N/A	N/A	13.6	14.6
Milford Haven	32.8	33.4	33.1	32.3	35.7	35.6	35.9	34.4
Southampton Fawley	N/A	N/A	26.1	20.0	31.5	29.8	31.0	31.4
Sullum Voe	N/A	N/A	N/A	N/A	N/A	N/A	39.4	38.6
Tees-Hartlepool	33.5	37.0	39.3	39.7	42.8	43.4	42.8	43.0
Tyne	6.0	6.4	5.9	5.1	4.9	4.5	3.3	3.8
<b>USA</b>								
Baltimore	27.5	31.8	34.2	25.0	21.7	25.9	25.1	26.2
Corpus Christi	N/A	N/A	76.5	69.4	70.4	72.5	76.6	77.6
Duluth	N/A	N/A	37.0	37.0	35.0	35.5	34.0	38.6
Hampton Roads	N/A	N/A	N/A	N/A	N/A	N/A	53.0	53.2
Houston	121.3	N/A	69.0	57.1	87.6	86.7	71.8	72.1
New York	N/A	56.3	57.2	49.7	42.1	38.0	40.7	46.5
Long Beach	N/A	N/A	N/A	N/A	N/A	N/A	72.4	87.1
Los Angeles	N/A	N/A	N/A	N/A	N/A	N/A	68.6	65.0
New Orleans	N/A	N/A	N/A	N/A	N/A	N/A	33.3	33.9
Philadelphia	68.5	N/A	79.2	75.6	N/A	N/A	57.3	56.7
Tampa	55.0	56.1	58.7	47.1	N/A	49.1	47.1	49.1
<b>Japan</b>								
Chiba	153.4	159.2	164.2	170.2	168.6	191.7	159.5	173.7
Kawasaki	90.4	N/A	N/A	105.1	54.5	54.3	N/A	N/A
Kitakyushu	N/A	N/A	N/A	N/A	N/A	N/A	93.1	N/A
Kobe	N/A	N/A	N/A	171.5	N/A	169.6	168.7	170.9
Nagoya	109.6	116.3	N/A	128.9	136.8	130.9	134.3	137.2
Osaka	N/A	86.3	N/A	97.4	N/A	95.1	N/A	N/A
Tokyo	N/A	N/A	N/A	N/A	27.7	N/A	73.6	77.1
Yokkaichi	N/A	N/A	N/A	N/A	N/A	N/A	55.5	58.5
Yokohama	108.6	N/A	64.3	123.9	120.1	121.4	123.7	128.2

Source: Maritime Economic Research Centre, Rotterdam

are responsible for port superstructure. In France all important ports are owned by the state, and the port administration is responsible for infrastructure and cranes and operators for superstructure. In Sweden there has been by tradition a municipal port administration and a privately owned stevedore company in each port. Ports belong to the municipality, city or state. Private operators use part of the infra- and superstructure and pay according to the volume of cargo or number of passengers. Concerning rates /prices, ports in most cases are in charge of cargo-handling services as well as other and negotiate the total fees with their frequent customers. In Norway public port authorities are under municipal control. Some of the larger ports are managed co-operatively between neighbouring municipalities. Infrastructure and superstructure are either owned and operated by the port authority or by private operators and the industry.

### Strategies

High competition, partly increased because of improved land based cross border connections, is leading the ports management to strategically align their operations.

In the 1990s, the tendency has been towards a port restructuring able to make port management market oriented, and thus competitive, in meeting its clients' needs. Rapid changes are underway, especially in the container industry, on the Northern seaboard of Europe (from Hamburg to Le Havre) to attract container traffic. Expansion by investment in facilities is seen by the ports as a major strategy in maintaining or improving their relative competitive position. In response to customers demands for a briefer stay in port there have been changes

towards hub ports, thus the disappearance of manually unloaded and loaded vessels, which has had a strong negative impact on the employment of dockworkers.

Important progress is occurring in the area of new information technology, for example computer based management information system that tracks transport equipment and cargo by means of modular software packages and standardised computer and telecom hardware.

### REGIONAL DISTRIBUTION

With Rotterdam (NL), Antwerp (B), Hamburg (D) and Le Havre (F), most of the EU's larger ports are to be found on the Le Havre-Hamburg coast. These ports are the most important gateways to industrial and consumption areas on the European continent. This hinterland can be reached easily by way of a high standard infrastructure in terms of road, rail and inland waterways. The Rhine River is especially important for the port of Rotterdam. This connection and its good geographical location on the North Sea have combined to help Rotterdam evolve into the world's largest port.

### ENVIRONMENT

The potential of maritime transport in terms of environment preservation and safety requirement are higher compared with the land and air transport, but due to externalities there is unfair competition between the different modes of transport. Following a policy of safe seas, various measures has been taken concerning the obligations for vessels transporting dan-

gerous goods to make specific information available to authorities, the calculation of port dues for segregated ballast and double hull tankers, a completing vessel reporting system for the EU members. The specific position of port operations was made clear in the case of the so called COMAH proposal (Control of Major Accident Hazards involving dangerous substances), regarding the risks of major accidents on certain industrial activities. The aim is to ensure a level of environmental protection in ports and marshalling yards, either by checking existing EU international and national legislation or by making new legislative proposals within a period of three years. Other measures include identity, physical and documentary checks of veterinary products which take place at the port of destination in the case of transshipment with subsequent transportation by sea.

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## REGULATIONS

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The port is an integral part of the Trans-European Transport Network Plan proposed by the Commission in March 1994. In this document various measures are planned, to improve port efficiency and to promote short sea shipping. Financial support will be given for visits by industry experts to ports and for training programmes for managers of ports in peripheral areas: for example the improvement of communications in French Mediterranean Ports to ensure the necessary flow along the North-South axis, the developments of rail connections with Eastern Europe of the Port of Trieste, and, in general, a more efficient south-north connection.

Based on the principles of freedom to provide services, free access to trade and cargo and free and fair competition, stated by the Communication from the Commission COM66/24 of February 1993, some important measures were taken, having an indirect influence on ports and safety (see section on Environment).

Concerning labour issues, deregulation of port labour abolished laws reserving work in the ports to specific port-workers' organisations, allowing firms to employ their own personnel with substantial financial savings.

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## OUTLOOK

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In order to face increasing competition, the port industry is constantly reorganising its management. The trends are of a greater switch to containers and unitised cargo and away from conventional general cargo. Changes will continue to take place in the way sea ports are organised and controlled, but given the heterogeneous and dynamic character of the industry, these will not occur in a uniform manner. Increasingly there will be need to invest in capital equipment to handle specialised cargoes, but also in electronic data interchange to ensure that rapidity in operations is matched by improved communications. As interfaces between the different transport modes, seaborne, road, rail and inland waterway, as well as trade and industrial areas, the EU ports future developments in the framework of the Trans-European Transport Network Plan is of vital interest for the EU. However these needed reforms are complex and have to be compatible with the political environment, the traffic characteristics, the proportions between liquid bulk cargo, dry bulk cargo, breakbulk and containerised general cargo; the volume of traffic, handling features and the size of the operational unit, safety standards and management know-how, the size and skills of the workforce and the infrastructure and equipment available.

Written by: DRI Europe

# Airports and other air transport facilities

NACE (Revision 1) 63.11, 63.23

*Airports are a key component in the air transport industry, vital to Europe's links with the rest of the world, and to the Union's internal cohesion, as well as to national and regional development. However, congestion in EU airspace and at some of the major hub airports is causing problems for the operations and economics of both airports and airlines. At the same time, the impact of airports on the environment is increasingly recognised. To overcome current and forecast capacity shortages, EU Member States are expanding their airports and building new runways, while the Community is encouraging intermodal facilities, to optimise consumer choice and resource utilisation, and funding considerable research on air traffic management and surface movement guidance and control to make more efficient use of existing capacity. Further, the Community and its neighbours are developing improved air traffic management systems to increase co-ordination between countries. A functional classification of EU airports has been developed for the Trans European Airport Network, the budget for which can provide catalytic funding for airport development projects, including the encouragement of public/private partnerships. More substantial funding is available from the Structural Funds and the Cohesion Fund in appropriate cases. The financing of facility expansion nevertheless remains a major challenge for governments and the industry alike, particularly in view of the planned abolition of intra-EU Duty Free sales. Current European Commission initiatives in the airport field include the preparation of legislation revising the existing slot regulation, the opening of the ground handling market to competition at major airports, and the harmonisation of airport charges, including provision for modulation on environmental grounds. Environmental issues are also being pursued through the study of both fiscal and regulatory stringency methods, as well as operational techniques and monitoring, in the global framework of ICAO.*

## INDUSTRY PROFILE

### Description of the sector

The NACE Rev.1 classification separates 63.11, cargo handling for air transport, from 63.23, supporting services to air transport (airports and airfields). The NACE 1970 classification group 764 used to include all services to air transport (airports and airfields).

Organisations engaged in the commercial and technical operation of public and private airports and airfields, air traffic management and control, and navigational aids all fall within this NACE group, as well as groundhandling services (those for cargo now being separated).

As the termini of air transport services, airports are the focal points of all aspects of the aviation industry. They are where passengers and freight are concentrated into aircraft loads before departure, disaggregated and sorted after arrival, and transferred between connecting services. They are thus by definition intermodal nodes in the passenger and freight transport and logistics chains.

Their essential function is to provide the infrastructure for the air transport industry, but their role extends to that of gateways between the EU and the rest of the world, and to the generation of direct and indirect employment. As such they contribute to economic growth, social development and

cohesion; and have a strategic part to play in regional development.

### Recent trends

The air transport industry, and thus the airports and air transport facilities industries which serve it, is finally recovering from the recessionary period of recent years. Authoritative forecasts, such as those of the International Civil Aviation Organisation (ICAO) and the International Air Transport Association (IATA), predict a doubling of passenger traffic at European airports within the next fifteen years.

In 1995, the number of passenger movements at the largest 30 or so airports (those with over 5 million passengers each) in the EU reached a total of nearly 464.6 million, an increase of 5.1% on 1994. The largest individual airports were London Heathrow with 52 million passengers, Frankfurt/Main (35 million) and Paris Charles de Gaulle (30 million). The leaders in growth performance among these major facilities were Dublin with an 14.3% increase, Berlin Tegel (+13.7%) and Brussels (+11.5 %).

At the two dozen major freight handling airports (those handling 50 000 tonnes each) in the EU, total throughput was 7 355.3 million tonnes, a 8.3% increase on 1994. Frankfurt/Main headed the list with 1.3 million tonnes, followed by London Heathrow (1 million tonnes) and Amsterdam Schiphol (978 thousand tonnes). East Midlands showed the most spectacular growth, a 47.9 % increase on 1994, while Ostend (+35.8%) and Luxembourg (+18.6%) also showed sharp increases.

### International comparison

The world's three dominant regions in terms of air traffic are North America, Southeast and Northeast Asia, and Europe. North America has the largest share, with 23 airports recording over 20 million passenger movements each in 1995, against 8 in the EU and 6 in Southeast and Northeast Asia. Passengers handled at major (those handling over 5 million passengers each) airports in North America in 1995 totalled 1 062.8 million, a 3.6% increase compared to 1994.

The largest individual airports were Chicago O'Hare with 67.3 million passengers, Atlanta (57.7 million) and Dallas Forth Worth (54.4 million). Three airports showed growth rates for passenger transport of more than 10%: Detroit, Saint Louis and Miami.

At the largest Asian airports, passenger traffic increased in 1995 by 15.2 % compared to 1994 and for cargo the growth rate between 1994 and 1995 reached 25.1 %.

The largest individual airports are Tokyo Haneda with 45.8 million passengers in 1995, Seoul with 30.9 million and Hong Kong with 28 million. At two airports - Seoul and Bangkok - traffic increased by more than 10 %.

In Australia, Latin America and the Caribbean there are no airports handling over 20 million passengers per year. In Africa and the Middle East there are no airports handling more than 10 million passengers per year.

## MARKET FORCES

### Demand

There is some evidence of specialisation by airports in terms of the type of traffic they attract - business or leisure passengers, or freight - but in the passenger field this generally reflects the characteristics of the areas they serve. For instance, in holiday resort areas some airports are dominated by leisure traffic; Denpasar (Bali), Orlando (Florida) and Palma (Mallorca) being obvious examples. To an extent this is reflected in the airports serving the origins of this holiday traffic, such as London Gatwick.

**Table 1: Airports and other air transport facilities**  
**Largest European airports - Number of passengers handled (1)**

(millions) Airport	Country	1990	1994	1995
<b>EUR 15</b>				
London Heathrow	UK	43.0	51.7	54.4
Frankfurt/Main	D	29.4	35.1	38.2
Paris Ch. de Gaulle	F	22.5	29.6	28.4
Paris Orly	F	24.3	26.6	26.7
Amsterdam Schiphol	NL	16.5	23.6	25.4
London Gatwick	UK	21.2	21.2	22.5
Rome Fiumicino	I	17.7	20.3	21.1
Madrid Barajas	E	16.2	18.4	20
Dusseldorf	D	11.9	14.0	15.1
Manchester	UK	10.8	14.8	15
Munich	D	11.4	13.5	14.9
Palma de Mallorca	E	11.3	14.1	14.7
Copenhagen	DK	12.1	14.0	14.7
Stockholm Arlanda	S	14.0	13.4	13.4
Brussels	B	8.5	11.3	12.6
Barcelona	E	9.0	10.6	11.7
Milano Linate	I	9.4	10.1	10.8
Athens Hellenikon	GR	n/a	9.6	9.9
Vienna	A	5.7	7.7	8.5
Berlin	D	N/A	7.3	8.3
Hamburg	D	N/A	7.7	8.2
Dublin	IRL	5.5	7.0	8
Las Palmas	E	7.8	n/a	7.9
Tenerife Sur	E	5.6	7.6	7.4
Helsinki Vantaa	FIN	7.6	6.6	7.3
Lisbon	P	5.3	6.0	6.2
Malaga	E	N/A	5.5	6.2
Nice	F	5.7	6.2	6.1
Glasgow	UK	4.4	5.6	5.4
Birmingham	UK	4.9	n/a	5.3
Stuttgart	D	4.4	5.5	5.2
Marseilles	F	4.8	n/a	5.1
<b>Total EU15</b>		<b>N/A</b>	<b>422.8</b>	<b>464.6</b>
<b>Other Europe</b>				
Zurich	CH	12.7	14.5	15.3
Istanbul Ataturk	TR	6.5	10.2	12.1
Oslo Fornebu	N	7.0	9.3	8.4
Geneva	CH	6.0	6.0	6.2

(1) Airports with over 5 million passengers in 1994: embark + disembark + direct transit counted once.  
 Covers airports participating in ACI Annual Traffic Statistics Collection.  
 Source: ACI & Aéroports

In the case of freight, some airports have concentrated upon niche markets, such as Memphis (Tennessee), an express carrier hub handling 1.8 million tonnes of freight in 1995. Generally, however, the largest freight tonnages are seen at the largest passenger airports, such as Tokyo Narita, Miami, New York JFK, Hong Kong, Los Angeles International, Frankfurt/Main, Seoul, Singapore, Chicago O'Hare and London Heathrow; all with over a million tonnes of freight in 1995 and all handling at least 20 million passengers. This re-emphasises the role of major airports as poles of economic activity, particularly in major global trading nations.

Within the European Community, the Commission has mapped a Trans European Airport Network, identifying airports of significant Community interest. This process adopted a functional classification of airport roles, which in practice tends to reflect traffic volumes (passengers and/or freight). The classification comprises:

- international connecting points, the major hubs which link the Community with the rest of the world;
- Community connecting points, linking major provincial areas to the hubs and providing essential intra-Community and national (domestic) flights;
- regional connecting and accessibility points, with a more local role in the overall socio-economic cohesion of the Community, including some relatively small remote and/or island airports.

Clearly the major hubs worldwide tend to be those serving large conurbations and/or trade entrepôts, and often are the foci of activity by national flag carriers. Their relative dominance of their home base airports at least in Europe tends to reflect the restrictions prevalent in the Community before liberalisation. This parallels in some ways the situation in the United States; where, a higher propensity to fly, linked to the generally longer distances involved, have tended to make

**Table 2: Airports and other air transport facilities  
Largest European airports - Amount of freight handled (1)**

(thousand metric tonnes) Airport	Country	1990	1994	1995
<b>EUR 15</b>				
Frankfurt/Main	D	1 115.0	1 245.7	1 297.2
London Heathrow	UK	698.0	967.4	1 042.8
Amsterdam Schiphol	NL	604.0	838.1	977.5
Paris Ch. de Gaulle	F	618.0	786.3	824.3
Brussels	B	282.0	380.7	426.6
Copenhagen	DK	139.0	273.5	309.8
Luxembourg	L	143.0	241.5	286.4
Paris Orly	F	254.0	294.6	276.2
Rome Fiumicino	I	237.0	255.7	256.8
Cologne Bonn	D	163.0	235.8	n/a
London Gatwick	UK	220.0	223.6	232.1
Madrid Barajas	E	221.0	213.1	230.2
Milano Malpensa	I	72.0	111.1	n/a (2)
Stockholm Arlanda	S	N/A	93.2	104.3
Athens	GR	N/A	89.5	101.3
London Stansted	UK	33.0	87.6	93.0
Vienna	A	N/A	82.6	92.6
Lisbon	P	75.0	80.9	89.3
Manchester	UK	73.0	93.8	85.1
East Midlands	UK	N/A	56.0	82.8
Oostende	B	N/A	60.0	81.5
Helsinki Vantaa	FIN	59.8	73.6	78.0
Milano Linate	I	72.0	66.8	n/a (2)
Munich	D	57.0	63.6	64.6
Barcelona	E	66.0	58.9	68.3
Dublin	IRL	N/A	54.0	60.1
<b>Total EU</b>		<b>N/A</b>	<b>7 027.6</b>	<b>7355.3 (3)</b>
<b>Other Europe</b>				
Zurich	CH	255.5	320.0	326.9
Istanbul Ataturk	TR	N/A	88.3	131.8
Geneva	CH	55.9	66.3	99.2

(1) Airports with over 50 000 metric tonnes freight in 1995. Covers airports participating in ACI Annual Traffic Statistics Collection.

(2) Total for Milan Linate and Malpensa: 194.5

(3) Total without Cologne Bonn for which no data were available for 1995.

Source: ACI & Aéroports

airline hub-and-spoke network development a central policy strategy. Home based and flag carrier dominance at many major hubs worldwide is reinforced by airport capacity constraints, where the based airline may have historic control of a large proportion of air transport movement 'slots'. Airport access problems, as well as market access and economies of scale strategies, have thus tended to fuel the trend toward airline alliances and acquisitions on a global scale.

### Supply and competition

Airports are essentially the providers of infrastructure to the air transport industry and to their catchment areas, with the unique characteristic that appropriate infrastructure enables an almost infinite range of competitive transport links to be operated between city pairs by private and/or public sector operators, direct and via connections, both overland and overseas, without the need for any additional intervening surface infrastructure investment or land-take (other than for relatively minute ground-based navigational installations). They are required, by international treaty obligations, to provide facilities and services in a non-discriminatory manner to all air carriers, although many of them are owned and operated by the public sector - local or state authorities. To fulfil their function, their construction, extension, improvement and maintenance

has to be financed. This creates a strong incentive for individual airports and airport systems to adopt commercial business strategies.

To an extent, this implies competition between airports, but it is not of the same nature as competition between other kinds of transport undertakings, including airlines themselves. Safety and other considerations prevent, for example, airports being built closely adjacent to each other, although catchment area overlaps do exist, particularly where conurbations are virtually contiguous such as at Manchester/Liverpool, Amsterdam/Rotterdam, and Dusseldorf/Koln-Bonn. In such cases, however, either one of the airports attains critical mass and dominates the other; or, where more than one airport serves the same conurbation for capacity reasons (London Heathrow/Gatwick, Paris CDG/Orly, and New York JFK/La Guardia/Newark for instance), they tend to be operated as a system under common or co-ordinated ownership and operation, rather than in competition.

Regional airports also compete with the larger hubs for local origin/destination traffic, with direct point-to-point services (particularly holiday charters) supplementing their feeder role. While they cannot offer the same range of destinations or frequencies, and often cannot match the fares available at the

**Table 3: Airports and other air transport facilities  
Largest North American Airports: Passengers and Cargo 1995**

Airport	Passenger Movements (millions)	Change 94/95 (%)	Cargo (thousand tonnes)	Change 94/95 (%)
Chicago O'Hare	67.3	1.20%	1095	-1.80%
Atlanta	57.7	6.70%	545	-7.60%
Dallas/Fort Worth	54.4	3.80%	594	-0.50%
Los Angeles International	53.9	5.60%	1422	3.30%
San Francisco	36.3	4.70%	558	1.10%
Miami	33.2	10.00%	1514	8.90%
Denver	31	-6.30%	256	-4.80%
New York JFK	30.4	5.50%	1478	2.40%
Detroit	29	11.30%	251	0.00%
Las Vegas	28	4.40%	31	19.20%
Phoenix	27.9	3.70%	218	26.00%
Minneapolis	26.8	9.40%	257	0.00%
New York Newark	26.6	-4.50%	866	0.70%
Saint Louis	25.7	10.10%	199	111.70%
Houston Intercontinental	24.7	9.80%	296	8.00%
Boston	24.3	-3.50%	332	4.70%
Honolulu	23.6	5.10%	393	0.00%
Seattle	22.8	8.60%	310	-4.60%
Orlando	22.5	0.30%	185	3.40%
Charlotte	20.9	1.00%	128	-31.60%
New York La Guardia	20.6	-0.70%	28	-69.90%
Toronto	20.6	-1.50%	320	0.00%
Pittsburgh	20	2.70%	96	2.10%
23 Airports 20 mn	728.2	3.80%	11372	1.80%
12 Airports 10 mn	161.4	4.40%	1785	7.00%
24 Airports 5 mn	173.2	1.30%	3965	2.90%
TOTAL	1062.8	3.60%	17122	2.50%

Source: ACI & Aeroports

hubs, they do provide generally less congested surface access and overall journey time savings. Nevertheless, in the UK for example the London airports still account for two thirds of all UK airport passengers, including those on national feeder routes which are of course also counted at their provincial origin/destination airports. In a limited number of cases, the provincial airports have had some success in developing into major or minor hubs themselves, often due to geographical, as much as, commercially competitive reasons. Manchester, Lyon, and Osaka could be cited here.

Generally speaking, airports cannot compete for point-to-point business passenger traffic, particularly over relatively short distances. For example, a one-day conference delegate originating in London will not accept Brussels as an alternative to Paris, although rail offers an alternative and competitive modal choice. An American or Asian visitor coming to Europe for a longer stay, however, might well choose his gateway on a basis of schedule convenience and fare. There is also undoubted competition between resort areas for holiday visitors, and in that sense the airports serving those areas may be said to compete, particularly insofar as airport costs affect charter seat prices (e.g. Catania/Malaga/Heraklion). Since leisure traffic puts a lower economic value on time than business traffic, and is rather influenced by the perceived immediate cash cost of surface and air travel than the true total cost, the originating area airports can and do compete for series of charter flights.

There are also clear examples of competition in niche markets such as express freight, where motorway access, absence of night operating restrictions, and willingness to provide specialised facilities, as well as pricing, can all influence basing

decisions of logistics-oriented carriers. One specialist operator is reportedly moving from Koln/Bonn to Liege, for instance.

The primary area of intra-hub competition is that of connecting, or Sixth Freedom traffic. Thus Europe's gateway airports (primarily the Union's International Connecting Points) compete with each other for long-haul traffic, and within Europe connecting services can offer viable alternatives to direct flights, particularly when allied to airline loyalty schemes. Primarily it is the based airlines which are competing with each other, but some airports have adopted deliberate strategies of providing rapid connecting baggage facilities and terminal/apron layouts conducive to the encouragement of connecting traffic, both passenger and freight. Multi-terminal airports are at a disadvantage here, except for on-line transfers between flights of the same carrier in dedicated terminals. Nevertheless London Heathrow passenger surveys for instance have shown that international/international and EU connecting traffic accounts for up to 30 percent of its total international passenger throughput. At Amsterdam Schiphol the proportion of connecting traffic, including intra-EU, is even higher, and a conscious effort is made in airport planning and marketing to make and to present connecting between flights as seamless as possible. This effort is also emulated by Brussels Zaventem, for instance. The throughput of Europe's busiest airport, London Heathrow, is at 54 mppa roughly equivalent to the population of England. Amsterdam Schiphol, the dominant airport in the Netherlands with a population of some 15 million, handles 25 mppa. Clearly neither the airport nor its home-based flag carrier could sustain their current volume of activity without their success in competing for Sixth Freedom traffic.

**Table 4: Airports and other air transport facilities  
Largest Asian Airports: Passengers and Cargo 1995**

Airport	Passenger Movements (millions)	Change 94/95 (%)	Cargo (thousand tonnes)	Change 94/95 (%)
Tokyo Haneda	45.8	8.50%	655	33.80%
Seoul	30.9	14.20%	1194	18.90%
Hong Kong	28	8.10%	1458	12.90%
Tokyo Narita	24.2	2.00%	1619	3.70%
Singapore	23.2	7.20%	1106	9.50%
Bangkok	23.1	10.10%	661	12.50%
6 Airports 20 mn	175.3	8.00%	6693	12.60%
11 Airports 10 mn	148.8	20.10%	3598	40.90%
8 Airports 5 mn	65	11.20%	999	4.60%
TOTAL	389.1	15.20%	11290	25.10%

Source: ACI & Aeroports

### Commercial Operations and Duty Free

A particular incentive for airports to attract connecting traffic is the temporarily captive market which passengers in transit provide for shops and other concessions at the airport, particularly tax- and duty-free sales. The profit margins on the latter particularly, especially items such as liquor, tobacco and perfumes, which tend to be heavily taxed world-wide, are very lucrative and airports are able to extract concession fees as high as 45% of turnover from airport outlets for such goods. Retailers of other goods, particularly luxury and high-value items such as cameras, designer clothing, even diamonds and cars, also pay substantial premia for airport concessions. One of the world's most prestigious department stores has a Heathrow branch, and it is estimated that 20% of all UK paperback book sales are made at London airports. Surprisingly, American airports have until recently not exploited these opportunities to anything like the same extent as those in many other parts of the world, perhaps largely because of the preponderance of domestic traffic and consequent lack of the inaugural catalytic spur of duty free, so that European airport operators have won contracts to develop and operate retail facilities there.

Dubai and Singapore Changi are other examples where shopping is the focus of passenger activity, with a high reliance on transit as well as connecting traffic.

The pioneer of transit shopping was Shannon, but as aircraft range capability enabled its overflying by Transatlantic operators, it also pioneered the export processing (and manufacturing) zone concept geared to airfreight shipment, and the industrial estate became the largest concentration of employment in the west of Ireland.

The theme became more generalised with recognition that airport-adjacent and on-airport land commands a premium for compatible manufacturing, processing and distribution industries. While the sale of land can provide airport capital investment funding, its rental for aviation-related and air transport dependent (as well as other) industries and services provides ongoing revenue at many airports. This also enhances airports' contribution to local economies as direct and indirect job generators.

Taken together with the rental of office, lounge and check-in space to airlines, and concession fees from services such as banks and car rental, in addition to fees from handling and fuel companies (or profits from direct provision of these services by the airport itself), commercial revenue has become a vital complement to operational revenue at many airports. In perhaps extreme cases, such as the BAA plc London airports, whose operational revenues are legislatively capped on a per passenger basis, commercial revenues equal or outstrip reve-

nues from user charges. Indeed at Gatwick, a loss is made on the user charges element of the operating account, but more than outweighed by the profit on commercial activities. It is not at all uncommon for commercial activity airport profits to make up the bulk of total reported profits, where it is separately identifiable.

Within the European Community, therefore, there is considerable opposition from airports and airlines to the planned abolition of duty and tax free (DTF) sales to intra-EU passengers. Total DTF concession fees and profits account for some 15% to 20% of total airport income in the Community. While, the concept of intra-EU DTF is felt to be incompatible in principle with the operation of the Single Market, estimates on the impact of intra-EU DTF abolition concluded that:

- airport charges would have to rise by between 13% and 25% to compensate airports for the loss of net income; and that these increases, passed on to airlines as increased charges, would result in higher fares;
- losses by airlines (and ferries) of their duty free profits would further tend to increase fares;
- demand, particularly in the highly price-elastic leisure travel segment, could as a result be depressed, with adverse effects on other Community policies.

Therefore, it was decided to delay the abolition of intra-EU DTF until 1st July 1999, to give airports the opportunity to develop alternative sources of commercial revenue.

Meanwhile, the abolition of universal Customs controls on intra-EU travel has necessitated the introduction of vendor control systems to ensure adherence to individual DTF allowances, which are now available between all pairs of Member States. While there are doubts about the efficacy of vendor control, the attractiveness of DTF to the individual passenger has increased since DTF purchases can now be made on both outward and inward segments of a return trip from one Member State to another, and on each segment of a multi-State trip.

### Production process

Airports, as suppliers of infrastructure to the air transport industry, are natural monopolies. It is difficult to conceive of two runways on the same airport being under independent control, for example, as the runways are inherently linked to and interdependent with the taxiway, apron, gate and terminal facilities on the one hand, and, through the airport/air traffic systems interface, to air traffic management facilities on the other.

It is rare in Europe but more common in North America, for individual airport terminals (passenger or freight) to be owned and operated independently. For example, New York JFK has

**Table 5: Airports and other air transport facilities**  
**Largest Australasian, African & Middle East, Latin American & Caribbean Airports: Passengers and Cargo 1995**

Airport	Passenger Movements (millions)	Change 94/95 (%)	Cargo (thousand tonnes)	Change 94/95 (%)
<b>Australasia</b>				
Sydney	18.7	8.20%	260	n/a
Melbourne	12.7	14.20%	146	n/a
Brisbane	9.2	14.40%	149	n/a
Auckland	6.8	14.70%	188	-0.80%
4 Airports 5 mn	47.4	10.70%	743	n/a
<b>Africa &amp; Middle East</b>				
Jeddah	9.2	-2.60%	173	-0.20%
Riyadh	7.9	2.60%	125	n/a
Johannesburg	7.3	13.00%	136	-11.20%
Dubai	7.1	12.80%	316	29.90%
Cairo	7	3.90%	142	83.50%
Tel Aviv	6.8	15.20%	263	8.10%
Lagos	6	1.70%	65	n/a
7 Airports 5 mn	51.3	5.80%	1220	12.90%
<b>Latin America &amp; Caribbean</b>				
Mexico City	15.8	-16.10%	243	49.60%
Sao Paulo Guarulhos	11.9	17.40%	349	6.90%
Puerto Rico	9.6	3.30%	267	6.50%
Caracas	6.7	-2.80%	77	9.60%
Bogota	6.6	15.60%	543	12.00%
Rio de Janeiro Galeao	6.1	2.20%	131	8.70%
6 Airports 5 mn	56.7	1.00%	1610	8.50%

Source: ACI & Aeroports

dedicated airline terminals owned or leased by the airlines themselves, and Birmingham has its Eurohub Terminal, financed, constructed, owned, and operated by a consortium including the airport authority, a major airline, a handling company and the building contractor.

Build/operate/transfer (BOT) and build/operate/own (BOO) schemes, or variants or combinations of those basic concepts, are however becoming increasingly common methods for providing airport facilities in developing countries, recent examples or proposals include passenger terminals at Hanoi Noi Bai and St Petersburg Pulkovo, a joint venture proposal. The prime example in Europe is the new Spata airport currently under construction to serve Athens, but there the internal monopoly concept is preserved as the whole airport is the subject of the operating agreement between the Hellenic State and the contractor.

In the provision of handling services to airlines at airports, absolute or quasi-monopolies have traditionally existed, often with the airport itself or the home-based airline being the only organisation permitted. Such restrictions have been defended on grounds of volume of traffic offering, and the maintenance of safety, security and quality standards, as well as the physical availability of space. This has been particularly galling to non-resident airlines who wish to preserve their own identity, standards, and corporate culture throughout all aspects of their operations. Those arguments appear to lose some of their cogency in the context of possible solutions such as periodic tendering for monopoly concessions, and a legislative initiative has now been taken by the Commission services with a view to opening up ground handling markets at airports while taking account of legitimate difficulties of implementation.

In the field of air traffic management (ATM) and control (ATC), there would seem to be an inexorable case for *prima facie* natural monopoly, in that all the aircraft using a particular

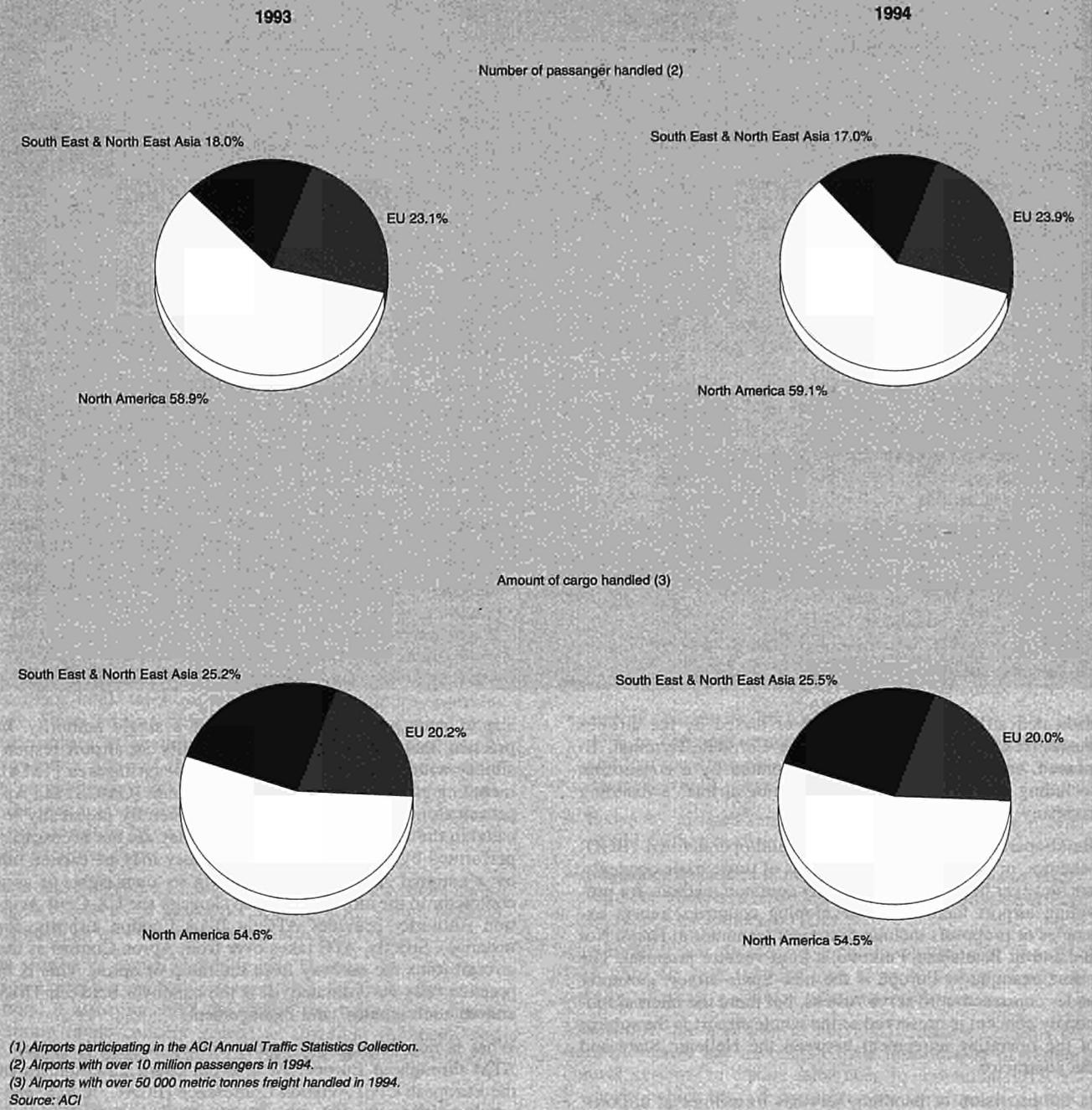
airport must be under the control of a single authority. In practice, that unified control is generally an airport responsibility within the airport terminal manoeuvring area (TMA), including ground movement control systems (GMCS) and Approach Control. These functions are generally physically located in the airport control tower, but they are not necessarily performed by the airport authority - they may be carried out by a national ATM/ATC authority in its own right, or as a contractor to the airport (in which capacity the UK Civil Aviation Authority provides ATC at BAA London airports, for instance). Strictly, ATC takes over from Apron Control as the aircraft joins the taxiway from the ramp or apron. This is in practice fully co-ordinated, as is the handover between TMA and en route control and management.

What is not, surprisingly, under unified control is en route ATM throughout Europe. At a recent count 23 countries of the European Civil Aviation Conference (ECAC, ICAO "geographical" Europe, wider than the 15-Member State European Union) had 31 different ATM systems, relying upon 18 different types of computers and 30 incompatible programming languages. Although a start has been made with Eurocontrol, with recent accessions by additional countries, much remains to be achieved in the field of ATM/ATC harmonisation, as outlined in the recent Commission White Paper on Air Traffic Management: Freeing Europe's Airspace (COM(96)57 final of 6.3.1996).

#### Capacity and Congestion

In recent years ATM/ATC capacity has come to be regarded as a prime cause of air transport congestion, unless more capacity is provided at the major hubs, and/or more efficient use is made of existing capacity, both at airports and of airspace. Capacity limitations at airports can be evident at significant points in the progress of the passenger or freight consignment to, through and from the airport, from surface access to terminal capacity, apron and aircraft stand avail-

**Figure 1: Airports and other air transport facilities**  
**Passengers and freight handled at major airports as a share of EU, USA & Canada and South East & North East Asia**



ability, taxiways, and runway utilisation to the airport/air traffic system interface and beyond, to en route airspace capacity. Forecast air traffic growth in the Community approximately matches overall existing and planned airport infrastructure capacity to about 2015, but some major hubs are already capacity-constrained while some airports have spare resources.

The same phenomenon of "mismatch" can be seen in the ATM field. The lack of ATM capacity particularly affects specific airspace sectors, the volume of airspace that can be safely controlled by a single controller, and can cause delays to aircraft which are obliged to stay on the ground until en route "slots" become available. Thus airspace capacity shortages react upon, and conversely are acted upon by, airport capacity.

Operational procedures at the interface can also cause delays and inhibit capacity utilisation. Their negative effects on the capacity of the whole airport plus airspace system result from:

- the need to organise the sequence of climbing and descending aircraft, ensuring safe separation in accordance with differences in performance, and taking account of wake vortex separation;
- restrictions on both inbound and outbound routes imposed for environmental noise abatement reasons, it having been estimated that in the absence of noise abatement procedural measures one of New York's three major airports could become superfluous.

The latter problem highlights an example of the recognition that airport and airspace capacity needs must be met in an environmentally compatible manner to attain the European Community's central transport policy goal of "sustainable mo-

**Table 6: Airports and other air transport facilities**  
**Passengers handled at other EU airports (1)**

(millions)	Country	1990	1991	1992	1993	1994
Birmingham	UK	3.6	3.4	3.8	4.2	4.9
Marseille	F	5.0	4.5	4.7	4.8	4.8
Lyon Satolas	F	3.8	3.6	3.9	4.0	4.3
Cologne Bonn	D	3.1	3.0	3.6	3.8	4.0
Hannover-Langenhagen	D	2.8	2.9	3.1	3.4	3.9
Lanzarote	E	2.5	3.0	3.1	3.4	3.7
Milano Malpensa	I	2.4	2.6	3.3	3.6	3.7
Alicante	E	2.7	2.7	2.8	2.9	3.5
Faro	P	2.8	3.3	3.4	3.1	3.5
Toulouse Blagnac	F	N/A	N/A	N/A	3.2	3.4
London Stansted	UK	1.2	1.7	2.4	2.7	3.3
Ibiza	E	2.4	2.6	2.6	2.8	3.2
Edinburgh	UK	2.6	2.4	2.7	2.9	3.1
Bergen Flesland	NL	N/A	N/A	N/A	2.7	2.9
Newcastle	UK	1.6	1.6	2.0	2.1	2.5
Bordeaux Merignac	F	2.6	2.2	2.3	2.4	2.4
Naples Capodichino	I	N/A	1.9	2.1	2.1	2.3
Venice Marco Polo	I	N/A	N/A	N/A	2.0	2.3
Fuerteventura	E	N/A	N/A	N/A	2.0	2.3
Aberdeen	UK	2.0	2.0	2.2	2.3	2.2
Basel-Mulhouse	F/CH	N/A	N/A	2.0	2.0	2.2
Menorca	E	N/A	N/A	N/A	1.8	2.1
EUR 12		N/A	N/A	N/A	64.2	70.5

(1) Airports with passengers between 5 and 2 million in 1994: embark + disembark + direct transit counted once. Covers airports participating in ACI Annual Traffic Statistics Collection. Source: ACI

bility". Both these interface difficulties are the subjects of ongoing Community-funded research into sequencing tools, capacity assessment, procedures, and new technologies. For example, global positioning systems (GPS) and global navigation satellite systems (GNSS), will permit far more accurate aircraft spatial location data, enabling safety standards to be maintained while reducing vertical and horizontal separation minima under the instrument flight conditions which govern air transport operations in controlled airspace even in clear skies.

New technologies are also permitting the development of new ATM operational concepts such as "gate to gate", whereby airport and airspace utilisation information and data will be able to be exchanged to common procedures and standards, enabling the optimum sequencing of aircraft from the moment they begin to move off blocks at departure airports until they shut down engines at destination airports.

Nevertheless, even after the implementation of economically justified future technologies, and the increase in airport/airspace synergies achieved through "gate to gate" concepts, unlimited capacity cannot be provided. Capacity constraints are expected to persist in a context of traffic growth, reinforcing the need for further reconciliation of ATM/ATC and airport capacity. This could call for co-ordination of en route flow management and airport slot scheduling, so that the future ATM system can provide airspace capacity in balance with airline schedules, meeting demand without congestion and delays at the interface.

With regard to en route airspace management, Member States recognise the need to move towards a single European control architecture in order to cope with congestion. This should accelerate progress towards harmonisation of procedures and equipment, and a rerouting and resectorisation of airspace designed to minimise crossing traffic. It is proposed that steps towards such a co-operative effort will lead to the establishment and operation of a single agency responsible for ATM in Europe. In this context, the ECAC Ministers established in 1990 the European Air Traffic Control Harmonisation

and Integration Programme (EATCHIP). In 1993, Commission Directive 65/93/EEC made the use of standards set by Eurocontrol mandatory throughout the Community. Eurocontrol is also responsible for the implementation of EATCHIP.

These efforts will go some way in improving the management of aircraft flows in Europe, as more cohesion and compatibility are brought to the various national ATC/ATM networks. The gradual global movement towards a Single Air Traffic Management System, and the development of GNSS (which if approved will move much of the current ground-to-air navigation and ATM systems to satellite-to-air, will complement and enhance Europe's airspace management improvements. Both ATC and GNSS have their place in the Trans-European Networks as now agreed by the European Commission and Parliament, reinforcing their eligibility alongside the Trans European Airport Network for Community funding where appropriate. They are also explicitly mentioned in the Commission White Paper on Growth, Competitiveness and Employment (COM(93)700 final, December 1993), implicitly recognising the importance of an efficient air transport system in the achievement of Community goals.

## INDUSTRY STRUCTURE

### Companies

As has been noted, the European airport industry demonstrates a mixture of public and private sector ownership and operation as regards infrastructure, facilities and services. Private/public partnerships (PPP) are increasingly seen as the way forward in financing airport infrastructure development, and the Trans-European Transport Network (TEN-T) budget line provides for catalytic financial assistance for mature airport projects facing financial difficulties of implementation by way of aid for studies, interest rate subsidies for loan capital, help with loan guarantee costs, and in duly justified circumstances, direct grants. The amounts are not large by comparison with potential Structural Funds and Cohesion Fund aid for which airports can also qualify in appropriate circumstances, totalling only

**Table 7: Airports and other air transport facilities  
Freight handled at other EU airports (1)**

(thousand metric tonnes)	Country	1991	1992	1993	1994
Düsseldorf	D	41.8	47.5	45.6	47.9
Marseille	F	32.2	38.2	39.3	42.2
Hamburg-Fühlsbüttel	D	N/A	38.4	36.1	37.8
Gran Canaria	E	38.1	34.0	33.8	35.1
Toulouse Blagnac	F	N/A	N/A	28.4	32.1
Basel-Mulhouse	F/CH	24.5	29.8	26.2	26.2
Liverpool	UK	N/A	N/A	15.2	25.4
Nuremberg	D	9.1	9.2	15.8	23.7
Shannon	IRL	17.3	18.0	19.9	22.6
Nice-Côte d'Azur	F	23.3	22.6	21.8	21.8
Oporto	P	16.1	20.9	19.6	20.7
Glasgow	UK	14.9	15.0	18.2	20.1
Lyon Satolas	F	18.6	21.9	20.9	19.8
Birmingham	UK	26.0	18.5	16.5	18.8
Maastricht	NL	26.2	10.8	15.2	17.0
Berlin Tegel	D	N/A	16.4	16.1	16.6
Palma de Mallorca	E	16.8	14.7	13.7	16.5
Prestwick	UK	N/A	N/A	11.3	14.1
Stuttgart	D	14.4	14.6	12.4	13.9
Tenerife Norte	E	N/A	N/A	7.8	13.7
London Luton	UK	N/A	23.5	20.9	11.6
Tenerife Sur	E	17.7	18.3	14.3	10.1
EUR 12		N/A	N/A	469.0	507.7

(1) Airports with freight between 10 000 - 50 000 metric tonnes in 1994.  
Covers airports participating in ACI Annual Traffic Statistics Collection.  
Source: ACI

240 million ECU in 1996 for instance, some 75% of which goes to Priority Projects identified by the Christophersen Group of representatives of Community Heads of State. This priority list includes the development of Milan Malpensa airport and the Nordic Triangle (within which Stockholm Arlanda qualifies). Other airports receiving assistance include Bologna G Marconi and Luxembourg Findel, and Heathrow received contributions to rail access study costs under transitional arrangements.

While Member States have shown some reluctance to put forward airport projects for TEN-T assistance, perhaps preferring to rely upon the alternative Community funding sources such as the recently approved 250 million ECU Cohesion Fund grant to the Athens Spata project, applicants have shown themselves to be well aware of the value of project endorsement by Community TEN-T assistance to the prospects of PPP infrastructure investment funding.

The functional structure of the industry as defined in the TEAN guidelines has already been described. It is important to recognise, however, that this classification is intended to be indicative and dynamic rather than restrictive and static. No International Connecting Points in the Community could stand alone without Community Connecting Point local and feeder traffic, for instance, and there is no intention to inhibit the development of direct international and intra-Community as well as national services at any category of airport. Further, airports currently not included in the network can qualify for inclusion as their traffic develops.

### Strategies

As already indicated, airports are tending to adopt more commercial attitudes. Their socio-economic role is recognised as going beyond the provision and management of infrastructure, and they are re-inventing and positioning themselves as centres for economic growth and cohesion; gateways to growth for their airline customers, and the communities and regions which they serve. They are obviously vital components in the tourism industry, but their influence and importance has both wider

and deeper aspects. Access to air communications is frequently cited in industrial location decision-making processes, and airports make an acknowledged contribution to the elimination of the concept of peripherality which can inhibit inward investment in regions far from the core of the Community. This transformation of airports' perceived roles has expanded beyond the airport boundaries not only to include enterprise zone and business park development as already described, but to encompass surface access modes.

The objective, endorsed by the thrust of the Common Transport Policy Action Plan, is for airports to fully exemplify the concept of intermodality, in order to maximise consumer choice of travel mode and to encourage the optimum allocation and utilisation of transport modal resources, with due regard to respect for the environment. In many ways, airports already offer models of best practice in the intermodal transport field - simple door to door documentation in the air express freight business for example - and by their nature as non-residential areas within their boundaries, all passenger travel by air involves intermodal transfers. These range from the provision of car parks at the simplest level, through the integration of bus and air services (scheduled coach/air services and the surface transport arrangements characterising package holidays by air), to the provision of rail stations at airports. These last range from connection to existing urban networks (like Heathrow's 3 London Underground stations), and dedicated rail links to city centres (as at Brussels and Rome), through regional and main line conventional stations at airports (Amsterdam Schiphol, Dusseldorf, and Southampton for instance), to High Speed Rail integration as at Paris CDG.

It may well be that this results in much feeder traffic over shorter distances transferring to rail from air, thus releasing hub airport terminal, runway and airspace capacity for the longer hauls within and beyond Europe where air transport offers an overall journey time saving.

## ENVIRONMENT

As a high-profile industry, aviation tends to be a target for environmental lobbyists. Insofar as it causes environmental damage, the air transport industry should be held to account and encouraged by regulatory and/or economic measures to minimise that damage and to pay for its repair. To date, the international air transport community, and the European Community (working at the global level in view of the international nature of air transport), has followed the regulatory route, with considerable success in reducing air transport noise and other emissions at source, and ensuring that airport operations and infrastructure developments are subject to the full rigours of pollution avoidance and environmental impact assessment. Economic pressures have led to great improvements in fuel efficiency, so husbanding the consumption of scarce fossil fuel resources.

The industry is already acutely aware of its environmental responsibilities, and many airlines and airport authorities have formulated corporate environmental protection policies. In comparison with road transport for instance, aviation produces relatively little environmental damage in absolute terms. That, however, is no excuse for not continuing to work for at least its stabilisation in the face of expected absolute and relative volume growth.

As a means to that end, fiscal measures are often advocated on the "polluter pays" principle. It is however necessary to be sure what the polluter is paying for. While not as simple and clear-cut as making the toxic waste producer pay for its removal and treatment, paying for new cleaner, quieter, and more fuel efficient aircraft to meet increasing stringency measures and to remain cost-competitive is a cost already comprehensibly borne, as is the payment of noise charges imposed by airports to finance noise insulation schemes.

It thus seems likely that a balanced approach, involving both stringent regulations and economic measures as appropriate and effective, as spurs to technological and procedural improvements designed to minimise the emission of environmental pollutants at source, and to ameliorate their effects at the point of emission, will be the most effective.

### Noise

It has been estimated that some 80 million Community citizens are exposed to continuous outdoor transport noise levels in excess of 65 dB(A). Over 90% of those people are affected by road traffic noise, about 1% by train noise, and between 1% and 2% by aircraft noise. Aircraft noise is concentrated around airports. Since 1979, the Community has put in place a series of measures, starting with a non-addition rule (so that noisy aircraft could not be added to the fleets of Community carriers), to reduce that noise concentration. Council Directive 92/14(EEC) requires the progressive phase-out of comparatively noisy aircraft (those certified by Chapter 2 of ICAO Annex 16) by 2002, with certain interim exemptions particularly for older aircraft operated by visiting airlines from developing countries, but by the deadline date only the quietest current jets (Chapter 3 certification) will be allowed to operate at Community airports. Similar provisions exist in North America, Japan, and Australasia).

It should be remembered that the noise footprint of the latest Chapter 3 certified jets is about one ninth the area of that of the oldest (Non Noise Certification, or Chapter 1 technology) types. As a result, noise-affected populations around some busy airports have been halved in recent years. There are fears, however, that unless further technological strides are made volume growth could begin to reverse this trend in improvements in a few years time.

Noise stringency measures, so far in step with tightened ICAO recommendations, are paralleled by economic pressures in the form of airport user surcharges for noisy aircraft, and

finances for infringement of curfews and noise abatement procedures. These help fund noise insulation and property purchase schemes around airports.

### Fuel Burn and Emissions

Air transport fuel consumption accounts for about 56 % of total anthropomorphic fuel consumption. Because fuel costs currently account for around 10% to 15% of airline direct operating costs carriers have pressed manufacturers to produce ever more fuel-efficient engines. These engines, however, are acknowledged to produce between 0.1 % and 3.6 % of total anthropogenic emissions of such pollutants as nitrous oxides (NO<sub>x</sub>), carbon monoxide (CO), and hydrocarbons (the Commission-funded AERONOX study, 1995). The gaseous emissions at high altitude are identified as contributing respectively to ozone layer depletion and "greenhouse" (global warming) effects.

These effects, however, are mainly significant over oceanic and unpopulated areas. Further, their net climate change effects are as yet not fully understood, and it is extremely difficult to devise a monetary valuation for them, or to channel it into ameliorative action. It may therefore seem inappropriate to devise and apply a charging scheme at the Community level, since most EU air traffic flies in the skies above Europe, already polluted by other sources, and since it is a global problem of flight in international airspace there is a case for studying it and seeking solutions globally. That is what the Commission is doing, in the form of the Working Groups of ICAO's Committee for Aviation Environmental Protection (CAEP).

At the last full CAEP meeting in December 1995, a recommendation was made on increased stringency of NO<sub>x</sub> emission regulation, and that agreed 16% reduction requirement to be met by manufacturers on all new engines developed for introduction within a few years time is currently being considered by ICAO Member States. The Commission services are meanwhile preparing a Proposal for legislation to enforce that requirement in the Community.

At and around airports, aircraft emissions tend to be negligible in the context of overwhelming road vehicle and other emissions. Nevertheless, some airports have introduced bans on auxiliary power unit (APU) and/or ground power unit (gpu) use, providing centrally generated electrical power on the apron. These measures, together with some airport restrictions on engine running, are however probably as much oriented toward fuel saving and noise abatement as emission prevention.

### Airport Infrastructure Development and Operations

All Community airport development beyond the existing boundaries is subject to the requirements of Council Directive 85/337/EEC as amended by the Council in June 1996, for appropriate environmental impact assessment and ameliorative measures in accordance with Member State law. No Community funds are disbursed for airport development without proof of compliance, but TEN-T assistance has been given for environmental studies of proposed airport projects. Noise, and effects on water resources and wildlife are among the aspects required to be covered.

At the operational phase, one hazard is waste water contamination by fuel and toxic fluids such as de-icing compounds. Separation techniques and controlled disposal of contaminants are an aerodrome standards requirement. Operational airports are also effectively refuges for certain types of grassland-dependent flora and fauna, although birds are discouraged as an operational hazard.

## REGULATIONS

### *Global*

The air transport industry is at the technical level one of the most highly regulated in the world. All nations with significant air transport activities are members of ICAO, and thus undertake to adhere to the International Convention on Civil Aviation. Its technical Annexes cover all aspects of air transport in terms of standards and recommended practices, including operational procedures, environmental matters (Annex 16) and airports (Annex 14). Annex 14 goes down to such levels of detail as the number of firemen and rescue vehicles (with their foam capacities) to be employed at an airport for the regular acceptance of various aircraft types, and the size and style of runway markings. These standards are universal. ECAC is ICAO's European regional organisation.

Another global international body of relevance to airport services is the International Air Transport Association (IATA), an airline representative body. Once assailed as a tariff-fixing cartel, IATA has devised the standard internationally accepted commercial documents and procedures which make international air travel work - the same ticket format, freight air way bill, inter(air)line billing and accounting systems, and airport handling services definitions and contract form are used and honoured all over the world.

The Airports Council International (ACI) has also made valuable contributions to setting standards for environmental best practice and capacity assessment methodology at airports, but is not in the same sense a regulatory body. With other professional and trade associations associated with the industry, however, it represents the self-regulatory culture and responsible attitudes in all matters bearing upon the safety and security of operations which characterises the air transport industry perhaps more than any other.

### *Community Legislation*

In addition to environmental legislation to which reference has already been made, the main thrust of Community legislative initiatives on air transport has been in the field of liberalisation, in the interests of applying the principles of a single competitive market to aviation, with due regard to international obligations and reciprocity. The final application of the third "package" of liberalisation measures becomes effective in 1997, after which any Community air carrier will be able to operate intra-Community services freely in and between any Member State (with certain exceptions), provided they meet the safeguards built in to Council Regulation 2407/92/EEC on the licensing of air carriers to ensure that new entrants to the market have sufficient financial resources to reasonably ensure continuity of safe operation, and all other relevant safety and environmental requirements. In practice, market access also requires access to airport capacity, a scarce resource expressed as airport "slots". Their availability depends upon the various factors already discussed such as runway and stand capacity of course, but also upon neutral, transparent and non-discriminatory allocation of what is available.

The Community slot allocation rules were adopted in January 1993 as Council Regulation 95/93/EEC, and aimed at:

- allocating slots among existing carriers fairly, given the severe congestion at already evident at some Community airports and the "grandfather rights" of incumbent operators who, having invested in route development, did not welcome the potential "creaming off" of the rewards of their labours by new entrants in the name of competition; while
- allowing new entrants fair and non-discriminatory access to unused slots through a "pool" system.

Account was taken of the principle of reciprocity in third country relations by allowing for the withdrawal of third coun-

try carriers' slots at Community airports if fair treatment is not accorded to Community carriers at airports in that country.

Following a process of study and consultation, the slots Regulation is currently under review to improve various aspects of its implementation, particularly in the area of new entrant access and procedural matters.

So far, then, Community legislation has focused upon the environmentally sustainable introduction and practical implementation of "open skies" and "open airports" principles within the Community for Community carriers. Attention is now turning to specific areas of the airport and airport services segment of the industry.

On 13 December 1994 the Council adopted a Proposal for a Directive on the opening of ground handling markets to competition. Council formally reached a Common Position on this matter on 28 March 1996, and it was adopted by the European Parliament with certain amendments in July. The Directive, requiring implementative legislation by Member States, was adopted in October 1996. It will ensure that carriers have at least a minimum of genuine choice at a reasonable price, for services tailored to their needs, including the right to self-handling under certain conditions, initially at large airports. However, the measure takes into account the specific problems of the sector concerning safety, security and quality control, as well as the social consequences, by providing for:

- smooth and progressive implementation;
- the possibility of limiting the number of handlers in certain areas of the airport;
- in very specific cases, the prolongation of monopolistic situations through the grant of exemptions.

That achieved, a current legislative initiative of the Commission services concerns the perhaps more complex issue of the harmonisation of a common framework for airport charges, embodying the principles recommended in the ICAO Airport Economics Manual of:

- cost-relatedness;
- transparency;
- non-discrimination.

The Directorate-General for Transport has recently issued a Consultation Paper on airport charges, analysing the current situation at Community airports and proposing a common framework embodying the three principles. The objective is to ensure fair and equal conditions for air carriers as well as for airport owners and operators. It should also provide a stable background for the financial planning of investment to meet anticipated airport capacity shortages.

The Consultation Paper was transmitted to some 42 stakeholders concerned with airport charges. These ranged from Member States to the organisations representing airports and air carriers and workers in the airport industry. National Experts from Member States also expressed their ideas in the framework of the ECAC Task Force on Airport Charges.

The results of the consultation process indicated considerable support for the establishment of a common framework, but a majority of stakeholders stressed the need for flexibility on the cost-relatedness principle, largely because of difficulties in the precise calculation of infrastructure usage by each individual user. However, many stakeholders welcomed the idea of regular consultation procedures between airports and their users, and the formal establishment of two-way channels of communication on charges.

Broad agreement on principles is of course not the same thing as agreement on detailed implementation. The principle of cost-relatedness may be taken to include provision for an adequate return on capital investment in infrastructure, but

is it therefore reasonable to increase charges to provide reserves for self-funding of such investment, or is it better to increase charges to remunerate loan capital for the purpose in arrears, and if so for how long ? Taking these views and difficulties into account, the Commission services plan to present a Proposal for a Directive to the Council in the autumn of 1996.

## OUTLOOK

The outlook for the airport and air transport facilities sectors depends ultimately upon passenger and freight demand, which is forecast to continue to grow in Europe at rates of between 3% and 6% per annum for the foreseeable future, in the context of a liberalised air transport market. Improved opportunities for seamless intermodal connections and intermodal choice may respectively push and pull the rate of growth in demand for airport facilities. Overall, however, a doubling of demand can thus be expected within the next 15 to 20 years, bringing inevitable congestion unless the challenge of capacity provision can be met in an environmentally compatible manner, while maintaining or still further improving safety standards.

The process of full internalisation of industry costs, particularly environmental costs, may prove to be a significant burden tending to depress demand. Great care will have to be exercised to ensure that compatibility with other Community policies is maintained within the framework of the achievement of sustainable mobility, convergence and cohesion.

Since it is impracticable to double the number of airports, or even runways and terminals to meet forecast demand, it will be essential to enhance existing capacity (including airspace and surface access capacity) by improving its utilisation and management, with the help of new technologies and procedures as well as infrastructural investment.

In the short term, some of the larger congested airports may not be able to take full advantage of the potential for demand-led growth due to capacity constraints, although it is worth remembering that some of them are already handling higher traffic levels than was thought possible only a few years ago. Improvements in ATM systems and techniques are expected to ease some of the capacity constraints at least for a while, but definitive solutions will inevitably require selective infrastructural investment.

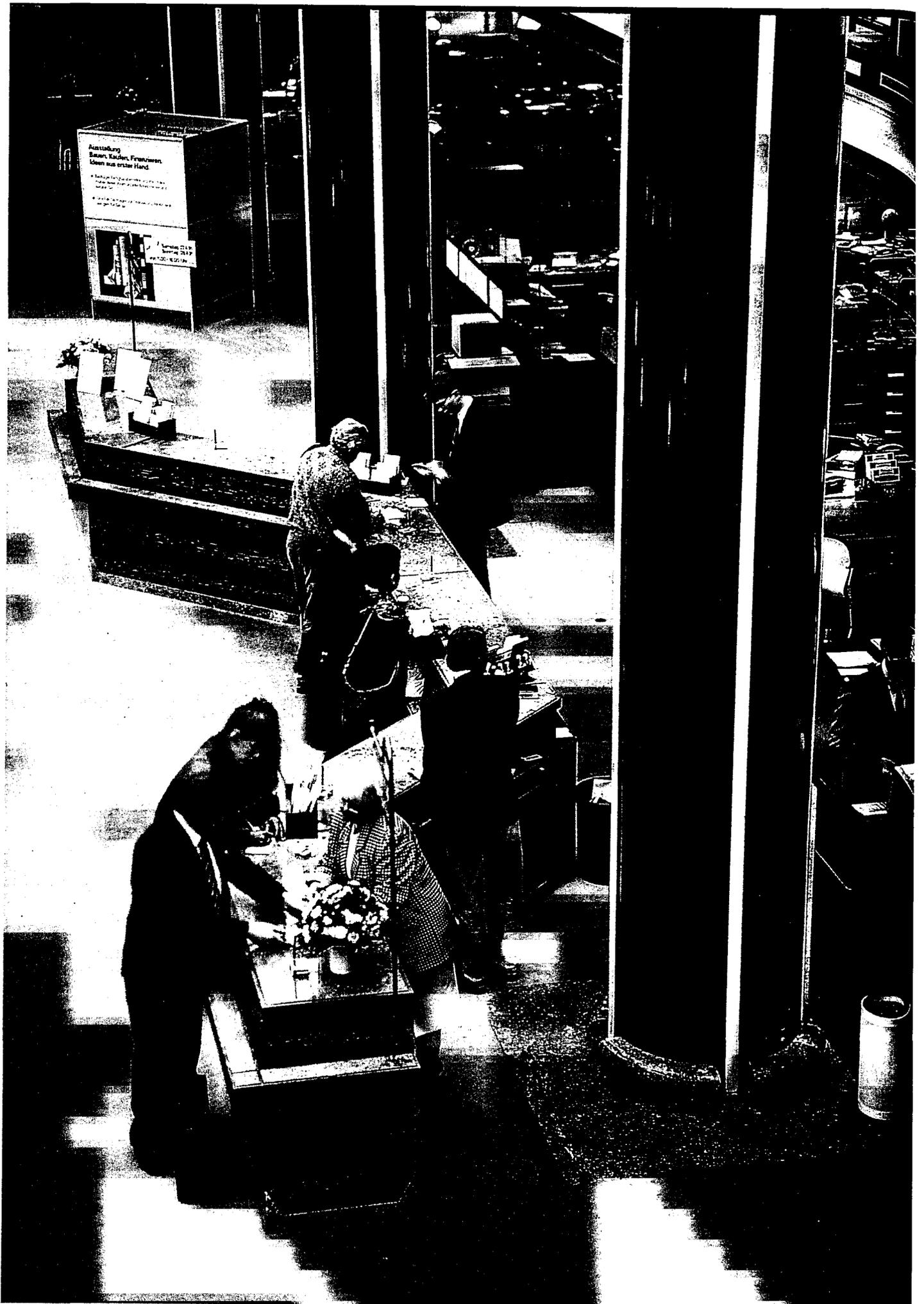
Medium sized airports will probably to continue to expand, especially those which have positioned themselves as potential competitors to existing major hubs, and the smaller airports are likely to continue to claw back point to point traffic to the regions from the hubs.

The financing of capacity enhancement and expansion represents a further challenge to the industry. Part of the funding may come from the public sector, but a considerable proportion will probably have to be found from the private sector, including funding by carriers (and thus ultimately the passengers and shippers) through user charges. Much may depend upon the success of airports in diversifying their commercial activities, and in what is becoming the relatively short term, successfully finding alternatives to duty- and tax-free concession income, if intra-Community DTF abolition proceeds as envisaged.

These financial pressures could accelerate the trend toward the creation of autonomous airport management authorities, which will not be allowed in a liberalised context to abuse their propensity to internal monopoly. However, efficient commercially-oriented autonomous airport operators, exploiting revenue opportunities and exercising close control of costs, should inspire confidence amongst prospective private funding sources and facilitate financing.

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# Financial services

NACE (Revision 1) 65, 66, 67, 70

Over the last decade the banking and financial services industries in the EU and elsewhere have experienced dramatic changes, resulting in pressures for the adaptation of business strategies. Changes in market structure have been particularly prominent. At the same time, technological advances have had significant impact on the way used to provide financial services. By lowering the cost of entry, new technologies have enabled institutions to enter or compete in new markets. Examples include telephone or screen-based banking, the sharing of ATM networks, and prepaid microcircuit cards. Another significant source of change within the EU has been the creation of the single market in financial services. By removing restrictive regulations, the single market creates opportunities for financial services companies to compete in previously inaccessible foreign markets. These developments have resulted in structural changes, globalisation and more cost-efficient operations within the financial services, and are expected to continue. The recent economic upturn has stimulated the market for financial institutions and is expected to do so in the coming years.

## INDUSTRY PROFILE

### Description of the sector

Deregulation and the abolition of protectionist market structures were worldwide trends in the 1980s, causing major structural changes in Europe, the USA and Japan. Perhaps the most important example of these trends was the move to abolish regulations on exchange control. Other examples included the

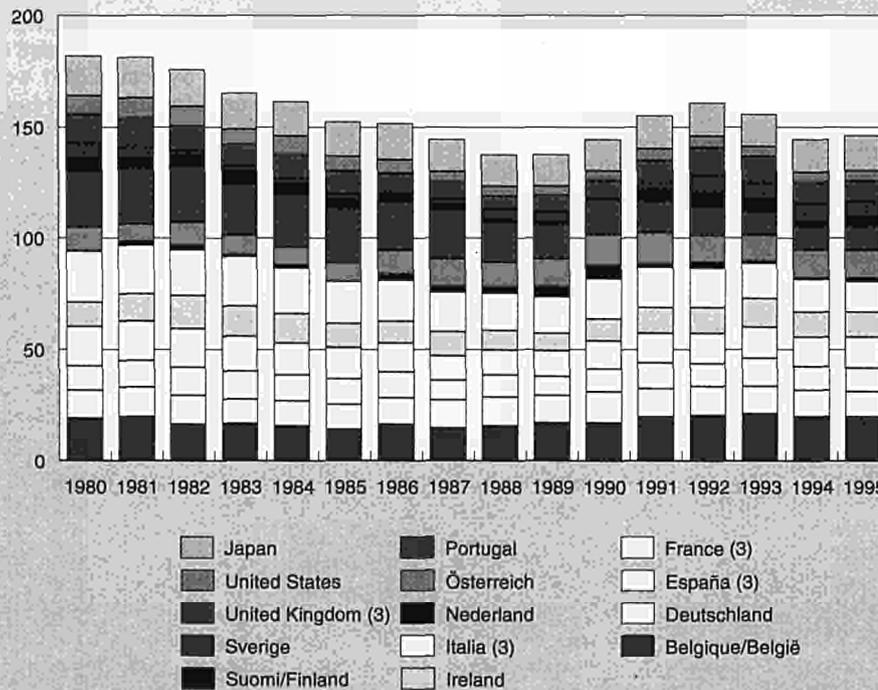
removal of legal barriers and administrative regulations allowing acquisitions, mergers and other alliances to take place, both within domestic markets and across national frontiers. As a result, financial markets have been divided into functions rather than traditional sectors and categories.

At the same time, technological advances have had significant impact on the way used to provide financial services. By lowering the cost of entry, new technologies have enabled institutions to enter or compete in new markets. Examples include telephone or screen-based banking, the sharing of ATM networks, and prepaid microcircuit cards.

Another significant source of change within the EU has been the creation of the single market in financial services. By removing restrictive regulations, the single market creates opportunities for financial services companies to compete in previously inaccessible foreign markets.

These developments have made it even harder to provide discriminatory definitions for the individual financial market segments. For example, it has become more difficult to define what is meant by a "bank" as the barriers between different types of financial institutions break down and the basic business of banking is invaded by non-banking institutions. Moreover, the increasing interdependence of worldwide markets is further blurring the distinctions between bank credits and securities issues, domestic and international papers, cash instruments and derivatives, and between different categories of derivative products (futures, options and swaps).

Figure 1: Overview financial services  
Household net saving rates (1,2)



(1) As a share of disposable household income according to national definitions, except for United States.  
 (2) 1995-1997 estimates and projections.  
 (3) Gross saving rate.  
 Source: OECD: Economic Outlook



**Table 1: Overview financial services**  
Gross value added at market prices as a share of country's total

	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	4.3	5.6	6.0	6.1	5.8	5.5	4.8	5.0	5.1	5.0	5.0
Danmark (1)	2.7	2.6	3.4	3.1	2.8	3.2	2.7	2.0	(2) 1.4	N/A	N/A
Deutschland	(1) 4.4	(1) 5.4	(1) 5.1	(1) 4.8	(1) 4.9	4.9	4.7	4.9	5.2	5.7	N/A
Ellada (1)	2.2	2.3	2.3	2.3	2.2	2.3	2.5	2.7	(2) 2.9	(2) 2.7	N/A
España	(1) 5.9	6.3	6.1	6.3	6.6	6.9	7.3	(2) 7.9	(2) 7.5	N/A	N/A
France	(1) 4.4	(1) 4.8	(1) 5.3	(1) 5.5	(1) 5.3	5.1	4.4	4.4	4.3	4.8	5.2
Ireland	(1) 5.0	(1) 5.6	(1) 5.8	5.7	6.2	5.7	5.7	6.3	7.3	7.6	N/A
Italia	4.9	4.9	5.2	4.6	4.6	4.6	5.0	4.9	5.2	5.6	5.0
Luxembourg	10.5	24.4	22.6	21.3	18.1	13.3	13.3	13.9	15.0	N/A	N/A
Nederland	4.4	4.8	4.8	4.8	4.8	5.0	4.6	4.5	(2) 4.7	(2) 4.9	5.1
Österreich	N/A	6.2	6.2	6.3	6.5	6.7	6.7	6.7	6.9	7.5	7.2
Portugal	(1) 5.5	(1) 6.1	5.9	6.1	6.0	6.8	7.6	8.2	N/A	N/A	N/A
Suomi/Finland	3.0	3.0	3.2	3.5	3.2	3.3	3.9	3.7	2.7	3.6	N/A
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	(1) 2.9	3.8	4.2	4.5	5.0	5.8	5.8	5.1	6.0	6.0	6.2

(1) Estimate.

(2) Provisional.

Source: Eurostat: National Accounts

Therefore it is more appropriate to describe the industry of financial services by function than by type of institution. The following functions can be identified:

- payment services;
- saving products;
- fiduciary services;
- lending to business (corporate);
- lending to consumers (retail);
- underwriting/issuance of equity;
- underwriting/issuance of debt;
- insurance and risk management products.

These functions are provided by all kinds of institutions, such as insured depositor institutions, insurance companies, financial companies, securities firms, pension funds, mutual funds, diversified financial firms and specialist firms.

For the EU as a whole, employment in financial services accounted for 3.1% of total employment in 1994. The dif-

ference between most Member States is not large. Only in Luxembourg the financial sector appears to be disproportionately important to the economy, with a share of 8.8% of total employment.

Four large EU countries account for around 75% of gross value added in financial services, with Germany constituting the largest share, followed by Italy, France and the UK. These figures, however, do not provide information about the relative importance of each country on the different financial markets, since value added measures the contribution to the 'real' and not the 'financial' economy. In order to measure the 'financial' economy, figures on assets, premiums written and stock turnover are more appropriate. Using these figures, the UK appear to be the most important financial market within the EU.

#### Recent trends

The 1993 monetary turmoil revealed that the rules of the European Monetary System (EMS) were set politically and highlighted the need for adjustment to economic reality. This adjustment has been stimulated by the financial markets, which - to a growing extent - encourage the introduction of EMS.

**Table 2: Overview financial services**  
Employment in the financial sector as a share of total employment (1)

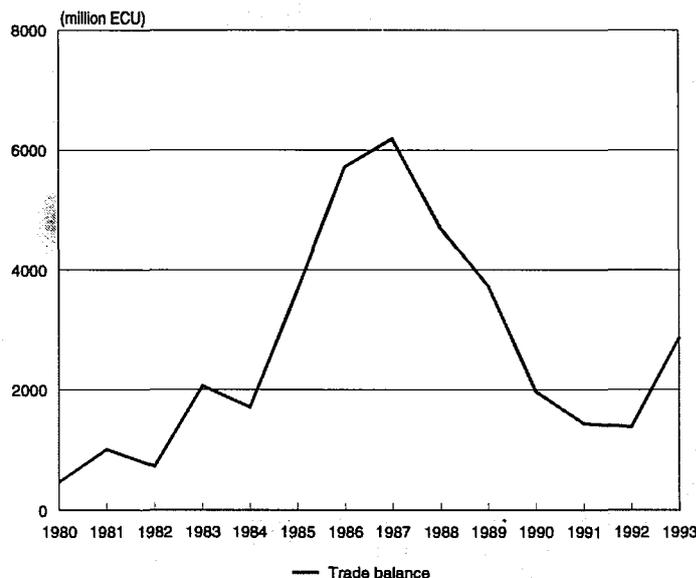
(%)	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 (2)	1993	1994
Belgique/België	3.6	3.5	3.7	3.7	3.7	4.0	3.9	4.0	3.9	3.9	3.8	3.9
Danmark	2.8	3.2	3.0	3.2	3.4	3.6	3.7	3.6	3.4	3.5	3.0	3.4
Deutschland	N/A	3.4	3.5	3.5	3.4	3.3	3.4	3.4	3.5	3.3	3.4	3.5
Ellada	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.3
España	N/A	N/A	N/A	2.6	2.4	2.5	2.5	2.3	2.5	2.5	2.7	2.6
France	2.8	2.8	2.8	2.9	3.0	3.0	3.0	2.9	2.8	2.8	3.0	2.9
Ireland	3.2	3.0	2.9	3.0	3.2	3.2	3.2	3.0	3.3	3.5	3.4	3.3
Italia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.8	3.0	3.0
Luxembourg	5.9	6.4	6.6	7.2	7.2	7.9	8.5	8.3	9.3	8.7	8.6	8.8
Nederland	3.2	N/A	3.2	N/A	2.8	2.9	2.8	2.9	2.8	2.8	2.7	2.7
Portugal	N/A	N/A	N/A	2.0	1.9	1.8	1.9	2.1	2.1	2.6	2.9	2.8
United Kingdom	3.3	3.3	3.4	3.3	3.6	3.5	3.7	3.8	3.9	3.6	3.7	2.9
EUR 12	3.0	3.2	3.2	3.1	3.1	3.1	3.2	3.2	3.2	3.1	3.2	3.1

(1) Excluding auxiliary activities to financial services: NACE/70: 831, 832.

(2) Break in series: from 1993, data in NACE/Rev.1. Includes financial intermediation, insurance and pension funding (NACE/Rev.1 divisions 65, 66). Compulsory social security and auxiliary activities to financial intermediation are not included.

Source: Eurostat: Labour force survey

**Figure 2: Overview financial services**  
**External trade balance at current prices (1)**



(1) Extra-EU exports less imports. Estimates based on balance of payments.  
 Source: Eurostat: International trade in services

The development of a new exchange rate arrangement EMS-2 is the main cause of the growing confidence of the financial markets.

Deregulation and the revolution in communication technology have enabled a substantial degree of internationalisation in the provision of financial services. The resulting integration of financial markets has extended the free choice of participants: issuers have gained a better access to foreign markets to raise capital, whilst investors have tended to internationalize their portfolios.

The performance of banks was mixed in 1994. Banks in the United Kingdom and Spain improved pre-tax profits to capital

ratios to levels considerably above the 15-17% range. In the long run, a return around these percentages is regarded as necessary to provide a proper dividend to shareholders and maintain necessary capital strength. Returns on capital in France, Germany and Italy, in contrast, were lower than the corresponding percentages in 1993. Following the development in 1994, the total value of new credits granted by financial houses has increased by 12.3% to 144 242 million ECU in 1995.

The EU insurance market has grown at a rate varying between 5 and 10% in recent years. Within the EU, the life insurance sector especially has benefited from the fact that more and more people have set up individual supplementary savings.

**Table 3: Overview financial services**  
**Gross value added at market prices (1)**

(million ECU)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	3 684	5 864	6 793	7 353	7 440	7 580	7 148	7 905	8 735	9 202
Danmark (3)	1 300	2 018	2 822	2 753	2 581	3 077	(4) 2 802	2 082	(5) 1 706	(5) 2 528
Deutschland (2)	25 501	43 868	45 874	46 273	49 065	52 262	55 102	63 663	72 130	N/A
Ellada (3)	641	1 013	929	910	995	1 127	1 311	1 561	(5) 1 691	(5) 1 667
España	(3) 9 017	13 648	14 282	15 958	19 310	23 976	28 120	(5) 30 953	N/A	N/A
France	(3) 20 889	(3) 33 070	(3) 39 513	(3) 42 708	(3) 43 156	44 852	41 560	41 713	43 760	47 940
Ireland	(3) 689	(3) 1 387	(3) 1 564	1 552	1 802	1 867	1 995	2 272	2 893	N/A
Italia	16 049	27 344	31 940	30 044	32 322	36 290	42 760	45 517	49 067	47 206
Luxembourg	343	1 113	1 152	1 127	1 041	870	940	1 047	1 224	N/A
Nederland	(3) 5 751	(3) 8 188	(3) 8 739	(3) 9 033	(3) 9 356	(3) 10 416	(4) 10 177	10 587	(5) 11 642	(5) 13 275
Österreich	N/A	5 348	5 933	6 446	7 006	7 715	8 414	8 967	9 963	11 567
Portugal	(3) 1 006	(3) 1 652	2 047	2 217	2 455	3 231	4 028	(3) 4 759	N/A	N/A
Suomi/Finland	1 112	2 095	2 309	2 697	2 796	3 366	4 140	3 595	2 236	2 597
Sverige	2 902	4 882	6 108	6 360	7 302	8 054	8 879	8 151	5 856	7 327
United Kingdom	(3) 11 163	22 899	23 851	26 548	32 173	35 463	37 106	38 852	37 845	39 439
EUR 15 (3)	N/A	174 390	193 855	201 979	218 800	240 145	254 482	(5) 272 623	N/A	N/A

(1) Excluding auxiliary activities to financial services: NACE/70: 831, 832.

(2) Includes only former West-Germany; estimates until 1988.

(3) Eurostat estimate.

(4) Break in series.

(5) Provisional.

Source: Eurostat: National Accounts

**Table 4: Overview financial services (1)  
Employment structure, 1993**

(%)	Share of female workers	Share of employees workers	Share of part-time
Belgique/België	42.9	89.3	10.7
Danmark	52.4	98.7	18.3
Deutschland	53.1	93.9	13.1
Ellada	40.8	96.5	2.0
España	28.7	93.4	4.6
France	51.3	92.3	9.7
Ireland	50.9	95.2	5.7
Italia	32.9	90.1	4.0
Luxembourg	44.4	97.8	7.0
Nederland	42.9	95.6	21.5
Portugal	31.6	96.8	2.7
United Kingdom	54.6	96.7	13.1
EUR 12	47.5	94.5	10.7

(1) Data provided in NACE/Rev.1; includes divisions 65, 66 and 67.  
Source: Eurostat: Labour force survey

Mortgage lending increased strongly in most Member States during 1994. The main factors contributing to this increase were lower levels of interest rates, improved economic conditions, and growing competition amongst financial institutions as a consequence of deregulation during 1994. The annual gross lending increased sharply in the residential as well as the commercial mortgage lending sector.

In real estate a spectacular expansion has occurred during the past decade, which peaked in the first quarter of 1991. Since then the property sector has slumped, due to the economic recession, high real interest rates and sometimes too excessively increased office rents. With respect to the housing market (residential property), the overall level of transactions in the European countries has risen by 6%. The European equity turnover demonstrated a small decline in 1991. Despite this small decline, the first years of the 1990s have been characterised by an enormous growth in equity turnover. Between 1990 and 1994 the amount of equity turnover almost doubled and in the period 1988-1994 this amount almost tripled. Stockholm, Athens and the Italian exchange market were the largest stimulators of the 1994 increase.

### International comparison

The leading financial centres are clearly New York, London and Tokyo. Although trade in financial products is to a large extent international, the international part of trade primarily originates from large (private as well as official) financial institutions or multinational firms. National regulations, conventions and culture still create distinct national markets. For instance, the consolidation of financial services in Europe - linking banking, insurance and other financial services - makes Europe the laboratory for new products and merged companies.

The Japanese banks still dominate the world market. The six biggest banks in the world are Japanese. For the world as a whole, total Tier One capital equalled 1 189 billion ECU, of which the EU-12 commanded a share of 34%. Japan was the largest single country with a total Tier One capital of 321 billion ECU (27%), followed by the USA with 178 billion ECU (15%). In terms of assets, a similar picture exists. Total world asset value equalled 25 461 billion ECU of which 38% was accounted for by the EU, 33% by Japan and 10% by the USA.

Compared to the USA and Japan, the European insurance market as a whole is less developed in terms of premiums per capita. With premiums per capita of 1 157 ECU the EU-15 is lagging far behind the USA and Japan with corresponding

figures of 2 334 and 2 561 ECU, respectively. Both of them, in turn, are small compared with the figure for Switzerland. In 1993 the Swiss insurance market corresponded to a total of 4 400 ECU per capita. Within the EU, Luxembourg is the only country which recorded a higher premium value per capita (2 800 ECU) than the USA and Japan. With a value of 2 037 ECU per capita the United Kingdom ranked second in the EU. The figures are the lowest for Portugal and Greece, with respective values of 260 and 128 ECU per capita.

Within the EU-15 gross value added at market prices differ among the different Member States. In absolute terms, this figure is highest for Germany (more than 72 billion ECU in 1993). France, Italy and the United Kingdom follow Germany at a distance with 47.9, 47.2 and 39.4 billion ECU, respectively. Although the gross value added is lowest for Luxembourg (1.2 billion ECU), the financial sector is of a relatively large importance to this country's economy, which becomes evident from the employment figures for the financial sector as a share of total employment. While the average share in the EU equalled 3.1% in 1994, the share for Luxembourg was 8.8% in this year. The importance of the sector for this country is also reflected in the value of total net assets of publicly-offered, open-ended funds investing in transferable securities and money market instruments. It appears that this value equalled 231.4 billion ECU for Luxembourg, which implies a second ranking after France (406.5 billion ECU).

### Foreign trade

The financial services industry is becoming increasingly globalized. Financial products are becoming more homogeneous across borders, partly as a result of single market measures to increase competition. In the early 1990s new competitive pressures have arisen, from outside the traditional financial services industry (e.g. the growth of credit cards issued by non-banks) and from a blurring of boundaries at the edge of the industry (e.g. bancassurance).

A substantial expansion of international activities in financial services has been made possible by deregulation and the revolution in communication technology. The resulting integration has broadened the choices of market participants: issuers have increased access to foreign markets to raise capital, while investors have tended to internationalize their portfolios.

In daily practice some obstacles to the functioning of the single market still exist, which prevent rapidly intensifying cross-border trade in the financial services sector. These obstacles among other factors include the lack of taxation har-

monisation within the EU, obstacles in the intermediation in insurance, and the absence of precise European criteria to draw a clear distinction between freedom of establishment and freedom to provide services. Despite these obstacles the deregulation of the financial services in the single market is expected to lead to further increases in cross-border operations.

## MARKET FORCES

### Demand

Demand for financial services is determined by demographic and savings trends, deregulation and liberalisation of capital markets, and changing patterns of consumption. In general, the European population is ageing, which means that in the future a relatively smaller workforce will be available to generate the social security and pension benefits in pay-as-you-go systems. In anticipation of deficient social security payments, many people save in order to secure a sufficient pension. If this trend continues, the supply of savings in the financial markets should increase, raising the question of which financial instruments will be in demand.

The ageing of Europe's population has played and is still playing a decisive role in the growth of premium volume in life insurance. The need for comprehensive insurance coverage increases with advancing years, especially when social security benefits relating to pensions and medical treatment appear progressively inadequate. In an effort to compensate for the erosion of state benefits, the public is turning increasingly towards life-insurance related products, which in turn stimulates demand for securities.

Retail banking, including investment of savings, portfolio management, consumer credit and mortgages, payment services and a wide range of advisory services, today constitutes one of the most important branches of the financial services sector. This branch, however, is widely reckoned to have considerable excess capacity. The increasing use of IT in this sector has a positive effect on productivity, but will affect the traditional branch networks negatively. Moves towards telebanking will also accelerate the decline of traditional bank branch networks. Especially small sized companies are increasingly using telebanking software for the administration and realisation of their customer payments.

In the provision of financial services to the industrial sector three main trends can be identified. The first one is an increasing demand for very specialised services for the management of assets and liabilities. Financial management

increasingly relies on computer assistance and uses a wider range of instruments, for instance options and new fixed-term instruments. The supremacy of the banks is challenged by large companies, who have set up their own systems of financial management. The second trend is a growing intervention of banks in the management of businesses. Banks are increasingly asked to assist with financial restructuring and reorganisation, mergers and acquisitions, take-overs and leveraged management buy-outs. The third trend is the emergence of a capital market to finance small and medium-sized enterprises that have a solid track record, but are unable to meet the criteria for an official market listing. These enterprises are served by risk capital companies, as well as by new segments of the official stock markets, such as secondary markets or over-the-counter markets.

Financial services linked to shares (especially the issue of shares, brokerage services, share transactions and portfolio management) have become one of the most important segments of financial markets since the beginning of the 1980s. Around 1982, when financial institutions were revealed as highly exposed to liquidity and country debt risks, they reoriented their activities towards stock-market based operations, in particular the underwriting of international bond issues and the intermediation of international transactions.

The market for derivative instruments has grown and is still growing exponentially. The function of derivatives is to hedge against risks. Consequently, the trading of these instruments involves a degree of speculation. The risks involved with this speculation has become evident through the collapse of the Barings bank. The Group of Thirty, however, asserts that these markets provide an important service and are not excessively vulnerable. Supervisory organisations, however, emphasise the substantial undiversifiable market risks inherent in these instruments. These risks could materialise when the liquidity of the markets dries up.

### Supply and competition

Since the mid-1980s deregulation has liberalised capital markets, thereby permitting the introduction of many new products, and has blurred the demarcation lines between different market players. In particular, deregulation involves:

- an end to brokers' monopolies within stock exchanges and other organised markets accompanied by free negotiations between brokers and clients, which led to a reduction in commissions;

**Table 4: Overview financial services (1)  
Employment structure, 1994**

(%)	Share of female workers	Share of employees workers	Share of part-time
Belgique/België	42.7	91.5	10.4
Danmark	53.0	99.1	14.5
Deutschland	51.8	92.5	13.1
Ellada	40.3	93.8	1.7
España	31.9	94.2	4.4
France	53.6	95.6	9.6
Ireland	53.1	95.7	7.0
Italia	32.2	88.6	3.9
Luxembourg	43.6	98.1	6.4
Nederland	45.7	96.7	22.4
Portugal	30.7	96.5	1.9
United Kingdom	52.7	95.7	13.7
EUR 12	47.0	93.8	10.7

(1) Data provided in NACE/Rev.1; Includes divisions 65, 66 and 67.  
Source: Eurostat: Labour force survey

**Table 5: Overview financial services**  
**Direct investment in the EU by sector, 1993 (1)**

(million ECU)	Extra-EUR 12 outward	Extra-EUR 12 inward	Intra-EUR 12
Energy	-955	1 158	-1 296
Manufacturing	-5 650	6 813	-10 351
Building, construction	-366	440	-414
Services, total	-13 212	11 947	-21 854
Credit institutions	N/A	N/A	N/A
Insurance	N/A	N/A	N/A
Trade, hotels, catering	-3 973	2 607	-2 238
Transport, communication	610	614	-575
Real estate	-569	883	-156
Other services	-718	192	-508
Not allocated	-1 671	672	-435
All sectors	-21 854	21 029	-34 350

(1) A positive figure indicates a net disinvestment and a negative figure a net investment. Reinvested profits are excluded.  
 Source: Eurostat: European Union direct investments

- reorganisation of the market for treasury bonds, with the appearance of specialists whose role is to stimulate the market and assure its liquidity;
- development of secondary markets;
- computerisation, resulting in improvements in market liquidity and in the precision and speed of information;
- creation of markets in derivative products, notably the United Kingdom's LIFFE and France's MATIF, respectively the fifth and sixth largest derivative markets in the world.

The result has been a more intense competition, but also a wave of acquisitions, mergers and alliances. While competition in new products and, to a less extent, price intensified, competition in territory (through building and extending a network of banking outlets) was less severe from the beginning of the 1980s as new organisational features such as home banking and automated banking facilities increasingly made the necessity of extensive branch networks less paramount. Product competition became particularly intense in the investment of household savings, with the appearance of a greater number of market participants. These included insurance companies and investment funds in addition to the traditional banks. One of the major trends in Europe has been financing with securities rather than with (bank) loans. Examples are credit notes negotiable on the market in national currency, bonds issued by business firms, negotiable gilts issued by national treasuries and deposit certificates issued by banks. In line with this trend, financial disintermediation has spread. Increasingly firms bypass banks by going directly to the capital market (for an over-the-counter loan from for instance a life-insurance company, or the issue of bonds or commercial paper). As banks made less money out of 'normal' on-balance business, they had to look out for other income sources. These were found in off-balance activities thereby bringing commercial banks and investment banks into direct competition.

The supply of insurance within Europe has traditionally been dominated by domestically owned insurance companies. Domination on a European scale used to be difficult as many insurances are comparatively standardised products, leaving little opportunity for product differentiation. In life insurance and pensions a greater possibility for differentiation exists, but regulation in some European countries has tended to inhibit product innovation. Moreover, since there are no patent laws in insurance, new products could and still can be copied relatively quickly, especially as production systems are not complex.

### Production process

Three developments keep the financial system vulnerable to the following excesses:

- the flight of investment away from traditional institutions, illustrated by the enormous growth of mutual funds.
- the increasing deregulation, the greater use of new instruments and trading techniques, and the growing numbers of high-octane portfolio managers.
- the tremendous infrastructure of banks and non-banks in industrial countries which may result in a rapid expansion of credit mostly outside the control of central banks.

The decade of the 1980s was marked by the liberalisation of financial markets involving the removal of brokers' monopoly, the authorisation of new products and the removal of credit restrictions. This triggered the expansion of markets and the introduction of innovative new products. Moreover, the distinction between brokers, banks, exchanges and electronic markets has become less clear, and in several instances even obsolete. All compete to provide services to the suppliers and demanders of capital.

An indispensable factor for the explosion in market activity and the proliferation of products permitted by deregulation has been the availability of enhanced information and communication technology. From a cost perspective, as a mass processing tool, computers permit significant increases in output per employee. At the same time, by minimising manual intervention using real time operations, keeping customer files updated to the minute, reducing delays and making deadlines more reliable, computers are an important quality tool as well. Finally, technology is necessary for the provision of new services such as remote banking.

Technology and competition have resulted in organisational changes within financial institutions. The most important changes are the overall responsibility of employees for good performance and cost control, the improvement of working conditions, the increased direct contact between employees and customers, and better internal control.

New technologies and methods presuppose new staff skills. Financial establishments that hired large numbers of untrained staff during the expansion race in the 1960s and 1970s are now faced with major investments in training and writing off redundancies. Furthermore, the additional costs of investment in computerization decrease profits of banks and insurers. Set against a background of growing competition, the way institutions handle these changes will be crucial for their future performance.

## INDUSTRY STRUCTURE

### Companies

The twenty major European banks, ranked by Tier One capital, include 4 French, 4 UK, 3 Swiss, 3 German, 2 Dutch, 2 Italian and 2 Spanish banks. The used Tier One capital definition (BIS strict definition) covers only the core of bank's strength - the shareholders' equity available to cover actual or potential losses. This includes common stock and declared reserves, and the increasing number of perpetual, irredeemable and non-cumulative preference shares. However, this definition excludes hybrid forms of capital, extras such as goodwill and revaluation reserves. For the top 20 European banks excluding Crédit Lyonnais, the average return on Tier One capital was 13.4%, slightly higher than the corresponding percentage for 1993 (13.1%). This French bank was the only bank which recorded a loss in 1994 (-1571 million ECU), which is more than twice the 1993 loss. Different developments can be observed between banks.

Most insurance companies are active in non-life insurance. When insurance companies are taken over, the acquiring companies often do not incorporate them into their own structure for marketing and/or tax reasons. As a result of the ongoing mergers and take-overs, the total number of insurance companies can increase, whilst the number of independently controlled groups is further declining. The average size of insurance companies is measured in terms of gross premiums divided by the number of undertakings. In 1992 within the EU this average size was 80 million ECU against 66 million ECU in 1990. For 1993, it reached 87.3 million ECU for all life and non-life insurance companies, which implies a growth of more than 9%.

The market for financial intermediaries consists of different groups with brokers being the most important one. They can be divided into large international brokers, small national ones and niche players. The stock exchanges themselves are engaged in the competition, positioned either as an international player or as a domestic one. Private electronic markets are becoming significant and in some instances have already played a leading role (e.g. Instinet). Finally, the (investment) banks are also active in this industry.

In the past decade, large groups of financial intermediaries have emerged, consisting of combinations of brokers and

banks. Monitoring these groups is a difficult matter, as they engage in activities that fall under different supervisory authorities in most European countries. Within the EU, property professionals represent a workforce of around 120 000 authorised practitioners. Most agencies are small and operate at a local level.

### Strategies

The large financial services groups follow two main strategies. The first is diversification, that is offering a complete financial service package ("Allfinanz"). The second is cross-border expansion or linkage (global player). Allfinanz (also named 'ban-cassuranc', although the emphasis lies on insurance products) offers benefits to banks and insurance companies, especially in the life insurance sector. The market for life insurance offers banks attractive prospects for improving the return from their distribution network. More precisely, the scope of the banks' networks is also attractive for the insurer, in that a larger volume of customers can be accessed at lower cost. The strategy of global player is pursued through acquisitions, mergers and alliances.

Other financial intermediaries, such as securities brokers, must first determine if they want to be an international, regional or niche player. To be an international operator the successful strategy seems to be to invest in international networks of offices. Goldman Sachs, Credit Suisse First Boston and S.G. Warburg all have invested heavily and all are leading advisers. A strategy of innovation can create competitive advantages for all players in the financial services sector, but especially for the stock exchanges. International capital investments increasingly use new financial instruments, simply because they offer a better performance.

## REGULATIONS

In all Member States, governments regulate the functioning of financial services activities for a variety of reasons including market failures. Regulatory instruments are usually divided into two broad categories: those that affect the structure of the industry, and those that impinge upon conduct of industry participants. The former govern the entry of new firms into the industry, while the latter control the behaviour of existing industry members. Banking and insurance have traditionally been subject to a high degree of both structural and conduct

**Table 6: Overview financial services**  
**EU - Collective Investment scheme, 1994 (1)**

	Total number of funds (2)	Total net assets (million ECU)	Total net sales (million ECU)
Belgique/België	211	15 434	3 133
Danmark	158	4 452	816
Deutschland	528	92 065	28 868
Ellada	93	4 551	2 969
España	656	70 129	N/A
France	4 826	406 498	-19 425
Ireland	293	6 359	N/A
Italia	354	65 425	-192
Luxembourg	1 007	231 376	25
Nederland	136	39 043	N/A
Österreich	387	19 155	N/A
Portugal	129	10 521	N/A
Suomi/Finland	39	889	N/A
Sverige (3)	314	16 482	814
United Kingdom	1 452	108 881	5 690
EUR 15	10 583	1 091 260	N/A

(1) as of 31.12.1994

(2) Publicly-offered, open-ended funds investing in transferable securities & money market instruments.

(3) Figures include funds set up in other countries by members of the Swedish association.

Source: FEFSI

regulations. In the financial services industry as a whole, the governmental role has been indirect even though the authorities of some Member States used to be or still are major shareholders of financial institutions. Nonetheless, regulatory rules have been stringent, mostly (but not exclusively) for prudential reasons.

The creation of the single market involves the replacement of national regulations by EU legislation. In the early 1994, the Commission started a detailed examination of the supervision of financial conglomerates (which combine banking, insurance and other financial services). The Commission is focusing its examination of financial conglomerates on six areas:

- the need for transparent group structures;
- the need to apply 'fit and proper' criteria within the company structure;
- rules against risk concentration and on intra-group transactions;
- problems of consolidated accounts of financial groups;
- co-operation and exchange of information between supervisors;
- the double gearing of capital.

Towards the end of 1994, the Commission proposed a directive aimed at reducing the time taken and the charges made for cross-border payments. At the same time, the Commission published its future action plan of legislative measures in the area of cross-border payments. Some of these measures may lead to a low incentive for credit institutions to provide the service of cross-border payments, if the charges would not include a profit margin.

In July 1994, the third generation of insurance directives (92/49 for non-life insurance and 92/96 for life insurance services) came into force. These directives seek to provide a single structure for business conducted either on an establishment or on a cross-border basis. It means that personal insurance policies can be freely sold throughout the European Union. The most significant feature of these directives is the attempt to move the regulatory focus from host-country control to home-country control.

With respect to the second co-ordination banking directive and the completion of single market some obstacles still exist. Also differences in the national interpretation of the directive hinders the cross-border activities. In November 1995, the Commission also published a draft communication on the interpretation of the 2nd banking directive. Indeed, as some of the concepts used in the directive, such as that of the general good, were in need of clarification the directive itself curbed the European expansion plans of some mortgage credit institutions.

## OUTLOOK

The structural developments affecting the financial services industry will further encourage competition. Therefore attention is turning to improving operations in a cost-efficient way. Some cost savings will be reached in the distribution of financial services. Market deregulation, increasing competition and new technology have pushed firms to reassess their strategic objectives. For the rest of this decade, the following promising segments can be recognised for participants in the financial services industry:

- traditional banking: interest-differential lending and deposit-taking for consumers, small businesses, agricultural firms, and the lower end of middle-market corporations;
- financial intermediation and advisory services: underwriting debt - and to a lesser degree equity and securities - primarily to the upper end of the middle market and to larger corporations;
- investment management: trust, mutual funds, broker/dealer activities, money-management;
- insurance: as agent, underwriter, or both;
- fee-based operational services: usually with a high-tech component area such as automated clearing houses (ACH)-processing, data-processing services, cash-management, letters of credit, and stock transfer;
- trading: customer and proprietary trading for securities, foreign exchange;
- merchant banking and equity investment: venture capital, equity "kickers", mezzanine financing, leveraged buy-outs (LBOs);

The recent economic upturn has stimulated the market for financial institutions and is expected to do so in the coming years.

Written by: Netherlands Economic Institute

# Credit institutions

## NACE (Revision 1) 65

The banking industry is becoming increasingly globalised. Products such as retail banking are becoming more homogeneous across borders, partly as a result of single market measures to increase competition. In the early 1990s new competitive pressures have arisen from outside the traditional banking industry (e.g. the growth of credit cards issued by non-banks) and from a blurring of boundaries at the edge of the industry (e.g. bancassurance). The dominant feature in the European banking industry is one of increased competition within the industry from increasing cross-border operations, and at the margins of the industry from new entrants. This will affect the structure of the industry in terms of the number and size of banks, and also the employment prospects.

### INDUSTRY PROFILE

#### Description of the sector

This year's edition of the old NACE'70 classification has been replaced by the new NACE (Rev.1) classification. For the scope of this chapter, this replacement does not have any consequences. The classes, however, did change in the new classification.

Division 65 of the new NACE classification covers the financial intermediation services except insurance and pension funding services. It can be split into the following groups:

- monetary intermediation services (group 65.1);
- other financial intermediation services (group 65.2).

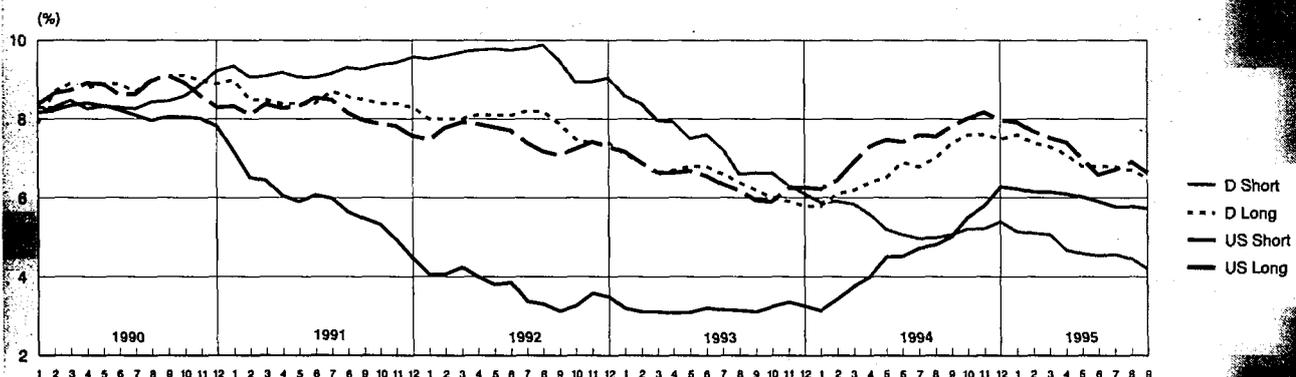
The first group covers central banking services and all other commercial banking services. The second group covers financial leasing services, other credit granting services and other financial intermediation services.

Banking fulfils various functions: accepting deposits and converting them into loans and credit to enterprises, public authorities and consumers; managing payment systems and clearing mechanisms; providing services with capital transactions; performing various other services like the provision of guarantees and insurance agency. These functions are not performed by banks alone. Consumer and industrial credit are provided by finance companies (many of which have links with banks) and mortgage loans by life insurance companies or, for example pension funds. The special nature of banks is being eroded by the trend towards deregulation and disintermediation. In addition the new EU rules have created, at least in principle, the concept of a single passport for financial institutions offering services across the Member States. The new rules are also causing an apparent reduction in the historical distinctions between different kinds of banks. However, it should be recognised that this process has not resulted in a loss of identity for certain banks, i.e. the Savings Banks maintain and encourage their separate identity from the commercial banks. It is important for competitive reasons within the Single Market that different banking models are recognised and fostered. Credit institutions can be classified along the following categories:

- Universal banks: multi-purpose banks which can offer the whole range of financial services. Most of them are (universal) commercial banks, but in certain countries savings banks, cooperative and public banks are also universal banks;
- Specialised banks: among them are the merchant banks, investment banks, mortgage banks, industrial banks, finance houses, etc. which offer types of finance according to their scope (cf. industrial banks), or their financial techniques (cf. mortgage banks).

Savings Banks also play an important role in this area through the use of specific structures. (Central financial institutions at regional and national level, mortgage subsidiaries etc.). Mortgage credit plays a fundamental role in the EU economy, accounting for more than 80% of all household debts. At the end of 1995, outstanding debt from mortgage loans amounted

Figure 1: Credit Institutions  
Interest rates (1)



(1) Short term interest rates: Germany 3-month FIBOR; USA certificates of deposit.

Long term interest rates: Germany 7-15 year public bonds;

USA US Government bonds (composite over 10 years)

Source: OECD: Financial Market Trends

**Table 1: Credit Institutions  
Main indicators, 1994 (1)**

	Number of enterprises employed	Number of local units	Number of persons	Turnover (10) (million ECU)
Belgique/België	130	17 040	N/A	55 271
Danmark	208 (2)	N/A	48 756	10 605
Deutschland	3 736	52 443	727 800	265 626
Ellada	49	1 779	52 485	7 785 (11)
España	316	35 591	246 127	59 208
France	606	N/A	383 000 (5)	347 019
Ireland	52	1 327	22 400 (6)	N/A
Italia	1 002 (3)	23 120	339 297	99 880 (12)
Luxembourg	222	213	17 638	30 787
Nederland	768 (4)	7 269	112 000	12 561
Österreich	955	4 645	64 909 (5)	23 711
Portugal (5)	259	3 539	63 870	13 217
Suomi/Finland	362	N/A	37 729	N/A
Sverige (6)	111	2 690	43 203	13 551

(1) NACE Rev.1 class 65.12

(2) Including specialised credit institutions and credit co-operatives.

(3) Including specialised credit institutions.

(4) Including credit co-operatives.

(5) 1993 data.

(6) Licensed banks.

(7) Including the Bank of England.

(8) Referring to members of the British Bankers' Association, including the staff of the Bank of England.

(9) Excluding Belgium.

(10) Interests and commissions received.

(11) Commercial banks.

(12) Not all banks covered.

Source: Eurostat; Mercure

**Table 2: Credit Institutions  
Commercial banks - Main indicators (1,2)**

	1993				1994			
	Number of banks employed	Number of branches (3) employed	Total assets (billion ECU)	Number of persons	Number of banks	Number of branches (3)	Total assets (billion ECU)	Number of persons
Belgique/België (4)	151	(8) 7 925	563.3	(13) 77 088	147	(8) 7 791	594.8	(13) 76 270
Danmark	(7) 112	2 340	137.7	45 465	120	2 245	126.2	44 685
Deutschland	330	7 604	825.5	221 000	331	7 571	858.2	219 200
Ellada (5)	41	1 554	52.8	40 867	40	1 637	51.8	42 985
España	168	(9) 17 580	469.8	153 638	165	(9) 17 469	460.9	150 624
France	425	10 442	(11) 1 184.8	226 847	427	10 428	1 193.5	201 209
Ireland	43	919	61.2	21 500	46	1 002	63.8	22 400
Italia (6)	315	19 722	796.4	315 120	315	20 580	1 015.4	328 167
Luxembourg	218	315	397.4	16 143	222	315	449.7	17 638
Nederland	176	7 191	630.6	(14) 109 200	173	6 648	(15) 655.1	(14) 105 963
Österreich	57	733	108.1	18 192	56	732	111.3	(16) 16732
Portugal	42	3 144	(12) 116.8	59 748	46	3 378	(12) 132.6	61 649
Suomi/Finland	14	1 213	84.8	25 099	15	911	86.7	24 556
Sverige	15	2 478	146.6	37 472	17	2 329	151.1	39 498
United Kingdom	491	(10) 12 800	1 926.7	(10) 378 700	484	(10) 12 400	1 989.5	(10) 367 700
EUR 15	2 598	95 960	7 502.5	1 746 079	2 603	70 176	6 727.1	1 124 658

(1) As of December, 31st.

(2) Including also foreign bank branches and subsidiaries.

(3) Excluding foreign bank branches (excluding Belgium and Portugal in 1994).

(4) Figures are not comparable to those in 1992 and earlier: following the adoption of a new statute for the Belgian banking sector, in 1993, all credit institutions have the same legal basis and are submitted to the same supervisory authority.

(5) Figures are not comparable to those in 1992 and earlier.

(6) Also former savings banks, but excluding rural and artisanal banks and central institutions.

(7) Commercial, savings and cooperative banks whose capital exceeds 13.2 million ECU.

(8) Excluding delegates; including only banks that are member of the Belgian Bankers Association (93.5% of total balance sheet).

(9) Excluding branches of Savings (14 485 in 1993, 14 880 in 1994) and Cooperative (3 119 in 1993, 3 154 in 1994) Banks.

(10) Estimate.

(11) Domestic operations only.

(12) Including off-shore and foreign branches.

(13) Figure derived from extrapolation of various sources.

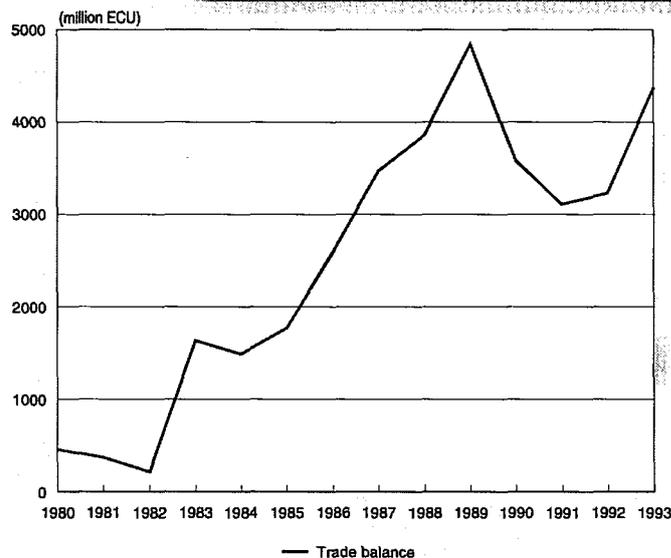
(14) Not including employees working abroad (27 500 in 1993, 33 500 in 1994).

(15) Consolidated figures, including banking activities abroad.

(16) Basis revised, part-time employees now excluded

Source: ECBF

**Figure 2: Credit Institutions**  
**External trade balance at current prices (1)**



(1) Extra-EU exports less imports. Estimates based on balance of payments.  
 Source: Eurostat: International trade in services

to 2 500 billion ECU, i.e. a 5% increase compared with 1994, which represents approximately 30% of European Union GDP. The average loans for residential mortgages vary among Member Countries. In the Netherlands, for instance, the average loan value was 76 300 ECU in 1995, whereas the corresponding value for Greece was 12 800 ECU in the same year.

Due to the great differences between the European mortgage markets, housing finance is provided by a wide variety of institutions including specialised banks such as mortgage banks, building societies and Bausparkassen as well as savings banks, commercial banks and insurance companies.

In banking a broad distinction can be made between commercial banks, savings banks and cooperative banks. In commercial banking, the UK represents the largest market with

a total asset value of 1 926.7 billion ECU, followed by France and Germany with corresponding values of 1 184.8 and 825.5 billion ECU, respectively. The highest total asset value of savings banks is found in Germany. With a value of 727 billion ECU, German savings banks accounted for nearly 42% of total asset value for the EU-15. A similar picture exists for the cooperative banks. With a total asset value of 430.8 billion ECU, Germany is closely followed by France with a total value of 415.6 billion.

In the latter sector, the number of banks in Germany is over-estimated because all of the cooperative banks are counted as individual banks, whereas in other countries (e.g. France or the Netherlands) they are categorised under the heading of their central or regional cooperative bank. The number of

**Table 3: Credit institutions**  
**Savings banks - Main indicators, 1994**

	Number of banks (billion ECU)	Number of branches employed	Total assets	Number of persons
Belgique/België	2	1 369	50.3	9 714
Danmark (1)	115	802	22.2	9 200
Deutschland	668	20 105	727.0	372 000
Ellada (1)	1	925	6.4	1 051
España	51	14 593	233.6	84 726
France	35	4 300	153.2	38 300
Ireland	1	71	1.6	1 147
Italia (1)	76	5 196	259.2	82 472
Luxembourg	1	102	17.7	1 717
Nederland	7	717	25.5	8 589
Österreich	20	1 583	115.0	25 969
Portugal	1	509	26.3	9 518
Suomi/Finland	N/A	248	3.3	1 595
Sverige	1	660	53.3	10 639
United Kingdom	1	1 240	44.1	26 079
EUR 15	(2) 980	52 420	(3) 1 738.7	682 716

(1) 1993 figures.

(2) Excluding Finland.

(3) Not including central financial institutions (F and I).

Source: European Savings Banks Group

**Table 4: Credit institutions  
Cooperative banks - Main indicators, 1994 (1)**

	Number of banks (billion ECU)	Number of branches employed	Total assets	Number of persons
Belgique/België	(2) 223	1 678	27.9	4 838
Danmark	41	81	0.5	293
Deutschland	2 658	19 916	430.8	144 300
Ellada	N/A	(4) 22	(4) 0.06	(4) 28
España (3)	156	5 778	36.2	20 105
France	3 002	13 959	415.6	123 996
Ireland	N/A	576	3.8	1 861
Italia	644	2 343	50.9	18 932
Luxembourg	38	115	1.9	301
Nederland	595	1 923	126.5	37 789
Österreich	805	3 058	76.8	26 840
Portugal	192	480	4.0	(4) 3 500
Suomi/Finland	302	990	28.0	11 830
Sverige	10	11	2.5	83
United Kingdom	N/A	2 458	4.2	3 816
EUR 15	(5) 8 472	53 388	1 209.7	398 512

(1) As of December, 31st.

(2) Covers only Banque CERA Bank.

(3) Figures include estimates for the 'Banco Cooperativo Español'.

(4) Estimate.

(5) Excluding Greece, Ireland, United Kingdom and partly Belgium (Codep).

Source: European Association of Cooperative Banks

local units is informative about the presence of (retail) banking in the countries concerned. Cooperative banks figure prominently in Austria, France, Germany, and the Netherlands, and savings banks in Italy, Portugal, Spain, Germany, Belgium, Sweden, Luxembourg, Austria and France.

Finance companies specialising in providing credit to consumers and industry are also referred to as The Finance Houses members of EUROFINAS. Mostly, they are subsidiaries of larger credit institutions. New credit granted by Finance Houses is distributed along consumer credit, car financing, and industrial credit. Industrial credit (to be distinguished from leasing) is common in Germany, France, the United Kingdom and Sweden.

There are also institutions which offer some type of specialised credit, but are not credit institutions according to EU directives, which are called "financial institutions" because they do not attract their funding from the public. Such institutions are particularly active in consumer credit, industrial credit, factoring, leasing and car financing. In 1994 over 176 billion ECU of new credit was granted in the EU-15 excluding Denmark, Greece and Luxembourg, with 79.6 billion ECU, Germany commanded the highest share (45.2%), followed by the United Kingdom (22.1%) and France (16.3%).

#### Recent trends

The banking industry is becoming increasingly globalised. Products such as retail banking are becoming more homogeneous across borders, partly as a result of single market measures to increase competition. In the early 1990s new competitive pressures have arisen, from outside the traditional banking industry (e.g. the growth of credit cards issued by non-banks), from a blurring of boundaries at the edge of the industry (e.g. bancassurance).

The performance of banks in the European top five was mixed in 1994. Banks in the United Kingdom and Spain improved pre-tax profits to capital ratios to levels considerably above the 15-17% range. In the long run, a return around these percentages is regarded as necessary to provide a proper dividend to shareholders and maintain necessary capital strength.

Returns on capital in France, Germany and Italy, in contrast, were lower than the corresponding percentages in 1993.

1995, the trend in mortgage credit for residential and commercial purposes dipped after the rise started in 1993, thereby closely following the economic climate. An estimate can be given for mortgage loans for residential purposes. The volume of gross credit shows a decline of about 12% compared with 1994, whilst the net annual amount fell by 15%.

Various factors appear to be at the origin of this trend; the overall slowdown in the growth of the households and private investors, and the reduction in both direct and indirect housing subsidies.

As far as finance houses are concerned the total value of new credits granted has decreased from 138 505 million ECU in 1994 to 119 219 million ECU in 1995 (-16%). In consumer credits, the most noticeable growth could be signalled in Sweden (+281%), Portugal (63.1%), Finland (+34.8%), Italy (+24.9%) and the United Kingdom (+20.7%). The market for industrial credits is still dominated by Germany which saw the total value of new credits granted increased by 18.8% in 1995. In car finance a significant drop in the value of credits granted could be observed; from 60 180 million ECU in 1994 to 38 455 million ECU in 1995.

#### International comparison

For the world as a whole, total Tier One capital equalled 1 189 billion ECU, of which the EU-12 commanded a share of 34%. Japan was largest single country with a total Tier One capital of 321 billion ECU (27%), followed by the USA with 178 billion ECU (15%). In terms of assets, a similar picture exists. Total world asset value equalled 25 461 billion ECU of which 38% was accounted for by the EU, 33% by Japan and 10% by the USA. The Japanese banks still dominate the world market in terms of assets (size), with Japanese banks on the first six places in the world Top 1 000. However, the profitability and capital strength of the Japanese banks is weak in comparison with their international competitors. The profits of the EU-banks lie between these two extremes. The EU

**Table 5: Credit institutions**  
**Finance houses - Main Indicators, 1994**

	Number of enterprises (million ECU)	Number of branches employed	New credit granted in 1994 (1)	Number of persons
Belgique/België	67	6 400	5 981	3 200
Deutschland	55	999	79 586	15 789
España	94	625	1 493	4 190
France	75	N/A	28 707	14 100
Ireland	17	68	2 375	1 410
Italia	36	299	8 439	3 750
Nederland	32	91	6 059	1 300
Österreich	3	71	270	874
Portugal	22	52	1 118	584
Suomi/Finland	9	25	1 003	972
Sverige	30	53	2 048	1 034
United Kingdom	803	6 332	38 976	27 281
EUR 15 (2)	1 243	(3) 15 015	176 055	74 484

(1) Includes consumer credit, industrial credit and car finance.

(2) Excluding Denmark, Greece, Luxembourg.

(3) Excluding France.

Source: Eurofinas

accounted for 33% of total pre-tax profits against a 38% share in total assets.

Japanese banks have been slow to recover from their bad-debt ills. Standard & Poor's, a rating agency, reckons that it could take five to ten years before Japan's banks can clear their bad debts. Because the earnings environment remains severe at home, Japanese banks are looking more and more at the USA market. Japanese banks operating in the USA have become more aggressive in lending, which shows signs of recovery from a long slump. The banks also are becoming more involved in securitisation (loans transformed into securities) and derivatives; like forwards, swaps and futures (forward-based contracts), and options, caps and floors (option-based contracts). This weak relative position is reflected in the low Japanese share of total world pre-tax profits (8%).

Banks in the USA have succeeded in restoring their health. Capital strength has been rebuilt, problem lending is being worked off, costs have been cut, margins and profits have recovered and prospects are opening for renewed expansion at home and abroad. The excellent performance of many US banks in 1993 continued in 1994. Pre-tax profits of these banks commanded 30% of total world pre-tax profits against a share of only 10% in total world's asset value.

## MARKET FORCES

### Demand

Although the banking sector has normally grown faster than GDP, the strength of this seems to be gradually weakening. Poor conditions in home markets have led to losses on domestic lending and uncertainty in currency markets has increased the risk associated with operating foreign subsidiaries, while also creating opportunities for banks to make profits from own-account speculative trading. The collapse of Barings Bank has highlighted the risks associated with speculative trading, especially for relatively small players with inadequate capital base.

Attracting deposits, the funding base of banks, is an increasingly competitive market. Credit institutions are no longer able to increase profits by adding assets to overcome shrinking margins, instead they have to cut costs. The concern today is not necessarily the shortage of capital but, in many cases,

an excess. In the United Kingdom, for instance, both Lloyds and Barclays Bank have expressed concerns about being over-capitalised. The increasing competition leads to a demand for lower banking fees. In order to remain competitive, banks have to cut costs, either operational or lending related.

### Supply and competition

The dominant feature in the European banking industry is one of increased competition, within the industry from increasing cross-border operations, and at the margins of the industry from new entrants. In the market for the consumer credits competition is also intensifying, but this not due to increased cross-border operations. Nearly 100% of all consumer credit contracts have a domestic character.

The increasing competition will affect the structure of the industry in terms of the number and size of banks, and also the employment prospects. The banking industry has already seen considerable consolidation in recent years, especially through mergers and acquisitions. The number of mergers and acquisitions, however, have fallen since the end of the 1980s and early 1990s when banks were anticipating the creation of the single market. In recent years banks have tended to move into other European markets that are in close proximity to their own. European Savings Banks have followed a strategy of bilateral and multilateral cooperation in this area of retail banking rather than expanding through the opening of branches abroad.

The most mature segment of the industry, retail banking is widely reckoned to have considerable excess capacity. Employment in retail banking can be expected to fall as productivity rises and the number of banks falls through take-overs. The increasing productivity is further stimulated by the increasing use of IT in this sector. Moves towards telebanking will also accelerate the decline of traditional bank branch networks. Especially small sized companies are increasingly using telebanking software for the administration and effectuation of payments.

Moves towards a monetary union will result in extra costs to the banks due to changes to internal IT systems and a loss of revenue from activities currently associated with foreign exchange. However, the convergence of the Member States' economies and, above all, the introduction of the single currency will fundamentally alter the structures of European fi-

**Table 6: Credit Institutions**  
**Mortgage lending institutions - Outstanding loans against mortgage, 1995**

(million ECU)	1995 Residential and commercial property	Residential property
Belgique/België	50 963	44 363
Danmark (1)	107 833	77 692
Deutschland	1 018 226	848 336
Ellada	N/A	3 890
España	108 051	81 133
France	N/A	244 446
Ireland	13 537	11 482
Italia (1)	(2) 64 706	(2) 52 129
Nederland	232 527	153 314
Österreich (1)	9 244	N/A
Portugal	18 038	14 224
Suomi/Finland (1)	956	N/A
Sverige	114 274	97 308
United Kingdom	N/A	462 655

(1) Members of the European Mortgage Federation.

(2) 1994 figure

Source: EMF

financial markets. The introduction of the single currency will constitute an essential step in the creation of an internal market in the field of financial services.

### Production process

Technology, especially computerisation, is of crucial importance to banking productivity, cost effectiveness and product development. The financial revolution, brought about by technological improvements is by no means over. What is over, however, is the misguided notion of the 1980s that is the widget that creates revolutions and therefore merits almost unlimited financial investment. In a cost cutting environment, credit institutions are more aggressively looking to get value for money. Considering that the financial sector dedicates, something in the region of 12-16% of its expenditure, on computer systems there is no wonder that credit institutions are looking for a utilitarian function to be performed by what they buy. It is therefore the new utility that can be obtained from the information technology (IT) expenditure which creates revolutions and not the widget that makes it all work.

Current trends in the implementation of computing are not new. They form a continuation of a general path marked by decentralisation, a shift to client server architecture (where the applications and business data are held separately), open systems and object oriented programming. These developments will enable what credit institutions want a more flexible information processing infrastructure that is more adaptable to change, which better reflects the organisational structure of the firm, which allows for quicker product development and greater customer orientation while keeping costs under control.

The European Savings banks have followed a specific path in this area through a joint venture founded in Brussels in 1990, with 14 participating countries under the name of EUFIS-ERV. This company intends to provide a strategic alternative to the national systems. In 1995 the network represented some 46 million cards.

## INDUSTRY STRUCTURE

### Companies

The twenty major European banks, ranked by Tier One capital include 4 French, 4 UK, 3 Swiss, 3 German, 2 Dutch, 2 Italian and 2 Spanish banks. The used Tier One capital defi-

inition (BIS strict definition) covers only the core of bank's strength - the shareholders' equity available to cover actual or potential losses. This includes common stock and declared reserves plus the increasing number of perpetual, irredeemable and non-cumulative preference shares. However, this definition excludes hybrid forms of capital, extras such as goodwill and revaluation reserves. Tier One capital is a measure of strength. For the top 20 European banks excluding Crédit Lyonnais, the average return on Tier One capital was 13.4%, slightly higher than the corresponding percentage for 1993 (13.1%). This French bank was one of the only banks which recorded a loss in 1994 (-1 571 million ECU), which is more than twice the 1993 loss. Between the banks some different developments can be observed.

The major retail banks in France were in respective order Crédit Agricole, Paribas, Groupe Caisse d'Epargne, French Savings Banks Group, BNP, Société Générale, Crédit Lyonnais and Crédit Mutuel Confédération Nationale. The return on Tier One capital show a very different picture between these banks. Groupe Caisse d'Epargne recorded the lowest return on Tier One capital (2.8%) for the European top 20 banks excluding Crédit Lyonnais. The other French banks saw this return vary from 5.6% to 12.5%.

The German banking industry is dominated by commercial banks such as Deutsche Bank, Dresdner Bank and Commerzbank. These are all universal banks. Westdeutsche Landesbank Girozentrale, belonging to the savings banks sector, is another main player in the German banking market. However, it should be stressed that the Savings bank sector which is coordinated by a national organisation (DSGV) is the main financial group within Germany. All German banks in the top-20 saw returns on Tier One capital decline. Despite a pre tax profit of 1.72 billion ECU, the return of the Deutsche Bank declined from 17.8% in 1993 to 11.2% in 1994.

The UK banking market is dominated by HSBC Holdings, Barclays Bank, National Westminster Bank, Abbey National and Lloyds Bank. Following the trend of 1993, the profitability of the UK top 20 banks were highest. HSBC recorded a return of 27.7% against 26.4% in 1993 and has become the largest bank of Europe. Also, Westminster and Barclays saw returns increase; from 16.8% to 24.2% for Westminster and from 11% to 28.6% for Barclays. The merger between Lloyds Bank plc and TSB Group plc Savings Bank in 1995 has created one of the main banking groups in the country.

**Table 7: Credit Institutions**  
**Commercial banks - Income as share of average balance sheet total**

(%)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Net income</b>														
Belgique/ België (6)	N/A	0.54	0.65	0.65 (7)	0.62	0.67	0.76	0.66	0.75	0.67	0.51	0.59	0.64	0.63
Danmark (1)	N/A	2.21	2.79	6.49	0.87	4.69	0.02	1.06	2.04	1.14	0.94	1.48	0.59	N/A
Deutschland (8)	0.68	0.89	1.26	1.41	1.24	1.30	1.36	1.04	0.97	1.11	1.16	1.05	1.16 (7)	1.24
Ellada (2)	1.37	1.05	0.89	0.77	0.81	0.67	0.76	0.62	0.56	0.85	1.45	2.52	1.63	1.54
España	1.63	1.51	1.49	1.79	1.66	1.56	1.55	1.86	2.13	2.15	2.08	2.25	1.78	1.75
France (3)	N/A	1.06	1.01	0.99	0.85	0.87	0.91	0.91	0.87	0.76	0.67	0.72	0.68	0.53
Italia	1.52	1.88	1.70	1.34	1.36	1.44	1.78	1.31	1.47	1.72	1.83 (7)	1.76	1.61 (7)	1.91
Luxembourg	N/A	0.77	0.98	1.10	0.99	1.06	1.00	0.84	0.77	0.68	0.74	0.67	0.72	0.79
Nederland (4)	1.03	1.02	1.03	1.21	1.11	1.10	1.08	0.97	1.02	1.00	0.80	0.80	0.83 (7)	0.90
Österreich (9)	N/A	N/A	0.36	0.32	0.33	0.37	0.40	0.65	0.72	0.83	0.90	0.93	1.00	1.07
Portugal (6)	1.66	1.66	1.66	1.13	0.93	0.95	1.13	1.91	2.18	2.61 (7)	N/A	3.32	2.55	2.17
Suomi/Finland	N/A	N/A	0.97	0.70	0.81	1.13	0.76	0.92	0.97	0.58	0.66	-1.10	-1.86	-1.73
Sverige	N/A	N/A	0.91	1.39	1.11	1.16	1.84	1.54	1.52	1.33	0.61	-0.58	-1.70	-0.58
United Kingdom	N/A	N/A	N/A	N/A	1.56	1.64	1.73	1.81	1.77	1.79	1.65	1.72	1.54	1.65
USA	1.32	1.26	1.28	1.31	1.40	1.58	1.58	1.54	1.70	1.75	1.68	1.77	2.09	2.22
Japan	N/A	0.46	0.56	0.57	0.53	0.48	0.56	0.64	0.70	0.51	0.38	0.39	0.39	0.32
<b>Net interest income</b>														
Belgique/ België (6)	N/A	1.84	1.70	1.61 (7)	1.73	1.72	1.80	1.68	1.60	1.57	1.49	1.48	1.51	1.30
Danmark (1)	N/A	3.71	3.78	3.40	3.01	3.03	2.63	2.86	2.78	2.55	2.61	3.39	3.56	N/A
Deutschland (8)	1.89	2.07	2.44	2.71	2.54	2.44	2.58	2.30	2.19	2.04	2.04	2.16	2.21 (7)	2.18
Ellada (2)	2.47	2.03	2.02	1.99	1.73	1.35	1.27	0.68	0.83	1.36	1.79	2.41	1.88	1.80
España	4.32	4.15	3.90	3.94	3.77	3.57	3.72	3.83	4.06	4.04	3.92	3.96	3.39	3.16
France (3)	N/A	2.79	2.69	2.58	2.50	2.44	2.29	2.23	2.12	1.77	1.68	1.51	1.25	0.93
Italia	3.37	3.47	3.19	3.14	3.11	3.01	3.26	3.15	3.27	3.54	3.62	3.59	3.55 (7)	3.17
Luxembourg	N/A	0.87	1.09	1.23	1.20	1.18	1.13	1.04	0.95	0.82 (7)	0.77	0.83	0.84	0.77
Nederland (4)	2.27	2.18	2.25	2.40	2.23	2.20	2.42	2.31	2.30	2.08	1.82	1.78	1.83 (7)	1.82
Österreich (9)	N/A	N/A	1.28	1.24	1.13	1.17	1.20	1.76	1.78	1.73	1.77	1.81	1.85	2.11
Portugal (6)	2.69	2.62	2.47	1.85	1.86	2.37	2.76	3.41	3.66	4.12 (7)	N/A	4.97	4.09	3.47
Suomi/Finland	N/A	N/A	2.08	1.67	1.65	1.70	1.27	1.57	1.61	1.43	1.60	1.25	1.12	1.37
Sverige	N/A	N/A	1.99	2.27	2.21	1.98	2.61	2.49	2.44	2.15	2.08	2.09	2.19	2.72
United Kingdom	N/A	N/A	N/A	N/A	3.04	3.11	3.17	3.19	3.25	3.14	2.95	2.97	2.62	2.45
USA	3.08	3.06	3.16	3.13	3.35	3.47	3.34	3.36	3.50	3.49	3.45	3.57	3.85	3.87
Japan	N/A	1.46	1.55	1.50	1.36	1.22	1.27	1.20	1.17	1.00	0.90	1.11	1.26	1.25
<b>Net provisions</b>														
Belgique/ België (6)	N/A	0.23	0.31	0.30 (7)	0.30	0.32	0.36	0.33	0.44	0.46	0.22	0.31	0.38	0.25
Danmark (1)	N/A	1.26	1.59	1.41	0.77	0.97	0.39	0.70	1.09	0.87	1.21	1.49	1.79	N/A
Deutschland (8)	0.24	0.46	0.73	0.82	0.52	0.47	0.55	0.44	0.25	0.42	0.53	0.47	0.69 (7)	0.69
Ellada (2)	0.52	0.48	0.45	0.36	0.38	0.33	0.32	0.25	0.24	0.36	0.50	0.76	0.36	0.38
España	0.88	0.76	0.90	1.14	1.07	0.84	0.74	0.87	0.77	0.57	0.55	0.69	0.66	1.74
France (3)	N/A	0.68	0.76	0.75	0.65	0.66	0.69	0.59	0.50	0.50	0.46	0.48	0.61	0.56
Italia	0.90	1.18	0.83	0.61	0.58	0.55	0.58	0.49	0.56	0.55	0.57 (7)	0.51	0.64 (7)	0.92
Luxembourg	N/A	0.45	0.70	0.84	0.69	0.73	0.66	0.51	0.37	0.37	0.52	0.42	0.40	0.27
Nederland (4, 5)	0.54	0.80	0.80	0.62	0.61	0.36	0.34	0.19	0.42	0.36	0.30	0.29	0.30 (7)	0.30
Österreich (9)	N/A	N/A	0.21	0.18	0.19	0.22	0.23	N/A	N/A	0.39	0.50	0.52	0.66	0.58
Portugal (6)	1.15	0.95	1.01	0.71	0.59	0.62	0.84	1.35	1.43	1.59 (7)	N/A	1.79	1.59	1.22
Suomi/Finland	N/A	N/A	0.45	0.28	0.32	0.58	0.21	0.48	0.40	0.24	0.19	-0.01	-0.01	N/A
Sverige	N/A	N/A	0.55	0.95	0.76	0.82	0.84	0.81	0.93	0.86	0.40	-3.42	-1.95	-0.73
United Kingdom	N/A	N/A	N/A	N/A	0.68	0.55	0.54	1.53	0.31	1.60	0.95	1.31	1.24	0.90
USA	0.25	0.26	0.40	0.47	0.57	0.67	0.78	1.27	0.56	0.97	0.95	1.01	0.75	0.46
Japan	N/A	0.01	0.06	0.04	0.04	0.02	0.04	0.03	0.05	0.04	0.03	0.07	0.13	0.14
<b>Profits before tax</b>														
Belgique/ België (6)	N/A	0.31	0.34	0.34 (7)	0.32	0.35	0.40	0.34	0.32	0.21	0.29	0.28	0.26	0.38
Danmark (1)	N/A	0.95	1.20	5.08	0.09	3.72	-0.37	0.35	0.96	0.28	-0.27	-0.01	-1.20	N/A
Deutschland (8)	0.45	0.43	0.53	0.60	0.72	0.83	0.81	0.60	0.73	0.70	0.63	0.58	0.47 (7)	0.55
Ellada (2)	0.85	0.57	0.43	0.41	0.43	0.34	0.44	0.37	0.32	0.50	0.96	1.77	1.28	1.16
España	0.76	0.75	0.58	0.64	0.60	0.72	0.81	0.99	1.36	1.58	1.53	1.56	1.12	0.01
France (3)	N/A	0.38	0.26	0.23	0.19	0.21	0.22	0.32	0.37	0.26	0.21	0.25	0.06	-0.03
Italia	0.62	0.70	0.87	0.73	0.78	0.89	1.20	0.82	0.91	1.17	1.26	1.25	0.98 (7)	0.99
Luxembourg	N/A	0.32	0.28	0.26	0.30	0.33	0.33	0.32	0.40	0.31	0.22 (7)	0.26	0.32	0.52

Nederland (4)	0.49	0.22	0.23	0.59	0.51	0.74	0.74	0.78	0.60	0.64	0.50	0.51	0.53 (7)	0.60
Österreich (9)	N/A	N/A	0.15	0.14	0.14	0.16	0.17	0.65	0.72	0.44	0.40	0.41	0.34	0.49
Portugal (6)	0.52	0.71	0.64	0.42	0.34	0.33	0.29	0.56	0.75	1.02	(7) N/A	1.53	0.97	0.95
Suomi/Finland	N/A	N/A	0.51	0.42	0.49	0.54	0.55	0.45	0.58	0.34	0.47	-1.08	-1.85	-1.73
Sverige	N/A	N/A	0.36	0.44	0.35	0.34	1.00	0.73	0.59	0.47	0.22	2.84	0.25	0.15
United Kingdom	N/A	N/A	N/A	N/A	0.88	1.09	1.19	0.28	1.46	0.18	0.70	0.40	0.31	0.75
USA	1.07	1.00	0.88	0.84	0.84	0.90	0.80	0.28	1.14	0.78	0.73	0.77	1.34	1.76
Japan	N/A	0.45	0.50	0.54	0.49	0.46	0.52	0.60	0.64	0.46	0.36	0.32	*0.26	0.18

(1) Data refer to commercial and savings banks. Break in series in 1991.

(2) For 1981-85 and 1987-88, data refer to large commercial banks.

(3) For 1980-87 data refer to large commercial banks. Change in methodology from 1988.

(4) Data refer to all banks. From 1986 onwards Postbank is included.

(5) From 1988, net provisions consist of transfers to the provision for general business risk.

(6) Data refer to all banks.

(7) Break in series.

(8) As from 1993, data include East German credit institutions.

(9) For 1980-86, data refer to large banks only; from 1987 onwards to all banks.

Source: OECD: Bank Profitability

**Table 8: Credit Institutions**  
**Savings banks - Top 10 ranking by non-banker deposits, 1993 (1)**

Rank		Deposits Country	(million ECU)
	Caja de Ahorros y Pensiones de Barcelona - LA CAIXA	ES	41 868
2	CARIPLO SA	IT	36 980
3	ASLK-CGER Bank	BE	33 144
4	Caja de Ahorros y Monte de Piedad de Madrid	ES	25 195
5	TSB Bank	UK	21 038
6	Caixa Geral de Depósitos	PT	17 898
7	Caisse d'Épargne Ile de France - Paris	FR	12 384
8	Landesgirokasse öffentliche Bank und Landessparkasse	DE	11 910
9	Banca CRT Torino	IT	10 886
10	Banque et Caisse d'Épargne de l'Etat - Luxembourg	LU	10 777

(1) Share of total deposits of all savings banks in the country concerned.

Source: European Savings Banks Group

**Table 9: Credit Institutions**  
**Top 20 European banks by Tier 1 capital, 1994**

Rank		Country	Tier 1 capital (million ECU)	Change 93/94 (%)	Assets (million ECU)	1993 Rank	Change 93/94 (%)	World ranking (1) 1994	1993
1	HSBC	UK	15 121	16.8	264 939	3	- 2.0	3	8
2	Union Bank	CH	13 651	16.2	209 392	10	12.4	4	9
3	Deutsche Bank	D	11 013	6.1	309 861	1	8.5	17	12
4	CS Holdings	CH	10 143	-	251 045	4	-	2	14
5	Swiss Bank Corporation	CH	9 766	20.6	136 147	14	9.9	14	19
6	Paribas	F	9 110	10.8	203 807	12	0.1	12	22
7	BNP	F	8 772	1.7	228 559	7	3.0	(2) 16	24
8	National Westminster	UK	8 661	12.2	208 078	11	3.7	13	26
9	ABN/AMRO Bank	NL	8 635	-4.4	244 714	5	9.2	5	27
10	Barclays Bank	UK	8 559	6.7	213 814	8	- 1.8	27	28
11	Société Générale	F	7 506	7.9	233 919	6	1.5	(3) 9	29
12	Dresdner Bank	D	7 452	18.9	213 567	9	9.3	30	31
13	Crédit Lyonnais	F	7 372	-19.9	275 903	2	- 8.1	7	35
14	Commerzbank	D	5 477	-	185 704	13	-	43	36
15	Lloyd's Bank	UK	5 063	-	106 961	15	-	31	37
16	Banco Bilbao Vizcaya	E	4 894	5.6	83 447	18	15.1	35	39
17	Internationale Bank Nederland	NL	4 377	-	105 466	16	-	37	41
18	Banco di Roma	I	4 324	-	78 566	19	-	44	43
19	Banco Santander	E	4 199	-	96 068	17	-	36	46
20	Banca Commerciale Italiana	I	3 849	-	77 877	20	-	(4) 25	51

(1) According to percentage of assets based overseas.

(2) Overseas assets = foreign company assets.

(3) Overseas assets = total risks outside France.

(4) Overseas assets = total credit risks outside Italy.

Source: The Banker

**Table 10: Credit institutions  
Largest 10 Mortgage Lenders in the EU, 1994**

Rank		Country	Outstanding Mortgage Loans (million ECU)
1	Halifax B.S.	UK	74 687
2	Abbey National	UK	65 523
3	Credit Agricole	FR	63 405
4	Rabobank Nederland	NL	58 935
5	Nykredit A/S	DK	44 265
6	Realkredit Danmark A/S	DK	39 098
7	Bayerische Hypotheken-und Wechselbank	DE	38 454
8	Nationwide B.S.	UK	35 867
9	Credit Foncier de France	FR	34 481
10	Stadbank	SE	34 025

Source: European Savings Banks Group

The Italian banking market is more fragmented. Only Cariplo savings bank under the first twenty European banks. Other major players in Italy are San Paolo Bank, Banca di Roma, BNL, Istituto Mobiliare Italiano and Banca Commerciale Italiana.

Regarding the mortgage credit sector, although Germany has the highest figure of outstanding mortgage loans in the EU at the end of 1994, eight UK mortgage lenders rank among the top 20 mortgage lenders in Europe, whereas Germany only ranks four institutions. The Netherlands, France, Sweden and Denmark come next with two (which reveals the importance of mortgage credit in Denmark).

The most prominent non-EU Member State in banking is Switzerland. Union Bank, Crédit Suisse and the Swiss Bank dominate the Swiss banking market. The profitability of the Swiss banks declined after an increase in 1993.

### Strategies

Banks today compete in the broadbased financial services industry, not just in banking. Bankers recognise that the industry's future revenue streams will be quite different from the past. Next to traditional banking there can be identified at least six promising segments for banks to play a role of importance in. Those segments are: financial intermediation and advisory services, investment management, insurance, fee-based operational services, trading, and merchant banking and equity investment. Finance houses deal with related areas such as consumer and industrial credits, and car financing. These areas can be viewed as broader defined segments of the financial services industry. Because traditional banking will not provide enough revenue to support a viable strategy, a bank's most important strategic decision is to choose in which segment to participate and which to avoid. In the broadbased financial services industry, performing as well as the competition will not be satisfactory. That's why it becomes more and more important to determine and sharpen the skills needed for success in the segment(s) selected.

In general, four strategies can be identified as critical to banking's future successes:

- managing current opportunities and risks;
- dealing with the impact of mergers and acquisitions;
- providing and charging for superior quality services and products;
- raising human and financial capital.

Because strategy tops the list of things that bank managers can control, it becomes the most important factor determining banking success.

### REGULATIONS

In early 1994, the Commission commenced a detailed examination of the supervision of financial conglomerates (which combine banking, insurance and other financial services). The Commission is focusing its examination of financial conglomerates on six areas:

- the need for transparent group structures;
- the need to apply 'fit and proper' criteria within the company structure;
- rules against risk concentration and on intra-group transactions;
- problems of consolidated accounts of financial groups;
- cooperation and exchange of information between supervisors;
- the double gearing of capital.

Towards the end of 1994, the Commission proposed a directive aimed at reducing the time taken and the charges made for cross-border payments. At the same time, the Commission published its future action plan of legislative measures in the area of cross-border payments. Some of these measures may lead to a low incentive for credit institutions to provide the service of cross-border payments, if the charges would not include a profit margin.

In April 1995, the Basle Committee issued revised proposals on the supervisory treatment of market risk. The proposals are of considerable importance for banks. Once they come into force, banks will be required to apply capital charges in respect of market risk in addition to their capital charges for credit risk under the 1988 Basle Accord.

In May 1995, the European Commission issued a Green Paper on the practical arrangements for the introduction of the single currency, covering a scenario for its introduction and related aspects such as the legal framework and communications.

In November 1995, the European Commission issued a communication on the harmonisation of accounting. The European Commission recognises the need to stimulate the international harmonisation process which is already well under way in the International Accounting Standards Committee (IASC).

With respect to the second coordination banking directive and the completion of single market, still some obstacles exist.

Especially for mortgage credit institutions, wide differences in market factors, taxation, and consumer laws prevent the use of the 'single licence'. Also differences in the national interpretation of the directive hinders the cross-border activities. In November 1995, the Commission also published a draft Communication on the interpretation of the 2<sup>nd</sup> banking directive. Indeed as some of the concepts used in the directive, such as that of the general good were in need of clarification, the directive itself curbed the European expansion plans of some mortgage credit institutions.

For the consumer credit industry, the implementation of the Directive 87/102 on consumer credit is of particular interest. With respect to this Directive problems arise with the definition of a 'consumer'. The industry is opposed to the extension of such concept to 'starting business'. 'Overindebtedness' and 'the duty to advice' are other topics of concern for this industry.

Other developments in the European legal and fiscal environment affecting credit institutions include the harmonisation of Value Added Tax on financial services, the growing importance of consumer protection, and issues related to the supervision of banks such as the advantages and risks of financial derivatives.

## **OUTLOOK**

The recent economic upturn have brought relief for banks and enabled them to bring the non-performing loan portfolios under control. As no severe economic downturn is expected, the upswing for credit institutions is expected to continue. Credit institutions will increasingly focus on areas of business where there are genuine economies of scale to be achieved as a result of technological developments. The introduction of the electronic highway even enables banks to produce in low wage and/or fiscally attractive countries, as the physical presence near the major downstream markets is no longer necessary. This new technology, however, will also result in increasing competition as cross-border operations will grow and new companies will enter the industry at the margins. Therefore the emphasis on cost control will continue. Staff numbers, which had been allowed to increase during the boom years will be further cut back. These cutbacks will also be driven by the technology, such as the already mentioned relocation of production activities. Moves towards a monetary union will have a negative impact on the banking sector. It will result in extra costs to the banks due to changes to internal IT000 systems and to a loss of revenues from activities currently associated with foreign exchange.

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Grouperment Européen des Banques Coopératives (GEBC). Address: Rue de la Science 23-25, Bte. 9, B-1040 Brussels; tel: (32 2)230 1124; fax: (32 2) 230 0649; and

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# Insurance

## NACE (Revision 1) 66

The implementation of the third generation directives have a large impact on the expansion of free intra-Europe trade. Although these directives imply the freedom to provide services anywhere within the EU, not all the obstacles in the regulatory environment have been removed. In life insurance, an increase of cross-border business has been seen, especially products offering high prospective yields. In the non-life insurance markets, by contrast, cross-border business is still relatively unexplored. In the coming years gross premium income is expected to increase at the same rapid pace as in recent years. This continuing growth is motivated by the economic recovery, the relatively undeveloped European insurance market and the market stimulus caused by the newly adopted directives. The life insurance sector will continue to benefit from the fact that more and more people are setting up individual supplementary savings. This is due to the fact that social security systems are increasingly facing difficulties. Also demographic changes will further stimulate demand for private pension schemes.

### INDUSTRY PROFILE

#### Description of the sector

In comparison with the old NACE'70 classification the scope of this chapter has not changed. NACE '70 group 82 encompassed units engaged in several types of insurance except for

compulsory social insurance. In the new NACE (Rev.1) classification insurance and pension funding services are covered by division 66. The insurance sector can be described as embracing all units "exclusively or primarily engaged in insurance", i.e. converting individual risks into collective risks. Compulsory social security services are excluded.

Insurance is thus defined in terms of the economic function of converting and mutualising risks. Division 66 makes a broad distinction between the following classes:

- class 66.01: life insurance services;
- class 66.02: pension funding services;
- class 66.03: non-life insurance services.

With respect to life insurance, the risk covered relates to the deceased or insured person. It embraces conventional life insurance contracts, annuities and unit-linked insurances. Pension funding services are distinguished in a separate class. In non-life insurance, the risk covered is defined as everything not included in the previous category. It includes assets or liability insurance, covering either individuals or organisations. According to the EU's insurance directives there are 18 main classes of risk, ranging from health insurance to physical assets property damage, through transportation to credit insurance.

The NACE classification does not consider reinsurance as a separate activity as most of the general insurance companies also underwrite reinsurance business, called 'accepted reinsurance'. It is assigned to one of the three groups according to the type of risk reinsured. The reinsurance market supplies capital support to the direct insurers and a variety of technical services under specific reinsurance treaties or contracts. As

**Table 1: Insurance**  
**Gross premiums written (In Mio ECU and as a share of EEA total, 1993)**

	Life insurance (1)		Non-life insurance (2)		Total		Specialist reinsurance (million ECU)
	(million ECU)	(% of EEA total)	(million ECU)	(% of EEA total)	(million ECU)	(% of EEA total)	
Belgique/België	3 445	1.70	6 749	2.95	10 195	2.36	(3) 722
Danmark	3 107	1.53	(4) 2 996	1.31	6 103	1.41	556
Deutschland	39 754	19.58	(5) 63 109	27.57	102 863	23.82	24 386
Ellada	630	0.31	698	0.31	1 328	0.31	-
España	6 881	3.39	12 058	5.27	18 939	4.38	488
France	50 034	24.64	37 802	16.51	87 836	20.34	(6) 4 062
Ireland	2 231	1.10	1 738	0.76	3 969	0.92	-
Italia	9 117	4.49	18 898	8.26	28 015	6.49	1 314
Luxembourg	(7) 504	0.25	(7) 603	0.26	1 107	0.26	1 666
Nederland	11 743	5.78	11 008	4.81	22 751	5.27	-
Österreich (4)	2 949	1.45	(5) 5 810	2.54	8 760	2.03	748
Portugal	766	0.38	1 796	0.78	2 562	0.59	8
Suomi/Finland	461	0.23	1 931	0.84	2 392	0.55	8
Sverige	5 596	2.76	6 039	2.64	11 635	2.69	47
United Kingdom	63 892	31.47	54 464	23.79	118 355	27.40	(8) 5 353
EUR 15	201 112	99.06	225 698	98.60	426 810	98.82	(8) 39 360
Island	6	0.00	176	0.08	182	0.04	14
Norge (4)	1 904	0.94	3 022	1.32	4 927	1.14	168
EEA	203 023	100.00	228 896	100.00	431 919	100.00	(8) 39 541
Schweiz/Suisse	14 867	7.32	15 527	6.78	30 394	7.04	7 244
USA (9)	228 032	112.32	374 024	163.40	602 056	139.39	-
Japan (9)	233 526	115.02	84 957	37.12	318 483	73.74	-

(1) Including the life insurance business of composite insurance enterprises.

(2) Including the non-life business of composite insurance enterprises.

(3) 1992 data.

(4) Gross premiums earned.

(5) Including health insurance enterprises.



**Table 2: Insurance**  
**Number of Insurance enterprises, 1993 (1)**

(unit)	Life insurance enterprises	Non-life insurance enterprises	Composite insurance enterprises	Specialist reinsurance enterprises	Total
Belgique/België	42	174	50	17	283
Danmark	51	202	0	21	274
Deutschland	123	(2) 403	0	32	558
Ellada	29	137	16	1	183
España	506	299	83	7	895
France	143	466	0	21	630
Ireland	33	74	0	0	107
Italia	74	166	25	9	274
Luxembourg	36	35	2	184	257
Nederland	99	667	0	17	783
Österreich	6	(2) 28	32	3	69
Portugal (3)	12	22	9	1	44
Suomi/Finland (3)	12	148	0	11	171
Sverige	31	100	0	6	137
United Kingdom	194	(4) 575	59	-	828
EUR 15	1 391	3 496	276	231	5 394
Island	4	19	0	2	25
Norge	10	127	0	2	139
EEA	1 405	3 642	276	235	5 558
Schweiz/Suisse	30	93	0	20	143
USA (5)	1 619	2 705	4 324	485	9 133
Japan (5)	40	50	0	5	95

(1) Including branches of foreign enterprises.

(2) Including health insurance enterprises.

(3) Excluding branches.

(4) Including specialist reinsurance enterprises.

(5) Source: OECD.

Source: Eurostat

such the activity in reinsurance is an important indicator of insurance activity as a whole. Reinsurance activity can be evaluated by two indicators: the rate of accepted reinsurance and the retention rate. The reinsurance rate is calculated by dividing the premiums on reinsurance accepted by total gross premiums. The retention rate expresses the percentage of total gross premiums written that is retained by the insurers; the remainder represents premiums ceded.

The EU market is dominated by Germany, France and the United Kingdom. In terms of gross premiums written these countries together accounted for 72.4% of the total EU-15 market in 1993. With 118.4 billion ECU, the United Kingdom recorded the highest gross premium income, employing more than 267 800 people. Germany and France followed at a distance with total premium incomes of 102.9 and 87.8 billion ECU, respectively.

In Southern European countries the insurance markets are relatively less developed than in other Western European countries. In the Netherlands for instance, total gross premiums written equal 22.8 billion ECU, which is only 5.3 billion ECU lower than total premiums written in Italy and even 3.9 billion ECU higher than Spain.

### Recent trends

The EU insurance market has grown at a rate varying between 5 and 10% in recent years. Within the EU, the life insurance sector especially is benefiting from the fact that more and more people are setting up individual supplementary savings. This is due to the fact that social security systems are increasingly facing difficulties. Also demographic changes (the drop in the birth rate and in the size of the working population) pose serious problems for the financing of state pension systems. These developments stimulate demand for life insurance

products. Also the non-life insurance markets have been performing well in recent years. The economic recovery and with growing production and consumption encourage the sale of new insurance policies.

### International comparison

Compared to the USA and Japan, the European insurance market as a whole is less developed in terms of premiums per capita. With premiums per capita of 1 157 ECU the EU-15 is lagging far behind the USA and Japan with corresponding figures of 2 334 and 2 561 ECU respectively. These latter two figures, in turn, are small compared with the figure for Switzerland. In 1993 the Swiss insurance market corresponded with a total of 4 400 ECU per capita. Within the EU, Luxembourg is the only country which recorded a higher premium value per capita (2 800 ECU) than the USA and Japan. With a value of 2 037 ECU per capita the United Kingdom ranked second. The figures are the lowest for Portugal and Greece with respective values of 260 and 128 ECU per capita.

Also if gross premiums are related to GDP, a similar picture exists. The insurance markets in the USA and Japan are better developed than the European market (7.23%) with 11.26% and 8.85% of GDP. Switzerland, however, demonstrates the highest percentage (15.11%). Within the EU, the United Kingdom and Luxembourg show the highest share; 14.71% and 10.35%, respectively. The UK share is even higher than the respective shares for the US and Japan.

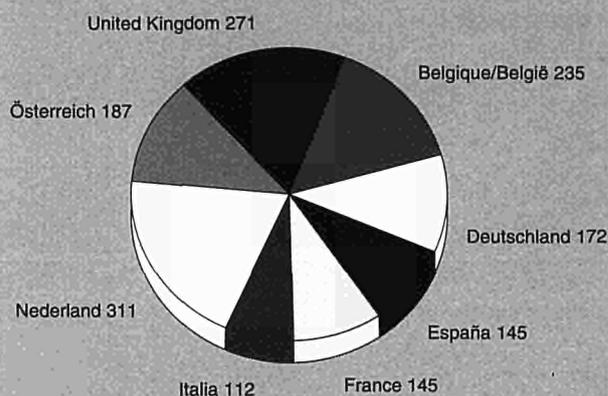
Compared with 1992, gross premiums per capita increased drastically in the USA and Japan with respective growth figures of 29.2% and 34.2%. For the EU this growth was only 16.2%. Due to the higher growth rate for Japan and the rapid growth of other insurance markets in the Far East, Asia increased its market share on the world insurance market from 26.88%

**Table 3: Insurance**  
Insurance enterprises employees as % of total employment, 1993

	All insurance enterprise employees	% of total employment
Belgique/België	29 444	0.96
Danmark	14 637	0.64
Deutschland	254 484	0.79
Ellada	20 000	1.01
España	44 570	0.51
France	122 000	0.65
Ireland	10 085	1.16
Italia	48 829	0.34
Luxembourg	1 208	0.83
Nederland	71 100	1.21
Österreich	32 104	1.05
Portugal	12 766	0.39
Suomi/Finland	9 595	0.52
Sverige	40 100	1.06
United Kingdom	267 800	1.22
EUR 15	978 722	0.80
Island	422	0.38
Norge	12 599	0.72
EEA	991 743	0.80
Schweiz/Suisse	48 319	-
USA (1)	1 518 400	1.42
Japan (1)	649 653	1.27

(1) Source: OECD.  
Source: Eurostat

**Figure 1: Insurance**  
Breakdown of worldwide gross premiums, 1993



Source: Eurostat/CEA

in 1992 to 34.84% in 1993. The USA and EU share dropped to 33.29% and 25.26%, respectively. The world insurance market as a whole grew 36.3% in 1993 after small average annual growth from 1990 to 1992 (+3%).

#### Foreign trade

An indication of the foreign influence on domestic insurance markets is provided by the number of branch offices of foreign EU and non-EU enterprises. In 1993 a total number of 146 foreign branch offices accounted for 7.4% of total gross premiums written for the EU-15 without Denmark and the United

**Table 4: Insurance**  
Market share of the five largest direct insurance enterprises, 1993

(%)	Life insurance enterprises (1)	Non-life insurance enterprises (2)	Composite insurance enterprises (3)
Belgique/België	19.93	23.58	32.38
Danmark	50.76	60.26	-
Deutschland	30.92	22.49	-
Ellada	64.98	36.38	-
España	20.53	10.96	15.62
France	40.64	32.97	-
Ireland	57.84	39.89	-
Italia	106.33	194.37	226.92
Luxembourg	106.33	194.37	-
Nederland	2.00	0.00	-
Österreich	106.33	461.61	353.84
Portugal	106.33	194.37	226.92
Suomi/Finland	106.33	194.37	-
Sverige	106.33	461.61	-
United Kingdom	106.33	461.61	353.84
EUR 15			
Island	100.00	84.30	-
Norge	91.85	78.55	-
EEA			
Schweiz/Suisse	70.40	73.64	-

(1) Business of life insurance enterprises and life business of composite insurance enterprises.  
(2) Business of non-life insurance enterprises and non-life business of composite insurance enterprises.  
(3) Business of life, non-life and composite insurance enterprises.  
(4) Excluding Loyds.  
Source: Eurostat

**Table 5: Insurance**  
**Insurance tax on insurance premiums, 1994 (1)**

(%)	Motor	Fire	Health	Life
Belgique/België	9.25	9.25	(8) 9.25	Exempt
Danmark	(3) 50.00	Exempt	Exempt	Exempt
Deutschland	12.00	10.00	Exempt	Exempt
Ellada	(4) 10.00	(7) 15.00	10.00	(10) Exempt
España	0.50	0.50	(8) 0.50	Exempt
France	18.00	(6) 30.00	7.00	Exempt
Ireland	2.00	2.00	2.00	Exempt
Italia	12.50	21.25	(9) 2.50	2.50
Luxembourg	4.00	4.00	4.00	Exempt
Nederland	(5) 7.00	7.00	Exempt	Exempt
Portugal (2)	9.00	9.00	5.00	Exempt
United Kingdom	2.50	2.50	2.50	Exempt

(1) Basic rates  
(2) Figures given are for Stamp duty  
(3) Except Lorries 6 tons loaded, buses, mopeds  
(4) For all risks excluding fire  
(5) Except for vehicles registered in another European country  
(6) Normal rate  
(7) Normal rate excluding earthquake and terrorism  
(8) Health & accident insurance combined  
(9) Includes personal accident  
(10) Contracts of less than 10 years = 4% (on premiums for 1st year)  
Source: CEA

**Table 6: Insurance**  
**Share of gross premiums written in terms of GDP, 1993**

(%)	Life insurance (1)	Non-life insurance (2)
Belgique/België	1.91	3.75
Danmark	2.69	2.59
Deutschland	2.44	(3) 3.87
Ellada	0.82	0.91
España	1.68	2.95
France	4.68	3.54
Ireland	5.53	4.30
Italia	1.08	2.23
Luxembourg	4.72	5.64
Nederland	4.45	4.17
Österreich (4)	1.90	(3) 3.74
Portugal	1.06	2.48
Suomi/Finland	0.65	2.70
Sverige	3.54	3.82
United Kingdom	7.94	6.77
EUR 15	3.41	3.82
Island	0.12	3.40
Norge (4)	2.16	3.42
EEA	3.38	3.82
Schweiz/Suisse	7.39	7.72
USA (5)	4.27	7.00
Japan (5)	6.49	2.36

(1) Including the life business of composite insurance enterprises.  
(2) Including the non-life business of composite insurance enterprises.  
(3) Including health insurance enterprises.  
(4) Gross premiums earned.  
(5) Source: OECD  
Source: Eurostat

Kingdom. The market share of foreign-controlled enterprises and branches/agencies of foreign enterprises in total domestic business is another indicator. Except for Greece and Portugal, these shares are highest in non-life insurance. In comparison with 1992 there is no clear increase of market shares.

**Table 7: Insurance**  
**Foreign companies' market share in the domestic market, 1993 (1)**

(%)	Life insurance	Non-life insurance
Danmark	7.6	36.7
Deutschland	11.3	16.3
Ellada (2)	33.0	28.0
España	23.3	41.3
Nederland	22.8	25.8
Österreich	33.8	48.8
Portugal	28.8	12.8

(1) Market share of foreign-controlled enterprises and branches/agencies of foreign enterprises in total domestic business (gross premiums written basis).  
(2) Net written premiums basis.  
Source: OECD: Insurance Statistics Yearbook

On 1 July 1994 the Single Insurance Market was born. With 18 national markets (the EU-15, Norway, Iceland and Liechtenstein) an integrated insurance area with nearly 5 000 insurance companies was created. Although it has resulted in an in-depth revolution for the large majority of markets, companies and supervisory authorities, the impact of the Single Market on cross-border business has been limited. The freedom to provide services is finding its preferred territory in the field of industrial and commercial risk which has long benefited from a high degree of freedom. In life insurance, a certain increase of cross-border business has been seen, especially in products offering high prospective yields. In the non-life insurance market, in contrast, cross-border business is still relatively unexplored.

In daily practice some obstacles to the functioning of the Single Market exist, which prevent rapidly intensifying cross-border trade. These obstacles include the lack of harmonisation of taxation within the EU, the fact that because of the absence of mutual recognition of diplomas and coordination (see Com-

**Table 8: Insurance**  
Gross premiums written per capita, 1993

(ECU)	Life insurance (1)	Non-life insurance (2)	Total
Belgique/België	342	670	1 013
Danmark	600	578	1 178
Deutschland	491	(3) 779	1 270
Ellada	61	67	128
España	176	309	485
France	870	657	1 527
Ireland	627	488	1 115
Italia	160	332	492
Luxembourg	1 275	1 525	2 800
Nederland	771	722	1 493
Österreich (4)	370	(3) 730	1 100
Portugal	78	182	260
Suomi/Finland	91	382	473
Sverige	644	695	1 339
United Kingdom	1 100	937	2 037
EUR 15	545	612	1 157
Island	23	672	695
Norge (4)	443	703	1 146
EEA	544	613	1 156
Schweiz/Suisse	2 152	2 248	4 400
USA (5)	884	1 450	2 334
Japan (5)	1 878	683	2 561

(1) Including the life business of composite insurance enterprises.

(2) Including the non-life business of composite insurance enterprises.

(3) Including health insurance.

(4) Gross premiums earned.

(5) Source: OECD.

Source: Eurostat

**Table 9: Insurance**  
World's insurance markets (as % of world's total premiums)

(million ECU / %)	1985	1986	1990	1991	1992	1993
EUR 15 (1)	24.08	26.86	31.48	30.75	28.86	25.26
Asia	19.62	22.44	24.63	26.29	26.88	34.84
North America	50.32	45.47	37.91	36.82	37.99	33.29
Others	5.99	5.23	5.99	6.14	6.27	6.62
Total	828 212	873 833	1 065 016	1 141 903	1 129 343	1 539 480

(1) Partly estimated.

Source: Eurostat/CEA

mission Recommendation of 18 December 1991 on insurance intermediaries) on insurance intermediaries, the latter are still facing numerous legal obstacles when operating in another Member State, and the absence of precise European criteria to draw a clear distinction between freedom of establishment and the freedom to provide services. Despite these obstacles the deregulation of the insurance in the single market is expected to lead to further increases in cross-border operations.

## MARKET FORCES

### Demand

Total gross premiums written can be divided into life and non-life insurance. With 225.7 billion ECU non-life insurance is larger than the EU-market for life insurance which equalled 201.1 billion ECU in 1993.

The major growth in demand in the insurance industry is in the life segment. Life insurance includes conventional life contracts and also the increasingly important market of sav-

ings-related products such as private pension schemes. The ageing of Europe's population has played, and is still playing, a decisive role in the growth of premium volume in life insurance. The need for comprehensive insurance coverage increases with advancing years, especially when social security benefits relating to pensions and medical treatment appear progressively inadequate. In an effort to compensate for the erosion of state benefits, the public is turning increasingly towards life insurance related products. In addition, there is a growing tendency for earlier retirement. The legal or accepted retirement age in every European country is now between 60 and 65 years (except Denmark, with a retirement age of 67 years). The effective retirement age, however, is below the age prescribed. Additional insurance for the years of earlier retirement is stimulating demand. Further growth is expected from the Southern European countries, where demand catches up towards the levels common in the United Kingdom and the Netherlands.

In life insurance, large differences exist between EU Member States. In Luxembourg and the United Kingdom the gross

**Table 10: Insurance**  
**Profit and loss account in life insurance, 1993 (1)**

	Gross premiums written (million ECU)	Gross claims incurred (%)	Change in gross life insurance provision (%)	Gross operating expenses (%)
Belgique/België	3 445	70.77	51.06	25.42
Danmark	3 107	(2) 78.79	128.59	9.26
Deutschland (3)	39 243	53.42	60.32	19.65
Ellada	630	-	-	-
España	6 881	65.76	54.26	13.59
France	50 034	42.26	72.16	9.30
Ireland	2 231	82.80	-	22.18
Italia	9 117	30.64	58.83	15.14
Luxembourg	504	22.50	94.29	10.91
Nederland (4)	10 644	40.00	81.13	16.42
Österreich (3)	2 949	43.26	49.19	18.12
Portugal (5)	766	29.76	80.95	13.01
Suomi/Finland	461	113.30	27.25	18.19
Sverige	5 596	57.60	49.64	8.64
United Kingdom	63 892	78.81	-	16.75
EUR 15	199 502	-	-	-
Island	6	37.26	-	36.21
Norge (3)	1 904	71.24	115.10	17.05
EEA	201 412	-	-	-
Schweiz/Suisse	14 867	0.03	52.35	12.93

(1) Including life business of composite insurance enterprises.

(2) Claims paid.

(3) Gross premiums earned.

(4) Net premiums written.

(5) Gross direct premiums written.

Source: Eurostat

**Table 11: Insurance**  
**Profit and loss account of non-life insurance, 1993 (1)**

	Gross premiums written (million ECU)	Gross claims incurred (%)	Gross operating expenses (%)
Belgique/België	6 749	69.39	41.83
Danmark (2)	2 996	(3) 91.74	27.08
Deutschland (4)	49 389	75.55	23.79
Ellada	698	-	-
España	12 058	71.89	31.66
France	37 802	83.33	28.51
Ireland	1 738	82.16	12.23
Italia	18 898	80.73	18.90
Luxembourg (5)	603	62.92	19.70
Nederland (6)	9 439	74.53	22.61
Österreich (2)	5 459	72.85	26.48
Portugal	1 796	67.57	34.70
Suomi/Finland	1 931	90.56	21.46
Sverige	6 039	81.30	22.48
United Kingdom	54 464	53.77	16.51
EUR 15	210 057	-	-
Island	176	82.6	16.4
Norge (4)	3 022	78.4	24.1
EEA	213 256	-	-
Schweiz/Suisse	15 527	78.4	30.2

(1) Including non-life business of composite insurance enterprises.

(2) Gross premiums earned including specialist reinsurance enterprises.

(3) Claims paid.

(4) Gross premiums earned

(5) Direct gross premiums written.

(6) Net premiums written.

Source: Eurostat

**Table 12: Insurance**

**Main products of non-life insurance (% of non-life direct gross premiums written), 1993 (1)**

(%)	Motor vehicle	Accident and health	Fire and other damage to property	General liability	Others	(million ECU)	Total Mio loccur
Belgique/België	36.66	8.58	18.96	6.17	29.63	261 546	6 463
Danmark	25.97	18.78	41.24	2.99	11.02	22 642	2 982
Deutschland (2)	33.14	29.41	22.25	8.49	6.71	117 019	60 432
Ellada (3)	54.99	(4) 4.62	23.99	3.00	18.02	152 276	567
España	45.93	20.08	5.00	3.47	25.52	1 742 123	11 682
France	34.58	20.37	25.13	5.27	14.65	224 711	33 874
Ireland	46.11	3.44	23.03	22.42	5.00	1 315	1 644
Italia	56.00	14.59	14.89	6.81	7.71	33 751 000	18 331
Luxembourg	26.64	(4) 3.02	15.01	5.78	52.57	24 390	603
Nederland (5)	25.42	45.01	16.01	-	13.56	20 629	9 484
Österreich (2)	36.95	(6) 26.20	9.32	5.94	47.79	76 532	5 618
Portugal	53.49	27.38	12.68	1.52	4.93	334 709	1 777
Suomi/Finland	30.78	22.05	26.40	2.51	18.26	11 458	1 711
Sverige	24.34	3.91	-	-	71.75	41 350	4 533
United Kingdom (8)	19.53	7.20	20.97	6.15	46.15	42 481	54 464
EUR 15	32.43	19.43	(9) 19.83	(10) 6.18	22.13	214 165	
Island	42.06	9.07	25.64	-	23.23	12 622	159
Norge (11)	26.97	-	21.97	-	51.06	22 517	2 710
EEA	32.37	(12) 19.18	(12) 19.86	-	22.49	217 034	
Schweiz/Suisse	(13) 13.43	14.85	15.24	(14) 33.30	69.91	21 936	12 678
USA (15)	27.49	33.40	8.51	4.98	25.62	429 219	360 834
Japan (15)	43.50	28.36	19.46	2.32	6.36	9 846 739	81 162

(1) Including business of composite insurance enterprises.

(2) Direct gross premiums earned.

(3) 1992.

(4) Accident only.

(5) Direct net premiums written.

(6) Excluding accident insurance with premium return / estimate.

(7) Estimate.

(8) Gross premiums written, including reinsurances accepted.

(9) EUR 14.

(10) EUR 13.

(11) Direct net premiums earned.

(12) EEA 16.

(13) Including only motor vehicle casco insurance.

(14) Including motor-vehicle third party insurance.

(15) Source: OECD.

Source: Eurostat.

premiums written per capita are 1 275 and 1 100 ECU, respectively, while the corresponding figures for Greece, Portugal, and Finland only amount to 61, 78 and 91 ECU, respectively. In Greece, Austria and Portugal foreign companies hold relatively high market shares, varying from a share of 28.8% for Portugal to 33.8% for Austria.

Non-life insurance covers health and accident insurance and other general risks, such as motor, household, marine, fire theft and liability insurance. Here, a distinction can be made between mandatory insurance coverage (car insurance, workplace accident insurance, and so on) and other categories of insurance (health, legal etc.) which are currently marketed. Improvements in living standards emerge as an essential factor in the shifting patterns of non-life insurance consumption. The population insures not only itself but also its growing number of possessions. Furthermore, consumers are becoming more conscious of the wide range of products and services which are offered in the insurance industry. As product varieties increases the need for independent advice is also growing. This trend is reflected in a growing importance of independent intermediaries.

In the EU-15, motor vehicle insurance is the largest category of the non-life insurance accounting for 32.4% of total non-life direct gross premiums written. Fire and other damage to prop-

erty (19.8%) and accident and health (19.4%) are the other major categories.

In non-life insurance, Luxembourg (1 525 ECU) and the United Kingdom (937 ECU) are the two EU-countries with the highest amounts of gross premiums written per capita in 1993. Germany, Austria and the Netherlands follow at a distance with 779 ECU, 730 ECU and 722 ECU, respectively. In Austria and Spain a large share of the total non-life market is accounted for by foreign companies, with respective shares of 48.8% and 41.3%.

Reinsurance is a specialised market sector that provides an opportunity for more conventional insurance companies to reinsure risks of the policies they have written. Reinsurance companies have been hit in recent years because of the rise in number and value of major catastrophes such as earthquakes and winter flooding in Europe.

### Supply and competition

There are broadly two models of insurance markets: the Anglo-Saxon model and the Continental model. The models mainly depend on the extent of regulation in the respective countries. The first one can be found in the UK, Ireland and the Netherlands (and in the USA). It is characterised by less prescriptive regulation, a wider range of consumer choice

**Table 13: Insurance**

**Gross claims incurred in direct non-life insurance (as % of direct gross premiums written, by product), 1993 (1)**

(%)	Motor vehicle	Accident and health	Fire and other damage to property	General liability	Total non-life products Others	(million ECU)	(%)
Belgique/België	89.06	71.00	52.00	-	80.6	4 684	72.48
Danmark (2)	(3) 94.38	(3) 88.07	(3) 70.37	(3) 47.79	-	3 258	(4) 109.27
Deutschland	92.78	64.89	71.10	65.50	104.4	47 348	(4) 78.35
Ellada	-	-	-	-	-	-	-
España	81.22	71.80	56.88	92.77	64.3	8 669	74.20
France	85.86	86.32	77.51	95.33	144.8	31 499	92.99
Ireland	89.93	44.44	72.61	85.42	159.1	1 428	86.84
Italia	90.87	70.79	63.21	83.03	90.1	15 256	83.22
Luxembourg	76.94	(5) 44.10	41.79	54.39	63.9	379	62.92
Nederland	84.69	101.14	62.99	-	69.2	8 205	86.51
Österreich (4)	96.55	(6) 72.05	45.72	79.19	98.8	4 778	(7) 85.06
Portugal	73.27	64.42	46.12	49.91	98.5	1 213	68.29
Suomi/Finland	82.65	82.90	58.51	24.65	232.2	1 748	102.18
Sverige	83.63	98.09	-	-	117.2	4 909	108.29
United Kingdom (2)	-	-	-	-	53.8	29 282	53.77
EUR 15							
Island	99.91	144.02	47.40	-	104.16	146	91.44
Norge (8)	85.02	-	67.10	-	97.38	2 368	87.40
EEA							
Schweiz/Suisse	(9) 72.34	66.35	58.07	(10) 64.68	198.68	12 172	96.01

(1) Including the business of composite insurance enterprises, ratios for the total of all products differ from those in Table EEA 11 where the business includes reinsurances accepted.

(2) Including specialist reinsurance.

(3) Claims paid.

(4) Gross premiums earned.

(5) Accident only.

(6) Excluding accident insurance with premium return / estimate.

(7) Estimate.

(8) Direct net premiums earned.

(9) Including only motor vehicle casco insurance.

(10) Including motor-vehicle third party insurance.

Source: Eurostat

and the distribution is dominated by independent brokers. The second applies elsewhere in Europe (notably Belgium, Germany, Switzerland, Italy and France) and is characterised by strict regulations, less product innovation and tied company agents as the main distribution channel.

The supply of insurance within Europe has traditionally been dominated by domestically owned insurance companies. Domination on a European scale used to be difficult as many insurances are comparatively standardised products, leaving little opportunity for product differentiation. In life insurance and pensions a greater possibility for differentiation exists, but regulation in some European countries has tended to inhibit product innovation. Moreover, since there are no patent laws in insurance, new products could and still can be copied relatively quickly, especially as production systems are not complex.

EU policies designed to create a single market in financial services have had an impact on the competitive position of EU insurance companies. They have resulted in market deregulation and abolition of protection of national markets. As a consequence, cross-border activities have increased, although national distribution channels remain very important as individual markets retain distinguishing characteristics. Due to these developments, cross-border operations will further grow and insurance companies will increasingly find banks and other financial intermediaries competing in life insurance. The appearance of new information technologies and the entry of foreign insurance companies into local markets has further enhanced competition.

## Production process

The recession in the early 1990s had an adverse impact on profitability, which in turn has stimulated insurance companies to look more carefully at their costs, particularly staff costs, because of the labour-intensive nature of the business. This growing attention to cost-efficiency is further stimulated by the integration of the European insurance markets. The intensifying competition is resulting in a pressure on the tariffs and a search for cost savings.

The expected further cross-border will increase the level of competition, and production will become more concentrated with fewer firms taking larger market shares. The increased concentration within the insurance markets caused by take-overs has led and will further lead to some rationalisation in the insurance labour force. When insurance companies merge into larger enterprises, there is usually some reduction in staffing levels as job duplication is eliminated.

A comparison among EU Member States of gross premiums written per employee reveals that gross premiums per employee may vary relatively strongly. For this ratio the highest value was found for Luxembourg (916 391 ECU per employee), followed by France (719 967 ECU per employee). The lowest was for Greece in 1993, equalling only 66 400 ECU per employee.

In the insurance industry productivity growth will also stem from the growing application of information technology (IT). The application of IT and the restructuring processes may lead to further cost savings with respect to the internal processes. Other cost savings can and will be reached with respect

**Table 14: Insurance**  
**Gross premiums written in the host country by branches of foreign enterprises and number of branches, 1993 (1)**

	Life insurance branches (2)		Non-life insurance branches (3)		Total gross premiums of branches (4)		Number of branches (unit)
	(million ECU)	(%) (5)	(million ECU)	(%) (6)	(million ECU)	(%) (7)	
Belgique/België	286	8.3	331	4.9	617	6.05	(8) 90
Danmark	-	(9) 0	-	(9) 2.5	-	(9) 3.5	53
Deutschland	1 371	3.45	1 825	3.66	3 196	3.57	77
Ellada	106	15.53	93	12.19	199	13.77	56
España	-	-	-	-	1 080	5.7	28
France	3 502	7	9 261	24.5	12 764	14.53	124
Ireland	-	-	-	-	1 528	38.49	44
Italia	164	1.8	793	4.2	958	3.42	50
Luxembourg (10)	17	3.45	64	10.54	81	7.31	21
Nederland	756	6.44	638	5.8	1 394	6.13	141
Österreich	15	0.5	58	1	73	0.83	10
Portugal (10)	113	12.86	121	6.32	234	8.38	47
Suomi/Finland (10)	0	0	6	0.34	6	0.27	2
Sverige	0	0	121	(11) 2	121	(11) 1.04	13
United Kingdom	-	-	-	-	-	-	146
<b>EUR 15</b>							
Island	0	0	0	0	0	0	0
Norge	0	0	46	1.54	46	0.94	14
<b>EEA</b>							
Schweiz/Suisse (10)	0	0	602	4.75	602	2.2	27

(1) Including EU and non-EU branches.

(2) Including life insurance business of composite insurance enterprises.

(3) Including non-life insurance business of composite insurance enterprises.

(4) Total business of life, non-life and composite enterprises.

(5) In percentage of total life insurance business written in the host country.

(6) In percentage of total non-life insurance business written in the host country.

(7) In percentage of total life and non-life insurance business written in the host country.

(8) 1994 data.

(9) Estimate.

(10) Gross direct premiums written.

(11) Including the business of two foreign subsidiaries.

Source: Eurostat

to distribution costs. As far as operational costs are concerned, marketing and distribution costs rank immediately after policy payments in terms of size. Not surprisingly, a lot of attention is given to less expensive modes of distribution. The various approaches open to distribution include:

- salaried employees (particularly in the life sector);
- tied company agents: an intermediary between a client and an insurance company, who is contractually bound to, but not employed directly by, a specific company; remunerated on a commission basis;
- independent brokers, which are mandated by the client and usually do not have any link to an individual insurer; remunerated on a commission basis;
- direct-writing by the companies themselves;
- banks, in which case there is a great variety of means to market insurance products (e.g. distributed under the bank's own name or that of the insurer, sold by insurance salesmen on recommendation by bank staff, sold partly by the bank staff and partly by the insurance salesmen);
- others, e.g. retail chain stores.

The preferred strategies vary from one country to another, depending on the regulatory environment, the companies' strategy, the influence of shareholders and the market structure. Brokers dominate the markets in Anglo-Saxon model (UK and the Netherlands), whereas agents are more common in the continental model (Germany and France).

There is a trend towards direct writing with the aim to improve cost efficiency, though even if no intermediary is involved in the distribution process (advice, claims handling, administration etc.), there are still important costs related to these operations which must be then borne by the insurer.

In any case, distribution is becoming increasingly important for the achievement of other goals. Reflecting the growing need among consumer for independent advice, the importance of the independent brokers as distributors of insurance services will increase. Furthermore, the growing demand for more convenience has been responded by a concentration of supply within the distribution channels. As a result, a wide range of products can be offered at one place (one-stop shopping), bancassurance being the best example of this development.

## INDUSTRY STRUCTURE

### Companies

Most insurance companies are active in non-life insurance. When insurance companies are taken over, the acquiring companies often do not incorporate them into their own structure for marketing and/or tax reasons. As a result of the ongoing mergers and take-overs it can happen that the total number of insurance companies is increasing, whilst the number of independently controlled groups is further declining.

The average size of insurance companies is measured in terms of gross premiums divided by the number of undertakings. In 1992 within the EU the average size was 80 million ECU against 66 million ECU in 1990. For 1993 this figure reached

**Table 15: Insurance**  
**Total of investments (levels and in % of gross premiums written), 1993**

	Life insurance enterprises		Non-life insurance enterprises		Composite insurance enterprises		Total of investments (million ECU)
	(million ECU)	(%)	(million ECU)	(%)	(million ECU)	(%)	
Belgique/België	4 352	474	4 340	146	36 718	582	45 410
Danmark	39 144	1 260	10 713	(1) 358	-	-	(4) 49 856
Deutschland	307 562	774	88 218	(2) 140	-	-	(4) 395 780
Ellada	-	-	-	-	-	-	1 532
España	12 339	318	2 856	63	17 736	169	32 932
France	243 315	486	60 494	160	-	-	(4) 303 809
Ireland	15 555	697	3 610	208	-	-	19 165
Italia	25 095	536	11 028	134	48 253	320	84 376
Luxembourg (3)	-	-	-	-	-	-	-
Nederland	112 767	960	13 715	125	-	-	(6) 126 482
Österreich	4 373	718	1 173	(2) 120	20 937	296	(4) 26 484
Portugal	1 019	292	943	133	2 743	183	4 705
Suomi/Finland	2 664	577	3 723	193	-	-	6 387
Sverige	56 721	1 014	11 225	186	-	-	67 946
United Kingdom	590 411	924	95 631	176	-	-	(5) 686 042
<b>EUR 15</b>							
Island	12	195	238	135	-	-	249
Norge (1)	21 611	1 135	5 453	180	-	-	27 064
<b>EEA</b>							
Schweiz/Suisse	86 736	583	31 167	201	-	-	(4) 117 903

(1) In percentage of gross premiums earned.

(2) Including health insurance.

(3) In percentage of direct gross premiums written.

(4) Book value.

(5) Current value.

(6) Book and current value according to the type of investments.

Source: Eurostat

**Table 16: Insurance**  
**Gross technical provisions (levels and in % of gross premiums written), 1993**

	Life insurance enterprises		Non-life insurance enterprises		Composite insurance enterprises		Total of gross technical provisions (million ECU)
	(million ECU)	(%)	(million ECU)	(%)	(million ECU)	(%)	
Belgique/België	4 128	450	5 112	172	33 390	529	42 630
Danmark	35 964	1 157	5 296	(1) 177	-	-	41 260
Deutschland	294 162	740	63 451	(2) 101	-	-	357 613
Ellada	1 055	168	522	75	-	-	1 577
España	13 460	347	3 357	74	19 879	189	36 696
France	244 318	488	60 102	159	-	-	304 420
Ireland	13 963	626	3 614	208	-	-	17 577
Italia	20 023	427	11 920	145	43 475	288	75 418
Luxembourg (3)	1 431	284	1 091	181	-	-	2 522
Nederland	101 863	867	11 958	109	-	-	113 821
Österreich	4 312	708	1 105	(2) 113	19 383	274	24 800
Portugal	848	242	774	109	2 437	162	4 059
Suomi/Finland	3 076	667	4 206	218	-	-	7 281
Sverige	39 987	715	10 766	178	-	-	50 753
United Kingdom	-	-	-	-	-	-	-
<b>EUR 15</b>							
Island	10	173	293	166	-	-	303
Norge (1)	23 438	1 231	5 688	188	-	-	29 127
<b>EEA</b>							
Schweiz/Suisse	86 900	585	23 647	152	-	-	110 546

(1) In percentage of gross premiums earned.

(2) Including health insurance.

(3) In percentage of direct gross premiums written.

Source: Eurostat

**Table 17: Insurance  
Capital and reserves (levels and in % of gross premiums written), 1993**

	Life insurance enterprises		Non-life insurance enterprises		Composite insurance enterprises		Total of capital and reserves (%) (million ECU)
	(million ECU)	(%)	(million ECU)	(%)	(million ECU)	(%)	
Belgique/België	265	29	1 019	34	4 589	73	5 873
Danmark	3 581	115	4 961	(1) 166	-	-	8 542
Deutschland	3 459	9	13 876	(2) 22	-	-	17 335
Ellada	-	-	-	-	-	-	487
España	1 569	40	1 240	27	2 733	26	5 543
France	13 504	27	16 890	45	-	-	30 394
Ireland	203	9	284	16	-	-	486
Italia	6 919	148	3 493	42	10 871	72	21 283
Luxembourg (3)	-	-	-	-	-	-	-
Nederland	12 754	109	6 559	60	-	-	19 313
Österreich	204	34	352	(2) 36	1 992	28	2 548
Portugal	174	50	288	41	573	38	1 036
Suomi/Finland	169	37	1 047	54	-	-	1 216
Sverige	19 560	350	4 874	81	-	-	24 434
United Kingdom	-	-	-	-	-	-	-
EUR 15							
Island	-	-	-	-	-	-	-
Norge (1)	923	48	1 239	41	-	-	2 162
EEA							
Schweiz/Suisse	1 129	8	6 141	40	-	-	7 270

(1) In percentage of gross premiums earned.

(2) Including health insurance.

(3) In percentage of direct gross premiums written.

Source: Eurostat

87.3 million ECU for all life and non-life insurance companies, which implies a growth of more than 9%.

In premium income, Allianz (D) was the largest EU company in 1994 with a total value of 34 billion ECU. Allianz was followed by UAP, GAN and AXA (F) with premium incomes of 29.1, 19.9 and 18.8 billion ECU, respectively. Generali (I), Münchener rüch (D) and the Belgian/Dutch group Fortis followed at a distance with respective values of 17.4, 16.4 and 16.2 billion ECU. Prudential is the largest UK-based company with a total premium income of 15.3 billion ECU in 1994.

### Strategies

Since the passing of the Single European Act in 1985 most of the leading European insurers have averaged in a series of mergers and take-overs within the EU. Many companies now operate in several other EU countries other than their home base.

Underlying the acquisition strategies of many insurers is the belief that owning an established firm is the only worthwhile approach for market entry on other European markets. Insurers fear that the tax treatment of investment in different countries (which is not covered by the new rules) will still favour certain kinds of products, especially those which are already provided by local companies. Another potential barrier to entry is the caveat in the new European regulations that allows countries to restrict the sale of some policies in the "common good". This could encourage the protection of national firms by Member States.

Although cross-border moves through mergers continue, the implementation of the third generation directives may reduce the need to use mergers and acquisitions as a toll of expanding

cross-border operations. Although these directives imply the freedom to provide services anywhere within the EU, not all the obstacles in the regulatory environment have been removed. Also large differences in market characteristics between national markets still complicates market entries without using a merger or acquisition. The third generation of insurance directives not only offers EU companies more and better possibilities to operate internationally within the EU, but they also pave the way for non-EU insurance companies.

The third generation directives have also paved the way for a series of take-overs and mergers between banks and insurance companies. Through these take-overs the phenomenon bancassurance has emerged in recent years. Bancassurance offers advantages in the distribution of insurance products, but also on the product side itself as the access to a large volume of customers at low costs can be established. Through the emergence of bancassurance a clear distinction between insurance companies, banks and bancassurance companies cannot be made anymore. The need for such a distinction is also fading as the financial companies increasingly focus on products, markets and their combinations.

Major EU insurers may be able to prevent entry of new competitors in some markets if they move quickly enough to adopt the new selling routes, but an alternative possibility is that cross-border market entry will occur from firms experienced in telephone-based sales from their own national market. Rapid penetration into EU markets based on telephone sales can also be achieved by non-EU suppliers of insurance services.

Continued rationalisation in the number and size of smaller insurance companies seems inevitable in the single market. The larger firms are expected to extend the range of their

operations to all members states and are likely to win market share from smaller nationally-based competitors, or achieve through take-over of the same.

## REGULATIONS

In July 1994 the third generation of insurance directives (92/49 for non-life insurance and 92/96 for life insurance services) came into force. These directives seek to provide a single structure for business conducted either on an establishment or on a cross-border basis. It means that personal insurance policies can be freely sold throughout the European Union. The most significant feature of these directives is the attempt to move the regulatory focus from host-country control to home-country control. The acceptance of the principle of a single licence represents an important breakthrough and should facilitate the European integration. These directives are supported by the implementation of the Insurance Accounts Directive. More standardised accounting systems give confidence to the regulatory authorities within the Member States to operate within the single licence principle.

The new directives are important to insurance companies not just because they increase the potential for cross-border business, but mainly because they are accompanied by changes which more directly address competition policy within Member States. The minimum price restrictions, for instance, are phased out and some national regulations are removed. The consequence is a major deregulation of the market. Furthermore, there is greater freedom for investment policy, which is important for product innovation in the areas of life insurance and pensions.

Still, a complete free Single Market has not been reached yet. In addition to the persistence of serious obstacles for cross-border activities insurance intermediaries, one of the most important arguments for life insurance are the applicable fiscal regulations. These regulations are not yet harmonised. With respect to life insurance contracts, national laws often only contain fiscal advantages for contracts with domestic insurers or branches of foreign insurers. These fiscal differences (and difference in indirect taxation) have to disappear if a free Single Market is to be established. Especially in non-life insurance, the freedom to provide services in other EU Member States is further hampered by the absence of precise EU criteria to draw a clear distinction between freedom of establishment and freedom to provide services.

Recent legislative developments include the Directive to reinforce the prudential supervision of financial undertakings. This Directive envisages a series of measures intended to ensure better transparency of financial groups and prevent fraud. The European Commission further submitted a proposal for a directive on the supervision of insurance undertakings which are part of an insurance group, intended to ensure supervision, transparency and solvency of pure insurance groups.

## OUTLOOK

Although some obstacles still have to be overcome, the third generation EU directives will stimulate cross-border activity within the EU and further contribute to the creation of a single insurance market. Insurance companies have already anticipated the single market by taking over existing insurance companies. Mergers and acquisitions are expected to continue, though to a smaller extent than in the early 1990s.

The newly adopted directives will further encourage competition and stimulate cost-efficient company operations. Therefore attention is still focused on improving operating performance. The rapid developments in information technology and telecommunications will play a major role in achieving more efficient operations.

In the coming years, gross premium income is expected to increase at the same rapid pace as in recent years. This continuing growth is motivated by the economic recovery, the still relatively undeveloped European insurance market, and the market stimulance by the newly adopted directives. In addition, insurers will try to further develop the insurance markets in Southern Europe and the Eastern Europe.

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# Health insurance

## NACE (Revision 1) 75.3

*Structural reforms and cost-containment efforts in the health care systems of several European countries have over the last decade introduced new mechanisms of financing and fund allocation. Budgetary restrictions are being imposed upon all actors in health care, making them more financially responsible for their attitude. Health insurance carriers, in particular, are assuming a crucial role in meeting the objective of efficient health care delivery. In this context, new fund allocation systems devised by national health authorities are seeking to create a more level playing field between health-care actors by compensating for the risk structures of different insured groups. Competition-driven reforms like these are certain to change financial mechanisms as well as relations between insurers, providers and patients.*

*European legislation is of growing concern to national health-care policy makers. There are fresh problems to be solved, such as the mutual recognition of diplomas and the free settlement of medical providers across the EU, single-market access for health insurers, free trade in medical goods and the free movements of patients. The partial relevance of EU rules for national health-care sectors has thrown a spotlight on the structure and function of national social security schemes as a whole.*

### INDUSTRY PROFILE

#### Description of the sector

The NACE classification defines the insurance sector as embracing all units "exclusively or primarily engaged in insurance," i.e. converting individual risks into collective risks.

Health insurance is an example of non-life insurance which includes, according to the EU's insurance directives, assets or liability insurance covering either individuals or organisations.

**Table 1: Health Insurance**  
Accident & health compared to total of non-life direct gross premiums written, 1993 (1)

(%)	Accident and health
Belgique/België	8.58
Danmark	18.78
Deutschland (2)	29.41
Ellada	N/A
España	20.08
France	20.37
Ireland	3.44
Italia	14.59
Luxembourg	N/A
Nederland (3)	45.01
Österreich (2, 4)	26.20
Portugal	27.38
Suomi/Finland	22.05
Sverige	3.91
United Kingdom (5)	7.20
EUR 15	19.43

(1) Including business of composite insurance enterprises.

(2) Direct gross premiums earned.

(3) Direct net premiums written.

(4) Excluding accident insurance with premium return/estimate.

(5) Gross premiums written, including reinsurances accepted.

Source: Eurostat

So far the EU's diverse social insurance systems have mainly remained under the jurisdiction of individual Member States. In addition, the European national health system is largely run by the public authorities.

#### Recent trends

The rising cost of health care has been recently one of the main concerns of society everywhere. The problems in common include growing demand for medical treatment, the ageing of populations, the high cost of new drugs and medical technologies, and tighter limits to funding. Thus, in the struggle to contain costs, the organisations that finance medical treatment have restructured and competed for the favour of their clients.

#### Foreign trade

As the EU's diverse social insurance systems mainly remain under the jurisdiction of individual Member States, foreign trade in the European sector of health insurance has been limited so far. However, higher cross-border mobility of citizens in Europe will probably increase its intensity in the future.

### MARKET FORCES

#### Demand

Demand for health insurance is influenced by the degree of risk with respect to sickness and maternity. Thus, improvements in living standards emerge as an essential factor in the shifting patterns of non-life insurance consumption.

Additionally, as consumers have greater access to medical information they are becoming more conscious of the wide range of products and services which are offered in the insurance industry. As the number of product varieties increases, the need for independent advice is also growing. This trend is reflected in a growing importance of independent intermediaries.

#### Supply and competition

The supply of insurance within Europe has traditionally been dominated by domestically owned insurance companies. Domination on a European scale used to be difficult as many

**Table 2: Health Insurance**  
Gross claims incurred as % of direct gross premiums written, 1993 (1)

(%)	Accident and health
Belgique/België	71.00
Danmark (2, 3)	88.07
Deutschland	64.89
Ellada	-
España	71.80
France	86.32
Ireland	44.44
Italia	70.79
Luxembourg	N/A
Nederland	101.14
Österreich (4, 5)	72.05
Portugal	64.42
Suomi/Finland	82.90
Sverige	98.09
United Kingdom (2)	-
EUR 15	N/A

(1) Including business of composite insurance enterprises.

(2) Including specialist reinsurance.

(3) Claims paid.

(4) Gross premiums earned.

(5) Excluding accident insurance with premium return/estimate.

Source: Eurostat

insurance schemes were comparatively standardised products, leaving little opportunity for product differentiation.

The health-care systems of practically all Member States today feature competitive elements. These include private (doctors and hospitals), commercial health insurers, not-for-profit health funds offering both compulsory and complementary health-care coverage, and private enterprises which develop, manufacture and market drugs and medical appliances.

Thus, competition is being cautiously introduced into national health-care services throughout the European Union. As this trend grows, it is posing a challenge to solidarity, a cornerstone of Europe's social insurance systems. Solidarity-based health funds increasingly recognise competition as an instrument for containing costs and improving the quality of services. However, solidarity-based health insurance is a not-for-profit business committed to providing universal access to care. Rather than selecting risk, it seeks in the name of social cohesion to share it throughout the insured population. The social mission of this type of insurance is hard to reconcile with conventional principles of competition in free markets.

In order to ensure fair competition between health insurers and to allocate funds according to needs, the varying risk structure of different insured groups is a key factor. A search is under way in many countries to find the best risk-factor accounting formula that both provides sufficient means to cover health care expenses for the insured population and offers health insurers enough financial incentives to use available funds efficiently. In other terms, new fund allocation systems devised by national health authorities are seeking to create a more level playing field between health-care actors by compensating for the risk structures of different insured groups.

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## INDUSTRY STRUCTURE

### Categories of health financing

One of the main features of the health services sector which distinguishes it from other service sectors is the source of revenue. There are four main sources of revenue for the service providers: the public health insurance system, private health insurance, personal incomes and government subsidies. Within the EU, it is public spending on health which accounts for the lion's share of total expenditure on health.

Public health funds are collected through sickness fund agencies (such as *ziekenfondsen* in the Netherlands or the *mutuelles* in Belgium), through national insurance contributions or from taxation. In contrast, private insurance is paid by people who opt for additional or alternative coverage to national health provision, or who are excluded from coverage by the national health system because of a too high income level (as in Germany) or other reasons.

Other sources of revenue for the health sector are non-reimbursable contributions made by patients directly to the health provider. These payments can be relatively important but are not necessarily correctly assessed in overall health spending statistics. Another problem in terms of statistical reporting arises from the fact that in some countries it may not be necessary to make payments for most health services, whereas in others payments must first be made by the patients or their relatives and then be reclaimed through sickness funds.

On average, however, the share of total health spending which is financed by the public sector within the EU has stabilised around 78%, the rate of reimbursement being close to 90% for hospital services and much lower for pharmaceutical products.

Not surprisingly, the organisation of the "supply-side" of the sector partly reflects the organisation of revenue by origin, in that in the countries in which national health systems are

most developed, the share of "public-owned" or "public-operated" health services is higher. This is typically the case of the UK and Denmark.

### Strategies of companies

The recession in the early 1990s had an adverse impact on profitability which in turn has made management look more carefully at their costs, particularly staff costs, because of the labour-intensive nature of the business. This growing attention for cost-efficiency is further stimulated by the integration of the European insurance markets. The intensifying competition is resulting in a pressure on tariffs and a search for cost savings.

The cost saving strategies concentrate on internal processes, entailing the introduction and development of cost-efficient administrative procedures, and on distribution costs. Thus, in terms of production process an increasing number of modern techniques such as electronic-mail, Internet and on-line information services have been introduced.

Besides, activities of mergers and acquisitions have recently increased. European companies of health insurance tend to regroup themselves into larger units. Consequently, the number of European companies of health insurance tends to decrease.

### Impact of the Single Market

The EU's diverse solidarity-based social insurance systems remain under the jurisdiction of individual Member States. The European Commission clearly acknowledged this in its July, 1992 recommendations on convergence of social protection (92/441 and 92/442). The social protocol to the Maastricht Treaty also states that voting by the Council of Ministers on social security matters is to remain governed by the principle of unanimity. Member States are in general very reluctant to transfer their prerogative in social protection to EU authorities. Thus perceived, the EU's role is one of co-ordination of national systems only in specific cases - for example, in matters of cross-border health insurance and pension rights.

However, the different national social insurance systems cannot remain unaffected by the European integration process. Indeed, inevitable changes are already underway. National governments are reshaping their social policies to the EU's economic convergence criteria. Free circulation and equal treatment are raising new challenges to national social insurance systems. Nowhere is this more true than in health care, where a broad variety of self-governing organisations (in particular, not-for-profit mutual benefit societies) are actively engaged in both providing and insuring health-care benefits.

Moreover, the complex mixture of private and public elements in the health-care systems of Member States is one of the reasons why Europe-wide harmonisation of social insurance remains impracticable.

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## REGULATIONS

### Belgium

In theory, all Belgians have health coverage through social security. Social insurance has two general schemes: for paid workers and for self-employed. Self-employed have the choice of whether they wish to have full or partial coverage.

In order to be covered against sickness and invalidity risks, employees should join a mutual insurance fund or register with a regional office of the auxiliary sickness and invalidity insurance fund. Both are called sickness fund.

### Contributions

The social security (public insurance) system is itself financed by contributions from employers and employees and by State subsidies. In addition, the insurance fund may ask the employee to pay for supplementary voluntary insurance cover.

### **Health benefits**

Primary health is paid for (and reimbursed by the insurance) on a fee-for-service basis:

- In principle, the sickness fund reimburses 75% of the fees paid for health services such as consultations and visits to general practitioners and specialists in medical and dental treatment, nursing care;
- For pharmaceutical products obtained with a prescription, a fixed charge (Bfrs 50) has to be paid per prescription.
- A fixed sum upon entering hospitals must be paid. Thereafter, a small fixed amount towards the cost of each day spent in hospital has to be paid;

Where their income is lower than a certain limit, certain categories of persons (widows, invalids, pensioners, orphans) are reimbursed at a higher rate for the majority of benefits. In case of poverty or insolvency, health is provided by social assistance centres.

### **Cash sickness benefits and maternity benefit**

The cash sickness benefit consists of a sum equal to 60% of the previous wage or salary during the first year of incapacity for work and after that an invalidity benefit is allocated.

Pregnant women are entitled to maternity leave for a period of 15 weeks and the amount of maternity benefit is 75-80% of salary depending upon qualification.

### **Luxembourg**

The public health system in Luxembourg is organised through a national compulsory social security scheme. There are nine different insurance companies.

### **Contributions**

The insurance system is financed by assessments from employers and employees, and by contributions from the State.

### **Health benefits**

Primary health is paid directly by the patients, who are then reimbursed by the insurance company.

The benefits in kind concern the following health care services: medical and dental treatment, paramedical treatment, laboratory tests and investigations, dentures and orthopaedic prostheses, medicines, aids and appliances, stay in hospitals, therapeutic treatment and convalescent care, travel and transport expenses.

The reimbursement of these benefits is equal to the amount of 80% of the cost of medicines. Certain non-essential pharmaceutical products are reimbursed at a rate of 40% and costs which exceed what is strictly necessary are not refunded.

### **Cash sickness benefits and maternity benefit**

The cash sickness benefit is awarded for up to 52 weeks from the first day of illness and the rate of sickness benefit corresponds to the patient's earnings.

To compensate for expenses incurred in connection with childbirth, a lump sum is awarded for confinement and a maternity allowance is awarded for eight weeks before and eight weeks after confinement. The rate of this allowance corresponds to the earnings the woman concerned and is not paid as long as the employer continues to pay the woman's wage.

### **Denmark**

In Denmark, public health schemes cover the entire population and only allow for limited private insurance schemes, in connection with user payment (in the area of medicine and dentistry). About 85% of the financing of the Danish national health service comes from general taxation.

### **Contributions**

The contributions from employees and employers are set at a percentage of salaries, rising from 5% in 1994 to 8% in 1998. The contributions from self-employed persons are set at a percentage similar to that for employed persons.

### **Health benefits**

The health service contributes towards the cost of a large number of medicines, various kinds of preventive dental care and treatment, and physiotherapeutic treatment provided by a recognised physiotherapist on referral by a doctor.

In a first group of persons the health service pays for the services provided or bears a part of the cost in accordance with the rates agreed between the health service and the medical associations. In a second group of persons the fees charged by the doctor have to be paid.

### **Cash sickness benefits and maternity benefit**

The employee is entitled to cash sickness benefit from the first day of sickness, if the patient fulfils certain criteria. Payments are linked to the hourly earnings to which they have been entitled if they had not fallen ill, up to a maximum level of benefit which is linked with the average wage level in Denmark. The payment of benefit is discontinued after it has been paid for more than 52 weeks in the previous 18 months.

Women resident in Denmark are entitled to free maternity care. The services provided include preventive medical examinations, confinement in hospital or at home, attendance by a midwife in the case of home confinement, as well as free transport to and from such examinations or hospital. The amount of benefit is calculated in the same way as for cash sickness benefit. Cash benefits for childbirth or adoption are paid by the local administration.

### **France**

Almost every person in France is covered by health insurance. The financing of the health system is based on the principles of national solidarity and mutualisation. There are, however, different schemes reflecting a persisting degree of corporatism. As in Belgium, thus, some workers pay additional health insurance schemes to have full reimbursement for all services.

The major portion of health costs is paid by the Social Security system, the remaining part being covered by the individual or by optional mutual insurance schemes. The system itself is funded by compulsory contribution from the employees and their employers.

### **Contributions**

A social security contribution calculated as a certain percentage of the earnings has to be paid. The employer deducts this contribution from the earnings and pays it to the authority which is in charge of collecting social security contributions.

### **Health benefits**

Employed and unemployed persons and pensioners, as well as their dependants, are entitled to medical treatment if they satisfy the following conditions:

- either contributions at least equal to 60 times the SMIC ("salaire minimum de croissance", the index-linked statutory minimum wage per hour) on the earnings received during the calendar month before receiving treatment must have been paid; or
- at least 60 hours of work as an employed person during the month before receiving treatment must have been done; or
- contributions equal to 120 times the SMIC on the wage received during the first three calendar months before receiving treatment must have been paid; or

- at least 120 hours of work as an employed person during the last three calendar months before receiving treatment must have been done.

The fixed charges which have to be paid are the following: hospital charges: 20%; doctor's fees: 25%; paramedic's fees and charges for laboratory tests: 35%; medicines with the blue "vignette": 60%; other expenses, including transport costs: 30%.

Apart from the charges paid by the patient, the fees are reimbursed at standard rates by the sickness fund.

#### **Cash sickness benefits and maternity benefit**

Cash sickness benefits are given for a basic period of up to six months from the day when the illness has started, if the patient has paid a certain level of contributions. Benefits are given beyond the initial six-month period are possible if contributions meet those required.

The daily sickness allowance is equal to half the average daily earnings during the month before the application for it, but may not exceed a fixed amount. The daily allowance rate may be increased with the existence of dependants.

Maternity insurance include medical treatment for the mother and child, as well as a cash benefit during the incapacity for work caused by maternity. Insured persons must have been insured for at least 10 months before the expected date of confinement.

The daily allowance amounts to 84% of the average daily earnings during the last month before going on maternity leave, up to an upper limit.

#### **Germany**

Approximately 90% of the population is insured under GKV, the statutory health insurance system which covers all the low and medium income earners. High income earners may join voluntarily. In practice, the rest of the population (approximately 10% or seven million) are either privately insured or receive supplementary benefits with automatic health insurance coverage.

#### **Contributions**

The amount of the contribution is determined as a certain percentage of the earnings. Half of the contribution has to be paid by the employee, while the employer pays the other half. However, for self-employed or voluntarily insured persons the full amount of contributions have to be paid.

The contribution rate for sickness insurance is, on average, 14% of the earnings up to a certain limit fixed each year. The contribution rate for long-term care insurance is 1% from 1 January 1995 and 1.7% from 1 July 1996. Half of the contribution is paid by the employer, except for self-employed persons.

#### **Health benefits**

Treatment is provided by doctors or dentists recognised by the sickness funds, more than 90% of all established medical practitioners.

Medicines are available on prescription from a sickness fund doctor and can be obtained from all dispensing chemists. As a rule, the chemist must be paid between DM 3 and 7 for each medicine prescribed. Medicines taken for certain illnesses such as the common cold or influenza must be paid in full by the insured person.

The sickness fund normally assumes financial responsibility for the cost of spectacles and other aids and appliances up to the limit of a fixed amount.

Fees charged by dental technicians and dentists for dentures and crowns are reimbursed by the sickness fund to an amount of 50% of the approved rates. This refund percentage will

be increased by a further 10% if preliminary examinations are undergone every year.

The sickness fund will pay for the necessary domestic nursing care as well as for the medical treatment, where it is not possible to hospitalise the patient. In principle, entitlement to domestic care is limited to four weeks per case of sickness.

For up to 14 days per calendar year, a small fee (DM 12) must be paid for each day in hospital. As long as the insurance exists, there is no restriction on the duration of stay in hospital. If the insurance cover ends while services are still being provided, the liability of the sickness fund to pay for benefits provided ceases one month after the date on which insurance cover ceased.

As a rule, the employer will continue to pay the wage or salary during the first six weeks of incapacity for work.

Sick persons whose wage or salary is not paid or is no longer paid by their employer are entitled to cash benefit payable by the sickness fund. The amount of benefit is 80% of the last regular wage or salary, but it may not exceed the last regular net earnings.

#### **Cash sickness benefits and maternity benefit**

Cash sickness is paid up to the end of the certified period of incapacity for work. For one and the same illness, however, the cash sickness benefit cannot be claimed for more than 78 weeks during a period of three years.

All women entitled to Health benefits are also entitled to comprehensive health benefits during pregnancy and after delivery.

Apart from benefits in kind, maternity allowance is paid for six weeks before and eight weeks after confinement. The amount is dependant upon the wage or salary and will not exceed DM 25 per day. If the insurance cover does not give you entitlement to maternity benefit, a confinement benefit to the amount of DM 150 will be allowed.

#### **Greece**

Approximately 95% of the population is covered by an insurance fund. In total, there are 80 funds providing health coverage, four of them being particularly important. Voluntary hospitals and private clinics are licensed to provide additional health services.

Most of the expenses on health are reimbursed by the State.

All employees in Greece have to be insured with a governmental insurance organisation. Nevertheless, since the quality of services offered by the public sector is not always up to expectations, patients frequently contribute out of pocket expenses for private care or rely on supplementary private insurance.

#### **Contributions**

The full amount of the social insurance contribution is paid by the employer, after which he will deduct the employee's part from his earnings.

#### **Health benefits**

The following benefits in kind are available: medical treatment, medicines, hospital treatment, paraclinical examinations, therapeutic treatment, ordinary and special aids and appliances (including prostheses), and medical baths.

These benefits are granted from the beginning of the illness for so long as the sick person continues to be entitled to benefit.

The share in the cost of treatment is determined in accordance with the Institution for Social Insurance, but in no case may it exceed 25% of the total cost.

In order to be entitled to benefits in kind, at least 50 days of work must have completed during the calendar year preceding the day on which illness has been reported, during the calendar year which ended three months before that day. A "day of work" is a day of employment or a day of insurance (for example, days of annual paid leave).

#### **Cash sickness benefits and maternity benefit**

Cash sickness benefit normally amounts to 50% of the reference wage of the category of insured persons. The basic rate of benefit is increased by 10% in respect of each dependant family member; up to a fixed maximum. Cash sickness benefit can be paid for each particular illness for a maximum period of 182 days.

Maternity benefits are granted on the birth of a child. The birth grant consists of a flat-rate sum paid on the birth of a child.

The amount of maternity allowance is the same as that of cash sickness benefit, including the appropriate increases in respect of dependants. However, the maternity is not limited to a maximum amount.

#### **Ireland**

Ireland's national health system is financed from taxation and from the government's Health Insurance Scheme. One fifth of the population is covered by additional private health insurance. The Department of Health allocates funds to the eight boards which provide health services on a regional basis.

#### **Health benefits**

There are two categories of eligibility: people with full eligibility and people with limited eligibility.

The first category consists of people who are unable to afford general practitioner services for themselves and their dependants. Income guidelines are available to determine a person's eligibility. The guidelines are increased each year.

The following services are available to them: general practitioner services, all in-patient hospital services in public wards, specialist services in out-patient clinics, dental services, ophthalmic and aural services, medical and surgical appliances, dental appliances, optical and aural appliances, maternity care and infant welfare services, and a maternity cash grant for each new-born child.

The second category is composed of anyone who does not have full eligibility for health services. They are entitled to health services subject to certain charges and to a refund of expenditure on drugs and medicines above a specified limit.

Besides, all persons ordinarily resident in Ireland are entitled to the following services free of charge: hospital services for children suffering from specified long-term illnesses, drugs and medicines for persons suffering from specified disabilities, and diagnostic and preventive services in hospital for infectious diseases.

In this scheme, the treatment benefits are the following: dental benefits (dental treatment and supply of dentures), optical benefits (sight testing and supply of spectacles), and supply of hearing aids and contact lenses.

They are available to insured people satisfying the necessary contribution conditions and to their dependant spouses. However, a part of the cost of treatment or appliances will be required to be paid.

To be eligible for treatment benefits, the following conditions must be fulfilled: 260 weeks of PRSI (pay-related social insurance) contributions must have been paid since first starting work if the insured person is aged 25 or over; the income earned in the governing contribution year must be below a fixed maximum; 39 weeks of PRSI contributions must have been paid by the employee in the tax year on which the claim

is based. Exceptions are made for young persons and those near retirement age.

#### **Cash sickness benefits and maternity benefit**

Disability benefit is paid weekly to insured people during periods of incapacity for work. It may be replaced by injury benefit if the incapacity results from an accident at work or an occupational disease. To be eligible for disability benefit, people must be unfit for work and must satisfy the contribution conditions.

Maternity benefit may be payable to women who are in employment which is covered by the Maternity Protection of Employees Act of 1981.

It is payable for a period of 14 weeks, four of which must be taken before and four of which must be taken after the date on which the baby is due. The amount paid is 70% of the woman's earnings in the relevant income tax year, subject to a fixed minimum and maximum weekly payment.

#### **Italy**

The Italian National Health Service (NHS) came into being in 1979, replacing a sickness fund service. The health services are financed by government funds other than taxation, and by general taxation. In effect, there are four financing mechanisms: each independent work or employee must pay in a set quote. Each employer, whether public or private, must pay an additional sum for each of his employees. A surtax is paid by independent workers which is called the health tax. Any additional sum needed is covered by the national government.

Many Italians are increasing their health coverage through private insurance. There are approximately 1.5 million private policies providing cover to approximately 3.7 million people. Access to health services is available regardless of financial or insurance status of the client.

#### **Health benefits**

All Italian nationals resident in Italy, as well as foreigners working in Italy and their dependants, are entitled to health benefits. These benefits are: treatment by a general practitioner at home or at his surgery, specialist paediatric and obstetric/gynaecological treatment, specialist treatment (including dental treatment) in public out-patient departments and in private out-patient departments which have concluded an agreement with the National Health Service, and medicines and drugs.

Health benefits are provided for an indefinite period and are usually provided directly - where treatment or medicine is provided free of charge by the local health unit or by authorised doctors or chemists. Indirect provision is also possible and means that the patient initially pays the cost of benefits received and is subsequently reimbursed.

General medical assistance is provided directly at the general practitioner's surgery at which the patient is registered or at the patient's home if he is confined to bed.

Pharmaceuticals products are provided directly on production of the medical prescription to the dispensing chemist.

Most medicines are listed in the treatment manual. Some medicines are free of charge; those intended for the treatment of emergency situations, high-risk illnesses and serious conditions which require long-term treatment. In respect of other medicines, a fixed charge is payable for each medical prescription. If a doctor prescribes a medicine which is not included in the treatment manual, the total cost must be borne.

Specialist treatment is provided directly by out-patient departments of the local health unit or at private establishments which have concluded a contract with the health service. Per-

sons receiving treatment are required to pay part of the cost of diagnostic and laboratory services.

Hospital treatment is provided free of charge at hospitals and at private clinics which have concluded an agreement with the health service.

Supplementary benefits are generally provided indirectly by reimbursement of part of the cost. They are restricted to the provision of hydrothermal treatment, specified prosthetic and orthopaedic treatment, and certain treatment facilities.

#### **Cash sickness benefits and maternity benefit**

Cash sickness benefit is payable from the fourth day of sickness onwards, for a maximum of 180 days per year. Up to the 20th day of sickness, it amounts to half the average overall daily earnings and after this date, the daily allowance is increased to two thirds of the average overall daily earnings.

Maternity benefits comprise of medical treatment and cash benefits. A daily allowance is granted by the National Social Welfare Institution via the employer during statutory maternity leave (two months before the expected date of confinement and three months after confinement), amounting to 80% of the average overall daily earnings. For a six months cessation of work, after the birth, the daily allowance amounts to 30% of the previous earnings.

#### **The Netherlands**

Health in the Netherlands is decentralised and organised to a large extent by sickness funds and local authorities. At present, there are more than 70 sickness funds. Not every person has the same rights concerning coverage. Persons with above average income for example are not entitled to full reimbursement by the national system. Private insurance is available for those not covered by the general federal programme. Regarding payments, fees and costs of products must be paid by the patients, but most are recoverable from the sickness funds retrospectively. Reimbursement rules also vary from one locality to another.

Public and privately owned hospitals operate under the same conditions. A part of their budget is provided by the Ministry of Health, and the rest comes from reimbursement given by the sickness funds.

As a rule, all employed and self-employed persons are insured. Self-employed, however, do not receive cash benefits under the sickness insurance scheme and are not covered by sickness fund insurance. They can, however, take out voluntary insurance against sickness if their income does not exceed a certain amount.

#### **Contributions**

The employer pays the contribution due under the various laws on social security. The part of the contribution to be paid will be deducted from the salary. If social security benefits are received, the insurance institution may in some cases deduct insurance contributions from these benefits. Except for sickness fund insurance, all sums are collected by the tax authorities.

For sickness fund insurance, the contribution is paid directly to the sickness fund where the registration has occurred.

#### **Health benefits**

Medical services are covered by two different insurance schemes which complement each other: the sickness fund insurance and the insurance against special sickness costs. The latter is based on a law called "Algemene Bijzondere Ziekkosten" and is therefore known as AWBZ.

In principle, the sickness fund insurance covers employees if their salaries do not exceed a certain fixed amount for the year in question. As a rule, the cover provided by the sickness fund insurance will continue after the age of 65 years.

Once registered with a sickness fund, the employee is entitled to medical care. Persons insured under the law on sickness funds are entitled, inter alia:

- to general medical treatment, surgical treatment and dental treatment. They are entitled to treatment from the general practitioner or dentist with whom they are registered;
- to a stay in hospital for treatment. The cost of treatment for the first 365 days is borne by the sickness fund insurance, thereafter these costs are borne by the AWBZ;
- to transport charges. The transport of sick persons by ambulance on medical advice is free.
- Persons insured under the AWBZ are entitled, inter alia:
- to a wide range of medicines. For each type of medicine, at least one brand is free of charge; while for some more expensive equivalent products, however, a fixed charge towards the cost may have to be paid;
- to aids and appliances - either on a permanent basis or on loan. For some of them, a fixed charge is to be paid.

The AWBZ further covers costs in relation to treatment, nursing and care in the case of long-term sickness or serious disability.

#### **Cash sickness benefits and maternity benefit**

The cash sickness benefits are payable by the professional or trade association to which the employer is affiliate. Cash sickness benefits amount to at least 70% of the wage or salary, limited to a certain maximum. Cash sickness benefits are provided for a maximum period of 52 weeks, after which people are covered by invalidity insurance.

Women are entitled during pregnancy to maternity benefits which equal the full daily wage, during their 16-week period of leave. If, after this, they are still incapable of working as a result of the pregnancy, the same benefit will be paid for a maximum period of 52 weeks.

#### **Portugal**

Social security cover is provided through the National Pensions Centre and the regional social security centres. However, the award of health care benefits is the responsibility of the health centres, which form part of the national health system and not of social security proper. The Portuguese health system is largely run by the public authorities.

#### **Contributions**

Under the general scheme of social security for employed persons, the employer is required to remit every month to the regional centre 35.5% of wages, of which 11% is payable by the employee. Self-employed workers have to pay contributions amounting to 25.4% if they are covered only by the compulsory scheme, or 32% if they have opted for the wider scheme.

#### **Health benefits**

Health benefits cover preventive and medicinal care, including general medical consultations, specialist consultations and home visits, treatment in the event of illness, additional diagnostic services, specialist treatment, pharmaceutical products, additional medical equipment such as spectacles, artificial eyes and dentures, hospital treatment, etc. Health benefits are granted for the duration of the illness, without a time limit.

A fixed charge towards the cost of most kinds of medical treatment has to be paid, and for each consultation (whether in a health centre or in hospital) and each additional diagnostic investigation. All costs exceeding the fixed charges are for the account of the health service.

By way of exception, however, a considerable number of people are exempt from payment of the fixed charges, in-

cluding pregnant women and nursing mothers, children up to the age of 12, registered unemployed persons and their dependents, employees receiving a monthly income of not more than the national minimum wage and their dependents, most persons who are disabled of have an incurable or long-term disease, and persons receiving a lifetime monthly allowance.

Furthermore, there are no fixed charges for admission to and treatment in hospitals and in-patient units of health centres.

Medicines prescribed by the bodies which provide health care may be purchased at any pharmacy on presentation of a prescription. The State bears a certain percentage of the cost of each medicine, while the rest must be paid by the patient. The percentage paid by the State depends on the classification of each particular medicine in one of three scales and ranges from 40 to 100%.

As far as additional medical equipment and prostheses (such as spectacles) are concerned, the health service contributes to their cost up to a specified amount, according to specified percentages and conditions.

#### ***Cash sickness benefits and maternity benefit***

In case of absence from work for a reason which is not caused by an accident at work or an occupational disease, the insured person may be eligible for a sickness allowance. To qualify for the sickness allowance provided, certain contributions should have been made. The daily amount of sickness allowance is 65% of the daily average earnings. If the period of incapacity lasts more than 365 consecutive days, the percentage is increased to 70%.

The birth or adoption of a child, as well as absence from work in order to look after children, can provide entitlement to a certain number of benefits. In order to be entitled to these cash benefits, a qualifying period of six months of paid employment must have been complete. Maternity allowance is paid for 90 days, paternity and adoption allowances for 60 days and is 100% of the average earnings.

#### **Spain**

The core of the system is the national health insurance scheme which covers approximately 97% of the population. Participation is compulsory for wage earners. The social security system can contract services of other public and private hospitals as supply is not sufficient to meet demand, such that there is a strong private system which provides secondary cover to millions of people.

#### ***Contributions***

The amount of social security contributions in respect of each worker is calculated as a percentage of the contribution basis. The contribution rates tend to change annually.

In the general scheme, the contribution basis corresponds approximately to the actual salary of the employed person. There is, however, a minimum limit, equal to the minimum wage in the case of full-time employment, and a maximum limit, equal to slightly more than five times the minimum wage.

In the special scheme for self-employed persons, the persons concerned pay contributions only for non-professional risks such as sickness. The amount on which the contribution is based is determined by the insured person himself.

The employer pays both his own share of contributions and the employee's share. The latter is deducted from the gross salary of the employee in the same way as income tax is deducted.

#### ***Health benefits***

The right to medical treatment is acquired by a beneficiary and his/her spouse and children on the day on which he or she becomes a social security contributor.

Health benefits are provided only by the social security health network. Treatment in other health centres is as a rule not covered by social security insurance.

People can go directly, without referral, to a general practitioner, paediatrician, obstetrician, dentist or ophthalmologist. For other specialists, a referral note will be needed from the general practitioner.

Hospitalisation and emergency treatment and transport in an emergency health centre are also covered. In general, medical treatment is provided free of charge. However, psychiatric help and dental care are not covered in full.

Pharmaceutical products are provided free of charge to certain beneficiaries, notably pensioners and persons entitled to cash benefits owing to an accident at work or an occupational disease. Other beneficiaries must pay a certain part of the cost of medicines (as a rule 40% of the price of the medicament) themselves. Medicines provided in the course of treatment in hospital are free of charge for everybody.

The social security scheme covers surgical and orthopaedic prostheses and also mechanically propelled vehicles for disabled persons. It does not, however, cover artificial dentures or spectacles.

#### ***Cash sickness benefits and maternity benefit***

Under the general scheme, a cash benefit is paid to workers who are temporarily incapable of working.

The benefit is paid for a maximum period of 12 months, with the possibility of an extension for a further six months. In the case of maternity, the maximum period is 16 weeks, which can be extended to 18 weeks in the event of a multiple birth. At least six weeks' leave must be taken after childbirth.

The benefit amounts to 75% of the patient's salary. In the case of non-occupational illness or accident, the responsibility for payment rests with the employer from the start of the benefit until the 15th day, when the National Institution for Social Security assumes responsibility for the payments.

#### **United Kingdom**

The United Kingdom social security schemes include:

- the national insurance scheme, which provides cash benefits for sickness, unemployment, widowhood and retirement, etc.;
- the National Health Service, which provides medical, dental and optical treatment and which is normally available to people who live in Great Britain and Northern Ireland;
- the child benefit scheme, which provides a cash benefit for children;
- non-contributory benefits for certain categories of disabled persons.

#### ***Contributions***

Contributions to the National insurance scheme are divided into the following three main classes:

- If the earnings are above a lower limit the employee will pay class 1 contributions, which represent a percentage of the weekly earnings up to a higher limit and will be deducted from the pay;
- The self-employed persons must pay class 2 contributions, which are payable at a flat rate;
- For persons who are not liable for contributions, or who have been exempted from paying class 2 contributions, class 3 contributions are voluntary and only count towards basic retirement pension and basic widow's benefits. They are payable at a flat rate.

### **Health benefits**

According to medical care, family doctor and hospital services are provided free of charge without any national insurance qualification to persons (and their family) who are employed or seeking work in the United Kingdom or who are ordinarily resident there. Some charges towards the cost of medicines, dental services and certain appliances, as well as the full cost of spectacles, will normally have to be paid, although some persons are exempt from some or all of these charges. Nearly all doctors and opticians and many dentists take part in the National Health Service.

As doctors, dentists and opticians taking part in the National Health Service are free to treat patients privately and to charge them accordingly, the patient should ensure that the practitioner is willing to treat him under the National Health Service.

If hospital treatment or consultation to a specialist is needed, the doctor will arrange it for the patient, and no charge will be made.

### **Cash sickness benefits and maternity benefit**

Most people who work for an employer are entitled to Statutory Sick Pay (SSP) from that employer for a maximum of 28 weeks when illness makes them incapable of working. SSP is paid instead of State sickness benefit. Payment of SSP is made at one of two rates depending on what the average earnings were in a period before the illness.

If after 28 weeks or if he is not entitled to payment of SSP, the patient can claim State sickness benefit or invalidity benefit from the Department of Social Security applies.

Most pregnant working women can receive Statutory Maternity Pay (SMP) for up to 18 weeks and must stop work at least six weeks before the expected week of confinement.

Assuming the minimum level of National Insurance contributions, the first six weeks of SMP will be paid at 90% of the average weekly earnings, with a lower rate after this for up to 18 weeks.

Maternity Allowance (MA) may be payable if the woman cannot get SMP, is self-employed or has recently given up her job.

### **OUTLOOK**

No enterprising health insurer wants to turn his back on growing competition. Thus, in the future tighter, more innovative management will win more business, keep costs down and benefit the patient. However, special codes of conduct for health insurers will remain necessary to keep health care broadly accessible.

In this context, the recent trend followed by the new fund allocation systems devised by national health authorities, which is to create a more level playing field between health-care actors by compensating for the risk structures of different insured groups, is likely to continue in the future.

Besides, with higher cross-border mobility of citizens cross border health insurance will be more developed. Moreover, the degree of harmonisation between the different national systems social insurance in Europe is expected to increase.

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# Financial intermediaries

## NACE (Revision 1) 67

*Financial intermediaries have become more important during the last decade. One reason for this growth has been the rise in mergers and take-overs, which increased the demand for the services of financial intermediaries. Also the rise in supply of funds on the financial markets have stimulated the demand for their services. Financial intermediaries are more and more operating on the international markets partly caused by changes in regulation and partly caused by technological changes. The various changes in regulation have served to liberalise the provision of services and increased competition. The recent technological developments, enabling cross-border access to exchanges, have led to more liquidity and lower costs.*

### INDUSTRY PROFILE

#### Description of the sector

In this year's edition the new NACE (Rev.1) classification has been applied. Between the old and new NACE classifications no significant differences have been found, except that the old code has been changed from 831 to the new group code 67.

Financial intermediaries have a supporting function in the world's capital markets. They assist in the transformation of savings into investments and in the transformation of the portfolio of existing stock of capital. Their activities consist of the following activities: brokerage, advice, research, dealing in securities, market-making, clearing and settlement and more general organising the "marketplace". Stock exchanges, brokers, and large investment banks also operate in this industry. The financial intermediaries perform functions that are complementary to banking and insurance activities and also provide financial services in competition with banks and insurance companies. The liberalisation of capital markets since 1986 led to the emergence of sizeable financial intermediary groups. These groups are present in corporate finance, in stock markets and in collective savings management. Banks, and to a lesser extent insurance companies, are also active in those markets.

However, the distinction between financial intermediaries, banks and insurance companies is becoming more and more vague.

Because of this complication the following market forms will be described:

- money markets (short term instruments: call money, on-sight deposits, checking accounts) and capital markets (long term: securities, loans, mortgage loans);
- primary markets (issues of securities);
- regulated secondary markets (like stock exchanges) and non-regulated secondary markets (like over-the-counter markets, in which dealing takes place off the record);
- spot markets (operations and payments are carried out immediately) and forward markets (traded currency securities will be remitted later, and will be paid at the agreed time upon remittance of those securities).

The activities of financial intermediaries serve investors in equity, debt and derivative markets. By providing their services, financial intermediaries make the market for short and long-term securities and to a lesser extent loans. Nowadays a very large proportion of the investment banks activities consists of advice and assistance on (cross-border) mergers and acquisitions (M&A).

#### Recent trends

The London stock exchange market is by far the largest in Europe with a total of 2 209 listed shares (excluding the investment funds). The German exchange market, which is divided in three submarkets with Frankfurt as the main market, and Paris are good followers with 1 467 and 922 listed shares, respectively. In the majority of European countries, the number of companies listed has declined. A reason for this overall decrease may be related to the large number of mergers and acquisitions that have taken place. Noticeable is the large increase of new companies listed in Luxembourg. In 1994 the amount of listed companies increased by 25.3%.

At the end of the 1980s, the European equity turnover demonstrated growth. However, in 1991 a small decline in equity turnover had been spotted. Despite this small decline, the first years of the 1990s have been characterised by an enormous growth in equity turnover. During 1990-1994 the amount of equity turnover almost doubled and in the period 1988-1994

**Table 1: Financial intermediaries  
Stock exchanges, 1994**

	Number of companies listed (1)			Change 1994/93 (%)	Shares turnover (2) (million ECU)
	Total	Domestic	Foreign		
Bruxelles (B)	295	162	133	-3.0	13 557.3
København (DK)	252	242	10	-1.9	23 058.6
Deutschland	1 467	666	801	13.1	479 981.3
Barcelona (E)	335	331	4	-3.2	5 293.9
Bilbao (E)	267	266	1	-25.8	5 602.7
Madrid (E)	378	374	4	-0.3	46 160.3
Paris (F)	922	724	198	-1.3	170 025.0
Italia	260	256	4	0.4	100 472.4
Luxembourg	272	55	217	25.3	867.2
Amsterdam (NL) (3)	466	234	232	-3.3	71 741.7
Wien (A)	153	111	42	-1.3	7 355.6
Helsinki (FIN)	65	65	0	12.1	11 189.1
Stockholm (S)	229	218	11	11.7	72 435.1
London (UK)	2 209	1 747	462	-8.4	866 053.2

(1) Excluding investment funds.

(2) Including investment funds.

(3) Number of shares listed.

Source: FIBV



**Table 2: Financial intermediaries  
Medium-term borrowing facilities in the international capital markets**

(billion ECU)	1990	1991	1992	1993	1994	(2) 1995
Note issuance facilities (1)	3.4	1.5	1.2	1.3	0.2	1.2
Other committed facilities	2.1	4.7	3.9	5.7	3.9	1.1
Euro-commercial paper programmes	37.9	29.0	22.3	32.8	25.9	19.4
Euro-note programmes	12.6	34.9	75.4	96.7	186.8	201.1
Other non-underwritten facilities	1.5	0.9	0.8	0.3	0.1	0.3
Total	57.5	70.9	103.7	136.8	216.9	223.2

(1) Including multiple-component facilities.

(2) First nine months.

Source: OECD: Financial market trends

this amount almost tripled. Stockholm, Athens and the Italian exchange market were the largest stimulators of the 1994 increase.

Stock market capitalisation of the three most important European stock exchanges decreased sharply, especially the capitalisation of Paris and London, which declined by 10.04% and 9.61%, respectively, in 1994. The German exchange market has shown a minor decrease of 1.96%, although in the first two months of 1995 there was a small increase of 2.02%. The market capitalisation of Helsinki, Luxembourg, the Italian market and Oslo on the other hand have demonstrated major increases of 61.37%, 33.43%, 21.34% and 20.53%, respectively, in 1994, but all these high growth rates have been followed by decreases in the first months of 1995.

Also the European value of bond turnover has demonstrated an increase in 1994. The bond market in Madrid was responsible for the largest rise in bond turnover with a growth of 131.19%. Other bond markets which increased significantly were the Italian exchange market (71.78%), Stockholm (46.38%) and the Swiss exchange market (42.30%). Helsinki had the biggest loss, the value of bond turnover declined by 96.10%. The overall trend during the period 1988-1994 has been an increase, although the major boom took place in 1993. In 1993 its value of bond turnover was nearly 2.5 times larger than in 1988.

Mergers and acquisitions (M&A) activity in the USA has been high and the debt market has seen some benefits. But the predominant source of capital for European take-over activity has been shareholders equity rather than debt. For example, Europe's biggest take-over of 1993-4, Akzo's (NL) 2.65 billion ECU acquisition of Nobel Industries, was entirely equity based. What will underpin the debt market in the medium term is the market's ability to provide financing structures. The three main sources of demand for this type of financing will be M&A and restructuring, project finance and, more controversially, junk bond borrowers.

### International comparison

In the period 1989-1994, the market capitalisation of shares of domestic companies in Europe, Africa and the Middle East together increased by an amount of nearly 2%, but remained the same in 1994 compared to 1993. North America also demonstrated a significant growth of 4.2% during the same period. However, in 1994 a decline of 3.0% has been spotted. For the Asia-Pacific it has been just the opposite, a decline of 8.3% has taken place in the period 1989-1994, but the market capitalisation of shares of domestic companies increased in 1994 by 2.9%.

The development of turnover of shares by time zone has demonstrated a similar pattern as the development in market capitalisation of shares of domestic companies. No change in turnover value in Europe, Africa and the Middle East has

taken place in 1994. However, compared to 1989 the turnover value of shares by time zone increased by 5.5%. The growth of turnover value of North America increased in the period 1989-1992 by more than 20%, but a small fallback of 6% has taken place in the years after. A more drastic decrease in turnover value has been spotted in the Asia-Pacific region in turnover value in Europe, Africa and the Middle East has taken place in 1994. However, compared to 1989 the turnover value of shares by time zone increased by 5.5%. The growth of turnover value of North America increased in the period 1989-1992 by more than 20%, but a small fallback of 6% has taken place in the years after. A more drastic decrease in turnover value has been spotted in the Asia-Pacific countries during the period 1989-1994. The total turnover value declined from 49.2% to 27.0%. The Asia-Pacific region is definitely losing position in terms of share turnover value.

### Foreign trade

A substantial expansion of international activities has been made possible by deregulation and the revolution in communication technology. The resulting integration has broadened the choices of market participants: issuers have increasing access to foreign markets to raise capital, while investors have tended to internationalise their portfolios.

Indicators of activities in the international capital markets showed a remarkable growth of Euro-note programs, Euro-commercial paper programmes and other committed facilities in 1993. Total medium-term borrowing facilities in the international capital markets have increased even further in 1994 and in the first nine months of 1995. At the same time, however, the Euro-commercial paper programmes have shown declines of 21% in 1994 and 25% in the first three quarters of 1995. Euro-note programmes, in contrast, have demonstrated further growth in 1994 and 1995 (first three quarters). The amount of these Euro-note programmes even doubled during these two years.

Since January 1996, financial activities within the countries of the European Union can occur faster and easier due to the introduction of the so called "European passport". This European passport means that the stockbrokers and financial trustees only have to make an announcement of the planned activities to a domestic supervisor, eliminating the need for a foreign permit from the country in which the activities will take place.

## MARKET FORCES

### Demand

Demand for services from financial intermediaries is a result from the demand and supply of funds on the financial markets where the intermediaries are active. The securities market is especially important as is the position of this market in relation with the banking market.

**Table 3: Financial intermediaries  
Insurance brokers and agents, 1994 (1)**

	Number of brokers	Market share (%)	Number of agents	Market share (%)
Belgique/België	N/A	60	(7) 12 200	15
Danmark (3)	80	14	N/A	N/A
Deutschland (3)	3 000	14	(8) 359 000	75
Ellada	54	10	7 000	N/A
España	4 346	21	12 964	61
France	2 400	(4)	17 440	(4)
Ireland (3)	1 387	N/A	1 901	N/A
Italia (3)	1 980	12	(9) 23 000	67
Luxembourg	9	N/A	5 500	(5)
Nederland	8 000	63	N/A	5
Portugal (2)	77	11	31 713	76
United Kingdom	3 917	(6)	N/A	(6)

(1) Most of the figures are estimates.

(2) 1993

(3) 1995

(4) Brokers: life 7%, non-life 17%; agents: life 14%, non-life 43%.

(5) Life 95%, non-life 98%.

(6) Brokers: life 40%, non-life 54%; agents: life 40%, non-life 7%.

(7) Includes brokers.

(8) Of which 59 000 full-time.

(9) Of which 16 000 full-time.

Source: BIPAR

The supply of capital ultimately originates from savings. When the suppliers of capital desire a specific form for their portfolio investments, like bonds, shares or a savings account, the supply of capital is translated into a demand for those specific financial assets.

The increase of equity market valuation in recent years implied that companies preferred to raise equity finance rather than debt. It is unlikely that this will change in the near-term even if stock markets weaken substantially. There may be potential for hybrid equity-linked debt products such as convertibles and warrants.

Demographic trends, falling birth-rates and rising longevity imply that relatively more elderly people will have to be supported. Government will then encounter difficulties in financing the growing volume of payments in unfunded systems. To alleviate this problem, governments stimulate private pension plans. The growing awareness of these trends also induces the public look out for supplements to possibly deficient state pension and health care payments. This stimulates saving through institutional investors and pension funds in particular, and increasing demand for securities.

Another driving force comes from mergers, acquisitions, privatisations and management buy-outs, which require services from financial intermediaries in various forms. The demand for services involving management of corporate assets and liabilities has increased, above all in situations involving financial and corporate restructuring. Furthermore, the need for advice and support for cross border alliances and take-overs has grown.

### Supply and competition

Financial services can be divided into two groups according to their target markets: institutional versus private markets and international versus local markets. Institutional lenders and borrowers have different needs. International competition mainly takes place on this market. Local markets will keep their role, however, because many private persons and companies prefer the home financial market to the foreign markets for borrowing and investing. Most domestic shares will be bought by the inhabitants of the country and not by foreign investors. Competition can be characterised as competition for orderflow.

With respect to institutional markets, stock exchanges compete with each other to maintain or increase their share of trading. An exchange's competitiveness is based on its technology and procedures for trading, clearance and settlement. In Europe, the London Stock Exchange has attracted much trade of shares of non-United Kingdom companies. The other European exchanges have also been investing heavily to make markets more efficient in order to boost liquidity on their local markets.

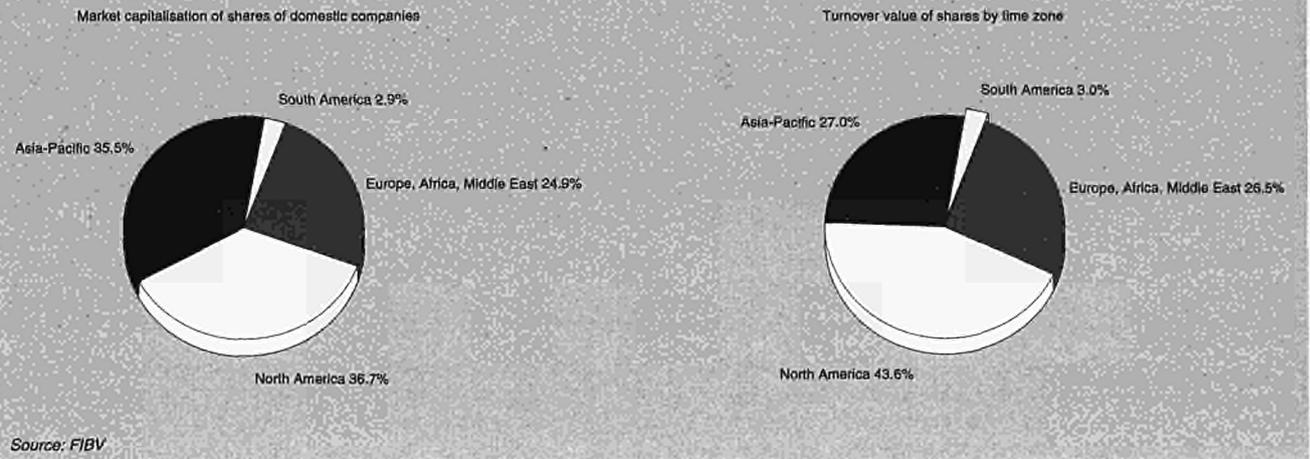
Regulation is very important to the competition between exchanges, both as an instrument and as a constraint in making exchanges attractive. Stamp duty, capital gains taxes, brokers' fees, trading hours and the delivery-clearing systems all determine competitiveness. It is thought that this is one of the main reasons that a level regulatory playing field should be achieved as a matter of policy. In the United Kingdom, for example, deregulation of the financial market in the 1980s has not only led to fast growing competition from banks and building societies, but also to the emergence of numerous new small operators.

Proprietary Trading Systems (PTS) operated by large international brokers compete with the stock exchanges, and with each other, to gain the business of the institutional investors. They try to lure customers with the advantages of one-stop shopping. Instead of deciding whether to deal net (without commission) or agency (with commission), home market or off-shore, and then splitting orders among brokers, institutions can deal with just one large broker. Through the large broker investors can benefit from superior services, for instance 24-hour trading in stocks. Only brokers with a sufficiently large customer base, however, are able to offer such a service.

Electronic markets also threaten the more traditional stock and foreign exchanges. They allow investors and intermediaries to deal anonymously on an electronic system. Participants enter bid and offer prices directly into the system and can either trade instantly against these prices, or negotiate on screen on order size. Also bond trading will increasingly be screen-based. Electronic markets blur the distinction between brokers and exchanges.

The reorganisation of stock markets has also played an important part in stimulating the supply of financial services and the competition between financial intermediaries. Its aim

**Figure 1: Financial Intermediaries**  
Market capitalization and turnover value of shares, 1994



was improving efficiency while ensuring stability and investor protection. Key elements include: an end to brokers' monopoly and liberalisation of commissions; a reorganisation of the market for treasury bonds, with the consequent adoption of a secondary market in such stocks to reflect the needs of investors; the creation of secondary listings, allowing medium-sized businesses, unable to meet the conditions for full listing, to improve their access to capital; and the computerisation of stock markets and market operations in all European exchanges boosted market liquidity by making information more rapidly available and accurate.

## INDUSTRY STRUCTURE

### Companies

Competitors in this industry consist of different groups with brokers being the most important. They can be divided into large international brokers, small national ones and niche players. The stock exchanges themselves are engaged in the competition, positioned either as an international player or as a domestic one. Private electronic markets are becoming significant and in some instances (Instinet) already play a leading role. Finally, the (investment) banks are also active in this industry.

In the past decade, large groups of financial intermediaries have emerged, consisting of combinations of brokers and banks. Monitoring these groups is a difficult matter, as they engage in activities that fall under different supervisory authorities in most European countries.

Stock exchanges can be compared by their stock index performance and value of share trading. Merchant banks and securities firms can be compared by for instance their engagement in take-over deals. This measure reveals the dominance of Lazard Houses (UK), Crédit Lyonnais (F, a bank), and S.G. Warburg (UK). The role of financial intermediaries in insurance products can be indicated by the way of distribution. The distribution of insurance products via insurance brokers and agents shows a different pattern in the different European countries. Here two extremes emerge: market domination by brokers versus market domination by agents. The first extreme is represented by the Netherlands and Belgium, with a brokers' marketshare of respectively 63% and 60%. At the opposite end of the scale we find the market dominated by agents, with Germany (75%), Portugal (76%), Italy (67%) and Spain (61%). Another distinction can be made between insurance brokers and agents: the core activity of brokers is company risk and the principal business of agents is individual personal risk.

### Strategies

Brokers must first determine if they want to be an international, national or niche player. Due to the fierce competition, the most successful brokers will be those which develop niche sectors of the market. To be an international operator, the successful strategy seems to be to invest in building up international networks of offices.

The convergence of computers and telecommunications has provided the technology for stock exchanges to eschew the trading floor and allow members to trade via computer terminals. The ability to keep up with technology will be one of the things determining the stock exchange leaders of tomorrow, although the overheads of brokerage offices in each EU state have technological advances and plummeting cost of computers and communications.

The privatisation trend can warrant a local strategy, coupled with an international presence. Local knowledge is needed in order to successfully bring state enterprises to the market. International presence is needed to manage the typically large size of privatised companies.

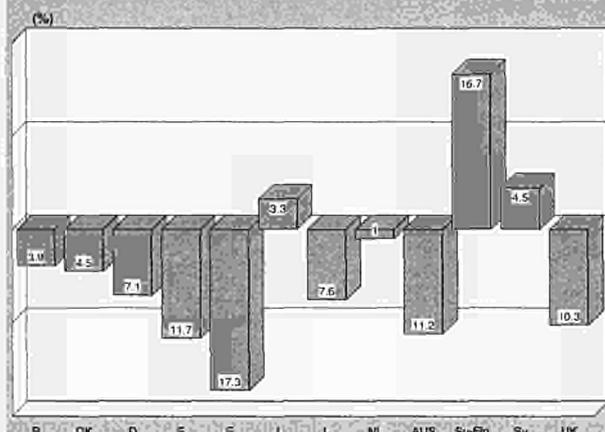
Stock exchanges will compete with each other on market-making or order-driven trading systems. Brokers and electronic markets are offering more linkages between exchanges as Amsterdam has done for wholesale investors.

Direct-selling becomes an increasingly important marketing tool in the insurance industry. The dominance of the broker dealing with large corporate risks and particularly the tied agent dealing with individual personal risks are the ones challenged by the increase in direct-selling.

### Impact of the Single Market

The impact of the creation of the Single Market on financial intermediaries is considered to have been generally positive. Freedom to provide services, the right of establishment and the free movement of capital are of extreme importance to this sector. In European exchanges, generally one transaction in seven involves at least one foreign counterpart. The field of taxation has a tremendous impact on the location of trading and on trading volumes. Tax measures that contribute to higher costs divert transactions to non-EU exchanges. Free movement of goods is also of great importance to the financial intermediaries, notably in the area of technical harmonisation, mutual recognition of rules and prevention of new barriers. Advance on an increasingly fluid and integrated capital market is considered a priority by the European securities industry.

**Figure 2: Financial intermediaries  
Stock market performance, end-1993 to end-1994**



Source: FIBV

## REGULATIONS

The objective of the Investment Services Directive (ISD) which took effect on 1 January 1996, is to create one single EU regulated market for securities firms. A securities firm only needs one licence in a single Member State to be allowed to operate in all Member States. This rule is a compromise between countries with markets subject to competition from OTC trades and countries with more protected markets.

Furthermore, under certain conditions a Member State is allowed to force market participants to handle securities transactions on the regulated market. The investor, however, can demand that the transaction will be executed outside the regulated markets. A Member State can then require the investor to ask permission for such a transaction. This rule is a compromise between countries with highly regulated markets and countries with less regulated markets.

Together with the Capital Adequacy Directive (CAD) of 15 March 1993, the ISD regulates the EU securities market. The CAD stipulates minimum capital requirements as well as a minimum starting capital. The ISD stipulates that securities firms and banks need to fulfil the CAD requirements.

The Fédération Internationale des Bourses de Valeurs (FIBV) and the Federation of European Stock Exchanges (FESE) state that a level regulatory playing field between electronic and floor based markets should be achieved. Electronic markets performing similar functions should be regulated in a similar manner whether operated by an exchange or not. However, regulation should be appropriate to the system and to the constituencies served rather than identical regulation.

The International Capital Markets Group (ICMG), which is a cooperative arrangement between the International Bar Association, Section on Business Law (IBA), International Federation of Accountants (IFAC) and the FIBV, is dealing with a number of important issues. The main issues are: international regulatory issues, disclosure to investors in the secondary markets, regulation of electronic markets, and harmonisation of securities regulation.

## OUTLOOK

The ability to keep up with technology will be a major challenge for stock exchange leaders during the coming years, because information technology will remain an important factor in achieving a competitive advantage in the financial intermediaries market. The overheads of brokerage offices in each EU state are unsustainable, given the technological advances and plummeting cost of computers and communications. These new technologies will lead to an further increase in competition, although this will not be the only source of competition increase. The European Union's Investment Services Directive (came into effect on 1 January 1996) allows stockbrokers to become remote members of other EU exchanges, which will turn Europe into a single market in which recognised financial companies are free to sell their products and services across the European Union.

Due to the increase in competition, many brokers will increasingly specialise in selected markets, especially in the insurance brokerage market. But banks will also provide a further threat to the insurance companies as they are likely to continue taking control. Banks are using their existing branch network to distribute the product and are expected to increase their share of the insurance market even further.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: Federation of European Stock Exchanges (FESE), Address: Rue du Midi 2, B-1000 Brussels; tel. (32 2) 513 0518; fax (32 2) 512 49 05; and

Fédération Internationale des Bourses de Valeurs (FIBV), Address: 22, Bd. de Courcelles, F-75017 Paris; tel: (33 1) 40 54 78 00; fax (33 1) 47 54



# Real estate

## NACE (Revision 1) 70

The real estate market can be divided into two sectors: residential property and commercial property. The European real estate market has gone through a severe downturn which has taken place after a long period of strong growth in rental and capital values. Currently, the European economy is recovering from this recession, although overall growth rates for the real estate market are disappointing. However, major differences have been spotted between cities and regions. Falling rentals and rising vacancy rates underscore the difficulties within the commercial property market, but first signs of improvement have been seen due to the low commercial construction activities. In 1995, the market for residential constructions has also been under downward pressure.

### INDUSTRY PROFILE

#### Description of the sector

In this year's edition, the new NACE (Rev.1) classification has been applied. Between the old and new NACE classifications no significant differences have been found, except that the old codes have been changed from 833, 834 and 835 to the new group code 70.

The various professions active within the property sector attest the dual nature of the industry, implicit in its primary and secondary markets. Certain activities relate to primary demand and the completion of property development, whereas other relate to the functioning of the secondary market. To the first category belong builders, developers and consultants specialising in feasibility studies. Real estate professionals operate on the secondary market, with their expertise in surveying and valuation of properties, and their role in sales transactions and estate management.

In addition, the property market sector may be divided in separate compartments: residential, commercial and leisure property, where commercial includes office, retail and indus-

trial property and leisure includes for example hotels, seaside and mountain.

#### Recent trends

All over Europe a spectacular expansion has occurred during the past decade, which peaked in the first quarter of 1991. Since then the property sector has slumped, due to the economic recession, high real interest rates and sometimes too excessively increased office rents. With respect to the housing market (residential property), the overall level of transactions in the European countries where such information is available for 1995 (B, DK, D, E, F, IRL, I, NL, S and UK) declined by 6%.

Between 1990 and 1994 the prices of dwellings in nominal terms increased in most Member States, with the exception of Finland and the UK, which showed a decline of 34% and 7%, respectively. In 1995 Finland Sweden and the UK showed a decline in nominal prices of -4%, -2% and -2% respectively. The other EU countries have demonstrated increases varying from 1% to 8%. In all Member States, the general picture for the first quarter of 1996 compared to 1995 has been one of relative stability in prices of dwellings.

On the basis of 10-year census data, the number of home occupied by their owners have increased in most EU Member States over the last decade. However, this proportion varies among European countries. In Ireland, for example, 80% of the housing units are now occupied by their owners. This proportion is also high in southern European countries, as it is equal to 75% in the Mediterranean countries, with the exception of France where, like in Germany, the Netherlands and Denmark, only 50% of housing units are occupied by their owners.

While the total European real estate market has remained relatively stable, there are large differences between cities and regions. Scandinavian cities, like Copenhagen, Helsinki, Oslo and Stockholm have been hit particularly hard in 1993. In 1995, however, these cities have shown a positive upturn. Vacancy rates are estimated to be around 10% in each of these markets. Low activity of office development and improving demand have caused a small decline of the vacancy rate. The Spanish cities were also hit hard as a result of a sharp recession and overbuilding in the early 1990s, which

**Table 1: Real estate  
Main indicators, 1992 (1)**

	Number of enterprises	Turnover (million ECU)	Number of employees
Belgique/België	(2) 14 605	2 596	(2) 14 520
Danmark (5)	(10) 2 175	(2) 298	(3) 4 977
Deutschland (6)	N/A	N/A	(7) 186 753
Ellada (4)	(10) 942	N/A	(7) 1 429
España (3)	10 562	N/A	(7) 42 322
France	48 739	22 207	97 265
Ireland (4)	733	N/A	2 423
Luxembourg (2)	421	N/A	687
Portugal (8)	311	267	5 005
Suomi/Finland	3 814	913	11 744
United Kingdom (2,9)	42 333	N/A	N/A

(1) Dealers in real estate, and house and estate agents.

(2) 1991

(3) 1990

(4) 1988

(5) House and estate agents only.

(6) Excluding house and estate agents.

(7) Number of persons employed.

(8) Covers only enterprises with at least 5 employees.

(9) Including also letting of real estate by the owner.

(10) Number of local units.

Source: Eurostat; Mercure

**Table 2: Real estate  
Number of employees (1)**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	11 770	11 965	12 269	12 694	13 637	13 843	14 483	14 520	N/A	N/A
Danmark (2)	N/A	4 281	4 703	4 901	4 903	4 889	4 977	N/A	N/A	N/A
Deutschland (3)	122 040	129 600	131 501	136 653	140 167	148 639	160 598	174 059	186 753	N/A
France	N/A	80 252	78 333	80 419	89 850	99 210	103 480	102 929	97 265	N/A
Luxembourg	219	251	280	361	383	455	557	687	N/A	N/A
Portugal	N/A	N/A	N/A	N/A	N/A	N/A	8 734	8 429	7 089	4048
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	12 187	11 895	11 744	11339

(1) Dealers in real estate, and house and estate agents.

(2) House and estate agents only.

(3) Excluding house and estate agents.

Source: Eurostat; Mercure

produced rental drops ranging from 33% in Madrid and Barcelona to 12% in Valencia. However, these rental drops appeared to have reached the bottom. The prime rents have stabilised at about 2 700 pesetas per square meter per month in Madrid and 2 300 pesetas in Barcelona. German cities seemed to be for a long time invulnerable to the downturn in the property markets occurred elsewhere in Europe, but there are now oversupplies of office space and so office rents are falling. Berlin, Frankfurt, Munich, Hamburg and Düsseldorf are the five largest markets in Germany with an overall vacancy rate of 5.3%, which varies from 8.5% in Frankfurt to 4.9% in Berlin. The property market in Paris also saw a sharp downturn. Vacancy rates have risen from 3.5% in 1990 to almost 10% by 1995. Despite the major increase, vacancy rates are now expected to decline, due to a further decline of new development activities. Office rents are still under downward pressure. Outside Paris, however, the office rents are far more stable. In London, the prime rental levels are under some upward pressure, which leads to falling vacancy rates (especially in the grade A space).

Interest rates on mortgage loans have fallen considerably throughout the EU since mid-1992, as national governments progressively eased the tight monetary policies. In 1994, however, rates have been rising again. Significant differences have been seen in the development of the interest rates on mortgage loans between the EU countries. In Sweden, for example, the interest rate of mortgage loans increased by 2.9 points in 1994. The mortgage rate in Portugal in contrast has declined significantly (-2.3 points). The average interest rate on mortgage loans of the EU-14 (excluding Finland) has risen from

10.3% to 10.4% in 1994. But for the first time since the start of 1994, the average mortgage rate in the European Union fell slightly during the second quarter of 1995. This trend of decline continued in the third and fourth quarter of 1995. The main reasons for this generalised drop were low German and international interest rates and the high and growing level of competitiveness between mortgage lenders.

### International comparison

Despite the economic recovery, the European office markets have remained subdued during 1995. A persistent feature of most European markets are cautious occupiers, low levels of activity and high vacancy rates. In North America, where the real estate markets have continued to improve, the vacancy levels have steadily declined. In particular, the vacancy rates of the suburban areas have been decreasing, due to the increasing interest of the small and medium-sized companies, who have been net recruiters of staff, to establish themselves in the suburbs. Because of this decline and also the higher occupier demand and the low levels of new construction, the rental levels have been modestly improved. A consequence of this increase in rent levels has been a growth of interest by investors in property. The investment market has been active, with a substantial inflow of funds and competitive bidding for quality properties. The best performers in commercial property markets in recent years have been the Asian-Pacific countries, although these markets have been showing a mixed picture. For example, Manila and Singapore have been growing during 1995, but Hong Kong and Tokyo on the other hand have shown significant falls in values. However,

**Table 3: Real estate  
Number of housing transactions**

(units)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Belgique/België	78.6	86.9	94.8	99.2	107.1	99.8	99.7	104.9	104.1	104.1	95.3
Danmark	84.6	76.6	72.8	63.5	55.1	56.8	52.4	60.1	62.7	71.4	72.7
Deutschland	N/A	N/A	N/A	N/A	600.0	554.0	543.0	612.5	754.3	722.1	700.0
Ellada	64.1	71.2	53.6	62.8	76.7	93.1	43.9	59.9	61.4	65.9	N/A
France	599.2	627.2	707.2	768.4	809.8	754.0	712.5	605.8	584.5	670.0	683.0
Ireland	N/A	N/A	N/A	N/A	N/A	34.8	37.1	44.4	45.4	50.2	48.4
Italia	428.9	462.7	462.6	492.8	474.6	517.1	555.9	465.4	501.9	495.2	245.9
Luxembourg	2.9	3.2	3.2	3.2	3.1	2.9	3.1	(2) 3.6	3.0	N/A	N/A
Nederland	209.3	237.2	236.5	237.2	231.5	202.1	211.1	245.3	339.0	431.5	376.7
Portugal	191.1	207.1	236.1	250.1	224.8	170.4	235.1	248.3	258.3	N/A	N/A
Sverige	140.0	145.0	150.0	155.0	160.0	165.0	160.0	155.0	150.0	150.0	140.0
United Kingdom	1742.0	1 800.0	1 938.0	2 149.0	1 580.0	1 398.0	1 305.0	1 138.0	1 195.0	1 275.0	113.3
EUR 15 (1)	N/A	N/A	N/A	N/A	N/A	4 048.0	3 958.800	N/A	N/A	N/A	N/A

(1) Excluding Spain, Austria and Finland.

(2) Break in time series.

Source: European Mortgage Federation

**Table 4: Real estate**  
**Share of all homes occupied by their owners**

	Year	Share (%)	Year	Share (%)
Belgique/België	1981	61	1992	65
Danmark	1983	55	1995	52
Deutschland (1)	1985	43	1988	40
Ellada	1981	70	1991	75
España	1981	73	1991	78
France	1982	50	1992	54
Ireland	1980	76	1991	80
Italia	1983	65	1991	75
Luxembourg	1981	59	1991	64
Nederland	1981	42	1994	48
Österreich	N/A	N/A	1991	50
Portugal	1981	57	1991	66
Suomi/Finland	N/A	N/A	1994	62
Sverige	1983	50	1995	60
United Kingdom	1983	59	1995	67

(1) Partly estimated by the Verband Deutscher Hypothekbanken.  
 Source: European Mortgage Federation

the performance in 1995 has been positive, but was considerably smaller than the years before.

The economic downturn also had major influences on the Japanese real estate market. Five years ago the Japanese property prices were sky-high: an 8 400 m<sup>2</sup> plot of land in central Tokyo, for instance, was said to be worth USD 360 000 per square meter. In 1995, the same amount of land was worth only 20% of the price of 1990, that is USD 71 000 per square meter. The office rents have also halved from USD 1 300 per square meter per year in 1993 to USD 650 per square meter per year in 1995.

Between 1991 and 1995 the European Rental index has declined by 26%, according to the Jones Lang Wootton property index. North America on the other hand has been showing a small increase during the same period. The Rental indices for the Asian-Pacific countries decreased in the years 1991 and 1992, but have grown in the following years. The Capital index has demonstrated a similar development as the Rental index. After a major decline of the European Capital index between 1990 and 1993, the index stabilised at an index of nearly 270 (1980=100) in 1995. North America and Asia-Pacific have shown an increase of the index between 1993 and 1995. The Asian-Pacific countries are responsible for the highest indices, followed by Europe. North America has the smallest Rental and Capital indices in 1995.

### Foreign trade

The increase in the proportion of international investments in the property market has slowed down during the economic recession. Potential investors focus on opportunities in their home markets, like Scandinavia, Austria and Portugal where domestic investors are dominating the real estate market. European countries with a high level of international investments are France and Spain. Spain, for example, has had the highest domestic and international investment level since 1991, on the perception that property is historically "cheap" and poised for rental growth. Germany and the Netherlands are the most important cross-border property investors in Europe. Japanese players, who dominated the cross-border market in the 1980s, are on the sidelines for the medium terms.

## MARKET FORCES

### Demand

Property demand is of course largely determined by local factors. The most important are economic growth, replacement

demand, luxury demand (upgrading) and location preferences. Economic growth creates a need for more space for offices, shops and factories. Replacement demand is the base for demand for commercial property. Its volume is dependent on the average lifetime of real estate. Upgrading will take place in a favourable economic climate and when the existing stock of real estate is estimated to be of poor quality (which applies to the building and the location). Finally, other factors can increase the attractiveness of a particular location and create an additional demand for property.

The rental market is less dependent on economic fluctuations. Unlike the sales market, it is not bound by investment logic: rental is not investment in, but consumption of real estate. Therefore, interest rates are less crucial in the rental market than in the property market.

Transfer duties are levied at the time of a property sale. At the moment, France has the highest rate in the world with 18.2%, compared to rates situated between 6% and 12.5% in most other European countries. The United Kingdom and Germany are the exceptions, with transfer duties of 1% and 2%, respectively.

The level of infrastructure provision and planning also influences demand. The three regions of Greater London, the Rhine-Ruhr and Ile-de-France comprise the principal focuses of wealth in the EU. When cities are ranked according to several attraction factors, Paris and London stand out ahead of others. These cities have an outstanding infrastructure and benefit from a strong presence of multinational firms.

In the commercial property market, the shift in business towards the services sector increases the demand for office properties to the detriment of industrial sites. In addition, the demand for offices is becoming more sophisticated, with the development of large luxurious American-style complexes, such as the "Quartier de la Défense" in Paris.

More personal factors for locating a business are the quality of life for employees and freedom from pollution. Considering all these factors influencing the location of businesses, Europe's favoured business locations are London, Paris, Frankfurt and Brussels. Cities that are moving up are Barcelona, Milan, Madrid, Munich, Prague, Lyon and Warsaw.

An increase in demand for office space, according to the Jones Lang Wootton property clocks, has taken place particularly in Bombay, Warsaw and Moscow. In these markets strong rental growth has been recorded in recent years, but

**Table 5: Real estate**  
**Trend in the price of dwellings (1)**

(Index 1985=100)	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Belgique/België (2)	98	98	100	106	111	116	129	139	147	160	171	184	191
Danmark (3)	73	85	100	115	107	110	110	101	102	96	102	109	109
España (4)	N/A	N/A	N/A	N/A	100	125	154	178	204	201	200	202	209
France (6)	95	94	100	104	108	104	118	135	128	134	140	146	N/A
Ireland	N/A	N/A	100	104	104	113	126	142	145	149	151	158	N/A
Italia	N/A	N/A	N/A	N/A	N/A	100	128	160	180	196	201	194	170
Nederland	101	100	100	105	110	115	123	125	129	139	152	164	N/A
Suomi/Finland (7)	N/A	N/A	N/A	N/A	N/A	184	225	213	183	150	139	147	141
Sverige	N/A	97	100	103	113	131	156	173	207	180	175	176	173
United Kingdom (8)	84	92	100	114	133	167	202	199	196	189	184	187	186

(1) National averages. Nominal indices.

(2) Public sales and sales by private contracts (1995 figure is estimated).

(3) Average of one family houses and flats.

(4) New dwellings.

(5) Index 187=100

(6) Acquisitions by private individuals through a loan.

(7) Index 1983=100.

(8) Mix adjusted house price index.

Source: European Mortgage Federation

has now reached the top. A lot of European cities, like London, Brussels, Madrid and the Scandinavian cities, are indicating a return to rental growth.

### Supply and competition

National and even urban markets still have distinct evolutions. However, due to the growing activities of internationally operating firms, developments in the different national or urban markets are coming more in line with each other. The German market is very regionalised and has many centres. In the French real estate market, the south will gain importance, but Paris will remain by far the most important area. The UK market, with London at the forefront, is still setting trend for the developments in office space.

During the last years, there has been an oversupply in the property market. The boom in Europe's property values during the 1980s stimulated construction, often funded by large amounts of bank debt. Economic slowdown and high real interest rates hit these markets hard. Many countries have seen office vacancy rates rising. Overcapacity in property has been even more pronounced to the extent that foreign investors has been pulled out. Sales agents were the first to be hit by the property recession. Having been drawn in by seven years of market growth, they counted on the rapid and highly profitable turnover of property and borrowed, in some cases, up to 100% from the banks. The recession brought major losses, aggravated by the withdrawal of the banks. The development in 1995 and the following years has been and will be a decline of the vacancy rates (especially in the office market) caused by a decrease in new building activities. This will eventually lead to rising rental prices, which can also lead to new domestic and international investments in the property markets.

In 10 EU Member States, the development in construction activity has been downwards in 1995, despite the fact that interest rates no new mortgage loans have decreased compared to 1994. The only EU Member States with positive figures compared to 1994 are Spain and Ireland. In Spain, there was a 15% increase in the number of building permits issued and the available figures for housing starts in 1995 indicate an even more marked increase (about 30%). Ireland records a recovery in the number of dwellings completed of 14%, thereby confirming an economic recovery assisted by a very low level of mortgage rates and a growing demand based on consumer confidence. In the United Kingdom, on the other hand, the sector (-14% in housing starts) is influenced by the lack of

confidence of consumers who are worried about instability of employment and a rise in interest rates. In Germany and France, activity also experienced a slowdown, closely mirroring the downwards trend in the national economies.

European cities are increasingly recognising that they are in competition with each other and need to understand the factors businessmen weigh and how their own city is perceived by these factors. Communication issues continue to dominate corporate thinking, with ease of access to markets being the most important factor.

### Production process

Supply of offices is fed simultaneously by the arrival on the market of new buildings (60 to 65% of supply) and the recycling of older ones. Few markets have a primary sector coexisting with a secondary sector to such a degree. This secondary market allows property to be used as an investment base, as it guarantees a measure of liquidity. (This role as an investment base is more pronounced in office property than in residential property. The latter has more of a community character, and is often the subject of regulation designed to preserve its social utility. This in turn holds down yields on capital investment.) This structure allows particular importance to the role of intermediaries. They exist to help transactions (and ensure market liquidity), performing an essential role in affording investors continuity between primary and secondary sectors. Another consequence of this special configuration is that the various players in the market-place can either simultaneously or successively adopt opposing roles: buyer and seller, provider and consumer.

Satisfying end-user demands presupposes activity by developers, investors, managers of financial funds and consultants. Professional competence in this sector takes the following forms:

- knowledge of the local market: the ability to put a precise value on a site and its possibilities, and to define a product suited to the needs of the end-user. This factor can only be provided by local experts, and has acted as a brake on internationalisation of the sector as a whole.
- deployment of human resources: this activity is an integral feature of the sector and is translated into high levels of productivity.
- financial expertise: the professions in the property market are closely linked to the world of finance, which explains

**Table 6: Real estate**  
**Outstanding residential mortgage debt as share of gross domestic product, 1993**

	(%)
Belgique/België	23
Danmark (1)	66
Deutschland	47
Ellada	6
Espana	18
France	23
Ireland	25
Italia	6
Nederland	78
Portugal	16
Sverige (2)	68
United Kingdom	58

(1) This figure now refers to residential mortgage debt.

(2) Mortgage debt against residential and commercial property.

Source: European Mortgage Federation

the presence of banks in the sector. Financing of the product, in addition to production and sale, presupposes management.

As in each activity of service, communication capacity plays a major role. The profession is able to intervene rapidly, which is a key element for success. This is seen, for example, in the auction process, where the reaction of the investor must be immediate. In such conditions, the larger institutions, with their hierarchical structure and their prudential constraints, are at a disadvantage in the race to obtain business.

## INDUSTRY STRUCTURE

### Companies

Within the EU, property professionals represent a workforce of around 120 000 authorised practitioners. Most agencies are small and operate at a local level.

There are two categories within the profession: developers who construct buildings on land that they already own with a view to their sale or rental, and intermediaries who make markets in the product and counsel those involved. Outside

the property profession two other groups play an important role on the market: firms or persons who construct buildings for own use, and the government, which often represents an important owner of land.

There are four types of developers:

- the independent developers: they make up only a small part of the sector.
- the subsidiaries of banking or financial groups: almost all of them have in-house development divisions, both as a channel for the distribution of credit and as a profitable activity in itself.
- subsidiaries of public works and construction authorities: among them, the large ones have development arms.
- institutional developers: an example is the association of around 15 insurers and bankers in the "Société Française d'Investissements Immobilières".

At the intermediary level, the approach to the market is characterised by an increasing professionalism at the level of estate agents, an increasing role for consultants and progressively national/international structure. In this context, three types of intermediaries can be identified:

- the estate agent and administrator: they are specialised in marketing and renting to end-users, as opposed to developers targeting institutional investors.
- the consultant: as products become more sophisticated and the sector more international, this type will increase in number and importance. They usually take the form of small, independent practices. Their role are important because decisions on development, investment and acquisition are wholly dependent on market conditions.
- the market-maker who buys to re-sell: they are the speculators who exploit market imbalances (notably when causing undervalued purchase prices) to their own advantage. In addition, however, they also act as a buffer, mitigating the impact of major differences between supply and demand. Their ability to play this role depends on their capacity to carry a property over a period.

### Strategies

One current striking characteristic is the emergence of widely divergent strategies on the part of developers. Until recently, developers tended to adopt similar strategies. They were typi-

**Table 7: Real estate**  
**Representative interest rates on new mortgage loans (1)**

(%)	1993	1994	Change
Belgique/België	8.6	9.7	12.8
Danmark	7.1	9.5	33.8
Deutschland	7.3	8.8	20.5
Ellada	24.0	23.0	-4.2
Espana	11.7	10.3	-12.0
France	8.6	8.7	1.2
Ireland	7.7	7.2	5.2
Italia	11.3	11.1	-1.8
Luxembourg	7.0	6.5	-7.1
Nederland	6.7	8.0	19.4
Österreich	8.4	8.5	-4.8
Portugal	15.5	13.2	-14.8
Suomi/Finland (2)	10.5	8.6	-18.1
Sverige	8.0	11.4	42.5
United Kingdom	7.9	7.8	0.0
EUR 15 (2)	10.0	10.2	2.0

(1) End of year rate.

(2) Average rate on a yearly basis.

Source: European Mortgage Federation

**Table 8: Real estate**  
**Total annual net lending against mortgage (1)**

(million ECU)	Residential and commercial property			Residential property		
	1993	1994	1995	1993	1994	1995
Belgique/België	3 395	3 765	2 151	2 347	2 749	1 898
Danmark (3)	3 951	3 235	3 316	3 793	5 263	3 493.0
Deutschland (4)	90 776	91 257	72 285	66 810	70 269	62 024.0
Ellada (2)	N/A	N/A	N/A	380	493	625.0
España	10 092	11 893	10 233	7 638	9 250	7 509.0
France (5)	N/A	N/A	N/A	4 462	5 226	3 356.0
Irland	1 303	1 504	1 648	1 019	1 271	1 353.0
Italia (6)+(3)	6 197	4 120	N/A	4 590	3 079	N/A
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A
Nederland	25 055	28 032	28 487	16 688	18 302	17 866.0
Österreich	269	293	420	N/A	N/A	N/A
Portugal	1 922	2 458	3 039	1 640	2 337	2 657.0
Suomi/Finland (7)	-33	-132	-75	N/A	N/A	N/A
Sverige	2 850	4 147	N/A	N/A	N/A	N/A
United Kingdom	N/A	N/A	N/A	21 155	24 595	18 438.0
EUR 15 (8)	144 994	148 522	N/A	130 522	142 834	N/A

(1) Net lending is defined as the difference in outstanding loans from one period to the next.

(2) Figures for 1995 are provisional.

(3) European Mortgage Federation members only.

(4) Figures for residential property include loans for residential property not secured by mortgage.

(5) Includes loans to promoters.

(6) 1994 figure for residential property refers to first three quarters only.

(7) Including loans for buildings not secured by mortgage.

(8) Total only for the countries which have data.

Source: European Mortgage Federation

cally small-scale and unambitious, finding it difficult to operate on an international level in such a conservative profession. The current trend, however, is towards integration of upstream activities (development) and downstream activities (commercialisation).

One can also identify a growing tendency to extend the range of products offered in an attempt to reduce dependence on the vagaries of a single market sector. For example, a certain number of developers originally specialised in housing have repositioned themselves to profit from the boom in office property. Two major strategic groups of developers can thus be identified. Some have chosen the diversification of activities and have started complementary development activities such as administration, hotel chain management or even insurance, which do not share the cyclical nature of property development. Others have opted to remain specialised, but have diversified their product portfolio and attempted to become more international in scope.

For several years now, intermediaries have tended towards the Anglo-Saxon model of consultancy. This strategic transformation, which is accompanied by an increased presence of banks in the market-place, has facilitated globalisation of the property market. The main consultancy offices assume the role of go-between by opening up their domestic market-place to foreign partners. This development also allows a larger volume of transactions, regardless of the size of the market. For instance, while the office markets in London and Paris are almost the same in volume, there may be (depending on the period in question) between ten and twenty times more transactions in London than in Paris.

The recent recession in the property market has reduced financial resources to estate agents. Developing these resources has emerged as a priority objective, and agents are working more closely with the banks to allow the development of projects for which no immediate client has necessarily been identified.

Despite growing globalisation of the property market and the increasing sophistication of products - both of which aim towards responding increasingly to demand along the lines of the Anglo-Saxon model - consumers tend to remain more attached to traditional national models.

## REGIONAL DISTRIBUTION

Most real estate activity is concentrated in northern Europe, in an area that is bounded by Paris, London and Frankfurt and includes the Brussels area, the 'Capitals Centre'. This region has more than 30% of employment in the EU (excluding the new German Länder) and more than 35% of gross value added in the EU. London and Paris house the largest volume of office space in Europe, with a total surface area of around 32 million m<sup>2</sup>. Other European capitals typically average around 5 to 6 million m<sup>2</sup>. However, the southern cities of Barcelona, Milan and Madrid are moving up as best cities to locate a business today.

As manufacturing activity moves increasingly out of the cities, European urban development is to a considerable extent influenced by the existing infrastructure and knowledge related to market services. These historically "locked-in" advantages create a significant element of rigidity in the economic ranking of European cities. London for instance has retained its first position for financial services because of first-mover advantages (gained thanks to the early liberalisation of markets), and because of the strong infrastructure of the supporting financial and business services.

However, the opening up of markets, and political and infrastructure changes provide all challenges to established patterns. The cities best positioned to prosper in the more competitive environment are those that have attracted unique international functions and have a critical mass of activity and infrastructure to support the presence of specialised services needed locally by other activities.

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## REGULATIONS

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The regulatory provisions that affect the real estate profession vary widely from country to country within the EU. Generally speaking, regulatory provisions apply mainly to estate agents. Certain countries - Denmark, Spain, France and Italy - have erected major barriers to entry into the profession; elsewhere, professionals are subject to the provisions of common law.

The abolition of exchange controls in France, Spain and Italy has facilitated greater intra-EU competition. The second banking co-ordination directive ensures that the remaining obstacles to cross-border activity are eliminated.

With the exception of Greece, Portugal and Denmark, each EU jurisdiction has a professional charter. However, further harmonisation of regulations on an European level will be an ongoing process.

In the market for commercial property there has been a (positive) impact of the creation of the Single Market. The market as a whole is easier to identify and easier to reach as the market participants have started to think and act more internationally. This has resulted in the formation of international groups and the exchange of information. Residential property markets in Europe are still segregated according to national frontiers because of significant differences which still remain, especially in the field of housing policy, legislation regulating mortgage credit and taxation. Another obstacle for the unification of these markets in the EU is related to the fact that mortgage credit institutions have little recourse to the single passport conferred upon them by the 2nd banking directive, which was designed to liberalise the financial services sector. Some of the concepts used in this directive, such as that of the "general good", which allows Member States to subject foreign credit institutions to their national laws are subject to diverging interpretations and are effectively being used to close the borders.

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## OUTLOOK

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The outlook for the real estate industry is one of modest growth. The high vacancy rates in Europe are expected to decline due to a further decrease in new construction activities, although developments will differ between cities and regions. There will be marked differences between central business districts (CBD) and outlying areas. More headquarters will be established in the central business districts, while small and medium-sized companies, which are departments of the headquarters, are establishing themselves in the suburbs.

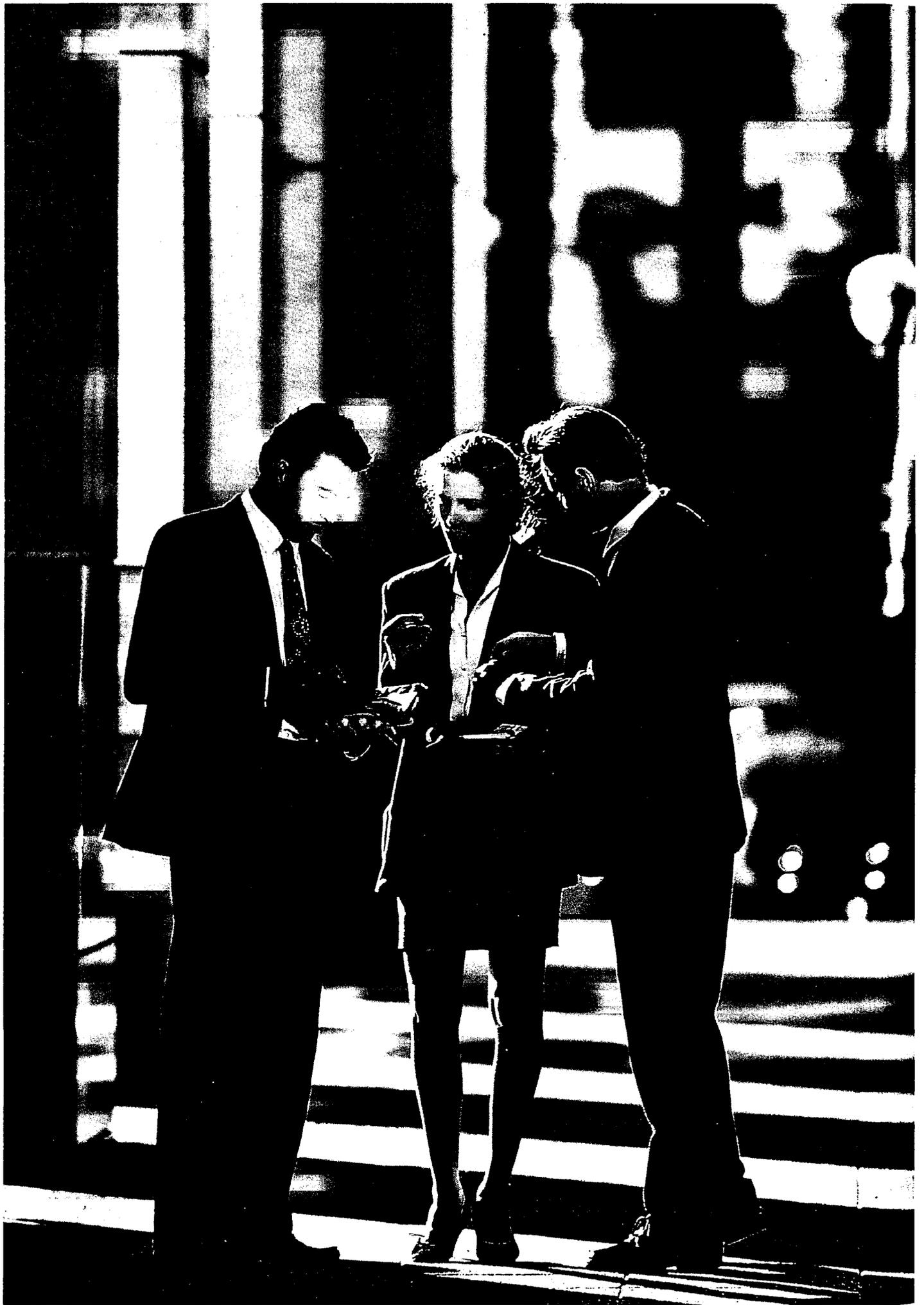
One of the promising investment areas will be worldwide retail property. In the 1980s, most cross-border investors concentrated on offices, which have been badly hit during the recession of the 1990s. Retail property - especially shopping centres - has shown better defensive qualities and is expected to lead offices and industrial property further out of the recession.

The prospects for housing construction activity will remain mixed among the European countries for the first half of the 1996, although no substantial changes are foreseen in most Member States. The number of transactions is expected to remain relatively stable which will not lead to important changes in the amount of mortgages loans.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: European Mortgage Federation (EMF). Address: Avenue de la Joyeuse Entrée 14, Bte 2, B - 1040 Brussels; tel: (32 2) 230 2551; fax: (32 2) 230 6411; and Fédération Internationale des Professions Immobilières (FIABCI). Address: 23 avenue Bosquet, F - 75007 Paris; tel: (33 1) 45 50 45 49; fax: (33 1) 45 50 42 00.





# Overview

Internationalisation, changes in 'business practices', specialisation and technological development have all resulted in a growing complexity of both society and production processes. Organisations often require knowledge that is new and not generally available in-house and more and more companies externalise those functions or services that do not relate to core competencies. These rapidly changing conditions have served to stimulate the growth of business services. Because of low entry barriers, the degree of concentration is also low. The economic upturn is reflecting its influence as business service companies are experiencing strong growth again, after a slowdown in growth in the beginning of the 90s.

## INDUSTRY PROFILE

### Description of the sector

Business services generally include the technical, professional and operational services generally supplied to firms and the government, rather than to households, for the support of their production process or their organisation. Its main functions include management and administration, production and operations, information and communication, personnel, and marketing. The most important business services are:

- Accountancy and tax advice services;
- Legal services;
- Engineering services;
- Computer-, software-, and data services;
- Temporary work services;
- Cleaning and maintenance services;
- Advertising and publicity;
- Market research;
- Management and technical consulting services.

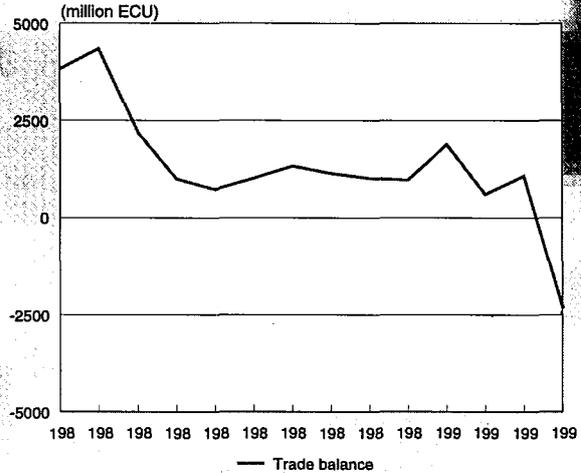
Because of diversification, the traditional boundaries that characterise these subsectors aren't as clear as they once were. Indeed, given the range of activities, it is difficult to identify business services as a 'sector' of the economy. The list of sub-sectors gives an example of the most relevant activities, but does not intend to be exhaustive. Transport, banking, and insurance services are excluded.

### Recent trends

Organisations are changing because products are being produced in ways that demand an unceasing array of information and knowledge. New business services, particularly those related to information technology, have developed both outside and within large companies to adapt to this structural change. Internally developed services have often become an autonomous function within these companies which, in many cases, led to disposal of this function.

The degree of market saturation varies substantially for the individual services. Production processes involve more and more complexity, which means that information and knowledge are becoming more important. Service functions linked to the collection and processing of information and the development and application of knowledge, both internally and externally generated, are increasing in number and size. Business services such as computer services, data banks and value

Figure 1: Overview business services  
External trade balance at current prices (1)



(1) Extra-EU exports less imports. Estimates based on balance of payments.  
Source: Eurostat: International trade in services

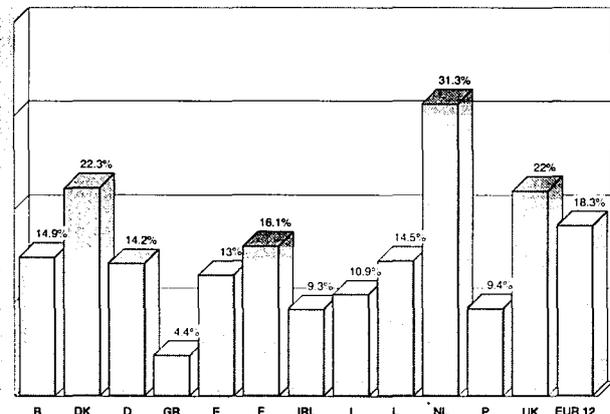
added networks have good growth potential. Consultancy, marketing, engineering and legal advice benefit because they meet demand for issues resulting from the growing complexity and internationalisation of business. Auditing services have reached a form of market saturation.

Companies have become more discerning in selecting suppliers of business services and do not automatically return to the firm from which they previously bought their services. To this end, a shift has occurred from a relational strategy, with long term professional ties, to a transactional strategy. Reasons for this shift include the fact that present suppliers cannot always provide the expanded range of expertise required as well as the influence of price competition. This trend has implications for firms supplying business services.

### International comparison

The American share of Triad business services is higher than that of both Japan and Europe. Also, the growth rate of business

Figure 2: Business services  
Share of part-time workers in total employment, 1994 (1)



(1) Data provided in NACE/Rev.1; includes divisions 70, 71, 72, 73, 74.  
Source: Eurostat: Labour force survey

**Table 1: Business services  
Main indicators, 1992**

	Number of enterprises	Turnover (million ECU)	Number of persons employed
Belgique/België	(1) 88 178	24 833	(1,5) 190 790
Danmark	(1) 21 621	(2) 10 995	(2) 127 872
Deutschland	(2) 308 870	(2) 130 285	(5) 1 293 508
Ellada (3)	(4) 20 068	N/A	41 710
España (2)	85 086	N/A	458 540
France (6)	260 933	145 786	1 708 118
Irland (3)	6 440	N/A	38 029
Luxembourg (1)	2 270	N/A	9 445

(1) 1991

(2) 1990

(3) 1988

(4) Number of local units.

(5) Number of employees.

(6) Excluding renting, leasing and hiring of other means of transport without driver.

Source: Eurostat; Mercure

services is faster in the US in comparison with the European countries and Japan. A relevant factor in this regard is the greater use of information technology in the US. Besides the fact that this has created a larger demand for service functions allied to the operation of computer hardware, different business services are required to implement and guide organisational changes to ensure success of the introduction of information technology. Another probable factor is a more developed market for business services for small- and medium-sized firms in the US than in the European countries and Japan.

## MARKET FORCES

### Demand

The main causes for the growing demand for business services within the EU include increasing complexity of business processes and society, changes in 'business practices', and externalisation. The growth of this sector is related to economic growth generally, although in some specific sub-sectors such as consulting services, there is a remarkable anti-cyclical dynamic whereby, many larger companies reduce the number of in-house experts and contract out these business services to reduce overheads and costs. Indeed, many consulting services are demanded in recessionary times, as companies seek external help to boost performance.

Specialisation, technological developments, and optimisation of scale benefits play an important role in this regard. Specialisation leads to more stages in the production process and to more co-ordination between those stages. Moreover, new logistic concepts put more pressure on demand for co-

ordination and has stimulated the need for services. Technological developments lead to changes in organisation and require different service functions.

Externalisation or contracting out is a growing practice. Such implies an increased demand for externally provided business services. Two variants of contracting out can be distinguished. The first variant concerns contracting out for a service that formerly had been performed internally. Arguments for contracting out for services include a more flexible organisation, lower costs, better quality service and insufficient in-house know-how. Control over the production process is an important reason for generating certain services internally. The second variant involves the contracting out for forms of services which are new to the sector. For example, when a company is computerised, a whole range of related automation and software services need to be hired as well.

The degree of externalisation differs per service, per size of company and patterns are different among the European countries. The increasing use of external (management) consultants is related to demand for services which have never been performed internally. Financial review, engineering, operational services and advertising are externalised to a relatively high degree (more than 50%). Combined internal and external provision of business services is used relatively often for legal and computing services. Because of its strategic importance, publicity and research and development services are provided internally.

Small companies' owners-managers tend to do a substantial part of the business service function themselves. Medium-sized

**Table 2: Business services  
Number of employees**

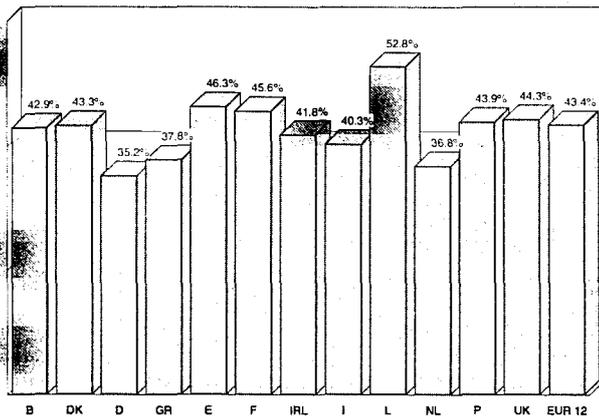
(units)	1990	1995	1996	1997	1998	1989	1990	1991	1992
Belgique/België	N/A	N/A	114 730	128 875	151 461	171 157	184 305	190 790	N/A
Danmark (1)	N/A	89 887	96 437	103 395	105 706	106 334	110 270	N/A	N/A
Deutschland	N/A	792 455	825 109	883 730	935 503	999 093	1 069 080	1 178 891	1 270 711
España (2)	138 823	N/A	N/A	N/A	N/A	N/A	458 540	N/A	N/A
France	N/A	N/A	894 145	959 668	1 118 539	1 314 815	1 386 796	1 426 996	1 430 196
Irland	N/A	N/A	N/A	N/A	32 711	N/A	N/A	N/A	N/A
Luxembourg	3 811	4 141	4 569	5 116	5 724	6 541	7 399	8 591	N/A
Portugal (1)	N/A	N/A	N/A	N/A	N/A	N/A	50 995	N/A	N/A

(1) Excluding renting, leasing and hiring of other means of transport without driver.

(2) Number of persons employed

Source: Eurostat; Mercure

**Figure 3: Business services**  
**Share of female workers in total employment, 1994 (1)**



(1) Data provided in NACE/Rev.1; includes divisions 70, 71, 72, 73, 74.  
 Source: Eurostat: Labour force survey

companies rely for more than half of the business services on outsiders. The large companies, with more than 500 employees, often combine internally- and externally-provided business services.

### Supply

The market for business services in Europe is extremely fragmented. Many suppliers are small or even one-person enterprises. The degree of concentration is fairly low and the share of the market for the largest four or eight companies is below 25% in most parts of the market. The market is also very diverse with business conditions very different; as such, examples given often relate to specific sub-sectors only.

In all European countries business service companies have low entry barriers and (as a result) a relatively high birth rate compared to the national average of 3.5%. This rate - the number of newly started companies measured annually divided by the number of existing companies - depends on the type of service supplied and varies between 5% and 15%. In general, the number of companies in the business services sector is growing faster than in other branches of business.

## INDUSTRY STRUCTURE

### Companies

Industry structure varies significantly between the sub-sectors. There are a number of fast-growing conglomerates which play an increasingly important role in some sectors, for example, in accountancy. Most countries in Europe are dominated by the networks of the "big six" with total fees varying between 2.5 and 4.5 billion dollars: Ernst and Young, KPMG, DRT International, Arthur Andersen, Coopers and Lybrand and Price Waterhouse. These firms have globalised and are internationally developed because they followed the lead of their clients who went global and preferred to have one accountant for all their branches. Diversification strategies have pushed these firms into tax advisory and management consultancy services.

Advertising, like accountancy, is characterised by the large multinational agencies, which have grown by acquisition and diversification, and the small- to medium-sized agencies mainly operating in domestic markets. Europe's five leading advertising agencies are Saatchi and Saatchi (UK), FCB-Publicis (USA/F), Eurocom/Havas (F), WCRS Worldwide (UK) and HOM (USA/F). Billings vary between 2 billion and 5 billion dollars which represents about 8 billion ECU and about 25% of the total market in Europe.

Increasing investment needs were the basis for the growing scale of operations, made through a series of mergers and acquisitions in the market research sector. They have resulted in some major corporations and a rise in concentration rate in this subsector. The top five firms in Europe, A.C. Nielsen (USA), I.M.S. International (USA), Pergamon/AGB Research Inc. (UK), G.F.K. Group (D) and Research International (UK) account for roughly 37% of the total revenue in Europe.

Since the beginning of the 90s, legal firms have engaged in international expansion. Continental law firms, because of a lack of capital, rely more often on international co-operations rather than international branches. Demand for business legal services is often linked to financial transactions of firms. The size of the biggest law firms is relatively small compared to firms in other subsectors. Europe's leading law firms by number of foreign offices include Clifford Chance (UK), Loyens and Volkmaars (Netherlands), Freshfields (UK), Allen and Overy (UK) and McKenna and Lo (UK).

Since tremendous growth in the 80s and a slow down in the first half of the 90s, software services have experienced strong growth once again. The majority of the companies are small- to medium-sized. The largest companies are part of US hardware manufacturers and have a dominant position in the supply of software services. Only a few independent European software vendors operate on a truly international scale. In the beginning of the 90s, stagnant market segments with thin profitability, coupled with the advent of a one-stop shopping service concept, triggered a wave of merger and acquisitions that has restructured the sector. Today, software and computing service are supplied by computer hardware producers, systems and software houses, management consultancy and accountancy firms and telecommunication companies. Important suppliers of software and computing services in Europe are EDS (USA), Cap Gemini (D), IBM (USA)

## REGULATIONS

For many services, supply has thus far been controlled by well-organised professional bodies that aim to restrict admission. Specific services can only be supplied by specific professions. Lobbying has ensured that entry to markets is restricted by laws and regulations. In addition, clients are sometimes legally obliged to purchase certain services. For most professions there is no single European standard; the Commission favours a mutual recognition approach instead of pursuing harmonisation in all regulated professions. One of the consequence of this approach is to limit the need to modify national practices and customs.

Moreover, an indirect relationship exists between laws and regulations and the demand for business services. If the government issues new norms with which companies must comply, this often implies an extra demand from companies for business services to adopt knowledge to comply with these norms.

New environmental standards have provided extra work for engineering firms, research agencies, and solicitors. Even more, environmental regulations have stimulated the development of environmental services. Europe is still in the early stage of comprehensive environmental regulation. Legislative demands are increasing throughout Europe, and the need for environmental services is expected to increase, accordingly.

It must be noted that for many other business services, there is still a remarkable absence of regulation and/or self-regulation.

## OUTLOOK

The economy has recovered from a recession in the first half of the 90s. After a period of only small growth and stagnation, business services growth is following the pattern of growth

seen in economic and industrial production, generally. Not only information and computer related services show strong growth again but also temporary work services, as a consequence of the economic uncertainty and a changing relationship between employee and employer, are showing spectacular growth.

Employment in the business services sector is expected to rise and perform better than the national average. Employment growth for the business services sector in 1995 is expected to be 5.5%. As more markets open up, and barriers of trade between countries in Europe and other regions in the world disappear, new opportunities will be created that will fuel this growing trend.

Written by: Bakkenist Management Consultants.

# Advertising and direct marketing

## Nace (Revision 1) 74.4

Advertising is the persuasive process by which users for goods, services or ideas are found through paid-for communications media. There is a clearly defined trend in many European countries towards direct response advertising in the mass media. The classic media are television, radio, newspapers, magazines, cinema, and outdoor. The main encouragement for on-line and interactive marketing has come from telecommunications. The reduction in the cost of telecommunications, due to the gradual liberalisation of telecom monopolies in Europe and to economies of scale, is one important element. Another important element, the development in telecommunications, closely interrelated with the first, is that of digitalisation, allowing for faster and less 'bulky' exchanges of voice and data messages. Therefore, a telecommunication programme is an essential tool for the economic growth in Europe.

### INDUSTRY PROFILE

#### Description of the sector

The sector is engaged in communications services that promote ideas, goods and services to the general public, to specific target groups, to individuals, and to other businesses.

Advertising constitutes a large part of the marketing communications business, which also includes direct marketing, public relations, sponsorship, and sales promotion.

The entire category is likely to grow considerably over the next few years, acting as a catalyst for the growth of the European economy as a whole.

There has been a considerable shift in the media used by general advertising (refer table 9). New opportunities to advertise on television have caused an increase in television's share of total advertising and a corresponding decrease in the share held by print media. However, this trend is seen as a normalisation process caused by the relaxation of the regulatory brakes on commercial television in Europe, which

is allowing the pattern of media shares in Europe to approximate to those already established in Japan and the USA.

The advent of new media is unlikely to pose a threat to classic advertising. Rather, the new media will increasingly be used in addition to and in support of general advertising campaigns, providing important new opportunities for direct marketing, sales promotion and niche communications.

Matching the realities of the market-place, advertising agencies are broadening the scope of their services to clients to include the full range of marketing communications. They are also widening the geographical spread of their services, particularly within the European Union's Single Market, aiming to build suitable brands across frontiers by using the same concept expressed in different ways according to the cultural and linguistic characteristics of the people they address.

Advertising is the persuasive process by which users for goods, services or ideas are found through paid-for communications media. The classic media are television, radio, newspapers, magazines, cinema, and outdoor. The increased use of telephone numbers and addresses in classic media advertisements reflects the desire for an on-going dialogue with consumers: to invite them to send for further information.

Today, marketing is 'consumer-led'. Market power is firmly in the hands of the consumer: the individual who is presented with a wide choice of goods, services, job opportunities, causes and ideas through a plethora of media, which have changed more in the decade between 1985 and 1995 than in all of the previous thirty years.

'Mass media' are becoming more fragmented. They are diversifying, 'demassifying', offering multiple choice to fragmented audiences. This has helped the development of direct marketing, which aims at definable, minority target groups through 'narrowcast' media.

Specialised 'niche' publications continue to mushroom all over Europe. Instead of trying to offer something for everyone, they speak to very specific groups of readers only. They do not offer the advertising to the general public, but to useful readers, and to real potential buyers. Print media are spilling over frontiers, thus, millions of copies of newspapers and magazines are being imported and exported around our continent every week.

Direct marketing is a marketing system that uses media which are unique (direct mail, mail order catalogues, tele-shopping,

**Table 1: Advertising and direct marketing**  
**Main indicators, 1992**

	Number of enterprises	Turnover (million ECU)	Number of persons employed
Belgique/België	(1) 8 711	2 959	(1,5) 9 927
Danmark	(4) 2 527	(1) 1 229	(1) 9 500
Deutschland	(2) 30 631	(2) 14 866	(5) 79 648
España (2)	2 818	N/A	20 295
France	16 900	18 592	123 005
Ireland (3)	156	N/A	1 992
Luxembourg	(1) 133	(2) 51	(1) 536
Nederland (1)	6 715	3 302	23 600
Portugal	248	914	4 419
Suomi/Finland	1 231	185	3 664
United Kingdom (6)	10 080	N/A	N/A

(1) 1991

(2) 1990

(3) 1988

(4) Number of local units.

(5) Number of employees.

(6) Including market research.

Source: Eurostat: Mercure

**Table 2: Advertising and direct marketing  
Number of employees**

(units)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	4 108	5 149	5 766	6 487	8 071	8 584	9 208	9 927	N/A
Danmark	N/A	7 088	7 895	8 601	8 834	8 787	8 730	N/A	N/A
Deutschland	41 790	46 990	49 378	54 096	58 602	62 489	68 290	74 219	79 648
France	N/A	64 220	70 395	82 726	91 006	108 127	102 699	109 262	106 502
Luxembourg	200	225	210	231	296	455	386	485	N/A
Nederland	N/A	N/A	N/A	N/A	12 600	13 600	16 700	16 700	N/A
Portugal	N/A	N/A	N/A	N/A	N/A	N/A	3 760	4 317	4 322

Source: Eurostat: Mercure

home-shopping and telemarketing) and media which are shared (off-page and off-screen). There are two types of direct mail: 'addressed' (i.e. to a particular person or entity) and 'unaddressed'.

Direct marketing has traditionally concentrated on mail order. However, direct response mechanisms in the printed press, broadcasting and other mass media, telephone marketing (also known as telemarketing) and interactive or semi-interactive systems, such as videotex and the Information Super-Highways, are increasingly becoming vehicles for direct marketing and "electronic retailing".

Direct mail is growing fast as direct response advertising develops to serve the needs of 'niche' marketing. With the removal of internal barriers to trade within the EC, large numbers of small and medium-sized companies may be expected to take advantage of the direct mail opportunities offered by a market of 345 million consumers.

Direct marketing is much broader in scope than the 'direct contact', which is typified by door-to-door distribution of leaflets. Direct Marketing uses all the message delivery systems, not just the mail. It is extremely useful, for example, for advertisers who wish to circumvent the bottleneck imposed by distribution chains. With Direct Marketing they contact the individual consumers direct, thus, using direct selling as an alternative distribution system.

In this rapidly evolving situation, advertising agencies have adapted, in order to provide not only the services required

for handling advertising budgets, but also the broader communications' services required by marketing budgets. Agencies are developing in fact (and in name) into marketing communications agencies; and their clients are insisting on talking to communications strategists with a broad range of expertise, not simply the traditional account people.

Changes and innovations in marketing and advertising practice will continue to occur as the European economy expands. Producers and distributors will turn increasingly to advertising as the most efficient and cost-effective way of reaching new markets and finding new consumers in the European Union's integrating, single market.

### Recent trends

1994 was the year when economies in the rest of Europe began following the UK out of the recession. Economic performance improved massively in Northern countries. The total investment in advertising and direct marketing in Europe in 1994 was significantly higher than in 1993 with about 80 billion ECU in 1994 compared with 73.6 billion ECU in 1993. In 1993, advertising accounted for approximately 64% of the total expenditure, while in 1994 the share of advertising accounted for 62% of the total expenditure. Advertising showed an increase of 6.8 %, direct marketing increased by 12%.

Television's share of total advertising investments accelerated sharply from 1990 (25%) to reach 31% in 1994. The significant advances were in France, Germany and Italy. This was coupled with the effects of deregulation in Scandinavia and the Benelux

**Table 3: Advertising and direct marketing  
Advertising expenditure at current prices (1)**

(million ECU)	1980	1981	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	405	400	441	484	538	668	730	806	863	917	1 029	1 116	1 143
Danmark	365	428	496	550	610	685	758	782	862	807	888	903	995
Deutschland	4 386	5 334	6 352	7 170	7 772	8 416	9 060	9 876	10 755	12 326	13 633	14 422	15 474
Ellada	73	105	119	122	136	156	205	257	330	387	564	642	815
España	833	974	1 392	1 089	1 349	1 698	2 215	2 909	3 484	4 165	5 006	3 756	3 569
France	2 273	2 857	3 469	3 965	4 539	5 159	5 871	6 626	7 331	7 040	7 112	6 974	7 383
Ireland	92	137	142	154	188	223	248	293	321	329	365	374	389
Italia	1 036	1 446	2 411	2 620	3 153	3 788	4 125	4 608	5 017	5 326	5 564	4 251	4 208
Nederland	1 232	1 157	1 917	1 245	1 385	1 505	1 564	1 738	1 969	2 083	2 200	2 310	2 515
Österreich	N/A	N/A	N/A	482	541	600	681	838	936	1 015	1 094	1 179	1 249
Portugal	38	59	63	76	94	140	195	254	317	412	532	531	594
Suomi/Finland	N/A	N/A	N/A	716	731	793	916	1 109	1 084	916	708	597	703
Sverige	N/A	N/A	N/A	924	980	1 076	1 270	1 470	1 446	1 357	1 357	1 153	1 332
United Kingdom	4 269	5 024	6 085	6 666	6 704	7 329	9 057	9 928	9 307	9 006	8 843	8 682	9 693
EUR 15 (2)	N/A	N/A	N/A	26 263	28 720	32 236	36 895	41 494	44 022	46 086	48 895	46 890	50 062
USA	25 494	35 625	66 534	73 493	61 008	55 303	57 708	65 005	57 629	56 694	56 303	65 424	70 286
Japan	5 529	8 477	11 833	13 619	15 406	16 507	20 487	22 970	20 718	23 424	22 683	26 601	28 890

(1) Net of discount, excluding production.

(2) Excluding Luxembourg.

Source: EAAA



**Table 4: Advertising and direct marketing**  
**Final adjusted total expenditure in direct marketing, 1993**

(million ECU)	Mailings	Direct advertising	Telemarketing/ others	Total
Belgique/België-Lux.	568	198	49	815
Danmark	665	100	85	850
Deutschland	5 728	3 538	1 720	10 987
Ellada	20	101	13	134
España	510	1 254	78	1 842
France	4 010	754	776	5 540
Ireland	68	28	14	111
Italia	1 222	1 238	190	2 650
Nederland	1 382	460	1 103	2 945
Portugal	20	82	11	113
United Kingdom	1 388	1 936	769	4 094
EUR 12	15 581	9 688	4 811	30 081

Source: EAAA

countries in the late 1980's. Radio, cinema and outdoor media remained virtually unchanged with about 10% between them. Over the past ten years, newspapers remained fairly resilient in the face of the onslaught from television. Newspapers lost only four points of their original share of 43% of the market, which they had in 1985. The significant share loss has been for the magazine sector which has been cut back from 25% in 1985 to only 20% today. This is doubly significant, since the revenue is spread across significantly more in the niche and specialist titles than before. General interest magazines have been the significant losers, in terms of market share.

Direct marketing (also known as "dialogue" or "database" marketing) has greatly benefited from advances in database management and computer technology. This has not only enabled advertisers to select their target audience very accurately, but has also facilitated the taking and fulfilment of orders and the provision of customer care programmes (providing clients with additional information on the products they have bought, after-sales service, advice on the use of products etc). Direct marketing techniques are particularly popular with SMEs who cannot compete against established brands head-on in the mass media, with charities and political parties who use telemarketing and direct mail to appeal for funds, and with service industries (such as the financial services sector)

which need to deliver a message explaining their services in some detail.

There is a clearly defined trend in many European countries towards direct response advertising in the mass media. This could be taken as an indication that, once the new media are firmly established in a sufficiently large percentage of households, the new media will be able to benefit from the upsurge in direct response mechanisms by virtue of their interactivity.

The recent trends towards database or 'dialogue' marketing has been noted in various studies prepared over the last few years by the advertising industry. The advent of the new on-line services will accelerate this process. However, at least for business-to-business, the electronic systems will not do away with the established paper-based media. The 'paperless office' is at present a myth, and it is highly unlikely that the 'paperless household' relying only on electronic systems will be any more than a myth in the coming decades.

The consumer will play a new role. She/he is not only a receiver of commercial messages, but has to become active to select relevant information, to place orders, etc. Therefore interactivity, creating a dialogue with the customer, will be the most important aspect, with on-line media consumers hav-

**Table 5: Advertising and direct marketing**  
**Advertising expenditure per capita**

(ECU)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	36.4	43.2	49.1	54.6	67.7	73.9	81.2	86.8	91.8	102.7	110.8	113.2
Danmark	71.8	97.0	107.6	119.2	133.7	147.8	152.4	167.9	156.8	172.0	174.3	191.5
Deutschland	79.4	103.8	92.3	100.1	108.2	116.3	126.0	135.9	154.6	169.8	178.1	190.2
Ellada	6.4	12.0	12.3	13.7	15.6	20.5	25.6	32.6	37.9	54.8	62.0	78.3
España	19.7	36.3	28.4	35.1	44.0	57.3	75.1	89.8	107.2	128.5	96.2	91.2
France	41.5	63.0	71.9	81.9	92.7	104.9	117.8	129.6	123.7	124.3	121.2	127.8
Ireland	37.8	40.2	43.5	53.1	62.9	70.2	83.4	91.5	93.4	103.0	105.1	109.0
Italia	17.5	42.6	46.3	55.7	66.9	72.9	81.3	88.5	93.9	98.0	74.6	73.6
Nederland	73.7	132.9	86.2	95.3	103.0	106.3	117.4	132.2	138.8	145.4	151.6	163.9
Österreich	N/A	N/A	63.8	71.6	79.3	89.8	110.2	122.2	130.3	142.7	146.1	155.8
Portugal	3.8	6.7	7.6	9.4	14.0	19.5	25.5	32.0	41.7	54.0	53.8	60.1
Suomi/Finland	N/A	N/A	146.3	148.9	161.0	185.5	223.8	217.9	183.3	140.8	118.1	138.4
Sverige	N/A	N/A	110.8	117.3	128.4	150.9	173.8	169.6	158.0	157.0	132.7	152.3
United Kingdom	68.0	107.8	117.6	118.1	128.7	158.7	173.4	162.0	156.1	152.7	149.4	166.3
EUR 15 (1)	N/A	N/A	70.3	76.7	86.2	98.2	111.9	118.5	119.1	124.7	119.6	129.4
USA	102.5	280.7	309.1	252.5	221.4	234.3	261.3	230.6	224.4	220.8	253.8	N/A
Japan	47.3	98.6	112.8	126.8	133.6	167.1	186.6	167.7	189.0	182.4	213.4	N/A

(1) Excluding Luxembourg.

Source: EAAA



**Table 6: Advertising and direct marketing  
Comparison of expenditure per capita, 1994**

(ECU)	Advertising	Direct marketing (1)
Belgique/België	113.2	77.9
Danmark	191.5	164.1
Deutschland	190.2	135.7
Ellada	78.3	12.9
España	91.2	47.2
France	127.8	96.3
Ireland	109.0	31.2
Italia	73.6	46.5
Nederland	163.9	193.3
Portugal	60.1	11.5
United Kingdom	166.3	70.5
EUR 12 (2)	124.1	86.6

(1) 1993

(2) Excluding Luxembourg.

Source: EAAA

ing to take the initiative themselves to look at commercials. This means that commercial messages have to rouse interest or be entertaining in order to attract the consumer's attention.

The main encouragement for on-line and interactive marketing has come from telecommunications. The reduction in the cost of telecommunications, due to the gradual liberalisation of telecom monopolies in Europe and to economies of scale, is one important element. The Postal Operators, for example, have been studying the effects of competition between paper-based mail and electronic mail such as e-mail, faxes, etc. Their conclusions have been that the cost differentials have disappeared and that soon telecommunications will become cheaper even than local mail. This realisation explains the moves into electronic mail (sometimes termed 'non-physical mail') by the postal operators.

The second development in telecommunications, closely interrelated with the first, is that of digitalisation, allowing for faster and less 'bulky' exchanges of voice and data messages. The advances in voice systems on Internet and the World Wide Web which were announced in the summer of 1995 offer the greatest challenge yet to both telecommunications and postal operators.

Due to digitalisation, services can be offered all over the world. Images, sound and text can easily be transferred via, for example, computers from one place to another. This means that in the advertising and direct marketing sectors, globalisation of the offer can take place, subject to the cultural and linguistic characteristics of the recipients.

Digitalisation also means, increase in the speed of the present marketing process. With the help of new technology, everything from the production of the commercials, to the handling and the fulfilment of orders including the delivery, will be easier and faster.

Interactive (direct) marketing, or creating a dialogue with the customer, with the help of databases that save relevant information received from the client, provides a more focused, precise target, and at the same time leads to a more satisfied and loyal customer. This also leads to a more interested customer who takes the initiative. The challenge is to create that possibility and then to benefit from it.

### Advertising

Advertising agencies define turnover or 'billings' in terms of the amount of money they spend in the media on their clients' behalf. Normally, the gross earnings are fixed at a percentage of turnover. The mass media with the highest billings for advertising agencies are newspapers and television. Both media together account for about 90% of total advertising expenditure. In 1994, the printed press accounted for approximately 59% of total advertising expenditure, television for 31%, with radio, cinema and outdoor making up the remaining 10%. Northern countries, the UK and Ireland take the lead for newspapers expenditure with between 44% and 64% of advertising expenditure. Greece, Italy and Portugal demonstrate a very high market share in television with a range between 55% and 66%. France is the only country with a double digit market share for outdoor, at 12%.

The average per capita expenditure on advertising in the EU in 1994 was 129 ECU. Germany and Denmark lead the way with over 190 ECU per capita, followed by the UK (166 ECU), the Netherlands (164 ECU), Austria (155 ECU) and Sweden (152 ECU). Portugal is the country with the lowest (60 ECU).

### International comparison

At first glance, the three major advertising markets of the world show striking similarities in the way that the distribution

**Table 7: Advertising direct marketing  
Advertising expenditure as share of GDP at market prices**

(%)	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgique/België	0.48	0.28	0.46	0.47	0.55	0.57	0.58	0.57	0.57	0.60	0.62	0.59
Danmark	0.95	0.71	0.72	0.73	0.77	0.82	0.82	0.85	0.77	0.81	0.78	0.80
Deutschland	0.88	0.81	0.88	0.86	0.88	0.90	0.92	0.91	0.89	0.90	0.88	0.90
Ellada	0.30	0.28	0.23	0.28	0.32	0.38	0.43	0.51	0.55	0.76	0.84	1.01
España	0.63	0.69	0.50	0.57	0.67	0.76	1.12	0.90	0.97	1.12	0.92	0.88
France	0.48	0.55	0.57	0.61	0.67	0.72	0.76	0.78	0.73	0.70	0.65	0.66
Ireland	0.78	0.60	0.61	0.70	0.82	0.85	0.90	0.91	0.90	0.93	0.93	0.88
Italia	0.37	0.46	0.47	0.51	0.58	0.58	0.58	0.58	0.57	0.59	0.50	0.49
Nederland	1.01	1.19	0.74	0.76	0.80	0.80	0.84	0.88	0.89	0.89	0.87	0.90
Österreich	N/A	N/A	0.56	0.57	0.59	0.63	0.73	0.75	0.76	0.76	0.76	0.75
Portugal	0.22	0.26	0.25	0.28	0.39	0.48	0.54	0.60	0.66	0.72	0.73	0.80
Suomi/Finland	N/A	N/A	1.01	1.03	1.04	1.04	1.08	1.02	0.93	0.86	0.84	0.85
Sverige	N/A	N/A	0.70	0.72	0.77	0.83	0.85	0.80	0.70	0.71	0.73	0.80
United Kingdom	1.11	1.11	1.10	1.17	1.22	1.28	1.30	1.21	1.10	1.10	1.08	1.13
EUR 15 (1)	N/A	N/A	0.63	0.66	0.72	0.76	0.82	0.81	0.79	0.82	0.80	0.82
USA	1.32	1.39	1.40	1.42	1.42	1.41	1.38	1.34	1.24	1.23	1.22	1.24
Japan	0.73	0.74	0.77	0.76	0.79	0.84	0.88	0.90	0.86	0.80	0.74	N/A

(1) Excluding Luxembourg.

Source: EAAA

**Table 8: Advertising and direct marketing**  
**Distribution of total advertising expenditure by media, 1994**

(%)	Newspapers	Press Magazines	TV	Radio	Cinema	Outdoor	Total
Belgique/België	26.0	26.0	31.0	8.0	1.0	9.0	100.0
Danmark	62.0	16.0	17.0	2.0	1.0	2.0	100.0
Deutschland	50.0	20.0	21.0	4.0	1.0	3.0	100.0
Ellada	14.0	14.0	66.0	4.0	N/A	2.0	100.0
España	32.0	16.0	37.0	9.0	1.0	5.0	100.0
France	25.0	23.0	32.0	8.0	1.0	12.0	100.0
Ireland	57.0	5.0	25.0	8.0	1.0	4.0	100.0
Italia	22.0	17.0	57.0	1.0	N/A	3.0	100.0
Nederland	47.0	25.0	20.0	4.0	0.4	3.0	100.0
Österreich	44.0	18.0	22.0	10.0	0.4	5.0	100.0
Portugal	17.0	17.0	55.0	5.0	N/A	6.0	100.0
Suomi/Finland	61.0	13.0	19.0	4.0	0.1	3.0	100.0
Sverige	64.0	11.0	19.0	1.0	1.0	5.0	100.0
United Kingdom	43.0	18.0	32.0	3.0	1.0	4.0	100.0
EUR 15 (1)	40.3	17.1	32.4	5.1	0.8	4.7	100.0
USA	39.0	13.0	36.0	11.0	N/A	1.0	100.0
Japan	30.0	9.0	41.0	5.0	N/A	14.0	100.0

(1) Excluding Luxembourg  
 Source: EAAA

of advertising has developed over the last thirteen years. In all three cases, the television media have increased their share of total spending by a noticeable margin, and that increase has consistently come at the expense of the print media.

However, the similarities remain on the surface, and it should be pointed out that there are fundamental differences in the way the shift has happened across the three regions.

The main difference comes from the fact that the USA behaves largely like a mature advertising market in which absolute volumes of spending, in real terms, have not been growing by significant margins. The Japanese advertising market was growing vigorously year by year up to 1988, however, this market is becoming more and more like of that of the USA. Europe sets itself apart from the other two markets by the fact that its growth in absolute spending, since the early 1980s, has continued virtually unabated until very recently. The effects of this need to be explained.

In the USA, television has increased its share of spending since 1980 when it had 31% to 1994 when it had risen four points to 35%. This growth over such a long span of time is relatively minor when one considers major upheavals such as the introduction of cable television in the early 1980s and the changing status of the national television networks including the introduction of a new national network, Fox Television. It is noteworthy that these significant changes in market shape have produced changes in spending share of a less dramatic character. By the same token, magazine media in the USA have virtually maintained their position throughout

the thirteen years, falling only from 14% in 1980 to almost 13% in 1994. The remarkable resilience has been shown by the newspaper medium in America, which of the 43% of spending which it had in 1980, it has maintained 39% thirteen years later.

The main dynamics in the shifting share patterns of the USA can be associated with the vagaries of the advertising market itself, and its bumpy changes in size year by year, rather than any inexorable movement away from print and towards television. Those shifts are there, but when they are compared with the situation in Europe they are clearly of a different character.

The picture in Japan does more to support the view of an inexorable shift out of print and into television, but even here we have to say that the shift is not of the same dramatic nature as that which we have witnessed in the last decade in Europe. Going back to the mid 1980s, television in Japan had 37% of the market, which grew to 40% by 1994, a significant increase, but not one which could be described as the rout of its rival media. The newspaper media in Japan have hung on to thirty percentage points of the thirty-four which they held in 1984. This is far from being the picture of a dying medium.

Turning to Europe, we see a very different picture, at least since the mid to late 1980s. In Europe, the shift to television, continent-wide, has been noticeable and dramatic, a shift from 22% in 1985 to 32% in 1994. Overall, that growth in share terms has come from the relative shrinkage of the print media.

**Table 9: Advertising and direct marketing**  
**European advertising expenditure by medium (1)**

(million ECU)	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Newspapers	6 531	10 376	11 193	12 430	14 151	15 673	16 447	17 239	17 958	17 351	18 342
Magazines	4 020	6 141	6 648	7 533	8 327	9 303	9 677	9 827	10 072	8 915	9 156
TV	2 662	5 306	5 954	6 881	8 177	9 313	10 307	11 457	13 185	13 156	14 466
Radio	690	1 011	1 116	1 202	1 465	1 635	1 750	1 791	1 930	2 034	2 203
Cinema	153	183	197	206	224	250	271	275	288	301	317
Outdoor/Transport	945	1 127	1 363	1 514	1 682	1 904	2 104	2 210	2 300	2 209	2 290

(1) Not including Austria, Finland, Sweden.  
 Source: EAAA

**Table 10: Advertising and direct marketing  
Top 20 advertising agencies by billings in the EU, 1995**

Rank		Billings (million ECU)		Employment
		1995	1994	1994
1	EuroRSCG	3555	3543	5 500
2	Publicis FCB	3165	3109	4 052
3	Ogilvy and Mather	3066	2608	2 300
4	Young and Rubicam	3061	2396	1 900
5	DDB International	2676	2524	2 500
6	BBDO Europe	2676	2440	2 300
7	McCann-Erickson	2429	2487	3 212
8	Grey International	2200	2103	3 245
9	Bates Europe	2028	1833	2 252
10	Saatchi and Saatchi	1988	2019	2 027
11	J. Walter Thompson	1872	1838	1 650
12	DMB&B	1813	1687	2 075
13	Ammirati Puris Lintas	1699	1733	2 275
14	The Lowe Group	1498	1432	1 200
15	Leo Burnett Europe/ Middle East/Africa	969	946	1 476
16	BDDP	962	995	1 600
17	TBWA Worldwide	832	732	1 103
18	The GGT Group	560	611	992
19	Testa International	550	589	700
20	Bozell Worldwide	330	321	620

Source: EAAA

Although it has to be said that it is magazine media, particularly the mass appeal titles which dominated the coloured print media scene in the early 1980s, which have been the biggest 'losers'. In one short decade, print media in Europe have fallen from almost 70% of the market collectively to only 59%.

The reasons for Europe's major shift in advertising shares by medium, when compared with the other two major markets, are not difficult to discern. The significant fact is that, unlike the USA and Japan, Europe during the 1980s saw significant deregulation of commercial television, a loosening grip on advertising monopolies by government-run television, and the proliferation of new commercial services in response to the newly liberal climate for commercial broadcasting.

One can conclude from this that legislation was artificially holding back the development of television advertising until the liberalisation programmes of the late 1980s. If those restrictions had not been in place, it could be argued that Europe would have been showing share patterns by medium much more typical of the US and Japanese scenes much earlier on in time. The hypothesis is that, despite the description of television's advance as a runaway phenomenon, it is in fact a 'normalisation' process. If this is true, we would expect television to consolidate its position at something like a third of the market, in the reasonably near future.

## MARKET FORCES

### Demand

Very few large international companies run their own advertising department. Instead, most use advertising agencies. Multinational companies prefer working with advertising agencies with offices in all key markets. Advertising also plays an important role in promoting retail outlets. Although small and medium-sized companies may not be able to afford the investment required for national mass-media advertising. The increase of local television and radio stations should encourage more local advertising campaigns by SMEs.

### Supply and competition

Evidence provided by the introduction of commercial television and radio in relation to print media suggests that a new medium tends to increase overall advertising investments. Therefore, the introduction of additional opportunities for advertising and direct marketing, e.g. interactive television, CD-ROM/CD-I and on-line publishing and services, is likely to contribute to an expansion of the total advertising investments and revenues.

### Agency revenues

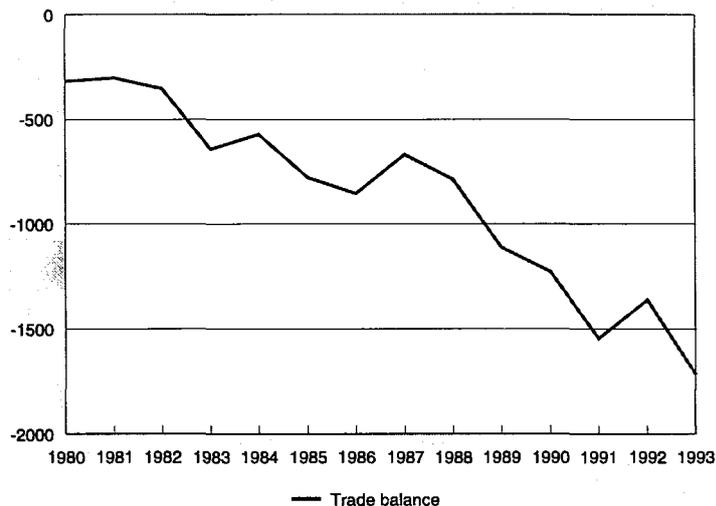
Agency revenues are not growing nearly as quickly as one might have expected, and margins remain extremely tight. In the late 1980s, most of the network building was completed in Western Europe. Central and Eastern Europe became a high priority for the major players over the past three or four years. Most have acquired or set up offices in Russia, Prague, Budapest and Warsaw. But in 1994, the focus for expansion shifted to the Middle East, and in particular to Turkey and Israel.

The 1994 ranking bears witness, above all, to the spectacular growth of agencies with European roots. No less than 9 of the top 20 agencies are agencies with their headquarters in Europe. EuroRSCG has retained the number one position ever since 1991 (date of the merger of Eurocom and RSCG), in spite of a sharp decrease of no less than 12% in terms of billings since 1993.

TBWA, DMBB and Young Rubicam experienced consistent growth in 1994, with European billings increasing respectively by 33.5%, 20.2% and 18.4% between 1993 and 1994. This allowed Young Rubicam (which experienced the biggest cut in staff from 2100 to 1900 between 1993 and 1994) to move from the 10th to the 7th place, approaching the n° 3 position it had held in 1992.

In 1994, TBWA was present in 18 countries compared to 12 in 1993, and it had almost doubled its staff from 610 to 1103. DMBB enjoys continuous growth since several years (4.7% in 1992, 9% in 1993 and 20.2% in 1994). Fourteen agencies

**Figure 1: Advertising and direct marketing**  
**Advertising - External trade balance at current prices (1)**



(1) Extra-EU exports less imports. Estimates based on balance of payments.  
 Source: Eurostat: International trade in services

(compared to seven in 1993) out of the top 20 in Europe increased or maintained their level of staff.

It is unfortunately not possible to equate these figures with total European expenditures since the latter cover measured media (above-the-line) investments only, whilst agency billings include the sum of all agency invoices, including traditional above-the-line business and agency fees.

## INDUSTRY STRUCTURE

### Companies

Advertising agencies are effectively divided into two types:

- large multinational agencies and agency groups,
- small to medium-sized agencies mainly operating in domestic markets.

Both groups are represented in the European Association of Advertising Agencies (EAAA). The aggregate membership represents about 2000 agencies, which place about 80% of all media advertising and a very high percentage of all marketing communications in Europe.

### Impact of the Single Market

Forms of protectionism of national markets through advertising bans; stringent packaging and labelling standards and the overly dominant positions of media companies in a number of Member States (notably Italy) are considered to be the most important obstacles to free competition within the Union. The marketing communications business also experiences the cost of telecommunications and postal services, provided by, amongst others, national monopolies as being extremely high.

## REGULATIONS

Traders, marketers, broadcasters, service-providers and advertisers in the European Union are all faced with a great many laws, rules and regulations, contained in statute law, administrative regulations and self-regulatory codes of conduct. For companies wishing to engage in cross-border trading, broadcasting, marketing or advertising, the problems are compounded by the fact that they often have to deal not with

one set of laws and regulations, but with those of several countries within an (often complex) European law context.

Apart from specific advertising rules, the context for cross-border trading comprises such diverse matters as contract law, data protection law, credit and payment rules, postal regulations and environmental rules. There are also more practical matters (but with a regulatory aspect), such as currency fluctuations, international bank transfers and the costs and delays they entail, VAT, logistics (deliveries), and of course language and language requirements in advertising.

In virtually all these respects, the national laws and regulations in the various Member States differ, sometimes in detail, often in basic concepts. In spite of the creation, in principle, of the Single Market, EC rules have barely begun to address, let alone remove, the numerous obstacles to pan-Union trade which these differences create. The most positive approach (after the recognition that full harmonisation of laws and regulations was not achievable in many areas), was the introduction of the joint "country of origin/mutual recognition" principle. This principle is, however, only applied piecemeal, and not across the board.

An EAAA summary of the rules in the EU Member States is the size of a telephone directory, even though the various laws and regulations are only very briefly summarised in shorthand paragraphs. The full texts of all the relevant rules and regulations in the EU Member States would fill a small library. There are general advertising restrictions and special rules, e.g. on the advertising of alcohol, tobacco, food, medicines, cosmetics and personal hygiene products, cleaning and household products, and products aimed at children, etc. There are special rules and prohibitions on vocabulary and language, testimonials and endorsements, the use of cartoon characters, sexism and pornography; and special restrictions on the advertising of certain services (such as credit, financial services, loans or mortgages, insurances) or by certain professions (such as doctors and lawyers). There are different rules for advertising on television, on radio, in cinema, in newspapers, in magazines, outdoor, on packaging/labelling, through sponsorship or sales promotions.

Some of these rules are contained in specific advertising laws, some in more general unfair trading or marketing laws, some in administrative regulations, some in court decisions, and

quite a few in voluntary industry codes, sometimes adopted in consultation with (or under pressure from) state authorities. The enforcement systems are equally diverse, ranging from the ordinary courts through special marketing courts or tribunals, to self-regulatory bodies established by industry.

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## OUTLOOK

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The outlook for the marketing communications business is nevertheless positive, amongst other reasons because of the economic growth in Europe, the impending liberalisation of telecommunication monopolies throughout the Union as well as the technical developments in communication.

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# Public relations

*Public relations is being used today by a growing number of companies, organisations, public institutions and bodies all over Europe. PR is used as a tool for developing communications towards public opinion and/or specific target related to a company, its products and services.*

## INDUSTRY PROFILE

### Description of the sector

Public relations could be thought of as combining different elements, such as, social sciences, behavioural ethics and strong communicational techniques, in order to attract public interest and influence expectations.

The company's targets are the basis for establishing and developing appropriate relationship systems between a company or an organisation, its products and services and public opinion. PR tools are used in order to gain, maintain and develop public confidence. Acceptance and satisfaction of a company, its products and or services are just few other reasons why PR tools are being used.

Journalists, consumers, employees, shareholders, public authorities, public servants, the local community, trade, suppliers, Unions, and competitors are some examples of key constituencies addressed by public relations.

Because of the wide variety within the public groupings, the appropriate use of specialised tools is of utmost importance. Specialised tools can be viewed as media relations, consumer relations, corporate communications, product advertising, environmental issues, internal communications, crisis management, in-house publications and audio visuals, sponsorships,

**Table 1: Public relations  
Main Indicators**

(units)	1991	1992	1993	1994
<b>Number of enterprises</b>				
Belgique/België	105	98	105	105
Danmark	45	76	81	90
Deutschland	1 140	1 103	1 265	1 275
Ellada	35	40	42	53
España	145	245	260	338
France	420	593	629	613
Ireland	45	88	89	89
Italia	545	421	405	405
Luxembourg	N/A	15	16	16
Nederland	230	451	475	480
Portugal	50	50	53	53
United Kingdom	1 970	1 394	1 660	3 000
EUR 12 (1)	4 730	4 574	5 080	6 517
<b>(million ECU)</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>
<b>Turnover</b>				
Belgique/België	18.0	12.2	12.7	12.9
Danmark	4.9	7.9	8.9	10.3
Deutschland	119.5	121.9	144.1	148.1
Ellada	1.9	2.0	1.2	1.7
España	15.7	20.4	20.1	28.9
France	31.9	48.2	48.8	49.2
Ireland	11.0	26.5	28.8	N/A
Italia	53.3	41.6	45.2	43.5
Luxembourg	N/A	0.9	1.0	1.3
Nederland	28.4	54.5	59.5	56.6
Portugal	N/A	N/A	N/A	N/A
United Kingdom	227.9	152.8	190.4	386.8
EUR 12 (1) (2) (3)	512.6	489.1	560.8	739.3
<b>(units)</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>
<b>Number of consultants employed</b>				
Belgique/België	195	156	169	169
Danmark	75	102	113	130
Deutschland	1 220	1 173	1 395	1 425
Ellada	45	50	54	68
España	195	309	330	468
France	500	713	761	761
Ireland	85	158	159	N/A
Italia	635	571	555	555
Luxembourg	N/A	25	26	26
Nederland	330	653	665	660
Portugal	70	70	75	75
United Kingdom	2 110	1 700	1 980	4 000

**Table 2: Public relations  
Number of consultants**

(units)	1991	1992	1993	1994
<b>PR agencies: number of consultants employed</b>				
Belgique/België	135	87	96	96
Danmark	45	39	48	60
Deutschland	120	105	195	225
Ellada	20	20	24	30
España	75	96	105	195
France	120	180	198	198
Ireland	60	105	105	N/A
Italia	135	225	225	225
Luxembourg	N/A	15	15	15
Nederland	150	303	285	270
Portugal	30	30	33	33
United Kingdom	210	459	480	1 500
EUR 12 (1) (2)	1 100	1 664	1 809	2 847
<b>PR firms: number of consultants employed</b>				
Belgique/België	60	69	73	73
Danmark	30	63	65	70
Deutschland	1 100	1 068	1 200	1 200
Ellada	25	30	30	38
España	120	213	225	273
France	380	533	563	563
Ireland	25	53	54	N/A
Italia	500	346	330	330
Luxembourg	N/A	10	11	11
Nederland	180	350	380	390
Portugal	40	40	42	42
United Kingdom	1 900	1 241	1 500	2 500
EUR 12 (1) (2)	4 360	4 016	4 473	5 490
<b>Number of individual consultants</b>				
Belgique/België	25	86	93	79
Danmark	150	140	127	150
Deutschland	1 630	3 663	4 305	4 275
Ellada	15	22	42	15
España	30	263	300	211
France	2 875	1 320	1 440	1 109
Ireland	140	59	27	N/A
Italia	1 830	1 817	1 699	1 630
Luxembourg	N/A	5	14	15
Nederland	723	481	955	1 170
Portugal	115	113	123	72
United Kingdom	3 340	5 260	4 545	4 800
EUR 12 (1) (2)	10 873	13 229	13 670	13 526
<b>Total number of PR consultants</b>				
Belgique/België	220	242	262	248
Danmark	225	242	240	280
Deutschland	2 850	4 836	5 700	5 700
Ellada	60	72	96	83
España	225	572	630	679
France	3 375	2 033	2 201	1 870
Ireland	225	217	186	198
Italia	2 465	2 388	2 254	2 185
Luxembourg	N/A	30	40	41
Nederland	1 053	1 134	1 620	1 830
Portugal	185	183	198	147
United Kingdom	5 450	6 960	6 525	8 800
EUR 12 (1)	16 333	18 909	19 952	22 061

(1) Excluding Luxembourg for 1991.

(2) Excluding Ireland for 1994.

Source: CERP

**Table 3: Public relations**  
**Number of public relations agencies and firms**

(units)	1991	1992	1993	1994
<b>Number of PR agencies</b>				
Belgique/België	45	29	32	32
Danmark	15	13	16	20
Deutschland	40	35	65	75
Ellada	10	10	12	15
España	25	32	35	65
France	40	60	66	50
Ireland	20	35	35	N/A
Italia	45	75	75	75
Luxembourg	N/A	5	5	5
Nederland	50	101	95	90
Portugal	10	10	11	11
United Kingdom	70	153	160	500
EUR 12 (1) (2)	370	558	607	938
<b>Number of PR firms</b>				
Belgique/België	60	69	73	73
Danmark	30	63	65	70
Deutschland	1 100	1 068	1 200	1 200
Ellada	25	30	30	38
España	120	213	225	273
France	380	533	563	563
Ireland	25	53	54	N/A
Italia	500	346	330	330
Luxembourg	N/A	10	11	11
Nederland	180	350	380	390
Portugal	40	40	42	42
United Kingdom	1 900	1 241	1 500	2 500
EUR 12 (1) (2)	4 360	4 016	4 473	5 490
<b>Total number of PR agencies and firms</b>				
Belgique/België	105	98	105	105
Danmark	45	76	81	90
Deutschland	1 140	1 103	1 265	1 275
Ellada	35	40	42	53
España	145	245	260	338
France	420	593	629	613
Ireland	45	88	89	89
Italia	545	421	405	405
Luxembourg	N/A	15	16	16
Nederland	230	451	475	480
Portugal	50	50	53	53
United Kingdom	1 970	1 394	1 660	3 000
EUR 12 (1)	4 730	4 574	5 080	6 517

(1) Excluding Luxembourg for 1991.

(2) Excluding Ireland for 1994.

Source: CERP

**Table 4: Public relations**  
**Consultancy fees turnover**

(million ECU)	(1) (2) 1991	(2) 1992	(2) 1993	1994
PR agencies and firms	512.6	489.1	560.8	739.3
Individual consultants	952.9	1 161.5	1 239.5	1 290.1
Total	1 465.5	1 650.6	1 800.3	2 029.4

(1) Excluding Luxembourg

(2) Excluding Portugal

Source: CERP



**Table 5: Public relations**  
**Number of public relation professionals**

(units)	1991	1992	1993	1994
<b>Number of PR consultants</b>				
Belgique/België	220	242	262	248
Danmark	225	242	240	280
Deutschland	2 850	4 836	5 700	5 700
Ellada	60	72	96	83
España	225	572	630	679
France	3 375	2 033	2 201	1 870
Ireland	225	217	186	198
Italia	2 465	2 388	2 254	2 185
Luxembourg	N/A	30	40	41
Nederland	1 053	1 134	1 620	1 830
Österreich	N/A	413	475	500
Portugal	185	183	198	147
Suomi/Finland	350	306	200	280
Sverige	1 440	1 374	1 005	1 350
United Kingdom	5 450	6 960	6 525	8 800
EUR 15 (1)	18 123	21 002	21 632	24 191
Norge	N/A	N/A	175	175
Schweiz/Suisse	600	574	700	660
<b>Number of PR officers</b>				
Belgique/België	480	378	420	372
Danmark	575	858	960	1 120
Deutschland	7 350	7 564	9 300	9 300
Ellada	360	578	544	467
España	1 025	1 628	1 795	1 931
France	4 125	3 317	3 685	3 630
Ireland	75	133	201	252
Italia	2 785	2 692	2 646	2 565
Luxembourg	N/A	120	120	124
Nederland	2 847	3 066	4 380	4 270
Österreich	N/A	1 087	1 425	1 500
Portugal	1 035	1 037	1 152	833
Suomi/Finland	1 600	1 394	1 800	1 720
Sverige	2 160	1 976	2 345	3 150
United Kingdom	7 850	7 540	7 975	13 200
EUR 15 (1)	32 267	33 368	38 748	44 434
Norge	N/A	N/A	3 325	3 325
Schweiz/Suisse	1 400	1 276	1 300	1 540
<b>Number of PR consultants and officers</b>				
Belgique/België	700	620	682	620
Danmark	800	1 100	1 200	1 400
Deutschland	10 200	12 400	15 000	15 000
Ellada	420	650	640	550
España	1 250	2 200	2 425	2 610
France	7 500	5 350	5 886	5 500
Ireland	300	350	387	450
Italia	5 250	5 080	4 900	4 750
Luxembourg	60	150	160	165
Nederland	3 900	4 200	6 000	6 100
Österreich	N/A	1 500	1 900	2 000
Portugal	1 220	1 220	1 350	980
Suo	3 600	3 350	3 350	4 500
United Kingdom	13 300	14 500	14 500	22 000
EUR 15 (2)	50 450	54 370	60 380	68 625
Norge	N/A	N/A	3 500	3 500
Schweiz/Suisse	2 000	1 850	2 000	2 200

(1) Excluding Luxembourg and Austria for 1991.

(2) Excluding Austria for 1991.

Source: CERP

**Table 6: Public relations**  
**Public relation professionals - Number of men and women**

(units)	1991	1992	1993	1994
<b>Number of men</b>				
Belgique/België	455	341	382	347
Danmark	464	616	624	700
Deutschland	6 120	6 572	9 000	9 300
Ellada	243	299	326	275
España	875	1 188	1 273	1 331
France	3 525	2 140	2 413	1 100
Ireland	114	129	119	211
Italia	2 783	2 642	2 548	2 470
Luxembourg	N/A	45	64	66
Nederland	1 950	2 058	2 940	2 928
Österreich	N/A	825	1 140	1 200
Portugal	793	793	891	647
Suomi/Finland	819	680	600	500
Sverige	1 800	1 708	1 541	2 070
United Kingdom	6 916	6 525	6 525	8 800
EUR 15 (1)	26 857	26 561	30 386	31 945
Norge	N/A	N/A	1 820	1 820
Schweiz/Suisse	1 100	1 055	1 100	1 210
<b>Number of women</b>				
Belgique/België	245	279	300	273
Danmark	336	484	576	700
Deutschland	4 080	5 828	6 000	5 700
Ellada	177	351	314	275
España	375	1 012	1 152	1 279
France	3 975	3 210	3 473	4 400
Ireland	186	221	268	239
Italia	2 467	2 438	2 352	2 280
Luxembourg	N/A	105	96	99
Nederland	1 950	2 142	3 060	3 172
Österreich	N/A	675	760	800
Portugal	427	427	459	333
Suomi/Finland	1 131	1 020	1 400	1 500
Sverige	1 800	1 642	1 809	2 430
United Kingdom	6 384	7 975	7 975	13 200
EUR 15 (1)	23 533	27 809	29 994	36 680
Norge	N/A	N/A	1 680	1 680
Schweiz/Suisse	900	795	900	990

(1) Excluding Luxembourg and Austria for 1991.

Source: CERP

financial relations, public affairs, community relations, institutional advertising, business to business communications, etc.

### Recent trends

The survey carried out by the European Confederation of Public Relations (CERP) during 1995 covers the 20 European Countries whose National PR Associations were full members of CERP in 1994.

The above National Associations were asked to update the existing data on the public relations profession obtained from the surveys completed in 1991, 1992, and 1993.

The 94 report confirms that in many European countries the PR sector is overcoming the critical period linked to the economic recession, because there has been a turnover increase, higher than the inflation rate. This is also confirmed by the estimated number of consultants employed by PR agencies or firms or operating individually as freelance that totalled 22 061 in 1994 versus 19 952 in the previous year, and the total turnover of employment in public relations has grown from 560 million to 739 million ECU. The figures also show that investments in advertising are decreasing in many Euro-

pean countries, in favour of other sectors of communications and of public relations.

The estimate for 1994 shows 6 517 PR agencies and PR firms in the 12 EU countries, including 938 PR agencies and 5 490 PR firms, with a total of 8 337 consultants employed, to which 14 526 freelance consultants must be added, totalling 22 061 PR consultants.

In 1994 the highest annual turnover for consultancy fees among EU-12 states was reported in the UK (387 million ECU) followed by Germany (148 million ECU); the Netherlands (57 million ECU); France (49 million ECU); Italy (43 million ECU); Spain (29 million ECU); Belgium (13 million ECU); Denmark (10 million ECU); Greece (2 million ECU) and Luxembourg (1 million ECU).

Looking at the number of consultants, again the United Kingdom ranks first (8 800) followed by Germany (5 700); Italy (2 185); France (1 870); the Netherlands (1 830); Spain (679); Denmark (280); Belgium (248); Ireland (198); Portugal (147); Greece (83) and Luxembourg (41).

## **INDUSTRY STRUCTURE**

PR agencies, PR firms and freelance consultants have the leading role in the European PR consultancy sector.

Usually, a PR agency is a registered firm, a small company founded and managed by a group of consultants working in teams and offering a complete range of PR services. On average, the number of PR consultants employed in a PR agency ranges from 3 to 10 people, including executives and secretarial personnel.

A PR firm is a smaller unit, and in most cases is not registered as a company, where 1 or 2 consultants and their secretarial support staff provide PR services in some specialised areas. These firms do not typically cover all publics and issues related to global corporate communications.

Freelance consultants are individuals who may provide professional service to either 2 or 3 clients through annual contracts, covering the widest part of their clients' communications needs, or on the basis of contracts for specific short-term PR projects related to single issues, publics and/or clients' requirements.

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# Legal services

## NACE (Revision 1) 74.11

*Progress in European integration, as well as, the advent of the European Union in 1993 has focused attention on a number of largescale changes which are reflected on a much smaller scale within the legal professions. These trends are characterised firstly, by a process of "harmonisation" or reconciliation and simplification of common elements; and secondly, by a recognition of the need to compete in a suprajurisdictional marketplace. The process of simplification of the legal professions is occurring in both common law and civil law jurisdictions, both inside and outside of Europe. Over the past few years, international legal practice has been growing rapidly. Within Europe, the growth of economic integration and trade has strongly challenged the traditional jurisdictional restrictions that have characterised legal practice. Multinational (also referred to as crossborder or transnational) partnerships are permitted within the EU and function to varying degrees within a number of EU countries. These developments are likely to continue.*

### INDUSTRY PROFILE

#### Description of the sector

The legal services sector described within this report covers all professional staff working in the liberal legal professions within the Member States of the European Union. As a general idea, the following professions fall within this definition:

- Advocates, barristers and solicitors (as defined in the EU Directive to facilitate lawyers' effective exercise of freedom to provide services M/249);
- Public notaries;
- Patent lawyers;
- Legal consultants.

This monograph does not relate to lawyers undertaking legal work as employees of, respectively, central or local government, judiciary, prosecution service or commerce and industry.

Table 1 provides an estimate from Eurostat for the number of firms, employees and turnover in various countries in the

EU. Since these figures are in some countries derived from VAT registers and social security registers, a large proportion of the firms, employees (e.g. self employed persons) and turnover is not registered. The figures are also difficult to compare because of the emphasis on in-house lawyers in some jurisdictions and their inclusion in the figures (e.g. in Italy and France) and not in others (e.g. Germany).

For some countries more detailed information is available about some of the sectors of legal services. This will be covered later in this monograph.

This monograph concerns mainly the registered lawyers (advocates etc.) and the notaries. One has to note however that the boundaries between these professions differ from country to country and even within one country.

The services provided by the legal professions described as "lawyers" within this chapter fall within the following general categories:

- negotiation on behalf of a client;
- the preparation of legal documents;
- legal advice and representation of clients before Courts, Tribunals and administrative bodies.

The function of notaries is principally the preparation of deeds and legal documents (e.g. a will, the preparation of documents for the transfer of real estate).

Table 2, compiled from a number of sources shows the number of registered lawyers within the definition and the number of notaries.

The number of registered lawyers in some cases conceals those who may be registered but not currently practising as lawyers. For example in Greece, the Athens bar association estimates that between a quarter and a third are not practising. In Spain, over 22 000 of the registered advocates are non-practising.

Even if we take into account the fact that in these countries many registered lawyers are non-practising, one can see that the number of registered lawyers per 10 000 inhabitants is highest in Spain and Greece. The lowest number of registered lawyers per 10 000 inhabitants can be found in Finland, Austria and Sweden.

The lowest number of notaries per 10 000 inhabitants can be found in Spain, followed by the Netherlands. The highest

**Table 1: Legal services**  
**Main indicators, 1992**

	Number of enterprises	Turnover (million ECU)	Number of persons employed
Belgique/België	(1) 4 380	153	(1,4) 10 779
Danmark	(3) 1 660	(1) 532	(1) 11 501
Deutschland	(2) 30 707	(2) 5 942	(4) 384 086
España (2)	19 301	N/A	57 563
France	24 127	8 372	132 419
Luxembourg	(1) 205	(2) 68	(1) 816
Nederland	2 829	1 344	22 857
Portugal (5)	5	26	255
Suomi/Finland	490	201	2 051
United Kingdom	18 525	10 605	N/A

(1) 1991

(2) 1990

(3) Number of local units.

(4) Number of employees.

(5) Covers only enterprises with at least 5 employees.

Source: Eurostat; Mercure, CBS for NL



**Table 2: Legal service****Registered lawyers and notaries and penetration level, 1995-1996**

	Total number of registered lawyers	Total number of notaries (1)	Population 1993 (thousands)	Number of lawyers per 10 000 pop.	Number of notaries per 10 000 pop. (1)
Belgique/België	11 672	1 221	10 068	11	1.2
Danmark	3 873	(3) N/A	5 181	7	N/A
Deutschland	79 265	(4) 10 269	80 614	10	1.3
Ellada	(1) 26 500	2 800	10 346	26	2.7
España	(1) 84 971	2 020	39 114	22	0.5
France	31 568	7 551	57 530	5	1.3
Ireland	4 300	N/A	3 560	12	N/A
Italia	85 000	4 490	56 933	15	0.8
Luxembourg	601	35	395	15	0.9
Nederland	8 500	1 123	15 239	5	0.7
Österreich	(1) 3 159	N/A	7 962	4	N/A
Portugal	15 000	N/A	9 860	15	N/A
Suomi/Finland	1 273	N/A	5 055	2	N/A
Sverige	(1) 3 240	N/A	8 692	4	N/A
United Kingdom (2)	66 123	N/A	57 959	11	N/A

(1) 1993-1994 figures.

(2) Estimates from the Research and Policy Planning Unit of the Law Society of England and Wales.

(3) Not available as notarial functions are carried out by the City Courts through the country.

(4) Notaries 1 609 and lawyers working as notaries 8 660.

Source: CAUE, CCBE, Eurostat, Bakkerist Management Consultants

number can be found in Greece, France and Germany. The differences between the countries can partially be explained by the legal situation. In Denmark, the notary does not exist; the functions of the notaries are carried out by the city courts. In Scotland, every solicitor can become a notary public; 95% of the solicitors in Scotland do so. In Spain, many lawyers also perform notary functions, but are not registered as notary.

### Recent trends

A key trend that characterises the professions which provide legal services is that, in the absence of a distinct limit to their size, they have been growing rapidly. It is estimated that between 1989-1993 professional providers of legal services have increased on average by over 20% across the EU over the last four years, with the largest individual increases in Luxembourg, Portugal, and Belgium.

Progress in European integration, as well as, the advent of the European Union in 1993 as outlined in the Treaty of Maastricht has drawn attention to a chain of largescale trends reflected on a much smaller scale within the legal professions. These trends are characterised firstly, by a process of "harmonisation" or reconciliation and simplification of common elements; and secondly, by a recognition of the need to compete in a suprajurisdictional marketplace. These two characteristics dictate a third development which is the building of international regulations to codify and structure behaviour within the new system (see Regulation section below).

The process of the simplification of the legal professions is occurring in both common law and civil law jurisdictions, both inside and outside of Europe. The legal professions in the UK, Germany, France, Greece and Spain have and are currently undergoing substantial structural and legislative changes.

In Germany, reunification forced the pace of the reorientation of the domestic legal market from a focus on small firms working within court delimited practice limits to translocal firms with up to 80 partners with offices in cities throughout Germany. A number of these new translocal firms have opened Brussels offices and then moved on to enter alliances and networks with other European law firms.

Another possibly important factor in relation to the provision of legal services has been the considerable shifts in policy

towards the public funding of legal aid in a number of countries. Although many areas of the law and legal practice are becoming more European in character, legal aid appears to have remained primarily defined by national policy. Given the national parameters, no national government with the exception of France, whose expenditure prior to the 1992 reforms was one of the lowest in Europe, expects to increase central expenditure on legal aid.

A common experience amongst a number of countries is that the State wishes to control the steady increase in legal aid expenditure, while legal professionals have indicated that the provision of legal-aid work is becoming increasingly uneconomic for them to carry out. In some jurisdictions, legal-aid work accounts for up to 12% of the estimated gross income of the legal professions.

### International comparison

Reliable data on the patterns of development of the United States and Japanese markets for legal services are also difficult to obtain as each state and the District of Columbia is considered to be an individual jurisdiction and there is little information available on Japanese lawyers in private practice.

In 1986, there were 12 500 licensed lawyers in Japan with about 9 000 in active practise. The ratio of lawyers to population was about one practising lawyer to every 14 000 people. The output of law graduates from Japanese universities is high between 65 000 and 70 000 a year. Approximately 30 000 to 35 000 per year sit the examination to continue their training to become advocates, judges or public prosecutors. In 1993 only 712 passed the exam. Thus, the number of lawyers in private practice is low.

Most of the top corporations in Japan have inhouse legal departments staffed by nonlicensed law graduates. A licensed lawyer would be retained only when a court appearance is necessary.

Japan appears to be opening its borders for foreign lawyers. The results of the GATT negotiations (see the chapter on regulations) will have a positive effect on this trend. A bill has been sent to the Diet allowing lawyers with at least 5 years of experience to offer services together with a Japanese lawyer in Japan. Services concerning Japanese law are excluded. It will also be allowed to use the name of the company

**Table 3: Legal services**  
**Number of representations before the European Court of Justice**

	1988	1989	1990	1991	1992	1993	1994	1995
Belgique/België	39	56	30	32	39	23	34	34
Danmark	4	6	4	2	6	6	2	9
Deutschland	26	41	65	43	56	55	54	48
Ellada	6	6	19	8	4	3	0	16
España	2	1	1	12	18	3	9	4
France	23	37	44	18	34	18	16	27
Ireland	1	4	8	10	11	3	3	10
Italia	19	28	12	20	26	36	11	40
Luxembourg	20	11	1	15	8	3	2	6
Nederland	9	38	14	23	13	17	18	14
Portugal	1	1	1	3	6	4	0	1
United Kingdom	26	43	33	57	55	78	76	84
EUR 12	176	272	232	243	276	249	225	293

Source: European Court of Justice

in the home country. Some hurdles are however expected before the bill passes the Diet.

Long term outlook is promising in Japan, although the Japanese legal service industry has been hit hard by the problems in the real estate market. Japanese companies are expected to need more lawyers since the cost of handling of legal affairs by themselves is proving too high.

In the USA it is estimated that the number of lawyers has tripled over the last 20 years to approximately 800 000 in 1993. About one-third of all lawyers practise law outside the legal sector. There are about 925 000 employees working in the sector, an increase of 1.1% as compared to 1992. Receipt for professional legal services reached an estimated USD 93 billion.

The key trends to be found in the USA are (roughly speaking):

- A business approach to providing legal services: The economic downturn in the US in 1990 and 1991, cost conscious clients, technology, litigation reforms and other factors, have reduced the demand for legal services, forcing firms to become more efficient and competitive;
- Alternative dispute resolution (ADR): This avoids interference with business operations, and preserves confidentiality. It can be seen as a kind of arbitration, development of legal policy by client companies, in order to reduce legal expenses;

- Internationalisation: US law firms have increased their turnover more rapidly than their domestic operations due to the expansion in the international marketplace. The new markets are Eastern Europe, the former Soviet Union and increasingly, the People's Republic of China and Taiwan. Receipt for the provision of legal services to foreign individuals or organisations were nearly USD 1.2 billion in 1991. The trade surplus for legal services in 1991 reached USD 951 million.

The top ten legal service providers in the USA recorded gross revenues of USD 3.2 billion in 1992. The largest legal service providers (expressed in number of lawyers) are Baker & McKenzie (1 604 lawyers) and Jones Day (1 170 lawyers).

#### Foreign trade

Over the past few years, international legal practice has been growing rapidly. However, it is important to note that international legal practice is numerically a minority undertaking in relation to the bulk of most legal work. The key source of work for many international law firms (especially in the UK and the USA) has been capital markets work related to the large number of privatisations undertaken during the 80s in the EU and Eastern Europe and security offerings.

One of the major reasons for working internationally appears to be the wish to capture work at its source.

The Council of the Bars and the Law Societies of the European Community (CCBE), provides material and intellectual support to East European bars and actively participates in coop-

**Table 4: Legal services**  
**Number of notary acts, 1994**

	Number of acts per country	Number of acts per 1 000 inhabitants	Number of acts by notary
Belgique/België (1)	650 000	65	532
Danmark	N/A	N/A	N/A
Deutschland	N/A	N/A	N/A
Ellada	1 300 000	126	464
España	4 275 823	109	2 117
France (1)	4 058 259	71	537
Ireland (1)	80 000	22	N/A
Italia	5 507 246	97	1 227
Luxembourg	39 000	99	1 114
Nederland	1 307 767	86	1 165
Portugal	N/A	N/A	N/A
United Kingdom	N/A	N/A	N/A

(1) 1993

Source: CAUE, Eurostat, Bakkenist Management Consultants

**Table 5: Legal services**  
**Number of notaries' offices, lawyer firms and employees, 1993-1994**

	Notaries' offices	Employees (notaries' offices)	Number of registered lawyer practises, etc	Individual practises (%)	Estimated number of employees in lawyer firms
Belgique/België	1 209	4 155	6 600	90.9	9 600
Danmark	N/A	N/A	2 749	38.2	7 000
Deutschland	N/A	N/A	38 077	78.8	29 000
Ellada	2 800	3 500	20 500	97.6	22 500
España	2 058	8 528	N/A	N/A	N/A
France (2)	4 735	38 353	N/A	N/A	N/A
Ireland (1)	149	149	N/A	N/A	N/A
Italia	4 000	24 000	N/A	N/A	N/A
Luxembourg	35	175	N/A	N/A	N/A
Nederland	797	7 000	2 233	45.7	8 900
Portugal	N/A	N/A	11 280	97.5	6 600
United Kingdom (1)	N/A	N/A	25 061	54.6	100 000

(1) Common law countries.

(2) Figures concerning notaries: 1993.

Source: CAUE, CCBE, Bakkenist Management Consultants

eration programmes with the European Commission and the Council of Europe. Moreover, delegations from the Czech Republic, the Slovak Republic, Hungary, Slovenia and Turkey have joined the CCBE as observer members, so as to be provided with information by the CCBE (e.g. in establishing a new legal system, in organising their national bars and safeguarding their independence and in conceiving rules of deontology).

Within Europe, the growth of economic integration and trade has strongly challenged the traditional jurisdictional restrictions that characterised legal practice.

Multinational (also referred to as crossborder or transnational) partnerships are permitted within the EU and function to varying degrees within Belgium, France, the Netherlands, Spain, Denmark, Germany, Portugal, Ireland, Sweden and the UK. It is expected that the number of multinational European firms (as the Dutch-French-Belgium firm Stibbe Simont Monahan Duhot) will increase.

The mechanisms through which these practises function are numerous: delivery of occasional services in another country; becoming a fully integrated member of another jurisdiction's legal profession; establishing oneself in another jurisdiction but retaining only one's home state qualification; and through an association with other firms, groups, networks or through European Economic Interest Groupings (EEIGs).

One of the international sources of work are representations before the European Court of Justice. As shown in Table 3, there is no clear tendency towards more representations since 1989. The number of cases varies year by year, within certain limits.

## MARKET FORCES

### Demand

As consistent statistics across all the Member States are not collected, it is difficult to fully assess the effects of market forces on and within the legal professions through the EU.

Table 4 from Eurostat provides some insight in the demand for notarial services by showing the estimated number of notarial acts for 1994.

### Supply and competition

Legal services are not only provided by registered lawyers and notaries. Notably accountant firms, trade unions, employers associations and banks provide these services to their clients or members. Figure 1 from Eurostat provides an overview

of the market share of lawyers, notaries and others in five EU Member States.

Cooperation with other legal professions is increasing in many Member States.

In Belgium, the Belgian Order of Advocates announced a "joint declaration of rapprochement" between advocates and notaries, stating that it is advisable to allow lawyers and notaries to work together, provided clients are informed of such collaboration.

In Germany, partnerships between attorneys performing advocacy work and patent attorneys, tax consultants/auditors, and notaries are allowed in regions which permit attorneys to be notaries. The success of this arrangement is widely attributed to a common code of ethics which protects the secrets of clients with their lawyers and accountants.

The legal professions are not the only ones struggling to obtain a place in the European market for professional legal services. Arthur Andersen, one of the "big six" accounting firms, has established a legal arm in many countries of the EU, in France, Germany the UK and Denmark, by associating with a (newly-created) law firm.

### Production process

The extent to which fees for legal services are regulated is not standard between different countries. There appears to be a continuum with total control of pricing and billing for legal services on the one hand (through the profession and/or the state) and complete nonregulation on the other. The one shared element appears to be the high level of control over legal fees for cases in which the State is the indirect client, i.e. for legal aid work.

However, it can be argued that civil law jurisdictions exhibit greater levels of control over fees for legal services, and most other Member States have adopted and maintain more institutional mechanisms for regulating legal costs.

## INDUSTRY STRUCTURE

### Companies

There are thirtyfour legal professions within the European Union arising from the unique histories and social structures of each member state. The structure of legal professions and the limits it imposes on how lawyers work; for example what legal work they can do or where they can practise also defines at least in part, the type of legal service which lawyers provide.

**Table 6: Legal services  
Largest 15 law firms in Europe, 1992**

Rank	Law firms
1	Clifford Chance
2	Linklaters & Paines
3	Lovell White Durrant
4	FreshFields
5	Slauthter And May
6	Allen & Overy
7	Herbert Smith
8	Simmons & Simmons
9	Norton Rose
10	Denton Hall Burgin & Warrens
11	Nabarro Nathanson
12	McKenna & Co.
13	Richards Butler
14	Dibb Lupton Broomhead
15	Nauta Dutilh

Source: Law Firms in Europe and Legal Business

Taking the British jurisdictions as an example, the legal profession's formal specialisation and separation into solicitors and barristers may entail the use of more than one lawyer for a single legal problem. Another example is provided by countries that operate on a limited geographical or local system of jurisdiction. An obvious case is that of "localisation" in Germany which prevents individual lawyers from practising outside their court-delimited jurisdiction. Before the recent legalisation of translocal firms, a "correspondence system" had evolved with two or more lawyers working on a shared case in each of their jurisdictions. Again such divisions of legal functions, this time based on geography as opposed to specialisation, may lead to the involvement of more than one set of lawyers for a particular case.

There are 'numerus clausus' controlling the number of notaries in operation in the Latin notary countries. Notaries occupy a unique position in most of the jurisdictions in Europe, being both an independent practitioner acting solely on behalf of his/her client, as well as an official of the state from which his/her notarial power to act is derived.

In Table 5, the number of offices and the number of employees is given for both the notaries and the registered lawyers. Most of the firms are small. In fact, in Belgium, Greece and Portugal (and most likely also in the Latin countries) over 90% of the practises are individual. As for the notaries, an office in which say 5 notaries cooperate, is considered large.

Table 6 shows the largest 15 law firms in Europe and illustrates an important point about the traditional structure of legal practises throughout the world: the large law firm is a phenomena particular to common law jurisdictions. Of the 40 largest law firms, there are 25 American firms, 10 British, 4 Australian and 1 Canadian. However, there is evidence that a direct challenge to the common law hegemony may be emerging within Europe where of the 30 largest firms, 5 are Dutch.

In jurisdictions with relatively low population concentrations or with smaller economic centres, the legal needs of the jurisdiction could be best met by smaller collections of practitioners. For example, French notaries are known for having one of the most profitable legal professions in Europe, yet the number and size of their practices are relatively small compared with other legal professionals. International associations, cooperation and EEIGs as described above give smaller groups of practitioners access to the international legal marketplace.

## REGULATIONS

A number of EU Directives circumscribe and define the activities of legal professionals within the European context.

One of the most basic was 'The Council Directive to facilitate the effective exercise by lawyers of freedom to provide services' (77/249/EEC) also known as the EU Services Directive of 1977. It requires each member state to recognise lawyers from another member state for the purpose of providing occasional services. It specifically does not address the issue of the rights of establishment or the mutual recognition of qualifications. It does allow the foreign lawyer to practise under his home title, but submits him to the deontology of both his home and the host state, and requires him to be presented and assisted by a local lawyer for in-court services. This Directive has been implemented by all the Member States.

A second Directive of importance is the EU Directive 89/48 on the Mutual Recognition of Qualifications. The so-called "Diplomas Directive" provides for full integration into the legal profession of a host member state, upon that state's recognition of home state legal qualifications. Recognition can take one of two forms: the host state may require an aptitude test, or it may subject lawyers to a waiting period before becoming fully-qualified members of the host state profession. As of January 1994, all Member States had implemented the Directive: With the exception of Denmark, all have opted for an aptitude test, although the practical organisation of the tests has not yet occurred in all states. The content and the difficulty of this aptitude test, as well as the help provided by the local bodies to the applicants, varies from country to country. The CCBE is monitoring the implementation of the test in the different Member States (and has issued an interim report) in order to provide the national bodies with inspiration.

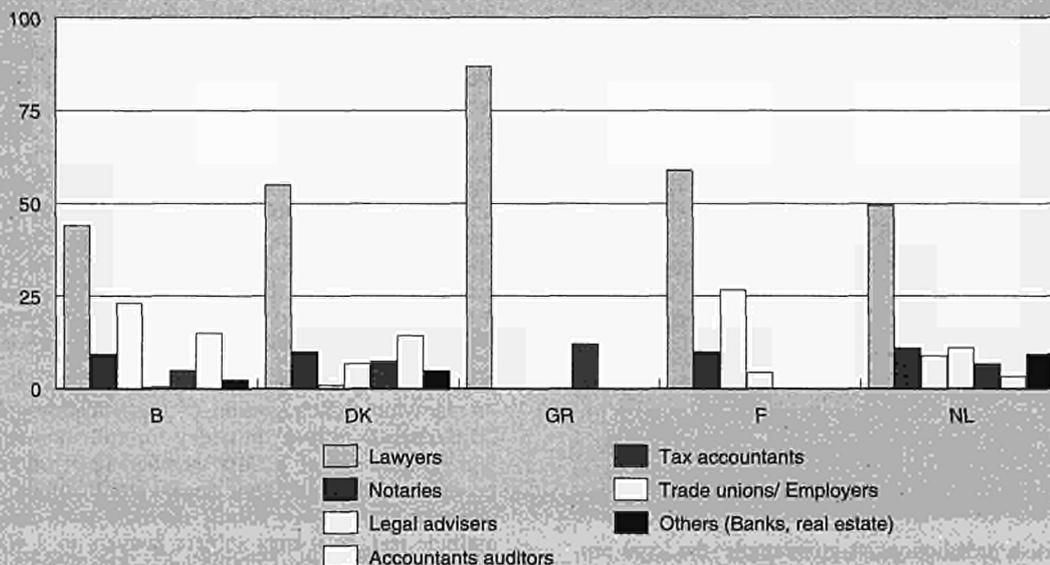
The Commission of the European Union has issued by the end of 1994 a "Draft proposal for a Parliament and Council Directive to facilitate practise of the profession of lawyer on a permanent basis in a Member State other than that in which the qualification has been obtained". This draft will be adopted (if so) pursuant to the co-decision procedure of article 189B of the treaty of Rome. It is inspired by, but modified, an earlier draft of the CCBE. Actually it is not possible however to ascertain which system will be retained at the issue of the legislative process.

Within the framework of the Strategic Programme "Making the most of the Internal market", Directorate General XV launched a new initiative, the "Robert Schuman Project", designed to improve the application of Community law in national jurisdictions. This project will support training and information initiatives in Member States aimed at increasing judges and lawyers' knowledge of Community law. This targeted programme, once approved by the Council should start in 1997.

One of the main issues for the development of the Internal Market is providing an effective access to justice for the consumer, even for small amounts and especially for cross-border transactions. In this last respect, the CCBE has stressed the possibility of extending the existing schemes for legal aid to EU residents' "small claims" arising out of cross-border activities, and the need to use the existing Conventions governing legal aid more intensively. It also highlighted some improvements that could be made to the Brussels and the Hague Conventions to explore the principle of "free circulation of judgements".

To cope with the issues raised by the numerous changes, a number of supra-jurisdictional organisations have attempted to lay down some agreed ground rules to regulate the new scope of the professions. The CCBE has been at the forefront of organisations trying to address the issues and has issued

**Figure 1: Legal services  
Main indicators, 1992**



Source: CCBE

an international Code of Conduct for European Community lawyers. The code confirms some fundamental principles (e.g. independence, confidentiality, pactum de quota litis), recommends approaches to the way of dealing with fees, and recommends how to deal with lawyers belonging to more than one bar or law society (e.g. in matters of publicity, relation with the Courts and between lawyers).

These provisions have been adopted by most professional bodies in Europe; where the local bar has a regulatory function, the national bar has suggested the adoption or incorporation of similar rules. On a smaller scale, the International Bar Association has been working on an international code of conduct along the lines of the CCBE provisions.

In addition, the legal services have been included in the Uruguay Round GATT negotiations, and as such now belong to the General Agreement on Tariffs and Services (GATS) agreement reached in Marrakech in Spring 1994. A working group on services has begun to negotiate the implementing of liberalisation measures on a sectorial basis, beginning with the accountants. It may take one year or more to reach the legal services.

## OUTLOOK

It is most likely that the overall trend towards the growth of the legal professions throughout Europe and the increasing internationalisation of service provision will continue.

If the trends of crossborder cooperation, simplification and the creation of panEuropean organisations continue, the legal professions in each jurisdiction are likely to grow and crossborder legal activity is likely to increase. Cooperation (and mergers) between the providers of legal services within jurisdictions as well as between jurisdictions is likely to grow rapidly over the next few years, especially within the European market.

In addition to more cooperation, another likely result is that of more direct competition on both a national and international basis. Competition on a national scale between specialist providers of legal services within jurisdictions is likely to occur as all attempt to promote themselves within an increasingly international business context. This is likely to be circumscribed by increased competition between jurisdictions.

The increase of competition will force the law firms to become more efficient. Most likely this will take place through shrinking workforces, increased utilisation of computers and databases and customised legal software.

Legal service providers learn from the German experience of reunification and from the USA to regard legal advice as a vital export. Already this has led to a climate of intensifying struggle between lawyers from Europe and North America for the adoption of their systems of law as the primary system to govern commercial contracts in the new markets opening in the East.

Written by: Bakkenist Management Consultants

The Industry is represented at the EU level by:

Conseil des Barreaux de la Communaut Europeenne (CCBE) Address: Rue Washington 40 B1050 Brussels; tel (32 2) 640 4274; fax (32 2) 647 7941; and International Union of the Notary Profession (UNILC) Address c/o Chambre des Notaires Bte 1936 L1019 Luxembourg; tel (352) 44 70 21; fax (352) 45 51 40; and

Union Internationale des Huissiers de Justice et Officiers Judiciaires (UIHJ) Address 42 rue de Douai, F75009 Paris; tel (33 1) 49 70 12 94.

# Accountancy services

## NACE (Revision 1) 74.12

*Accountancy services is a generic term covering a large number of activities. There is no strict correspondence between accountancy services and the field of activity of the accounting profession. Within the EU, the existence of independent professional organisations is perhaps the only common feature of this very diverse sector. Despite the efforts made at Community level to remove the barriers to the cross-frontier activity of professional accountants, whether they be natural or legal persons, the existing national differences in commercial and accounting practices are still an obstacle to the opening-up of frontiers in this sector.*

### INDUSTRY PROFILE

#### Description of the sector

Accountancy services have existed for a long time in Europe, but it was not until the middle of the 19th century that a few specialists in this field began to organise themselves on a professional basis. The first developments took place in the United Kingdom, which has since then retained this tradition of a self-regulating accounting profession. Identical developments subsequently occurred throughout the European continent, where the market structure evolved in accordance with local traditions, with greater use of laws and regulations.

Financial information is at the heart of accountancy services. Its accuracy and relevance and the speed with which it becomes available are all key factors of success in a market economy. The development of accountancy services has very logically followed that of the European economy in terms of volume, variety and sophistication, etc. The development of capital markets has even conferred on the provision of financial information, the status of a public service. Knowing that there are many ways of recording the same economic reality from the accounting point of view, public authorities have deemed it necessary to intervene in order to protect the public interest. That is why accountancy services and the accountancy profession are now subject to a multitude of rules and regulations

in all the Member States of the EU, a situation which gives this market a very individual character.

The set of rules governing this profession and the services which it provides has hitherto been designed purely from a national point of view, in order to solve each country's problems locally. It is hardly surprising, therefore, that this process has led to very significant differences in the Member States' rules and regulations.

The range of services offered by professional accountants is very wide and may vary from country to country. It must be emphasised, however, that the main activity of professional accountants remains centred on financial information and hence on accounting services. These consist chiefly of keeping accounts and auditing. The purpose of accountancy is to produce financial information, which entails analysing economic transactions, choosing an appropriate accounting method for dealing with them and carrying out a data-processing operation. An audit is the expression of an objective opinion on financial statements, with reference to a given set of rules, for the purpose of increasing the credibility of this information.

The skills developed by professional accountants in order to produce, process, analyse or audit financial information can also be used for other purposes. That is why, depending on the national traditions, the activities of professional accountants have spread far beyond the field of accountancy services alone. In view, for instance, of the fact that it is impossible to produce financial statements without having accurately assessed the enterprise's tax liabilities. Professional accountants have to be skilled in tax matters, this being a skill which can be used outside any accounting context. Similarly, accountancy and auditing call for thorough knowledge of the enterprise and its activities and structures, etc., and this can easily lead on to the development of management consultancy activities, a possibility of which many accountants do take advantage.

In addition to accountancy and auditing, the range of services offered by accountants in most Member States includes:

- the checking of mergers, which consists of expressing an objective opinion on a merger in order to ensure fair treatment for the shareholders of all the companies involved in the merger;
- the checking of contributions to companies, which consists of expressing an objective opinion on the value attributed

**Table 1 Accounting services**  
**Main indicators, 1992**

	Number of enterprises	Turnover (million ECU)	Number of employees
Belgique/België	(3) 16 731	1 862	(3,5) 21 222
Danmark (3)	2 919	1 051	20 014
Deutschland (2)	55 974	15 847	N/A
Ellada (2)	(4) 3 364	N/A	6 839
España (2)	12 823	N/A	53 386
France	14 162	6 919	122 807
Irland (1)	1 323	N/A	7 891
Italia	N/A	N/A	N/A
Luxembourg (3)	361	N/A	1 898
Nederland (3)	9 600	2 841	61 800
Österreich	N/A	N/A	(5) 1 348
Portugal	697	177	7 230
Suomi/Finland	1 731	300	5 912
Sverige	N/A	N/A	N/A

(1) 1988

(2) 1990

(3) 1991

(4) Number of local companies

(5) Number of salary-earners

Source: Eurostat; Mercure



**Table 2 Accounting services  
Number of employees**

(persons)	1980	1985	1986	1987	1988	1989	1990	1991	1992
Belgique/België	12 170	13 346	14 578	15 870	17 966	19 153	20 069	21 222	N/A
Danmark	13 125	15 730	16 794	17 964	18 644	18 788	19 147	N/A	N/A
Ellada (1)	N/A	N/A	N/A	N/A	6 839	N/A	N/A	N/A	N/A
España (1)	12 551	N/A	N/A	N/A	N/A	N/A	53 386	N/A	N/A
France	N/A	80 356	82 114	85 400	91 772	99 303	106 548	111 983	110 996
Ireland	N/A	N/A	N/A	N/A	7 751	N/A	N/A	N/A	N/A
Luxembourg	701	991	1 067	1 155	1 271	1 415	1 599	1 772	N/A
Nederland	N/A	N/A	N/A	N/A	41 600	44 500	48 200	49 100	N/A
Österreich	N/A	N/A	N/A	N/A	1 479	N/A	N/A	N/A	1 348
Portugal	N/A	N/A	N/A	N/A	N/A	N/A	5 833	6 658	6 986
Suomi/Finland (1)	N/A	N/A	N/A	N/A	N/A	N/A	5 483	6 167	5 912

(1) Number of total employees.

Source: Eurostat: Mercure

to contributions in kind (immovable property, stocks, trade marks) made by a shareholder to a company in order to ensure fair treatment of the other shareholders of the company in question;

- in cases of insolvency, accountants act as liquidators, trustees or receivers in bankruptcy. They may also advise their clients on the strategy to be adopted in order to avoid getting into a critical financial situation;
- the provision of expert reports, for which accountants are called upon to appear before most courts in accountancy matters;
- tax consultancy for the purpose of ensuring that clients comply with the tax regulations. This advisory service is often supplemented by assistance to the client in filling in the various declaration forms required by law and helping the client in his dealings with the tax authorities;
- advice on investment, plus, often, financing studies and even, possibly, trustee functions;
- management consultancy, mainly consisting of giving advice on data processing, internal auditing, reviewing of procedures, advice on organisation, etc.

This wide range of services varies from country to country depending on local rules and regulations. In some countries the law may even forbid accountants to offer some of these services. In France, for instance, accountants are not allowed to offer services in the field of liquidation or of judicial reconstruction, or even to give advice on tax matters except in very limited cases, as these activities are performed by members of other professions. In the other Member States, however, accountants are the main providers of these services. Consequently the NACE classification of services does not correspond to the way in which the market is divided up among the various professions. That is why there are no reliable data concerning the turnover, profits, etc. of the accountancy profession.

### Foreign trade

Nearly 40 years after the signing of the Treaty of Rome, there are still fifteen national markets for the accountancy profession and accountancy services in the EU. The maintenance of the existing barriers between the national markets is due to many factors, such as:

the profession's high degree of dependence on legislation. Many of the activities of professional accountants call for thorough knowledge of the legislation in a number of fields (accountancy, taxation, company law, social legislation, etc.). As most of these laws differ very considerably from one Member State to another, the amount of new knowledge which

has to be acquired by an accountant in order to be able to practise in another Member State is still considerable, even though in many cases the professional know-how required would be much the same;

- accountants generally provide their services only within a limited geographical radius, owing to the need for close relations with the client. This is particularly true of small and medium-sized enterprises (SMEs), which constitute the bulk of the market. Cross-frontier competition on these markets has remained very limited up to the present. The implementation of the general system of mutual recognition of diplomas has not generated any substantial flow of migration as far as accountants are concerned: only eight accountants in 1992, fifteen in 1993, sixteen in 1994 and twenty in 1995 have taken advantage of this system. The general system was not in fact designed in order to remove the existing barriers but was meant to help accountants to establish themselves abroad in spite of these barriers. All the recent initiatives taken at Community level have strongly emphasised the preservation of the status quo as regards regulations. That is why, despite the provisions of the Treaty of Rome, the rendering of cross-frontier accountancy services and the mutual recognition of accountancy firms are still not possible;
- the international networks of accountancy firms developed their own solutions to these problems long ago. They rely mainly on local accountants for offering their services, passing the work on to their correspondent members in the country in question whenever an international service is called for.

For all these reasons it is more than probable that intra-Community trade in accountancy services will remain marginal. Unfortunately, no figure is available to confirm this.

## MARKET FORCES

### Demand

Even though individuals do sometimes have recourse to the services of accountants, the bulk of the market consists of enterprises, whatever their legal form (one-man business, company with share capital (partnership), or status (private company, plc, public corporation, etc.)). Accountants can therefore be defined as advisers to the business world. The demand is potentially very great and can be classified in segments according to various criteria such as the size of the enterprise - because the requirements of one-man businesses, SMEs and large enterprises are not the same, or again, the economic sector, legal form, whether or not the enterprise is listed on the stock exchange, etc.

As in many other markets, demand varies depending on the size of the client, as large multinational companies call for very sophisticated and diversified services while SMEs generally have simpler needs. It must be admitted, however, that large enterprises can afford to resort to a number of different advisers if they have sufficiently highly developed international verification structures to enable them to endeavour to obtain each service from the best specialist on the subject. SMEs, on the other hand, appreciate the fact that the same consultant to whom they have taken the trouble to explain their business is able to offer them a wide range of services, thus saving both time and cost. For instance, in the case of small enterprises the accountant is often the only external adviser in matters of business management.

The legislation requires many companies to have their annual financial accounts audited. A duly accredited auditor or auditing firm then has to certify that the financial accounts present a true picture of the company's results and financial situation and that the books have been kept in accordance with the legal rules in force.

The purpose of the independent external audit is to enhance the credibility of the financial information and thus increase the effectiveness of the economic decisions based on it. Furthermore, many enterprises which are not required by law to have their accounts audited voluntarily submit to contractual audits because of the advantages which they bring. Lastly, the demand for special auditing services is growing steadily and may lead to the issuing of special reports or opinions on the application of particular procedures.

In the past a fair number of small enterprises, one-man businesses and small trading establishments were unable to keep their accounts themselves, and therefore relied on the services of professional accountants in this field. The decline in the prices of computers and accountancy software means that now every firm can afford to undertake the necessary investment. Many enterprises nevertheless continue to have recourse to the services of accountancy firms in order to make better use of their own resources and to have access to a specialist's expertise.

The public authorities are another source of demand. The courts entrust accountants with liquidation and judicial reconstruction functions and seek expert opinions for judicial purposes, while governments resort to audits and valuations when they decide to privatise public enterprises. Lastly, with the development of the "social economy", a market has now developed among non-profit associations, as their needs are now coming closer and closer to those of the rest of the economy.

### Supply and competition

For a person to be allowed to offer certain accountancy services, the law often requires that the provider of these should possess a professional qualification and belong to a recognised professional organisation. This is particularly the case for the statutory auditing of accounts, which can be done only by duly qualified and accredited accountants. The requirements for the other activities of accountants vary from country to country; some demand compliance with conditions identical to those laid down for the statutory auditing of accounts. In any case, all professional diplomas of members of the main

**Table 3 Accounting services  
Principal EU accounting bodies, 1995**

Belgique/België	Institut des Réviseurs d'Entreprises (IRE)
Danmark	Institut des Experts-Comptables (IEC) Foreningen of Statsautoriserede Revisorer (FSR) Foreningen of Registrerede Revisorer (FRR)
Deutschland	Wirtschaftsprüferkammer (WPK) Steuerberaterkammer (SBK) Institut der Wirtschaftsprüfer in Deutschland (IDW)
Ellada	Soma Orkoton Elegkton (SOE) Association of Certified Accountants and Auditors of Greece (SELE)
España	Instituto de Contabilidad y Auditoria de Cuentas (ICAC) Registro de Economistas Auditores (REA) Registro General de Auditores (REGA) Instituto de Auditores Censores Jurados de Cuentas de España (IACJCE)
France	Ordre des Experts-Comptables (OEC) Compagnie Nationale des Commissaires aux Comptes (CNCC)
Italia	Consiglio Nazionale dei Dottori Commercialisti (CNDIC) Consiglio Nazionale dei Ragionieri e Periti Commerciali (CNRPC)
Luxembourg	Institut des Réviseurs d'Entreprises (IRE) Ordre des Experts-Comptables Luxembourgeois (OECL)
Nederland	Nederlands Instituut Van Registeraccountants (NIVRA) Nederlandse Orde van Accountants-Administratieconsulenten (NOvAA)
Österreich	Kammer der Wirtschaftstreuhänder Institut Österreichischer Wirtschaftsprüfer
Portugal	Camara dos Revisores Oficiais de Contas (CROC)
Suomi/Finland	KHT Yhdistys - Foreningen CGR
Sverige	Foreningen Auktoriserade Revisor
United Kingdom & Ireland	Institute of Chartered Accountants in England and Wales (ICAEW) Institute of Chartered Accountants of Scotland (ICAS) Institute of Chartered Accountants in Ireland (ICAI) Chartered Association of Certified Accountants (ACCA) Chartered Institute of Management Accountants (CIMA) Chartered Institute of Public Finance and Accountancy (CIPFA) Association of Authorised Public Accountants (AAPA) Institute of Certified Public Accountants in Ireland (ICPAI)

Source: FEE



professional organisations in the EU are protected in their country of origin, but only rarely in the other Member States.

The training course for professional accountants is very long and requires the acquisition of both theoretical knowledge and practical experience. It may last six to seven years, and even ten to fifteen years in some countries. Many of those who work at a subordinate level in accountancy firms do so in order to obtain the practical experience necessary for obtaining the professional qualification. Most of those who work in the accountancy services sector are not professional accountants themselves. They are generally auxiliary staff, technical staff or accountancy trainees.

The accountancy profession is practised mainly through collective bodies in most of the Member States. Only Italy still forbids the use of such bodies, even though in that Member State, professional associations without legal personality are very popular in the accountancy profession.

The fragmentation of supply is at least as great as that of demand. The large international firms are the most conspicuous part of the profession and attract all the public attention, the best known of them being the "Big Six", namely Arthur Andersen, Coopers & Lybrand, Deloitte Touche Tohmatsu, Ernst & Young, KPMG and Price Waterhouse. These firms generally work for the big national and international companies in each Member State and all over the world. One of their main characteristics is their ability to provide the same service with the same level of quality irrespective of the part of the world where their clients are located. These large firms dominate the market of large stock-exchange-listed companies, banks and insurance companies.

Eventhough, There are many large firms, the bulk of the accountancy profession consists of small and medium-sized firms, which are often better able to serve the many SMEs in each Member State. Combined, these small firms offer the same range of services, even though obviously, each firm individually offers its clients only a smaller number of services.

Unlike the 1980s, the early 1990s did not witness any "mega-merger" among the largest firms in the sector. The EU's small and medium-sized accountancy firms are at present developing regional networks in order to achieve national or even international coverage of the market. This development is following the movement embarked upon by many enterprises which are using the single market to extend their activities abroad.

The general economic recession of the early 1990s is affecting the accountancy sector in the same way as others. The pressure on fees has become very strong, and the growth rate of the profession's turnover, which was for a long time over 10% in most of the Member States, is now only just keeping pace with inflation. The recent recovery recorded by the economies of most of the Member States is also benefiting the accountancy profession.

### Production process

Data processing has already been an integral part of accountancy services for a long time, and further developments may be expected in this area. Edificas is the accounting profession's latest initiative, its aim being to adapt ADE (Automated Data Exchange) to the needs of accountancy and auditing. Even though accountancy services do not have a very great technological content, these developments will have a significant impact on the way in which the services will be offered in future. One reason being that it will enable accounting information to circulate faster and more accurately.

The fact that there have long been professional standards in this sector has hitherto considerably limited the real impact of ISO 9000 Standard as regards accountancy services. The situation is nevertheless developing, because the British profession has recently taken steps with a view to its voluntary

**Table 4 Accounting services  
Membership of FEE Member bodies, 1995**

(%)	Number of members	Share in public practice
Belgique/België	8 538	53
Danmark	2 577	77
Deutschland	8 310	100
Ellada	350	100
España	4 666	N/A
France	24 760	100
Ireland	9 484	39
Italia	75 727	95
Luxembourg	340	100
Nederland	10 011	39
Österreich	5 474	100
Portugal	1 074	70
Sverige	1 992	99
Suomi/Finland	574	77
United Kingdom	219 351	21

Source: FEE

implementation. It is still too early to say whether this will set a precedent for the other Member States.

### INDUSTRY STRUCTURE

The structure of the accountancy profession in the EU is very much varied, as each country has its own system. The existence of independent professional organisations or institutions is actually the only common feature. These organisations may have been created by the profession itself, as in the United Kingdom and the Netherlands. It also may have been created by law, as in France and Belgium, or again they may combine structures stemming from either of these origins, as in Germany and Spain. In recent years, governments have played an ever-increasing part in the regulation of the profession, largely owing to the implementation of the Community Directives.

The profession is generally structured at several levels, corresponding to the segmentation of demand in terms of complexity of services. The differences between these various levels are due, among other things, to:

- the level of training, measured in terms of university education, practical experience, etc.;
- the field of activities, the least qualified members of the profession as a rule having more limited practising rights;
- the code of ethics, as the code of conduct of some organisations is less strict than that of others;
- international recognition, since some international professional organisations, such as the FEE, have members only at the highest level.

There are, however, exceptions to the rule of multiple levels. In France, Greece and to a lesser extent Luxembourg, all the national organisations belong to the highest level. It is not possible, therefore, in these countries to obtain a less sophisticated service (provided by less highly qualified accountants) for all the regulated services the provision of which is restricted to professional accountants.

In addition to the traditional functions of any professional association, the institutes participate actively at national and international level in the development of accounting standards, auditing standards and other professional standards, and also of codes of ethics. They play an important role in the supervision of their members.

**Table 5 Accounting services**  
**Number of member bodies by member type, 1995**

	Accounting association	Individual entities	Legal entities	Total
Belgique/België	IRE (1)	923	198	1 121
	IEC (1)	6 339	1 078	7 417
Danmark	FSR (1)	2 577	510	2 577
	FRR	3 340	1 100	3 340
Deutschland	IDW (1)	7 161	774	7 935
	WPK -WP	8 976	1 615	10 591
	VBP	4 205	113	4 318
	BvBP	1 799	7	1 806
Ellada	SOE (1)	350	28	350
	SELE (1)	N/D	N/D	N/D
España	ROAC	14 332	757	15 089
	IACJCE (1)	4 615	51	4 666
	REA	2 878	35	2 913
	REGA	1 472	12	1 484
France	OEC (1)	15 417	9 343	24 760
	CNCC (1)	12 864	2 136	15 000
Ireland	ICAI (1)	9 484	N/D	9 484
	ICPAI (1)	N/D	-	N/D
Italia	CNDC (1)	40 700	0	
	CNRPC (1)	35 027	0	
	IRE (1)	340	80	420
Luxembourg	OECL (1)	86	0	
	NIVRA (1)	10 011	0	
Nederland	NOvAA	4 231	0	
	CROC (1)	767	134	901
United Kingdom	ICAEW (1)	109 743	18 630	109 743
	ICAS (1)	14 010	1 155	14 010
	ACCA (1)	47 230	5 881	47 230
	CIMA (1)	N/D	-	N/D
	CIPFA (1)	12 368	0	12 368
	AAPA	982	0	982
	AAT	N/D	-	N/D

(1) FEE Members.  
 Source: FEE

The structure of the profession has remained on the whole stable in recent years. Changes are rare, and all the more significant for that, in view of their potential impact on the market (at least as far as supply is concerned). The implementation of the 8th Directive and of the Directive on the mutual recognition of diplomas (see the paragraph on regulation) has had an important influence on the structures of the profession in a large number of countries, and especially in Germany, Spain and Italy. Two years ago, changes took place from this aspect in two countries, France and Portugal. In France the law which implements the mutual recognition of diplomas also contains provisions designed to modernise the regulation of the profession. The changes are, however, relatively minor and do not affect the crux of the regulation. In Portugal the law which implements the 8th Directive did not significantly change the specific features of regulation in that country.

In the EU some 350 000 persons belong to the professional organisations which are members of the Federation of European Accountants (Fédération des Experts Comptables Européens - FEE). About 40% of these persons work in the accountancy services sector. Most of the other 60% of members of the professional organisations represented in the FEE practise in industry, trade, education or the public sector. Tables 4 and 5 show the breakdown of these accountants among the Member States of the EU. Obviously, the size of the profession in a given country does not in any way reflect that of its economy. This is due to the way in which the profession is

perceived in countries such as the United Kingdom, Ireland, the Netherlands, Italy, etc., where everyone who has received a suitable training is entitled to be a member of the professional organisation, whether he or she exercises the profession on a self-employed basis, is employed in industry, retired or otherwise situated. Countries such as Belgium, France, Germany or Greece, on the other hand, restrict membership of the professional associations to those who practise as independent professionals. Membership of the organisation is then linked to a given function, not to a specific training.

## REGIONAL DISTRIBUTION

As the provision of accountancy services generally requires a certain proximity between the accountant and the client, the regional distribution of accountancy services across the EU faithfully reflects that of economic activity in general. Certain particular concentrations are, however, to be seen in the main financial and administrative centres. The profession's permitted field of activity also has a decisive influence, members of the profession being relatively more numerous in the Member States where this field is wider.

## ENVIRONMENT

A distinct growth can be seen in the importance attached to accountancy and auditing in connection with the environment. The number of companies that provide ecological information

in their annual accounts is increasing, even though this information is usually only qualitative in nature and does not include any assessment of its real financial impact. In many countries companies are moving towards the production of more ecological financial statements; the development of a conceptual framework with regard to accountancy dealing specifically with ecological questions is not however on the immediate agenda. Ecological auditing calls for knowledge and experience beyond the scope of the auditor, even though the latter does have a part to play in this field as a member of a multidisciplinary team of experts. The accountancy profession may, thanks to its considerable expertise in the auditing of accounts and the presentation of the results of these audits, constitute the starting point for the creation of a new function performed by individuals from a variety of professional environments.

## REGULATIONS

Accountancy and auditing services are subject to a high degree of regulation in the EU. The forms of regulation are both numerous and complex and vary from country to country despite the attempts at Community harmonisation. These forms of regulation fall into two main categories: the regulation of the services as such, including the rules defining the way in which these services are to be performed, and the regulation of the accountancy profession and its members.

### *Regulation of services*

Many services provided by the accountancy profession have been subject to regulation for a long time in most European countries, often in different ways. These services are: the statutory verification of accounts, accountancy proper, public-sector auditing, the verification of assets contributed to companies, liquidation or judicial reconstruction, etc. National regulatory systems define the types of work to be done, the time limits and conditions to be observed and the person able to do this work.

The statutory verification of accounts is the only service provided by the accountancy profession that is regulated in the same way in all the Member States of the EU. It is also the only one that has been the subject of specific Community Directives. That is why all companies above certain minimum thresholds now have to prepare and file financial statements audited by an independent expert. All the other services have up to now retained their specific national features. Some services are subject to regulation in some countries but not in others; some services are restricted to the profession in some countries but shared by several professions in other countries; while in some they are not even allowed to be carried out by accountants. The range of services offered by the profession thus varies significantly within the EU, as does the degree of competition which exists in each of these markets between the accountancy profession and the other professions.

### *Regulation of the profession*

In addition to the services which it provides, the accountancy profession itself has long been subject to regulation in Europe. As the economies of the Member States have developed differently, the regulation of the profession differs from country to country. The degree of self-regulation has decreased in recent years, chiefly owing to the implementation of the Community Directives.

In most of the Member States the profession was created and organised by the public authorities or by law. It enjoys official recognition by the State, including in the Member States where the origin of the regulation is private. This authorises the members of the profession to perform regulated activities. The regulation system, whether public or private, deals with a large number of fields such as the definition of documents evidencing professional qualification, the protection of these

evidencing documents, the conditions governing membership of the professional organisations, the minimum levels of training and experience, in-service training, ethical standards or codes of conduct, professional standards, specific authorisations needed in some specialised fields, the rules for the formation of professional companies, etc.

At Community level only a few very limited attempts have been made to harmonise these rules. These led to the 8th Company Law Directive on "the approval of persons responsible for carrying out the statutory audits of accounting documents". The Directive defines the minimum conditions to be fulfilled with regard to training and experience by statutory auditors of accounts, whether they be natural or legal persons. The Member States nevertheless have the possibility of imposing more stringent requirements than these minima, and many have taken advantage of this possibility.

Another Directive of concern to the accountancy profession is the 1st Directive on the Mutual Recognition of Diplomas, which, when applied, enables professional accountants of any Member State to obtain recognition of their qualifications with a view to being able to pursue regulated activities in another Member State without having to pass the professional examinations there. In the case of the accountancy profession, the Member States may require applicants to undergo a competence test on the subject of local law and the ethical rules. While such a system already existed in some countries such as Belgium, France, Ireland, Luxembourg and the United Kingdom, it is completely new for the others. This system was to enter into force at the beginning of 1991, but its implementation was delayed in a number of countries. It is already clear, however, that it will not lead to any substantial migratory flows as far as the Community accountancy profession is concerned. Even though it makes it easier for accountants to establish themselves abroad, it does not remove the differences between the laws and regulations of the Member States which accountants have to master. These differences will continue to restrict the free movement of accountants within the EU.

## OUTLOOK

The growth of the market for accountancy services depends on the general health of the economy. The present recovery has therefore benefited the accountancy profession, as others. The state of the economy does not, however, appear to be the main challenge which accountants have to meet at present, as the growth rate of their activity should sooner or later rise again to over 10%.

The recent wave of financial scandals and the legal proceedings to which they have led have had an impact on the profession as a whole. Its very credibility is now even being questioned in some quarters. It is easy to retort that accountants are convenient scapegoats for the various difficulties experienced by enterprises during a period of economic recession. The fact nevertheless remains that the profession now has to face up not only to the financial pressure imposed on its largest members by the enormous claims for damages resulting from these affairs, but also to a development of the laws and regulations which is liable to restrict its freedom of action, and to the task of enhancing its public image. A great deal of work has already been done on these questions, both within and outside the profession, and this will undoubtedly lead to a satisfactory response.

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# Market research

## NACE (Revision 1) 74.13

The EU accounts for 37% of the world market for market research. Of the world's largest market research companies, five have their headquarters in the EU. About 51% of all EU market research is bought by manufacturers, 12% by public authorities and 14% by the service sector; 66% of research is for consumer products and services. The market research sector employs an estimated 29 600 permanent employees and over 86 100 interviewers as well as freelance researchers and other self-employed consultants and sub-contractors.

### INDUSTRY PROFILE

#### Description of the sector

Marketing research is covered by NACE Rev.1 category 74.13 and is distinct from management consultancy. Market research analyses the markets for products and services. It provides a flow of information between consumers and the product or service supplier on what people want and why they want it. It is used by decision makers to identify and define opportunities, threats, competition and emerging trends. It is also used to initiate, modify and evaluate marketing strategies in addition to improving the understanding of marketing processes and ensuring that the benefits of products and services are effectively communicated.

Marketing research enhances economic efficiency by enabling companies and other organisations to provide the goods and services that people want, by investigating their needs, attitudes and behaviour. It provides a channel of communication between the consumers and providers of goods and services, and in the case of research for the public sector, between the governed and those who govern them.

Marketing research designs the method for collecting information required to address these issues, manages and implements the data collection process, analyses the results and communicates the findings with recommendations for action. For instance, in recent years marketing research has highlighted, to both manufacturers and governments, the increasing public concern over protecting the environment and associated health issues.

As an activity based firmly on the application of aspects of scientific method such as hypothesis generation and testing, experimental design and the use of statistical and sampling methods, market research combines many elements of academic rigour with the characteristics of both a profession and a key sector of the business service industry. The structure of the market research industry is remarkably similar across the Member States. Generally, the market can be split into three parts. The first, media market, consists of research measuring the readership of newspapers and magazines, and audiences of television, radio, videos and films and outdoor billboards and posters. This can be done by asking sample households to keep diaries of their media habits, by day-after interviews, and electronic techniques such as peplemeters which record television viewing habits. With the emergence of a global marketplace and a growing fragmentation of audiences, advertisers are under pressure to monitor, justify and optimise expenditures on advertising, sponsorship and promotions. To do this they must know if they are reaching their targets to ensure that their commercial communications maximise volume sales and profitability over the full life-time of a brand. The second, warehouse and shop auditing and the scanning of shop sales along with electronic scanner information through bar code scanning technology can provide detailed sales data on a daily basis. It can track the effects on sales of advertising and pricing strategies as well as simulate store displays and promotions and predict their outcome. And finally the third which is specialised market research which includes quantitative and qualitative research. Quantitative research consists of statistical sampling and analysis of information about respondents' behaviour and attitudes obtained

**Table 1: Market research  
Turnover (1)**

(million ECU)	1990	1991	1992	1993	1994
Belgique/België	71	73	70	74	78
Danmark	27	30	32	36	40
Deutschland	490	548	637	703	780
Ellada	14	18	21	25	27
España	136	146	148	(2) 177	183
France	540	545	571	604	610
Ireland	14	15	15	15	(2) 17
Italia	254	281	290	261	273
Luxembourg	1	1	1	1	1
Nederland	123	136	144	164	172
Portugal	16	18	22	25	28
United Kingdom	539	553	565	599	675
EUR 12	2 225	2 364	2 516	2 684	2 884
Other Europe (3)	241	294	309	323	357
Europe	2 466	2 658	2 825	3 007	3 241
USA	1 916	2 171	2 226	2 690	2 909
Japan (4)	493	570	590	729	795
Other (5)	641	673	713	756	801
World	5 516	6 072	6 354	7 182	7 746

(1) Excludes market research conducted in-house by marketing departments, advertising agencies, governmental organisations, academic institutions, etc.

(2) Comparison with preceding year distorted due to improved data source.

(3) Europe excluding EUR 12.

(4) Based on the revised estimates for Japan provided in 1995 for 1990-1994.

(5) No complete data are available for 'other' parts of the world; the assumption has been made that the annual growth rate was 5% for 1990-91, and 6% for 1992-94.

Source: ESOMAR Annual Market Study

**Table 2: Market research  
National shares of EU Member States, 1994**

(%)	Market research expenditure	Advertising expenditure	Gross domestic product	Population
Belgique/België	3	2	3	3
Danmark	1	2	2	2
Deutschland	27	33	30	23
Ellada	1	2	1	3
España	6	8	7	11
France	21	16	19	17
Irland	1	1	1	1
Italia	9	9	15	16
Luxembourg (1)	0	0	0	0
Nederland	6	5	5	4
Portugal	1	1	1	3
United Kingdom	23	21	15	17
EUR 12	100	100	100	100

(1) Less than 0.5 %

Source: ESOMAR Annual Market Study, Eurostatistics, The European Advertising & Media Forecast NTC Publications Ltd.

through interviews (face-to-face, telephone or mailed questionnaires). Qualitative research includes group discussions and in depth interviews with individuals.

Research can also be divided between continuous research (covering for example audits and panels) and ad hoc research. Another division is between single client studies versus omnibus and other syndicated surveys in which clients can buy space for individual questions they wish to ask.

#### Recent trends

The 1980's saw annual real growth in excess of 10% with very strong growth in Southern Europe, albeit from a low base. Over the five years from 1990 to 1994 inclusive, growth slowed to an average of 7% per annum in the EU but the

market research industry has outperformed many other sectors including advertising during this period.

There has been a considerable expansion in the volume and value of the research market in Eastern Europe and in the developing world outside Europe. In the years ahead it looks as though these trends will continue with, perhaps an acceleration in the development of research activity in places like Asia and Latin America at a faster rate than we have yet seen.

There has also been a significant shift towards business to business research versus consumer to business research. In 1990 the ratios were 73% consumer to 27% business to business. This has now changed to 66% consumer and 34% business to business. In particular, there has been a marked decline

**Table 3: Market research  
External trade by value, 1994**

(%)	Client origin for EU research organizations		Subcontracted by research organizations to foreign research suppliers
	National	Foreign	
Belgique/België	79	21	13
Danmark	85	15	4
Deutschland	71	29	(1) 2
Ellada	79	21	3
España	90	10	(2) 0
France	89	11	8
Irland	85	15	10
Italia	85	15	10
Luxembourg	80	20	0
Nederland	89	11	5
Österreich	75	25	13
Portugal	92	8	6
Suomi/Finland	93	7	1
Sverige	87	13	8
United Kingdom	83	17	12
EUR 15	82	18	7

(1) Based on 1991 statistics.

(2) Less than 0.5 %

Source: ESOMAR Annual Market Study

**Table 4: Market research  
Source of revenue, 1994**

(%)	Manufacturing	Services	Advertising agencies	Public sector	Wholesale/retail	Research organisations	Others
Belgique/België	35	21	9	13	8	13	1
Danmark	47	18	9	6	10	7	3
Deutschland	67	6	3	9	3	3	9
Ellada	59	8	8	5	3	10	7
España (1)	25	13	7	24	8	19	3
France (2)	50	19	4	11	6	4	6
Ireland	44	19	2	25	5	5	0
Italia	50	7	14	8	7	10	4
Luxembourg	4	26	4	49	4	13	0
Nederland (3)	40	23	3	15	10	9	0
Österreich	60	5	5	5	10	5	10
Portugal	57	7	14	6	6	7	3
Suomi/Finland	52	22	3	3	12	3	5
Sverige	34	19	4	25	9	4	5
United Kingdom	47	17	3	13	7	3	10
EUR 15	51	14	5	12	6	5	7

(1) Estimate based on 1992 data

(2) Estimate based on 1990 data

(3) Estimate based on 1991 data

Source: ESOMAR Annual Market Study

in the proportion of total research expenditure going towards researching the markets for fast moving consumer goods and an increase in research for retailers, governments and the automotive industry.

One other noticeable trend has been a decline in face to face in-home personal interviewing. This is related to a switch away from ad hoc to continuous data collection methods rather than a switch from face to face to other forms of ad hoc data collection such as telephone or postal research. The long term prospects for marketing research are good in view of the growth of global marketing by multinationals and the opening of new markets about which companies need a deeper understanding.

### International comparison

Over the five years from 1990 to 1994 inclusive, we estimate that the world total market for market research grew from about 5 500 to 7 750 million ECU - that is an increase of 40%, or an average of 8% per annum. The proportion of the total world turnover in research accounted for by the EU over this five year period has declined from about 40% in 1990 to 37% in 1994 not because the EU market has shrunk in absolute terms, but because the market for research outside of the EU has tended to grow more quickly. In absolute terms the total EU market for research grew by 30%, from 2 225 to 2 884 million ECU between 1990 and 1994.

In the USA, the market for research grew during this period from about 1 920 to 2 900 million ECU - an increase of 52%. In Japan it increased by almost two thirds (61%) from 490 to 800 million ECU but much of this apparent growth can be attributed to the considerable appreciation in the value of the Yen. In the rest of the world the estimated increase was from about 640 to 800 million ECU - an increase of 25%.

In 1994, the world-wide value of the research market was estimated to be worth 7 746 million ECU. The EU accounted for 37% of this total and the rest of Europe for 5% (357 million ECU). The USA accounted for 38% (2 909 million ECU), Japan for 10% (795 million ECU) and the rest of the world 10%.

Between 1993 and 1994, the EU market for research grew by 7% from 2 684 to 2 884 million ECU (see Table 1). This compares to 8% growth in the US and 9% growth in Japan when quoted in ECU. However, if estimated in local currencies and inflation is taken into account, growth in the USA was 7%, compared to 6% in the EU and just 1% in Japan. These figures include work conducted by research institutes but exclude in-house research by companies, advertising agencies, governmental and academic bodies and consultants.

In 1994, Germany was the largest market for research in the EU and research turnover was 780 million ECU taking 27% of the EU total (see Tables 1 and 2). The UK (23%) was the second largest market and France (21%) the third with 675 and 610 million ECU respectively. Italy (9%) was in fourth place with 273 million ECU, followed by Spain (6%) at 183 million ECU and the Netherlands (6%) with 172 million ECU in sixth place. Germany, the UK and France continue to account for well over two-thirds of EU market research turnover.

Individual countries show quite significant differences in their growth rate from 1993 to 1994. After taking inflation into account, real growth rates in local currencies were 10% in the UK and 7% in Germany whereas France showed a 2% decline. In the smaller research economies, Portugal showed 10% growth and Denmark 7%, compared to Greece and Spain at 5% and Italy at 4%. The Benelux countries each grew by just 1%.

Table 2 compares expenditure in 1994 on market research with advertising expenditure, GDP and population in the EU. This shows that in France and the UK the market share of market research within the EU exceeds that of advertising. This also applies to Belgium and the Netherlands but not Denmark, Germany, Greece and Spain where the reverse is true.

### Foreign trade

As shown by Table 3, 82% of market research conducted in the EU was commissioned by domestic clients in 1994. The share accounted for by international clients has grown from 10% to 18% between 1990 and 1994. Foreign clients are particularly important for Germany, Greece, Belgium and the UK. About 13% of market research turnover in Belgium and 12% in the UK came from co-ordinating international multi-

**Table 5: Market research  
Employment (1)**

(units) Number of employees (2)	1990	1991	1992	1993	1994
Belgique/België	700	800	800	820	835
Danmark	405	400	390	400	400
Deutschland	(7) 5 719	7 500	6 650	6 774	(4) 6 778
Ellada	548	575	700	664	679
España	(4) 2 000	(4) 1 800	(4) 1 900	2 313	2 374
France	(7) 4 500	(4) 5 600	(4) 6 720	(4) 6 500	(4, 8) 6 500
Ireland	270	270	280	277	300
Italia	(7) 2 750	1 200	1 200	(5) 2 000	(9) 1 972
Luxembourg	(4) 13	(4) 11	(4) 11	(4) 13	(4) 17
Nederland	(7) 2 200	(7) 2 200	2 000	2 697	2 800
Österreich	N/A	N/A	N/A	N/A	(4) 750
Portugal	700	670	670	750	730
Suomi/Finland	N/A	N/A	N/A	N/A	335
Sverige	N/A	N/A	N/A	N/A	800
United Kingdom	(7) 6 700	(4) 6 500	(4) 5 300	(4) 5 800	(4) 6 200
EUR 15	N/A	N/A	N/A	N/A	(6) 31 470
<b>Number of self-employed (3)</b>					
Belgique/België	N/A	1 300	1 300	2 000	2 200
Danmark	N/A	1 300	1 400	1 400	1 400
Deutschland	N/A	30 000	29 800	31 500	27 837
Ellada	N/A	1 567	1 635	1 739	2 591
España	N/A	N/A	N/A	6 000	(10) 6 000
France	N/A	8 000	7 000	10 000	12 000
Ireland	N/A	550	600	700	750
Italia	N/A	5 000	6 000	6 000	6 000
Luxembourg	N/A	80	100	100	(10) 100
Nederland	N/A	7 000	7 000	8 372	8 500
Österreich	N/A	N/A	N/A	N/A	2 200
Portugal	N/A	2 000	2 000	2 000	2 000
Suomi/Finland	N/A	N/A	N/A	N/A	360
Sverige	N/A	N/A	N/A	N/A	3 000
United Kingdom	N/A	20 000	16 800	16 800	16 800
EUR 15	N/A	N/A	N/A	N/A	91 738

(1) Most figures are estimates

(2) Including permanent employees

(3) Covers freelance interviewers

(4) Number excluding full-time research functions within client companies

(5) Market change implied in comparison with 1992 market partly attributable to different basis for estimate

(6) Total excluding full-time research functions within client companies for some countries

(7) Estimate based on 1991 data

(8) Includes research organisations offering only fieldwork or d.p. services

(9) Based on extrapolation of 1993 statistics

(10) Estimate based on 1993 estimates

Source: ESOMAR Annual Market Study

country research and the UK accounted for 41% of all such work conducted by EU countries, while France accounted for 25%, Italy 14% and Germany only 8%.

## MARKET FORCES

### Demand

Manufacturers of consumer packaged goods are the main buyers and users of market research. About 51% of research within the EU is for manufacturers (see Table 4). A broader range of business and non-commercial organisations is now using market research to aid their decision making. The public sector is a significant client at 12% and research is becoming more important in providing feedback to local and national governments, about public reactions to policies. Taking 14% of research spending, service industries are also important clients. Hospitals, banks and airlines are amongst those who use market research to improve the quality of their services.

Advertising agencies (5%), wholesalers/retailers (6%), other research organisations (5%) and other clients (7%) account for the rest. In the EU, approximately 66% of total expenditure stems from research for consumer products and services and the non-consumer sector (including business-to-business and government research) accounts for 34%.

There have been major changes in the information needs of marketing companies. A key factor is the increase in global marketing and a swelling interest by multinationals in the Single European market. An increased demand for pan European information is exacerbated by the proliferation in media. This underlines the need to remove barriers created by different national statistical definitions so that survey findings are more comparable. Clients require research companies to have a wider geographic spread of resources but also a strong local presence and perspective so the national insight is not lost in the global picture.

**Table 6: Market research  
World top 10 market research companies, 1994**

		Turnover (million ECU) (1)	Countries with office (2)	Head office	Ownership
1.	A.C. Nielsen	1 144	55	USA	Dun & Bradstreet, USA
2.	IMS International	585	71	USA/UK	Dun & Bradstreet, USA
3.	IRI	319	26	USA	Public Company, USA
4.	GfK	200	25	D	Public Company, D
5.	Sofrès Group	153	7	F	Finalac-led Group, F
6.	Research International	145	46	UK	WPP, UK
7.	Video Research	113	1	JPN	Dentsu et al, JPN
8.	Infratest/Burke	104	12	D	Public Company, D
9.	Arbitron	103	1	USA	Ceridian Corp., USA
10.	IPSOS Group	102	8	F	Public Company, F

(1) Excluding associates

(2) Including associates

Source: ESOMAR Annual Market Study, major research companies, J. Honomichi/Marketing News

Another major influence is the growth of profitable and relatively undeveloped new markets in South East Asia as well as Central and East Europe where potential demand is significant in the long term by both public institutions and private corporations. A greater emphasis on building and maintaining strong brands has had a major influence on the types of market research in demand as companies strive to understand brand elasticity and the measurement of brand relationships, positioning and brand equity, particularly in relation to growing competition from own-brands.

Growth areas for research are customer satisfaction, branding and research into corporate image, business to business, finance, retail and utility sectors and legal research. Studies suggest that expenditure on most types of market research is likely to increase rather than decline over the next five years. This will be markedly so in the case of usership and attitude studies, product testing, advertising and concept development and evaluation, and advertising campaign tracking, particularly with the multiplication of electronic and published media.

### Supply and competition

Changes in technology, growth in the information industry, diversification of life-styles and proliferation of media has made marketing research ever more necessary to monitor changes in the market place. Many major corporations have disbanded or downsized their market research departments in the past few years and this has created the opportunity for research institutes to develop new and often closer forms of relationship with clients whilst the client also benefits in a switch from fixed to variable costs.

A greater detail and frequency of reporting and more diversified sources of marketing information, have made it more necessary for researchers to interpret the data and help management understand the implications for marketing strategy. Researchers must provide added value by offering diagnostic, interpretative and predictive services as well as expertise in the client's specific sector. This implies that clients will demand an on-going strategic counselling relationship and this trend is already evident with a growing number of researchers acting as consultants to companies.

ISO 9000 accreditation has been taken up by research institutes in certain countries, notably the Netherlands and the UK, as a means of guaranteeing a procedures to check quality standards to clients who are not professional market researchers themselves. In a 1994 ESOMAR survey, designed to discover how research prices vary from one country to another, research institutes were asked to state what price they would quote to a client for carrying out six different types of surveys. In

terms of an overall price index across all six projects for 16 West European countries, with the average being 100, France (134) and Germany (130) emerged as the most expensive countries and Greece (70) and Spain (80) as the cheapest.

This price variation largely reflects differences in salaries and social costs. For instance, freelance and part-time interviewers in France and certain other countries are eligible for benefits. Costs for employers include income tax, social security contributions as well as holiday entitlements, redundancy pay and pension provision. In other countries they are employed on a very different basis. This will probably change with greater harmonisation across the EU in the benefits that freelance and temporary workers are entitled to. Other factors in pricing include the degree of competition in the local market, the enhanced efficiency that comes with greater experience in certain types of research, the mix of research and data collection methods and geographic dispersion of populations.

Continuous research demands higher investment than ad hoc research and the advent of scanners, peplemeters and single-source data services have added to the high technology and investment that characterise this sector. Computer-aided interviewing especially by telephone (CATI) also involves sizeable investment in facilities often comprising 20 to 100 telephone booths with appropriate telecommunication and computing equipment.

Over the past decade, more research companies in the ad hoc sector have developed standardised or branded research products. This too, involves investment in designing, testing, validating and marketing new techniques, which is only possible if the costs can be amortised by applying the same techniques across many countries and over time.

These costs, and the protection afforded to research suppliers by time series data, have created entry barriers that have led to a limited number of very large players. Corporate guidelines for buying research using preferred research suppliers or techniques and a demand for sophisticated international co-ordination of research projects have all led to a concentration of ownership, the formation of international research chains or networks of national agencies.

Parallel to this has been the emergence of more specialist research companies dedicated to CATI omnibus services, advertising tracking and research into particular sectors. Examples are pharmaceuticals and automobiles. Larger research businesses have also broken down into separate operating divisions or subsidiaries focusing on specific areas of market information need or research techniques. Clients can now choose between a wide spread of suppliers from large full-

**Table 7: Market research**  
**Number of research organizations in EU member countries,**  
**1994 (1)**

	1994	94/93 (% change)
Belgique/België	36	3
Danmark	14	8
Deutschland	124	14
Ellada	23	15
España	39	- 3
France	78	1
Ireland	7	17
Italia	72	- 3
Luxembourg	3	0
Nederland	49	7
Österreich	19	N/A
Portugal	12	9
Suomi/Finland	19	36
Sverige	41	21
United Kingdom	133	7
EUR 15	669	8

(1) The figures refer to the numbers of research organisations with a full listing in the ESOMAR 1995 Directory which reflects the market situation in the year 1994; comparison has been made with the listings in the 1994 Directory (1993 market situation).

Source: ESOMAR Directory 1995

service research companies to specialist research boutiques and consultants.

Market research has always been highly competitive and subject to intense price pressure. Recession exacerbated this tendency with a number of research professionals leaving research institutes or client corporations to set up their own consulting businesses.

An estimated total of 29 600 people are employed on a permanent basis in the EU market research industry with a further 86 100 as freelance interviewers (see Table 5). This is a conservative estimate which excludes freelance qualitative researchers and other self-employed consultants and sub-contractors. Over the past years, several countries have seen a slight rise in the number of permanent employees. This is evidence that despite automation and downsizing for greater efficiency, the industry is out of recession.

External competitors include management consultants, accounting firms and database marketing organisations which also offer marketing and management information. This combined with changes in client requirements mean that new skills are required within the market research industry. In addition to marketing research expertise, researchers need to possess a broader range of marketing and management skills and knowledge about their clients' specific sector. Furthermore, interviewers require more training, particularly those who use portable computers for interviewing instead of paper questionnaires.

### Production process

In 1994, 53% of research was ad hoc and 47% was continuous (31% on panel research, 6% on omnibus research and 10% on other continuous research). About 80% of ad hoc research expenditure in the EU is from quantitative research and 20% qualitative.

Data collection methods in quantitative research divide between mail survey, telephone and face-to-face interviews. Despite the higher costs involved, face-to-face studies continue to account for the majority of quantitative research expenditure in the EU: 26% of total turnover compared to 12% telephone and 3% mail studies. Smaller countries with a highly developed

infrastructure tend to make more use of telephone studies (e.g. 31% of research turnover in Luxembourg and 13% in Denmark) compared to 4 to 5% in Greece, Turkey and Ireland and 8 to 9% in southern European countries such as Italy, Portugal and Spain. The proportion of telephone studies is rising because of cheaper costs, higher telephone penetration and faster delivery of data. Group discussions account for the majority of qualitative research expenditure in the EU (approximately 6% of total research expenditure) compared to 4% for in-depth interviews.

## INDUSTRY STRUCTURE

### Companies

There are well over 1 500 market research companies and consultancies in the EU, including the headquarters of several of the world's largest. Five of the Top Ten world market research companies have their headquarters in Europe (see Table 6). Although there are a number of major players in the EU, the industry is, nevertheless, characterised by considerable fragmentation and intense competition. Barriers to entry are low except in the high tech/high investment areas. Many of the major research organisations are represented within the ESOMAR membership (see Table 7).

Pre-tax margins have historically been modest (an average of around 5 to 6% on turnover for ad hoc research companies) though slightly higher in recent years. Substantially higher margins are earned by companies with multi-client services and a contractual customer base.

### Strategies

Mergers and acquisitions, often as part of the creation of global marketing service corporations, have meant an increase in industry concentration. Eight major research chains have holding companies in the EU (see Tables 8 and 9).

Advances in technology and the growth of international research chains, have enabled buyers to go to one head office to commission a research project in many countries or several regions. A variant on this is the licensing in other countries of particular research techniques or brands in advertising pre-testing, simulated test market, brand position and customer satisfaction/service quality research.

The other major structural change is horizontal specialisation. Increasingly, market research organisations have set up specialist divisions or operating subsidiaries that concentrate on key business sectors (e.g. media, health care, finance) or research specialisations (e.g. qualitative, advertising, customer care). Growth in international research has also led some research suppliers to set up multi-country syndicated services on a regional or global basis.

Vertical integration has always been a feature of the European industry. All but the smallest companies have combined a client service function with a data handling facility (data collection, preparation, processing and printing). However, some companies are starting to question this arrangement especially where personal interviewing fieldwork is concerned. The US market for instance has long been characterised by an ownership separation of research companies from fieldwork suppliers.

The client-research company relationship is being affected by Total Quality Management (TQM) and Service Quality demands and associated measurement needs. Many companies have adopted TQM and research organisations are doing the same to offer consistently high and reliable quality in their services.

## REGIONAL DISTRIBUTION

When a market reaches a certain stage of maturity, an equilibrium is established, in which continuous research captures about one-third of total expenditure. Other regular services (e.g. advertising tracking, quality of service monitoring) add a further semi-contractual sector, partly substitution for ad hoc studies and partly reflecting overall growth in the information market. Other geographic variations stem from broader economic and marketing influences. In smaller countries, less research on new product development is undertaken as the major R & D activities and corporate headquarters are located elsewhere. This leads to more research involving the screening of concepts, products or communication approaches that have been developed and more thoroughly researched in the larger EU markets.

Market research tends to be relatively less widely used in countries where there is a greater stress on industrial products. Restrictions on television advertising (and hence, related research) in a number of countries have also contributed to a differential use of market research across Europe as have varying levels of retail trade concentration (broadly, more concentration in the north than in the south). These and other factors mean that compared with the national level of economic activity, the research market is particularly well developed in North West Europe and somewhat less so in Southern Europe.

## ENVIRONMENT

A major problem is falling response rates caused by a variety of reasons. People often do not have the time or motivation to respond to interviews. Rising crime levels in urban areas and a distrust of being approached by strangers also affect response rates. There is also growing concern about invasion of privacy and about what happens to personal information given during an interview and who has access to it thereafter. This is particularly the case when respondents have difficulty in distinguishing between a sales call and a research project.

## REGULATIONS

Market research depends upon the voluntary co-operation of respondents and professional self-regulation. The ICC/ESOMAR International Code of Marketing and Social Practice is applied by all ESOMAR members and the national marketing research associations in all EU Member States. This Code which guarantees the respondent's anonymity, specifies responsibilities towards respondents, the rights of respondents, relations with the general public, the mutual responsibilities of clients and researchers, and reporting standards. The Code is particularly relevant in the light of the EU Directive on privacy of personal data. For the time being, such restrictions vary from one Member State to another, with many countries offering an exemption to marketing research, recognising that it deals with aggregated and anonymised data rather than not personalised data.

Another Directive which can also have a drastic affect on telephone research, is the EU Directive on the protection of personal data (95/46/EC), which harmonises national laws in this area and should therefore help market research at European level, in the context of digital telecommunications networks, in particular ISDN and digital mobile networks. The hope is that this Directive will not restrict telephone research which is increasingly used in many countries.

The proposed sectoral Directive on protecting personal data in the telecommunications environment (subject of a political agreement at the Telecommunications Council, 27 June 1996) includes specific provisions only on unsolicited calls for direct marketing purposes, not for market research.

The proposed Directive on Temporary Employment will affect most free-lance interviewers and ultimately will drive up market research prices in some countries. At the moment, legislation on social security and benefits varies widely between Member States. Other restrictions which vary from country to country can affect the right to conduct and publish public opinion polls, particularly in the run-up to an election. Although political opinion-polling constitutes only about 2% of the entire market research industry and actual pre-election polling less than 0.3%, it naturally attracts a lot of media and public attention.

**Table 8: Market research  
Top 10 market research companies in the EU, 1994**

		EU market research turnover (1) (million ECU)	EU countries with office	Current ownership/Acquired/ Merged with
1.	A.C. Nielsen	(2) 526	11	Dun & Bradstreet, USA (acquired 1984)
2.	IMS International	(2) 242	11	Dun & Bradstreet, USA (acquired 1988)
3.	GfK	(2) 184	10	Public company, D (ex-public association)
4.	Sofrès Group	153	7	Finalac-led group, F (ex-Sema; acquired Cecodis 1992)
5.	Research International	112	10	WPP, UK (acquired 1989)
6.	Infratest/Burke	101	8	Public company, D (acquired Burke in Europe 1980)
7.	IPSOS Group	100	6	Public company, F (acquired Makrotest (Italy) 1990; RSL, GFM-Getas, ECO 1992; Insight, WBA, Explorer, Infométrie 1993)
8.	Taylor Nelson AGB	74	3	Public company, UK (acquired MaS 1987, Addison 1990, AGB 1992)
9.	MAI Information Group	62	2	Public company, UK (acquired MIL, NOP, SRA 1989)
10.	Millward Brown	47	8	WPP, UK (acquired 1989)

(1) Excluding associates

(2) The figures are derived from extrapolating the ratio between EU: non-EU turnover for the company in 1992 based on the worldwide turnover figure for 1994

Source: ESOMAR Annual Market Study, major research companies, J. Honomichi/Marketing News



## OUTLOOK

The adoption of TQM by many corporations brings the need for measurement to monitor its success. This involves setting benchmarks in efficiency and quality, satisfaction studies amongst internal and external customers, and the effectiveness of their communication and studies amongst personnel. Furthermore, research companies are increasingly working with central and local government, including education, health and crime prevention services.

There is a move towards pan-European data collection where the region is treated as an entity. One-stop data collection through integrated European data handling companies is moving the industry further along the road of international research co-ordination. Steps in this direction have already been taken with computer assisted telephone interviewing.

Another trend is the enhancement of tracking services with a demand for more multi-country tracking on a comparable basis, more emphasis on various types of brand equity measurement, and a wider scope for tracking studies including business control monitors, advertising effectiveness, business efficiency, environmental issues and other topics of public concern.

As clients need more immediate data to support a range of strategic decisions which go beyond marketing, timeliness has become a major issue. Downsizing has fed client demand for marketing research institutes to provide marketing intelligence and added value services, rather than just market data.

The outlook for market research is good provided that proposed European legislation takes into account the needs of legitimate marketing research. The market research industry will need to ensure that it is predictive rather than reactive, and that it provides not just techniques and data but in addition, timely, tactical and strategic advice for decision makers.

Written by: ESOMAR

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# Management consultancy

NACE (Revision 1) 74.13, 74.14

*There has been a slow-down in the rate of growth in the demand for management consultancy services in recent years. Nonetheless, there exists positive features which point the way to revival.*

*Competition between consultancies is intensifying. The gainers include consultancies which offer leading-edge services on a world-wide scale.*

## INDUSTRY PROFILE

### Description of the sector

Reference to IMCs (Institutes of Management Consultants) indicates that management consultancy is a professional service provided by independent and qualified persons acting objectively on management matters to business, public and other undertakings. Whilst the keynote is advice, management consultants normally also provide extensive assistance, when required, in the implementation of solutions.

The profession started its roots in industrial engineering in the U.S.A. in the early 1900s, when engineers such as Frederick W. Taylor and Frank B. Gilbreth introduced the practices of methods engineering and time and motion study. But public accounting firms also contributed through their early work on budgeting and cost control. Since then, the work of consultants has broadened to embrace virtually all fields of management.

The principal fields presently comprise: corporate strategy; operations management, including production and maintenance issues, TQM (total quality management), JIT (Just-in-Time) and logistics; HR (human resources); IT (information technology) services; finance and administration; and marketing and sales. But new topics continually arise which do not fit established specialises. A recent example is BPR (business process re-engineering), which overlaps with other activities such as IT, operations and change management.

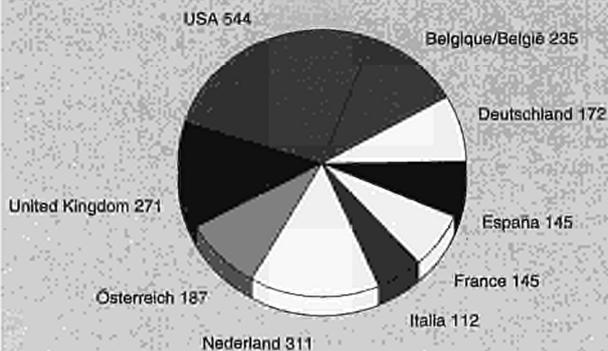
Reference to the market place nonetheless indicates that services are being provided to clients under one or more of these headings by people or organisations which lack a professional standing as defined by the IMCs. An example is the work being carried out for clients mainly in the IT consulting area by U.S. computer product manufacturers such as IBM, Unisys and Hewlett-Packard and by systems producers such as Oracle and Microsoft. Can their consultants be acting objectively?

The fact that the question is being raised does reflect one very healthy aspect: it indicates a growing willingness by clients to seek outside advice from whomsoever seems capable of giving it.

The figures in Table 1 indicate that the U.K. is easily the largest user of management consultancy services subject to acknowledging exclusions of EDP hardware and software from the statistics for Germany, as is footnoted also for Table 1. The apparent difference in management consulting turnover between Germany and the U.K. is, however, less than portrayed, since the U.K. figure itself includes an amount for systems development.

The most intensive users of management consultants relative to population, as shown in Figure 1, are the U.K. and the Netherlands, to which one could add Sweden. Italy and Spain have a relatively low usage of consultants. A comparison with U.S.A. is interesting. Clients in the U.S.A. make a far greater

**Figure 1: Management consultancy**  
Number of management consultants per million inhabitants, 1995 (1)



(1) Population figures for 1992.

(2) No. of consultants in the U.S.A. for 1994.

Source: Alpha Publications, Beaconsfield, U.K. (published 1996)

use of services such as consulting and advertising than is the case in Europe. It is predicted that consultancy use in Europe will catch up to that of the U.S.A., though this could be on a long time scale.

Clients are widely dispersed in almost all industry and service sectors, as is shown in Figure 2.

### Recent trends

Based on a survey carried out by Alpha Publications during 1995-6, the EU market for management consultancy services in 1995 is estimated at 8.6 billion ECU.

For comparative purposes, reference may be made to a survey in 1993 carried out by FEACO (Fédération Européenne des Associations de Conseils en Organisation). This indicated an EU market of about 9 billion ECU. However, this included elements for EDP hardware and software in Germany, as already mentioned, plus exports. Recent figures from FEACO indicate that sales by FEACO members in areas outside the EU are of the order of 5.5% of their total sales. Exports to central and eastern Europe are about 2%.

Comparison may also be made with an Alpha Publications market valuation for the U.S.A. in 1994 of 17.3 billion ECU. Up-to-date figures for Japan are not available, but it is estimated that, using a comparable definition for management consulting as used in most western countries, it would approach 40% of the EU figure.

During the period 1990-5, market volume in the EU countries increased at an average rate of only 5% per annum. By contrast, the market had been growing at a rate averaging more than 15% during the five year period 1985-1990. The main culprit for slower growth in recent years has been the European economy. There was a recession in the U.K. in 1991-2 and in several leading continental countries in 1993. The European economy has also been growing more slowly than in the earlier period.

In France, Italy and Spain, market volume has changed comparatively little over the past 4-5 years. Germany, by contrast, has experienced a strong growth in the demand for consulting services, reflecting a massive effort by manufacturing clients to re-orient themselves in response to a highly-valued Deutschmark and a sharp increase in price competition coming from foreign-based suppliers. The U.K., which went through its last recession earlier than its continental neighbours, has also recovered earlier, creating a generally positive climate for management consultants.

**Table 1: Management consultancy  
Turnover, number of enterprises and consultants (1)**

(units) Number of enterprises	1989	1990	1992	1993	1994
Belgique/België	24	21	19	20	27
Danmark	50	46	46	34	40
Deutschland	270	310	310	472	(4) 437
Ellada	N/A	N/A	21	24	24
España	35	29	29	50	21
France	40	48	50	60	53
Ireland	15	15	15	15	15
Italia	48	55	50	53	47
Nederland	30	27	29	28	32
Österreich	N/A	N/A	N/A	200	200
Portugal	19	19	19	14	16
Suomi/Finland	N/A	N/A	N/A	148	26
Sverige	N/A	N/A	N/A	50	9
United Kingdom	31	32	32	36	32
EUR 15 (2)	562	602	620	1 204	979
Central Europe (3)	N/A	N/A	N/A	495	(5) 262

(units) Number of consultants	1989	1990	1992	1993	1994
Belgique/België	853	877	848	N/A	985
Danmark	344	386	340	424	450
Deutschland	7 000	7 000	9 000	12 867	(4) 6 308
Ellada	N/A	N/A	215	250	250
España	1 300	1 900	N/A	N/A	4 392
France	1 990	2 000	3 175	3 305	3 500
Ireland	369	316	N/A	N/A	N/A
Italia	2 310	2 400	2 092	2 092	2 740
Nederland	1 323	1 450	1 797	1 692	1 744
Österreich	N/A	N/A	N/A	N/A	N/A
Portugal	733	733	N/A	N/A	390
Suomi/Finland	N/A	N/A	N/A	43	136
Sverige	N/A	N/A	N/A	N/A	248
United Kingdom	6 760	7 265	6 321	6 706	7 267
EUR 15 (2)	22 982	24 327	23 788	27 379	28 410

(million ECU) Turnover	1989	1990	1992	1993	1994
Belgique/België	112	129	141	N/A	200
Danmark	42	71	68	57	62
Deutschland	1 400	1 550	2 053	2 065	(4) 900
Ellada	N/A	N/A	80	95	95
España	385	224	N/A	N/A	305
France	323	432	455	415	503
Ireland	N/A	47	N/A	N/A	N/A
Italia	300	320	212	212	162
Nederland	151	172	227	242	560
Österreich	N/A	N/A	N/A	N/A	N/A
Portugal	N/A	70	N/A	20	25
Suomi/Finland	N/A	N/A	N/A	3.5	9.8
Sverige	N/A	N/A	N/A	N/A	75.4
United Kingdom	980	1 170	1 012	1 111	1 450
EUR 15 (2)	3 693	4 185	4 248	4 221	4 347

(1) Figures for Europe cover members of FEACO.

(2) Available data only.

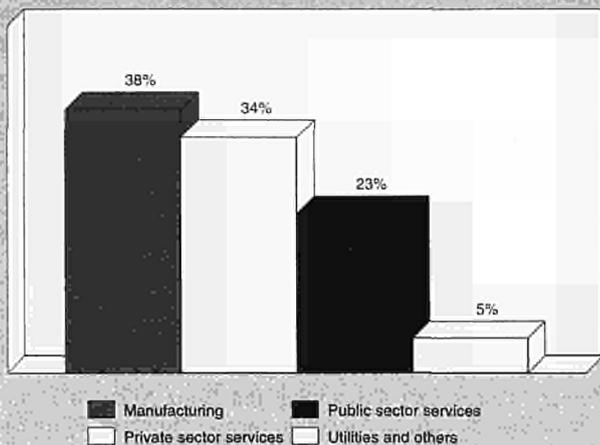
(3) Bulgaria, Czech Republic, Hungary, Poland, Romania, Russia, Slovakia, Slovenia.

(4) Consultancy services for EDP hardware and software are no longer included in the German statistics. While this shows a small loss in the no. of enterprises it means a larger loss for the total turnover of German MC and no. of consultants (One software house would employ some 3 000 staff).

(5) Bulgaria not included.

Source: FEACO

**Figure 2: Management consultancy  
Market breakdown by type of client, 1994**



Source: FEACO

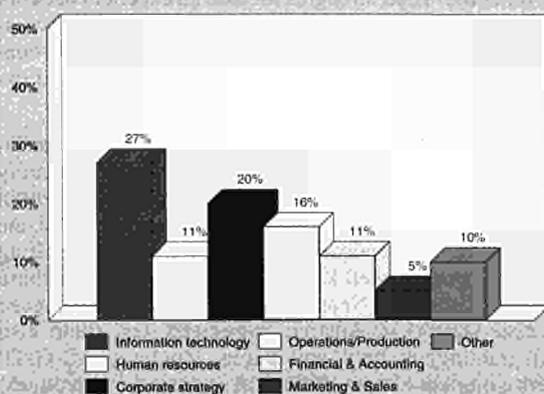
## MARKET FORCES

### Demand

The main forces driving the demand for management consulting services comprise:

- the economy - and how it fares;
- the amount of restructuring taking place - this partly reflects the impact of privatisation and deregulation;
- outsourcing (the more companies outsource, the more scope there is for consultants to fill gaps in some of the services left behind);
- a strengthening demand from multi-national corporations for management consultants to support the management of their operations in Europe and in other parts of the world.

**Figure 3: Management consultancy  
Market breakdown by type of service, 1994**



Source: FEACO

A positive feature is that there is a good momentum for further privatisation and deregulation, prompted in part by the EU Commission in Brussels. Outsourcing is also gaining ground quickly in the leading continental countries, but from a very low base (it is already relatively well-established in the U.K.).

For many clients, the last two years have marked a transition from cost-cutting imperatives to a deeper perception of what consultants can do to help raise management's performance at the strategic level. Not that cost-cutting has gone away. It is simply that it is increasingly seen as one of a number of measures that the client may need to take to regain what it regards as the strategic high-ground.

Factors inducing the change of outlook are:

- a renewed emphasis by large corporations on geographic/global expansion - this, in turn, creates a need for market entry strategies and for a fresh look at the centralisation/decentralisation issue since they have a growing involvement in diverse, multi-cultural, operations;
- flourishing stock-markets during 1993-5 - these have caused a boom in mergers and acquisitions, placing demands on consultants to review existing strategies, to nominate candidates for acquisition and to help resolve post-acquisition problems;
- a search for new ways to measure corporate performance, including TSR (total shareholder return) - this is partly a function of an increase in sophistication on the part of stockholders, including investment institutions; but there has also been dissatisfaction with performance-related compensation schemes, leading CEOs and their boards to re-appraise the criteria used for executive compensation.

Industry sectors undergoing major change generate above-average calls on the services of consultants providing that the expected outcome seen by clients as positive, not negative. The proportion of the market accounted for by private services such as banks, distribution and transportation is gradually rising, whilst that for manufacturing is gradually falling. Financial institutions, including banks, have registered a big increase in the use of consultants mainly as the result of deregulation, increased competition and technical changes which facilitate, for example, home banking by telephone or on-line. Telecommunications is a booming industry for consultants, again partly as a result of deregulatory on moves being taken by EU members.

### Supply and competition

Management consulting shares a characteristic with other service industries such as accounting and the law which sell customised professional products: its supply tends to be "atomistic", i.e. in the hands of a great many firms which are on the small side. It is estimated that there are over 25 000 management consultancies in Europe, including some which might be better classified as sole practitioners.

The main reason for this situation is that the market is imperfect. Many would-be clients, but especially the smaller ones, make infrequent use of consultants and therefore lack deep knowledge of consultancy firms or their products, and cannot readily distinguish between them. There is also a fear of cowboys, with the result that clients usually like to deal with consultants who are personally known to them. The existence of a prior personal relationship is therefore usually the most important single feature in determining whether a consulting assignment gets off the ground.

The situation for large clients is somewhat different in that they usually know a range of consultants and consultancies and can afford to be selective. The greater part of the EU market by value, an estimated 63%, is served by 30 relatively large and well-known consultancies.

**Table 2: Management consultancy  
Leading consultancy firms within the EU, 1995 (1)**

Deutschland	España	France	Italia	Nederland	United Kingdom
Andersen Consulting Arthur D. Little Boston Consulting Coopers & Lybrand Ernst & Young Gemini Consulting KPMG McKinsey Mummert & Partner Roland Berger	Andersen Consulting Bossard Boston Consulting Control Presup. Coopers & Lybrand Ernst & Young Gemini Consulting McKinsey Price Waterhouse TEA	Andersen Consulting A T Kearney Bossard Boston Consulting CGI Ernst & Young Gemini Consulting KPMG Peat Marwick McKinsey Sema Group	Andersen Consulting Bain Cuneo Consiel Ernst & Young IBM McKinsey Praxi Soges Telos Group Tesi	Andersen Consulting Berenschot BSO/Origin Coopers & Lybrand CSC KPMG Klijnveld McKinsey Moret, Ernst & Young Oracle Twijnstra Gudde	Andersen Consult. Coopers & Lybrand Ernst & Young Gemini Consulting KPMG Mgmt. McKinsey Oracle PA Consult. Group Price Waterhouse Touche Ross

(1) In alphabetical order  
Source: Alpha Publications/FEACO.

There is a strong drive by the larger consultancies to develop "relationship consulting", i.e. to focus on a relatively small number of clients with the objective of securing most or all the consulting business which a client may have on offer. Whilst some consultancies may be achieving this, there is an impression that the really large clients still select consultancies on the basis of an individual specialism and may even have several different consulting firms working for them on several different projects at the same time. The much vaunted concept, "one-stop shopping" seems to come into its own for medium-sized, rather than large, clients.

The principal factors governing supply are that:

- barriers to entry are few and far between;
- the profession is also generally lucrative.

Public information on the latter point is hard to come by, but European figures relating to 1994 which were published by ACME (the American Association of Management Consulting Firms) in 1995 indicated an average pre-tax profit of 11% of revenues for consultancies having 50 or more staff. At that time some consultancies were still recovering from recession, so profitability ought to have improved since then. But the pre-tax profit rate was less for consultancies employing staff in the size range of 15-49.

Fee-rates for management consultants vary from country to country, being fairly high in Germany, but falling to appreciably lower levels in Italy and Spain.

A representative fee-rate for a consultant with 2/3 years experience and working for one of the larger consultancies in France / Germany / U.K. / Netherlands would be 920 ECU per day. But for certain services, such as strategy consulting, the rate could well be double that of the above figure.

## INDUSTRY STRUCTURE

### Companies

The larger consultancies can be placed in six groupings, the "Big Six" Public Accounting Firms. Led by Andersen Consulting and supported by firms such as Ernst and Young, and Coopers and Lybrand, they count amongst the ten largest management consultancies in Europe. Their strengths include intense global coverage, a wide range of services nonetheless emphasising IT, and a degree of referral from the audit/accounting sides of their businesses. However, the pace of change in the IT area calls for an increasing investment in new technology, which the systems houses may be better able to make. They are also presently over-represented in commodity-type work offering relatively low margins.

Strategy-Related Consultancies. These are led by McKinsey (also in the top ten) but other notable names comprise: The Boston Consulting Group, A.T. Kearney, Bain, Arthur D. Little,

Mercer Management Consulting and Booz-Allen. It is significant that they are all American-owned. However, European owned firms which give a good account of themselves in and outside Europe include Roland Berger and Gemini Consulting. They customarily take a sweeping (strategic) view of a client's problem. They focus on the CEOs of large (mainly multi-national) corporations.

They have gained in strength and importance in recent years. In 1995 A.T. Kearney merged into EDS, the world's leading independent IT services firm. Retaining its autonomy within EDS, A.T. Kearney has since taken on specialists from EDS which combine IT and business consulting skills.

IT Specialists. These comprise a mix of firms:

- computer hardware manufacturers, which have spread across into software and systems and thence into consulting; there is a strong American influence exemplified by IBM, Unisys and Hewlett-Packard, but prominent European firms include Siemens-Nixdorf, Olivetti and ICL;
- packaged software specialists such as the American firms, Oracle and Microsoft, and the German SAP;
- be-spoke IT specialists; these are led by the Americans, EDS and AMS, but French-owned Cap Gemini Sogeti; the Anglo-French Sema Group and the Anglo-Dutch CMG are also prominent.

European Generalists. Examples of European firms which provide a surprisingly wide range of services are: PA Consulting in the U.K., Bossard in France, Twijnstra Gudde in the Netherlands, Kienbaum and Mummert in Germany and Praxis in Italy. They tend to focus on clients' operating problems and usually offer relatively short-term solutions with a fairly predictable outcome. Their strengths include an excellent network of contacts in their home country. But a relative weakness is constant pressure on fee-rates coming from smaller consultancies, some of which have a deeper knowledge and experience in regard to certain specialisms.

Human Resource Consultancies. Led by Hay Group, the international consultancy, they nonetheless comprise mainly small to medium-sized firms which have prominence within their homelands. It is interesting that Austria, Italy and the Netherlands are well endowed in regard to HR consulting services. Examples of well known HR consultancies in these countries are Hill and H. Neumann (both of which also engage in executive search) in Austria, Soges and Tesi (both also strong in training) in Italy, and Bureau Zuidema and GTP (both with experience in psychological assessment techniques) in the Netherlands.

Actuarial and benefit consulting. The principal consultancies of this type in Europe are American-owned. The leaders include Watson-Wyatt, Towers Perrin and Alexander Clay. But the British-owned Sedgwick Noble Lowndes is also prominent.

## REGULATIONS

There are no legal restrictions—within the EU specifically regarding management consulting. Anyone can print a business card and present it to a possible client saying “management consultant”.

This presents a problem to the IMCs, which rely on voluntary association and self-regulation to develop management consulting as a profession. The IMCs carry out excellent work including examinations for applicants, a code of conduct, the laying down of standards of certification, as well as public relations.

The interests of management consulting firms at the European level are promoted by FEACO. The latter works closely with the EU - for example, on the Phare and Tacis programmes - to ensure that the work of management consultants is carried out cost-effectively and professionally.

Public bodies in Europe increasingly stipulate that contracts require an ISO quality certification or its equivalent on the part of the management consultancy concerned. The national consultancy associations are assisting in the creation of quality systems for their members.

## OUTLOOK

The main unsettled factor affecting the demand for management consultancy services is likely to be economic growth. On the assumption that this improves to around 2% per annum in real terms over the next few years, market volume for management consultancy services in Europe is expected to increase at an average rate of around 7.5% per annum. A better rate of economic performance ought to produce a yet better outcome for consultants.

Service lines with above-average prospects comprise: strategy consulting, operations and change management and BPR.

Industry sectors also with above-average prospects comprise: financial institutions and telecommunications. The public sector ought to be a growing sector of activity for management consultants, but experience in the U.K., where demand declined in 1994/5, is a warning that growth cannot be taken for granted. A significant factor in the U.K. was public criticism that government departments had been spending too much on consultants with not very much to show for it. An additional factor, however, was that many major programmes for privatisation and the re-structuring of public organisations had reached maturity and completion.

Management consultants will experience yet further new entrants to their profession. They could come from companies in the nascent multi-media industry sector, some of which have an impressive array of futuristic software. But corporations which have their own internal consulting services such as Lufthansa (Germany), Olivetti (Italy), and BP Exploration (U.K.) are also well placed to expand into the commercial market.

Written by: Alpha publications

The industry is represented at the EU level by:

Fédération européenne des associations de Conseils en organisation (FEACO). Address: 1-5 Avenue de la Joyeuse Entrée, B-1040 Brussels; tel: (32 2) 285 0025; fax: (32 2) 285 0024.

# Architects

## Nace (Revision 1) 74.20

*We are witnessing a worsening of the depression, which is heightened by the feeling of crisis in the construction industry in many EU countries; Ireland, Germany and Denmark, for particular reasons connected with the local economy are not so affected.*

*Architects occupy a position upstream of the building and contracting process. As a group, they may therefore be regarded as a barometer indicating the medium-term outlook for the construction industry.*

*While waiting for an upturn, which is a painfully long time coming, despite the promise of major public works and quite favourable interest rates, it is the sub-sectors like redevelopment or industrial building which are trying, however feebly, to make up for the general shortage of orders.*

*In contrast to this somewhat pessimistic assessment, we are witnessing a constant increase in the number of newly qualified architects, which is causing some anxiety in the profession.*

### INDUSTRY PROFILE

#### Description of the sector

The architectural profession does not yet have a sufficient number of economic observations to allow a satisfactory assessment of the wide and varied range of its numerous activities. However, the total number of European architects established in each EU country, as of 1 January 1995, and number of cross-border services is shown in the tables. It is based on information obtained from the "Competent Authorities" established in each EU country under European Directive 85/384/EEC. These data are accurate in the countries where professional registration is compulsory. They are much more difficult to check in countries where registration is not compulsory for nationals.

In addition, these tables take account only of "established" architects or "services provided" linked to architects from

one of the 15 EU countries. They do not record the establishments or services of architects associated with other countries of the world or involved in multinational structures. The number of these architects practising in the EU countries is increasing all the time and is posing questions for the Professional Organisations regarding the true extent of reciprocity in the opening of markets outside the EU.

The profile of architects' offices in Europe reveals that the vast majority consist of fewer than 5 people. The table, published by the American journal "Engineering News Records" (ENR), shows the situation in the 200 largest design firms in 1993.

Although these figures combine all the "design" activities linked with construction (architects, engineers, architectural engineers and contracting engineers, etc.), they can be interpreted in the same way as in the OECD study "The Economic Dimension of Professional Services", September 1995. Nozelle writes: "one might estimate that, at most, imports of architectural projects represented 1 per cent of the industry's turnover during the period 1987-1993. In short, as in the case of exports, architectural imports are fairly insignificant."

Furthermore, in such a fragmented and diverse economic environment, the impact on employment is not particularly apparent at first glance. In fact, this situation conceals great potential; firstly the number of professionals working on a "self-employed" basis shows stability and there are very few insolvencies; secondly, there is a significant mobility of professionals working as "salaried employees" due to fluctuations in order levels.

However, the continuation of the economic crisis within the industry is now threatening a serious destabilisation of offices consisting of a single small team of indispensable colleagues.

#### Recent trends

In only 6 of the 11 countries investigated are the professional activities of architects protected by law; so that only certified architects may provide these particular services. The services mainly relate to the drawing up of plans, the building permit, preparation of follow-up and supervision of the way the work is carried out. (Only Spain reserves urban and rural development planning for architects alone). This is why it is mis-

**Table 1: Architects**  
Number of architects in the EU by country of origin, 1995

	B	DK	D	GR	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Other	Total of non nationals	Total number of architects
Belgique/België			8	13	14	45	3	69	11	28		5					196	8 950
Danmark																	150	6 500
Deutschland	1	39		6	2	2	5	2	5	7					14		(1) 81	92 821
Ellada																		12 661
España	11	1	40	1		25	73	11		3			30		195			23 600
France	72	6	44	20	19		13	106	3	9		2			103		397	26 508
Ireland																	20	1 800
Italia																		66 500
Luxembourg	115	5	36	1		30	2	8		1	2				3	16	201	403
Nederland																		N/A
Österreich																		N/A
Portugal	1		9	1	3	15		2		1					12		44	4 930
Suomi-Finland																		N/A
Sverige																	350	8 000
United Kingdom	12	21	51	25	5	13	154	23		30		2					336	31 300

(1) Figure valid for 6 Länder only out of a total of 16.  
Source: Architects Council of Europe



**Table 2: Architects**  
Number of cross-border services provided, 1995 (1)

	B	DK	D	GR	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Other	Total
Belgique/België			9		2	53		2		103					1		170
Danmark																	N/A
Deutschland	2	3				5		1		3					2		(2) 16
Ellada																	N/A
España	2					14				2		2			1		21
France	157	2	26		2			11	1	2	2				11	15	229
Ireland																	N/A
Italia																	N/A
Luxembourg																	(3)
Nederland																	N/A
Österreich																	N/A
Portugal	1		1		10	5		3							2		22
Suomi-Finland																	N/A
Sverige																	(3)
United Kingdom																	(3)

(1) Horizontally: destination country.

(2) Figure valid for 6 Länder only out of a total of 16.

(3) This country makes no distinction between services provided and establishments.

Source: Architects Council of Europe

leading to link automatically the volume and cost of construction work with the professional activities of architects. In France, for example, housing construction hardly involves any architects at all.

## MARKET FORCES

### Demand

Architecture, as art, is not an "easel art" but rather a "contract art", which involves the existence of a client with a programme, a budget and a site on which a structure is to be erected by a builder.

The majority of architects, however, place the emphasis of their activity on "design" or the study of the construction project, i.e. its planning, which is the main activity involved in the provision of cross-border services.

However the public and investors increasingly demand results; i.e. a building conforming to a programme, a budget, a com-

pletion date and a foreseeable management cost. This demand pressure is leading architects to offer not just an original design, but one which meets the agreed objectives in terms of price, delivery and management. If clients fail to get such responses from architects, they are tending more and more to bring in specialists to work with the architects in order to ensure that the promised result is achieved.

We can therefore look forward to seeing some diversification of skills in multi-disciplinary architects' offices, thanks to specialised or further training.

Changes in demand and of life in society offer the architectural profession a unique opportunity to reprofile itself in the wider and more complex area of the environment. It is to be expected that the architect, with his "general" training, his ability to bring things together and his potential for specialisation, should be able to play a vital part in the renewal of the collective and individual living space resulting from the options for "sustainable cities".

This development should be possible if the professional institutions responsible for training take determined action to include this option in their programme. Such a development will only be possible, however, if the Public Authorities and public demand coincide and bring about a fundamental change in economic, social and cultural objectives.

Our planet has its limits, however, and the survival targets which it sets will necessitate reappraisals which will inevitably tend towards the recycling and the planned conservation of available space. The majority of architects are "naturally" in favour of an "ecological" development of this kind, which aims to include sustainability among its quality criteria.

## REGULATIONS

Continuing trends in the EU Member States in the European Commission and in the negotiations on world trade are raising fundamental questions for regulated professions such as that of architecture in many European countries.

The wish to see markets liberalised should not, however, make us lose sight of the objectives of product and service quality,

**Table 3: Architects**  
International billings by country of origin

	Number of firms	International billings (million USD)	Share (%)
Europe	80	5 521.5	45.7
- United Kingdom	18	1 679.8	13.9
- Deutschland	16	650.6	5.4
- France	8	609.6	5.0
- Italia	5	648.5	5.4
- Nederland	12	1 089.3	9.0
- Other	21	843.6	7.0
USA	80	5 143.5	42.5
Canada	11	653.5	5.4
Japan	15	319.8	2.6
Other	14	450.2	3.7
All Firms	200	12 088.5	100.0

Source: Architects Council of Europe

**Table 4: Architects  
Training and establishment procedures**

	Period of training	Qualification training	Practical registration	Compulsory documents	Organisation procedure	Establishment	Establishment
Belgique/ België	5 years	Architect and Architectural engineer	yes	by Provincial Council	National council and Provincial councils	(1),(2),(3),(4),(5)	Professional experience and 1 month's wait
Danmark	5 to 6 years	Architect	no	no	DAL and PAR	(1)	
Deutschland	4 or 5 years	Architectural engineer	yes	by Länder	National chamber and Länder chambers	(1),(2),(3),(4),(5)	Prof. experience, reg. fees and 2 months' wait
Ellada	5 years	Architect	no	yes	Technical Chamber of architects and engineers		
España	6 years	Architect	no	by Regional College	Supreme Council and regional colleges	(1),(2),(3),(4),(5)	Registration fees and 2 months' wait
France	5 years	Architect	no	by Regional Council	National council and regional councils	(1),(2),(3),(5)	Registration fees and 1 month's wait
Ireland	5 years	Architect	yes	no	RIAI	(1)	Registration fees
Italia	5 years	Graduate in architecture	yes	by Provincial order	National council and provincial orders	(1),(2),(3),(4),(5)	Registration fees and 3 months' wait
Luxembourg	Recognition of training abroad	id.	id.	yes	Order of architects and consulting engineers	(1),(2),(3)	1 month's wait
Nederland	5 or 6 years	Architectural engineer	no	no	BNA		
Österreich	5 years	Architectural engineer or Master of Architecture	yes	by Länder	National chamber and Länder chambers		
Portugal	5 years	Architect	no	by Regional order	AAP and regional orders	(1),(2),(3),(4),(5)	Registration fees and 1 month's wait
Suomi-Finland	4 or 5 years	Architect	no	no	FAA	(1)	
Sverige	4, 5 years	Architect	yes	no	SAR and AF	(1)	
United Kingdom	5 years	Architect	yes	yes	ARCUK	(1),(2)	Prof. experience, reg. fees and 3 months' wait

(1) Diploma certificate.

(2) Evidence of identity.

(3) Police record.

(4) Registration in country of origin.

(5) Business address.

Source: Architects Council of Europe

insofar as these form part of a political strategy concerned with the public interest and consumer protection.

There is concern that a mainly financial viewpoint may lead to the weakening of the recognition of architectural creation as an asset of public interest in Europe or elsewhere, or could

abandon services to the user based on trust, competence and professional responsibility in favour of the rule of the lowest price.

CAE (Conseil des Architectes d'Europe - Architects' Council of Europe) commissioned two major studies in 1995. The

**Table 5: Architects**  
**Provision of services procedures**

	Documents needed	Procedure	Protection of title	Protection of function	Work carried out	Compulsory insurance	Liability
B	(1),(2),(3), (4),(5)	Document fees and 1 month's wait	yes	yes	Law of 1939: design, implementation	yes	For negligence, 10 years from acceptance, 30 y. in cases of fraud or wilful misrepresentation
Dk	(1)		no	no	Any architectural work, design, landscaping	no	For negligence, 10 years from acceptance
D	(1),(4), (5)	Document fees and 1 to 3 months' wait	yes	depends on Land		no	For negligence, 5 years from acceptance
GR			yes	no	Design, construction	no	For negligence, 10 years from acceptance
E	(1),(4), (5)	1 to 2 months' wait	yes	yes	Design, execution, supervision, acceptance	no	For negligence in solidum, 10 years from acceptance
F	(1),(2), (4),(5)	Project declaration and short wait	yes	yes	Law of 1977: design, supervision, implementation	yes	Presumed negligence, 10 years from acceptance, 2 years for fittings
Irl	(1)		no	no	From design to construction	no	Contractual: duty of care, 6 years from date of damage
I	(1),(4)		yes	no, except for history & public monuments	Design and possibly coordination	no	10 years for inherent defects, 5 years for any design change
L	(1),(2), (3),(5)		yes	yes, for architectural projects	Law of 1989: design, coordination, acceptance	yes	For negligence, 10 years from acceptance for major projects
NL			no	no		no	Contractual, 10 years from completion of work
Österreich			yes			no	For negligence, 3 years from acceptance
P	(1),(2), (3),(4)	Document fees and 1 month's wait	yes	no	Design	no	For negligence, 5 years from completion
Suomi-Finland	(1)		yes		Variable, design and implementation	no	For negligence, 10 years from acceptance
Sverige			no		Variable, design	no	For negligence, 2 years from hand-over
UK	(1),(2)		yes	no	Variable, design implementation	no	From 6 to 15 years from date of damage, depending on contract

- (1) Diploma certificate.  
(2) Evidence of Identity.  
(3) Police record.  
(4) Registration in country of origin.

first, for internal use, was carried out by the European Documentation and Research Centre at the University of Lyon III (not published) and is entitled "Architects' Europe: ten years' application of European Directive 85/384/EEC".

The second, "Europe and Architecture Tomorrow: White Paper: Proposals for the development of the built environment in Europe", a collective work, was published in January 1996.

## OUTLOOK

The architects who are members of CAE have drawn up concrete proposals for a constructive dialogue with political leaders at European, national and local level. Specifically, they are putting forward proposals aimed at getting away from the mainly economic way of thinking and expanding it to take account of social and cultural factors, so as to achieve a global and realistic approach and a sustainable environment.

Written by: Architects' Council of Europe (ACE)

The Industry is represented at the EU level by: Architects' Council of Europe (ACE). Address: Avenue Louise 207, Bte 10, B-1050 Brussels; tel: (32 2) 645 0905; fax: (32 2) 645 0964.



# Construction economists

## NACE (Revision 1) 74.2

*The construction economist is a professionally qualified expert who assists the client/owner/building promoter in contractual, financial, managerial and economic matters, to optimise the value of a construction project over its lifetime.*

### INDUSTRY PROFILE

#### Description of the sector

Construction economics encompass:

- project development - new and rehabilitation;
- project and quality management;
- feasibility studies - incl. environmental issues;
- risk analyses related to construction;
- cost information and time scales;
- bills of quantity;
- advice on design and construction procurement;
- management of design and project documentation;
- tender procurement;
- planning of site and of security measures on site;
- logistics to and on site;
- planning of building maintenance and operation;
- facilities management;
- valuation of property;
- services related to building pathology;
- arbitration and related services.

In the EU, construction economists cover the following professions:

- they are predominantly engineers in Belgium;
- in Denmark, they are architects, construction technologists and engineers who have specialised in construction economics and participated in a post graduate training programme;
- in Spain and Portugal, construction economists are trained as technical architects - "Arquitectos técnicos";
- in Finland and the Netherlands, they are architects and engineers who have specialised in construction economics;
- in France, the construction economists are educated as construction economists;
- in Ireland and the United Kingdom, the construction economists are educated as quantity surveyors and building surveyors. Traditionally, quantity surveyors deal mainly with new construction while building surveyors are specialised in facilities management, building pathology, and refurbishment;
- the construction economist is the geometer in Italy;
- construction economics are performed by architects or engineers in Germany, Greece, and Austria.

As the professional training and the role of the construction economist varies from country to country two interlinked Pan

**Table 1: Construction economists**  
**Number of construction economists, 1994**

Belgique/België	25
Danmark	100
España	17 500
Finland	80
France	8 100
Ireland	460
Italia	27 691
Nederland	270
Portugal	540
United Kingdom	35 575
Total	90 341

Source: AEEBC and CEEC

European associations dealing with construction economics have been founded - Association of European Building Surveyors (AEEBC) and European Committee of Construction Economists (CEEC).

The basis of co-operation and exchange of information is a common definition of construction economics, of terms and of procedures. The next phase in the Pan European co-operation is the development of Pan European guidelines and tools for management and execution of construction economics. These guidelines and tools are expected to be produced by the newly founded European Centre for Construction Economics - in co-operation with AEEBC, CEEC, European Society of Chartered Surveyors, and other Pan European associations.

#### Recent trends

In 1994, about 90 000 construction economists were registered in the national professional associations in the EU covered by AEEBC and CEEC. However, no figures are available for Germany, Greece, and Austria.

Apart from the United Kingdom, there is no data available about turnover and value added. The turnover produced by quantity and building surveyors in the United Kingdom was equal to about 2.8 billion ECU in 1994.

The activity of construction economists mainly follows the general economic developments, and thus is performing slightly better than the construction sector in general due to clients focusing on business reengineering and financial investments.

### MARKET FORCES

#### Demand

Capacity of the construction industry exceeds demand for construction in the EU. This will be the case for years to come, except in eastern Europe. Demand here refers to the resources actually allocated to construction, not to the obvious need for improvement of elderly buildings with inadequate layouts, installations, and heating systems.

High vacancy rates in existing buildings have substantially depressed demand for new constructions as well as the value of real estate. Due to the drop in value it is in many cases more profitable to refurbish existing buildings than to construct new ones, as this change alone would generate less turnover in the industry. Unoccupied space is not primarily a result of the economic recession, but results from the increasing cost competition in many economic sectors. Increases in productivity are often accompanied by a decline in need for labour and space.

The nature of demand for construction have changed dramatically since the latest boom in construction in the mid 1980s. Construction output has been lower than demand and

a substantial part of income from investment in property has originated from increases in value. Consequently, incentive for a consumer-oriented strategy, quality management, and improvement of productivity has been small in the construction industry.

Now the consumers of the industry are in focus- the end-user and the investor, as real estate has become an asset generating payback equivalent only to the difference between rent obtained and costs - and elements such as cuts in costs for financing, facilities management, use of resources, vacancy rates etc. have become important. The prospect of cutting vacancy rates depends on location, functionality, indoor climate, level of rent, and aesthetics.

### Supply and competition

Traditionally, the basis for a construction project is an elementary need for production infrastructure, for dwellings for a growing population etc., and not an ongoing evaluation of building facilities as a corporate finance instrument.

As a result of increased competition in all sectors of the industry and fiscal strain considerations for modernisation, the construction of new buildings, and the process of relocation, ownership, or lease, now tend to start with corporate feasibility studies.

This development has created a relatively new, but rapidly expanding market for services within construction economics; mainly, it concerns the establishment of briefs based on the most favourable solution in economic terms - representing a basis for decision-making in the phase of inception and viewed in the light of the needs and preferences of the client for the planned period of use. Once the client has chosen a principal solution, he need someone skilled in project management and with no vested interest to manage and optimise the process of planning, design, construction, collection of data for facilities management, and handing over.

Due to fierce competition on fees and construction contracts, architects, engineers and contractors also use construction economists in order to cut costs by improving information management, various kind of logistics, etc.

The need for the skill of construction economists is amplified in two ways by the EU Directive on procurement of services. Firstly, those advising clients on procurement of services are not allowed to bid for designed contracts and, secondly, the criteria for awarding contracts are either the lowest price or the most favourable bid in economic terms.

To manage tender procurement according to the principle of the economically most favourable bid requires the skills of a construction economist as the salient characteristic of tender and bidding for immaterial services is the difficulty of specifying the exact nature and quality of services wanted. The present specification of services, often drawn up as part of fee scales, is rather general, and not very suitable for tender or bidding.

The Directive on procurement of services only covers public procurement, but the principle of tendering is expected to be applied to almost all procurements of services.

### Production process

The nature of the services provided by construction economists evolves over time. The first professionally specialised construction economists emerged in the United Kingdom in the second half of the last century as the quantity surveyors who provided the production of bills of quantity as basis for tender procurement and settlement of claims.

Services and methods are changing as a consequence of the change in the role of real estate, from a passive to an active asset. The traditional education of construction economists was focusing on bills of quantity - produced on basis of the

final drawings and specifications provided by architects and engineers, and settlement of claims. The new services and methods are focusing on cost modelling for investors, design management and operational electronic information services.

The significant trends in the production process are the following:

- feasibility studies as basis for decision-making - based on risk evaluation and costs for the use planned before procurement of design and construction;
- procurement of services - design as well as construction based on the economically most favourable bid;
- design management aiming at minimising running costs and improving flexibility, indoor climate, and buildability, and collection of all data needed for facilities management;
- documented environmental and quality management;
- planning of site layouts, safety measures, and logistics;
- use of information technology - also for data exchange.

Demand for quality management according to EN 29 001 is expected to be included in all contracts. The aim of quality management is not only to improve basic services but also to reduce time spent on negotiation of contracts, time wasted on misunderstandings, inter professional frictions, and judicial disputes. For the client, the main advantage will be the reduction of these indirect costs, as the safeguard of the consumers interests in the case of design and construction defects will be provided by an EU directive on liability.

A thorough and intelligent use of information technology and exchange of data offers a possibility for substantial cuts in production costs. Furthermore, as a service to the client a database can be constructed with all data relevant to facilities management structured in a functional way. When such a database is handed over to the operator of the completed building, costs for organising facilities management can be cut substantially.

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## INDUSTRY STRUCTURE

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### Companies

Construction economists are engaged as employees by governmental institutions, local authorities, architects, contractors, and in consulting companies owned by construction economists. The total number of these companies operating on a business service basis is about 10 000 in the EU. In most Member States the majority of construction economists are employed in private consulting companies. However, in some countries, notably the Netherlands and Spain, a substantial majority of them works as employees within contracting organisations. In all countries, a smaller number of construction economists works for the public sector.

The total number of private companies within the EU Member States varies from 10 in Belgium to 3 000 in Spain. The average number of qualified staff in such firms is less than 10, except in the United Kingdom where the average is 20.

However, there is a small number of firms, particularly in the United Kingdom, with a total worldwide staff in excess of 100, and in some instances in excess of 500.

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## ENVIRONMENT

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About half of the CO<sub>2</sub> outlet in Western Europe results from the use of energy in buildings for heating, lighting and air condition, and air condition accounts for about half of the CFC outlet. Consequently, major changes have to take place in design of new buildings as well as in existing buildings.

Along with other environmental objects this presents an enormous challenge to the building owners - and a need for services

rendered by construction economists in order to safeguard the financial interests of the building owners.

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## OUTLOOK

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In general, the outlook for the construction industry is depressing. However, the outlook for construction economists in construction as well as in civil and heavy engineering is quite optimistic due to increased competition among building owners, the directive on procurement of services, and the need for a variety of measures to protect the environment.

The need for new construction and extensive rehabilitation in Eastern Europe, and the absence of know-how concerning project management and other kinds of construction economics, justify the presence of the construction economists.

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# Engineering consultancy services

## NACE (Revision 1) 742

In 1994, EFCA members were made up of 23 national associations from 17 European countries (all the EU countries excluding Finland, Switzerland and Norway and Poland), represented over 8 500 firms which were active in the field of engineering consultancy with about 200 000 employees. However the EFCA only represents about 40% of engineering consultancy in Europe; the total sector within the EU is comprised of about 18 500 firms with over 420 000 employees. Turnover in engineering consultancy increased between 1993 and 1994. This was due to the improved economic environment. As in previous years, the demand for consultancy engineering services remained at a low level with increased private demand not being able to compensate for reduced public demand. The outlook for 1995 and the medium-term is for demand to increase slightly due to expected new market opportunities such as environmental and water management.

### INDUSTRY PROFILE

#### Description of the sector

Engineering consultancy services are defined as intellectual services aimed at optimising investment projects in industry, construction and infrastructure, and at all stages of a project from its initial conception to its final operation. These services, which require highly specialised knowledge, are provided by private engineering consultancy firms, suppliers of various services, i.e. manufacturers and contractors who provide engineering services as a secondary activity and in-house consultancies of large firms and public administrations. Their main aim is to optimise investment projects by proposing the lowest cost and highest investment productivity engineering solutions. The range of these services includes advice, design, monitoring, management and assistance for various building and construction projects. An engineering consultant could

be responsible for part of a project, or for a whole project from the construction itself to the final completion. The latter projects are known as turn-key-projects.

Engineering services apply to residential and non-residential buildings, civil engineering like transmission lines, power plants, transport infrastructure and facilities, public work facilities, environment, telecommunication, industrial plants and other technical services (e.g. geology, hydrology, ship-building and marine engineering).

Consultant engineering professionals have close ties with other technical professions, such as architects, quantity surveyors and land surveyors, as well as with the building trade industry. These industries are mentioned in separate Panorama chapters.

For the housing, construction and civil engineering sectors, engineering consultancy services are of great importance, since there can not be construction without any design, planning and project management. Considering that the construction sector contributed to about one sixth of the gross value-added in the EU in 1995. Consulting engineering is of great importance, as it represents only about 8% of the construction industry and generates considerable turnover in the production of equipment and material.

Traditionally a large share of engineering consultancy services are still provided in the United Kingdom, where they were already offered for the first time in the 18th century by the construction industry. After the Second World War, Denmark, Germany, France and Italy became increasingly involved in providing engineering consultancy services within the EU. The new Member States, Austria, Finland and Sweden also have also acquired quite a good reputation for providing engineering consultancy services.

Engineering consultancy services are not separately accounted for, and therefore are not separately reported in official statistics. They are, to a large extent, part of the building trade industries. Specific data are only available for the EFCA and its national member associations, which represent 40% of the sector in Europe.

#### Recent trends

Ever since the period following the Second World War, there has been many fluctuations in the development of trends in

**Table 1: Engineering consultancy services**  
**Main Indicators, 1994**

	Number of firms	Turnover excl. VAT (million ECU)	Number of persons employed	Exports (million ECU)	Exports as share of turnover (%)	Average no. of employees per firm	Turnover per employee
Belgique/België	100	366	4 000	92	25	40	91 500
Danmark	290	585	7 937	141	24	27	73 705
Deutschland	3 640	6 350	46 000	700	N/A	13	138 043
Ellada	176	100	2 800	15	15	16	35 714
España	152	432	6 134	4	1	40	70 427
France	895	2 257	23 533	561	25	26	95 908
Ireland	104	38	1 020	N/A	N/A	10	37 255
Italia	184	1 060	18 000	600	57	98	58 889
Luxembourg	56	42	814	3	7	15	51 597
Nederland	250	913	11 500	240	N/A	46	79 391
Österreich	1 325	N/A	4 730	N/A	N/A	4	N/A
Portugal	55	94	1 949	3	4	35	48 229
Sverige	177	370	6 770	40	11	38	54 653
United Kingdom	673	2 109	37 096	742	35	55	56 852
EUR 15 (1)	8 077	14 716	172 283	N/A	N/A	21	85 418
Norge	333	316	4 104	57	18	12	76 998
Schweiz/Suisse	283	583	5 554	121	21	21	104 969

(1) Excluding Finland.  
Source: EFCA



**Table 2: Engineering consultancy services  
EU trade balance**

(million ECU)	1991	1992	1993	1994 (1)
Domestic market	9 800	11 000	9 450	11 576
Exports	3 600	3 500	3 300	3 140
Total turnover	13 400	14 500	12 750	14 716

(1) From 1994 EUR15 excluding Finland.  
Source: EFCA

the engineering consultancy services. In the production sector, the United Kingdom faced increased competition from the US companies, and since the mid-seventies also from the German, the French and the Japanese firms.

On the demand side, the market was dominated by the international aid programmes, which led to growing export market in the sixties and early seventies. Foreign direct investment and considerable public investments for the development of infrastructure in Third World Countries forced this trend. The oil price shocks led to world-wide recession in the seventies and in the first half of the eighties, with strong inflation and high interest rates. As a consequence, engineering consultancy services were negatively affected, with planned projects being reduced or even cancelled. During the second half of the eighties, the demand for engineering consultancy services increased especially due to infrastructure projects in Eastern Europe.

During the nineties, engineering consultancy services within the EU were being provided, by a large extent, by British and German companies. The US firms also played an important role in the international market, although they have lost their leading positions. Strong demand also came from the CEEC (Central and East European Countries), Kuwait, and from the former CIS (Commonwealth of Independent States) and the new Länder of Germany.

There was a contrary development in the nineties, regarding the number of firms and the number of employees. Whilst the number of firms slowly increased from 1990, but the number of employees had after a significant increase from 1990 to 1991, been steadily decreasing since 1991. Especially the number of draftsmen, secretaries and accounting personnel were reduced. The average number of employees per firm in 1994 was again smaller than that of the year before. In 1994 total turnover increased by more than 12%, after a slight decrease between 1992 and 1993. Thus, the average turnover per employee in 1994 was significantly higher than in 1993.

#### International comparison

The world market is still dominated by the US and the British companies, however, this traditional pattern is changing more and more. Countries with long traditions in the sector have set up representations all over the world. The US and the Japanese companies are following this strategy in order to be closer to the demand. The US companies concentrate more on the Middle East and Latin America. The Japanese firms concentrate more in South East Asia, and the EU companies have their main markets in the CEEC, the CIS and in Africa.

Although demand from developing countries is not as strong as it was until the mid-eighties, it is still significant. In this context, it is interesting to note that some of the EU countries are mainly exporting their services to some specific regions of the world. For example Swedish consultants concentrate on Eastern Europe, and Denmark consultants are often working in Africa. The majority of export engineering consultancy companies are registered with international organisations which award contracts to consulting firms. The most well-known are the World Bank, the Asian Development Bank,

the Inter-American Development Bank, the African Development Bank, the European Commission, the EBRD, the European Investment Bank and certain specialised organisations of the United Nations such as the FAO, WHO and UNDP.

Since 1987 domestic markets, especially in the EU, have become much more important. Intra-EU trade is however stagnant despite the trend of the EU companies setting up subsidiaries in most of the other Member States. In general, decreased exports to developing countries have been compensated by increased demand in developed countries, especially in the domestic markets. In the East Asian markets (mainly ASEAN states) - the major markets for some US and Japanese companies - the demand for engineering consultancy services is still high, due to the rate of growth of these economies. In all countries of the EU, exports of consultancy services had declined again in 1994. However some national markets are still very export oriented such as Italy, the United Kingdom, France, Denmark and Belgium. In absolute values the United Kingdom and Germany lead the ranks in exports turnover in 1994.

#### MARKET FORCES

##### Demand

Demand for engineering consultancy services is closely linked to the general economic environment. After a period of recession in all EU countries, most of the national economies are beginning to recover slowly. Three main factors influence the sector's growth: public and private investment, technological progress and the availability of financial resources. Although public investment is quite modest, demand for engineering consultancy services has slightly increased in most of the EU countries, because of a marked increase in private demand. With the exception of Italy and the United Kingdom, engineering consultancy services in the EU derive on average about 75% of their annual turnover domestically. In the export markets, the most significant demand comes from international organisations who are still offering consultancy contracts to the Third World. Recently demand for consultancy services from the CEEC and the CIS has increased. Major European projects for transport infrastructure (e.g. the channel-tunnel) held the intra-EU demand for engineering consultancy services on a high level during recent years. Demand has also increased due to increased private funding (by so-called developer-funders) of public infrastructure in some Member States. Thus, domestically generated turnover from public demand between 1993 and 1994 decreased again in favour of private demand in almost all of the EU countries. The reason for this is a lack of funding by public authorities for investments in infrastructure. Engineering consultancy for housing construction replaced public investment as the market's driving force in most of the EU countries. Demand was also strong from mechanical engineering, civil engineering for transport infrastructure, environmental and water engineering and for health and safety planning.

## Supply and competition

The directives on Public Procurement and particularly the Services directive (92/50/EEC) have influenced existing relations between client and consultant, as public procurement of services for a value exceeding the indicated thresholds has to be carried out according to procedures laid down in such directives. Most of the procurement take place according to the restricted procedure, with a pre-qualification of the bidders based upon letters of interest from the service providers after contract notices in the press and in the Official Journal of the European Communities.

Tenders are in general selected according to the "economically most advantageous tender", which includes of the following criteria: price, skill, capacity and competence of the consultant. Four different tender procedures are of interest: open, restricted or negotiated procedures and the design contest. Large international companies however select their engineering consultants by using the combined criteria of quality and price.

On small and medium public projects, private engineering consultancy firms are often in great competition with in-house engineering consultants, especially in the case of large local authorities and housing project developers. This is another competitive disadvantage for private engineering consultancy companies, leading them to reduce their profit margins. There is a negative correlation between the size of a firm and its profit margins. Therefore, there does not seem to be economies of scale in the EU. Smaller firms tend to have higher profit margins with greater labour productivity than larger firms. This explains why larger firms are trying to decrease their administrative costs by using facility management.

Today small enterprises which can only cover part of the services required by clients face strong competition from larger enterprises which have their own planning offices and thus can offer complete management and co-ordination of projects. This means that smaller firms or independents must specialise in fields where the larger enterprises are not involved or cooperate more with larger enterprises, as has been the case in the past. An externalisation of in-house services could prove to be a decisive factor for the development of EU engineering consultancy services, but at the same time could lead to increased competition. The Internal Market should facilitate such co-operation.

Local experts often assist in the planning and construction process of foreign enterprises whose commission work abroad.

These firms need local specialists who know the specific situations of the national markets and their regulations. In 1994, the trends showed that large companies were moving towards externalisation and reduction of staff in favour of more freelance consultants. These consultants have an indirect labour cost advantage because they know the local markets, rules and habits, and can therefore save time in doing the job. Large enterprises are therefore operating as main contractors and cooperating with some small specialised firms as sub-contractors.

## INDUSTRY STRUCTURE

### Companies

In 1994 the sector showed a very high concentration of large companies, especially in Italy, the United Kingdom, Spain, the Netherlands and Sweden. The highest number of companies within the EU in 1994 was registered in Germany followed by Austria. In both countries the structure is dominated by many SME's, most of them being merely one man firms, with an average number of employees per firm below the EU average. Although the largest firms are registered in the United Kingdom, the Netherlands, Sweden and Finland, it is interesting to note that the highest average size per enterprise is in Italy. The firms with the smallest average number of employees are located in Ireland and Austria.

### Strategies

In recent years, large companies have had to cut back their staff due to the recession. This has opened up opportunities for small enterprises to get sub-contracts in large projects, especially at a cross border level. In such cases, large firms often cooperate with specialised design and construction one-man firms, which have experience and knowledge about the domestic market.

Three countries, Germany, France and the United Kingdom, accounted for more than two-thirds of the turnover of all the EU companies in 1994. Considering exports as a share of the total turnover in each country, Italy is still on top followed by the United Kingdom. Turnover per employee shows the highest levels in France, the Netherlands and Germany. Germany and the United Kingdom are the only EU countries which report a substantially increased exports for 1994.

Mergers and acquisitions are significant on the domestic, as well as, on the international market. They are mainly under-

**Table 3: Engineering consultancy services  
Development of employment (1)**

(units)	1992	1993	1994	1995	1996	1997	1998
Belgique/België	3 500	3 500	4 000	4 070	4 190	4 280	4 360
Danmark	7 940	7 940	7 937	8 400	8 710	9 020	9 270
Deutschland	49 000	49 490	46 000	46 870	46 590	46 400	47 100
Ellada	2 800	2 800	2 800	2 850	2 880	2 900	2 920
España	5 190	5 240	6 134	6 300	6 430	6 500	6 560
France	23 100	22 800	23 533	23 770	24 200	24 560	24 800
Ireland	800	840	1 020	1 130	1 190	1 200	1 220
Italia	18 000	21 500	18 000	18 100	18 520	18 710	18 800
Luxembourg	830	840	814	820	830	840	840
Nederland	10 750	10 750	11 500	11 710	11 710	11 850	11 970
Österreich	5 160	4 850	4 730	4 760	4 740	4 660	4 610
Portugal	1 900	1 920	1 949	2 080	2 200	2 320	2 410
Sverige	8 730	6 420	6 770	7 070	7 310	7 470	7 580
United Kingdom	43 760	43 980	37 096	38 170	38 550	39 510	40 230
EUR 15 (2)	181 460	182 870	172 283	176 100	178 050	180 220	182 670

(1) 1992 to 1994 EFCA values, 1995 to 1998 estimations by Volker Stabernak Consulting.

(2) Excluding Finland.

Source: EFCA, estimations made by the author



taken with the aim of opening up new market opportunities. The trend towards creating international alliances continues despite only a few larger companies merging since 1990. Companies seem to be expanding due to mergers and acquisitions and not because of internal organic growth. One of the main causes for mergers on an international scale is the inherent reluctance in most EU countries to open up the domestic market to foreign companies.

Companies are developing new strategies in domestic markets. Models as a complement to the "model of a general-contracting company" are more often developed. This is a model for planning, financing and the preparation of public and private work projects by independent consulting firms. Its main components are the "project-development company" and the "object-company". The former is a joint venture between the participating consultancy firms on a short, medium or long term with various legal forms. The "object company" mainly operates as the project owner. It works as the contracting entity for the relevant work projects with respect to both the "project-development company" and the companies carrying out the construction or work. It combines the interests of the relevant project sponsor and the investor. In addition it can simplify and accelerate tendering and contract-awarding processes in connection with public work projects. The "object company" commissions the "project-development company" following a competition with regard to the relevant services, to carry out consultation, planning and monitoring of the project. It also determines the execution of the work. The "project-development company" is the central contact within the project for the contracting entities and handles all project-management details. This task includes the central monitoring of deadlines and costs.

## REGULATIONS

The profession of consulting engineer is not recognised by an official EU regulation. However due to specific national laws, access to engineering consultancy services is either totally regulated, partially regulated or not regulated at all. The EU regulations, namely Public Procurement directives (and especially the Services directive) and the directive on minimum health and safety requirements for construction sites, have considerable influence on engineering consultancy services.

The Directive on Services obliges all the EU public contracting authorities to publish calls for tenders for public service contracts, of which the estimated value is not less than 130 000 SDR (Special Drawing Rights). The aim is to open up the services market for trans-border services and thus increase competition. The Directive has however not yet been adopted in all the EU countries (e.g. France). Regulations for fees are not included in this Directive, even though the national regulations are still valid. Consultants working abroad have still to consider the national remuneration systems (e.g. the so called HOAI in Germany). Beyond that, certain national associations have developed a number of additional criteria (e.g. technical quality, quality of previous contracts fulfilled) which should be considered when awarding contracts in national markets and which have been approved by national parliaments (e.g. Spain).

The minimum safety and health requirements Directive is still in discussion in most EU countries. The Directive relates to a liability of 20 years for construction with a probable increase in costs. The Directive so far has only been adopted by Luxembourg, and is also supported now by the ISO regulations 29 000 - 29 004 which refer to quality management and quality assurance. In some of the EU countries there is already active debate about quality assurance, and many companies have devised their own quality systems according to the ISO 9000 structure. There is also debate regarding the amount of risks, which should and/or could be covered by insurance.

## OUTLOOK

A forecast improvement in the general economic situation in almost all of the EU countries could lead - in the short and medium term - to a slight increase for the engineering consultancy services. Private demand is expected to increase, and compensate for reduced public demand. A decrease in public non-residential construction could be compensated by increases in private residential and non-residential construction.

The new trend in financing infrastructure by developer funders and by privatised organisations (e.g. railway companies, postal services) could further boost demand in the engineering consultancy sector, particularly for some of the EU priority infrastructure projects (such as PBKAL the planned transport system link between Paris, Brussels, Köln, Amsterdam and London) which should positively influence the sector on the medium and long term.

Stricter environmental regulations and further technological progress will also improve the situation for engineering consultancy services. The construction of wastewater treatment facilities, and landfill technologies are important in this context. New opportunities for large projects in the non-EU countries requiring experienced consultants will also lead to additional demand. They will also lead to a change in the usual contracting procedures towards a more general contracting/total contracting, where engineering and planning are both provided by the contractor or sub-contracted by them. Therefore new management and control techniques will be implemented which should increase overall productivity in the sector.

It is surprising that improvements for engineering consultancy should be opposed to increased competition due to completion of the Internal Market.

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# Geodetic surveying

## NACE (Revision 1) 74.20

"Geodetic Surveyor", "liberal", "Regulated", "Licensed" and "Chartered": Different terms for a profession that has different qualifications in different Member States. Strict regulations make it a national business with mostly small companies and hardly any international competition. The sector is looking for ways of dealing with European regulations concerning freedom of establishment and cross border practise. Demand for geodetic services is cyclical and often related to exchanging, monitoring or development of real property. The sector has to keep up with the latest technological developments as their clients require this. On one side, computer systems have replaced much of the labour intensive processes like collecting and transformation of data, on the other side, these systems have made new applicability's for geodetic information possible and will provide new opportunities in the future.

### INDUSTRY PROFILE

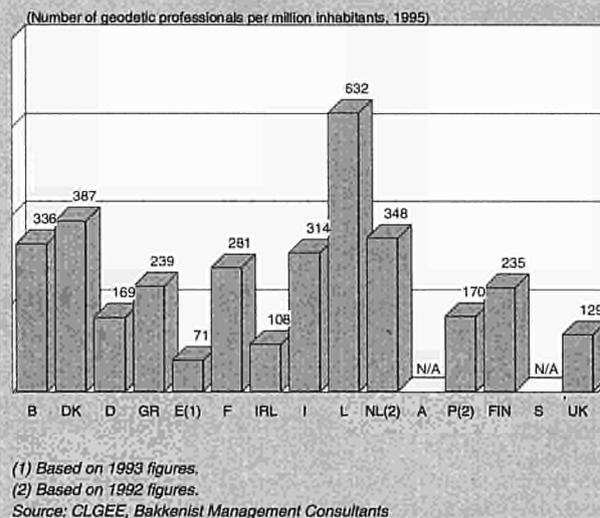
#### Description of the sector

Geodetic surveying concerns measuring, assembling and assessing land and geographic related information. Also, using that information for the purpose of planning and implementing the efficient administration of the land, the sea and structures thereon; and to instigate the advancement and development of such practices.

It's main functions include Hydrography, Photogrammetry and Remote sensing, Cadastral and Boundary Surveying, Land and Geographical Information Systems, Engineering surveying and Metrology and to a lesser extent Minerals and Mining Surveying and Cartography. The functions are used to a greater or lesser extent in virtually all forms of surveying, but it is the extent to which they are used which distinguishes geodetic applications (professional tasks) from other forms of surveying.

The national distribution of geodetic activity within the EU is explained in figure 1 and table 1. Figure 1 shows the national distribution of geodetic surveyors (including technicians) per million inhabitants and table 1 the number of square kilometres

**Figure 1: Geodetic surveying**  
Number of geodetic professionals per million inhabitants, 1995



per geodetic surveyor. Table 1 shows that between EU member states the number of square kilometres per geodetic surveyor (including technicians) vary from 7.7 in Holland to 54.5 in Portugal. Exceptions are Norway, Sweden (large surfaces, little population) and Ireland.

#### Recent trends

Within the EU the applications of surveying vary in each of it's member state. In some countries such as Germany, Austria, France and Switzerland, the Liberal Professions dominates cadaster and landed property surveying, and the public sector only has a controlling function. In many other countries, including the Scandinavian ones, these applications are not kept exclusively to the private sector, whilst in other countries, such as the Republic of Ireland, the Cadastral system does not exist at all in a comparative fashion. Due to privatisation processes in some countries more private companies are able to profit from public tendering.

**Table 1: Number of square kilometres per Geodetic Surveyors**

Country	Sq. Kilometres	Geo. Surveyors	Sq kmtrs/G. surv
Austria	83 853		
Belgium	30 513	3 400	9.0
Denmark	43 000	2 020	21.3
Finland	338 142	1 200	281.8
France	551 000	16 300	33.8
Germany	357 020	14 000	25.5
Greece	131 986	2 500	52.8
Ireland	70 283	385	182.6
Italy	332 463	18 000	18.5
Luxembourg	2 586	257	10.1
Netherlands	41 548	5 370	7.7
Norway	324 219	3 000	108.1
Portugal	92 082	1 690	
Spain	504 782		
Sweden	449 793	4 300	104.6
Switzerland	41 293	2 400	17.2
United Kingdom	244 119	7 543	32.4

Source: CLGEE, Bakkenist Management Consultants

**Table 2: Geodetic surveying**  
**Estimated number of geodetic surveyors and technicians, 1995/96**

	Surveyors	Technicians	Total
Belgique/België	1 500	1 900	3 400
Danmark	760	1 260	2 020
Deutschland (1)	1 240	12 500+	13 740+
Ellada	2 000	500	2 500
España (4)	2 200	600	2 800
France	4 800	11 500	16 300
Ireland	90	295	385
Italia	5 000	13 000	18 000
Luxembourg	31	226	257
Nederland (2)	1 080	4 290	5 370
Österreich	580	N/A	N/A
Portugal (2)	N/A	N/A	1 690
Suomi-Finland	400	800	1 200
Sverige	1 800	2 500	N/A
United Kingdom	2 019	5 524	7 543
Norge (3)	1 300	1 700	3 000
Helvetia (4)	600	1 800	2 400

(1) Excluding former East Germany.

(2) Based on figures in the 1992 report 'Europäischer Binnenmarkt'.

(3) Excluding private sector.

(4) Based on 1993 figures.

Source: CLGEE, Bakkenist Management Consultants

In practically all member states there is a difference between geodetic surveyor and geodetic surveying technician. In most states the education process is common to both surveyors and technicians, but usually the divergence occurs at the tertiary academic level where technicians rarely enter university or equivalent with the intention of pursuing an intensive, comparatively short term, course of study. This explains the fact that they outnumber the surveyors who have finished an academic study. Table 2 shows that Italy, Germany and France together employ more than 60% of the total number of about 80 000 geodetic surveyors and technicians in the EU.

### International comparison

Not much is known about the qualifications and developments of the geodetic profession in Asia. However, it is clear that it offers major projects that require geodetic applications like building airports (Hong Kong) and sea ports (Singapore), bridges, land reclaiming, and construction. This is just to name a few and is only a start for the projects that will follow in the (near) future. It wasn't until the last ten years when America started to qualify academic geodetic surveyors, however, the use of sophisticated new technologies is more widespread than it is in Europe.

### MARKET FORCES

#### Demand

Clients vary from oil and dredging companies for Hydrography, the Cadastral office and the department for the maintenance of dikes, roads, bridges and the navigability of canals for Photogrammetry, the Cadastral office for Cadastral services, government and municipalities and engineering companies for Geographic Information Services (GIS) and land Information Systems (LIS) and construction companies, public utilities and government for Engineering surveying.

Most clients operate in industries and sectors where demand corresponds with the economic (business) cycle. Although the required geodetic functions vary per client and country, overall demand for geodetic services is cyclical.

Key-end markets are Geographical Information Systems (GIS) and Land Information Systems. Momentary they represent around 15% of the market for geodetic services but it is expected that this segment will grow rapidly. Government, municipalities and engineering companies are its main clients but the information systems also have the potential to be applied to Cadastral services.

#### Supply and competition

Because of strict requirements concerning national regulations and (educational) qualifications geodetic surveying remains a national business (and in many countries even regional). Only when a foreign company has a subsidiary company in a member state that it is allowed to provide geodetic services in that particular member state, and international competition

**Table 3: Geodetic surveying**  
**Share of geodetic surveyors, technicians and other working in the public sector, 1995/96**

(%)	Private	Public
Belgique/België	34	66
Danmark	44	56
Deutschland (1)	32	68
Ellada	56	44
España (4)	66	34
France (2)	84	16
Ireland	16	84
Italia	72	28
Luxembourg	32	68
Nederland (4)	34	66
Österreich	N/A	N/A
Portugal	50	50
Suomi-Finland	33	67
Sverige (3)	N/A	N/A
United Kingdom	43	57
Norge (4)	33	67
Helvetia (4)	83	17

(1) Estimate based on 1991 data.

(2) Geodetic technicians include geodetic topographers.

(3) Geodetic surveyors only, based on 1994 data.

(4) Based on 1994 data.

Source: CLGEE, Bakkenist Management Consultants

**Table 4: Geodetic surveying**  
**Estimated number of geodetic companies in the private sector**

	1994	1995	trend 1996
Belgique/België	N/A	250	+
Danmark	133	127	-
Deutschland	N/A	N/A	N/A
Ellada	85	100	+
España	1 124	1 174	+
France	1 800	1 750	-
Ireland	20	22	+
Italia	800	650	-
Luxembourg	3	3	=
Nederland	60	N/A	N/A
Österreich	263	251	=
Portugal	90	100	=
Sverige	N/A	N/A	N/A
Suomi-Finland	N/A	N/A	N/A
United Kingdom (1)	286	290	=
Norge	20	N/A	=
Helvetia	300	300	=

Source: CLGEE, Bakkenist Management Consultants

is almost impossible. Table 3 gives the proportion of the people working in government and private organisations.

Cadastral, Engineering and Land and Geographic Information systems represent around 75% of the provided geodetic services in the EU. France, Germany, Switzerland and Italy provide more than average photogrammic services. Major hydrographic companies are located in the United Kingdom and the Netherlands. The distribution of geodesists is highly correlated with the overall population distribution. The service provided is strongly tied to the land itself and hence the industry polarises where land or real estate is being exchanged, monitored or developed.

#### Production process

New technologies have a strong influence on both the way services are conducted nowadays and the quality of the services that are provided. Better quality is required and delivered. Land measurement can be done with satellite systems and developments in GIS and LIS systems facilitate working and produce new sorts of data. It is also possible to use different databases. For example, information in the LIS and GIS systems for Cadastral purposes or the other way around. In all member states, geodetic surveyors see the developments in LIS and GIS as an opportunity.

### INDUSTRY STRUCTURE

#### Companies

The number of private companies in each Member State is given in table 4. In total the number of companies is approximately 6 000. Because of the regulations concerning this (liberal) profession practically all member states have a high proportion of small companies that employ very few people, for example, one or two surveyors or technicians. Only the Netherlands and the United Kingdom have a more equitable spread of company size. Except for Belgium, Greece and Ireland where a small growth in the small companies is expected, the number of companies remains stable or is declining.

Most larger companies are either technically specialised, for example in hydrography, remote sensing or aerial photogrammetry or offer geodetic surveying within their main operations, for example civil engineering. Some larger companies do offer a range of services purely within geodetic surveying.

The following companies are amongst the larger operating companies within the EU (in order of the estimated size that provide geodetic services (number of employees)): Fugro-McClelland (UK/Geo.Survey (NL)), B&S Grontmij/Geogroep (NL), Oranjewoud (NL), Hansa Luftbild (D), Starkstrom Anlage Gesellschaft (D), BKS Surveys (UK), Geonex UK (UK), Egle Vermessungsbros (D) and Eurosense (B), Fjellanger Wideroe (N) and Blom (N). For most of the larger companies geodetic surveying is just one of their fields of activities and not their core business.

#### Strategies

Traditionally many services have been conducted outdoors. Technological progress and new techniques like satellite and computer systems, LIS and GIS has made data collection easier and more precise and shifted much of outside measuring and transformation of data to indoor, office work. To stay competitive most companies will have to invest in the latest technological developments. Besides, their main customers often demand high quality services, for example in infrastructure, off shore and civil engineering projects.

Companies merge in order to operate on a larger scale, to be more cost efficient and also to expand their market base. This is also true for companies in the geodetic sector. As regulation concerning providence of geodetic services is often very strict, it could be particularly interesting to have daughter companies or subsidiaries in other regions or countries.

### REGULATIONS

In conjunction with progress in completing the Internal market, the sector will be increasingly influenced by two fundamental principles of EU laws, freedom of establishment and freedom to provide cross-border services.

Currently, qualification varies between the member states: Different terms are used, such as "European Geodetic Surveyor", or "Liberal", "Regulated", "Licensed" and "Chartered" professions. Recognition of qualifications concerning education and (professional) experience differs between countries. There is a trend towards defining a qualified name, valid for geodetic surveyors everywhere in the EU.

Important regulations are those concerning cadastre. Most countries recognise boundaries based on survey measurements. In different countries these measurements are carried out by different professions and organisations. For example, specialist organisations (Luxembourg), public servants (Cadastral surveyors in most countries), liberal profession (geomtres experts in France) or by (licensed) geodetic surveyors (Germany and Austria). In the last case, this work will often form a substantial part of a geodesist's activities. As land registration is mainly a descriptive system in Ireland and the United Kingdom, the geodesist's role in Cadastral work is only a minor one.

In order to benefit from the opportunity of providing cross-border services, progress is needed in national procedures for the recognition of educational and professional qualifications. These procedures are being addressed by the Comité de Liaison des Geomtres-Experts Européens (CLGEE). Two reports, one concerning education for geodetic surveyors within the EU, and the other concerning the establishment of the profile and definition of the geodetic surveying profession within the EU have been published in November 1995.

This is especially true in those countries where the profession is afforded legal protection problems exist with respect to professional competence of geodetic surveyors from other countries who have different education or experience. In Denmark, Germany, France and Italy the profession is afforded legal protection. In the Netherlands, Ireland and the United Kingdom no such legislation exists. Elsewhere there is a position between these extremes.

## OUTLOOK

In general demand for geodetic services is linked to the economic cycle. In the short term this looks positive for Engineering surveying, as the economy is recovering from its recession and activities in the construction and engineering industry are increasing.

In the short and medium term Cadastral services are affected in two ways. On one side budget constraints from government and semi-government and competition from government bodies in the private sector will have a negative influence on demand. On the other side privatisation processes will have a positive influence because opportunities are created to tender for service formerly provided by governments themselves.

Perspectives for the medium and long term aren't very bright. Competition is expected from companies that are not engaged in geodetic activities so far but gain access in this sector by take-overs. Bigger companies will probably overtake small companies for diversification purposes. In the long term information will be required for projects related to infrastructure and planning purposes (for example, expanding projects of cities)

Demand for hydrographic services strongly depend on developments in the oil price, high prices will have a positive impact on demand. Demand for photogrammatic services has always been quite stable and is expected to stay stable. Comparable to developments in other sectors, new technologies like computer systems and satellite systems provide services that are more comprehensive and work cheaper and faster than the traditional way to provide these services. Particularly Land measurement services will be affected negatively by technological progress. On the other hand, demand for Land and Geographic Information Systems is growing. Because Governments, semi-governments, companies and other organisations engaged in infrastructure or real property projects will require more and more access to databases with ready geodetic information demand for computer systems and software that offer such service will grow.

Techniques and technological developments used to be under control of the geodetic sector itself. Nowadays and even more in the future technological progress outside this sector has a big impact on the geodetic sector. Labour intensive work in EU member states that has traditionally been done by low educated personnel, for example transformation of physical information from cards etc. into digital information (computer databases) is going to be shifted to cheap labour countries (Eastern Europe). High skilled personnel probably won't be affected that much.

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# Landscaping

## NACE (Revision 1) part of 742

The landscaping, gardening and sports ground construction industry that showed a continuous growth during the last decade is dominated by a large number of small to medium sized firms who operate labour intensively. Besides private clients the industry is reliant on the construction and public sectors for a great part of its business. Whereas the construction industry remains relatively stagnant and there is a little growth in public spending throughout most of Europe, private households turn out to be a reliable client of the industry in most EU countries. This is also a consequence of diversification of services into promising new, traditionally non-core landscaping areas such as ecological environment creation, roof gardens, facades and indoor gardens.

### INDUSTRY PROFILE

#### Description of the sector

This sector includes the installation, renovation and maintenance of gardens, landscaping and sports ground construction in private and public gardens, parks and leisure centres. Specific activities such as tree maintenance and transplantation, landscaping of public works, installations for noise prevention, creation and construction of ways and places within parks also fall within this sector.

Traditional landscaping work such as construction, laying out and maintaining gardens and parks is the core sector. However, as a consequence of the recent economic recession, landscaping companies have seen a decline in the construction of new gardens, parks and sports grounds facilities. In response, firms have diversified into new fields of work such as backyard gardens, roof gardens, facades and even indoor gardens. Municipal and state projects have also been areas of growing interest, for example: landscaping in traffic-restricted zones, natural landscaping of roads and highways, city redevelopment and leisure centres. Renovation of pre-existing sites and on-going maintenance is also a significant field of work for landscape contractors.

The importance of less traditional activities such as biological engineering and natural landscaping is growing. The former is landscaping which uses living plants and inanimate materials like wood, stone, and geotextiles; natural landscaping is the creation of "almost" natural spaces or ecological niches not typically intended for public use.

**Table 2: Landscaping**  
**Turnover by type of customer, 1994 (1)**

(%)	Public	Private Persons /Households	Private Firms
Belgique/België (2)	20	[	80 ]
Danmark	15	35	50
Deutschland	38	38	32
France	40	50	10
Ireland	40	30	30
Italia (2)	60	[	40 ]
Nederland	40	40	20
Österreich	20	55	25
Sverige	35	10	55
United Kingdom	10	[	90 ]

(1) Covers member companies of national associations in the EU (excl. Greece, Spain, Luxembourg, Portugal and Finland).

(2) Figures from 1993.

Source: ELCA

**Table 1: Landscaping**  
**Main indicators, 1994**

	Number of enterprises	Number of persons employed
Belgique/België (2)	2 000	4 700
Danmark	450	2 300
Deutschland	8 600	83 300
España (2)	5 000	50 000
France	7 000	31 000
Ireland	450	850
Italia	3 000	14 000
Nederland	2 700	10 000
Österreich	380	1 360
Sverige	325	2 500
United Kingdom (1)	3 000	13 000
EUR 15 (3)	32 755	213 010

(1) Figures from 1991.

(2) Figures from 1993.

(3) Excluding Greece, Luxembourg, Portugal and Finland.

Source: ELCA

#### Recent trends

In 1994, the EU had over 33 000 landscaping enterprises, employing over 213 000 people (turnover statistics were not available). The introduction of the new member states Austria and Sweden accounted for an increase of 750 enterprises and 3 800 employees (no figures were available for Finland).

1994 saw an increase in activity in Germany, with an increase in employment of 4% and an increase in the number of enterprises of 6% over 1993. Other countries remained relatively static, both in terms of employment and number of enterprises.

#### Cross-border trade

The vast majority of landscaping companies are SMEs operating on a regional basis. Thus foreign trade is typically limited to intra-EU projects that take place when the landscaping firms are located close to national borders, or decide to join efforts for a specific contract, or if the firm is highly specialised and is able to fill special requirements such as transplantation of larger trees, roof planting, etc.

### MARKET FORCES

#### Demand

Demand for landscaping services is derived from three areas: The construction sector, the public sector, and individuals (households).



**Table 6: Landscaping**  
Average collective wage and salary increases in the last year

(%)	1993	1994
Danmark	2.00	2.00
Deutschland	3.10	3.00
France	2.10	1.70
Ireland	2.00	2.00
Nederland	3.20	3.10
Österreich	4.10	3.00
Sverige	3.70	4.00
United Kingdom	5.00	5.00

(1) Index 1993: + 3.6, 1994: + 3.0

Source: ELCA

Landscaping often deals with various projects of re-cultivation and re-naturalisation. In general, these projects are a result of a legal condition. An example would be the re-naturalisation of gravel pits or quarries, greening of mounds or slag heaps, re-cultivation of industry fallows or areas under recent construction, and the restoration of damp areas.

### Supply and competition

The ELCA industry survey of 1995 indicates that the major competitors of the landscaping sector are not in fact industries that are active in the same market, such as structural and civil engineering companies. Rather, public sector companies, subsidised agricultural sector, and particularly government subsidised employment programmes are currently perceived by the industry as being their major competitive threats.

There is widespread use of the gardening industry to employ untrained people through employment programmes. State-financed employment and social programs employ untrained persons to maintain parks and public places. These programs are widespread in Europe, and particularly in Denmark, France, Germany and the Netherlands.

This creation of a second labour market is thought by the industry to have a depressive effect on entry into this profession for private sector entrants, due to increased low-cost competition.

### Production process

Landscaping is a typically labour intensive activity. The average salary per employee per hour varies between approximately 6 and 11 ECU with an average estimated work week of 39 hours. Within the EU, traditional construction machines i.e. wheel loader, excavator and tracked vehicle make up, on average, 45% of equipment used. Transport vehicles are the second largest capital expense followed by machinery and equipment for speciality use, e.g. compressors for building paths and squares.

The use of special machines varies among the individual Member States. By way of example, winter equipment represents a large share of apparatus used in North European countries, while its importance falls considerably in the Mediterranean area.

Professional qualifications are treated differently by public authorities throughout Europe. In Austria and Norway, a professional certification is required in order to manage a landscaping company, whereas, in other countries no certification is necessary to open a landscaping company although professional certificates do exist and membership in national associations require an adequate qualification.

### INDUSTRY STRUCTURE

#### Companies

The landscaping industry is very fragmented. Available data indicates that 80% of garden, landscaping and sports ground construction companies operate with less than 26 employees, with 40% of firms having less than 6 employees. The largest garden, landscape and sports ground companies with more than 50 staff are to be found in Germany, France, Italy, the United Kingdom. Firms frequently collaborate across national boundaries to expand capacity and expertise in larger projects.

### ENVIRONMENT

The push for environmental quality in and around urban centres continues to benefit the industry. As land gets more expensive, gardens and green spaces become smaller. This encourages creative and intensive use of gardens. Reurbanisation projects such as Parc André Citroën in Paris are another example of the urban need for green space.

**Table 7: Landscaping**  
Following fields of activity will become increasingly important in the separate ELCA member associations

	DK	D	F	IRL	A	S	CH
Biological and ecological works					X		
Roof garden planting			X			X	X
Environmental works, conservation	X	X			X		
Facade gardens							X
Natural parks					X		
Maintenance work					X		X
New private gardens					X		
Green on road and in town						X	
Tree care			X				
Hydraulic engineering					X		
Biotops					X		
Ecology	X						
Landscape management		X					
Local authority work				X			
Domestic works				X			
Civil engineering works						X	
Green on houses							X
Landscape construction and management							X

Source: ELCA



**Table 8: Landscaping**  
**The following working fields will gain less importance in the future**

	DK	D	F	IRL	A	CH
Public orders			X		X	X
Simple maintenance works					X	
Golf construction	X	X			X	
Sport facilities					X	
Industrial work				X		
Intensive maintenance of grass and areas of vegetation						X

Source: ELCA

## REGULATIONS

An important area for currently developing EU regulation is the standardisation of quality and safety norms. Lawn quality and maintenance for sports grounds alone is subject to several different norms depending on the use and need for safety of the different facilities. Another important area is the contract bidding process. Public works projects now must be offered for tender on the EU level, instead of a national or local level as before. Other areas of public policy like social legislation, industrial law and the safety and security directives for workplace and machines have an impact on the industry.

## OUTLOOK

As mentioned, landscaping is an industry whose fortunes are tied to those of its client industries, and the general economic environment.

Due to the depressed nature of the economy, the stagnant construction industry, and the curtailing of government spending in most Member States, European landscaping passed a difficult year.

Private demand is expected to develop quite well, especially diversification of services into new areas that offers some potential for growth. Demand for re-cultivation and re-naturalisation, leisure centres, natural parks and maintenance work is set to start growing again. Biological/ecological and other more comprehensive environmental works will also grow in many Member States.

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# Linguistic services

**NACE (Revision 1) 74.83, 80.22, 80.42**

*The sector includes translation, interpreting and language teaching services. The number of professionals working in these three branches is growing steadily, although a large number of them, especially in translation services are not professionals. Whilst competition is strong in the major languages, good commercial possibilities exist in East European and Asian languages. The trend towards political and economic co-operation on an international scale will mean an increase in demand for language services. To keep up with these developments and further technological progress, translators, interpreters and language teachers will have to acquire more specialised knowledge.*

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## INDUSTRY PROFILE

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### Description of the sector

Language services include translation, interpreting and language teaching. The NACE Rev.1 classifies translation and interpreting in the class 74.83 and language teaching in the two classes 80.22 and 80.24, which are subgroups of secondary education and adult and other education. Information on language teaching is scarce because there is no official language teaching association. This chapter therefore concentrates mainly on translating and interpreting services.

Translators and interpreters require a deep knowledge of the source and target language, an in-depth subject-matter knowledge of non-linguistic disciplines and with additional, specialised vocabulary. Moreover, a sound understanding of the context of a text and professional communication skills are also required.

Translation covers an extremely diversified market ranging from commercial and industrial affairs to scientific research, legislation, communication and literature. Translations are normally made from a foreign language into the translators own native language. There are two basic types of translators: the literary translator and the scientific translator.

Interpreters give direct oral translations for parties conversing in different languages and as such they play an active part in the communication process. There are three different categories of interpreting: simultaneous, whispered and consecutive interpretation. These three types are different from each other according to the point in time of the translation (simultaneous, virtually simultaneous or after a short part of a speech). In addition, there is also sign-language interpretation for the deaf community, which is performed simultaneously.

Translation and interpretation is closely related to the professions of lexicographers, the terminologist, the technical writer and the computer linguist. For each of these professions additional specialised qualifications are necessary.

The economic weight of language services is difficult to measure in monetary terms because these services are mostly included in the turnover of large enterprises and institutions and are not separately reported. It's weight is more of a qualitative nature. Language services are the basis for international relations for large and small enterprises alike.

### International comparison

Due to there being, at present, eleven official languages in the EU, translation and interpretation within the EU is of much more importance than in Japan and the USA. While, both English and French are the working languages of the

EU, English is the dominant language and is often taught as the first foreign language at schools. Demand for translations out of and into the German language plays an important role within the EU due to Germany's powerful economic position and the entry of Austria into the EU. Due to Japan's intensive trade and cultural relations with the EU, literary and technical translations to and from other European languages into Japanese have gained increased importance in recent years.

Trade in language services is not yet significant, and texts, are normally translated at the place where they are needed. However, this situation is slowly changing as the Internet becomes more popular for the exchange of information.

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## MARKET FORCES

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### Demand

The importance of language services is strongly linked to the growing internationalisation of political and economic relations. After the second World War language services, were very important in promoting peaceful relations and understanding between nations. Affiliations between industrialised nations were created and international organisations like the European Community and the United Nations were founded.

As such, the demand for language services has grown proportionately, as international political and business relations become even closer and enterprises require more language services, especially in technical, marketing, legal, financial and commercial fields. Additional demand for language services has arisen amongst the European Institutions with the accession of the three new Member States in January 1995, while demand for language services has remained strong from multinational organisations and new market opportunities for language services have opened up since the last decade especially in the Far East, in countries of East and Central Europe and in the former republics of the Soviet Union.

Technological progress and new hard- and software have opened up new market possibilities for free-lance translators. Translation including desk-top-publishing and mechanical translations are branches of growing demand.

Interpretation is mainly needed for conferences at an international level in the public sector as well as in business. In this context, privately organised meetings are becoming more important. But as general conferences are not regularly scheduled and take place in various places, institutions and enterprises often contract out this work and do not maintain an in-house staff of interpreters.

Demand for language teaching services is coming from both the private and public sector. Whilst large companies and institutions normally have their own in-house language teachers for the vocational training of their staff, private individuals often demand independent language teachers. A new market for language teachers has developed in recent years with private schools offering a combination of language tuition and travel.

### Supply and competition

In general in most EU countries translators and interpreters registered in professional associations are either working as independent professionals, or are employed mostly by public bodies, private enterprises, such as in publishing houses or television and broadcasting corporations, or private translation services.

Traditionally, free-lance translators are members of a professional association. They work in their own premises and deal directly with the client or through the intermediation of translation agencies. These agencies often sub-contract work to free-lancers. Technical translators are normally paid per word, line, page or hour. Literary translators are considered as authors. They sign a contract with the publisher and receive

**Table 1: Language services  
Number of translators and interpreters (1)**

	1988	1989	1990	1991	1992	1993	1994	1995
Belgique/België	249	243	243	281	281	330	340	360
Deutschland	(4) 3 525	4 067	4 146	4 300	5 200	5 400	5 400	5 700
España	N/A	N/A	N/A	(2) 800	N/A	945	960	1 600
France	(5) 350	(5) 400	(5) 450	(2) 1 400	N/A	1 630	1 100	N/A
Italia	600	700	950	1 300	1 400	1 450	1 150	N/A
Nederland	N/A	N/A	N/A	(2) 1 440	(4) 1 150	(4) 1 300	(4) 1 300	(4) 1 350
Österreich (6)	N/A	N/A	308	312	331	336	349	N/A
Sverige (7)	N/A	N/A	129	183	212	247	351	700
United Kingdom	(4) 998	1 260	1 397	2 019	2 242	2 130	2 000	2 600

(1) Registered members of professional associations, including interpreters and literary translators.

(2) Excluding interpreters.

(3) German data includes former East Germany (from 1992 onwards).

(4) Excluding literary translators.

(5) Only literary translators.

(6) Excluding literary translators, court interpreters and retired members.

(7) Only members of the Swedish Association of Professional Translators (SFO), until 1994.

Source: National professional associations.

royalties, which are a percentage of the sale price of the book. The payment for the translation work, which is calculated by page or as a fixed sum, is a payment in advance for the royalties. High levels of competition in the translation market decrease with the grade of specialisation of a translator and with the language required. The more languages an interpreter can translate from, the more competitive his position will be. Another competitive advantage for free-lance translators is a combination of translation and other professional skills. Independent translators are often facing strong competition with in-house staff of large organisations and while established and qualified translators have enough work, there is still quite a high percentage of unemployed translators in the EU.

Due to the enlargement of the EU, a greater number of professionals are now registered in the EU countries. A large part of language services are provided by women. Most professionals work as free-lance translators and interpreters, e.g. about 95% in France, about 90% in the United Kingdom and about 85% in Belgium. Larger groups of employed translators and interpreters are only to be found in Germany with around 50% and in Italy with around 40% of all registered association members. The national professional associations throughout the EU estimate that their registered members cover only about 30% of all persons working as translators or interpreters. Shorter translations, such as business correspondence, are often done by part-time non-registered translators or by bilinguals who have other jobs.

Language teaching is offered by public institutions, private enterprises and individual teachers. Besides the normal state school language education, language teaching is also provided as advanced vocational training in private language schools, public high schools or in in-house language courses of large companies. As such, many language teachers work as employees of private language schools and large companies.

Some enterprises offer tutorials or training programmes using books, videos, tapes and compact discs. This new form of language learning is cheaper and offers more flexibility to the pupil than the traditional language school.

## INDUSTRY STRUCTURE

### Companies

The language services sector is structured according to public employers, independent professionals and private companies. The largest public employer within the EU is the European Commission who has its own in-house translation, interpreting and language teaching services. Private companies have in

general only a few full-time support staff and hire independent translators and interpreters when necessary. Their number does not correlate strongly with the number of full-time staff. A great part of the interpreters, translators and language teachers are independent professionals working alone. The largest firms are located in the UK but there are also some large companies in other EU countries. The largest translation companies are Alpnet (UK), Langenscheidt (Germany) and Intervendum (Sweden).

Companies concerned with interpretation tend to be smaller and networks of independent interpreters is common. Linguarama Ltd. (UK), Elsevier (France), E.F. (Sweden) and the now Japanese owned Berlitz are some of the largest companies in Europe offering language courses.

Considering that even large organisations often hire independent professionals, the small and medium sized enterprises are dominant in the EU language service market.

### Strategies

Stronger competition, shorter deadlines and new demand in Eastern European countries, are the greatest challenges for the language services sector. The degree of specialisation amongst independent professionals and small enterprises has therefore increased. There is also a trend to use IBM compatible hard- and software for computer assisted translations such as SYSTRAN, CAT and LOGOS. The Internet nowadays enables translated texts to be transmitted from the home of a translator to his customer. Another important aspect is that the larger translation companies are also offering interpreting services. Comprehensive services that cover the full printing and publishing services as well as translations, also offer new possibilities for translation companies. More cross-border activities often lead to alliances and the setting up of company networks, which in turn strengthens the company's respective competitive positions.

## REGIONAL DISTRIBUTION

All language services tend to be located close to their demand. Language schools and teachers are especially represented in all the larger European cities and fast growing regions with international ties. Interpreting services are often based close to the main European fair and exhibition places. Moreover, the interpreting and translation services are closely linked to places with international organisations like Paris, Brussels, Luxembourg, Strasbourg and Geneva. But modern technology now allows translators to work far away from their customer's

premises and thus geographical location for written translations becomes less important.

## REGULATIONS

While, generally unregulated in the EU, the sector is moving towards a model of self-regulation. The titles of 'translator', 'interpreter' and 'language teacher' are defined by the "International standard of classification for professions" elaborated by the International Labour Office in Geneva. According to this classification the professions of translators, interpreters and language teachers require a university degree or a special exam. This classification is complemented by the following documents which describe the role of translators and interpreters:

- The relevant provisions and recommendations regarding translators and translations set forth in the Final Act of the Conference on Security and Co-operation in Europe, passed in Helsinki in 1975.
- The UNESCO recommendation on the protection and improvement of the legal and social status of translators and translators, adopted in Nairobi in 1976.

The official recognition of the titles is currently being studied at national and international level by the professional associations. In addition, the professional associations are also trying to establish the rights and obligations of the translators and the clients in a translation contract. Payments and copyrights, which are closely related with the product-liability and the quality assurance, will be regulated in this standard contract.

## OUTLOOK

Globalisation will steadily increase the demand for language services. From 1995-2000, a 300% increase in the number of translated pages is expected in the EU, due to the entry of three new Member States and due to closer relations with the countries of East Europe and the former Soviet Union. A good knowledge of Scandinavian, East European languages and other rare languages will be necessary.

Technical progress will boost the productivity of the language services sector, whilst maintaining quality. Greater professionalism, specialisation and breadth of service provided will be required by the customers. Although they face strong competition from larger companies, independent translators and interpreters will continue to dominate the market.

Written by: Volker Stabernak Consulting

The Industry is represented at the EU level by: International Federation of Translators (F.I.T.), Secretary General, P.O. Box 21, Dr. Heinrich Malerstrasse 9, A-1184 Vienna, Austria; tel: (43 1) 440 3607; fax: (43 1) 440 3607 and;

Association Internationale des Traducteurs de Conférence (A.I.T.C.), Route des Morillons 15, CH-1218 Le Grand-Saconnex, Switzerland; tel: (41 22) 791 06 66; fax: (41 22) 788 5644 and;

Association Internationale des Interprètes de Conférence (A.I.I.C.), 10 avenue de Sécheron, CH-1202 Genève, Switzerland; tel: (41 22) 731 33 23; fax: (41 22) 732 41 51.



The DTP market is growing organically as trade associations, clubs and various companies produce more and more magazines, newsletters and other printed material for their members. The increasing ease with which high quality documents can be produced at low cost is contributing to this market expansion. On the other hand, these same factors are "internalising" increasing amounts of DTP work. A particularly important area is the financial sector with its need for rapid production of overnight reports for investors. The introduction of in-house DTP facilities in many companies reduces demand for publishing services from "publishing for profit" companies. This is particularly the case where companies think they can handle the whole job, perhaps with the help of a colour photocopier. However, some in-house printing would not have otherwise occurred had the firms concerned not acquired printing capabilities. The displacement effect, therefore, may be limited; and additional printed inputs may also be required. Examples include, stationery, labels, compliment slips and manuals. Furthermore, top quality work still usually requires the help of a professional pre-press or printing company.

### Supply and competition

DTP shops compete with traditional pre-press and printing companies and with in-house DTP departments. Their small size and relatively recent origin often makes the shops more flexible than traditional printers. Printing is a highly skilled profession, and in most countries the industry is a well organised, high-wage industry often with strong trade unions. In Denmark, for example, labour costs accounted for 38% of total printing industry costs in 1993, though the ratio is half this in the lower labour cost countries of southern Europe. In competition with the new DTP shops are traditional companies which must compensate for their higher labour costs with, either better quality products or with higher productivity resulting from their skilled workforces and more sophisticated equipment. Nevertheless, employment in the printing industry is declining - from 882 654 in 1991 to 817 318 in 1995 (for the EU 12).

There are no major pan-European DTP service companies although some, including franchise operations, transcend national boundaries. Most companies in this sector serve a local market. In such cases, comparative advantage is based on closeness to clients and flexibility. With declining technology acquisition costs, the level of investment required does not create a significant barrier to entry and economies of scale are limited. Prices of publishing services offered by both pre-press and printing companies, and by DTP shops, have been falling, partly due to increased competition, but mainly because of falling hardware and software prices.

### Production process

Most DTP companies are, as mentioned, very small enterprises. Their main work is to layout documents from manuscript or electronic text using professional DTP packages, and, often, subcontract the production. Many use only four main tools: a personal computer (PC) - Apple Macintosh or IBM compatible -, a scanner, computer software including DTP programmes, and a laser printer.

Some companies have made investments in higher or additional cost pre-printing equipment. This includes film making and bromide, and Cromalin proofing equipment. Often DTP involves incorporating pictures, graphs and tables into a document, and this sometimes needs special scanning or filming equipment and software to create files in tagged image film format (TIFF).

There are many DTP programmes. They range from programmes designed to make single page layouts to those for long documents. Printing professionals often use PageMaker. Companies not requiring so much sophistication or text adjustment can use other programmes such as Microsoft Publisher and parts of Microsoft Office for Windows 95. These

are relatively cheap and are very user friendly for novices. Most programmes are available for use in the DOS, Windows and Macintosh operating systems. Some are also available on UNIX and OS/2.

IBM compatible computers have become the standard for the PC computer industry and users are increasingly changing from the DOS operating system to Windows, especially in view of the marketing drive behind Microsoft Windows 95. But Apple Macintosh, whose share of the overall PC market slipped from 15% in the late 1980s to 8% in 1994 (and is still falling), remains the major computer system for DTP and has partially protected its position with the launch of the Power Macintosh (though computer aided design (CAD) developers tend to orient their products towards DOS and Windows-based workstations). The main reason for Apple's dominant market position is that PageMaker (for use in Apple machines) has offered colour picture DTP software for several years. This has meant that Apple Macintosh has been the computer system chosen by many printing companies for DTP. Thus, Apple's share of the DTP market is 80%. However, as companies producing word processing and integrated office packages, such as Microsoft, improve their packages, Apple may lose market share.

Specialised computer programmes are also available for making multi-coloured pictures. These programmes allow PC users to make colour separations and retouch images. Examples are Ventura Separator, Ventura Photo Touch and Ventura ColorPro.

Although scanning photographs or drawing has been the main method of making electronic pictures, programs now exist to make picture films from video films. Multimedia computer programmes provide pictures by the latter method. An editor can also buy picture files. Many electronic picture libraries and software companies sell electronic pictures. Ventura, for example, has published a series of CD-ROMs containing photographs classified by their theme and whether or not they are free of copyright. Documents containing line drawings, data tables and graphs must merge files or parts of files from other PC programmes for printing purposes. For example, Mathsoft - the leading developer of mathematical software had sold, by late 1995, over 550 000 copies of its Mathcad product which allows PC users to perform calculations and also document/print the results.

As discussed, professional printing companies often produce final documents because they have the equipment for high resolution film or bromide production and large print-run capacity. However, higher resolution desktop laser printers are increasingly available - these will enable DTP shops to compete more effectively with printing companies.

Photocopier technology has developed to the extent that the newest generation of digital photocopiers integrate printing and binding of documents. This process involves a computer terminal being linked to the photocopy machine.

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## INDUSTRY STRUCTURE

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### Companies

Most of the companies in this sector are new and many only started business in the mid-1980s when leading DTP software companies such as Aldus and Adobe (now merged) were founded. Some business service companies with longer histories have altered business plans in order to enter the dynamic DTP services market. In fact, many computer consultants have become more involved in DTP than in other activities.

Other professionals and firms attracted to DTP include those that were previously involved in translating, printing, typing, word-processing, copy-writing, and proof-reading. Publishing production professionals, photo composers, page layout specialists and photo engravers, have had to move with the times

by making investments in electronic printing/publishing. Most have now converted from manual to computerised page layouts.

### Strategies

The relative newness of the sector means that company strategy is still evolving. However, a tendency towards mergers and acquisitions is beginning to appear. Most strikingly, Adobe Systems (USA printer and software specialists) recently merged with Aldus (the leading USA DTP software group). In turn, in January 1996, Adobe shares had slumped after reporting fourth quarter losses for 1995 - which was partly related to Adobe's having consolidated its hold over the DTP software sector by the acquisition of two rivals, Frame Technologies (USA) and Ceneca (USA). Similarly, computer software companies, have been merging to, among other things, expand and integrate their product, portfolios and facilitate the development of office "packages" which combine word processing, graphics, spreadsheets, databases, etc.

Acquisitions and mergers are likely to extend into related sectors. For example, Alco Standard Corporation (a USA paper and office equipment distributor) purchased, in 1995, the Southern Business Group (another USA photocopier supplier), partly because of the increasing size of operation perceived necessary to develop and market new, expensive digital photocopiers capable of linking into DTP (see above).

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### REGIONAL DISTRIBUTION

There is little significant regional pattern of business location in this sector, except for a tendency for most businesses to be based around the largest centres of population and economic activity.

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### ENVIRONMENT

Environmental impact of the sector is limited, though, for example, DTP companies need to take account of measures to promote recycling of paper.

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### REGULATIONS

Further evolution of company strategy will be partially dependent on clarification of copyright regulations. There are currently two concepts in place, an Anglo-Saxon and a Continental version. The former essentially benefits the producer, the latter the author. In certain instances this results in problems. A modest degree of harmonisation has been reached, at least in principle. The ultimate goal is to develop a European copyright law, but complex negotiations lie ahead.

In addition, the emergence of multi-media has resulted in the formulation of a number of priorities, including a copyright law to protect publishers against piracy, and the need for companies to be able to gain access to copyrights for a range of products (text, pictures, etc.).

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### OUTLOOK

As the cost of DTP hardware and software continues to fall, more and more, "non-professionals" will be able to afford the equipment necessary to prepare their own documents for publication, and to ever higher standards. Professionals such as DTP shops and pre-press houses will find their market increasingly restricted to, on the one hand, clients who do not have in-house DTP facilities, and on the other hand, to the final preparation of high resolution documents, already in electronic form, for printing.

On the other hand, as costs fall, the overall volume of work undertaken both in-house and by independent professionals, will increase. More newsletters and publicity materials will be produced and catalogues will be updated more frequently. Output will be increasingly in electronic form such as CD ROM or on-line rather than printed formats. The input for documents will also be increasingly electronic, being derived from electronic databases and computer networks. There will also be increased demand for ancillary services such as electronic picture libraries.

Written by: Fitzpatrick Associates



# Temporary work services

NACE (Revision 1) 74.50

Over the past four decades, temporary work services have progressively changed into a sophisticated, professional service industry providing instruments for labour management. The industry has turned itself not only into the main tool for helping businesses fill temporary shortages in their workforce, but also (since temporary workers often find permanent employment through their temporary assignment) into personnel recruitment advisors. Temporary work businesses are now widely accepted in most countries. TWB has shown double digits growth figures for 1994 and 1995 in many countries in the EU. This is largely due to a wider degree of acceptance in the Member States and an economic upturn in these countries.

## INDUSTRY PROFILE

### Description of the sector

Temporary work businesses hire temporary workers and put them at the disposal of a third party (triangular relationship). Key to this relationship is the fact that they receive their salary from the temporary work business, but their work-orders on assignments from the third party. Client firms call upon the services of temporary work businesses when they have temporary shortages of labour. The hourly cost of temporary labour may at times be higher than that of permanent workers, but since temporary labour is usually resorted to for short, well defined periods or for specific tasks, the cost is borne only for effectively supplied hours of labour. The alternatives, overtime or a permanent reserve of extra manpower, would be more expensive. Temporary work businesses bear the cost of recruitment, selection, payrolling, statutory social security insurance, etc.

For temporary workers, temporary work businesses satisfy particular individual needs and preferences. However, a growing number of jobless workers also resort to temporary work businesses to find a temporary occupation with the expectation of finding permanent positions at a later stage. It is estimated that on average well over one third of temporary workers find permanent jobs as a result of temporary contracts. The actual proportion varies widely between different EU countries. In the USA, where labour laws are generally less strict than in European countries, workers even turn to temporary jobs in order to gain more job (read income) security and better career paths.

The ageing of the European workforce and the increase of the female component also have an effect on the temporary work services sector. These developments have been associated with a greater desire for more flexible and temporary working arrangements.

### Recent trends

The importance of temporary work can be shown by the number of people who are active in the sector each working day. In Table 1, it can be seen that Germany, the United Kingdom, France and the Netherlands are the largest employers of temporary workers in the EU. On the whole it is estimated that in the EU well over 1.6 million persons a day work through temporary work businesses. In the United States the past few years have shown a quickly increasing market penetration (also because of new services), so that employment per day is higher than in the EU. For a correct comparison, however, it should be taken into account that the temporary work services sector is non-existent in Italy and Greece, and still not very developed in for example Portugal, Luxembourg and Ireland.

Most of the turnover in this sector is generated in the United Kingdom, France, Germany, the Netherlands and Belgium, as can be seen in Table 2. The sector in general has shown double digit growth since 1994, in countries where temping was already more or less developed as well as in countries where it was still developing rapidly. In general the national branch federations expect another good year in 1996, with growth figures of 10% and up.

**Table 1: Temporary work services  
Employment through temporary work businesses, 1995**

	TWB employment per day (thousands)	Total employment (thousands) (3)	Employment as % of total employment	Expectation TWB employment 1996 (1)
Belgique/België	41	3 748	1.1	42
Danmark	2	2 537	0.1	3
Deutschland	176	35 840	0.5	185
España (3)	30	11 728	0.3	
France	370	21 720	1.7	416
Ireland (3)	2	1 207	0.2	
Nederland	180	6 707	2.7	198
Österreich	13	3 563	0.4	12
Portugal (2)	4	4 440	0.1	
Sverige	3	3 939	0.0	4
United Kingdom	850	25 657	3.3	+
Total (4)	1 671	121 086	1.4	+/- 1 800
Helvetia (2)	26	3 388	0.8	
Norge	8	1 971	0.4	9
Japan	263	64 495	0.4	288
United States	2 162	119 306	1.8	2 400

(1) For 1996, an estimate is given of the development of the employment figure, + indicates growth, - indicates decline.

(2) 1994 figures.

(3) 1993 figures.

(4) Estimate including the above mentioned countries only.

Source: CIETT, Bakkenist Management Consultants, Eurostat



## International comparison

Total turnover in the EU was approximately ECU 33 billion in 1995, up 20% from ECU 28 billion in 1994. Turnover in the USA, in comparison, was approximately ECU 28 billion in 1994 and is now estimated at ECU 32 billion.

The turnover of the sector in Japan has decreased in 1993 and 1994 and was estimated at less than ECU 8 billion in 1995. In Switzerland and Norway, the sector is still not very developed, but also growing rapidly.

The world market is estimated at well over ECU 70 billion currently. All figures and estimates given are based on statements made by national federations, since hardly any regular statistical surveys are held in this sector in the EU or other countries.

## Foreign trade

Basically, temporary work businesses operate on a local scale, whether they are a small, independent one-office company or an office of a larger multi-national temporary work business enterprise. 'All business is local' is a saying which applies very directly to this sector, with the possible exception of highly specialised businesses. Furthermore, it is difficult to send temporary workers across borders due to contradictory national legal regulations. Therefore, cross border activity takes place only on a very small scale. Temporary work businesses wishing to operate in foreign countries generally do this by starting a local branch or by buying (into) a local company. From a short survey it can be concluded that if the TWB-market is less developed, the more likely the strategy of buying (into) a local company becomes. TWB-companies from outside the EU (especially USA-based) appear to be more active in buying local companies than TWB-firms from within the EU. It should be noted however that many European TWB companies are starting or expanding their business in the USA as well.

In Japan the local TWB's are expanding their business in Asia and the USA. Ten years ago it was exactly the opposite and it was mainly the USA based TW-companies that were entering the Japanese market.

## MARKET FORCES

### Demand

The enormous growth in demand for temporary work services in the past clearly stemmed from the growing need for more flexible labour contracts. This general trend will help the industry to continue to grow in the future.

A favourable economic climate, however, also helps to boost growth. As has been shown in the recent past, the stagnation of economic growth or recession in most EU countries have caused zero to negative growth, and an economic upturn double digit growth figures. Markets which are heavily effected by these trends are, for example, France, the Netherlands and the United Kingdom. For example, in the Netherlands and France, the industry serves as an indicator for an economic climate change by national statistic offices or investment banks.

A third factor influencing demand (and supply) are the regulations in a country.

The fields in which temporary workers fulfil their assignments tend to differ between countries.

In France and Germany, for example, the majority of temporary workers are blue-collar workers. In the United Kingdom, Denmark and Spain temporary workers are primarily active in the administrative or commercial fields, as is more or less the case in the United States and Japan. In some countries this is due to restrictive regulations. The differences are further illustrated by table 3.

The length of the contract that is desired by clients varies. This is usually dependent on the function which the temporary worker will fulfil for the client. If the temp is called for to replace someone who is, for example, ill or on holiday, contracts are usually fairly short: from a day to several weeks. However, if a temp is called for because of an unfilled vacancy, or because the client is not certain whether the development of his business will allow him to hire an extra worker permanently, contracts can be extended to months or even a year or more. Contract duration is usually limited by national regulations, but the maximum period varies per country. Client companies often treat temping contracts as if they were trial

**Table 2: Temporary work services  
Development of turnover, 1992 - 1995**

(million ECU) (1)	1992	1993	1994	1995 (4)	1995/1994 (%)	1996 (2)
Belgique/België	1 028	939	1 199	1 422	18.6	1 493
Danmark	51	42	N/A	N/A	N/A	+
Deutschland (6)	2 750	2 060	2 462	3 960	(7)	4 174
España	195	189	N/A	N/A	N/A	
France	6 899	5 846	7 718	9 640	24.9	10 845
Ireland	N/A	36	N/A	N/A	N/A	
Nederland	2 495	2 248	2 850	3 640	27.7	4 004
Österreich	N/A	119	158	188	18.8	198
Sverige	N/A	36	72	108	50.0	130
United Kingdom (5)	7 000	10 946	13 257	14 595	10.1	+
Total (3)	20 418	22 228	27 716	33 553	21.1	36 500
Helvetia	745	725	955	1 147	20.0	N/A
Norge	100	100	96	111	15.6	+
Japan	9 174	8 387	6 938	7 589	9.4	8 352
United States	21 090	22 661	27 918	31 508	12.9	36 175

(1) National currencies for the years 1994 to 1996 were converted to ECU at the currency rates of april 12, 1996.

(2) For 1996, an estimate is given of the development of turnover or indicated with + when growth is expected, and - when decline is expected.

(3) Estimate including the above mentioned countries only.

(4) 1995 is an estimate for most countries.

(5) Includes permanent placement.

(6) Different methodology of calculating market size starting in 1995.

(7) Due to different methodology, this figure holds no meaning.

Source: CIETT, Bakkenist Management Consultants

**Table 3: Temporary work services**  
**Temporary workers by sector, 1995**

(%)	Agriculture	Industry	Construction	Commercial services	Other non-profit or governmental	Other fields
B	1	58	-	9	1	32 (2)
DK	0	10	0	80	10	0
D	-	68	-	22	-	10
E	-	12	15	50	20	3
F	-	49	21	24	-	6
IRL	-	80	-	10	-	10
NL (5)	2	43	-	32	23	-
A (3)	-	77	10	10	-	3
P	-	40	30	30	-	-
UK (1)	-	24	24	50	2	-
N	-	-	80	-	20	-
JPN (4)	-	16	9	67	5	3
USA (5)	-	35	5	50	0	10

(1) 1991 figures.

(2) Includes health care, CEE, Horeca.

(3) 1992 figures.

(4) 1993 estimate.

(5) 1993 figures.

Source: CIETT, Bakkenist Management Consultants

contracts. They increasingly tend to offer a permanent contract to workers who have worked for them through a temporary work business.

### Supply and competition

The number of establishments can serve as a basis for market coverage calculations and concentration figures. The third column in table 4 shows quite clearly that the sector is the most concentrated in Belgium and the Netherlands.

Comparing the figures for 1995 to those of 1993, a strong increase in the number of enterprises can be seen in Denmark, Germany and The Netherlands. In these countries especially smaller firms have started. In France the number of enterprises has decreased.

Differences in market coverage are large, as can be illustrated by comparing this last figure to that of Spain: there the number of persons one branch office serves is many times higher. These differences will diminish with the further development of the sector. Naturally, the market coverage figures also give an indication of the degree of competition in the different EU markets. In general it can be said that competition is fierce in well developed and/or stagnating markets and moderate in less developed and/or growing markets. The workforce served per office in Japan and the United States indicate temporary work markets which are fairly developed.

The degree of differentiation in supply varies from country to country, depending on market demand and regulations, but does not seem to differ very much within any particular country. An exception is a specialisation in client markets (intermediating for medical staff only, for example), which does appear regularly. Prices and other terms offered are more or less the same, competition takes place through elements such as response time to a client request, distance between client office and temporary work business, past performance of temps hired and other client services offered.

## INDUSTRY STRUCTURE

### Companies

Some of the largest temporary work businesses operating in the EU and their home countries are (in alphabetical order): Adia (USA/CH), Blue Arrow (UK), BIS (F), ECCO (F), Manpower (USA), Randstad Groep (NL), Kelly (USA) and Vendex (NL).

No statistics are available for their marketshares.

Many temporary work businesses operate under more than one name in the same market. Some have the same management, others operate more or less independently. Franchising is known to be practised by, for example, Manpower and Adia. The market leader differs per country; regularly, the leading position in a country where the TWB-market is developed, is held by a business with its home base in that country. Examples are the Randstad Groep in the Netherlands and in Belgium and Ecco in France.

A notable phenomenon is the existence of cost-based government temporary work businesses in Belgium (T Interim), and the Netherlands (START). They have gained a considerable share of the market. At the same time their operation has proven to be beneficial to the acceptance of organised temporary work in these countries, and thus to the market size.

In Switzerland, with the revision of the unemployment law, some 200 regional (cantonal) public employment agencies have been founded. Some tendencies to activities in the temporary work field by these agencies have been noted.

### Strategies

In the past years temporary work businesses, particularly the larger enterprises, have diversified into less related services such as security, contract cleaning and maintenance, language services, computer software services, business information and financial services. The present trend is focused more on efficiency and upgrading, while expansion is strongly geared to services related to personnel management and internationalisation. In their efforts to improve the efficiency of their operations and the quality of their services, temporary work businesses are investing heavily in computer systems and networks. The second trend (upgrading) is illustrated by the fact that some temporary work businesses are shifting towards temporary workers with higher educational qualifications and more experience.

The major temporary work businesses have expanded their businesses internationally. Internationalisation not only takes place in EU countries, whether or not by acquisition, but also outside the Community, notably in the USA and the Far East. Especially the USA is seen as an ideal area for expansion by foreign TWBs. This is evidenced by the fact that the USA branch federation's international affiliate membership now numbers 35 companies of which 15 are from within the EU.

**Table 4: Temporary work services  
Data on enterprises, 1995**

	Number of enterprises	Number of local offices	Nr. of offices per enterprise	Population 15-64 1995 (x 1000)	Population 15-64 per office
Belgique/België	89	624	7.0	6 707	10 748
Danmark	88	120	1.4	3 516	29 300
Deutschland	2 498	3 298	1.3	55 702	16 890
España (1)	310	320	1.0	26 653	83 291
France	830	4 000	4.8	37 951	9 488
Ireland(1)	43	245	4.7	2 282	9 314
Nederland	350	2 125	6.1	10 552	4 966
Österreich	75	313	4.2	5 413	17 294
Portugal (1)	168	300	1.8	6 698	22 327
Sverige	157	N/A	N/A	5 614	N/A
United Kingdom	2 750	8 000	2.9	37 930	4 741
Norge	57	101	1.8	2 808	27 802
Helvetia	400	650	1.6	4 750	7 308
Japan (2) (3)	N/A	8 758	7.0	85 904	9 809
United States (3)	7 200	17 000	2.4	163 778	9 634

(1) 1993 figures.

(2) Estimates.

(3) Population figures: 1992.

Source: CIETT, Bakkenist Management Consultants, Eurostat

The expansion into personnel management areas is to be found in services such as personnel management for small and medium-sized enterprises, recruitment (including head-hunting), outplacement, poolmanagement and training of personnel. This is triggered by the fact that the distinction between permanent and temporary employment is becoming less pronounced (often, a temporary contract later results in a permanent contract for the employee).

In the USA there is also a clear trend towards providing personnel for entire non-core functions (outsourcing).

In those countries with a liberal regulatory regime a shortage of qualified temporary personnel has shown to be an obstacle to growth. This shows the importance of education and training now provided by an increasing number of temporary work businesses. Typing courses, word-processing training and low-level technical courses are forms of training that figure regularly in their programme. Specific training tailored to the job or the individual is also common.

The issue of quality accreditation has also made its entrance into this sector.

The countries in which the sector is well developed have made efforts in this direction (e.g. Belgium, France, the Netherlands and the UK). It is a result of a more competitive market situation, combined with the trend in business in general towards a higher level of client service. Companies try to offer quickly available and flexible services, while still complying to the high quality standards demanded.

### Impact of the Single Market

The temporary work services sector has a definite local/domestic character. Although cross border activity is increasing slightly, this is not substantial (% of total turnover).

Most of the European Union directives and measures have had little or no impact on the sector.

There are several Community laws and (draft) proposals which (could) have an influence on the sector. The directive applicable to this sector concern the broader range of workers or business in general. The most important of these directives is one which concerns measures regarding health and safety. Two draft directives with a possible direct influence on the sector are currently being discussed. One of them regards the posting of workers across borders, the other one is a draft

proposal for a-typical work, which includes temporary workers. Both draft directives are still being discussed and therefore most likely subject to changes.

Recent directives are:

- One Commission labour law, accepted in 1991, apply to temporary work, it concerns measures regarding health and safety;
- One Community proposal regards the posting of workers across borders and considers, among others, pay and working time. This proposal has not been accepted. The Italian government is still trying to negotiate a compromise;
- The latest text, which would leave Member States free to do whatever they want vis a vis the threshold period, is unlikely to gain much support.
- A draft proposal for a typical work. This proposal rules the equal treatment of part-time workers, fixed term workers and temporary workers, with full-time workers. This proposal follows the route proposed by the social protocol of the treaty of Maastricht. It is now in its second round of consultation.

Some concern exists regarding the unfair competitive advantage the public sector has in some Member States. In some instances, public sector companies have access to information not available to private companies, have extra (government subsidised) funding or certain tax advantages.

### REGIONAL DISTRIBUTION

Basically temporary work business is local business. Most companies operate through a network of local offices located in the near vicinity of either potential clients or potential temps. This differs for each country.

### REGULATIONS

Organised temporary work is widely practised in the majority of the Member States. There are, however, considerable differences in regulation between EU countries.

Two countries, Greece and Italy, absolutely prohibit the operation of temporary work businesses and the conclusion of temporary work contracts. In these countries, illegal practices

**Table 5: Temporary work services  
Degree of regulation in Member States, EFTA-countries,  
United States and Japan, 1995**

Liberal	Restricted	Prohibited
Belgique/België	Deutschland (1)	Ellada
Danmark	España	Italia
Ireland	France	
Luxembourg	Österreich	
Nederland	Norge	
Portugal	Japan	
Suomi-Finland		
Helvetia		
Sverige		
United Kingdom		
United States		

(1) Deregulation expected.

Source: CIETT, Bakkenist Management Consultants

are known to exist. In Italy, the social partners are becoming increasingly aware of the benefits of temporary work and the negative effects of the illegal practices at this moment. The former Prime Minister had announced the intention to publish a new draft law in 1994, but due to the political situation this law has still not been placed on the political agenda. After the European Court ruled on formal grounds that it was not competent, several multinational TWB's combined have again started a lawsuit to test the law prohibiting TWB in this country.

A number of restrictions and requirements are common to regulations in the other Member States, the most important being:

- requirements for the contract between the user and the temporary work business;
- registration and/or licensing of temporary work businesses;
- limitations to the conditions under which temporary work is allowed;
- limitations to the duration of contracts (varying from 3 to 24 months or no restriction);
- requirements for wage levels and social security conditions.

In many countries within the EU the regulatory regime is still changing.

In Finland and Sweden, the regulations have been liberalised almost completely in the beginning of 1994. In Sweden however, there are forces towards a more stricter regulation. It is expected that the Swedish government will decide upon its standpoint in the course of 1996. Negotiations for a collective agreement for temporary workers are currently taking place.

Also since mid 1994 temporary work has been allowed in Spain. In June 1995 a collective agreement was negotiated between the national branch federation and the Unions CCOO and UGT.

In Germany the maximum duration of an assignment has increased from 6 to 9 months and private placement is allowed since mid 1994. Double-placement is required in this country, with the exception of long term unemployed provided by the Employment exchange. A recent IWG-study argues that the restrictions for temporary work should cease to apply since they are standing in the way of the temporary work sector's chances to create new jobs. The branch federation expects a modification of the law governing TWB (the AUG).

In Austria, permanent placement agencies have been legalised, excluding TWB from possible licences. Negotiations for a collective agreement for temporary workers have been started.

In Luxembourg, new laws have been passed which are less restrictive. Details were not available.

In Belgium social partners have agreed upon a new collective labour agreement. This agreement seeks to set up workgroups to look at a/o. abolishing the ban on TWB's in certain sectors (e.g. building sector, public services and removal companies).

In the United Kingdom, the government's initiative to de-licence the recruitment industry has become effective on January 3, 1995. However, industrial tribunals will be able to prohibit individuals from running employment agencies or businesses.

In the Netherlands the maximum period of temporary employment within one company is eased from 6 months (1000 hours) to 12 months since mid 1995. Temporary work in the building and construction industry has also been accepted.

The Minister of Social Affairs has recently published a note in which he proposes to abolish the licensing system but also to regulate temporary work according to the same rules which apply for regular labour-relations.

The national branch federation has started negotiations with the trade unions with the intention to reach a contract for 'long term temps', including pension benefits.

In Japan a formal report to the Minister of Labour has been issued. The core of the recommendation in this report is to add 12 occupations or sectors to the existing 16 allowed under the current TWB-laws.

An indicative summary by the national branch federations of the degree of regulation is shown in Table 5. The statements 'liberal' and 'restricted' should be seen relatively; they are meant to compare the EU countries to one another. The United States considers its regulatory regime liberal, while Japan characterises its regulation as restricted.

The ILO has put the subject 'private employment agencies' (including TWB's) on the agenda for the conference of 1997, which is geared towards changing convention 96. Since the ILO has said in 1994 that the changes of this convention will be based on the cessation of governmental monopoly of placement, this could mean an important impulse to the TWB-industry.

## OUTLOOK

The expectations for growth vary from country to country. In general it can be concluded that the trend is positive in most countries of the EU: the national federations of temporary work in all countries expect continued, but moderate, growth for 1996.

In those countries where temporary work businesses are well-developed, competition is strong. In the countries where the sector is less developed or as yet illegal, measures leading to a more liberal regulatory regime could still provide large growth impulses for the sector.

Written by: Bakkenist Management Consultants

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# Industrial cleaning services

In 1994, the cleaning industry confirmed that it was one of the most important sectors in Europe, both in terms of turnover and in terms of employment. The sector reached a turnover of 22 billion ECU in 1994, a 4.4%-increase over 1993. The number of employees rose by 3.5% since 1993 and totalled 2 068 000 in 1994.

The sector is still subject to restructuring, thus giving big companies (over 1 000 employees) an increasing economic power. Nevertheless, the sector is still characterised by the prevalence of small companies with less than 100 employees, which account for 86% of the total number of companies.

In the next few years, the sector will focus its attention on key-issues, such as training, quality and certification, which are essential to its professionalism strategy. The European Federation of Cleaning Industries, EFCI, which gained official recognition from the European Commission, will also work towards strengthening its political position at the European level vis-à-vis the Community Institutions.

## INDUSTRY PROFILE

### Description of the sector

The cleaning services, provided by specialised cleaning contractors, considered in the present study are the following: office cleaning, industrial cleaning (factories, nuclear power stations), window cleaning, cleaning of hospitals and public transport and small building maintenance. Some other activities may be carried out by cleaning companies but are not covered in the present study, such as security services, waste management services, laundry and dry cleaning. In some countries, chimney sweeping, facade cleaning, maintenance of areas around buildings and general sanitation are also part of industrial cleaning services.

### Main indicators

The total turnover in the cleaning industry reached 22 583 million ECU in the EU in 1994. The sector remains one of the economically most important sectors in the EU. Even if the cleaning industry does not record two-digit growth rates

any longer, as it did in the beginning of the decade, it still shows a sustained growth rate that reached 4.41% in 1994 over 1993, which lies slightly above the 1994 annual 2.6% GDP growth rate.

In comparison to last year's figures, most countries remain stable (Belgium, Germany, Spain, the Netherlands), while France, and especially the UK and Portugal, show stronger growth rates. After a relatively slack period in 1993, the French market shows a solid 10.5% growth rate in 1994. The UK continues to record two-digit growth rates with an enviable 14.9%-increase in 1994. As for Portugal, the market is booming with an impressive 15.5%-increase in 1994 over 1993. In less than three years, the Portuguese market has nearly doubled. The first three markets (France, Italy and Germany) alone account for close to 60% of the total market.

The turnover increase partly stems from an increase in the market penetration rate. Market penetration, which is a key-notion in business services, measures the share of the total potential market to the market contracted out to cleaning companies. The market penetration rate is estimated, among others, on the basis of sales of cleaning products and materials. At the end of 1994, the market penetration rate in Europe (except Finland) was estimated at 55%, a 2%-increase over 1993. Including Finland, the market penetration rate drops at 53%, given the very low penetration rate of the Finnish market. Portugal, France and the Netherlands, whose market penetration rates grew significantly in 1994, are responsible for the 2% increase. The remaining countries were stable.

It should also be noted that the market penetration rate in the public sector is, in general, 10 to 20% higher than the total penetration rate, with the notable exception of the UK. In spite of the increase in the market penetration rate, which is over 50% for most of the countries, the potential is still significant and there is no sign of market saturation.

### Recent trends

In 1994, it is estimated that public authorities (excluding Germany and Denmark) contracted out the equivalent of 6.7 billion ECU of industrial cleaning services. In the cleaning industry, the rate of public market penetration, which is systematically higher than that of the private industry, is estimated at 78.8%. The public procurement's share of the market is increasing in the EU, jumping from one third in 1991 to an average 37% in 1994. Spain (69.5%), Italy (50%) and Portugal (45.3%) are in the lead while the Netherlands and Finland (both 19%)

**Table 1: Industrial cleaning services**  
Turnover

(million ECU)	1987	1989	1990	1991	1992	1993	1994
Belgique/België	358	448	529	588	623	673	693
Danmark	333	385	401	442	576	632	570
Deutschland (1)	2 442	2 634	2 930	3 313	3 936	4 026	4 076
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	293
España	1 825	2 076	2 230	2 430	2 612	2 749	2 627
France (2)	2 181	2 693	3 065	3 976	4 242	4 339	4 793
Italia	1 964	1 997	1 971	3 906	N/A	(3) 4 500	4 702
Luxembourg	19	19	15	29	N/A	N/A	50
Nederland	721	917	1 146	1 396	1 661	1 747	1 760
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	335
Portugal	47	55	55	68	75	90	104
United Kingdom	1 723	1 610	1 563	2 395	1 875	2 243	2 579
EUR 15 (4)	11 613	12 834	13 905	18 543	15 600	20 999	22 583

(1) German data excludes former East Germany.

(2) Data prior to 1991 was undervalued.

(3) Estimate.

(4) Excluding Ireland, Austria, Sweden. For available data only.

Source: FENI

**Table 2: Industrial cleaning services**  
**Market penetration rate of cleaning subcontractors**

(%)	1989	1991	1992	1993	1994
Belgique/België	47	55	55	55	55
Danmark	23	25	30	30	30
Deutschland	N/A	65	65	65	65
Ellada	N/A	N/A	N/A	N/A	50
España	37	55	60	60	60
France	43	46	48	50	55
Italia	N/A	40	N/A	N/A	N/A
Luxembourg	N/A	60	N/A	N/A	N/A
Nederland	55	58	63	67	70
Suomi/Finland	N/A	N/A	N/A	N/A	13
Portugal	45	45	60	63	65
United Kingdom	20	30	35	39	40

Source: FENI

and France (12%) stay behind. Cleaning service contracts over 200 000 ECU, falling into the scope of the directive (92/50/EEC) on public service contracts make the greater part of the total public contracts (48%). For example, 60% in the UK and Italy, 35% in Spain and 30% in the Netherlands.

Office cleaning is traditionally more important, in terms of turnover, than any other market segment which accounted for 51.5% of the turnover in 1994. Office cleaning is the market segment in which in-house cleaning is estimated to be the most widespread. This indicates a strong growth potential of cleaning services. The second most important market segment is industrial cleaning which includes cleaning of factories, nuclear power stations, agri-food industries, with a market share of 12.6%. Coming in third, is window cleaning with 8.8%, followed by hospitals and means of transport with 5.5% and 3.8% of the total market respectively.

The cleaning industry is one the EU's largest employers, with 2 068 405 workers in 1994. Employment rose by 3.5% between 1993 and 1994 (see table 5). Growth was higher in the UK with a remarkable 24%-increase, France (6%), Portugal (5.5%) and Spain (5%). The number of workers sharply decreased in Luxembourg (-27%) and in the Netherlands (-12.6%).

Germany, with a total number of 601 600 workers, is the first European employer, followed by the UK. Another very important point to keep in mind is the fact that the majority of the workers are on part-time basis. Therefore, the number

of workers must be compared to the daily average working time to have an idea about the actual weight in terms of employment.

Women persistently have dominated in the cleaning industry and accounted for 75% of the total workforce in 1994. Blue-collar workers made up 89% of the workforce while the supervisory level made up 6.5% and the administrative level accounted for 4.5% of the remaining 11%. The share of women is higher in the blue-collar category (76%). But contrary to the common belief, women are also present in the upper classification brackets: women account for 20% of the technical staff and 30% of the administrative staff.

The prevalence of part-time work in the cleaning industry is one of its most significant features. More than 75% of the total workforce are part-time workers. At the same time, the average working time remains stable with an average of 4 hours per day.

Cleaning services are provided mostly before (in the morning) or after (in the evening or at night) the normal working hours. Only 15% of the services are performed during the day-time. The working day is usually split into two non-consecutive periods (in the morning and in the evening). Apart from Belgium where work is equally divided between mornings and evenings, the rest of the countries chiefly provide their services either in the morning (DK, P) or in the evening (D, E, SF, F, NL and the UK).

**Table 3: industrial cleaning services**  
**Number of enterprises**

(units)	1987	1989	1990	1991	1992	1993	1994
Belgique/België	915	1 002	1 017	1 023	1 144	1 198	1 219
Danmark	2 598	2 598	2 300	2 300	4 000	4 100	4 100
Deutschland	2 700	3 227	3 349	3 432	4 568	4 739	5 266
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	1 800
España	3 900	5 200	5 500	5 100	5 000	5 000	5 000
France	6 774	7 232	7 831	8 000	9 155	9 172	10 160
Italia	5 500	5 500	5 500	6 500	N/A	7 500	7 500
Luxembourg	16	N/A	40	40	39	47	55
Nederland	2 100	2 400	2 540	2 924	3 106	3 277	3 738
Portugal	120	150	150	185	226	260	290
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	2 100
United Kingdom	3 840	4 500	5 345	5 345	6 000	5 800	5 200
EUR 15 (1)	28 463	31 809	33 572	34 849	33 238	41 093	46 428

(1) Excluding Ireland, Austria and Sweden. For available data only.  
Source: FENI



## Labour costs

The minimum hourly wage for an unskilled worker in the cleaning industry (see table 8) is generally comparable from Member State to member State, averaging between 5 and 7 ECU. In Denmark, gross wages are higher than in any other EU country with 11.38 ECU per hour. Portugal has the lowest gross wage with 1.87 ECU (369 escudos). In the UK, there is no legal minimum hourly wage; therefore, the figure given below is an estimated average of minimum wages. However, the percentage of social contributions paid by the employer differs greatly from one country to another, pointing to discrepancies between national social protection systems and varying labour cost structures.

## Working time and training

The prevalence of part-time workers and the importance of fixed-term employment relationships make it difficult for cleaning companies to implement far-reaching training policies, thereby, hindering the professionalism of the industry.

In an attempt to improve the situation, the industry as a whole (companies, national professional associations and the European federation) is engaged in the promotion of training in the cleaning industry. The European federation (together with its social partner EURO-FIET) has just completed a project in the context of the Community-sponsored FORCE programme on the development of functions and training. The final FORCE report concludes with a series of recommendations which were taken up by labour and management in the EFCI/EURO-FIET joint guidelines on vocational training.

One of the priorities of the joint guidelines is basic training, defined as the "essential skills required of industrial cleaners". The aim would be to define the core content of training at the European level which could then be adapted to national or local requirements. To this end, EFCI and EURO-FIET submitted a project to the European Commission in the context of the LEONARDO programme.

## MARKET FORCES

### Demand

Broadly speaking, the cleaning service market is a market wherein demand pull is significant, due to a series of internal and external factors (e.g. economic downturn, fierce competition among service contractors, budgetary constraints on the client's side). Two current trends seem to have had a major

impact on the cleaning market: the demand for quality and a broader range of services. It is, however, difficult to either quantify or measure their impact on the industry.

### Supply and competition

There is no denying that cleaning service customers are more and more demanding in terms of quality. While customers ask for objective criteria to price a service for a defined level of quality, cleaning companies have sought an objective quality measuring system in order to avoid conflicts with their clients. The difficulty lies in finding a quality measuring system which is as objective as possible. Some countries have tackled this problem, achieving some significant results.

The Netherlands developed a system called VSR which covers about 30% of the Dutch market. A French institute (Centre Technique International de la Propreté) devised a quality measuring system which is widely used by major granting authorities (French Railways, Paris Airports, nuclear power stations). In Italy, a quality control system is implemented by the Railways (F.S) which is based on the same principles as the French CTIP-system. Finally, a German Institute (FIGR) conceived a quality measuring system which is mainly used by local authorities and hospitals.

At the same time, there is a growing interest for certification both from the client side and the company side. A substantial number of cleaning companies are certified according to ISO norms and more are in the process of earning their certification. Cleaning companies will use certification for marketing purposes and to create a quality-oriented corporate culture.

The client's demand for high quality services often clashes with a tendency to choose the lowest-priced tenderer. The companies have made their clients aware of the problem. The national professional organisations, on their part, have also contributed to the professionalism of the cleaning industry by setting up national quality labels and codes of conduct. For example, the Dutch federation launched the OSB+ certificate which is granted, on top of ISO certificates, to companies which meet a series of criteria specific to the cleaning industry. Interestingly enough, one of the requirements of the OSB+ certificate is the application of the VSR system.

A wide range of support services, other than cleaning, has been incorporated into the services offered by some companies. This was done in order to meet client demand while simplifying the process of subcontracting by limiting the number of contractors (facility management). These services include security

**Table 4: Industrial cleaning services**  
**Number of enterprises by employment size-class, 1994**

(%)	0-5	5-19	20-99	100-499	500-999	1000 +
Belgique/België	49.1	28.5	16.3	4.6	0.7	0.9
Danmark	84.6	12.2	2.4	0.6	0.0	0.1
Deutschland	(1)	(1)	65.0	20.0	10.0	5.0
España	50.4	20.0	14.0	11.0	4.0	0.6
France	(3)	(2) 84.9	11.3	(4) 3.8	(5)	(5)
Italia	(6)	66.0	22.2	8.5	3.0	0.3
Luxembourg	56.4	14.5	14.5	14.5	0.0	0.0
Nederland	63.9	22.0	13.0	0.3	0.4	0.3
Portugal	41.4	20.7	22.4	11.0	2.8	1.7
Suomi/Finland	88.8	9.2	1.4	0.5	0.0	0.1
United Kingdom	(6)	35.6	26.9	28.7	4.4	4.4

(1) Enterprises with 0-99 employees are shown under size class 20-99.

(2) Includes enterprises with 0-19 employees, with the following breakdown: 0-9: 76.2%, 10-19: 8.7%

(3) Enterprises with 0-9 employees are shown under size class 5-19.

(4) Includes enterprises with 100 and more employees, with the following breakdown: 100-199: 2%, over 200: 1.8%

(5) Enterprises with more than 100 employees are shown under size class 100-499

(6) Enterprises with 0-19 employees are shown under size class 5-19

Source: FENI

**Table 5: Industrial cleaning services  
Number of employees**

(units)	1987	1989	1990	1991	1992	1993	1994
Belgique/België	26 000	30 000	42 000	58 000	58 000	51 032	52 889
Danmark	20 000	20 000	21 000	24 000	26 000	26 000	27 000
Deutschland	430 000	490 000	457 500	466 200	473 400	601 600	601 600
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	25 000
España	160 000	175 000	190 000	200 000	200 000	200 000	210 000
France	168 000	187 000	203 700	215 300	239 481	238 727	253 583
Italia	350 000	350 000	350 000	330 000	N/A	350 000	340 000
Luxembourg	N/A	2 000	1 700	1 960	2 275	2 899	2 118
Nederland	110 000	120 000	131 450	146 000	158 107	166 122	145 115
Portugal	12 000	13 000	13 000	14 850	22 405	24 650	26 000
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	13 500
United Kingdom	256 000	260 000	270 000	300 000	277 800	300 000	371 600
EUR 15 (1)	N/A	1 647 000	1 680 500	1 756 350	1 457 468	1 961 030	2 068 405

(1) Excluding Ireland, Austria and Sweden. For available data only.  
Source: FENI

services, catering, building maintenance, green spaces and rubbish collection.

Such diversification, at first, was a trend found on the British and, to a lesser extent, the Dutch markets, but has now extended to Belgium, France and Germany. It is difficult to forecast how much further it could go, given that the demand for support services seems to be limited to a few large clients.

## INDUSTRY STRUCTURE

### Companies

In 1994, the number of cleaning companies operating in the EU was 46 428, up 3.5% over 1993. The number of companies increased by more than 10% in 5 different countries (France, Germany, Luxembourg, the Netherlands and Portugal), which testifies to the attractiveness exerted by the cleaning business on European entrepreneurs. However, as the recession hit the British industry, small businesses went down as they either went bankrupt or were incorporated into larger companies. Portugal, Spain and Italy remain stable (see table 3). The structure of the sector is characterised by the predominance of small and medium-sized companies (of less than 99 workers) which account for 86% of the total number of companies.

## Strategies

Although a great deal of small businesses go down in less than a year, their number remains stable due to a combination of two factors. Firstly, the business remains attractive to new entrepreneurs. Secondly, entry into the industry is, in most countries, not subject to any kind of barriers. However, it is worth mentioning that the number of bigger companies is on the rise, mainly through take-overs and mergers. In addition, bigger companies are growing in importance, not only in terms of turnover but also in terms of employment. For example, in France, the companies of more than 200 workers account for 51% of the total turnover and employ 59% of the total workforce but account for less than 2% of the total number of companies.

## REGIONAL DISTRIBUTION

Cleaning contractors must obviously be located close to their clients, i.e. in industrial and urban areas. As a result, there is a high level of fragmentation in the industry. Those companies (especially the bigger ones) which develop activities in several regions usually operate via a network of local agencies. In fact, most of the big groups are established in several countries (both EU and non-EU). The internationalisation of the groups is difficult to measure, however, since these large

**Table 6: Industrial cleaning services  
Share of women and blue-collar workers in the total  
workforce, 1994**

(%)	Women	Blue-collar
Belgique/België	66	94
Danmark	60	85
Deutschland	79	88
Ellada	80	N/A
España	80	90
France	63	94
Italia	80	89
Luxembourg	83	94
Nederland	68	85
Portugal	93	95
Suomi/Finland	95	92
United Kingdom	73	87

Source: FENI

**Table 7: Industrial cleaning services  
Part-time workers, 1994**

	Part-time workers (as% of total)	Average working time (hours/day)
Belgique/België	76.0	4.5
Danmark	65.0	4.5
Deutschland	80.0	4.0
España	58.0	4.8
France	63.0	4.7
Italia	80.0	4.0
Luxembourg	90.0	3.5
Nederland	82.0	4.0
Portugal	82.0	6.0
Suomi/Finland	38.6	4.2
United Kingdom	79.0	3.5

Source: FENI

**Table 8: Industrial cleaning services  
Labour costs, 1994**

(ECU/hour)	Wages	Total cost of work
Belgique/België	7.50	14.35
Danmark	11.38	14.22
Deutschland	7.60	14.05
España	5.19	8.30
France	5.55	9.33
Italia	5.24	7.81
Luxembourg	9.48	13.27
Nederland	6.69	10.97
Portugal	1.87	2.32
Suomi/Finland	5.14	9.02
United Kingdom	3.22	3.71

Source: FENI

groups often enter new markets by taking over domestic companies. Cross-border provision of services is rare and limited to neighbouring regions or specific contracts.

## REGULATIONS

In the cleaning industry, labour costs account for 75 to 85% of the companies' turnover. The cleaning industry is therefore highly sensitive to European legislation in the social field.

EFCI gives highest priority to the issue of "Transfer of undertakings", the evolution of which, are still unclear, may jeopardise the cleaning industry as a whole. More than a year has passed since the proposal amending Directive 77/187/EEC, relating the safeguarding of employees' rights in the event of transfer of undertakings, businesses or part of businesses came out. EFCI rapidly drew the attention of the European Commission to the negative consequences the extension of the Directive to contracting-out of services would have on companies within our industry. To put pressure on the Council, EFCI drew up, in March 1995, a position paper indicating that "the transfer of only an activity of an undertaking (...)" does not in itself constitute a transfer within the meaning of the Directive".

In September 1995, the Court of Justice gave a judgement on a reference for a preliminary ruling (Case Rygaard) which, for what it is worth, limits, more clearly than before, the scope of application of the Directive. But, it is still unclear how this judgement will impact on the development of the dossier "Transfer of Undertakings". This decision at least strengthens the argument in favour of the quick adoption of a legislation which would put an end to the legal uncertainty.

As an official organisation, EFCI is consulted by the European Commission in the context of the application of the Agreement on social policy of the Maastricht Treaty. The Agreement on social policy opened a new way in industrial relations whereby the social partners take part in the decision-making process in the area of European social policy. So, EFCI concretely takes part in the decision-making process and makes its views known and, in doing so, can safeguard the interests of the cleaning industry. In 1995, the European Commission consulted EFCI on three occasions: burden of proof in sex discrimination cases, flexibility in working time and security of workers and reconciliation of family and professional life (parental leave).

### Impact of regulations on companies' competitiveness

Too many regulations, costly and complex, hinder the creation of jobs. They affect the ability of companies, in particularly SMEs, to remain competitive, to thrive and to innovate. That is the main conclusion of a study conducted by UNICE in 1995 on the impact of regulations on companies' competitiveness in which EFCI took part. The cleaning industry was the object of a thorough survey covering 113 companies (85% of those are SMEs).

Companies from the cleaning industry think that regulations have a major impact on their ability to innovate. More precisely, 64% of the companies surveyed, stated that regulations made it more difficult to minimise costs and 50% said they made it more difficult to organise in a flexible way. The capability of companies to make structural adjustments - to respond effectively to changes in the competitive environment - is crucial to long-term competitiveness. Now, the survey shows that regulations create barriers to such adjustments. More precisely, 63% of the companies surveyed, stated that regulations made it more difficult for them to make staff reductions, 47% of companies felt that they created barriers to changing working practices.

More generally, 83% of the companies from the industry stated that regulations made it more difficult to grow their business because they increased labour costs (66%) and overheads (63%). Among those areas of legislation which have the greatest adverse effect on the industry are regulations concerning recruitment and dismissal (68% of companies), overtime restrictions (63%) and transfer of undertakings (57%).

## OUTLOOK

### Turnover

According to estimates, the total turnover should grow at an average rate of 2% per year to reach 24 000 million ECU in 1997 (in constant terms). Growth is expected to be highest in the UK, Portugal and lowest in Italy and the Netherlands.

**Table 9: Industrial cleaning services  
Development of turnover**

(%)	1995	1996	1997	1998
Belgique/België	1.80	1.79	N/A	N/A
Danmark	3.00	3.00	3.00	3.00
Deutschland	4.40	3.00	3.00	3.00
France	2.00	3.00	3.00	N/A
Italia	-3.00	1.00	5.00	N/A
Nederland	0.00	0.00	-1.32	0.00
Portugal	4.50	4.50	4.00	3.50
United Kingdom	10.00	9.09	10.42	9.43

Source: FENI

**Table 10: Industrial cleaning services  
Development of employment**

(thousands)	1994	1995	1996	1997	1998
Belgique/België	53	53	54	N/A	N/A
Danmark	27	27	28	28	28
Deutschland	602	610	616	622	628
France	254	243	247	252	N/A
Italia	340	336	338	345	N/A
Nederland	145	145	145	140	140
Portugal	26	27	27	28	29
United Kingdom	372	400	445	490	540

(1) Excluding Greece, Ireland, Austria and Sweden.  
Source: FENI

### Employment

In the White Paper, "Growth, Employment and Competitiveness", 17 areas were identified by the European Commission as having inherent job-creating potential. Although the cleaning industry was not specifically mentioned in the Commission's report, its problems relate to those of home services. Among others, demand from individuals and companies is directly linked to Europe's most recent demographic and sociological developments.

The issue, "home services" is being addressed by EFCI and EURO-FIET in the context of the European social dialogue. A study was launched to look at new job opportunities in the cleaning industry, notably the services to private individuals.

By the end of 1997, the cleaning industry is expected to generate close to 150 000 new jobs. Germany and especially the UK will be the most important contributors to generating employment.

Written by: FENI

The industry is represented at the EU level by: European Federation of Cleaning Industries (FENI). Address: rue de l'Association 27, B-1000 Brussels; tel: (32 2) 219 4737; fax: (32 2) 219 4531.

# Security services

## NACE (Revision 1) 74.6

*Private security, including the installation of electronic security systems, alarm monitoring centres, transport of valuables and manned guarding services, had an estimated turnover of approximately 30 billion ECU in 1996. About three quarters of the security activities in the EU, related to the sector 'manned-guarding services', are subcontracted to 7 000 private security companies employing 420 000 people, with the remaining quarter handled by corporate security divisions, employing an additional 100 000 security guards. The turnover by the private security companies is estimated at approximately 10 billion ECU, and the total number of security guards at 520 000. Figures and statistics may vary compared with previous reports. The main reason can be found in the improvement of market statistics itself, as they are reported by the national branch organisations in the EU countries.*

*The social partners for the European private security industry are EURO-FIET for the labour and CoESS for the management. The social partners initiated a formal social dialogue at European level, with the active support of the European Commission in December 1993. From the outset, vocational training has been a central concern within the European social dialogue for the security industry. Improving vocational training has been identified as a key component in raising the standards of quality, professionalism and employment in the private security industry. A primary role for the social dialogue at European level is, therefore, to give a view across the single European market and to undertake initiatives to spread innovative techniques and best practices in the field of vocational training.*

*Many Member States are working hard to improve the quality of the services provided. A lot of companies have already been certified in accordance with ISO standard 9000. Quality improvement in the education and training of employees has in some Member States resulted in co-operation with the regular police in the field of preventive supervision, in some cases leading to private-public partnership between the regular police and the private security sector.*

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### INDUSTRY PROFILE

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#### Description of the sector

The term 'security' applies to a variety of specialisations within the sector. This monograph is mainly based on data concerning the 'manned guarding' sector, but also provides some information on transportation of valuables and other related and ancillary specialities.

In only a few European countries, is there the opportunity to obtain reliable statistic figures about the total (financial) volume in relation to private security. Because of the specific legislation in the Netherlands, it is possible to get an impression of the total private security market, including the installation of electronic security systems, alarm monitoring centres, manned-guarding etc.

We can compare the situation in the Netherlands with the other EU-countries, by means of population size. In the Netherlands, with 15 million inhabitants, each head of the total population contributes 76.6 ECU to private security per year (situation 1994). To obtain an indication of the total volume in the EU-12 (340 million inhabitants), we estimate that in private security a total amount of approximately 26 billion ECU is involved, or an estimated turnover of 30 billion ECU in 1996.

It is interesting to observe the build-up of interest groups in Europe. Organisations are established by manufacturers, suppliers, users and third parties, such as insurance companies. They all may be considered as caretakers of the security sector in the EU, founded by existing national organisations. For example the Confederation of Private Security Services (CoESS) for the manned guarding sector, is also supported by the members of the Federation of European transport of valuable (ESTA). Now, in 1996, nearly all EU member countries are already members or have applied for full membership of the National Branch organisation in each country.

The Association of European Manufacturers of fire and intruder alarm systems (Euroalarm) plays its active role on an European level. Eurosafe, the European committee of Safe Manufacturers Association make considerable efforts with respect to the research and normalisation of the production of safes throughout Europe.

The European members of the American Society for Industrial Security (ASIS) founded ASIS-Europe. ASIS members are mostly individuals, involved in private security and can be considered as the 'users' of the service industry.

Industry co-operation has also been established with already existing organisations involved in accreditation, such as the European Organisation for Testing and Certification (EOTC). The EFSAC (European Fire and Safety Advisory Council) plays a vital role in certification requirements. Also a member of EFSAC, the European Association for national insurance companies (CEA), issues guidelines for security components and security installations, amongst other things. LISS (Ligue Internationale des Sociétés de Surveillance) also represents the industry at the European level.

All together some 28 European organisations are involved in private security, insurance companies as well as manufacturers, suppliers and users of security services, playing their role in accreditation, certification, normalisation.

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### MARKET FORCES

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#### Demand

All over Europe, the beginning of the nineteenth century saw the advent of night security services, usually on a small scale, active locally and often established in industrial areas. Not until after the Second World War did substantial growth occur due to a number of factors: increasing industrialisation and the prosperity it brought; increased crime; weakened social supervision by the environment (family, church etc.); increased awareness of entrepreneurs of the necessity of protecting their own belongings instead of considering this a responsibility only for the authorities or the police. Preventive security activities are carried out by security staff employed by the company itself, as well as by employees of the contracted private security organisation.

The growth of the private sector was greatly enhanced, because businesses frequently chose to concentrate on their own field and hive off disparate tasks. After industrial cleaning maintenance and catering, security activities were also increasingly subcontracted. Besides subcontracting we find the birth of the "externalisation" concept meaning that "corporate" security guards are transferred to a security organisation especially selected for the purpose which employs them in legal terms.

In this new form, existing security activities are continued on a contract basis, similar to the process of privatisation of government tasks.

Preventive security has also become a profession and the duties have become more complex. Whereas in the past they were mostly concerned with porter services and mobile surveillance, present-day security guards perform extremely critical tasks

**Table 1: Security services  
Main Indicators, 1994**

	Total number of security employees	Own security division companies	Private security (%)	Share of subcontracting inhabitants	Security guards per 100 000
Belgique/België	11 178	2 500	8 678	78	112
Danmark	10 000	3 000	7 000	60	150
Deutschland	176 000	70 000	106 000	60	132
Ellada	2 000	600	1 400	70	20
España	53 000	500	52 500	99	132
France	70 000	7 000	63 000	90	125
Ireland	5 150	1 350	3 800	82	147
Italia	43 260	1 081	42 179	98	75
Luxembourg	800	240	560	70	200
Nederland	17 500	6 000	11 500	66	117
Österreich	6 000	1 500	4 500	75	56
Portugal	15 000	4 500	10 500	70	146
Suomi/Finland	3 500	N/A	N/A	N/A	69
Sverige (1)	16 000	N/A	N/A	N/A	184
United Kingdom	90 000	49 560	40 440	67	485
EUR 15	519 388	N/A	N/A	N/A	N/A
Norge	3 500	N/A	N/A	N/A	81
Schweiz/Suisse	7 500	N/A	N/A	N/A	110

(1) 1996 data.  
Source: CoESS

within the framework of the total management of extensive projects, involving a wide range of crucial security functions.

In large industrial plants and exhibition operations, security guards are in charge of not just access control but also fire prevention and sometimes fire protection. They perform tasks in traffic control and parking supervision on the grounds or beyond and provide first aid. For all these purposes they man control rooms from where the security of the production process in the widest sense is monitored.

Another reason for the growth is the diversification of the security services sector. The uniforms (often an element of identification), recognisability, mobility and up-to-date communication equipment represent an infrastructure that allows private security organisations to explore new fields of activity such as operating bridges and locks in water-abundant areas, in nature reserves or preventive supervision in the recreational sector (campsites, beaches). Other activities include environment-screening in co-operation with companies or public authorities.

In many countries there is some form of co-operation with public authorities. For example, the budget inadequacies of the police have contributed to the development of co-operation in which the police play the supervisory role. A common example is the security check of passengers in many international airports, where private security guards screen passengers under the supervision of the regular police force and to the benefit of safe air travel. Less familiar are forms of co-operation in, e.g., the overseeing of the detained, traffic control, parking supervision in city centres and urban public transport, where drug abuse especially has caused criminal acts to multiply. Security guards are also used to protect military objects and to perform preventive activities in prisons.

### Supply and competition

In many EU countries, much is being done to improve the quality of the service. Quality is increasingly becoming a measurable element which relates to: quality/expertise of the company management; quality of the organisation, procedures, etc.; quality of the performing staff (education/training); quality of the terms of delivery.

In the countries where relevant legislation exists these rules are often seen to contribute to the quality aspect. Indeed, competition among security firms is first of all a matter of quality and much less a question of cost. In those countries where competition has focused on the cost of the service, we also find that this policy leaves no room for financial investments in quality improvement.

Although no unequivocal standard has as yet been established, it seems likely that the international quality standard for services (ISO 9000) will be applied as a certificate of quality assurance.

Several security firms have so far been certified according to this standard and no doubt more companies will follow their path.

The social dialogue at European level has increased understanding of different training systems in the Member States for the private security industry. This audience comprises of not just the management and employees in the security industry, but also of customers of security services, enterprises which provide their own security services in-house, public authorities, regulators of the security industry, as well as the general public. An effort must also be made to educate the client as the main purchaser of private security services, in order to install a culture of quality. At the European level, the social partners have a role to play in drawing up recommendations on the best practices based on minimum agreed standards.

An extensive amount of research has been carried out under the FORCE Programme of the European Union on job-profiles in the private security industry across Europe. Still, additional research is needed to assist the security industry improve its services to customers, in developing new services and creating employment. The result of the research should assist the security industry on the different national levels to improve their services for customers, to develop new service ranges and to create new jobs within the industry.

Given the importance attached by the industry to quality assurance and training of staff, it is essential to reach an agreement on commonly accepted minimum standards in the field

of training and to establish appropriate mechanisms to ensure compliance by security services, as well as the contribution of staff to the maintenance of public safety.

The promotion of best practices with regards to health and safety represent a priority for the industry, considering the specific risks linked to the performance of security services as well as the contribution of staff to the maintenance of public safety.

National laws and collective agreements provide for this training. However, the growth of the private security industry and the extension of responsibilities which security staff are expected to shoulder, mean high quality training in relevant aspects of health and safety. In addition, the security staff must be equipped with the skills and competencies that ensure not only that they are subject to the minimum risks in carrying out their functions, but also that they are able to fulfil an important role in public safety and the security of property.

## INDUSTRY STRUCTURE

### Manned guarding services

The private security industry in Europe is very much alive and with an estimated 30 billion ECU total turnover, it is an important industry in the EU.

The manned guarding sector fulfils a vital role in the service sector. CoESS members represent a turnover of approximately 10 billion ECU, produced by some 420 000 guards, employed by over 7 000 companies, which indicates that each company has an average of approximately 60 employees.

However, many of these companies, are operating in small local areas, and many of them are 'one-man-operations'. But if we look at the size of some large private security companies, which often work on an international scale, we see that in most countries 80% of the national turnover is achieved by 20% of these larger companies. This indicates that the larger companies employ 300 guards on average, and the remaining 5 000 companies have an average size of only 10-15 employees per company.

### Transportation of valuables

The security transportation sector in Europe represents: 1.6 billion ECU turnover; 48.831 persons employed; 10.941 armoured vehicles; 449 companies.

**Table 2: Security services  
Netherlands Security Market, 1994**

	ECU x 1Million (million ECU)	Sector (%)
Manned- Guarding	264.30	23
Installation/Electronic Systems	425.20	37
Security Equipment	172.40	15
Alarm Monitoring Stations	23.00	2
Transport of Valuables	57.50	5
Council/Advice	11.50	1
Locks etc.	195.40	17
Total	1149.30	100

Source: CoESS

This sub-sector of the private security industry, operates in some countries of the European Union, under very strict national regulations. In addition to the regulations for guarding, the transportation of valuables is submitted to regulations regarding the vehicles, the weapons and the employees' personal protection, as well as a number of detailed requirements on the form of providing such services.

The activities of armoured transportation include diverse activities such as: coin processing; cash and note processing; cheque encoding; ATM servicing.

Interesting developments have influenced the transportation of valuables in the course of 1995. In particular, a trend towards the concentration among enterprises and the emergence of strong international groups should be remarked. Progress towards increased concentration has often been an important stimulus for the restructuring of enterprises.

Securities AB from Sweden has taken over the number 4 company in Germany, the DWS Security Co and Raab Karcher Sicherheit transport activity, becoming the leading group in the European Union. The company operates in 11 European countries, employing around 27 000 people, guarding services included.

Recent attacks on armoured vehicles have strongly influenced the adoption of stricter rules and of modern technology. In Belgium, for example, new legislation was recently adopted

**Table 3: Security services  
Market leaders, 1994**

Country	Company
Belgique/België	Group 4 Securitas - IMS SA, GMIC Security SA, Securis-Securair
Danmark	Falck Securitas A/S, Cerberus Group Denmark, Dansikring A/S
Deutschland	Raab Karcher Sicherheit, DSW, Koetter Sicherheit, Nieder-Sächsische Wach- und Schliessgesellschaft
España	Securitas, Prosesa
France	Protectas, ACDS, SGI
Ireland	Securicor, Group 4, Securiforce Ltd.
Italia	Vigilanza Città di Milano Spa, Corpo Vigilanza, Prov. di Milano
Luxembourg	Securitas SA Securicor SA, Securite Civile S.A.R.L.
Nederland	Nederlandse Veiligheidsdienst, Randon Beveiliging, VNV
Österreich	Group 4 Securitas, Ostereirchische Wachdienst
Portugal	Securitas, Ronda, Grupo 8/Transegur
Suomi/Finland	Suomen Teollisuuden Vartiointi Oy, Suomen Vartiointi ja Sulkemis Oy
Sverige	Securitas AB with subsidiaries, Partena Security AB, Svensk Högsäkerhetsjänst AB, Argus Vakt AB
United Kingdom	Group 4, Securicor, Rentokil, Reliance
Norge	Securitas A/S, Verdisikring A/S, Norsk Industrivakt A/S
Schweiz/Suisse	Securitas AG, Protectas SA, Wache AG

Source: CoESS

and requires, among other things, complementary security devices for the transportation of cash, such as the self-destruction of valuables in case of attacks.

The introduction of the EURO currency will greatly affect the transportation of valuables over the next few years, with unprecedented changes to the present flux of bank notes across Europe. Therefore, it becomes essential to ensure that cross-border provision of services in this field will not be hindered by conflicting national regulations. Another change with which the sector will be increasingly confronted is the growing relevance of home banking, 'plastic money' and electronic purse systems. A certain reduction in monetary circulation is already noticeable.

## REGULATIONS

Most Member States have introduced an impressive set of detailed and often conflicting regulations governing the provision of security services. One noticeable exception is the United Kingdom where no government rules exist whatsoever. Germany too, considering the extent of the sector there, takes a position of its own. This country does have some incorporated legislation, but no specific legislation.

A number of duties are performed on a standard basis, though in some countries the array of duties is quite wide. In Sweden, the tasks include the production of identity cards and assistance in fire-fighting. In Germany, a considerable amount of activities are connected with the maintenance of public order.

With the exception of the United Kingdom, the aspects of security services regulated in most Member States show a considerable degree of similarity, while differences prevail in the actual content of legislation. A number of countries enforce special requirements, including:

- compulsory third-party liability insurance (Belgium, France, Portugal, Spain and Switzerland);
- Belgium and France apply restrictions for those who have previously been employed professionally in the police force or have been in the military. Italy and Spain, on the other hand, make it a requirement to have accomplished one's

military service in order to be allowed to work as a security guard;

- in France it is not possible to enter the security services sector after a bankruptcy.

The requirements and the duration of the various types of schooling in Europe are quite diverse.

Laws and regulations with regard to equipment (uniform, weapons, identification and the use of dogs) and the wearing of a uniform is compulsory in most countries, but optional in four countries. The uniform should not resemble the police uniform.

The carrying of arms is permitted with the exception of Denmark, the United Kingdom, the Netherlands and Norway. In some countries, the laws and regulations with regard to arms are contained in the Fire Arms legislation of the country in question. In other countries a separate article is included in the Security legislation.

In most countries, employees in the private security services sector are obliged to carry an identity paper; Austria is an exception. In Spain, it is not really a proof of identity, but security guards can easily be recognised by a badge that each guard is required to wear.

As for government supervision, Belgium, Netherlands, Portugal and Spain require annual reporting to the Ministry in charge. In Sweden and Norway, supervision is in the hands of the police.

The amount of possible sanctions varies widely. In the Netherlands, there is only the possibility of withdrawing the licence. Belgium, Denmark, France, Norway, Portugal, Spain and Switzerland have, in addition to that sanction, the possibility of imposing fines and/or imprisonment. Other noticeable clauses include:

- security firms are not to concern themselves with or to intervene in political or labour conflicts (Belgium and France);
- in case a person offers resistance against removal a certain amount of violence may be used (Finland and Sweden);

**Table 4: Security services  
ESTA activities in the EU, 1994**

	Turnover (million ECU)	Share (%)	Vehicles (units)	Share (%)	Personnel (units)	Share (%)	Firms (units)	Share (%)
Belgique/België	65	4.1	425	3.9	1 500	3.1	11	2.4
Danmark	7	0.4	10	0.1	75	0.2	2	0.4
Deutschland	197	12.4	2 000	18.3	5 000	10.2	130	29.0
Ellada	4	0.3	110	1.0	260	0.5	12	2.7
España	141	8.9	830	7.6	3 232	6.6	15	3.3
France	380	23.9	1 641	15.0	6 892	14.1	17	3.8
Ireland	6	0.4	60	0.5	200	0.4	4	0.9
Italia	190	11.9	1 450	13.3	4 350	8.9	223	49.7
Luxembourg	5	0.3	50	0.5	100	0.2	5	1.1
Nederland	56	3.5	300	2.7	922	1.9	3	0.7
Österreich	16	1.0	150	1.4	300	0.6	4	0.9
Portugal	21	1.3	160	1.5	450	0.9	3	0.7
Suomi-Finland	2	0.1	5	0.0	50	0.1	2	0.4
Sverige	110	6.9	150	1.4	500	1.0	5	1.1
United Kingdom	393	24.7	3 600	32.9	25 000	51.2	13	2.9
EUR 15	1 593	100.0	10 941	100.0	48 831	100.0	449	100.0

Source: ESTA



**Table 5: Security services  
Employees in private security companies, 1994**

	Number of security companies	Number of security guards	Average number of employees per company
Belgique/België	69	8 678	126
Danmark	350	6 000	17
Deutschland	1 300	106 000	82
Ellada	20	1 400	70
España	550	52 500	95
France	1 400	63 000	45
Irland	160	3 800	24
Italia	788	43 260	55
Luxembourg	7	560	80
Nederland	237	11 500	49
Österreich	50	4 500	90
Portugal	120	10 500	88
Suomi/Finland	320	3 500	11
Sverige (1)	270	16 000	59
United Kingdom	1 500	90 000	60
EUR 15	7 141	421 198	59
Norge	55	3 500	64
Schweiz/Suisse	50	7 500	150

(1) 1996 data.

Source: CoESS

- the wages of a security guard must not be lower than the starting salary of a police officer (Greece);
- approval from the Prime Minister is required if someone wishes to exercise other activities simultaneously with security activities (Austria);
- each private security organisation is assigned an exclusive number. This number must be mentioned on any document and in any publication the firm produces (Spain).

The industry has considerable potential for expansion; both in terms of services offered to clients and the extent to which employment can be generated. This growth can best be supported where a high degree of professionalism across the whole private security industry is assured.

Completion of the European Internal Market, the introduction of a single currency and progress with regard to the Schengen Agreement should prove unique opportunities for the growth of security services provided across borders. Still, a number of obstacles persist, due to conflicting national regulations. This is particularly true for the transportation of valuables, where the ease of operating in third countries appears greater than that of operating within the EU itself.

Where national systems of regulation of the private security industry promote different standards along borders, a situation of unfair competition can arise. The European social partners in the private security industry urge the European Commission to investigate this problem and to examine ways that national systems of regulation in the private security industry can best insure fair cross border competition combined with high levels of professionalism and high quality employment.

## OUTLOOK

Europe proves to be an interesting market for private security. Progress in completing the Internal Market for security services and further development of sub-contracting will lead to further growth of the industry on the national as well as the international level. Growth for the total sector is expected to be approximately 5-8% in the coming years.

Written by: CoESS and ESTA

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# Car rental

## NACE (Revision 1) 71.1

There have been positive developments in recent years in the market for car rental services. The total fleet of cars for short term rentals in EU countries grew by more than 13% in 1994. Over the period 1985-1994, the average annual growth of the number of passenger cars for short term car rental reached 3.7% (excluding Germany). Growth rates, however, differ by country.

The business segment of the market, for both short and long term car rental, is especially affected by general economic conditions as traffic intensity increases with economic growth. The private market segment of the short term car rental market, which mainly consists of car rentals for leisure activities, not only depends on the economic development, but is also influenced by customer attitudes. The increasing popularity of the fly-drive and, to a lesser extent, the rail-drive concept, in combination with price reductions, are indications for further market growth in the coming years.

In view of the expected moderate economic growth in the coming years, the growth of tourism and the trend towards more adventurous vacations, growth in the car rental industry will most likely be between 3-4% per annum for both short and long term car rental.

### INDUSTRY PROFILE

#### Description of the sector

In the new NACE classification car rental is grouped under group 71.1 officially called renting services of automobiles. The services falling under this category are described as leasing or rental services concerning private cars and light vans, up to 3 500 kg, without drivers. Compared with the NACE 1970 classification this means that rental services for trucks weighing over 3 500 kg are not included.

Car rental is an important subsection of Division 71 of the new NACE classification, in terms of turnover. As in the former classification, car rental with driver is not included, as this belongs to the taxi business classified in NACE Class 60.22. A distinction can be made between short term rental (a few days) and long term rental (contract hire and leasing). The latter is basically used for business purposes. Short term car rental is used for business and tourism purposes.

The total turnover of the EU market for short and long term car rental is estimated at 16 billion ECU, of which, 30-40% is accounted for by the market for short term car rental. The largest short term car rental markets can be found in Germany, France and the United Kingdom. Together these countries have a total fleet of 420 000 cars for short term rentals or 65% of the total EU-12 fleet. The United Kingdom has the largest fleet with 154 600, followed by France (145 000 cars) and Germany (120 000 cars). The entry of Austria, Sweden and Finland into the EU will increase the total EU fleet of passenger cars by 4-5%.

On the market for long term car rental, Germany is by far the largest market with a total number of vehicles consisting of 2.2 million cars and an estimated 250 000 light vans in 1994. The United Kingdom ranks second with nearly 1.2 million passenger cars and 85 000 light vans.

#### Recent trends

##### Short term car rental

Looking at fleet size as an indicator, the market for car rental services has developed positively in recent years. The total fleet of cars for short term rentals of the EU-12 countries has grown by more than 13% in 1994. In the early 1990s, however, the EU market for short term car rental has been negatively influenced by the economic recession in 1993. From 1991-1993, the growth rate dropped to a relatively low annual level of 3%. In some EU Member countries the levelling off of aggregate growth rates due to economic recession has had a negative impact on utilisation rates, and has caused a decrease in the number of rental cars. From the country-specific data it appears that the car rental branches in the United Kingdom and Germany have been hit hardest by the recession. In contrast, France and Spain recorded considerable growth during the same period. These different developments can be explained by different structures of market demand. In the United Kingdom, for instance, market demand is dominated by the business sector, while car rentals in France and Spain are mostly for private/leisure purposes. As business demand is stronger correlated to the economic performance than private and tourism demand, both markets will demonstrate different developments.

Over the period 1985-1994, the average annual growth of the number of passenger cars for short term car rental reached 3.7% (excluding Germany). Growth rates, however, differ drastically per country. While the fleet of passenger cars more than tripled in Belgium, and nearly doubled in France, Spain,

**Table 1: Car rental  
Main indicators, 1992**

	Number of enterprises	Turnover (million ECU)	Number of persons employed
Belgique/België	(1) 607	817	(1,5) 1 202
Danmark	(4) 293	(1) 180	(1) 1 253
Deutschland (2)	4 735	4 807	N/A
Ellada (3)	(4) 585	N/A	1 397
España (2)	1 065	N/A	4 894
France	1 179	2 295	10 357
Ireland (3)	45	N/A	405
Luxembourg (1)	16	N/A	125
Nederland (1)	618	1 711	4 000
Portugal (6)	85	461	2 209

(1) 1991

(2) 1990

(3) 1988

(4) Number of local units.

(5) Number of employees.

(6) Covers only enterprises with at least 5 employees.

Source: Eurostat; Mercure

**Table 2: Car rental**  
**Number of vehicles for short term rentals**

(units)	1985	1987	1989	1991	1993	1994
<b>Number of cars</b>						
Belgique/België	3 875	7 406	7 249	11 500	15 000	14 000
Danmark (1)	N/A	N/A	5 256	5 450	5 270	6 000
Deutschland (2)	53 000	57 000	65 000	125 000	110 000	120 000
Ellada	13 200	N/A	12 800	24 000	27 800	30 000
España	30 000	25 000	33 000	31 500	40 000	60 000
France	78 000	90 000	95 000	105 000	140 000	145 000
Ireland	9 000	9 500	10 500	11 750	14 250	15 500
Italia	30 000	36 000	38 000	41 000	40 000	43 000
Luxembourg	N/A	1 535	1 650	1 650	1 450	1 305
Nederland	11 185	15 300	17 000	19 000	22 500	25 000
Österreich	1 900	2 609	2 724	3 150	2 635	2 383
Portugal	12 035	16 600	23 500	24 750	23 370	29 340
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	13 200	19 000	23 000	23 000	18 000	19 000
United Kingdom	110 000	13 000	140 000	132 800	128 500	154 600
<b>Number of light vans</b>						
Belgique/België	760	1 648	1 748	1 835	1 800	1 700
Danmark (1)	-	-	-	-	-	-
Deutschland	N/A	N/A	N/A	N/A	N/A	N/A
Ellada (3)	0	0	0	0	0	0
España	650	600	1 250	1 170	2 000	3 000
France	35 000	35 000	35 000	50 000	45 000	45 000
Ireland	70	N/A	N/A	N/A	N/A	N/A
Italia	2 200	2 300	2 800	3 400	3 100	3 050
Luxembourg	N/A	120	120	120	100	115
Nederland	4 555	5 000	5 500	6 000	7 250	7 350
Österreich	180	210	302	320	300	400
Portugal	280	350	2 347	4 240	5 030	5 907
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	2 900	3 000	3 000	3 700	2 700	2 500
United Kingdom	30 000	33 000	38 000	34 200	37 000	50 300
<b>Number of commercial vehicles</b>						
Belgique/België	290	514	720	470	500	460
Danmark (1)	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland (2)	13 000	14 000	15 000	35 000	20 000	20 000
Ellada (3)	0	0	0	0	0	0
España	N/A	N/A	45	40	50	60
France	N/A	N/A	15 000	16 000	16 000	16 000
Ireland	100	N/A	N/A	N/A	N/A	N/A
Italia	N/A	N/A	N/A	N/A	N/A	N/A
Luxembourg	N/A	5	5	N/A	N/A	N/A
Nederland	501	600	650	700	760	800
Österreich	70	70	84	100	85	100
Portugal	N/A	N/A	N/A	N/A	N/A	3 173
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	N/A	N/A	N/A	275	200	200
United Kingdom	12 500	18 000	27 000	12 500	14 000	18 300

(1) Light vans included in cars.

(2) Excluding former East Germany for 1985-1989.

(3) Not rented

Source: ECATRA

Greece, Portugal and the Netherlands, growth rates were much smoother in Italy and the United Kingdom over the same period.

The average rental length of short term rentals is 4 to 5 days, which equals a rental value varying from 120-160 ECU. For light vans and commercial vehicles, the average period is 2-3 days. The average rental length appears to remain rather stable and is not influenced by weak demand. The average rental value, however, might differ as economic downturns lead to a shift in demand towards cheaper cars. Economic downturns also influence car utilisation rates. The utilisation rate is the percentage of time the vehicles are actually rented. For cars this rate varied between EU countries from 60% to 78% in 1994.

#### *Long term car rental*

The market for long term car rental heavily depends on business demand. For this reason this market is more sensitive to economic developments compared with the market for short term demand, which has a more diversified demand structure in most countries. Despite some fluctuations in demand, the number of cars for long term rentals has grown rapidly over the 1985-1994 period. For six Member Countries (Belgium, France, Italy, Netherlands, Portugal and the United Kingdom), aggregated annual growth was nearly 19% during this period. Until 1991, growth rates were even higher. Due to the recession in the early 1990s, growth rates slowed to a modest 2.4% per annum, sometimes followed by a reduction of the car fleet in some countries. In the course of 1994, however, the market has started to recover.

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## MARKET FORCES

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### **Demand**

With respect to market demand, a rough distinction can be made between the business and the private segment. The latter segment is largely dominated by tourism. In most Southern European countries, the private segment is larger than the business or corporate market, which in contrast the latter segment is larger in Germany and in other Western European countries..

The business sector is especially affected by general economic conditions as traffic intensity increases with economic growth. At airports and to a growing extent at railway stations, car rental companies have outlets in order to take advantage of the ongoing business traffic growth. For business travellers the supply of car rental services at these locations is meeting their demand for flexible and efficient transportation to their final destination.

Economic growth also has an impact on the amounts people are willing and able to spend on leisure and holiday. The private market, which mainly consists of car rentals for leisure and tourism activities, however, is also influenced by customer attitudes. The trend towards more adventurous vacations has stimulated car rental sales in holiday destinations. The fly-drive concept, either booked in advance or privately arranged, also increases the tourist's flexibility and reduces his dependence on often poor public transport.

In some countries, accident replacement is an important source of business for car rental companies. In Germany, for instance, accident replacement is the most important market sector, commanding 30% of total turnover. Due to the increasing competition and the market power of insurance companies, prices in this market are under pressure.

### **Supply and competition**

Fierce competition exists between the big internationally operating car rental companies, which is reflected in their pricing policies, product and service elements and in distributional aspects. These companies court the business sector as well

as the leisure sector with a flexible pricing policy, which is based on partial cost cogitating. At the same time, the performance standards (car plus service) have been expanded and improved substantially. Induced by the increasing competition and the high growth rates in the swelling pan-European market, a lot of attention has been given to cost reductions, speed of service and economies of scale in the operating systems. As a consequence, the modern computerised reservation systems have become an essential competitive edge.

Companies, in short term rentals, compete for the customers by offering all kinds of services. Express desks, self-service returns and reward schemes for frequent clients (e.g. Avis's Club, Hertz's Gold Club and Eurodollar's First Choice Card) appeal to the business clients. For the leisure traveller, rental companies have organised all kinds of arrangements together with airline companies and tour operators. Examples of a successful new product is the fly-drive arrangement. Following this success, rail-drive arrangements and rail-sail-drive arrangements are now available.

Besides the price and service aspects of competition, the comprehensive presence at major locations, such as airports and railways, and package deals with tour operators, as well as travel agents and hotels have become of strategic importance in order to attract new business.

In response to the growing need for advantageous financial agreements, competition on the market for long term car rentals is also intensifying. This intensifying competition forces leasing companies to focus on driving down costs and improving customer service. Furthermore, bank-owned lessors are being threatened by manufacturer-owned lessors. Business travel sales for car leasing are increasingly characterised by long-term agreements with large companies and by aggressive promotion of extras, such as car phones, reduced administration, etc.

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## INDUSTRY STRUCTURE

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### **Companies**

The short term car rental market is dominated by a few big internationally operating companies; Avis, Budget, Eurodollar, Europcar and Hertz. Together, these five multinationals represent over 50% of the market in Western Europe. The remaining share of the car rental market is accounted for by a large number of small, medium sized and larger firms of local, regional and nation-wide importance, which in turn frequently enter into horizontal cooperation arrangements in order to improve their efficiency.

With over 5 000 outlets in 120 countries, Hertz is the world's largest vehicle rental and leasing organisation. Ford Motor Company has had a 50% share of Hertz since 1987, Volvo a 28% share since 1988 and Commerzbank 5%. After Hertz, Avis is the second largest car rental firm world-wide. Avis Rent-A-Car is a subsidiary of Cliva holdings, which in turn is a consortium of General Motors (26%), Avis (9%) and Luxembourg owned Lease International (65%). Europcar is one of the world leaders in car rental and the leading rental company in Europe. Europcar is jointly owned by Volkswagen and the Accon Group and has a network of over 4 500 rental points in 120 countries world-wide.

Budget is the third largest car rental company world-wide with a fleet of 250 000 vehicles and 3 600 outlets in 140 countries. It operates its own network (in Belgium and in France), as well as a franchise network. In Germany, a partnership between Budget and Sixt is operative. This partnership has been an important factor in the increasing success of Sixt.

Eurodollar International is the European franchise of the American group Dollar Rent-A-Car Inc. Dollar in turn belongs to Chrysler Corporation, which also owns Thrifty Rent-A-Car.

**Table 3: Car rental**  
**Number of vehicles for long term rentals**

(units)	1985	1987	1989	1991	1993	1994
<b>Number of cars</b>						
Belgique/België	25 000	38 000	58 000	101 500	110 000	130 000
Danmark	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland	(1) 700 000	N/A	(1) 1 200 000	2 200 000	2 475 000	2 200 000
Ellada	N/A	N/A	3 200	5 000	9 000	10 000
España	N/A	N/A	5 500	7 000	(2) 12 000	20 000
France	143 000	180 000	260 000	335 000	405 000	416 000
Ireland	N/A	N/A	N/A	N/A	N/A	N/A
Italia	85 000	115 000	80 000	105 000	115 000	122 000
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A
Nederland	85 000	136 000	182 800	213 670	265 000	250 000
Österreich (3)	-	-	-	-	-	-
Portugal	2 800	4 000	19 000	59 600	102 500	113 937
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	610 000	960 000	1 300 000	1 260 900	1 044 800	1 196 880
<b>Number of light vans</b>						
Belgique/België	3 000	N/A	N/A	N/A	N/A	N/A
Danmark	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland	(1) 50 000	N/A	(1) 150 000	300 000	230 000	(5)
Ellada (4)	0	0	0	0	0	0
España	N/A	N/A	80	100	N/A	N/A
France	80 000	80 000	82 800	75 000	73 000	74 000
Ireland	N/A	N/A	N/A	N/A	N/A	N/A
Italia	17 000	20 000	2 600	3 000	3 360	3 300
Luxembourg	N/A	12	17	N/A	N/A	N/A
Nederland	14 550	23 280	31 200	23 140	46 000	54 000
Österreich (3)	-	-	-	-	-	-
Portugal	50	150	1 300	12 070	10 300	16 743
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	71 000	80 000	95 000	108 400	70 000	84 916
<b>Number of commercial vehicles</b>						
Belgique/België	900	N/A	N/A	N/A	N/A	N/A
Danmark	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland	N/A	N/A	N/A	N/A	N/A	N/A
Ellada (4)	0	0	0	0	0	0
España	N/A	N/A	N/A	N/A	N/A	N/A
France	60 000	60 000	61 200	64 000	64 000	64 000
Ireland	N/A	N/A	N/A	N/A	N/A	N/A
Italia	N/A	N/A	N/A	N/A	N/A	N/A
Luxembourg	N/A	45	45	N/A	N/A	N/A
Nederland	450	720	1 000	7 650	15 000	16 000
Österreich (3)	-	-	-	-	-	-
Portugal	N/A	N/A	N/A	N/A	N/A	7 840
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A
Sverige	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	60 000	60 000	70 000	36 820	31 250	55 318

(1) Excluding former East Germany

(2) Estimate based on 1992 figures

(3) Not involved - Banks & Vehicle Mfrs

(4) Not rented

(5) Included with cars

Source: ECATRA

Eurodollar has both its own and franchised outlets in 20 European countries. In 700 locations in Europe, it offers more than 70 000 vehicles (world-wide this figure is 125 000 in 1 800 locations).

The long term rental market is less concentrated than the short term market. In this market, more large companies are operative, but car rental is not their original and main activity in most cases. They are either bank owned or manufacturer owned lessors. In most cases the lessors offer a range of leasing products, although car leasing is still the most important lease product.

### Strategies

The majority of the big companies are exclusively operative in short term car rental, in some cases extended with car leasing. The small and medium sized companies, however, combine the car rental business with other activities, especially with gas stations, motor vehicle dealerships and garage repairs.

The intensifying competition forces car rental companies to review their strategies. In maturing markets, three basic strategies can be followed: specialisation in selected markets, cost reduction, and diversification. The numerous small and medium sized car rental firms try to specialise in selected market niches. They focus on the non-airport and often, local segments of the markets. These include the rental of substitutes for accident damaged cars, the rental for business purposes, the rental to tourists, and the rental for other private purposes. Large car rental companies often follow a cost reduction strategy while at the same time attaining a high performance and service level. With their large networks they are able to reach economies of scale and sharp financial and/or contractual inter-relationships.

Hertz promotes an image of cars for the more discerning customer and the weighting of its fleet is towards the upper end of the market. Hertz specialises in the business travel sector, with 75% of turnover stemming from this service. For the business traveller, Hertz offers numerous fly-drive agreements with airlines, e.g. its "Business-drive" programme in partnership with British Airways. Hertz also has an exclusive agreement with British Rail, and additional cooperation agreements exist with the national railroads of the Netherlands. The company, however, is attempting to improve its performance in the tourism sector. In Germany, for instance, Hertz has agreements with 7 000 travel agents, the Holiday Inn Group and American Express.

The car rental companies often have exclusive contracts or have partnerships with the transport companies, travel agencies and hotel chains. Avis, for instance, has exclusive contracts with the French, Belgian and Luxembourg railroads. In addition, there are cooperative agreements with most of the big travel agencies, many airlines (Lufthansa) and hotel chains. In Germany, Avis also has established a business network with the German railway system with 22 railway station rental points. Throughout Europe, Avis also has agreements with large oil and other multinational companies. In Germany, for instance, Avis cars can be rented at Aral petrol stations and Bosch service centres. Avis is considered to be the leading car rental firm in the tourist sector, working in association with about 5 500 travel agents. It provides a complete range of services from short to medium-term rentals of passenger cars and vans to hire of chauffeur driven prestige cars. In France, around half of Avis rental points are company owned with the remainder operating on a franchise basis. Avis also operates the Wizard computer reservation system.

In their distribution strategy, some differences can be observed between the big car rental companies. Avis and Hertz rely primarily on their extensive station networks at airports. Avis also has a comprehensive presence at train stations throughout Europe. Hertz has a strong foothold in British train stations. Europcar's presence at the major European airports is rather

poor. Its comprehensive presence lies in the primary and secondary cities of Europe.

The products and services provided are interrelated with the existing networks and cooperation agreements. For instance, in combination with British Rail, Hertz introduced its "Intercity drive" programme. In 1991, a number of products were introduced for the leisure traveller, like the "Holiday saver" programme in Europe. Europcar is especially active in special products in the non-airport segment of the market. Europcar operates a central booking service facilitating world-wide bookings and is the official car rental company of the Euro-Disney complex. Many of its outlets are operational through franchise holders with the company making profits from royalties on the turnover of each outlet. The company is active in the car hire self-drive and business markets.

Budget has been undergoing a policy of rationalisation over the past 8 years and has reduced its number of outlets. The company is active in the business car hire self-drive, truck hire self-drive and miscellaneous vehicle services markets. Budget's rental network consists of franchised operations, with only a small number of outlets company managed. One speciality of Budget is the provision of luxury cars. Of all car rental firms, Budget maintains the largest Mercedes fleet and is the biggest customer of Mercedes in the world.

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### ENVIRONMENT

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On average car rental activity has a negative impact on the environment. Negative considerations include car pollution and the economic costs of car accidents. Positive environmental considerations include the substitution effects resulting from rail-drive arrangements instead of using a car or aeroplane.

With respect to car pollution, some favourable developments can be noted, such as the increasing use of smaller sized cars and the use of relatively new cars in rental fleets, especially in the Western European countries. Further, car rental fleets get regular maintenance and inspection, which contributes to energy efficiency and the minimisation of harmful exhaust gas emissions. However, in Southern EU countries, car rental firms frequently have older, poorly maintained cars in their fleets.

The European Commission has adopted a proposal for the introduction of a voluntary carbon and energy tax. With this adoption, the Commission has cancelled a former proposal dating from 1992. With the current proposal Member Countries are free to decide to introduce a carbon and energy tax between 1 January 1996 and 1 January 2000. The introduction of such a tax may have a negative influence on car rental demand if the costs of taxation leads to a considerable increase of the car rental price.

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### REGULATIONS

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On 28 June 1995, the European Commission has adopted a new regulation, No EC 1475/95, about car distribution which introduces important changes designed to stimulate competition in the car sector and to strengthen the functioning of the Single Market in cars.

Following proposals from the car rental industry, the EU has made some changes in articles 10.12 and 10.13. Article 10.12 makes it clear that leasing contracts which involve a transfer of ownership or a purchase option prior to the expiration of the contract are, in reality, sales contracts, and that the leasing company in such cases is treated as a reseller. Article 10.13 of the regulation makes clear that a dealer can lease cars as well as sell them. This ensures that any dealer who offers contracts to customers will still be required to comply with

obligations imposed under the Regulation for the protection of consumers.

The envisaged harmonisation of VAT and excise duties is important for the industry as well. Currently, large differences still exist in the Member countries causing rental companies to charge different prices. For the consumer, who regularly comes from another country, prices are by no means comparable due to these differences, causing less clarity in the market. It also creates an inflexibility in international car renting.

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## **OUTLOOK**

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The current growth in the market for short and long term car rentals is expected to continue over the coming years. This growth will stem from the increasing mobility partly induced by the economic recovery, but also by an autonomic non-cyclical component. Growing business travel in the wake of the completion of the EU internal market, economic recovery in the EU, the economic development of Eastern Europe as well as continued expansion of Europe-wide tourism will stimulate the car rental market positively in the future.

Looking at the different customer markets, car rental for business purposes and for personal purposes are both expected to continue. The personal market, is expected to develop faster than the business segment. This faster growth will especially stem from a favourable tourism development and from the increasing demand by tourists for more adventurous travels.

The market for long term car rental strongly depends on the economic development. As economic growth is expected to remain moderate in the coming years, this market will also record moderate growth rates.

In view of the above, growth in the car rental industry is likely to be between 3-4% per annum for both short and long term car rental.

Written by: Netherlands Economic Institute

The industry is represented at the EU level by: European Car and Truck Rental Association (ECATRA). Address: Grafenberger Allee 363, D-40235 Dusseldorf; tel: (49 211) 685373; fax: (49 211) 660571.

# Leasing

## NACE (Revision 1) 71

*Most lease markets have recovered from the downturn in 1993. Total volumes, however, are still well below the level of the early 1990s. The market growth in 1994 especially stems from an upswing of 8.5% in leasing of motorcars. The machinery and industrial equipment segments, and road transport vehicles also recorded growth rates of 1.3% and 2.4%, respectively. The service sector, public and private services, continues to be the largest customer of leasing products, although its share has somewhat decreased. As the economic recovery is expected to continue and mobility will further increase, the leasing market will record growth in the short and medium term. This growth will especially stem from favourable developments in the car leasing segment.*

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### INDUSTRY PROFILE

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#### Description of the sector

According to the new NACE Rev.1 classification, leasing falls under division 71 which covers renting services of machinery and equipment without operator, and services of personal goods and household goods. In comparison with the old NACE '70 classification the scope of this chapter on leasing has not changed. Just like the former NACE 84, Division 71 includes both renting and leasing services of which leasing is the most important. The leasing of real estate is excluded. Renting services are also excluded in this chapter. Consequently, figures only refer to the leasing of movables, or the so-called equipment leasing. More specifically, the following types of equipment leasing will be dealt with: leasing of automobiles without drivers (part of group 71.1), leasing of other transport equipment including land transport, water transport and air transport (without permanent staff; part of group 71.2), leasing of other machinery and equipment including agricultural machinery, construction and civil engineering machinery and equipment, office machinery and equipment, and leasing of other machinery and equipment (without permanent staff; part of group 71.3).

The definition of leasing is not exactly the same in the different Member States. Comparisons across Member States, therefore, have to be interpreted cautiously. Broadly speaking, leasing refers to the transfer of a good from the lessor (the owner) to the lessee, who can make use of the good upon regular payments. While leasing concerns merely an operation on medium or long term, renting refers primarily to the transfer of a good in the short term (hours, days, etc.) between two persons on payment of a fee.

Principally, two major categories of leasing contracts are distinguished: the financial lease and the operational lease. Financial lease refers to a contract with full pay out (full amortisation). It is in principle irrevocable and does not provide for maintenance and service (the legal ownership stays with the lessor, but the economic ownership shifts to the lessee). Furthermore, in several Member States such the United Kingdom, the Netherlands, Belgium, Germany, France and Spain the financial lease includes a purchase option for the lessee at the expiration date.

Operational lease refers to a contract with non full pay out (partial amortisation): the lessee only uses the capital equipment for a portion of its normal service life, and there are normally one or more additional users. The leasing rates and payments are calculated at a fraction of the purchase value. Furthermore, an operational lease can in principle be cancelled. This form of leasing ordinarily calls for the lessor to maintain

and service the leased equipment, and the costs of this maintenance are either built into the lease payments or contracted for separately. The legal and economic ownership stay with the lessor.

In 1994, the total industry turnover for the EU-12 reached over 63.5 billion ECU and 67.4 billion if Sweden, Austria and Finland are included. The European leasing activities are mainly concentrated in Germany and United Kingdom. Both countries accounted for 60% of total EU-12 turnover in 1994.

#### Recent trends

For the EU-12 total industry's turnover has increased by a moderate 3%, which is a considerable improvement compared with the decrease of nearly 10% in 1993. With exception of France and Germany, most lease markets have recovered from the downturn in 1993. Total volumes, however, are still well below the level of the early 1990s. In Italy, for instance, turnover increased by 8.4% in 1994 to reach a value of 6.8 billion ECU against a turnover of 13.4 billion ECU in 1991. This decline is partly due to the depreciation of the Italian national currency against the ECU. But the volumes in the other EU member countries still have not reached the level of the years before the economic recession.

For France and Germany, two different developments can be observed. Since 1990 the lease market in France has demonstrated a continuous decline of turnover, whilst the German market has stabilised at 19 billion ECU from 1992 on.

Some differences can be observed in the developments of the different segments of the market for equipment leasing. The market growth in 1994 especially stems from an upswing of 8.5% in leasing of motorcars. The segments machinery and industrial equipment, and road transport vehicles also recorded growth rates of 1.3% and 2.4%, respectively. The other segments, however, saw a decline in turnover.

#### International comparison

The leasing market in the US is relatively well developed with a leasing ratio (share of leasing in total investments) above 30%. In contrast with Europe and Japan, the largest US lessors are manufacturer-owned (GE Capital, AT&T Capital Corporation and IBM Credit Corporation). Japan has lagged behind, but is now making up for it with high growth rates. The leasing ratios for the EU Member States are highest for the Anglo-Saxon countries with 30-33% for the United Kingdom and even 43-46% for Ireland. Germany for instance has a ratio of only 13-15%. With regard to the new EU Member countries, the leasing market is best developed in Sweden with a ratio of 15-20% followed by Austria with a ratio of 11-13% and Finland with only 6-7%.

The EU leasing market is far more developed than in Eastern Europe. The countries which have shown the most rapid recovery from the post-communist doldrums, namely, Poland, the Czech Republic and Hungary, are leading the development of western-style leasing in Eastern Europe. In these countries especially leasing of motorcars has stimulated market growth. The market for equipment leasing amounts to 817 million ECU in 1994 of which 57% is constituted by motorcars. In Hungary, the total leasing market equals 529 million ECU with a 40% share of motorcars.

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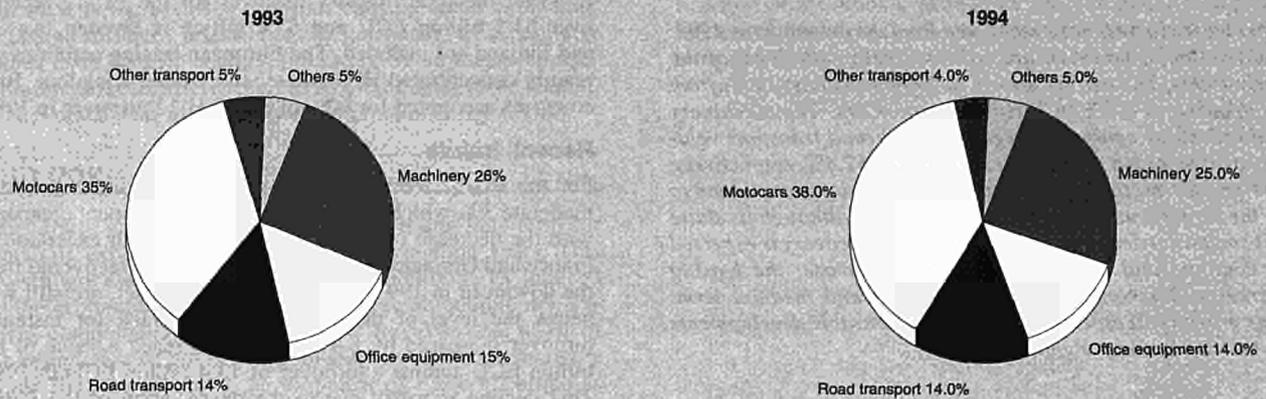
### MARKET FORCES

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#### Demand

The European leasing market has gradually undergone significant changes in terms of suppliers, customers and products. Before 1990, leasing operations concentrated on office equipment. Nowadays, all kinds of goods can be leased, ranging from machines and industrial equipment to roads transport vehicles, ships and aircraft.

**Figure 1: Leasing Equipment leased by type of asset in the EU**



Source: Leaseurope

The decreasing role of office equipment is reflected in a lower share in total turnover of leasing machinery. In 1994, only 14% of total turnover could be addressed to office equipment against 15.1% in 1993 and 17.1% in 1992. Motorcars remain the largest market segment constituting 38% of total turnover, which means an increase by three percentage points against 1993. The shares of the other segments remained fairly stable with machinery still accounting for 25% of the leasing market.

From the analysis by type of customer, it appears that the service sector (public and private services) is still the largest customer of leasing products, although its share has decreased from 53.6% in 1992 to 52.2% in 1993 to a value of 48% in 1994. In absolute terms, turnover in the services sector decreased from 32 150 million ECU in 1993 to 32 273 million ECU in 1994. This lost market, however, has been fully compensated by an increase of the manufacturing segment with 12%, thereby raising its relative market share from 35% in 1993 to 38% in 1994. Looking at the market shares for the individual countries it appears that in all EU Member countries except for Ireland, Spain, France and Italy, the services sector is the largest. In the three latter countries, however, the manu-

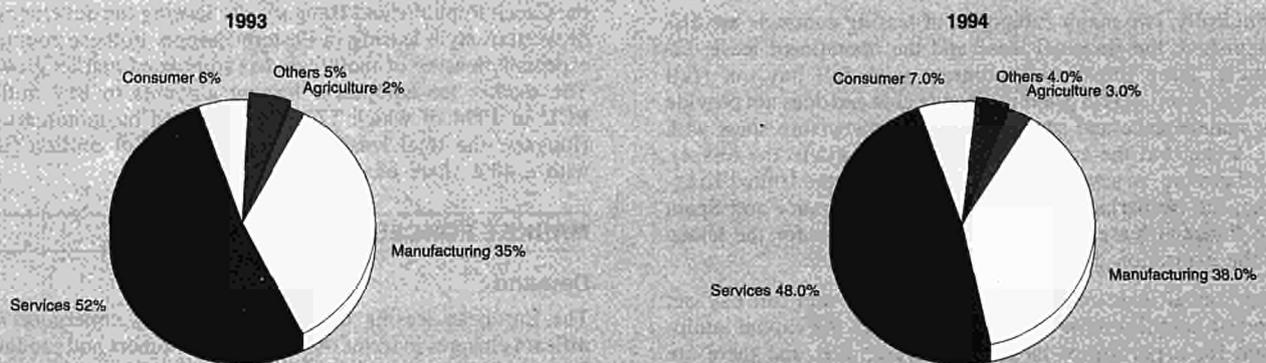
facturing industry is the largest customer of leasing equipment. In Ireland the consumer market constitutes the highest market share (37%).

The three new EU countries show some differences in demand structures. In Austria, the manufacturing industry is the largest customer with 49% of total demand. In Sweden and Finland the service sector constitutes the highest market share. In Sweden this demand especially stems from the private sector and in Finland from the public sector. Also in the Eastern-European countries demand for equipment leasing is dominated by the services and manufacturing industries both accounting for 70-80% of total demand.

**Supply and competition**

Originally, leasing companies were mainly manufacturer-owned trying to stimulate their sales by offering additional services for customers. A second family of leasing companies was formed by financial institutions which in several Member States overtook the manufacturers because of their financial expertise. The European market continues to be dominated by bank-owned lessors. But there is some indication that this

**Figure 2: Leasing Equipment leased by type of customer in the EU**



Source: Leaseurope

will change, as manufacturer-owned lessors are increasing their market shares. In 1994, Volkswagen Financial Services and Volvo Truck Finance were the fastest growing companies in lease volume.

According to the major players, leasing is a product which has reached maturity in most countries. As a result, competition in the leasing sector further increased in 1994 not only between leasing companies, but also from banks who are becoming increasingly active in leasing. Due to the intensifying competition and the resulting cost reduction by the major players, service quality and customer loyalty have become more and more important.

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## INDUSTRY STRUCTURE

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### Companies

According to the annual survey of Asset Finance and Leasing Digest, Societe Generale is still the largest leasing company in Europe in terms of portfolio size. In terms of lease volume, however, Lombard North Central/NatWest Group is the largest company with a lease volume reaching more than US\$ 7 billion. In both rankings, the rise of leasing activities of banks such as ING and ABN Amro is remarkable. It demonstrates the growing importance of banks on the leasing market.

### Strategies

The intensifying competition forces leasing companies to review their strategies. These strategies depends to a certain extent on the stage in which the leasing market finds itself in. In the still rapidly growing markets of Eastern Europe, leasing companies try to develop new leasing facilities. In already maturing markets, three basic strategies can be followed: the specialisation in selected markets, cost reduction, and diversification. The greater part of the leasing companies follow a cost reduction strategy. In the Eastern European countries including the former East Germany, the development of new leasing facilities is the most common strategy. In the other parts of Germany, the previously mentioned strategies are also being followed.

The distribution is also becoming increasingly important in a competitive environment. In order to attain new business, bank-owned lessors offer leases alongside mainstream bank products to take advantage of the parent bank's retail network and also by setting up specialised subsidiaries.

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## REGIONAL DISTRIBUTION

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Leasing activities are mainly concentrated in industrial areas. Differences between the penetration of leasing products cannot be explained by cross-border regional patterns but are more a consequence of differences in the regulatory environment between Member States. A wide variety of civil law, fiscal and accounting rules exist in the EU Member States. In some countries such as Germany and UK, this environment has stimulated leasing activity, whereas in other countries, regulations have hampered market growth. In Austria, for instance, new restrictions for the leasing sector, which are part of the reforms to the tax system and banking law, had a negative impact on leasing in particular. These reforms resulted in the loss of advantages leasing had previously enjoyed over credit companies.

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## ENVIRONMENT

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The Green Paper on remedying environmental damage was not quite clear about the question if the responsibility of any damage with leased equipment could also be addressed to lessors. In 1994, however, it has become clear that the Green Paper does not exclude financial activities from the system of strict liability for environmental damage. The EU is, nev-

ertheless aware of the potential implications of a cascading of this liability for lenders and financial institutions. LEASEUROPE has pointed out that leasing companies should not have to endure a treatment different to that reserved for credit institutions. The Federation further emphasised that credit institutions must be protected and not given inappropriate responsibilities such as the prior assessment of risks, which do not fall within their traditional sphere of responsibilities.

In this field, the Commission will undertake two studies. The first, to identify and analyse the characteristics and economic consequences of a joint compensation scheme for remedying environmental damage in Member States, the second, to analyse the way civil liability functions in Member States, in the United States and in EFTA Member Countries.

The European Commission has adopted a proposal for the introduction of a voluntary carbon and energy tax. With this adoption the Commission has cancelled a former proposal dating from 1992. With the current proposal Member Countries are free to decide to introduce a carbon and energy tax between 1 January 1996 and 1 January 2000.

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## REGULATIONS

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Since its establishment in 1991 the Accounting Advisory Forum discussed the accounting for lease contracts. With respect to accounting rules, major differences between Member States exist. Accounting operates according to two methods: the economic approach or the legal approach.

The economic approach neglects the legal content of a contract and interprets the economic content ('substance over form'). This interpretation is decisive for the capitalisation of the leased good: the economic owner is allowed to capitalise and depreciate the leased good. This means that with financial leasing, the lessee (economic but not legal owner) can enter the leased good in his balance sheet, while with operational leasing the lessor (economic and legal owner) is allowed to capitalise and depreciate the leased good. This approach is also called the Anglo-Saxon method, and is advocated in Europe by the UK, Ireland, the Netherlands and Belgium.

The legal approach gives the right to the legal owner to enter the leased good in his balance sheet. Consequently, no distinction with respect to accounting rules is made between financial and operational leasing, since the lessor stays in both cases the legal owner. This approach is used in most countries of continental Europe such as France and Germany.

During 1994, the work of the Advisory Forum on Accounting continued within DG XV. The Accounting and Taxation Affairs Committee prepared a standardised appendix for leasing contracts to be included with the statements of accounts. The document envisaged the equal recognition of the two techniques of accounting advocated. The document expressed no preference, either for the individual company balance sheet, or for consolidated balance sheets. The document has provided a base for further discussion on national and on European level.

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## OUTLOOK

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The economic recovery is expected to continue, although prospects for Germany are less positive in the short run. A better industry performance will positively affect leasing operations as investments will increase accordingly. Also in the period between 1996-1999, further growth is expected as economic growth and the accompanying increase in investments will continue. During this period the leasing market will rise to its 1992 level.

Car leasing is still the largest segment in the lease market and is expected to retain and even strengthen its leading po-

sition in the 1996-1999 period. Growth of this market will be directly influenced by the increasing mobility due to the unification of the EU market. For the same reason the leasing of road transport vehicles will be stimulated and lead to growth, although growth rates will be lower than the rates for car leasing.

Investments in machinery and industrial equipment, which show a relatively high cyclical character, are expected to increase because of the favourable economic climate. Growth rates, however, will not be higher than 2-3% per annum. The build-up of the former East Germany will result in a significant growth of leasing activities in Germany and Austria. Both countries have already benefited from the evolution in East European countries like Hungary and the Czech Republic, but it is expected that these countries will offer more opportunities for EU leasing companies.

The decline in residual value of office machinery and computer equipment is expected to continue thereby negatively influencing leasing activity in this market. This market is expected to stabilise in the coming years, although additional demand might be expected from the East European countries in this market. The negative development in leasing of ships, aircraft and railway rolling stock is expected to continue.

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# Franchising

Franchising is a means of business adaptation to local conditions without losing the benefits of global concerns, ideas and scales. Within the EU, franchising has become the most dynamic business development strategy. France is by far Europe's leading franchise country and third after the USA and Canada at the world level. The outlook is bright as franchising has an important role to play in the promotion of EU trade and has the tools for that purpose.

## INDUSTRY PROFILE

### Description of the sector

Franchising is a strategy of business development that has a remarkable success all around the world. Nevertheless, there exists a specific European form of franchising because the European culture has given franchising a specific colour, a clear concern for balance and transparency.

Franchising is a means of achieving adaptation to local conditions without losing the benefits of global concerns, ideas and scales. Therefore, Italian or Belgian franchising is quite different from German or French franchising. The basic definition of franchising, contained in the Code of Ethics, is accepted by all members of the European Franchise Federation and by the European Commission.

Franchising is a system of marketing goods and/or services and/or technology, which is based upon a close and ongoing collaboration between legally and financially separate and independent undertakings, the franchisor and its individual franchisees, whereby the franchisor grants its individual franchisees the right, and imposes the obligation, to conduct a business in accordance with the franchisor's concept.

The right entitles and compels the individual franchisee, in exchange for a direct or indirect financial compensation, to use the franchisor's trade name, and/or trade mark and/or service mark, know-how, business and technical methods, procedural system, and other industrial and/or intellectual property rights, supported by continuing provision of commercial and technical assistance, within the framework and for the

term of a written franchise agreement, concluded between the parties for this purpose.

### Guiding principles of franchising

The franchisor is the initiator of a franchise network, composed of itself and its individual franchisees, of which the franchisor is the long term guardian.

### Obligations of the franchisor.

The franchisor shall:

- Have operated a business concept with success, for a reasonable time and in at least one pilot unit before starting its franchise network; and,
- Be the owner, or have legal rights to the use of its network's trade name, trade mark or other distinguishing identification; and,
- Provide the individual franchisee with initial training and continuing commercial and/or technical assistance during the entire life of the agreement.

### Obligations of the individual franchisee.

The individual franchisee shall:

- Devote its best efforts to the growth of the franchise business and to the maintenance of the common identity and reputation of the franchise network; and,
- Supply the franchisor with verifiable operating data to facilitate the determination of performance and the financial statements necessary for effective management guidance, and allow the franchisor, and/or its agents, to have access to the individual franchisee's premises and records at the franchisor's request and at reasonable times; and
- Not disclose to third parties the know-how provided by the franchisor, neither during nor after termination of the agreement.
- Recruitment, advertising and disclosure. Advertising for the recruitment of individual franchisees shall be free of ambiguity and misleading statements.

### A specific organisation

In 1972, the European Franchise Federation (EFF) was created, as an international non-profit association assembling all national franchise associations or federations established in

**Table 1: Franchising  
Main indicators, 1994**

	Number of franchisors	Number of franchisees	Turnover (billion ECU)	Persons employed by franchisees
Belgique/België	225	3 500	3.7	27 360
Danmark (1)	42	500	N/A	N/A
Deutschland	500	20 000	11.5	N/A
Ellada	N/A	N/A	N/A	N/A
España	280	23 000	N/A	N/A
France	450	25 700	31.0	319 000
Ireland	N/A	N/A	N/A	N/A
Italia	370	18 650	8.1	46 300
Luxembourg	N/A	N/A	N/A	N/A
Nederland	341	11 975	7.9	77 400
Österreich	190	3 000	N/A	N/A
Portugal (2)	70	N/A	N/A	N/A
Suomi/Finland	N/A	N/A	N/A	N/A
Sverige	200	9 000	5.0	55 000
United Kingdom (2)	396	24 900	6.4	188 500

(1) Figures at the 03/12/1992.

(2) Figures at the 03/12/1993.

Source: EFF, national franchise associations and federations



Europe. Members of national associations are franchisors or franchising networks settled in the country.

Today, the EFF has 13 members and 2 associate members. To reinforce its statistical base, the EFF is creating the first European Franchise Data Bank. However, the following statistics are still under the responsibility of each national association and should, therefore, be interpreted more as estimations.

## MARKET FORCES

### Demand

The last 25 years have seen quite an evolution in the channels of distribution. Stronger competition resulted in increased specialisation and the emergence of new ideas, with franchising being one of them. Within the EU, it has become the most dynamic business development strategy. More than 3 000 franchisors and 140 000 franchisees achieved an annual turnover of over 90 billion ECU in 1994.

In Europe, franchising was first adopted in retail sectors, where, with some exceptions, the traditional forms of co-operation were not much used. It was also adopted in completely new business sectors, like do-it-yourself shops, fast food restaurants and car rentals. Although North American franchisors found their way to Europe, many national franchise networks were developed. Despite growing internationalisation, most national markets are still held by national networks.

### France

France is by far the leading country in Europe in franchising and comes third in the world after the USA and the Canada. In 1994, there were 450 Franchisors and 25 700 franchisees realising a turnover of over 31 billion ECU. This represents 8% of French retail turnover. Franchising in France first appeared in the northern part of the country, where the major wool manufacturers Pingouin and Phildar led the way in 1929. It then spread to the confectionery sector, giving a strong impetus to the growth of product franchising, which today represents 62.5% of all franchising in France. Within product franchising, personal equipment represents 25.6% of the Franchise market, the food industry 10.5% and home equipment 15.1%. The remaining 48.9% consists of service franchises, which at present is achieving an annual growth rate of 20% in areas such as fast food, hotels, instant printing, car maintenance, etc.

Two main characteristics of French franchising are:

- The preponderance of important French trademarks. The French are used to big names as Chanel, Yves Saint-Laurent or Pierre Cardin, who are not franchisors but are part of the French culture. The French franchising system gives much more importance to the trade mark than to know-how. The trade mark is considered the symbol of the franchise network identity.
- Foreign franchisors, which include McDonald's, Burger King and Midas, account for only 7.5% of all franchisors in France.

Franchising in France is moving towards increasingly innovative and performance-oriented forms in services for individual consumers or business. In these areas, a new trend is appearing. Franchisors are considering franchisees more like partners with an increased freedom in their actions, as long as the network's image is preserved.

Success in French franchising is best measured in terms of employment. In 1994, it is estimated that 10 000 jobs were created or saved by franchisors and franchisees.

### Germany

With 500 franchisors and 20 000 franchisees, German franchising realised a turnover of 11.5 billion ECU in 1994. Germany has become one of the most important franchising countries in Europe which at present is achieving an annual growth rate of 20% (networks). However, because of its co-operatively structured retail industry with strong "Buying Groups", franchising did not really take off until 6 years ago. It has mostly developed in food distribution (with large groups like Spar or Eisman), in pottery and household equipment, followed by personal equipment and services. Service franchising in Germany is largely made up of fast-food chains.

Growth in German franchising will receive extra stimulus from the development of eastern Länder and countries. In 1993, distribution of franchisees in the western and Eastern Länder were 81.2% and 18.8% respectively.

### United Kingdom

The United Kingdom has 396 franchisors and 24 900 franchisees which realised a turnover of 6.4 billion ECU in 1993. This represents 3.21% of British retail turnover. In recent years, growth in turnover has been 25%, mostly due to expansion in services and specialised retail businesses.

Characteristics of the United Kingdom are:

- The absence of confectionery franchises. In 1989, the UK had 7 confection franchises, while France had 150;
- The great influence of American franchises. For the US, the UK has been a natural gateway to Europe. Most US franchisors started their European strategies with an English subsidiary. Consequently, almost 30% of the franchise networks in the UK are American. The UK is the leading country for Master Franchise.

### The Netherlands

With 341 franchisors, 11 975 franchisees and a turnover of 7.9 billion ECU, franchising represents 12% of retail turnover in the Netherlands. Except in the fast food sector, developed generally in Europe by American franchisors, 86% franchisors are Dutch (soft drinks bottlers and petrol not included). Product franchising represents 73% of all franchising, the remaining 27% consists of service networks.

### Belgium

Belgium counts 3 500 franchisees sponsored by 225 franchisors with a turnover of 3.65 billion ECU. Here, franchising has revealed itself as a successful strategy for 15 years, and expands according to the French model. Product franchising is preponderant (80%), while service franchising is only recently developing. Currently, 40% of the franchise networks in Belgium are French, 30% are Belgian, with the GB Group being the largest franchisor.

### Italy

Italy has 370 franchisors and 17 500 franchisees achieving a turnover of 8.1 billion ECU. Italy experienced a sudden expansion in 1987 which lasted two years, with an important development in personal equipment. Franchising seems perfectly adapted to the needs of the country, which has experienced a severe recession and a rapidly spreading culture of individual entrepreneurship at the same time. The hotel and restaurant trades are expecting to grow in the years to come.

Still, however, franchise turnover is very low compared with total turnover, representing only roughly 1.2%. Few foreign franchisors, mostly American and French, have settled in Italy.

### Spain

Franchising is a rather new distribution channel in Spain. Taking off only in 1986, it expanded very quickly. Until 1991, the annual growth rate was almost 70%. Today, Spain has

280 franchisors and 23 000 franchisees (the annual turnover was 2.3 billion ECU in 1993).

Expansion is mostly due to foreign franchisors (especially US networks). In 1991, only 58% were Spanish. However, the trend is now changing. An important number of national networks have been established, resulting in the Spanish Franchise Association being founded in October 1993.

Spain's franchising evolution can be explained by the needs in southern Europe of primary consumption goods, where the standard of living is lower than in the north. Traditional economic areas are personal equipment, confectionery and food distribution. Service franchise is still not developed, but needs are obvious in sectors like car services, hotels, restaurants, as well as in specialised retail businesses (cosmetics, children's confection, etc.)

#### *Austria*

Till the end of 1994, the number of approximately 190 franchising systems for 3 000 franchisees have been existed in Austria. These franchising systems are usually divided in three different groups:

- The first group of the various ways of franchising possibilities can be seen as the so-called "product franchising" which roughly concerns 5% of the franchisors and 17% of all franchisees.
- The second division is usually defined as "distribution franchising". In Austria, 45% of the franchising networks are engaged in distribution franchising (for 51% of all franchisees).
- The third segment is "services trade franchising" in which 50% of all the franchisors and 32% of all the franchisees are involved.

#### *Portugal*

In the past four or five years, Portugal has experienced the same evolution as Spain. At first, there were primarily foreign trademarks (only one Portuguese network in 1986), but now national brands are developing (12 in 1989). Today, 70 franchisors are operating.

#### *Sweden*

Franchising in Sweden started in 1980 and expanded very quickly. Today Sweden has 200 franchisors and 9 000 franchisees. The annual turnover is 6 billion ECU. Product franchising represents 41%, and services franchising 50%.

#### *Denmark*

Franchising in this country has been a recent development, and little information is available. In 1992, there were 42 franchisors and 500 franchisees.

#### *Central and Eastern Europe*

In Central and Eastern Europe franchising may be a way to import managerial know-how and an efficient retail structure. Countries like Hungary have grabbed this opportunity and today have a successful franchising sector. As far as management is concerned, they have the know-how. The only drawback is that they do not have important investment capacities; a Western franchisor must have a long-term strategy and be willing to invest themselves first.

#### **Impact of the Single Market**

The most positive effect of the Single Market Programme is the freedom it brought about concerning the movement of persons, goods, Services and capital, factors which are essential for this industry. A high degree of harmonisation exists regarding the legal aspects governing this sector.

This was established before the inception of the Single Market, most notably by the Block Exemption of 1989. The regulatory

framework remains very limited, making the franchise industry an example of self-regulation.

Self-regulation is based on and enhanced by a European Code of Ethics. However, considerable barriers still exist in a number of areas. Environmental requirements, which display great differences between member states, constitute a good example of a fields where further harmonisation could prove particularly useful.

The need for a single currency and easy access to financing by small and medium sized enterprises are considered to be the most important current priorities within the franchising industry.

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## **REGULATIONS**

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While franchising occurs in many forms in the various EU Member States, its regulatory framework is very homogeneous, mainly ruled by two texts: the Block Exemption and the European Code of Ethics.

#### *The Block Exemption*

Before 1986, no specific national laws existed and jurisprudence was poor, with the notable exception of France. In this context, a French company, Pronuptia, provoked the first judgement of the Court of Justice of the European Communities favourable to franchising. Article 85(1) of the Treaty of Rome, establishing the European Economic Community, prohibits cartels between suppliers of commodities. However, the Pronuptia ruling took into account, for the first time, both the interests of the consumer and of a new economic being: the network in which franchisor and franchisee together fight their competitors, and whose identity and image need real protection. It was the first step towards a global exemption for franchising from Article 85(1). This was in recognition of the fact that consumers benefit from the combined purchasing power and higher service level that franchisees are able to offer in comparison with independent, individual entrepreneurs, and that franchising does not in itself harm competition.

After four other individual exemptions, Yves Rocher, Computerlands, Charles Jourdan, and Service Master, the block exemption for franchising was passed in 1989. The EU regulation covers product and service franchising (Art 1) only if the interest of the final consumer is taken into account (Art 4). Franchising was at last recognised as a distinct form of business, establishing a common legal basis for the development of franchising in EU Member States.

#### *The European Code of Ethics*

Since the beginning of franchising in Europe, there has been a real concern for ethics and self-regulation. The first Code of Ethics created by the French Franchise Federation in 1971, followed by a European Code in 1972 permitted a smooth development of franchising, becoming a reference for all partners of franchising: franchisors, franchisees, lawyers and consultants, administrations, and governments. It is also increasingly used by courts throughout Europe as a benchmark of franchising standards.

Since 1992, a new European Code, drafted in close consultation between the European Franchise Federation and the Directorate-General XXIII of the European Commission (which has responsibility, inter alia, for Trade and Distribution), has been promoted in all countries where the EFF has members. The absence of specific laws in EU Member States is proof, if any is needed, of the power of a self-regulating effort, a code of ethical conduct and fair behaviour in an economical environment.

*The franchise agreement (extracts of the Code of Ethics)*

The Franchise Agreement shall comply with national law, European Community law and the European Code of Ethics and any national extensions thereto.

Essential minimum terms of the agreement shall include the following:

- The rights granted to the franchisor;
- The rights granted to the individual franchisee;
- The goods and/or services to be provided to the individual franchisee;
- The obligations of the franchisor;
- The obligations of the individual franchisee;
- The terms of payment by the individual franchisee;
- The duration of the agreement which should be long enough to allow individual franchisees to amortise their initial investments specific to the franchise;
- The basis for any renewal of the agreement;
- The terms upon which the individual franchisee may sell or transfer the franchised business and the franchisor's possible pre-emption rights in this respect;
- Provisions relevant to the use by the individual franchisee of the franchisor's distinctive signs, trade name, trade mark, service mark, store sign, logo or other distinguishing identification;
- The franchisor's right to adapt the franchise system to new or changed methods;
- Provisions for termination of the agreement; and,
- Provisions for surrendering promptly, upon termination of the franchise agreement, any tangible and intangible property belonging to the franchisor or other owner thereof.

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## OUTLOOK

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Franchising more than ever has a role to play in the modernisation of commerce, not only because the existence of the network allows a rapid diffusion of technological discoveries (e.g. the computerised cash register that can process and analyse sales data), but also because franchise is a means of making alliances for the benefit of the franchisor, the franchisee and the consumer.

Franchising is adapting to a new environment and may be showing the way to a new and better model of European distribution. It should then be a means of standardisation. Franchising is a strategy that makes it possible to keep the advantage of scale economies, while respecting the identity of all the partners. Thanks to its centralised and flexible structure, and to the clear common interest which preserves the network's image, franchising makes it possible to redistribute decisions at the right level.

Now more than ever, franchising has an important role to play in the promotion of trade within the EU. Indeed, it has all the relevant tools for that purpose. It is certainly a way to grab the opportunities of a changing market. The present evolution promises a radiant future.

Written by FFF

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# Fairs and exhibitions

*Fairs and Exhibitions play an important role in modern economies. They contribute to economic development through the expansion of trade, sale and income. The only direct spending due to exhibitions can be estimated at 23 000 million ECU generated thanks to around 500 000 EU employees. If 1994 was a recovery year for the industry, 1995 and 1996 have been better in general, since most of the effects of the economic recession have already been overcome.*

## INDUSTRY PROFILE

### Description of the sector

Stemming from a long European tradition, Fairs and Exhibitions (F&E) are one of the most important business service sectors. F&E are trade activities linked to specific, extraordinary places and times in which suppliers and potential customers gather together in a co-ordinated, organised fashion, seeking to exchange goods, services, and information. Exhibition centres and organisers are those who co-ordinate the activity. They attract exhibitors and visitors interested in enhancing sales, opportunities, image, contacts, and market knowledge. Objectives differ depending on the type of event. General fairs and professional exhibitions represent the two main types of F&E, although the latter type is the more significant.

Figure 1 shows the great number and wide nature of agents involved in F&E activity. Supply is made up of organisers, exhibition centres and exhibition services. Demand is comprised of exhibitors and visitors. The affected local environment includes tourism supply (mainly accommodation, transportation and restaurants), involved economic sectors (local industries promoted as a direct consequence), the public sector (mainly local authorities and governments), and public and private investments (when improvements are made to exhibition centres and their surroundings). All these agents and activities produce exhibition activity as a whole.

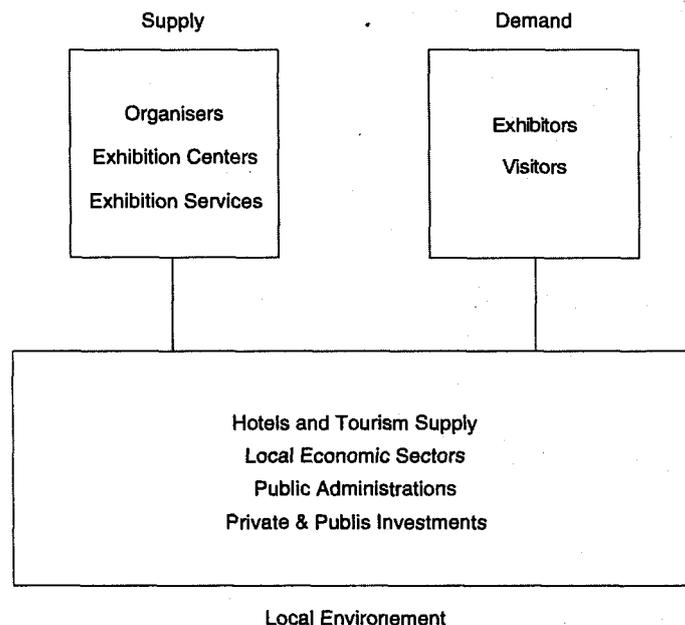
Since economic statistics are not available, some estimates have been made to measure the sector's overall economic importance. Thus, Table 1 shows available estimates from visitor and exhibitor spending, taking into account the number of major fairs in Europe. The F&E sector covers 3 500 to 4 000 fairs throughout the European Union, not counting local fairs held in small cities and villages. Depending on the criteria used, 100 to 300 exhibitions may be considered international. Located in more than 300 cities, F&E generated around 17 000 million ECU in 1990 thanks to direct visitor and exhibitor spending. Taking into account the inflation rates and the relative expansion of the sector, reasonable estimates could calculate to more than 23 000 million ECU for 1995. Exhibition spin-off effects create close to 500 000 full-time equivalent jobs, 70 000 of which are in the exhibition sector itself. Profits from sales, contracts, contacts, and other benefits resulting from exhibitions obviously cannot be estimated.

To make a country-by-country comparison of the exhibition industry, Table 2 shows the results of the Feria data base, whose data are taken from national professional associations' reports. Although some statistical problems persist in these data (e.g. coverage and methodological problems), the overall results are significant. Germany is the exhibition industry's leading country, with the highest figures in number of exhibitors, net rented area, and foreign visitors. France could be considered the second exhibition country, as it features the major European exhibition city, Paris. Exhibition activity is also very significant in the United Kingdom, Italy, Spain and the Benelux countries. Compared to these, other EU countries have but minor standing. The relative importance of major European exhibition countries is shown in Figures 2 and 3. Looking at the EU as a whole, each year the sector moves some 450 000 exhibitors all over Europe, renting 20 million sq. metres of net area. The number of fair visitors totals 63 million people.

### Recent trends

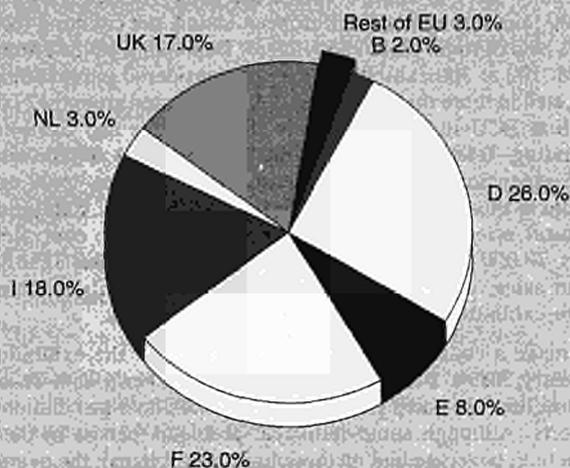
The last economic recession, starting in late 1991 for the industry was rather negative for those expansion trends coming from the 80s. As in other service sectors, the effects of the 70's petrol industry crisis were negligible, but the effects of

**Figure 1: Fairs and exhibitions  
Supply and demand**



Source: Author

**Figure 2: Fairs and exhibitions**  
**Geographic distribution of numbers of exhibitors - Annual average over 1988-1991**



Source: Author

the last crisis were important. As enterprises tightened their marketing budgets, their exhibition budgets had also been cut. Exhibitors therefore scaled down the area they rented and tried to limit their spending at fairs. Visitors reduced their spending as well, but in some exhibitions the flow of visitors was increasing. In 1993 and 1994, the situation tended to vary widely by sector, country and individual exhibitions. In some exhibitions, enterprises which decided not to attend came back; in others, they remained absent. Some enterprises trusted in exhibitions' counter-cyclical effects and consider exhibitions an important weapon for fighting against the recession. While some countries still laboured under the effects of a tough recession (France, Italy and Spain), the United Kingdom was showing an impressive speed of recovery. In 1995 and 1996 there is a general recovery of the exhibition industry, in accordance with the relative economic growth of this period. The number of fairs has been increasing and the number of exhibitors and visitors as well. However, the rented exhibition surface has moved less quickly, even if some enterprises have come back to the traditional big stands. In general, exhibitions tend to be more professional and reduced in term of space.

### International comparison

Although the major world exhibitions usually take place in Europe, the exhibition industry is also very important in the USA and Japan. Although they do not share the same historical tradition, their exhibition sector has grown greatly in recent decades. Some estimates given by the IAEM (International Association for Exposition Management) indicate that there are approximately 6 000 to 8 000 major exhibitions held each year. Estimates are that 90 million persons, including international visitors, attended US exhibitions in 1995. Investments in the USA, Japan and Southeast Asian countries have become very important lately. Atlanta, Los Angeles, Chicago, Las Vegas, Tokyo, Osaka, Makuhari, Hong Kong and Singapore are some of the cities whose international positions are advancing. As a result, the international differences between Europe, the USA and Asian cities are becoming less significant than before.

### Foreign trade

The broad, Europe-wide F&E market involves a hefty volume of intra- and extra-EU trade. There is an unfortunate lack of data and statistics on the sector, but it is possible to estimate some trade figures by looking at the following variables: direct

spending, percentage of foreign exhibitors and visitors, and percentages belonging to the EU. Assuming the percentage of foreign exhibitors and visitors to be 20% and 3% on average, and that exhibitor spending is around half of total spending, 12% of total spending in a single country may be estimated to be made by foreign countries. In overall terms, that is more than 2 000 million ECU. It is mostly intra-EU trade, since more than half of foreign exhibitors and visitors come from EU countries. The rest may be divided into two parts: spending in country of origin (20-25%), and spending in Europe. Thus, extra-EU exports may be estimated at 500 to 800 million ECU. EU spending in other countries cannot be estimated. The distribution of exports derived from spending can be seen in Figure 4.

## MARKET FORCES

### Demand

Most economic sectors use fairs as a tool for self-development. However, there are three kinds of sectors more liable to spawn exhibitions. They are: sectors with a fuzzily-defined demand, technological changes and incomplete distribution networks; sectors with a high degree of innovation, such as the fashion textile & clothing sector; and sectors with a certain degree of imperfect or asymmetric information due to their scattered supply or demand or to widely differing processes or qualities. On the other hand, strongly concentrated manufacturing industries and some highly immaterial service industries are less involved in exhibitions.

The relative importance of specialised exhibition sectors is shown in Table 3. Excluding general fairs because of their poor data coverage and increasingly clear differences with specialised exhibitions, the more important sectors are those led by textiles & clothing, lifestyle, sports, and other industries. Characteristics vary according to the indicators. For example, sectors open to the public, such as general fairs, cover a large portion of fairs, cities, exhibitions and visitors. However, they have less importance in terms of foreign participation. Professional exhibition sectors, however, cover a wide range of fairs and cities, and some of them feature high percentages of foreign participation.

Sectors which have been very active in 1995 are, for example, those related to new areas such as health, hygiene, environment, information and communication and biotechnology. Even in the more difficult field of services some fairs were successful, such as the case of franchising.

As to exhibiting companies, it goes without saying that exhibitions provide a privileged access to key markets, especially in terms of orders placed with international customers. As to visitors, it is equally important to stress the role of exhibitions in providing an overview of the changing pattern of world supply, most notably emerging products and new business networks. The major functions of exhibitions may be summarised as shown in Figure 5. According to the European survey carried out by the Paris Nord Villepinte exhibition centre, most enterprises decide to participate in order to develop a commercial policy (35.6%) and to promote their own image (26.3%). The other motivations involved are less decisive: to expand internationally (12.3%); to study the competition (10.6%); to make direct relations (8.1%) and to launch new products (7.2%). However, although some reasons are more important than others, the decision to participate in exhibitions usually involves an evaluation of a set of factors. That varies also, depending on company size. Although a considerable part of the exhibition world is linked to major enterprises, small and medium-sized enterprises are participating more than before, becoming an emerging market. Normally, sales motivations concern more SME enterprises than large firms, more worried about communication and information.



## Supply and competition

There are three types of exhibition suppliers: 1) organisers, exhibition centres and professional organisations; 2) exhibition service firms such as stand constructors, consultancies, business services, restaurants, etc.; 3) the city itself offering reception services such as hotels, infrastructures, transportation, local government policies, etc. Each type of agent has different problems and outlooks.

The major competition is concentrated around international fairs. Organisers, exhibition centres, and local administrations try to attract exhibitions from the most powerful, narrowest segment of the market. In a wide number of economic sectors, no more than 2 to 6 international fairs can be held successfully during a single year. The leaders in this market are the German cities, with competition between Frankfurt, Cologne, Hannover, Munich and Düsseldorf. In France, international exhibitions compete with one another for venues in Paris. In the UK, Birmingham and London compete for the British share of the international market. In Italy, Milan is the major city, though some other cities, such as Bologna, host some important fairs. In Spain, Madrid and Barcelona hold the major exhibitions, followed by Valencia. In the Benelux countries, the main cities are Brussels, Amsterdam, Utrecht, and Luxembourg. Other EU cities hosting international fairs are Copenhagen, Helsingør, Lisbon, Braga, Athens, Thessalonika and Dublin. Obviously, the more local exhibitions there are, the less competition they face. Scores of cities host hundreds of small and medium-size exhibitions playing an important role in regional economic development, far away from strong international competition.

The international segment of the market is well represented by EMECA the European Major Exhibition Centres Association (EMECA). Most of the major European exhibition centres are members: Basel, Barcelona, Birmingham, Bologna, Brussels, Frankfurt, Leipzig, London, Lyon, Madrid, Milan, Paris-Nord Villepinte, Paris, and Utrecht. In 1994 (see table 4) altogether they represented 2.2 million sq. m. exhibition hall capacity, 295 thousand exhibitors and close to 27 million visitors. Altogether they held more than 800 exhibitions. These figures show some significant annual rates with respect the 1993 situation: +4% growth in exhibitors and +3% growth in visitors and net rented area. This means that EMECA Exhibition Centres withstood the economic recession well, while developing high quality services.

These data also show how concentrated the sector is in the major exhibition segment. The EMECA members represent roughly 20% of the global market in terms of number of fairs, but considering the number of exhibitors assessed for European countries (for both large public and professional exhibitions, source Eurostat), they should be representing up to 50%. A great number of exhibitions held in EMECA Members' facilities are trade exhibitions and very internationally oriented events. 66% of their exhibitors attend international exhibitions while 34% attend national and regional ones.

Among the factors increasing competition, the following ones are noteworthy: the customer's increasing requirements for information, quality and prices; the growing internationalisation of markets, prices, the arrival of new mobile organisers or State intervention. It must be said that the last three ones hold much less relative importance than the other two factors, and depend on countries and sectors. Prices have not changed significantly in 1995, although the situation varies. Some countries seem cheaper than the rest in terms of the cost of renting space (Germany and the UK, for instance). In most countries, prices vary from 1 to 4, depending on individual exhibitions. Anyway, the real price of participating in exhibitions includes the costs of additional spending, living, transportation and, more importantly, the opportunity costs, the costs a firm must pay if it does not attend.

## Production process

Due to the toughening competition and the unique features of F&E, innovative processes are highly important in the sector. Firstly, new technologies are being used in an attempt to provide technical facilities for stands and transportation. Secondly, new spaces are being used to house complementary activities such as conferences, demonstrations, special meetings, etc. Thirdly, exhibition services are improving in quality and quantity. The first and third factors have taken the lead in 1993 and 1994. In addition to these 3 factors, the crucial process of innovation requires the creation and implementation of new ideas. The mix between information, technology and new ideas is becoming a key-success factor in 1995 and 1996. The use of the Internet information system provide examples of this profitable association.

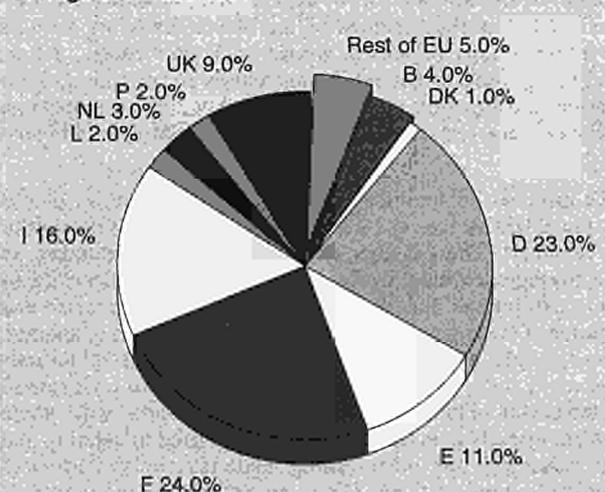
A relative rise in specialisation through training courses and staff specialisation could also be considered. However, training and professionalisation still have a long way to go before they offer real opportunities to the industry, even if 1995 has noticed advances in this field. Organisers as well as visitors and exhibitors co-produce exhibitions, regardless of the type of education and specialised skills their deputies have. General and specific skills in the economic sector involved in the exhibition are much more important than specific exhibition skills. A major source of specialisation comes from the outsourcing and externalisation of some (both routine and advanced) services, allowing for tighter concentration on the more important exhibition functions.

## INDUSTRY STRUCTURE

### Companies

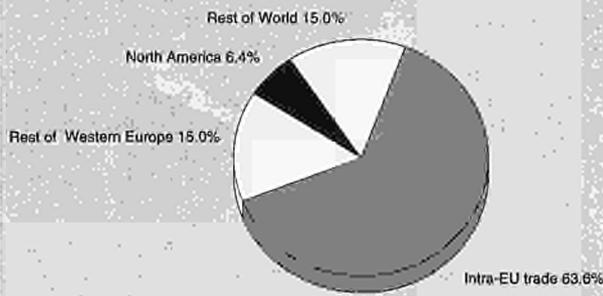
Due to the large number of local exhibitions organised in Europe and the lack of statistics, the number of companies operating in the F&E market is difficult to estimate. At least 1 200 organisers exist in Europe, since most small cities organise only one or two major fairs. However, major cities can organise between 10 and 150 events. Some estimates put the overall turnover of organisers at some 4 000 million ECU. There are two main types of organisers: those which are exhibition centres as well as organisers, and those which are independent of exhibition centres. The first case is more prevalent in Germany, the Netherlands and Denmark. The separation of functions predominates in the UK, France and the United States. When organisation and exhibition centres are the same,

**Figure 3: Fairs and exhibitions**  
**Geographic distribution of number of visitors - Annual average over 1988-1991**



Source: Author

**Figure 4: Fairs and exhibitions**  
**Distribution of EU exhibition exports, 1990 (1)**



(1) Estimates  
 Source: Author

most companies are state-run, semi-public, or public institutions. When organisers are independent, they are usually professional associations or private non-state companies.

Some of these private companies are specialists in organising exhibitions only. Most of these companies operating in Europe are British, such as Blenheim Group PLC, Reed Exhibition Companies, Andry Montgomery Network, Mac-Brooks Exhibition Limited, and EMAP International Exhibitions Ltd. Three of these produce an important percentage of their turnover in foreign countries, namely; the Blenheim Group (80% in France, Italy, Spain, Sweden, Denmark, United States, Japan and Singapore), the Reed group, (65% in France, Belgium, the Netherlands and Switzerland), and the Montgomery network (85% in USA, Germany, Saudi Arabia, Bangkok, Malaysia, Thailand, Singapore, Hong Kong, Indonesia, Australia, Africa and China).

Most of the rest of the major organisers are also exhibition centres. That is the case of all leaders German centres, especially, Messe Frankfurt, Leipziger Messe, Köln Messe, Messe München International, Düsseldorf Messe, and Messe Basel in Switzerland, the Ente Autonomo Fiera di Milano in Italy, and IFEMA and Fira di Barcelona in Spain. In some cases, the linked to exhibition centre-organisers have started to organise exhibitions far from their home city, in foreign countries, becoming a sort of hybrid linked-not-linked organisers. These are represented by the Messe Frankfurt, with its first exhibitions organised abroad in United States, Japan, and Hong Kong. Other exhibition centres and organisers have started to follow this strategy. In this way, joint-ventures and alliances are constituting key-success-factors in 1995 and 1996.

The turnover of the main exhibition centres is known thanks to the EMECA figures. Table 5 shows data on turnover for its members. These figures cover all activities undertaken by the management companies including renting space, organising exhibitions and supplying services. The character and volume of these activities varies from one exhibition to another. For example, some centres organise some or all exhibitions staged in their venues while other centres rely on external independent exhibition organisers. In the same way, some centres directly manage every function related to catering and car parking, while other centres undertake only a few and sometimes none of them. The turnover figures give an insight into the scale of activities of the companies managing these 14 major European exhibition centres.

## Strategies

During the economic recession, market dynamics remained vigorous and competition was strong. In 1995 and 1996, the recovery economic environment maintain important rates of competition. Most international exhibitions operate in narrow markets where only few cities can possibly come out on top. The major international exhibitions are held in Germany; in many sectors, the remaining countries look to secure second or third place positions. The top level of the F&E industry moves in the same way as industrial concentration processes. However, important segment of the markets allow the growth of new enterprises and avoid to have high market shares in few agents.

Three strategies can be discerned to exist as a result of the current dynamics:

- **Investments and alliances.** The economic recession might be expected to mean a reduction in investments. However, the dynamic context of the sector has averted reductions. Moreover, there was actually a surge in investments. Cities and local governments are still investing in exhibition centres; organisers and exhibition centres are investing in new services. The case of Frankfurt Messe is illustrative of this new wave of investments, since it has put money into organising exhibitions in the USA and Asia. In this sense alliances, networks and joint-ventures can be strategic elements.
- **Innovation.** The changing factors are forcing organisers and exhibition centres to outline more careful strategies, trying to reduce costs and improve the quality of exhibition services and the quality of the exhibition service itself. Customer service has become a priority, and service professionalisation is therefore on the upswing.
- **Specialisation.** Organisers look for more professional, better-specialised exhibitions, so, for example, separation between open public days and professional days remains important. Major cities and exhibition centres, however, look for a diversification of sectors and exhibitions in an attempt to get the most out of the potential exhibition days that an exhibition centre can hold. On the other hand, some medium and small cities are highly specialised in one or two sectors, which are sometimes very international. This is the case of Bordeaux (Vinexpo), Cannes (Midem), and Oslo (Nor'Shipping'), Nürnberg (Toys), among others.

## REGIONAL DISTRIBUTION

F&E play a key role in regional development. Exhibition activities generate regional spending and business in both the short and long runs. In the short run, exhibitions mean spending from visitors and exhibitors. This professional tourism involves accommodation, transport, communications, business services, leisure services, etc. Such spending is always positive to host regions and cities, regardless of the exhibition's success. But the success of an exhibition also involves additional short-term economic benefits when new contracts, distribution networks, and business are achieved. In the long-term, exhibitions can be a key factor in developing some sites, since political support runs parallel with exhibition centres' growth and infrastructure needs. From the business point of view, exhibition sectors obtain some long-term benefits since a certain rationalisation and reorientation of production and consumption is spurred by exhibitions.

There is a certain relationship between regional economic welfare and exhibition development. However, factors other than regional economic income explain an exhibition's success. Exhibitions are located in cities that feature one or more of these factors: tradition, population, income, infrastructures, tourism conditions, public investment and support policies, international city standing, exhibition centre size, and regional

industrial composition. The top exhibition cities are led by Paris, followed by the German cities of Frankfurt, Hannover, Cologne, Düsseldorf and Munich, Milan, Birmingham and London. Other cities like Bologna, Barcelona, Madrid, Amsterdam, Berlin, Valencia, Utrecht and Essen are also important. Ranking and classifications vary widely depending on the criteria chosen on which to base them.

## ENVIRONMENT

F&E are also a tool for environmental policies. New exhibition centres are rather like pilot cities, in which new methods of organisation are tested. The main ways in which F&E tend to contribute to a better environment are: a) spatial distribution (helping to clear congested areas); b) arrangement of constructions (low-rise buildings, modern lines, safe structure); c) transport organisation (intensive electric transportation, close to airports); d) waste treatment (new processes for ecological waste treatment); e) green areas and reforestation. Once an exhibition centre organises its own urban development, it begins generating positive external economies. Technological hubs, enterprise investments and infrastructure can arise, improving economic growth rates and local living conditions. In recent years, agents have been given an important emphasis to waste treatment processes. German cities in particular are studying the new ways and possibilities for procuring an effective ecological system for recycling and eliminating waste material.

It is also necessary to point out the fact that the number of fairs related to environment increasing, as a result of new social and political demands. Fairs on environment may be one the most dynamics exhibition sectors in the future.

## REGULATIONS

The State has a considerable influence on the sector. Local, regional and national administrations have certain tools for regulating, controlling and promoting F&E activities. Use of these tools varies country to country (e.g. differences between Germany and France) and city to city (e.g. differences between Birmingham and London). Some governments are more interventionist than others. In general, there are two levels of possible participation, the legal and the economic.

- Regulation issues: Regulation of general activity and the granting of rights (specific laws); granting of licenses and permits for developing activities; nationality of product imports (soon to end, due to the Single Market); criteria of recognition (e.g., nationality).
- Economic issues: Support for exhibition centres (investments in infrastructures, exhibition centre improvements); economic aid for supply (subventions for organisation, subventions for invitations and participation, special fiscal handling); economic aid to demand (export policy instrument, subventions for enterprise's participating).

Recent trends imply that legal and regulatory issues are dropping in importance, while the role of economic issues is still important, though less than in previous years though. Most regulations are not important, considering the sector's general activity. There is a general trend towards deregulation or self-regulation, which must be compatible with free movement of goods and free provision of services within the Internal Market. Following the principles of the Internal Market, existing regulations in areas such as recognition criteria based on nationality or restrictions on imports are considered contrary to Community law. The intervention of public authorities and local government in this field can affect some aspects of competition. A certain kind of economic support may be considered acceptable, provided it does not discriminate against certain operators and it respects Community competition law. Political economic support does not substantially

affect the hierarchy of F&E and fair competition. Examples of recent important investments can be found in Germany, Spain, the USA and Japan.

EU Commission policy has sometimes entered the F&E domain, not in relationship with State intervention, but in relationship with some organisers' use of their dominant positions. When an exhibition represents the vast majority of a sector, transparency and exhibitor admission are the main issues in which a dominant position can be used against free European competition. After the Commission's decisions (last one), the general principles are that the criteria for refusing to admit exhibitors must be clearly justified and that organisers' decisions must be transparent so information on exhibitions can be available in advance.

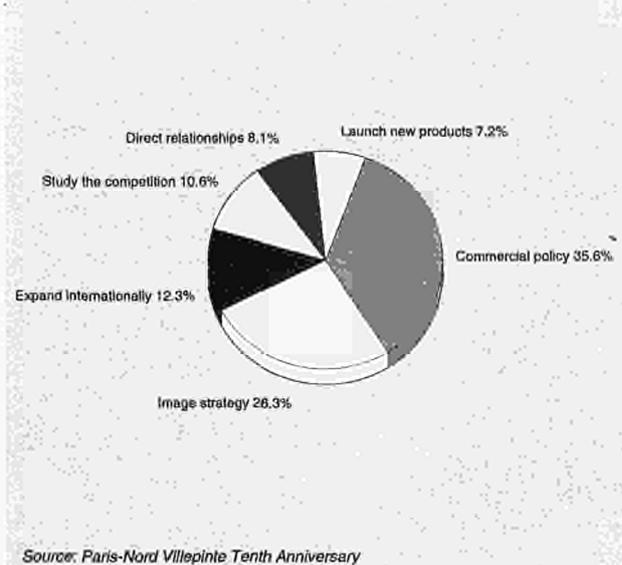
The sector is also heading towards a self-regulating system explained by the emergence of national and international professional organisations. These organisations are very active in giving prestige and training and trying to guarantee certain standards of quality (e.g. security regulations, technical standards for stand building and electronic materials, statistics through data publication, control and auditing). Professional associations' roles and coverage are expanding. The three major associations are EMECA, UFI ("Union des Foires Internationales") and IFES (International Federation of Exhibitions Services), grouping major exhibition centres, organisers and exhibition service firms respectively.

## OUTLOOK

The exhibition industry has seen clear recovery signs in 1995 and 1996, many more than in 1994 where the effects of the economic crisis started in late 1991 were still important. However, the speed of recovery and expansion varies depending on countries and sectors. It seems that there is a relationship between economic growth and exhibition activity, even if some counter-cyclical effects do exist and sometimes can be very necessary for enterprises.

Although the industry is experiencing a positive period, in general, some uncertainty coming from the last recession still remains, particularly uncertainty over the solidity of the positive cycle (some recent data indicate 1995 as an odd year), uncertainty over decision-making processes (for both demand and supply), uncertainty over organisation structure and competition (e.g., the role of alliances and joint-ventures), and uncertainty over the future of those new opportunities and

**Figure 5: Fairs and exhibitions**  
**Exhibition participation - Explanatory factors, 1992**



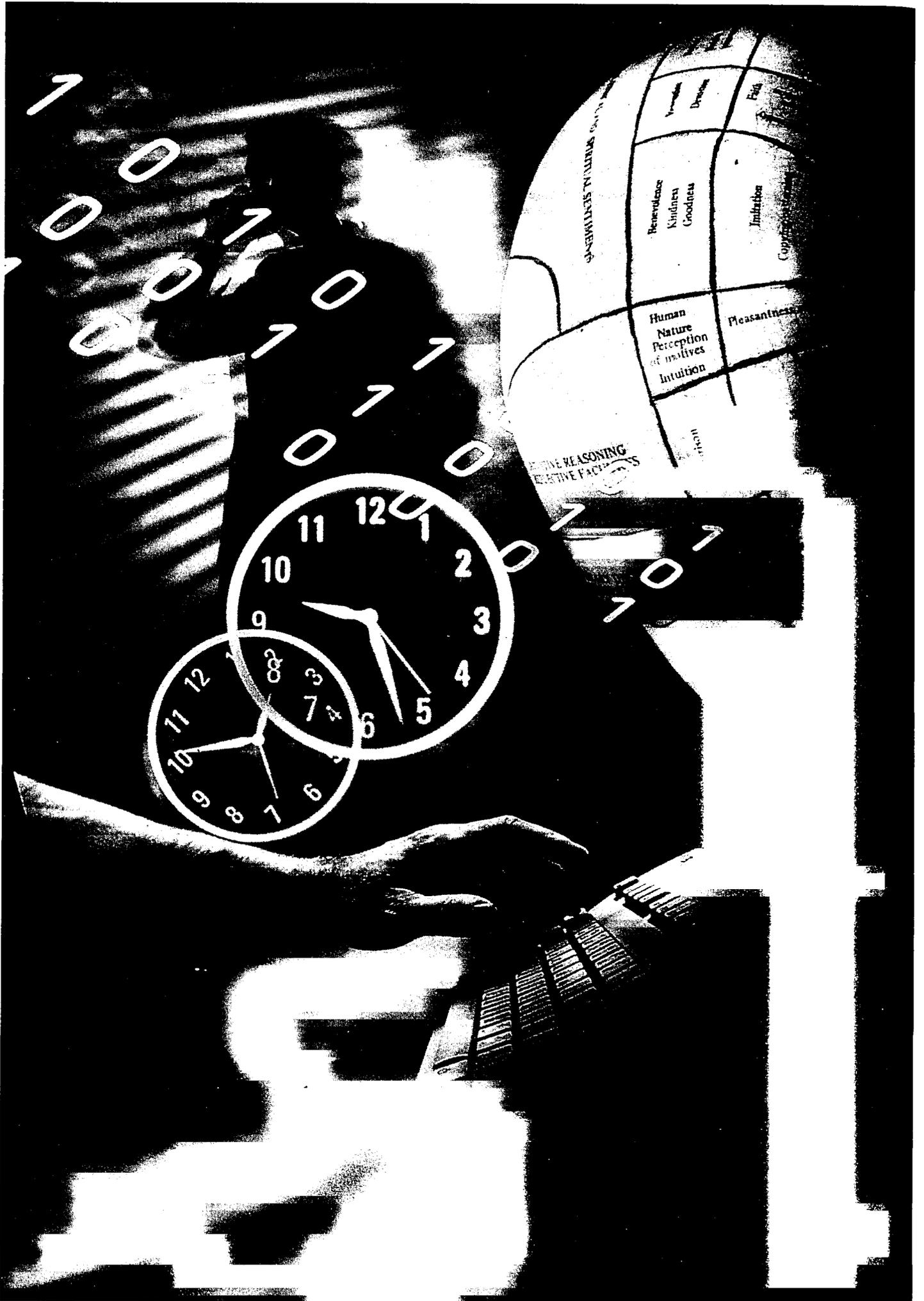
new business which are starting in some exhibition sectors. Anyway, recent trends demonstrate that exhibitions are a valuable business medium and are proving indispensable for tapping world markets.

From the exhibition management point of view it is evident that some restructuring processes are going to continue: specialisation, professionalisation and clear distinctions between open-public-days and only professional-days, among others. At the end of the 20th century, exhibition strategies will tend to conceive the fair as a global service in which the challengers coming from the new service-industrial economy need to be addressed: increasing interrelation between goods and services, needs of using technological innovation, flexible systems of demanding and supplying information, to promote training and skills in human capital intensive activities, etc. F&E will continue to develop with the economic and social change.

Written by: **Dr Luis Rubalcaba, Professor of Economics, in collaboration with EMECA.**

Address: This industry is represented at the EU level by: **European Major Exhibition Centres Association (EMECA) c/o Parc d'Expositions de Paris-Nord Villepinte, ZAC Paris-Nord II, BP 60004, F-95970 ROISSY CDG Cedex; tel:(33 1) 48 63 30 94. fax: (33 1) 48 63 11 28.**





SPERMATOPHYTES

Benevolence Kindness Goodness	Intuition Cognitive
Human Nature Perception of natives Intuition	Pleasantness

REPTILE REASONING  
REPTILE FACTORS

TYPEWRITER  
RENTAL

Overview

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The information society encompasses several of the economy's most dynamic segments. For the most traditional of these (telecommunication services and data-processing services), the growth rate, which has slowed down slightly during the last few years, is still between 6 and 8%. In the newest segments (electronic information services, multimedia) the rates of increase are much higher. At the confluence of these segments, the information highways are the harbingers of the society of tomorrow. The experiments which are being carried out practically all over Europe enable us to look into the usefulness and viability of various possible forms of organisation of the market. Already the Internet can be seen to be a prominent vehicle for the emergence of this future society. However, the implication of the information society, over and above the economic problems, is also, and mainly, social: it is an access to knowledge for everyone and hence offers the prospect of a means of redressing the balance to the benefit of the most disadvantaged.

INDUSTRY PROFILE

Description of the sector

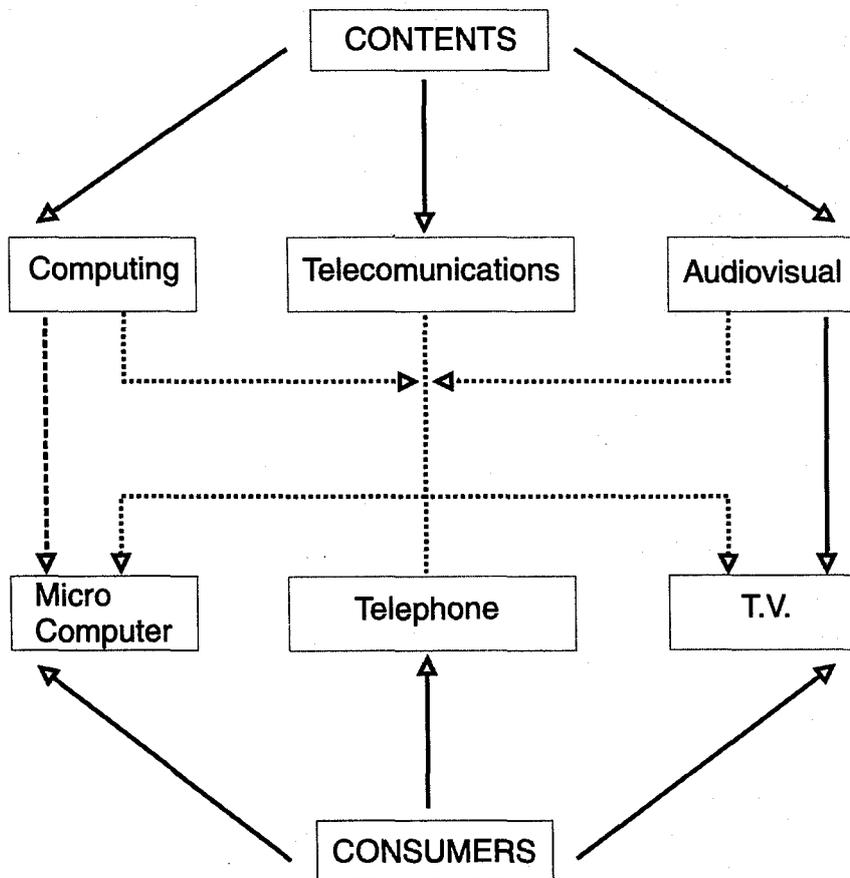
In few years the information society has become a reference concept embracing all kinds of exchange of information and especially those in electronic form. In Europe the term was used for the first time in 1993 at the Copenhagen meeting of the European Council. The definition of the associated concept of information highways specifies its industrial content, namely:

- telecommunication services, for conveying information;
- data-processing and software service, for managing and processing information;
- information services, for part of the content, especially for professional use;
- multimedia, for the part of the content aimed more at the general public.

Unlike the traditional industrial sectors, the term information society describes an emerging field whose outlines are still vague, even though some of its components are relatively clearly marked out (particularly telecommunication and data-processing services).

The social dimensions of the European model, censured in the White Paper on growth, competitiveness and employment, should prompt a particularly strong response from this infor-

Figure 1: Information society  
The multi-media sector



Source: G. Dang-Nguyen and J. Le Traon

**Table 1: Information Society  
Acomparison of Measure - EU versus USA**

	<b>Information Society Group (EU)</b>	<b>NII (USA)</b>
<i>Diagnosis</i>	The information society is worldwide	The competitiveness of the American economy is achieved through the use of multimedia  NII is the driving force for technological development, a nation-wide place in the market and a system of government
<i>Reasoning</i>	Reactive in relation to the USA	Project serving long-term economic growth strategy Political second thoughts: support for democratically managed high-tech industry
<i>Context of industrial regulation</i>	Deregulation	Cartellisation
<i>Funding</i>	Private in principle: redirection of public funds taking account of certain previous options	Private in principle; public support funds
<i>Evaluation of demand, requirements</i>	Identification of ten main applications, chosen for their demonstrative effect	Led rather by the demand of firms seeking, through NII, good levelling up of public networks
<i>Involvement of operators</i>		Mobilised by the effects of competition
<i>Principles</i>	Speeding up of liberalisation  Priority for the interconnection of networks and interoperability of services and applications  Stronger safeguards for intellectual property and data protection  Dissemination of standard transEuropean basic services	Competition will trigger the growth of NII; the FCC will iron out difficulties  Consideration of methods of charging for services in the Internet line  Policy aimed at countering effects in terms of inequality and dual society (maintain the universal service)  Encouragement of private investment
<i>Public action</i>	Negotiation of reciprocity agreement  Support for EURO-RNIS  Support for the development of a wideband infrastructure connected to cable and satellite  Arousing the interest of SMEs, government departments and young people  Strengthening of competition policies	Promotion of applications which have a training effect  International promotion of Internet  Promotion of action to network federal agencies and develop exchanges of information  Proposals for legislation

Source: Extract from Bangemann Report

mation society: the information infrastructures "are a powerful lever for the development of new services and can thereby contribute to an appreciable improvement in the employment situation". They should also make it possible to counter exclusion and create new opportunities for the disadvantaged (cf. the report of the group of experts on the subject "Building the European Information Society for us all").

The information society may be viewed on two levels. The first is that of learning, the initial acquisition of knowledge, and relates to individuals personally. The second is that of access to information and relates more to the professional field. They are the two facets of a single entity, but often make use of different methods of conveyance and distribution.

### Recent trends

The information society is a very recent concept, introduced at the beginning of the 1990s. With a perhaps more restrictive nuance, reference was previously made to the information and communication industries. The changeover from the one term to the other reveals the changes which have occurred and those which are expected. The networks must be capable of conveying ever-increasing volumes of information of many different kinds: digitalisation, the introduction of integrated networks, such as the ISDN, and the increase in transmission speeds through the implementation of new technologies (ATM, frame relay, etc.), are so many replies to this challenge. Data-processing services, too, should develop in order to offer applications which will not only be more and more powerful but also simpler to use. As for the content, whether the services are on-line or off-line, the objective to be achieved is to store the greatest possible amount of data in the smallest possible space: the changeover from computer diskettes or cartridges to the CD-ROM is an illustration of this. However, for at least two of the segments considered here (telecommunication services and data-processing services) these developments constitute only a marginal contribution to more extensive overall movements. In telecommunication services the most recent period is marked by the substantial growth in international traffic, the explosion of mobile telephony and, on a different level, the provision of "seamless" networks for major world users. The average annual growth in the market reached 8% between 1983 and 1993 and is likely to slow down slightly in the coming years. The rate of increase of data-processing and software services is also slowing down: software is still growing faster than processing and maintenance services.

### International comparison

The USA is very far ahead with regard to the information society. The main on-line services available at present, for example Internet, are of American origin. Furthermore, the USA have a very strong position in each of the segments: 32% of the world market in telecommunication services, 42% of the market for data-processing and software services, virtual dominance of the market for on-line services, a position shared to a greater extent with Japan in the field of video games. Europe nevertheless occupies strong positions in some niches, especially services with a high value added; the Commission's support for a number of innovative projects, recently supplemented by schemes promoting the deployment of information

highways (for example, the Info 2000 programme which in particular promotes the content side of the information society), is a further growth factor. Japan, except in the case of video games, is further behind, both in telecommunication services (probably owing to the type of domestic regulation) and in data-processing services, where there is no group of international stature.

### Foreign trade

While contents constitute the basis for a sizeable volume of international trade, information transmission networks are still organized according to markedly regional principles: nearly 90% of the income of telecommunications operators still comes from domestic trade. For contents, on the other hand, including software, substantial trade flows to Europe have developed from the USA and, to a lesser extent, Japan.

## MARKET FORCES

### Demand

All in all, the sector represents a market of about ECU 250 billion for the EU. In all segments the market is developing towards an endeavour to find "turnkey" solutions. In the business field, recourse to outsourcing is becoming more widespread, an effort being made to find solutions adapted to the needs of each type of customer. In the general-public field, on the other hand, demand is more consistent and the solutions are more standardised.

Even more than for other fields, the sector's progress depends primarily on the acceptance and adoption of the proposed new solutions by users. Evidence of this concern is provided by the experiments which are increasingly being carried out in most EU Member States.

### Supply and competition

The structure of overall supply is made up partly of complementary operators (network operators/data-processing enterprises/suppliers of content) but partly also of competing firms. In each segment a real battle is taking place between the major operators: the race for leadership or for the achievement of critical mass has involved them in a very large number of purchase or alliance operations. Both in telecommunications and in data-processing, the past decade has been fertile in regroupings: the formation of international consortia around the long-established telecommunications operators, mergers among companies rendering data-processing services. Competition is however becoming increasingly organised overall via movements of vertical integration: telecommunications operators are acquiring interests in or purchasing data-processing companies or content-providing companies in order to control the channels involved, while data-processing firms and content-providers are themselves joining forces with publishers and distributors in order to gain access to the final market.

### Production process

Digitalisation is undoubtedly the phenomenon which has set its mark most deeply on the production process of the data-processing branch of activity. For it is digitalisation that makes

it possible to convey and transmit, via the same (transmission or access) modes, texts, data, sound and images. Thus the infrastructures already in place or under construction in all the EU Member States permit the large-scale use of networked data-processing facilities on the one hand and of multimedia communication on the other.

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## INDUSTRY STRUCTURE

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### Companies

As the various segments which make up the information society are still relatively unconnected, the parties involved still differ from field to field. In telecommunications the leaders are, naturally, the long-established operators in the major EU Member States (Deutsche Telekom, France Télécom, BT in the first three positions); the degree of concentration is in fact high, as the five leading companies control over 60% of the market. The sector comprising data-processing services and software is much more fragmented, with nearly 16 000 enterprises established within the EU: only a few (Cap Gemini Sogeti, Sema Group, Fingiel) have more than 1% of the market. The market for on-line services, for its part, is largely dominated by the Americans, whose subsidiaries have been established in Europe for many years. Lastly, the multimedia market is exceedingly widely scattered, even though some press and media groups have a few large-scale operations.

### Strategies

After many extensive M&A movements around 1990, the recent period has been marked rather by the development of partnerships, culminating more and more frequently in the creation of joint companies. This phenomenon is observable firstly within each segment, viewed individually. Telecommunication operators have created new companies (Unisource, Atlas, BT/Concert) in order to offer international networks to enterprises or to organise consortia with a view to participating, in Europe and more widely, in privatisation and market-opening operations. In data-processing services, set up by often smaller companies, alliances make it possible to gain access to new categories of technical, financial or commercial know-how. As for the multimedia market, composed of a few big groups but also of a multitude of small companies, it is by its nature very open to cooperation arrangements: the extent of the activities which it embraces demands a combination of skills, including many from the peripheral segments. The alliances thus become intersectoral. Within the framework of the experiments which are being conducted in most of the major EU Member States, the network operators are associated both with data-processing management firms and with programme suppliers.

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## REGULATION

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The traditional segments are very much hedged in by regulations. The actual opening up of the markets has itself taken the form, for telecommunications, of the establishment of a number of rules whose broad outlines have been defined by the European Commission (Green Book, Directives). In the more recent segments the regulation is looser since, more often than not, the law of the market serves as the basis. Nevertheless, compliance with rules applicable to extended sectors is necessary in some cases (an example is the rule concerning copyrights, which apply to all works, whatever their medium).

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## OUTLOOK

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The information society is evolving. While the individual segments on which it is based are growing strongly, their increasing interpenetration offers even more dynamic prospects. Telecommunication networks will benefit from the proliferation of contents; conversely, publishers of programmes will be able to take advantage of the new platforms on offer. Nevertheless, some questions still remain concerning the ability of the information society to respond effectively and lastingly to the challenges with which it is faced. On the technical plane, will the Internet be capable of finding the resources which its fantastic development will require in the future? On the social plane, too, will the means employed be able to meet the demand from society and permit better access to information and knowledge for everyone?

Written by: IDATE

The industry is represented at the EU level by: The European Telecommunications and Professional Electronics Industry (ECTEL).

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# Software and computing services

## NACE (Revision 1) 72

*In software, the most notable growth areas are: multi-media software technologies; software and tools for the Internet; relational databases. New multimedia applications and the emergence of a pan-European information infrastructure have created a huge growth potential for the market. Meanwhile, the movement to open systems and client/server architectures continues to drive changes in the system-level software market. The problems of scalability and heterogeneity of businesses will continue to drive demand for middleware to manage communications and to mediate between otherwise incompatible environments, which serve the need for a free flow of information and interactive communication of data, voice and video via local and wide-area networks. In general, as technology becomes more advanced, end-users tend to need third-party help to help choose hardware and software, and to provide training and support to maximise the benefits of the technology.*

### INDUSTRY PROFILE

#### Description of the sector

The software and computing services comprises of many activities that can be split into the following categories; the share of each category in the EU market in 1995 is given in brackets:

- systems software and utilities which operate hardware, enhance operating systems and the capabilities of the hardware, or ensure integrity through security programmes (16%);
- application tools which allow users to retrieve, organise, manage and manipulate data and databases - which includes all database software, spreadsheets and object management development tools. Application solutions software which provide packaged solutions for specific functions. (21%);
- professional services, which comprise of procurements obtained on a customised or contractual basis for system or software development, systems design and integration, installation, related training, and consulting services (30%);
- processing services, classified as bureau-type services for problem-solving and transaction processing based on the time charged or transactions processed (11%);
- network services, such as chargeable services for network management, processing and messaging (2%);
- hardware maintenance and support services which cover the repair or replacement of components of computer systems hardware (19%).

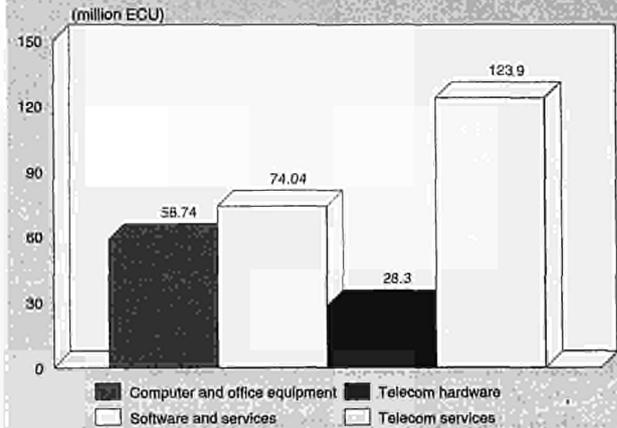
Many of these activities are inter-related with the IT hardware sector. Strong relations also exist between the telecommunications hardware and services sector and the electronic information services sector.

With 74 billion ECU in 1994 the software and computing services market represents 56% of the total IT market in the EU and 26% if telecommunications hardware and services are included.

#### Recent trends

The software and computing services market in the mid-1990s has seen good growth and will remain one of the major forces driving the whole IT market. In 1995, the EU market grew

**Figure 1: Software and computing services**  
Market value in comparison with related industries, 1995



Source: EITO, Eurostat

by 6.5% to 74 billion ECU and is expected to show growth rates of above 6% in 1996 and 1997.

The software products subsector, with 27.3 billion ECU in 1995, realised a growth of 8.8%. In 1996 and 1997, growth of 9.2% and 8.8% is anticipated for this segment. The strong growth in software products is based on the fundamental shift in downsizing IT, by moving applications from mainframes to a distributed PC based environment and to network and connect these computers, in order to share applications and data.

Within the software products subsector, systems software reached a market value of 11.9 billion ECU in 1995 and realised growth of 7.0% against 1994. With growth rates of nearly 8% in 1996 and 1997 predicted, growth will remain strong.

Meanwhile, the application software market is further profiting from the increase in the number of PCs. As well as the business trend to downsize, the falling price for PCs in recent years has spurred tremendous demand, especially from the small office / home office (SOHO) and private consumer markets, which in turn is stimulating demand for software.

In 1995, the application software market grew by 10.2%, reaching a market volume of 15.4 billion ECU. For 1996 and 1997 growth rates of 10.3% and 9.7% are envisaged.

Accounting and word processing are the most important sectors in the home market, followed closely by 'edutainment' and 'infotainment' consumer software.

While computing services represents the largest share, 63%, of the software and services market, with growth of 3.6% between 1992 and 1994 and growth of just over 5% in 1995, development in the sector is far more moderate than in the software products domain.

However, market share and growth differ significantly within the service segments. Professional services, with 20.7 billion ECU, is the largest services segment in 1995. Between 1992 and 1994 this segment grew by 6.0% per year and in 1995 by 8.4%, with further growth of 6.7% and 6.1% expected in 1996 and 1997 respectively. The driving forces of this segment are IT consulting and the outsourcing of IT services and facilities management by large companies.

**Table 1: Software and computing services  
EU market by segment (1)**

(million ECU)	1993	1994	1995	1996	1997
Systems software	10 395	11 097	11 877	12 801	13 783
Application software	12 876	13 993	15 426	17 016	18 660
Software products, total	23 271	25 090	27 303	29 817	32 443
Professional services	19 353	20 690	22 438	23 946	25 417
Processing services	7 796	8 117	8 465	8 852	9 220
Network services	1 398	1 543	1 783	2 097	2 409
Hardware maintenance and support services	14 332	14 082	14 052	14 245	14 532
Services, total	42 879	44 432	46 738	49 140	51 578
Software and services, total	66 140	69 522	74 041	78 957	84 021

(1) Expressed in constant exchange rates of 1994.

Source: EITO

Growth in custom software has been particularly flat as companies increasingly demanded packaged solutions requiring slight customisation rather than creating a one-off system.

Hardware maintenance and support services represent the second largest segment of computing services, however, growth potential here is minimal.

Processing services, which represented 8.5 billion ECU in 1995 (11% of the market), showed reasonable growth of 4.3% in 1995 and consistent growth of approximately 4% is expected in 1996 and 1997.

Network services, while still representing a small segment of the total market, due to the ever-increasing trend towards client-server applications and distributed computing network services, continues to realise the highest growth rates in the computing services sector. Network services grew yearly by 11.7% between 1992 and 1994, by 15.6% in 1995, and growth rates of 17.6% and 14.9% for 1996 and 1997 are expected.

#### International comparison

In 1995, the world market value for software and computing services was worth 263 million ECU. Of this, the USA held the largest share with 42% of world market value, with Western Europe in second place with 30% or 79.5 billion ECU, while Japan represented 14% of world market share.

In 1997, the world market value is expected to be worth 316 billion ECU, which represents 10% annual growth over 1995-97.

The largest growing market, with 18% annual growth during this period, is the 'Rest of the World' region, which reflects the strong IT focus and growth of the Asian countries. This growth will increase the region's share of the world market value to 15%.

The USA is expected to increase its share to 43% in 1997, with 11% annual growth between 1995-97. Eastern Europe is also forecast to experience 11% annual growth, although the region still represents a very low contribution at an estimated 1.8 billion ECU of market value in 1997.

Meanwhile, Western Europe and Japan will lose some share to represent 29% and 13% respectively. Europe is expected to grow by 7% annually over the period 1995-97, while Japan by only 3% annually.

Structural differences also exist between the major world market regions. Overall, computing services contributed the largest proportion, 70%, of the total software and computing services world market in 1995. In Western Europe and the USA, computing services are slightly less important relative to the world average, while in Japan and in the 'Rest of the World' there

is a much stronger bias towards computing services with 80% and 84% market share respectively.

Between 1995 and 1997, software is expected to grow faster than services in all regions except Japan.

#### MARKET FORCES

##### Demand

In an industry as fluid as software development, market-place trends continue to strongly shape the industry's focus. The increasingly visible trends include:

- **Networking:** an interconnected system of computers that can share expensive peripheral devices, such as printers; access data simultaneously; exchange files; and communicate with electronic mail messages.
- **Downsizing:** companies are tending to move complex applications from mainframes to less expensive, but increasingly powerful PCs.
- **Client/server computing:** computing tasks are distributed across a network, where the desktop computer or 'client', runs under its own processing power and provides an interface that lets the user analyse the data. The back-end host device, or 'server', stores data and processes requests. Client/server systems make more efficient use of a network, so that data processing is spread more evenly among computing resources.

It is estimated that less than half of all PCs are currently networked and this rapidly growing market should remain strong in the future, providing opportunities for software developers to increase the needs for efficiency and functional computer networks. Companies also require application development tools and enterprise management software built for and operating in, a distributed environment. In these environments, opportunities exist for software vendors and professional services to develop tools to facilitate this important transfer and seize the opportunity to provide tools, utilities and services to administer and secure the networked PC environment.

New applications for the home market are just starting to penetrate the market. Thus, new demand is emerging for computing services as facilitators and providers of the necessary tools for these applications.

Growth in the European packaged software market continues to be driven by application tools and solutions. The cost advantage of packaged software over custom solutions (a component of Professional Services) ensured higher growth in packaged software sales.

**Table 2: Software and computing services  
World market value by major regions (1)**

	Software		Services		Software and services	
	1995	1997	1995	1997	1995	1997
(million ECU)						
Western Europe	29 239	34 894	50 286	55 525	79 525	90 419
Eastern Europe	556	696	933	1 151	1 489	1 847
USA	36 674	48 527	72 527	86 671	109 201	135 198
Japan	7 646	7 898	30 407	32 603	38 053	40 501
Rest of world	5 648	10 966	28 801	37 222	34 449	48 188
World	79 763	102 980	182 954	213 171	262 717	316 151

(1) Expressed in constant exchange rates of 1994.  
Source: EITO

Operating systems account for more than 40% of the software market and will remain the dominant segment until the end of the decade. The second largest segment is middleware and utilities with performance management software accounting for a further 30% of the market. Both these markets have been boosted by the movement to UNIX systems and the middleware needed to support them.

In the area of tools, databases are the largest subsector, followed by third and fourth generation languages. The fast adoption of new application development tools with expected productivity or quality improvements mean that they are forecast to have an average annual growth of around 13% over the 1995-2000 period.

Strong growth is expected to continue for object-oriented technology with 25% growth forecasts for database management systems, object oriented CASE and programming. However these markets still constitute a relatively small part of the whole tools market. Database management systems (DBMS) are growing at between 15-20% and account for almost a third of the tools market.

The IT consulting market will increasingly benefit from IT and management related issues. User corporations will focus more on improving business processes, not only on how to roll out the information technology in the department or enterprise. Business process re-engineering services are already beginning to meet this need and will represent a growing share of the market.

The growing requirements of managing enterprise networks are leading to an increased network services segment, which includes managed network services, such as EDI and electronic mail services. The increasing complexity of network technology has caused more large- and medium-sized businesses to consider using an external service provider to supplement their skill sets. Key factors in determining the level of usage

of outside vendors for network services are the competitive environment, the level of internal networking expertise and the importance of the network to customer satisfaction.

On-site hardware maintenance still accounts for a large portion of the whole. But the needs of customers are changing: businesses are rapidly adopting the distributed computing model and shifting away from big-iron multi-user systems. The new model is based heavily on client/server applications and complex PC-based networks. With this shift comes businesses' needs for multi-vendor expertise as well as systems management and operational types of services. Systems have generally become more reliable and new technologies such as RAID are designed to let customers perform a certain degree of self-maintenance.

Where growth exists in hardware support, it is less likely to occur in the traditional break/fix maintenance services. Instead, it will provide some form of systems and peripherals management (asset management, predictive maintenance and systems management) or let the user access support information more efficiently (on-line knowledge base and bulletin board services).

Software support has been driven by the strong and growing market for telephone support services. However, on-site software support and systems management are both substantial sectors of this market.

### Supply and competition

Within the software and computing services market there are different types of companies, each with a specialised product focus - hardware vendors, independent software vendors and independent services companies. The latter focuses largely on special services like facilities management, processing services. IT consulting and training.

**Table 3: Software and computing services  
Market share by type of vendor**

(%)	1992	1993	1994	1995
Software products				
Hardware vendors	43	43	41	40
Independent software vendors	57	57	59	60
Professional services				
Hardware vendors	15	15	16	16
Independent software vendors	85	85	84	84

Source: EITO



**Table 4: Software and computing services  
Professional services - Market share by vendor type**

(%)	1993	1996
Systems vendors	22	25
US-based independent software vendors	15	17
European-based independent software vendors	63	58

Source: EITO

**Table 5: Software and computing services  
Industry concentration - Top 10 vendors market share**

(%)	Software			Services		
	1992	1993	1994	1992	1993	1994
Belgique/België & Luxembourg	14.8	15.6	10.1	21.1	19.5	17.6
Danmark	14.9	13.0	17.4	44.8	16.8	14.0
Deutschland	18.0	14.9	27.2	16.2	19.8	10.3
España	14.3	19.7	32.3	26.1	37.5	37.3
France	19.0	22.8	27.8	33.4	22.3	18.6
Italia	13.2	9.3	15.2	40.1	30.8	17.8
Nederland	12.8	17.8	14.4	67.7	34.9	27.9
Österreich	9.8	11.1	20.0	15.8	15.9	10.0
Suomi/Finland	23.6	24.7	30.0	30.2	26.2	22.3
Sverige	17.9	12.7	20.1	22.4	26.5	24.4
United Kingdom	17.1	16.5	16.9	30.9	32.7	27.0
Norge	26.0	19.1	26.1	25.0	14.2	13.5
Schweiz/Suisse/Svizzera	5.6	8.3	19.7	11.6	7.6	4.8

Source: EITO

Independent software vendors accounted for 60% of the software products market in 1995. But, because of their traditionally strong position in the systems software market, and the trend to combine hardware and software into a complete IT solution, hardware vendors still play a key role in packaged software and overall accounted for 40% of the software products market in 1995, though this share is falling.

US companies are the key players in the software products market, especially for systems and horizontal software. European companies have focused on vertical software solutions, while the Japanese have not been, and are not expected to be, particularly active in this area.

In the major PC business application software, Microsoft holds the dominant market share. IBM's recently acquired Lotus Development Corp. subsidiary ranks a distant second, with Novell third. Microsoft is expected to keep gaining share of the PC software market.

The reasons behind this US dominance are that software follows hardware and the USA offers software companies a single market of more than 60m PCs; it has the largest venture-capital market in the world and a stock-market, Nasdaq, for small, fast-growing firms. Also, the Silicon Valley industrial cluster provides a critical mass of other firms, that serve as suppliers, customers and inspiration.

The UK has 3 firms in the world's top 50 - Misys, JBA International and the Micro Focus Group. However most firms are still in slow-growth mainframe markets and the newer PC software firms have been hampered by lack of capital and not strong enough in marketing. 3-D graphics are strong. In Germany, the 2 biggest companies SAP AG and Software AG both specialise in client-server software. Their products are high-end - powerful and sophisticated but also relatively complicated and expensive. French companies produce state-

of-the-art programming tools but are less successful with mass-market applications.

Meanwhile, Japan has a small share of the software market, except in video games. This is mainly because the Japanese market until recently was dominated by a variety of various proprietary and incompatible PC standards and the preference of Japanese firms for commissioning software unique to their company.

Due to the relatively high labour costs of software development, several software companies have started to develop products from bases in Eastern Europe and India, where cheaper labour is available.

Israel has a strong IT industry and software which has been helped by military funding for signal processing and encryption. Traditional links with American business have also helped success.

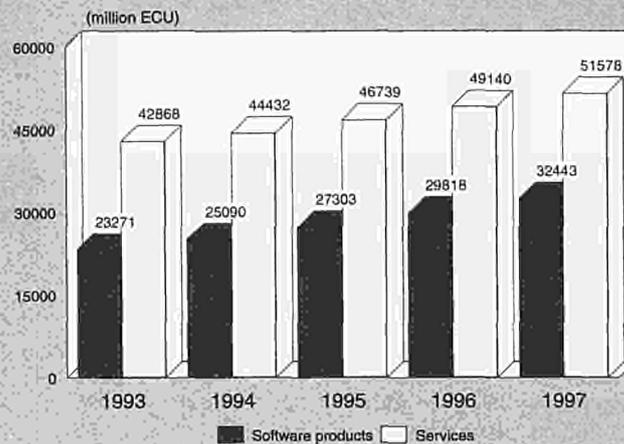
In computing services, it is essential to be close to the customer and as such the independent software companies are more successful and dominated with 78% market share in 1993, compared with 22% for systems vendors. Social, cultural, administrative and regulatory issues are also important for computer services and as such the majority of service companies focus on regional and country markets.

In the professional services segment in 1993, European independent software vendors held a market share of 63% compared to 15% for US independent software vendors.

Competition in the computing services market is increasing. Hardware vendors are improving their facilities management, systems integration skills and are able to provide computer services on a global scale. In addition, new multimedia and networking opportunities have led to new competitors, such as telecoms carriers and media companies.



**Figure 2: Software and computing services  
EU market value for software and services (1)**



(1) Expressed in constant exchange rates of 1994.  
Source: EITO

Larger companies, which through their critical mass and global network can support their clients' networks will be favoured, and as a consequence, the smaller local software and services vendors increasingly will lose market share.

### Production process

In systems software there continues to be increased use of open standards proposed by X/OPEN and UNIX and the enduring lead of PC operating systems in connection with graphical user interfaces.

Applications software now has to provide tools and serve the professional users' needs for interactive communication, information, co-ordination and co-operation via local or wide-area networks, so that groupware concepts and management information systems and work flow automation become more common.

For all these new solutions, it is essential that the user has the same object-orientated command structure so that the user can easily change between different applications. Due to these developments, application software vendors are directed to provide cross-platform applications. Furthermore, by emerging object-oriented programming, vendors expect encapsulation and re-use of software in order to shorten development time and to increase their ability to respond more quickly and flexibly to market needs.

For most of the 1990s, software has been a booming industry dominated by large companies making ever-more complex programs. However, by providing global distribution, the Internet is changing the rules to favour the small and nimble, by reducing the cost of entering the market; technological ingenuity and a spirit of innovation will matter more than marketing clout.

With the mass of information, the next software challenge is to help users filter the information or to 'intelligently' search for relevant information given the requests from the user.

Indeed, to penetrate the mass-market, cyberspace and software will need to be more intuitive, more forgiving and a lot better at simplifying the complex technology. Net-browsing software, using hyperlinking - jumping from one piece of information to another simply by clicking on highlighted words - is one such breakthrough.

The cross platform standard of the World Wide Web language HTML is understood just as easily by Windows, Macintosh and UNIX, so that the Internet is a new platform that depends less on the type of hardware used. In addition, Java, from

Sun Microsystems, is a cross-platform programming language which will work on any computer running the already widespread Java virtual machine. With Java, small programs called applets can be written which are automatically downloaded by the program. These applets work automatically in the background to link and update information from the source as it changes, so that content and software are seamlessly merged. Java will also allow greater programming of electronic consumer devices, such as mobile phones, televisions etc.

Software will be developed to give the user a more streamlined appearance. Whether data comes from the Internet, a local network or the PC hard disk, it will appear in the same way. At present, the slowness of phone lines currently restricts the amount of information that can be transmitted, and until this bandwidth increases over the next several years, software makers are developing hybrid programs that deliver most of the code on CD-ROM, but can fetch updates from the Internet. Examples of hybrid content software include electronic encyclopaedias.

To enable a more user friendly interface, software is often designed based on electronic equipment or concepts that consumers are already familiar with. 3-D design will allow users to browse a bookshelf or open a door, rather than scan file lists. This makes the location and relationship of data more obvious, and adds to the user's ability to comprehend information, while the fluid 3-D graphics make the electronic information more visually compelling, closer to television.

## INDUSTRY STRUCTURE

### Companies

It is estimated that more than 16 000 software and services companies with over 300 000 employees exist in Western Europe. In addition to this at least another 100 000 independent professionals and small offices with 200 000 people can be gathered. On top of this, additional employment is evolving from software and services in the field of Internet and multimedia applications. The vast majority of these companies have less than 20 employees, and several of those are companies with no more than five employees. Only a few large software and services vendors are in the market. Most of these larger companies are located in the UK, France and, to a lesser extent, in Germany. This group of vendors mainly has pan-European activities, whereas most of the smaller and medium-sized vendors are often regionally focused.

**Table 6: Software and computing services  
Market value by country (1)**

(million ECU)	Software					Services				
	1993	1994	1995	1996	1997	1993	1994	1995	1996	1997
Belgique/België & Luxembourg	1 118	1 175	1 206	1 259	1 322	1 445	1 470	1 529	1 595	1 651
Danmark	469	502	531	558	584	1 374	1 425	1 509	1 606	1 687
Deutschland	8 304	8 944	9 667	10 454	11 225	10 623	11 049	11 502	11 993	12 495
Ellada	63	73	89	103	126	98	112	128	148	178
España	803	832	1 020	1 157	1 302	1 443	1 430	1 468	1 546	1 643
France	3 397	3 632	3 998	4 428	4 847	10 016	10 174	10 537	10 986	11 446
Ireland	103	118	129	140	149	178	189	202	215	230
Italia	2 150	2 255	2 366	2 532	2 727	4 608	4 786	5 012	5 312	5 679
Nederland	1 474	1 642	1 822	2 056	2 316	2 496	2 637	2 801	2 973	3 158
Österreich	492	568	661	769	896	1 013	1 034	1 085	1 143	1 207
Portugal	115	123	131	141	158	171	177	187	202	217
Suomi/Finland	282	287	307	325	346	720	740	779	833	880
Sverige	611	667	703	742	774	2 052	2 162	2 306	2 454	2 579
United Kingdom	3 890	4 270	4 676	5 152	5 672	6 632	7 047	7 692	8 133	8 528
EUR 12	22 168	23 853	25 942	-	-	39 804	41 236	43 346	-	-
EUR 15	-	-	27 306	29 816	32 444	-	-	46 737	49 139	51 578
Norge	377	394	413	437	462	1 081	1 124	1 178	1 237	1 291
Schweiz/Suisse/Svizzera	1 186	1 356	1 523	1 741	1 989	2 231	2 281	2 369	2 509	2 656
Western Europe	24 834	26 838	29 242	31 994	34 895	46 181	47 837	50 284	52 885	55 525

(1) Expressed in constant ECU of 1994.  
Source: EITO

For systems manufacturers, the key issues are technology ownership, international infrastructure and the ability to provide global integrated solutions.

Concentration in the computing services sub-sector is decreasing. In the UK, the top ten vendors hold a market share of 27%. At the same time, the top ten vendors in France and Italy obtained a market share of about 18-19% and Germany only 10%.

Meanwhile, the software market is experiencing an increased concentration of market share. The development of market shares of the top ten vendors in the larger EU country markets between 1992 and 1994, shows that the concentration in the software market in France and Germany has reached about 27% of market share of the top ten vendors, whereas in Italy

and the UK, the market is still more fragmented with 15% and 17% respectively.

The success of software companies will depend on competitive prerequisites like having a global market and strategic scope, as well as a global infrastructure and international presence to service customers while covering a large number of vertical markets. In addition, it is decisive for services vendors to have the capacity and ability to address business process re-engineering needs and to leverage on the experience and scale economies from larger contracts. These new customer requirements lead to the need for large-sized vendor structures.

A new form of acquisitions and alliances has emerged. It is the strategic repositioning against a background of multimedia applications and the building up of the information super-highways. In this context, traditional software and services vendors are joining forces with telecoms, media and consumer electronics vendors.

### Strategies

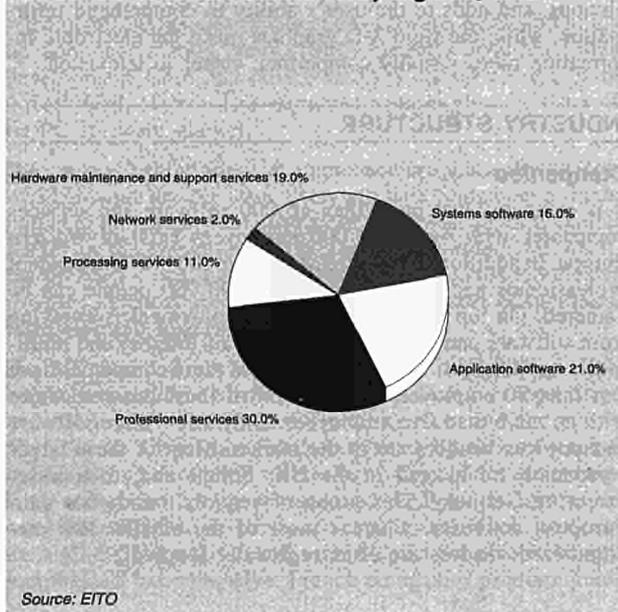
The two main factors influencing a software company's performance are the underlying strength of the markets in which a company's products compete and the position of a given product in its life cycle. Companies with products in the early stages of their life cycles and positioned in strong markets typically enjoy robust revenue.

Staying on the cutting edge of technology is crucial for success. The rapid technological change of the computer industry generally necessitates a consistently high level of R&D expenditures, typically 10-15% of sales.

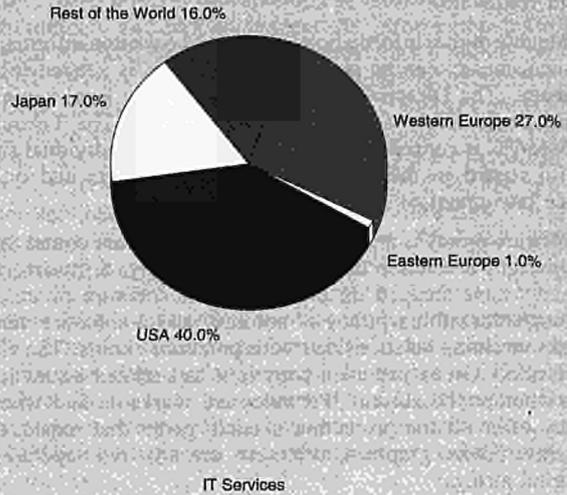
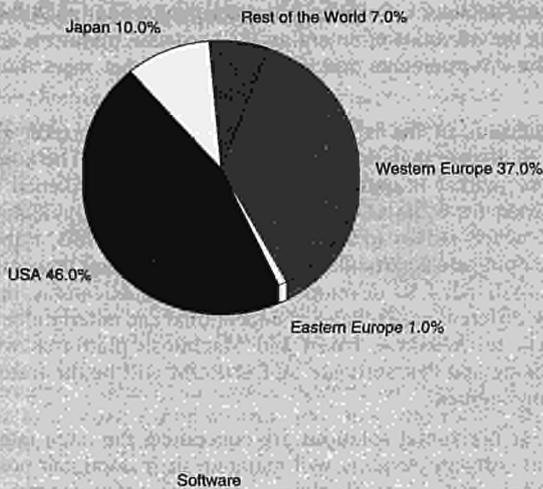
Smaller companies are generally the most innovative but establishing new titles in a cluttered market-place is becoming increasingly difficult and these firms also have limited capital for expansion, R&D and marketing. Therefore many alliances and acquisitions have occurred to gain new products, technological expertise, financial or distribution and marketing resources.

Sustained success in the industry requires product breadth, a strong development program to ensure a steady flow of new products, quality assurance associated with its increasingly respected brand name and its powerful distribution capabilities.

**Figure 3: Software and computing services  
EU software and services market by segment, 1995**



**Figure 4: Software and computing services  
International comparison of market value, 1995**



Source: EITO

Indeed, as mail-order and mass-market retail channels increase in importance, distribution channels are changing.

Once a product is actually brought to fruition, the actual production of copies is relatively inexpensive. Consequently, gross margins are relatively high and incremental software sales can lead to high operating margins as well.

In addition, software product leadership is vital. Software users are loyal to the products they know and are reluctant to switch to competitive programs for short-term price or performance benefits, since purchasing, learning and supporting an alternative program, and rewriting software to use with it takes time and money. As such, entrenched market leaders tend to build on their installed base and satisfied users are a receptive clientele for new products and upgrades of existing software.

In 1993, software prices dropped as companies aggressively cut their products' prices to position themselves in the popular Windows market to build up market share, since then software application prices have remained low and are expected to remain so. Companies have restructured and cut internal costs to be able to support these lower prices and still remain profitable, on a permanent basis.

Competitive upgrades, where companies offer software at very low introductory prices to users of competing brands in an attempt to gain market share, have contributed to price pressures. Similarly, offering software suites, where a software vendor offers a package containing several popular programs, grows installed bases which benefit the lesser known programs incorporated into the suite. This practice drives down the average revenue per application and puts particular pressure on companies that derive substantial revenues from only one product.

Because hardware costs are reducing and products are becoming increasingly complex, software vendors are increasingly under price pressures, therefore many vendors are increasingly obtaining revenues from consulting and implementation services.

## REGIONAL DISTRIBUTION

Marked differences between country growth rates highlighted the strong uptake of outsourcing services in the UK and Scandinavia.

The UK professional services sector benefited from general economic growth and high predictability - following much rationalisation during the recession. A fast up-take of outsourcing was driven by the government's policy of 'market testing' public services.

The growth in Germany was average. IT consultancy performed well, driven by growth in the East German economy. The French professional services market has always been disproportionately large for the size of the country's IT market. Growth last year was poor as custom software suffered from a lack of demand for external programming, companies preferring to employ internal IT professionals.

The Italian market was affected by reduced expenditure in several key vertical sectors. The manufacturing sector and central and local government all held back in their expenditure plans.

Amongst other countries, high growth rates in Sweden are solely the result of a small number of very large facilities management contracts, while the Dutch market suffered as a result of competition from packaged solutions and a fierce price war among local service vendors.

## REGULATIONS

The European Commission's information technology programme ESPRIT, the Telematics applications, as well as the formation of particular Directives concerned with telecommunications technologies, together address the security, political and legal issues that are raised by the increasing global use of IT and software.

ESPRIT in its constituent parts addresses the issues relating to the development of open standards, cooperative working, user interfaces, intelligent agents, hyper linking (ESPRIT supports the European part of the international consortium concerned with the further development of the World Wide Web), multimedia application tools and pilots, technologies for electronic commerce over the Internet.

The new Telematics Applications Programme launched for the period 1994 to 1998, has an emphasis on new multimedia telematics, the importance of user requirements and finding affordable solutions. The program foresees developments in a wide ranging number of sectors from administration, research, teleworking, education and training, libraries; to trans-

port, network management, operation, control and services for travelling, freight and fleet operations; health care, telemedicine; as well as process re-engineering and application engineering; electronic publishing, information dissemination and retrieval.

Valuable digital information, whether it be written information, voice, music, can be stolen and protection is needed for the owner. The Directive 96/9/EC relates to the legal copyright and protection of electronic databases. The Directive 95/46/EC is concerned with the protection of individual rights with regard to the processing of personal data and on the free movement of such data.

Software piracy is an ongoing problem. Software comes under copyright protection as intellectual property. Software companies have stepped up prosecution of software pirates, although unearthing piracy is not easy and a software vendor risks straining relationships with potential clients. The Commission's Green paper on copyright and related issues looks to whether the current IPR rules are workable and whether they offer all the protection needed, given that music, television, books, graphics, voice etc. are now not separate but digital strings.

Software technology combined with telecommunications allows a quick and efficient manner to exchange information and conduct transactions, however in order for electronic commerce to thrive, agreements must be reached regarding the use and deployment of encryption technology. Protection of transmission and trust must be ensured, that a message is delivered to the correct person, and even if it is intercepted, that the message is not tampered with, and arrives secure and unread.

Encryption technology and its deployment used to be the preserves of Governments for national security. Now the technology is readily available, the issue is less technical than political. Jurisdiction becomes difficult to deal with, in the face of disappearing national boundaries. At present, there are differences in legislation between countries, some prosecute the use of encryption technology, others prohibit the export or import of encrypted material.

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## OUTLOOK

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The major trends regarding the future development of the European software and services market can be observed: the globalisation and interconnectivity between countries, markets, industries, IT systems, information and hardware.

As country markets increasingly open up to competition, local software and services vendors will need to stay competitive, they will need to build up scale economies and a trans-European infrastructure. This development will lead to an increasing concentration within the European market as the globalisation process encourages mergers, joint ventures and alliances between the small and medium-sized independent software and services vendors.

The movement to open systems and client/server architectures continues to drive changes in the system-level software market. The problems of scalability and heterogeneity of businesses will continue to drive demand for middleware to manage communications and to mediate between otherwise incompatible environments, which serve the need for a free flow of information and interactive communication of data, voice and video via local and wide-area networks.

Demand for services is boosted by the need to integrate multi-vendor systems. While competition has driven prices down, and end-users rarely buy all equipment from one vendor, the complexity of designing and maintaining an integrated network has grown. In general as technology becomes more advanced, end-users tend to need third-party help to help choose hardware

and software, to provide training and support and to maximise the benefits of the technology.

In software, the most notable growth areas are: multi-media software technologies; software and tools for the Internet; relational databases. Software companies must continually anticipate the demands of emerging PC hardware platforms and software environments and design products that meet those needs.

The demands of the largely yet untapped home market are far more diverse than those of the corporate world. The home software market is more fragmented and can be likened to the market for a movie production company or a publishing house, which strives to bring out a few selected hits, rather than to dominate a particular category. This suggests that companies will need to develop a variety of applications that cater to different needs. Sales of educational and entertainment products for Windows based and Macintosh platforms will keep rising and that software on CD-ROM will be the fastest growing segment.

As far as horizontal solutions are concerned, the large international software vendors will maintain their dominant position. While in the vertical solutions environment, independent European vendors will have a potentially stronger position, as they are nearer to the customer and can benefit from their better knowledge of the specific requirements of SMEs.

The standardisation of software and packaged software solutions, which combined with intensified competition has meant on-going price reductions and important new product developments and upgrades, continue to keep the market fresh. In addition, users are expanding the range of activities for which they use their computer and as such are purchasing a greater amount of software for each PC. While much of current software will remain the same (spreadsheets and word processors), the overall market will grow quickly, especially as prices continue to fall and companies start to sell software on-line.

Software application, content and services will merge further - software will be hidden in content. Network programs such as Java will populate many new niches that will open as the Internet's combination of global reach, infinite capacity and near-zero marginal costs penetrates the traditional economy.

Written by: DRI Europe

# Electronic information services

## NACE (Revision 1) 72

The electronic information services sector expanded rapidly between 1989 and 1994 with a mean annual growth rate of 27% over that period. About 81% of the market turnover which totalled ECU 6 551.7 million came from on-line services. Despite the strong growth in off-line systems, mainly CD-ROMs, these accounted for only 10% of the market, the rest (9%) came from peripheral activities (training, conferences, etc.). Apart from the UK, which generates more than 70% of its turnover abroad, EU countries export very little except within EU boundaries. Businesses, particularly financial services, are the main users of professional electronic information services. Similarly, economic information represents 66% of the total market. For several years now, the market has been subject to a fair degree of concentration, in which a few large companies predominate: Reuters, Read-Elsevier, AFP in Europe and Dow Jones, Dun & Bradstreet, Knight Ridder in the USA. In the short term, the explosion in the use of the Internet has given providers of electronic information services a strong indication of the direction in which they should be expanding.

### INDUSTRY PROFILE

#### Description of the sector

This sector groups together electronic information services for purely professional purposes and thus excludes services for the general public, which appear in the section on multimedia. Because the content of these latter services is informational or purely transactional like telecommunications services (E-mail for example), they are excluded from our study of this sector. Finally, information is carried out by on-line systems (videotex, ASCII) or off-line systems (CD-ROMs, diskettes, tapes). In its most recent document, "Study on Assessing Markets for Electronic Information Services for Professional Purposes in the European Economic Area", the

IMO divides electronic information services into different areas, as it can be seen in Table 1. These include retrospective on-line databases: these provide historical data and are updated less frequently than once a day; real-time on-line databases: these services are up-dated at least once a day. For some subjects and at busy times, the information may be up-dated in real time and hence several times a minute. Most of these services are provided in the financial sector (stock exchange, forex, etc.) by companies like Reuters and Dow Jones or in the news sector (Agence France Presse, etc.); videotex services: on-line information services delivered a page or a screen at a time; audiotex services: on-line information services where the user receives the information orally. These services may be of the very simple "dial and listen" type or they may offer a certain degree of interaction using keys on the handset or speech recognition. Audiotex services are often linked to the reception of a complementary document by fax, E-mail or through the post; off-line information services: this term covers information products such as CD-ROMs (Compact Disc - Read Only Memory), CDI (Compact Disc - Interactive), floppy discs, magnetic tape, microfilm, etc. CD-ROMs often contain a combination of sound, images, data and text.

On-line services began to develop in Europe during the 1970s. Initially, they concerned technical and scientific information, but later were directed more towards financial and economic databases. Videotex services were introduced at the beginning of the 1980s by telecommunications operators wishing to offer access to information via the telephone line. Audiotex services appeared at the end of the 1980s.

According to the IMO study, the overall consumption of professional electronic information services and products in the internal EU market reached ECU 3 814.2 million in 1994. The UK alone accounted for nearly a third of the European market with 30% of the total. The other two large consumers of electronic information services are Germany, which is second with ECU 5 94.5 million or 16% of the total market, and France with 15% of the total.

#### Recent trends

The professional electronic information services sector recorded a mean annual growth of 27% between 1989 and 1994, a very high rate compared with that in other information tech-

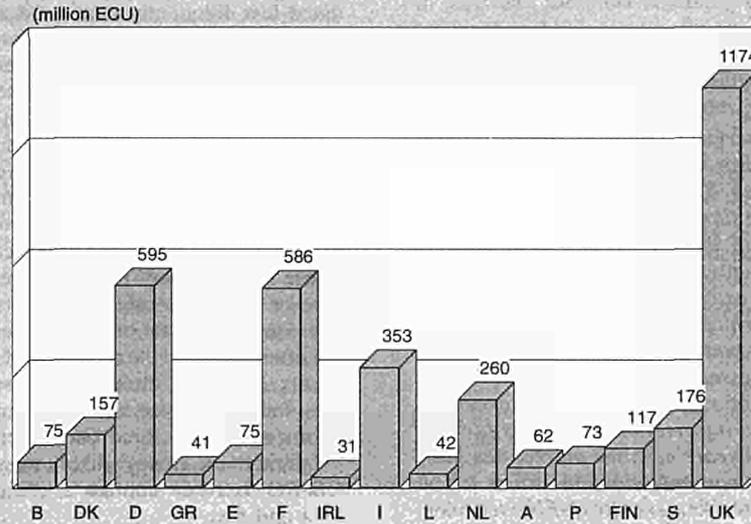
**Table 1: Electronic Information Services Revenue by product type, 1994**

(million ECU)	Data bases	Hist. Data-banks	Real time Data-banks	Video-tex	Audio-tex	E-mail	Other on-line (fax)	Total on-line	CD-ROM	Other off-line	Total off-line	Other	Total
Belgique/België	0.0	7.7	2.9	2.9	0.1	3.6	0.0	17.2	24.4	1.3	25.7	0.0	42.9
Danmark	0.0	42.9	89.5	0.7	1.8	1.4	2.9	139.2	8.1	16.7	24.8	3.5	167.5
Deutschland	0.0	158.9	173.1	14.0	15.1	0.0	0.0	361.1	83.7	44.1	127.8	0.0	488.9
Ellada	0.0	12.6	12.7	0.3	0.0	9.5	0.0	35.1	3.1	0.1	3.2	0.0	38.3
España	4.1	9.4	41.7	0.5	0.6	0.8	0.0	57.1	12.7	1.6	14.3	3.3	74.7
France	0.0	53.6	79.5	330.0	23.1	20.9	26.8	533.9	39.9	29.9	69.8	0.0	603.7
Irland	0.0	2.3	1.1	1.8	0.0	0.2	0.5	5.9	0.0	0.3	0.3	0.3	6.5
Italia	0.0	115.2	33.7	66.5	0.5	0.2	0.4	216.5	38.2	9.4	47.6	0.4	264.5
Luxembourg	0.0	1.3	1.4	0.1	0.0	0.1	0.4	3.3	0.4	2.6	3.0	1.1	7.4
Nederland	7.1	51.3	89.1	11.6	13.9	9.4	10.2	192.6	32.2	48.7	80.9	26.8	300.3
Österreich	0.0	15.2	7.7	4.7	0.0	0.0	0.0	27.6	10.5	4.7	15.2	0.0	42.8
Portugal	0.0	4.0	13.5	1.0	12.4	0.0	0.7	31.6	28.1	1.7	29.8	0.0	61.4
Suomi/Finland	0.0	23.4	25.5	8.0	31.0	7.5	1.5	96.9	2.0	0.9	2.9	0.0	99.8
Sverige	0.0	43.7	52.4	2.7	21.8	0.0	0.0	120.6	2.9	0.0	2.9	0.0	123.5
United Kingdom	3.2	1 245.4	2 028.9	51.9	137.5	0.1	1.3	3 468.3	125.0	53.5	178.5	585.8	4 232.6
EUR 15	14.4	1 786.9	2 652.7	496.7	257.8	53.7	44.7	5 306.9	411.2	215.5	626.7	621.2	6 554.8
(% of total)	0.2%	27.3%	40.5%	7.6%	3.9%	0.8%	0.7%	81.0%	6.3%	3.3%	9.6%	9.5%	100.0%

Source: IMO



**Figure 1: Electronic information services**  
**Sales of professional electronic information in Europe, 1994**



Source: IMO

nology sectors. The turnover for the 15 EU countries increased from ECU 2 659.1 million in 1989 to ECU 6 551.7 million in 1994. Of this total, 81% came from on-line services (ECU 5 306.9 million), 10% from off-line services (ECU 626.7 million) and 9% from peripheral activities (training, conferences, etc.). Real-time databases account for the majority of the income at European level, but a study of the data on a country by country basis reveals certain disparities. The dominance of Reuters in the UK inflates the EU total, whereas in France, Italy and Belgium, for example, real-time databases are not the largest category. At the same time, it is only in Belgium that CD-ROMs have a dominant share. In France, the largest proportion of videotex services arises mainly from their wide availability and their cheapness. The CD-ROM market will probably exhibit strong growth in the next few years because of the rapid rate at which CD-ROM drives have penetrated the market and because of the increasing number of titles launched.

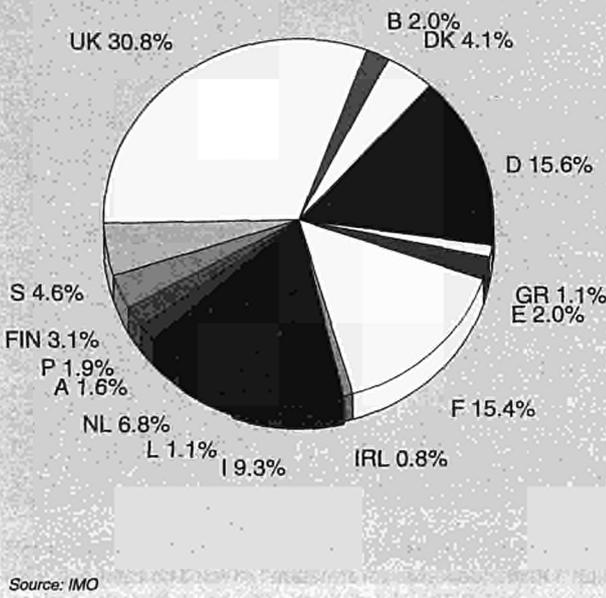
The total workforce employed in professional electronic information services increased considerably between 1992 and 1994: from 29 470 to 58 502 people, i.e. a mean annual increase of 49% over two years. The national figures include employees of national companies working both within and outside the country concerned. Because of this, the UK figures are artificially inflated since most of the Reuters staff work abroad. It should be pointed out that France and Germany, who are economically dominant in Europe, have relatively few people working in electronic information services. In the case of Germany, the explanation for this may be the existence of a large manufacturing sector as opposed to a small services sector. Germany also depends a great deal on foreign information providers. In France, France Télécom's strategy of expanding the use of Minitel has created the habit of making information available virtually for nothing, and brokers, by offering free financial analyses most of the time, have played their part in reinforcing this trend. The average ratio between the numbers employed in the electronic information services and the total population is 0.02% in EU countries, being very

**Table 2: Electronic Information Services**  
**Revenue distribution by information type, 1994**

(million ECU)	Financial info.	Company accounts	Other economic info.	Law	Patents, brands	Scient. & technical info.	Administ. & politic. info.	Tourism	Other	Total
Belgique/België	12.1	5.7	7.1	2.7	0.0	4.3	4.5	4.7	1.8	42.9
Danmark	92.5	13.6	40.3	5.9	0.4	13.5	6.0	1.2	14.1	187.5
Deutschland	38.6	113.5	94.8	26.8	22.1	51.2	81.9	4.5	22.9	456.3
Ellada	3.0	0.3	1.8	9.0	0.0	13.6	6.2	0.2	5.0	39.1
España	12.3	9.0	5.2	8.7	0.4	4.6	23.3	0.3	2.6	66.4
France	6.9	189.8	23.9	48.9	10.9	91.5	195.4	8.6	27.8	603.7
Ireland	2.1	2.4	0.5	0.0	0.1	0.2	0.2	0.1	1.3	6.9
Italia	24.6	76.2	111.8	56.1	5.3	17.3	41.5	0.1	13.7	346.6
Luxembourg	0.0	0.0	4.9	0.1	0.1	0.3	0.2	0.3	1.6	7.5
Nederland	12.4	10.2	51.4	26.0	0.0	35.9	29.7	11.8	131.1	308.5
Österreich	0.0	8.9	15.2	3.7	0.4	2.2	6.2	0.5	5.7	42.8
Portugal	2.2	1.4	8.7	0.3	0.0	3.1	0.0	1.4	43.7	60.8
Suomi/Finland	9.4	3.6	8.0	3.6	0.0	57.0	4.4	0.0	13.8	99.8
Sverige	48.1	31.0	17.7	1.4	0.0	1.6	10.6	0.4	12.7	123.5
United Kingdom	1 496.2	865.3	6.0	10.0	0.3	37.1	375.9	0.3	65.6	2 856.7
EUR 15	1 760.4	1 330.9	397.3	203.2	40.0	333.4	786.0	34.4	363.4	5 249.0
(% of total)	33.5	25.4	7.6	3.9	0.8	6.4	15.0	0.7	6.9	100.0

Source: IMO

**Figure 2: Electronic information services**  
**Breakdown of European market for electronic information services by country**



small in Spain (0.004%) but twice the average in the UK (0.04%) and in Denmark (0.04%).

The development of the Internet as a new means of distributing information is opening up some very important possibilities for the future. Although problems connected with methods of payment and control over copyright have not yet been solved, considerable growth in the commercial use of the Internet can be anticipated. At the moment, the most frequently-used functions are E-mail, file transfer and access to external data. Commercial exchanges between companies, particularly the supply of professional information, will probably be worth \$50 billion in the USA and \$25 billion in the rest of the world in the year 2000. Professional providers of information already supply the content for on-line commercial services. For example, Microsoft Network has signed agree-

ments with Dun & Bradstreet, MAID and the Information Access Company.

### International comparison

In 1993, according to the annual "Survey on actual conditions of specific service industries" carried out by MITI, the Japanese database services market amounted to approximately ECU 1 740 million, a decrease of 2% compared with the previous year. This fall was probably due to the recession in the Japanese economy and should be temporary. Japanese predictions assume a good level of growth in the information sector, pushed by the widespread use of computers and the demand for software. The database services sector should reach ECU 8 121 million in the year 2001, a mean annual increase of 45%.

In the USA, the number of subscribers to the 14 main on-line professional services has increased by 8.7%, from 1.19 million in 1993 to 1.29 million in 1994. The largest on-line professional service is LEXIS-NEXIS, formerly Mead Data Central, which was bought and renamed by the Anglo-Dutch group Reed-Elsevier at the end of 1994. The second largest is the Dow Jones service, with about 220 000 subscribers. The third, Dialog/DataStar, belongs to the American company Knight-Ridder and had 158 000 subscribers in 1994. This is the company generating the largest turnover in on-line professional services in 1994: \$265.7 million.

### Foreign trade

An overall analysis of the income by geographical region shows that 43.3% of the turnover of professional information service companies generated by EU countries is created in their respective national markets. The other 56.6% is mostly due to trade within the EU. Reuters has the greatest activity in markets outside the EU, with half its turnover produced in this way. A more detailed analysis showing figures for different countries reveals the strong position of the UK, with more than 70% of its turnover generated outside the UK thanks to companies like Reuters, Reed-Elsevier, Pearson, etc. The UK and the Netherlands are the only countries whose exports exceed their imports, but their exports are mostly to other EU countries. Hence, for the European suppliers and producers of electronic information services, there is still unexploited potential outside their frontiers, particularly in countries speaking the same language as they do.

**Table 3: Electronic Information Services**  
**Revenue distribution by enterprise type, 1994**

(million ECU)	Financial services	Other enterprises	Universities R&D	Administ.	Education, Training	Libraries	Other	Total
Belgique/België	8.7	23.7	3.9	4.7	0.0	0.0	1.9	42.9
Danmark	35.7	119.5	3.0	11.1	1.9	0.0	14.5	185.7
Deutschland	75.6	308.4	17.3	18.7	1.4	0.0	9.1	430.5
Ellada	5.3	2.3	5.8	16.8	0.0	0.0	8.1	38.3
España	2.9	42.1	4.9	12.8	0.3	0.0	3.1	66.1
France	50.0	350.0	42.0	72.0	10.0	10.0	61.0	595.0
Ireland	3.3	2.0	0.1	0.2	0.0	0.0	0.3	5.9
Italia	34.7	69.3	15.5	224.4	1.0	0.0	1.7	346.6
Luxembourg	0.0	6.0	0.3	0.2	0.1	0.0	0.9	7.5
Nederland	20.0	201.7	23.2	23.5	5.9	0.0	0.0	274.3
Österreich	0.0	15.6	8.9	10.7	3.1	2.0	2.5	42.8
Portugal	10.9	12.5	0.1	2.5	0.0	0.0	35.4	61.4
Suomi/Finland	25.0	45.0	5.0	13.5	0.5	0.0	10.8	99.8
Sverige	27.2	47.8	5.1	21.0	0.5	0.0	21.9	123.5
United Kingdom	1 497.1	396.9	0.9	2.6	3.3	0.1	29.1	1 930.0
EUR 15	1 796.4	1 642.8	136.0	434.7	28.0	12.1	200.3	4 250.3
(% of total)	42.3	38.7	3.2	10.2	0.7	0.3	4.7	100.0

Source: IMO



**Table 4: Electronic Information Services**  
Revenue distribution by geographic region, 1994

(million ECU)	National	Other European countries	North America	Rest of World	Total
Belgique/België	26.3	13.0	1.7	1.9	42.9
Danmark	142.7	4.5	1.5	1.5	150.2
Deutschland	278.7	43.5	14.4	30.8	367.4
Ellada	32.3	6.0	0.0	0.0	38.3
España	52.0	1.7	0.4	2.0	56.1
France	501.3	21.3	5.4	5.3	533.3
Ireland	9.8	0.3	0.1	0.1	10.3
Italia	258.7	5.0	0.0	0.8	264.5
Luxembourg	6.0	1.4	0.0	0.0	7.4
Nederland	235.9	69.0	9.9	7.2	322
Österreich	25.3	1.1	0.0	0.3	26.7
Portugal	60.3	1.0	0.1	0.0	61.4
Suomi/Finland	94.1	5.7	0.0	0.0	99.8
Sverige	117.4	6.1	0.0	0.0	123.5
United Kingdom	856.4	1 165.0	445.6	661.1	3128.1
EUR 15	2 697.2	1 344.6	479.1	711.0	5231.9
(% of total)	51.6	25.7	9.2	13.6	1

Source: IMO

## MARKET FORCES

### Demand

The business sector naturally forms the largest group of those using professional electronic services, and is the source of 81% of the income (financial service companies in particular accounting for 42% of the total). However, although the business user is an important group in most countries, it is the largest group only in the UK and Ireland. About 78% of the customers for electronic information services in the UK are British financial service companies. The proportion of users from the public sector (government departments, local authorities) varies quite widely according to the country. While contributing an average of 10% in the EU, it proves to be the largest group in Greece (44%) and Italy (65%), and the second largest in France (12%), Spain (19%), the Netherlands (9%), Norway (23%) and Austria (25%).

As regards the breakdown by subject matter in the European market, economic information alone accounts for 66% of the total. This is a category including "Financial Information"

(33% of the market), "Company Results and News" (25%) and "Other Economic Information" (8%). The category "Government and Political Information" comes in second place.

### Supply and competition

The providers of professional electronic information services fall into the following categories: database producers: these produce databases in electronic form, either on-line or off-line; servers: companies delivering information services directly to their users through telecommunications networks; suppliers of videotex services; suppliers of audiotex services; suppliers of E-mail services; distributors of on-line information services, move towards providing more "tailored to customer" services via the use of advanced software techniques e.g. "profiles" and "intelligent-agents," offering access to these via networks such as the Internet; distributors of off-line information products.

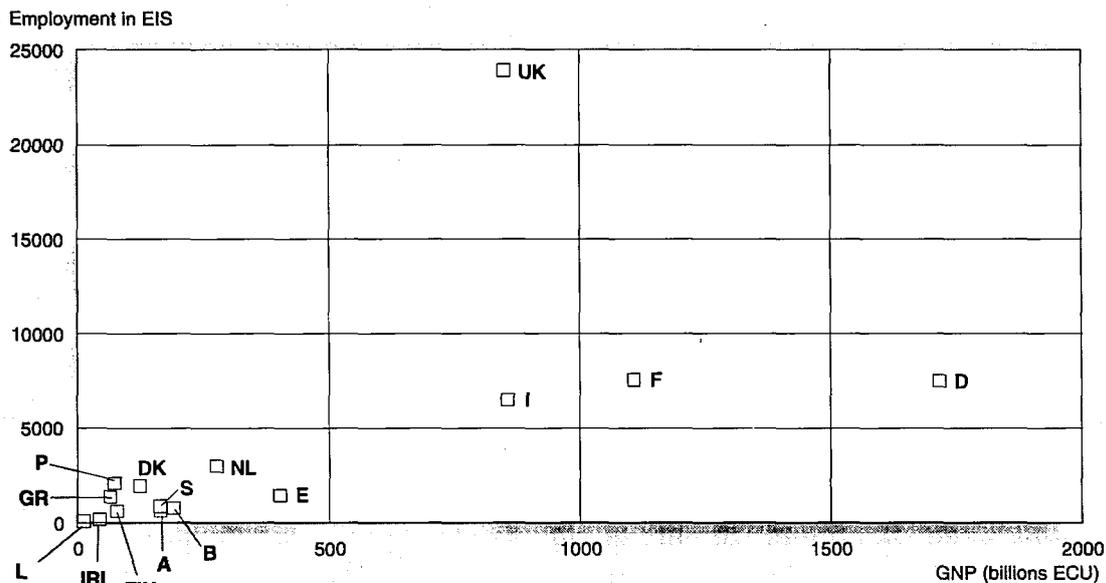
Europe, with its highly developed professional electronic information sector, has also experienced strong growth in the field during the last two years. This reflects the arrival of new databases, technological advances in software and com-

**Table 5: Electronic Information Services**  
Main Indicators, 1994

	Population (million)	GNP (billion ECU)	Effective total in EIS
Belgique/België	10.0	190.6	763
Danmark	5.2	123.9	1 934
Deutschland	80.9	1 716.2	7 500
Ellada	10.3	65.2	1 367
España	39.1	403.8	1 449
France	57.8	1 108.8	7 532
Ireland	3.5	43.5	185
Italia	57.1	857.7	6 500
Luxembourg	0.4	11.4	65
Nederland	15.2	276.2	3 001
Österreich	7.8	164.4	629
Portugal	9.9	73.6	2 090
Suomi/Finland	5.1	78.5	628
Sverige	8.6	163.7	880
United Kingdom	56.5	852.1	23 910
EUR 15	367.4	6 129.6	58 433

Source: IMO

**Figure 3: Electronic Information services  
Employment in EIS, 1994**



Source: IMO

puterisation, and an improvement in marketing methods, particularly as regards the setting of tariffs. Because of this, the volume of queries has increased, while the budgets allocated to the documentary services in large companies have remained stable or have fallen due to the economic stagnation. The short and medium term opportunities to widen the range of users are now centred on small firms, the liberal professions and professionals working from home. The increasingly widespread use of microcomputers coupled to modems increases the potential market for end users. The main selling points of those providing on-line and off-line services are the breadth and depth of the databases offered and their product awareness. The five routes towards expansion, with the primary aim of gaining a larger share of the market, are through a schedule

of attractive and flexible tariffs, setting inclusive rates or rates per transaction, more flexible distribution systems, new products giving easy access but based on powerful software for end users, acquisitions and distribution through the World Wide Web on the Internet

## INDUSTRY STRUCTURE

### Companies

European groups dominate the electronic information industry in Europe, Reuters being at the top with nearly a third of the European market. With a 1994 turnover of £2 309 million (77% of it dedicated to financial and news databases), Reuters' electronic information services are accessible in more than

**Table 6: Electronic Information Services  
Total EIS market, 1994**

(million ECU)	Total market (1)	World-wide revenue (2)	Exports (3)	Imports (4)
Belgique/België	75.3	42.9	16.5	48.9
Danmark	156.5	128.0	11.0	39.5
Deutschland	594.5	367.4	88.7	315.8
Ellada	40.9	38.3	9.6	12.2
España	74.7	60.2	4.1	18.6
France	585.7	533.2	118.0	170.5
Ireland	31.0	10.3	0.5	21.2
Italia	353.4	264.5	5.8	94.7
Luxembourg	42.0	7.4	1.4	36.0
Nederland	259.5	277.6	89.6	71.5
Österreich	61.5	26.7	1.4	36.2
Portugal	72.6	61.4	1.2	12.4
Suomi/Finland	116.7	99.8	5.7	22.6
Sverige	175.9	123.5	6.1	58.5
United Kingdom	1 174.0	4 080.9	3 110.6	203.7
EUR 15	3 814.2	6 122.1	3 470.2	1 162.3

(1) World-wide revenue of local companies - exports+imports.

(2) World-wide revenue of local companies

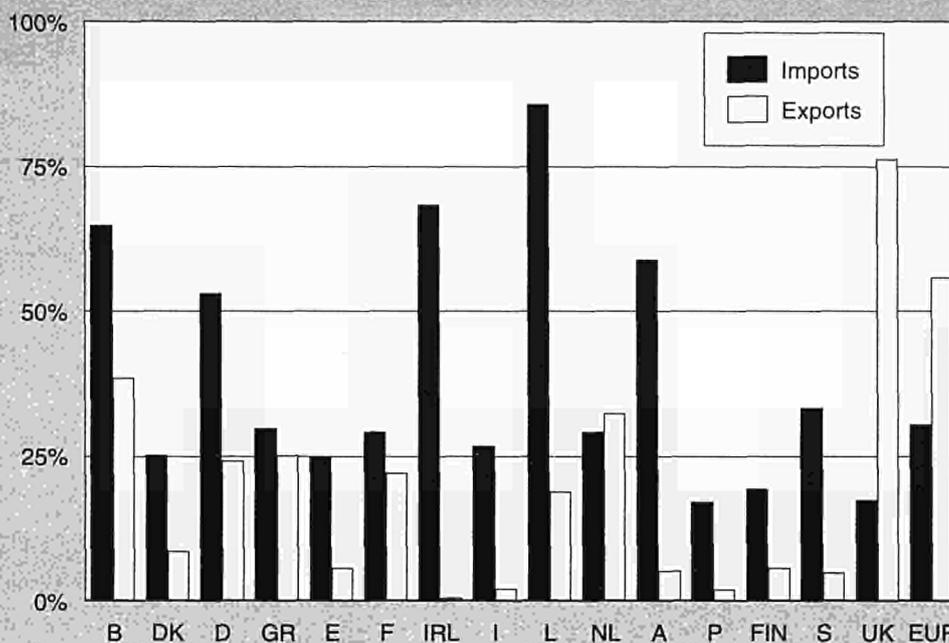
(3) Foreign revenue earned by national suppliers

(4) Domestic revenue earned by foreign suppliers

Source: IMO



**Figure 4: Electronic information services  
Imports and exports of EIS services, 1994**



Source: IMO

150 countries. Its main competitors in financial information fields are the American Dow Jones and Knight Ridder. However, it still has only a small presence in the American continent and favours the Asia-Pacific markets, particularly India and China. With an appreciable presence in the paper-based information sector, Reed-Elsevier took a great step forward in the electronic information sector by acquiring the American Mead Data Central for £1 billion, and renaming it Lexis-Nexis, the top on-line information service in the USA. Reed-Elsevier publishes many of its publications and professional directories like Kompass in electronic form (CD-ROMs). The group forecasts that 40% of its turnover will come from electronic publishing in the year 2000 compared with 16% in 1995. The American company Dun & Bradstreet specialises in databases covering company news. Continuing a policy of expansion into the European information services market, the American group acquired several companies in 1994: S&W in France, Orefro in Italy and Novimform in Switzerland. Dun & Bradstreet has also combined with the European Bank for Reconstruction and Development (EBRD) in order to set up economic information services companies in Hungary, the Czech Republic and Poland. About 28% of its turnover was generated in Europe in 1994.

Press Agencies also have a considerable market presence in the European electronic information services sector, among them the Agence France de Presse (AFP) in France and the German Press Agency in Germany. The third large company involved in the German market is Credit Inform.

### Strategies

The European professional electronic information services sector is both concentrated and fragmented. It is characterised by a small number of large firms and a very large number of small ones. Many of the acquisitions which have taken place in the last few years have mainly been aimed at directly increasing market share and diversifying into other areas of information (medical, technical, etc.). In addition, the increased sophistication in the means of electronic broadcasting and the development of information superhighways is attracting large telecommunications companies such as AT&T, MCI

and IBM. Lastly, with the predictable rapid expansion of a mass multimedia market in sight, some companies in the sector could attempt to use their experience in professional information services to penetrate the mass market, counting on greater ease of access and use and on attractive prices.

### REGULATIONS

In general, there are no specific laws and regulations making detailed provision for the classes of information that may or may not be included in an electronic information product. However, it is obvious that since, whether electronic or not, a database is a "work", it must, by analogy, comply with the

**Table 7: Electronic Information Services  
Import and export ratios, 1994**

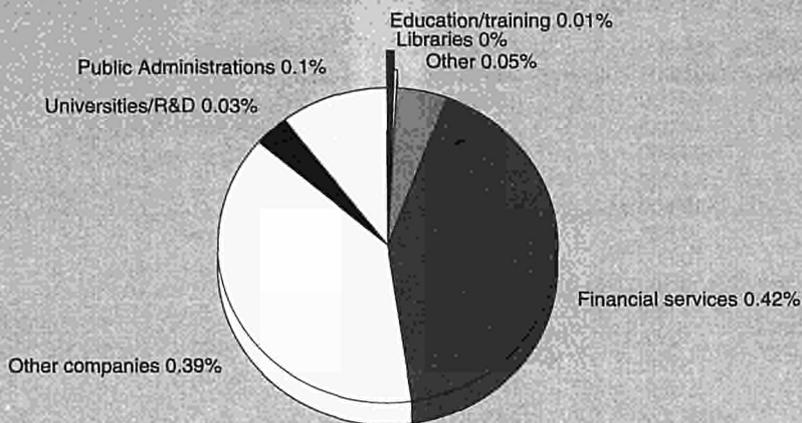
(%)	Imports (1)	Exports (2)
Belgique/België	64.9	38.5
Danmark	25.2	8.6
Deutschland	53.1	24.1
Ellada	29.8	25.1
España	25.0	5.6
France	29.1	22.1
Ireland	68.4	0.5
Italia	26.8	2.2
Luxembourg	85.7	18.9
Nederland	29.1	32.3
Österreich	58.9	5.2
Portugal	17.1	2.0
Suomi/Finland	19.4	5.7
Sverige	33.3	4.9
United Kingdom	17.4	76.2
EUR 15	30.4	55.8

(1) Imports/total market.

(2) Exports/world-wide revenue of local companies.

Source: IMO

**Figure 5: Electronic information services  
Revenue by user group, 1994**



Source: IMO

general rules applicable to laws governing the press and publishing. For some services, however, there are special rules. This is so for audiotex and videotex services, for which there are specific "codes of ethics" or other fundamental ethical rules. Two other basic rules apply to information services: the rights to intellectual property (essentially problems of copyright) and the protection of personal data. At the end of 1992, the Commission published a draft directive intended to prevent the pirating of databases and to protect the reproduction rights of electronic media. In April 1996 a formal agreement had been arrived at.

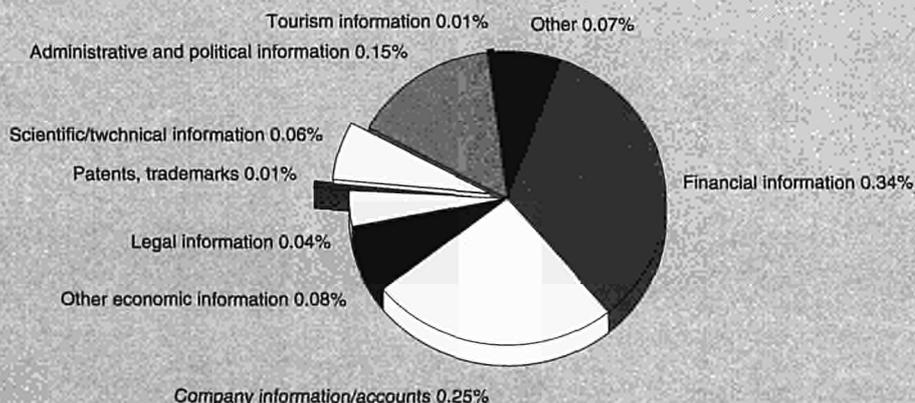
In its Legal Guide for the providers and users of information services, the EIIA gives the following list of regulatory documents emanating from the EU: An Action Plan (COM(94)347), the Commission announced the preparation of a "Green Paper on the Legal Protection of Encrypted Services in the Internal Market," 7/94; modified proposal for the Directive on the legal protection of databases, 10/93; Modified proposal for the Council Directive of 15 October 1992 relating to the protection of natural persons with regard to the treatment of data of a personal nature and to the free circulation of data, 10/92; Council Directive relating to the general security of products,

08/92; Proposal for a Council Directive on the responsibility of service providers, 12/90; Communication from the Commission relating to new guidelines concerning the responsibility of service providers, 06/94; Council Directive relating to improper clauses in contracts concluded with consumers, 04/93; Council Directive relating to the legal protection of computer programs, 05/91; Council Directive relating to harmonisation and to the duration of copyright protection and of certain related rights, 10/93; Council Directive relating to the harmonisation of statutory provisions, regulations and administrative provisions of Member States with regard to misleading advertising, 09/84.

## OUTLOOK

The large customer base already operative in the internal market, the existence of abundant and diversified supplies of specialist services, the positioning of companies faced with the development of the "information society", and mastery of the key technologies of these developments are all promising features for the future. Growth in the electronic information services market should also take off through a strong penetration

**Figure 6: Electronic information services  
Revenue by topic, 1994**



Source: IMO

**Table 8: Electronic Information Services  
Subscription to professional US on-line services**

	1993	1994
Reed Elsevier-NEXIS	650 000	707 000
Dow Jones News/Retrieval	205 000	220 000
Dialog/DataStar	155 000	158 000
MEDLARS	76 015	98 617
NewsNet	21 000	22 000
Info Globe	12 000	14 000
Ovid Online	19 600	14 000
OCLC	13 921	13 400
ORBIT	10 500	11 000
Questel	9 500	10 000
FirstSearch	1 992	8 214
EPIC	4 846	4 739
MAID	3 500	4 000
Infomart Online	3 000	3 500
Total	1 185 874	1 288 470

Source: Simba Information Inc.

**Table 9: Electronic Information Services  
Turnover of US professional on-line services**

(million USD)	1993	1994
Dialog/DataStar	243.5	265.7
NEXIS	187.4	221.1
OCLC	98.8	128.1
Dow Jones News/Retrieval	83.1	99.4
American Chemical Society	65.3	70.4
DataTimes	20.0	25.0
ORBIT	15.0	15.0
Telebase Systems	13.8	17.2
MAID	8.9	13.9
Questel	20.0	25.0
Ovid Online	11.1	6.4
Total	766.9	887.2

Source: Simba Information Inc.

of microcomputers, cheap telephone tariffs, a fall in the price of PCs and modems and more intensive use of information.

According to Inteco, the number of PCs in the four largest EU countries (Germany, the UK, France and Italy) will probably increase from 16 900 000 in 1995 to 47 800 000 in the year 2000, i.e. almost a three-fold increase. Over the same period, the number of modems should increase eight-fold from 4 300 000 to 35 900 000. This huge expansion should enable the present market growth to be maintained. Moreover, the liberalisation of the European telecommunications market planned for 1998 should mean an extension in the services and products on offer at highly competitive prices.

However, as far as the companies involved in these medium term developments are concerned, only the large publishing groups or the British information services groups seem to be capable of making the best use of them in a context of increasing globalisation. In addition, the strategy involving take-overs and acquisitions practised by the major companies will probably lead to an increasing concentration in the sector.

Written by: IDATE

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# Telecommunication services

## NACE (Revision 1) 64.2

Nearly 80% of the EU telecommunications service sector, which had an estimated turnover of ECU 150 billion in 1994 and a mean annual increase of 8% in current value over the last ten years, is still accounted for by basic services, mainly public telephone systems, but this is changing rapidly.

As far as the regulatory framework is concerned, the opening up of the markets advocated by the European Commission and taken up by Member States is leading to an increasing range of services being offered. This is now visible mainly in value-added services (mobile communications and data transmission) but will affect basic services more globally from 1998.

On the technological side, the continual progress being made in the field (digital technologies, high-speed networks, etc.) is improving the technical services on offer and is also creating increased market fluidity thanks to the growing opportunities for interconnection.

The proliferation of the number of active participants in the sector is making the organisation of the sector increasingly complex. Most observers agree on the fact that the present turbulent stage will be followed in the short to medium term by a period of stabilisation.

Finally, from the commercial point of view, the customer will now be placed at the heart of the organisation, a situation reflected both in the restructuring taking place within the operators' own businesses and in the appearance of new intermediaries (especially companies marketing services).

At stake for both existing and new players in the sector is thus the achievement of a position in the market adapted to this new situation: something that is mainly being realised by moves towards alliances and concentration and towards diversification and differentiation of what is on offer.

### INDUSTRY PROFILE

#### Description of the sector

Telecommunications services embrace the conveyance and distribution of various types of signal (speech, data, images) and includes both the running of networks and the provision of services. It is becoming increasingly important to differ-

entiate between the two latter aspects with the growing diversification of supplies and the opening up of the telecommunications market.

A distinction is also made between basic services, consisting mainly of public voice telephony, and value-added services covering data transmission, mobile communications and a number of activities introducing either new ways of accessing networks and services (call back, telephone cards, etc.) or "advanced" functionality's (call transfer, teleconferencing, etc.). The first group (basic services) has been constantly declining in relative importance for 20 years but it is still dominant in the economy of the sector.

Historically, the sector has been formed around national monopolies that still broadly provide the basic structure of the European industry. Moves towards market liberalisation since the end of the 1980s have until now concerned value-added services, and some services to business users, leaving complete control of basic services in the hands of the national monopolies (with a few exceptions like the UK and Sweden). This has nevertheless produced profound changes in the industrial landscape over the past few years with the arrival of new players (particularly mobile telephone operators and those providing value-added services) and the globalisation of traditional operators. Even greater turbulence is looming when 1998 comes, since it will mark the end of national monopolies in the basic services in almost all EU countries.

#### Recent trends

From an economic point of view, the telecommunications services sector accounts for 1.5% to 2.8% of GDP depending on the country, the EU average being 1.8% in 1994. Dynamically, its growth is significantly greater than that of the economy in general. In current values, the European telecommunications services market increased on average by 8% per annum between 1983 and 1993. Investment was also maintained at a high level: purchases by public network operators still account for more than two thirds of sales in the telecommunications industry.

During the last few years, however, growth has fallen off slightly, largely because of price reductions in most segments of the market and in most countries.

When discussing this trend, a distinction must still be made between traditional activities which (apart from some special cases like the catching-up programme in Italy and Spain, and the reunification of Germany, whose effects are gradually disappearing) are recording moderate increases, and new activities whose annual growth rate is often above 20%.

**Table 1: Telecommunication services  
Gross Investments**

(million ECU)	1980	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	426	458	507	490	479	462.3	420	590	657	669	601	1 124
Danmark	250	252	277	323	425	435.9	517	450	414	356	340	320
Deutschland	3 957	5 297	6 189	7 060	7 549	8 022.1	8 174	8 555	9 383	12 971	13 859	13 169
Ellada	184	353	372	323	163	169.5	204	275	297	441	548	681
España	1 175	1 271	1 610	1 478	1 496	1 293.6	2 571	4 332	5 578	4 847	3 192	2 560
France	4 029	3 906	4 032	5 237	N/A	4 390.6	4 133	4 362	3 782	4 976	4 395	5 309
Ireland	191	280	N/A	196	186	172.2	175	209	222	222	202	205
Italia	2 052	3 304	N/A	3 693	3 786	4 003.0	4 973	6 803	6 383	6 500	6 187	5 504
Luxembourg	18	N/A	9	14	N/A	26.1	31	41	48	50	56	87
Nederland	511	493	496	644	645	663.6	836	1 297	1 169	1 312	1 250	1 254
Portugal	106	199	190	228	222	229.9	369	431	562	427	714	626
United Kingdom	2 030	2 494	3 181	3 350	3 138	3 350.5	4 435	4 626	3 682	3 659	2 921	3 515
EUR 12	14 931	N/A	N/A	23 037	N/A	23 219.3	26 839	31 971	32 177	36 429	34 266	36 405

Source: ITU, national telecom administrations



A particularly striking example of this two-speed progress in the sector is the mean annual growth rate of 50% in the number of subscribers to mobile telephone networks since 1990 while that of subscribers to fixed networks is no more than 4% to 5% annually. In absolute numbers, of course, fixed telephones still keep a huge lead: at the beginning of 1995, 182 million main telephone line were in service in the EU (enlarged by Sweden, Finland and Austria) while the number of subscribers to cellular phones was 13.4 million.

The ratio between the two types of service varies considerably within countries. On the same date, the cellular/fixed phone ratio was 0.23 in Sweden, 0.13 in the UK, 0.07 in Germany and less than 0.03 in France. The telecom density (number of telephone subscribers per 100 inhabitants) is generally higher in northern than in southern European countries: for fixed telephones, in 1994 there were 68 lines per 100 inhabitants in Sweden compared to only 39.3 in Spain.

### International comparison

Overall, the EU accounts for 32% of the world telecommunications market, and for 29% of installed lines and of cellular

phone subscribers (according to data available at the beginning of 1995). The USA and Japan form the two other main markets, accounting for 32% and 14% respectively of the world total.

Earnings from telecommunications services have grown more rapidly in the EU than in the USA and even more so than in Japan. However, the difference between the EU and the USA has tended to become less marked as the European markets have opened up, while the Japanese market is particularly affected by the introduction of competition since the end of the 1980s.

On the other hand, mean annual consumption per inhabitant is lower in the EU: ECU 318 compared to ECU 425 and ECU 504 respectively for Japan and the USA in 1993. Such a large range of values reflects the very different habits of consumers from one region to another. In the USA, value-added services (mobile communications and data transmission) are much more highly developed, with the fixed telephone system accounting for a little below three quarters of earnings from telecommunications services (compared to nearly 80% globally in western Europe). The income per line is itself

**Table 2: Telecommunication services**  
**Public operators - Receipts and expenditure**

(million ECU)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Receipts</b>														
Belgique/België	929	973	1 020	1 097	1 269	1 394	1 546	1 699	1 806	1 948	2 113	2 268	2 476	2 741
Danmark	565	609	685	826	1 181	1 485	1 677	1 928	2 068	2 191	2 183	2 266	2 310	2 404
Deutschland	10 317	11 032	12 120	13 241	14 255	15 133	16 600	17 872	18 041	18 961	19 780	23 013	26 706	30 463
Ellada	395	442	675	694	726	714	737	777	884	921	1 016	1 089	1 222	1 491
España	1 895	2 229	2 507	2 536	2 981	3 292	2 673	3 803	4 588	5 559	6 337	7 927	8 804	8 182
France	7 925	8 455	9 071	9 919	11 627	14 275	15 532	16 275	13 942	14 852	16 232	16 602	19 825	18 398
Ireland	242	316	413	473	507	624	686	701	779	880	982	1 002	1 023	970
Italia	3 661	4 697	5 337	6 276	7 473	8 345	9 546	10 265	11 158	12 627	14 018	12 688	13 031	13 503
Luxembourg	53	N/A	58	N/A	69	74	N/A	91	118	133	155	164	179	192
Nederland	1 665	1 777	1 994	2 182	2 335	2 540	2 879	3 102	3 341	3 760	4 100	4 476	4 889	5 439
Portugal	332	436	480	573	720	855	867	727	869	943	1 247	1 366	1 540	1 974
United Kingdom	5 946	10 320	11 378	11 713	12 957	14 240	14 033	14 453	16 662	18 290	17 562	19 025	17 954	17 301
<b>Expenditure</b>														
Belgique/België	964	1 040	1 089	1 160	1 232	1 352	1 449	1 565	1 647	1 762	1 894	2 059	2 907	2 395
Danmark	N/A	N/A	N/A	N/A	1 068	1 269	1 485	1 802	1 982	2 049	2 002	2 185	2 196	2 199
Deutschland	9 120	9 964	10 871	11 874	12 781	13 531	14 975	16 500	16 576	18 012	19 168	21 940	29 004	34 186
Ellada	413	517	624	621	684	703	616	652	698	770	812	842	901	1 009
España	1 678	2 029	2 296	2 335	2 723	2 973	2 964	3 428	4 105	5 044	5 644	7 217	8 081	6 817
France	6 515	8 141	8 675	10 060	10 675	12 559	14 481	14 937	13 403	14 200	15 422	19 367	21 125	19 735
Ireland	272	346	435	496	625	674	703	687	722	790	885	902	930	888
Italia	3 857	4 426	5 220	5 953	7 214	7 982	8 972	9 685	10 706	12 094	14 123	11 467	12 530	12 989
Luxembourg	N/A	N/A	N/A	N/A	N/A	34	N/A	N/A	65	N/A	74	94	106	128
Nederland	1 568	1 683	1 862	1 999	2 079	2 208	2 407	2 573	2 840	N/A	3 541	3 824	4 304	4 604
Portugal	304	443	506	545	591	667	711	557	625	622	829	989	1 754	1 673
United Kingdom	5 398	9 492	10 727	10 027	11 823	12 389	12 918	12 383	14 286	16 010	13 457	16 067	16 262	13 671
<b>Surplus/deficit (1)</b>														
Belgique/België	-36	-67	-68	-64	37	42	97	134	159	181	218	209	-431	346
Danmark	N/A	N/A	N/A	N/A	113	196	191	125	86	142	161	81	114	205
Deutschland	1 198	1 068	1 249	1 367	1 474	1 602	1 625	1 372	1 465	949	611	1 073	-2 298	-3 723
Ellada	-18	-76	51	74	42	11	121	125	186	151	203	247	321	482
España	21	200	212	201	258	318	-291	374	483	514	692	710	723	1 365
France	1 410	313	396	-140	953	1 715	1 051	1 338	539	652	810	-2 766	-1 300	-1 337
Ireland	-30	-30	-22	-24	-118	-50	-17	14	57	90	97	100	93	83
Italia	-196	271	117	323	260	363	574	580	453	533	-105	1 220	501	514
Luxembourg	N/A	N/A	N/A	N/A	N/A	39	N/A	N/A	53	N/A	81	70	72	64
Nederland	97	94	133	184	256	333	472	530	501	N/A	559	652	585	834
Portugal	28	-7	-27	28	129	188	156	171	244	320	417	377	-213	301
United Kingdom	549	828	651	1 686	1 134	1 851	1 115	2 070	2 376	2 280	4 105	2 959	1 692	3 629

(1) Receipts less expenditures.  
Source: ITU, national telecom administrations

**Table 3: Telecommunication services**  
**Distribution of telephone main lines**

(millions)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Main lines</b>															
Belgique/België	2.5	2.6	2.7	2.8	3.0	3.1	3.3	3.4	3.6	3.7	4.0	4.1	4.3	4.4	4.5
Danmark	2.2	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.1	3.1
Deutschland	20.5	21.6	22.6	23.4	24.4	25.4	26.2	27.0	27.8	28.8	30.0	33.6	35.4	37.0	38.6
Ellada	2.3	2.4	2.5	2.7	2.9	3.1	3.3	3.5	3.6	3.8	3.9	4.2	4.5	4.7	5.0
España	7.2	7.7	8.0	8.5	8.9	9.3	9.8	10.2	11.0	11.9	12.9	13.6	14.3	14.8	15.4
France	15.9	17.7	19.5	20.9	22.1	23.0	23.9	24.8	25.8	26.9	28.1	29.1	29.9	30.9	32.1
Ireland	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.2
Italia	13.0	13.9	14.7	15.6	16.5	17.4	18.3	19.1	20.1	21.3	22.4	23.1	23.7	24.2	25.3
Luxembourg	0.1	N/A	0.1	N/A	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nederland	4.9	5.1	5.3	5.5	5.6	5.8	6.0	6.2	6.5	6.7	6.9	7.2	7.4	7.6	7.9
Portugal	1.0	1.1	1.1	1.2	1.3	1.4	1.5	1.7	1.8	2.1	2.4	2.7	3.0	3.3	3.6
United Kingdom	17.7	19.1	19.6	20.2	20.9	21.7	22.1	22.8	23.8	24.9	25.4	25.6	26.1	27.4	29.4
EUR 12	87.8	N/A	99.1	N/A	109.0	113.6	118.0	122.3	127.9	134.0	140.0	146.9	152.4	158.2	166.3
USA	94.2	94.4	94.9	N/A	99.9	111.5	115.2	11.9	122.2	125.8	127.2	130.1	N/A	N/A	151.9
Japan	38.6	39.9	41.1	42.4	43.8	45.3	44.8	46.3	48.0	49.9	52.0	55.9	N/A	N/A	60.7
<b>(units)</b>															
<b>Lines per 100 inhabitants</b>															
Belgique/België	25.0	26.4	27.8	28.8	29.9	31.0	33.0	34.5	35.9	37.7	40.0	41.0	42.5	43.7	44.5
Danmark	43.5	44.7	45.9	47.0	48.2	49.7	51.3	52.9	54.6	55.5	56.6	57.6	58.0	58.9	59.9
Deutschland	33.4	35.1	36.6	38.0	40.0	41.6	42.9	44.2	45.3	46.5	47.5	42.1	44.1	45.7	47.4
Ellada	23.5	24.6	25.8	27.5	29.5	31.4	33.0	34.7	36.2	37.7	39.0	41.4	43.9	45.8	47.8
España	19.3	20.3	21.0	21.9	23.1	24.2	25.2	26.4	28.3	30.7	33.0	35.0	36.5	37.8	39.3
France	29.5	31.9	34.9	37.4	39.3	41.7	42.2	44.6	46.2	47.8	49.5	51.1	52.3	53.7	55.3
Ireland	14.2	15.5	16.6	17.5	18.9	19.9	21.2	22.5	23.8	25.7	28.1	29.3	30.9	32.9	34.1
Italia	23.1	24.6	25.9	27.4	28.9	30.4	31.8	33.3	35.0	37.0	38.8	40.0	41.8	42.4	44.2
Luxembourg	36.2	N/A	37.5	N/A	39.2	42.0	42.5	43.5	44.8	45.9	48.1	49.9	53.0	54.4	56.2
Nederland	34.6	35.7	36.9	37.9	39.1	40.2	41.3	42.5	43.8	45.1	46.4	47.8	48.9	50.1	51.3
Portugal	10.1	10.7	11.5	12.4	13.1	13.8	14.7	16.2	18.0	21.0	24.1	27.3	30.6	33.0	36.3
United Kingdom	31.4	34.1	34.8	35.8	37.1	38.2	39.0	40.0	41.8	43.5	44.2	44.5	45.2	47.1	50.4
EUR 12	27.6	N/A	30.8	N/A	33.8	35.3	36.4	37.8	39.4	41.1	42.6	42.6	44.1	45.6	47.6
USA	41.4	41.0	40.8	N/A	42.2	46.6	47.7	4.9	49.6	50.6	50.9	51.5	56.5	N/A	58.3
Japan	33.0	33.9	34.7	35.6	36.5	37.5	36.9	38.0	39.2	40.5	42.1	45.1	46.7	N/A	48.6

Source: ITU, national telecom administrations

higher than the European average, a feature that is still more pronounced in Japan.

#### Foreign trade

Methods of compensation have been worked out by international operators to pay for access to the networks of foreign countries. The calculations take into account the volume of traffic and the tariffs fixed by each country. The trade surplus

or deficit therefore results from any difference between the levels of these two variables in the two relevant countries or regions. This explains the large surplus earned by the EU as a whole in relation to the USA, where international tariffs are significantly lower. However, this is tending to fall as the differential between the tariffs in the two blocks narrows.



**Table 4: Telecommunication services**  
**Number of persons employed**

(units)	1980	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	28 900	28 996	28 394	27 609	26 996	26 664	25 782	25 255	26 295	27 700	26 843	25 900
Danmark	N/A	N/A	N/A	16 609	17 758	18 745	18 858	18 492	18 064	17 929	17 701	16 740
Deutschland	195 000	204 718	207 693	212 364	214 349	216 020	216 156	216 210	212 205	229 000	231 000	231 000
Ellada	30 236	30 905	30 602	30 570	29 595	29 444	30 327	29 654	28 086	27 593	26 716	26 349
España	59 213	62 823	62 817	62 790	63 021	63 311	66 062	71 155	75 350	75 499	74 437	74 300
France	161 000	167 000	167 130	166 788	165 198	163 682	159 521	157 313	155 814	156 200	155 300	154 900
Ireland	19 650	18 205	17 510	16 165	15 298	14 615	14 269	13 705	13 472	13 440	13 033	13 100
Italia	104 000	107 040	108 782	109 792	110 232	109 680	113 676	116 391	117 986	90 818	90 536	115 000
Luxembourg	629	N/A	569	675	679	693	745	724	703	736	771	778
Nederland	27 902	27 677	27 760	28 774	29 674	29 833	29 142	31 500	31 770	30 819	32 327	32 000
Portugal	22 800	23 799	23 252	23 208	23 229	22 820	23 053	23 275	23 563	23 068	23 166	22 372
United Kingdom	240 700	241 816	235 178	226 700	223 084	237 200	244 400	245 700	226 900	210 500	170 700	183 200
EUR 12	N/A	N/A	N/A	932 355	919 847	932 962	942 133	948 882	930 144	903 302	862 103	895 639
USA	956 600	N/A	N/A	813 000	N/A	N/A	725 000	696 000	684 000	575 600	N/A	N/A
Japan	335 000	330 000	324 000	321 000	311 000	305 000	300 000	286 000	276 900	266 100	N/A	N/A

Source: ITU, national telecom administrations

By their very nature, international exchanges of telecommunications services affect only a limited proportion of the market, with nearly 90% operators' income still being generated by national and local communications. The growth in the sector at international level is based rather on the many agreements made between operators themselves: acquisitions, increased shareholdings, formation of common subsidiaries, and strategic alliances.

## MARKET FORCES

### Demand

In a few years, the sector has undergone a considerable cultural change, from an approach based essentially on technology to a more commercial approach centred around the customer (note also that this term now replaces the telecommunications term "user").

The way operators, particularly traditional ones, are organised is continually being adapted to cope with this new situation: customers themselves are segmented, both vertically (major account holders, businesses and residential users) and horizontally (in terms of customers' sphere of activity) so as to respond as closely as possible to market demand. This change is particularly evident in value-added services where segmentation is very pronounced. It is also very marked in mobile communications where the distributing companies match service modules to the type of customer. It is becoming the same in basic services where increasingly modular supplies are appearing, including those aimed at residential customers ("Friends and Family" type modules, for example).

Technological innovation is also affecting demand: the digitising of various parts of networks has been the major feature during the past few years, giving access to increasingly varied and improved services and functionality's (ISDN, GSM, "com-

**Table 5: Telecommunications services**  
**Text communications**

(units)	Number of telex subscriber			Number of fax machines (1)		
	1988	1992	1993	1988	1992	1993
Belgique/België	25 030	11 960	9 360	24 000	150 000	165 000
Danmark	11 690	5 990	4 870	35 000	170 000	185 000
Deutschland	158 280	81 090	55 400	197 250	1 172 700	1 296 000
Ellada	24 330	22 710	21 010	3 410	13 270	15 260
España	43 610	22 910	17 510	53 570	195 030	215 000
France	150 010	96 190	N/A	185 000	750 000	1 000 000
Ireland	5 370	2 630	N/A	10 000	75 000	80 000
Italia	72 770	50 000	43 730	92 410	201 000	202 000
Luxembourg	2 740	1 960	N/A	1 500	5 000	5 500
Nederland	(1) 33 100	15 000	N/A	65 000	372 750	400 000
Österreich	25 000	N/A	10 000	38 000	N/A	210 000
Portugal	27 650	15 220	9 060	3 300	26 760	35 340
Suomi/Finland	7 100	N/A	3 000	16 900	N/A	115 000
Sverige	18 300	N/A	10 800	75 000	N/A	325 000
United Kingdom	111 100	63 500	45 400	556 000	1 005 000	1 300 000
EUR 15	716 080	(2) 389 160	(2) 230 140	1 356 340	(2) 4 136 510	5 549 100

(1) Estimates.

(2) For available data only.

Source: ITU: Telecommunication Indicators for Western & Southern Europe.

**Table 6: Telecommunication services  
Number of cellular subscribers**

(units)	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Belgique/België	3 798	7 223	21 086	32 639	44 501	52 781	62 500	66 929	128 000	235 000
Danmark	60 504	79 523	101 903	123 792	148 220	175 943	211 063	357 589	503 500	790 394
Deutschland	23 800	48 747	98 763	163 619	272 609	532 300	951 900	1 769 962	2 476 000	3 724 000
Ellada	N/A	N/A	N/A	N/A	N/A	N/A	N/A	48 000	160 278	286 584
España	1 700	4 200	11 600	29 800	54 700	108 451	180 296	257 250	411 930	944 000
France	9 055	39 234	98 332	168 560	283 200	375 000	436 700	572 000	883 211	1 374 694
Ireland	1 500	3 475	6 300	13 579	25 000	34 189	44 025	61 100	80 985	121 208
Italia	9 044	16 534	33 609	66 070	266 000	568 000	783 000	1 207 000	2 239 738	3 923 000
Luxembourg	84	166	324	427	820	1 139	1 120	4 427	12 231	29 170
Nederland	15 300	24 200	33 100	56 000	79 000	115 000	166 000	216 000	320 458	539 543
Österreich	19 100	N/A	N/A	N/A	73 698	115 402	172 453	220 976	288 490	379 540
Portugal	N/A	N/A	N/A	N/A	6 461	12 570	37 262	101 231	185 000	311 108
Suomi/Finland	85 232	105 860	138 160	190 031	258 000	319 137	386 021	489 174	652 150	1 009 190
Sverige	112 600	159 800	228 700	332 900	461 200	568 200	656 000	811 600	1 387 260	1 988 110
United Kingdom	150 000	275 000	575 000	800 000	1 100 000	1 230 000	1 496 000	2 266 000	3 524 000	5 410 009
EUR 1	491 717	763 962	1 346 877	1 977 417	3 073 189	4 208 112	5 584 340	8 450 972	13 259 127	21 065 550

Source: ITU: Telecommunication Indicators for Western & Southern Europe, IDATE

fort" functions, etc.). The development of high-speed ATM-type networks will significantly improve the possibilities for data transfer at very high speeds and/or in large volumes. As for intelligent networks, their progressive introduction should make it possible to go even further in tailoring what is on offer to individuals' requirements.

### Supply and competition

Operators are thus adapting their structure so that they can respond appropriately to each large category of customer. Among these, major account holders have become particularly important, justifying the introduction of specific market segments. It is around these that a significant proportion of competition in the sector is centred today. Most traditional operators, as part of their development, have started to offer private networks designed to attract large groups. More glob-

ally, these same operators have formed joint companies in order to attract international groups.

International competition is taking on a new form with these groupings, which reduces the number of competitors but opens up the possibility of wider choices for customers.

The competitiveness of the European industry can only be assessed in relative terms, inasmuch as the markets are still largely compartmentalised. Nevertheless, several points of comparison can be found by looking at productivity's: turnover per employee ranged from ECU 120 000 to 140 000 for the principal European operators in 1994 (apart from Telecom Italia which recorded nearly ECU 160 000) whereas it was between ECU 150 000 and 170 000 for regional American operators and more than ECU 260 000 for NTT in Japan.

**Table 7: Telecommunication services  
Telephone tariffs, standard rates, Dec. 95 (1)**

(ECU)	Connection fees USA	Monthly rental Japan	Local calls (3 min.)	Long distance calls (1 min.)	International calls (1 min.)
Belgique/België	90.44	11.89	0.13	0.26	1.29
Danmark	143.28	9.64	0.13	0.10	1.36
Deutschland	46.16	11.35	0.11	0.33	1.11
Ellada	164.60	5.43	0.03	0.34	1.32
España (*)	212.50	12.42	0.06	0.51	2.34
France	39.24	5.89	0.10	0.29	1.51
Ireland	146.62	12.22	0.12	0.23	1.47
Italia	96.03	5.67	0.12	0.24	1.27
Luxembourg	64.60	5.69	0.14	0.08	1.25
Nederland	95.65	11.26	0.14	0.14	1.60
Österreich	120.69	10.56	0.15	0.40	1.36
Portugal	73.61	8.90	0.07	0.39	1.70
Suomi/Finland	170.21	8.30	0.10	0.13	1.30
Sverige (Telia)	89.68	9.70	0.10	0.12	1.10
United Kingdom (BT)	117.14	8.32	0.13	0.10	1.03

(1) For countries with regional operators (Denmark and Finland notably), the lowest tariffs are considered.

(\*) Additionally we charge 5.7 ptas. for each local call, 17.1 for each long distance, and 45.6 ptas. for each international call.

Source: IDATE



**Table 8: Telecommunication services  
Telephone installation and subscription fees, 1993**

(ECU)	Residential Installation	Monthly subscription	Business Installation	Monthly subscription
Belgique/België	103.3	10.1	103.3	10.1
Danmark	138.3	9.3	138.3	9.3
Deutschland	33.6	12.7	33.6	12.7
Ellada	316.7	4.7	316.7	4.7
España	250.0	12.0	250.0	12.0
France	46.5	6.8	46.5	14.3
Ireland	174.4	14.5	181.9	15.2
Italia	118.4	5.0	129.3	11.1
Luxembourg	61.7	6.2	61.7	5.5
Nederland	96.4	11.4	96.4	11.4
Österreich	88.1	11.8	88.1	11.8
Portugal	75.0	9.1	75.0	9.1
Suomi/Finland	669.9	4.4	669.9	4.4
Sverige	166.0	10.6	234.6	19.5
United Kingdom	149.2	10.2	149.2	16.4
EUR 15	165.8	9.2	171.6	11.2

Source: ITU: Telecommunication Indicators for Western & Southern Europe

### Production process

Technical improvements in networks makes the whole telecom system reliable and facilitates interconnections between operators. Reducing the cost of some of the components on offer and increasing market fluidity will in the end benefit customers who see prices fall. This fall is combined, particularly in the field of basic services, with the move to limit, if not remove, internal subsidies: the subscription rate and price for local communications have thus tended to rise while the cost of long-distance and international calls is falling.

Socially, on the other hand, this same progress is the main cause of the reduction in employment recorded in the sector: purely operational and maintenance functions need a smaller workforce. In total, the telecommunications services sector lost more than 100 000 jobs between 1990 and 1995: reductions made by traditional operators as part of their restructuring have not been compensated over this period by the creation of new jobs with new operators (BT has itself reduced its staff by 90 000 in five years.).

### INDUSTRY STRUCTURE

#### Companies

The telecommunications services sector is still heavily concentrated in the hands of a small number of players, the former national monopolies, because of their great involvement in basic services. In 1994, five Europeans figured among the top 15 operators in the world: Deutsche Telekom (D), France Télécom (F), BT (UK), Telecom Italia (I) and Telefonica (E).

In 1994, the ten principal European operators achieved a cumulative turnover of ECU 116 billion, or nearly four fifths of the total market. A change in balance in favour of new entrants is only slowly taking place as the traditional operators are themselves expanding vigorously in emergent activities.

Alongside these large groups with tens and perhaps hundreds of thousands of employees, new operators of more modest size have been emerging for several years, some of them quite large (Mercury (UK) had more than 12 000 employees at the beginning of 1995 and Vodaphone (UK) nearly 4 500). Side by side with network operators, providers of value-added services consist of a huge number of firms, the largest depending on operators or large groups, mainly in information technology. New classes of player are appearing: companies

marketing services, for example, which use mobile communications as commercial bridges between the operators and end customers by reselling airtime..

The industrial organisation of the sector is thus evolving rapidly. In the UK, nearly 150 licences had been granted by the end of 1995. In other EU countries, new players are already active in deregulated areas (mobile communications, data transmission) and new applicants are proliferating in anticipation of 1998 and the complete opening up of markets..T9.T10

#### Strategies

Traditional operators have been mobilising themselves for several years in order to hold on to their market power. Facing increasing competition in their respective national markets, they are now aiming particularly at international markets, either by setting themselves up abroad or through strategic alliances. Three main groupings have officially seen the light of day: one around BT associated with the American MCI; the second grouping together of Dutch (KPN), Swedish (Telia), Swiss (Swiss PTT) and Spanish (Telefonica) operators in Unisource, a consortium itself associated with the American AT&T to form Uniworld; and the third combining the German (Deutsche Telekom) and French (France Télécom) operators in Atlas and more widely in Global One, the subsidiary formed with the American Sprint. It is thus clear that all the large European operators are engaged in these global operations: STET (I) itself announced an agreement with IBM (USA) in the telecommunications field during 1995.

Several of these groups are also involved in more local operations, where they appear either in partnership or in competition with new entrants. BT is undoubtedly now one of those most engaged in this way (in Spain, Italy, Germany, Sweden, etc.).

New operators in the strict sense of the term, now concentrated in mobile communications and data transmission services, are coming from varied but relatively limited sectors. A first group consists of companies themselves involved in networked businesses, with large financial resources (electricity companies, water companies) or at least with a telecommunications system and cable networks (cable operators, railway companies, etc.). A second group consists of companies pushed by changes in their markets into a thoroughgoing diversification: electronic groups like Olivetti (I) or Racal (UK), or more traditional industries like Bouygues (F) or Mannesmann (D).

**Table 9: Telecommunication services  
Top EU companies, 1994**

Rank	Company	Country	Turnover (billion ECU)	Change 1993/94 (%)	Number of persons employed
1	Deutsche Telekom	D	32 202	3.7	225 000
2	France Telecom	F	21 932	3.1	167 882
3	British Telecom	UK	18 452	1.6	137 500
4	Telecom Italia	I	15 412	19.6	96 705
5	Telefonica	E	10 065	21.7	72 207
6	KPN (1)	NL	9 811	8.4	92 787
7	OPT (1)	A	5 198	5.8	57 276
8	Telia	S	4 089	7.0	32 593
9	Belgacom	B	2 979	5.2	26 885
10	Tele Danmark	DK	2 396	9.6	16 435
11	Mercury	UK	2 198	12.5	10 065
12	OTE	GR	1 700	35.4	26 140
13	Vodafone	UK	1 531	35.5	4 364
14	Portugal Telecom	P	1 526	N/A	19 830
15	Telecom Eireann	IRL	1 282	12.4	12 662

(1) Activities include postal services.  
Source: IDATE, from companies reports

A large number of extra-European operators, particularly regional American ones, are also taking part in new operations in Europe. Their chosen ground has so far been in two principal markets: mobile communications and cable systems, thanks to the development of the cable-telephone system in the UK since 1991.

#### REGIONAL DISTRIBUTION

Historically, the development of telecommunications worldwide has led to a considerable geographical compartmentalisation of the industry. Market globalisation, which began in manufacturing sectors, has only gradually reached the service sector. An additional factor in telecommunications is that regulations (cf. below) still greatly restrict the possibilities for international expansion.

However, recent privatisation's in Latin America, in Eastern countries, in Asia and the Pacific, and the liberalisation taking place in the same regions, have created some opportunities. European operators have been able to take advantage of these: the best example is undoubtedly that of Telefonica which is weaving a veritable web in Latin America (with a presence in Argentina, Chile, Peru, Venezuela, Colombia, Puerto Rico and Mexico).

#### ENVIRONMENT

There are some indirect environmental benefits arising from telecommunications. Firstly, the use of telecommunications networks can limit the need to travel as well as the proliferation of paper documents with a beneficial impact on pollution levels. Secondly, some applications of telecommunications are directed precisely at environmental monitoring (remote surveillance, remote warning systems).

Negative aspects, mainly the visual impact of installations such as cables, posts and pylons on the countryside, are declining to some extent thanks to an extension of underground networks. Furthermore, telecommunications operators are among the leading organisations in the development and implementation of environmental policies.

#### REGULATIONS

Following its 1987 Green Paper on telecommunications, the European Commission has pursued a policy of liberalisation through Directives on Open Network Provision, and legislation opening all services and infrastructure to competition. Value added and non-public voice services were liberalised in 1990; satellite and mobile communications markets were opened in 1994 and 1995 respectively; and the provision of infrastructure for already liberalised services was liberalised in July 1996. This last measure will give new service operators a wider choice, enabling them to introduce competition; cable networks are already used in some countries as alternative support media (notably in the UK, but also in the Netherlands and in France as part of experimental projects).

January 1988 will mark another major step with the opening of the market for public voice telephony which still accounts for 80% of earnings in the sector. Only Greece, Portugal, Spain and Ireland have negotiated a moratorium: 2003 for the first three (Spain nevertheless aims to anticipate this date) and 2000 for Ireland.

For the moment, however, the situation in the Member States still varies considerably. In particular there are wide differences in conditions for market access (e.g. licensing regimes for value-added services, limits on the proportion of operators' capital which may be held by foreigners). Against this background, the establishment of independent regulatory authority is a guarantee of the transparency of the industry. The UK has gone furthest in this direction, often being a structure independent of the political authority. In other European countries, regulators, when they exist as such, are under the direct authority of the Ministry responsible for Telecommunications. The British example has, however, created imitators: the new telecommunications laws in France and Germany in particular have also adopted the principle of an independent authority.

Apart from texts specific to the telecommunications sector, the organisation of the sector is also affected by some of the Commission's more general measures, notably the opening up of public markets and the respect for rules of competition.

The privatisation of traditional operators is another aspect of the trends in the regulation of the sector. After BT, which was a pioneer in the field, we had to wait another 10 years

**Table 10: Telecommunication services  
Regulatory environment, end 1995**

	Main Operators	Regulatory body	Services markets liberalized	Markets for terminal equipment
Belgique/België	Belgacom	Ministry for Telecommunications and Institut Belge des Postes et Télécommunications	All services excepts for telephone, telex, telegraph, Provision of leased lines, and radio paging. GSM = liberalised as of late 1994	Liberalised
Danmark	Tele Danmark, 51% owned by the State, and its four regional subsidiaries.	Ministry of Research (IT/Telecommunications Directorate) and National Telecom Agency (Telestyrelsen)	As of March '95, the following are liberalised: voice telephony over leased lines (supplied by TeleDanmark), voice telephony on local broad band networks (as of July '95), GSM, Data communications, Public phone booths, Value added services, Satellite services for news collection, Video links for TV distribution, CATV, Special radio applications	Liberalised in 1990
Deutschland	Deutsche Bundespost Telekom (DBP Telekom)	The Federal Office for Posts and Telecommunications (BAPT) within the Ministry of PT	All services except for the reserved voice telephony service	Liberalised in 1990
Ellada	OTE, State-owned	Ministry, and the National Telecommunications Committee	GSM communications	Supply of the first telephone set is no longer a problem
España	Telefónica, private company with 35% owned by the State	Dirección General de Telecomunicaciones (DG Tel) within the Ministry of Public Works, Transport and Environment	Bearer services (limited competition), value added services, mobile communications, data networks	Liberalised in 1987
France	France Télécom, a State-owned public enterprise, and its holding COGECOM	Direction Générale des Postes et Télécommunications (DG PT), within the Ministry of IT and Postal Services	All services except for voice telephony and telex	Liberalised in 1987
Ireland	Telecom Eireann, 100% State-owned company	Communications Department, within the Ministry for Transport, Energy and Communications	All services except for voice telephony, telex and satellite. GSM liberalised as of 1995	Liberalised in 1984
Italia	Telecom Italia, 57% owned by STET (the telecommunications holding company, 61% owned by IRI, the State holding)	Ministry of Posts and Telecommunications	All services except for voice telephony, telex, mobile, paging, and satellite services. GSM liberalised as of late 1994	Liberalised
Luxembourg	Entreprise des Postes et des Télécommunications	The Ministry of Communications	All services except for the "basic-service"	Supply of the first telephone liberalised set is no longer a problem

Nederland	PTT Nederland, 100% state-owned	General Directorate for Telecommunications and Posts (HDTP), within the Ministry, created in 1988	All services except for telephone service, telex, telegraphy. GSM liberalised as of 1995 Paging liberalised as of 1995	Liberalised in 1989
Österreich	ÖPTV, a Division of the Ministry for Public Economy and Transport	Telecommunications Authority, a Division of the same Ministry	In principle, all services except for voice telephony	Supply of the first telephone set is still a mandatory offer from ÖPTV
Portugal	Portugal Telecom S.A. and Companhia Portuguesa Radio Marconi (CPRM)	ICP, within the Ministry of Public Works, Transport and Communications, created in 1989	Complementary telecommunications services: fixed (data transmission) and mobile (GSM, paging) Value added services	Liberalised in 1990
Suomi/Finland	Telecom Finland and its subsidiaries (a division of Post-Telecom Finland, the State-owned operator) and several Regional Telephone Companies (approx. 50)	Telecommunications Administration Center (TAC), an agency under the Ministry of Transport and Communications	All services	Liberalised
Sverige	Telia, 100% owned by the State	National Post and Telecom Agency, under the Ministry of Transport and Communications	All services	Liberalised
United Kingdom	British Telecom and Mercury Communications	OFTEL, independent body, created in 1984	All services	Liberalised in 1984

Source: European Commission, DG XIII A2

before any new operators emerged: in Denmark and the Netherlands in 1994, in Portugal in 1995, and then in Sweden and Germany in 1996. Italy and Greece have repeatedly postponed projected dates while France has very belatedly begun an attempt to draw up a timetable. There is, however, a fear that the stock market may lose interest with the operators' capital being unlocked, and there is undoubtedly more sensitivity after the completion of several large operations such as the first tranche of Deutsche Telekom.

## OUTLOOK

The telecommunications market in Europe is poised to experience one of the greatest changes in its history. After the first moves towards the opening up of specific sectors or markets, the prospect of complete liberalisation is already creating excitement among participants, both present and future. However, the rate at which alliances are being made and unmade suggests fairly clearly that, after a series of moves in various directions, the industry should find a new equilibrium around several strong focal points at national, European and world levels.

Growing competition, both over access to infrastructures and over the supply of services, allied to technological advances, will continue to maintain the downward pressure on prices, and this will partly offset the very strong surge in demand.

Written by: IDATE

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# Multimedia

The development of the market in multimedia services and products for home use has been made possible by the converging evolution of the audiovisual, telecommunications and information technology sectors. Today, it is "off-line" applications that account for the majority of the market thanks to the growth of the video games industry and CD-ROMs. On-line applications, arising particularly out of the development of the Internet, are gradually being opened up to the general public, signalling the growing penetration of interactive television services. In spite of its rapid development, the multimedia industry is still relatively unstructured.

## INDUSTRY PROFILE

### Description of the sector

The technical definition of multimedia embraces all the products and services simultaneously combining sound, data, images and text and offering a certain degree of interaction to the user. Multimedia products may be accessible on-line (access to the Internet for example) or off-line (e.g. using CD-ROMs).

Given the large number of parties involved and the diversity of the supporting media, it is now usual to speak of the multimedia value chain or the multimedia industry.

The multimedia products and services industry can be divided according to the environment of the users: multimedia is looked upon as being directed at the general public, in contrast to electronic information services regarded as being mainly for professional use. Many aspects of household consumption are affected through the provision of services for leisure activities, information and education, financial transactions and communications: whole areas of activity in the home are involved.

The multimedia market is a new one, where industries as diverse as electronics, information technology, telecommunications and the audio-visual sector come together. It absorbs into itself particular features originating partly in these industries, which have developed products and services adapted to user demand.

The technical reasons for the emergence of multimedia are thus to be found in the combination of several factors related to the development of the above sectors, which have only produced their full effect during the 1990s:

- the general spread of signal digitisation (text, sound, fixed and moving images, etc.);
- advances in compression techniques;
- improvements in the performance of the storage media with optical devices;
- the growing capacity of infrastructures enabling multimedia items to be distributed (information highways; the Internet, etc.).

Multimedia products and services also develop along with new fashions in personal consumption related to the culture of the image: the explosion in video games in the space of a decade, the widespread use of microcomputers, new family entertainment with CD-ROMs and CDI.

The weak professional organisation of the businesses involved in the profession (publishers, distributors, etc.) explains the almost complete absence of public data in statistical form, such data being collected mainly by private consultancies (IDC, Dataquest, Intcco, etc.). The IMO (Information Market Observatory) contributes to knowledge of the markets in electronic information services and multimedia services along with

**Table 1: Multi-media**  
Number of titles available on multimedia supports

	1994	1995
CD-ROM	5 379	5 840
CD-I	264	368
3DO	33	58
Total multimedia supports	6 300	9 500

Source: Observatoire européen de l'audiovisuel

certain national observatories that are keeping a technological eye on the subject, such as the Observatoire des Industries du Multimédia (Multimedia Industries Observatory).

### Recent trends

It was the explosive development of video games in the 1980s which heralded the appearance of multimedia applications. These then spread rapidly at a rate that varied with the environment (from professional use to use by the general public, for example, and from office to home) and with the country concerned. While some applications are still only at the prototype or trial stage (interactive television, etc.), others have achieved high growth rates. Examples of the latter are on-line services which, in the space of a few months, have opened up in Europe and are already expanding, at first mainly for professional use but now increasingly directed towards the general public. The most characteristic symbol of this emerging market is undoubtedly the Internet. On a global scale, the multimedia market is becoming a mass market which in the medium term should overtake that for professional services.

### International comparison

The development of multimedia for home use was initiated by the video games market but it has also been due to the amount of home equipment with multimedia terminals (games consoles, microcomputers). The US and Japanese markets have a considerable lead in these two areas and, as a result, companies from these two countries, whether video games companies or publishers of on-line services, are dominant at world level.

### Foreign trade

The flow of trade today is mainly from the USA and Japan towards Europe. Nevertheless, the balance is being restored to some extent to the benefit of intra-European trade, although the unstructured nature of the sector makes any quantitative assessment difficult.

## MARKET FORCES

### Demand

#### Video games

After an abortive launch at the beginning of the 1980s, the consumption of video games has become a veritable social phenomenon and is causing television channels to lose part of their audience, particularly among the young.

The European video games market (hardware and software) was estimated by IDATE to be about \$5 billion in 1993. A slowdown in the sales of games consoles and games software was recorded in 1994.

According to the International Multimedia Association, Europe's share of the world market in electronic games was estimated at 26% in 1994 and is expected to fall to 23% in 1995. This is because Europe suffers from a relative rigidity in price levels and from relatively expensive local products. The new generation of consoles has only been available here since the autumn of 1995, whereas Sega and Sony 32-bit

**Table 2: Multi-media**  
**Main 10 topics addressed on CD-ROM in 1994**

	Number of titles	% of total
General Interest, Leisure	1 043	19.0
Arts, Humanities	724	13.2
Education, Training, Careers	631	11.5
Computers, Computer Programmes	510	9.3
Advertising, Design, Marketing	429	7.8
Business and Company	426	7.7
Languages, Linguistics	417	7.6
Crime, Law, Legislation	399	7.3
Science, Technology	386	7.0
Maps, Geography	332	6.0

Source : TFPL Publishing

consoles were launched on to the Japanese market in November 1994. However, the arrival of these new consoles should benefit the European market in 1996, especially since the new generation of 64-bit machines will appear by then (the Nintendo Ultra 64 announced for May 1996 and the 3DO M2 for the second half of 1996).

Income from the video games market in Europe fell by 21% in 1994. This is because more sophisticated games are being developed and then have a longer life. The volume of data being used for a video game has increased more than 500-fold in less than two years, and the CD-ROM now appears to be the universal supporting medium for ambitious future developments. CD-ROM drives are also becoming increasingly sophisticated, and the present basic configuration is triple or even quadruple speed. To benefit from these levels of performance, the user is often forced to acquire a new and more powerful machine.

The development of new hardware offering new possibilities to video games developers should give a new impetus to the market. However, the 32/64-bit video games market should not reach its true peak before 1998. Moreover, earnings by the industry should remain relatively diversified even with only three main consuming countries: Germany, the UK and France.

Lastly, although the video games (software) market drives the sales of CD-ROMs, it could eventually suffer from the launching of chains offering to download games: for the price of a cartridge, the consumer will be able to gain access to around 50 games per month.

#### *The CD-ROM and CD-I market*

The CD-ROM is a disc that is read optically on a CDROM drive connected to or incorporated in a microcomputer. It has a large storage capacity and thus forms the ideal supporting medium for multimedia publications. The initial CD-ROM market was in professional applications, but it is increasingly becoming a medium for leisure activities (games, cultural programmes, films). CD-ROMs for home use took off in 1994 and 1995. While the "traditional" professional field still accounts for a major share of the market today, about two thirds of titles are produced for the general public.

Electronic publishing for the general public can at present be divided into three types of editorial material associated with certain classes of multimedia titles:

- reference material or encyclopaedias as an extension of traditional dictionary publishing (such as Microsoft's Encarta Multimedia Encyclopedia which has sold more than 100,000 copies worldwide, and Hachette's Axis);

- step-by-step navigation systems suitable for video games or education (language learning, educational games such as Syst, etc.);
- simulations originating from virtual reality.

In addition, "adult" products undoubtedly form a significant part of the market.

The initial market indicator is the number of items of equipment sold. A mass market has emerged since 1994, attracted by the development of the multimedia home PC (MPC) and pushed by IT firms and distributors of consumer electronics. The world market according to some sources was estimated to be between 30 and 40 million CDROM drives at the end of 1995.

Even more than the growth of the market, is the profusion of new titles which testifies to the exceptional vitality of the sector. In 1995, according to TFPL, there were some 2005 publishers of multimedia programs worldwide (compared with 1337 in 1994), 897 of them in Europe (609 in 1994). The TFPL CD-ROM directory 95 lists 9691 available titles at the end of 1994 compared with 5379 at the end of 1993, an increase of 80%. Between 70% and 80% of titles worldwide are designed for PCs. According to Infotech, there were 92 million titles sold worldwide in 1994, an increase of 161% over 1993.

#### *On-line services and the Internet*

The on-line services market is following the same path as CDROMs: like them, it is moving from professional, business or university applications to those for the general public and the home.

The main services provided are electronic mail, access to forums and the Internet, games, information or thematic services and home shopping.

The current state of the demand for on-line services is still largely embryonic in Europe with the opening of services dating from the end of 1995 or the beginning of 1996.

According to Simba Research, on-line services for the general public accounted for only 5% of global activity in 1994, but the launching of new services in 1995 changed the situation.

The very strong growth recorded in the on-line services market is explained by a number of factors, including the increase in the installed PC (and modem) base, the development of user-friendly graphic interfaces, and the development of certain program contents such as access to forums or to the Internet. The expansion of the market should also continue at great pace with the appearance in 1996 of CDROM/online hybrids offering consumers high-speed access to data and instantaneous updating.

#### **Supply and competition**

Electronic publishing, particularly the production of multimedia titles, is at present clearly dominated by the USA. The distribution of titles (21.6% in Europe, 64.6% in North America and 13.8% in Asia) shows the imbalance in the forces with a market presence: Europe with a fifth of the published titles is clearly outstripped, particularly as some of these publications are in fact local versions of American products. 100,000 copies of Microsoft's Encarta were sold in the British market in 1994. European production is also unequally distributed between the various languages spoken in Europe (71% of identified titles were in English in 1994), being strongly influenced by English-speaking culture. In the long term, according to the IMO (in "The emergence of a mass multimedia market"), demand for a content adapted to Europe's cultural and linguistic diversity will be increasingly strong driving forces in consumers' choice.

It is also characterised by the extreme fragmentation of what is on offer, which is spread over a widely diverse range of

**Table 3: Multi-media  
Major on line service providers**

	worldwide (Dec. 95)	Number of subscribers in Europe	Launch date
America On Line	5 000 000	50 - 100 000	Nov. 95
CompuServe	4 500 000	600 000	1991
Prodigy	1 500 000	0	-
Microsoft	600 000	10 - 50 000	end 1995
EuropeOnline	0	0	Dec. 95
Infonie	3 - 5 000	3 - 5 000	Oct. 95

Source : IDATE, from companies declarations

subjects. Moreover, the lack of a structured distribution network still retards its expansion, particularly in Europe where, according to TFPL publishing, 75 companies are involved in retail trade and where the best performances are still achieved through multimedia titles sold in bundles (sale associated with a CD-ROM player or sale of a microcomputer with a CDROM title).

### Production process

The market has been able to expand through a certain degree of standardisation, particularly in optical supporting media and procedures for connection to the Internet, even though there is competition between different "proprietary" terminals (especially games consoles) or different software for consulting on-line services.

As regards publishing, there is generally a very considerable increase in the cost of producing the contents as the initial production becomes more sophisticated. Thus, the cost of CD-ROMs has risen with the use of video images.

Finally, growing competition means that investment in promotion and in setting up a distribution network is also tending to increase very quickly.

## INDUSTRY STRUCTURE

### Companies

Firms in the multimedia sector belong to several different sectors: producers of contents and games (Sega, Nintendo), CDROM publishers, on-line service operators (CompuServe, Europe en ligne, etc.), television channels (France Télévision, Canal+, etc.), large integrated audiovisual companies (Sony, Time Warner, NewsCorp, Canal+, etc.) which are positioning themselves in the interactivity market with the idea of converting existing contents into new forms: video games, CDROMs.

### CDROM publishing

The European market, more fragmented than that of the USA, involves a larger number of smaller firms. In 1994, there were in fact twice as many distributors in Europe as there were in the USA (829 compared with 449 in the USA).

The relative positions in the publishing field reveal American predominance (60% of titles compared with 30% from Europeans).

Alongside SMEs such as Arborecence and Infogrammes Entertainment, there are large media groups increasingly involved in electronic publishing: Matra Hachette, Havas (Havas Edition Electronique), groups originating from traditional publishing (Flammarion, Nathan, Bayard or Larousse) and audiovisual groups (TF1, Canal+).

The principal world-scale publishers (Grolier, Hachette, VNU, Elsevier, etc.) have already partly digitised their businesses in order to use CD-ROMs or CD-I.

According to Dataquest, the large worldwide publishers/distributors in 1994 were: Microsoft (8.3 million units sold and 15.4% of the market); Mindscape, Pearson group (6.7 million, 12.4%); Grolier (5.1 million, 9.4%); Electronic Arts (3 million, 4.7%); and Software (2.5 million, 4.7%).

### On-line services

In line with the example of the American market, the European market should develop rapidly under the impetus provided by several large businesses in the sector, often of American origin: CompuServe, with a presence in Germany, France and Great Britain; AmericaOnline (joint venture with Bertelsmann), NewsCorp/MCI with a presence in Great Britain and Italy. In general, such traditional businesses have been signing publishing agreements with European content suppliers from the press or publishing world in order to "Europeanise" or "nationalise" any of their services which are differentiated according to their subject matter (news, sport, etc.).

The response of European businesses in the sector is mostly at national level with telecommunications operators (France Télécom Interactive, BT or Deutsche Telekom) or certain publishers (Infonie in France, Europe Online formed by a consortium of publishers) but European firms are generally far from possessing the size and experience of their American competitors.

### Strategies

#### CD-ROM publishing

A major problem for the main European publishers at the moment is the formation of distribution networks, although it is in the process of being solved. Like the audiovisual producers before them, CDROM publishers are faced with the limited nature of national markets and are therefore forced to combine. As a result, large integrated groups present in several countries are tending to become even larger.

All those involved in electronic publishing are also seeking to build bridges with on-line services having closely related applications. This is another reason why large firms active over the whole multimedia field, both off-line and on-line, are destined to increase even further in size.

#### On-line services

The expansion of on-line service providers, who seek to increase the number of subscribers to their specific services, is threatened by the development of the "open" network, the Internet. The traditional use of the Internet was based on three main functions: electronic mail or E-mail, discussion groups or Newsgroups through Bulletin Board Services, and downloading of files. The revolution is due to the World Wide Web, the global spider's web of networks through which the Internet has been opened up to the general public in less than two years. The Internet had approximately 40 million users in 146 countries in 1995, the number of servers is doubling

**Table 4: Multi-media  
Installed base of residential CD-ROM readers**

(millions)	1994	1995	1996
Europe	2.7	9.0	17.7
USA	13.4	21.9	29.9

Source : Inteco

each year, and the number of accessible services increased 20fold in 1994. The explosion in the number of users is also reflected by a massive input of commercial services (500,000 servers with a commercial character at the end of 1995) and a development (privatisation) of the network.

On-line service providers are trying to win a place in the Internet market and, in the short term, the popularity of the Internet is undoubtedly beneficial to them. In the longer term, however, there is a danger that its success may be partly at the expense of the on-line networks (e.g. Apple has announced the closure of its eWorld network).

More generally, apart from the on-line service operators, those active in the mass market on the Internet in Europe will be the telecommunications operators in the EU (France Télécom, Deutsche Telekom and BT are already well placed as suppliers of access to the Internet), cable companies (which will increasingly offer access to the Internet as part of the service they offer), and a certain number of SMEs specialising in the provision of access and services (the main ones in Europe are EUNET and Calvanet).

#### *Towards interactive television*

Experiments in interactive television have increased since 1994 both in the USA and in Europe. According to IDATE (in "Description of experiments in interactive television and multimedia worldwide"), more than a hundred experimental platforms and services have been set up since 1994 both by telecommunications operators and by cable companies.

The main European operators (BT, France Télécom and Deutsche Telekom) are at the stage of carrying out experiments in several thousand homes (4000 homes tested in Stuttgart for Deutsche Telekom; some 10,000 in France with the Camille, Dora and Jasmin projects). Cable companies have also entered the experimental scene, particularly in Great Britain where the atmosphere is more competitive and North American firms more evident (USWest, Videotron). Interactive television services will consist of video games on demand and home shopping.

In spite of the impression given by a number of announcements, the interactive television market is still a "potential" one which will have no real economic existence before the end of the century, even though some market predictions forecast very high figures by the year 2000. This is because the experiments are beginning later than planned (1995 in the USA, 1996 in Europe) and there is at present no new service offered by interactive television for which demand would justify the necessary technical investment.

## REGULATIONS

The multimedia sector is at the cross-roads of the audiovisual, telecommunications and information technology industries. It benefits from innovations both in networks and content. Regulation of multimedia is at present far from being completed because it requires both European harmonisation and recognition of the convergence between the regulations of the various sectors involved.

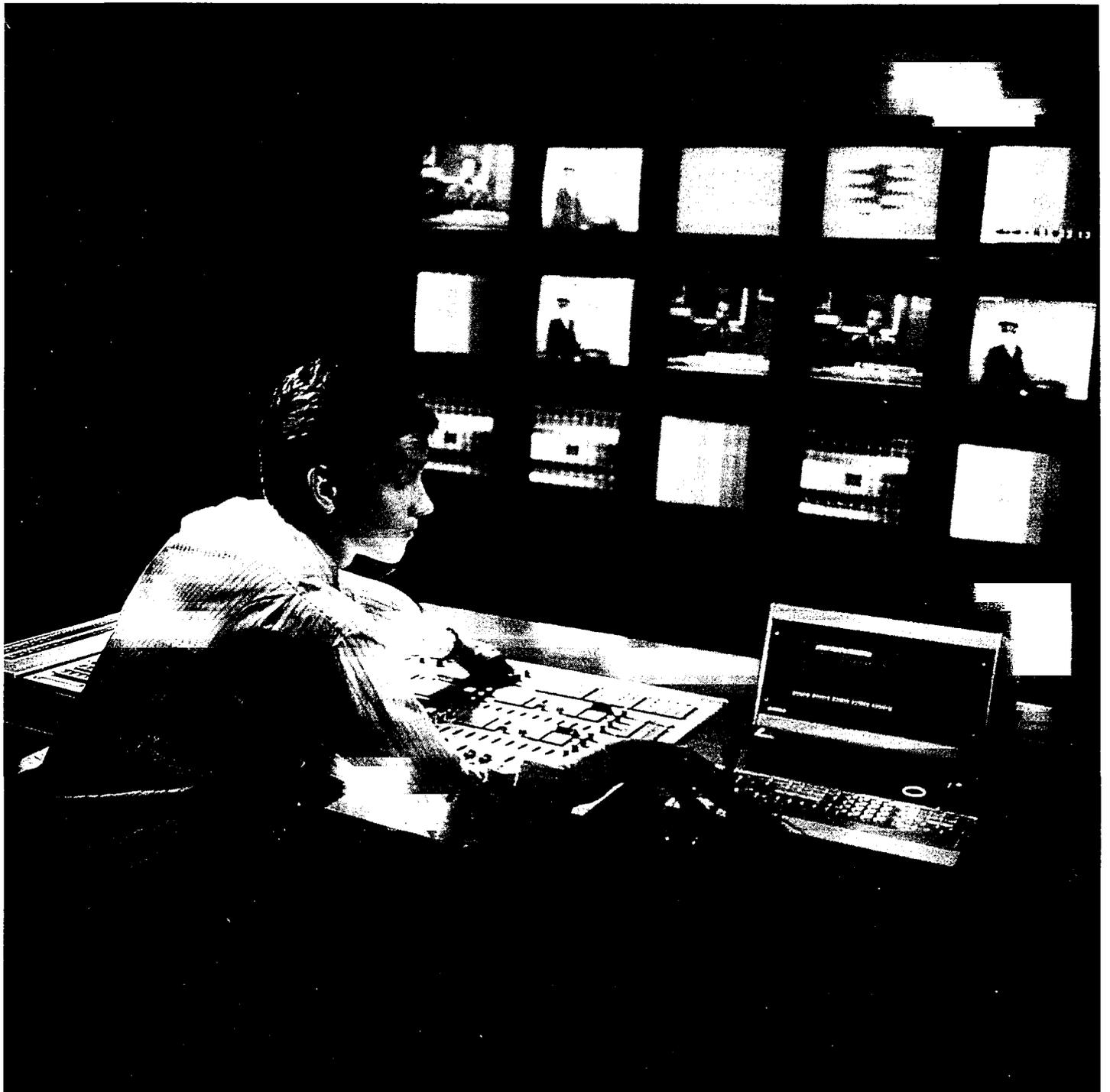
## OUTLOOK

The conditions for a long-term expansion of multimedia products and services are now in place: an increase in the numbers of computers in use, relative standardisation, better performance of the networks, the emergence of demand and the presence of major industrial firms. The growth of the sector will depend in the short term on the continuing development of the CDROM market, in the medium term on the increasing opening up of on-line services and the Internet to the general public, and in the long term on the applications of interactive television.

In this connection, Europe suffers from a lower level of computer equipment than the USA and from market fragmentation. However, the recent involvement in the sector of the major audiovisual and telecommunications companies gives us hope that the European industry, at present lagging behind, will be able to catch up.

Written by: IDATE

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## Overview

**NACE (Revision 1) 92.11, 92.12, 92.13, 92.20 & 92.32**

*The EU audio-visual sector has enjoyed double-digit growth over the last decade, despite the adverse effects of economic recession. Although it has suffered from recent economic sluggishness, the Union's music recording business is still dominant world-wide. Growth in feature film production is stagnant while cinema attendance is showing signs of revival. However, overall growth prospects remain very healthy with the technological revolution currently taking place in digital transmission and reception, particularly in broadcasting*

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### INDUSTRY PROFILE

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#### Description of the sector

Audio-visual services comprise five main subsectors: motion picture and video production (Nace 92.11), motion picture and video distribution (Nace 92.12), motion picture projection (Nace 92.13), television activities (Nace 92.20) and studios for sound recording (included in Nace 92.32). Multimedia products and services are not included in the sector.

In 1994, television accounted for approximately 43% of EU consumer expenditures on audio-visual services (not including expenditures on equipment). Music recordings ranked second with 27%, followed by videotapes and cinema tickets with 21% and 9% respectively. Total consumer expenditure on audio-visual services amounted to ECU 32 billion.

#### Recent trends

The European Audio-visual Observatory and the IDATE institute estimate the audio-visual turnover of the 50 leading world companies at ECU 113 billion in 1994. In spite of the adverse effects of economic recession, sales of the nine leading companies have increased by 10.3% per year between 1990 and 1994. Recent trends point to the ongoing world-wide concentration of the sector. The audio-visual turnover of the 9 leading companies increased from 36% of total audio-visual sales of the 50 leading groups in 1993 to 39% in 1994. Furthermore, mergers between major players such as Walt Disney and ABC altered consistently the structure of the global audio-visual sector in 1995; based on the 1994 sales figures and taking into account the 1995 mergers, the share of the 9 leading companies reaches almost 51% of the turnover of the 50 leaders.

Total audio-visual turnover for the 50 leading European companies amounted to ECU 49 billion in 1994, up 10.2% from 1993; the ten leading companies accounted for 58% of this turnover. Recent developments in the European audio-visual sector include the sharp increase in the total number of television channels in the Union and a decrease in the number of films made by EU producers.

Following deregulation in the 1980s, the number of television channels with a national broadcasting capacity grew from around 40 in 1981 to 205 in 1995. Approximately 75% of these 205 channels were private channels and included specialist as well as generalist broadcasters.

From 1980 to 1993, the yearly number of films produced in the EU has decreased at a compound annual rate of around 1.1%. In 1994, an estimated 445 films were produced in the

EU; this represented a 13.8% decrease over 1993. However, the average investment per production increased slightly and stood at around ECU 2.1 million in 1994.

Although the theatrical distribution network (cinemas) has fared relatively better since 1993, the distribution of films reflects a shift towards the growing importance of TV screen viewing as a channel of access to movies. Cinema screens in the EU decreased from 21 867 in 1986 to 18 754 in 1991. This trend has been reversed since 1992 and there were 19 492 cinema screens in 1994. The number of viewers declined from 687 million in 1986 to 583 million in 1992 but there was a notable 7.5% annual increase in attendance from 1992 to 1994.

Sales in the music recording sector followed a long-term cycle which was closely linked to the introduction of new hardware technologies such as the audio-CD. In nominal terms, EU sales increased at an annual compound rate of 13.5% from 1985 to 1991. In 1992, sales decreased by 6.6% partly because of the general European economic downturn which occurred at that time. From 1992 to 1994, the market recovered and the annual growth rate stood at almost 7.5%.

#### International comparison

Based on the combined turnover of the 50 leading companies, the European Audio-visual Observatory and the IDATE institute established a regional breakdown of the world audio-visual market. In 1994, European companies represented 35% of the world market, up from 34% in 1993. The share of US companies fell from 32% to 31% while Japanese companies held steady at 29%.

#### Foreign trade

From 1990 to 1994, the EU trade deficit to the US grew by approximately 1% per year to reach ECU 3.1 billion in 1994. However, for some sectors of the industry, customs figures are less relevant: music record companies, for example, organise manufacturing independently of market location whereas films are generally produced in the primary market country.

Intra-EU trade remains relatively limited, though some countries are more favourably inclined toward European products than others. For example, Italy and France are significant importers of other European films (typically between 30% and 40% of their respective markets).

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### MARKET FORCES

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#### Demand

The audio-visual sector has enjoyed double digit growth rates since 1990. Turnover of the 50 leading EU audio-visual companies increased by more than 10% between 1993 and 1994 despite the effects of the recession. The growth of the sector has been fuelled by a number of factors increasing penetration of equipment (although television and video penetration are below US and Japan rates);

- hardware technology developments (e.g. audio-CDs) and new transmission methods (e.g. cable, satellite and digital transmission methods);
- diversification of income sources, notably the development of Pay-TV and other subscription-linked revenues;
- aggressive marketing by distributors such as HMV (UK) and Virgin Megastores (UK) who helped push music / video demand

Consumers are increasingly sensitive to the quality of service and to level of choice. This sophistication of consumer demand is, in turn, being encouraged by the continuous evolution in equipment types and transmission methods.

While audio-visual sales have grown overall, there have been shifts between categories of products and services which reflect evolving consumer tastes, technology developments and new price/quality trade-offs:

- music recording sales grew by more than 8% per year in value between 1989 and 1994, driven by a 21% yearly increase in CD units sold and a 43% decrease in vinyl LPs sold;
- similarly, between 1983 and 1993, average cinema admission per head dropped from 2.54 to 1.94 (1.71 in 1992) while VCR penetration jumped from 10% to 57%.

### Supply and competition

Major changes affecting the industry environment are leading to a restructuring of EU audio-visual supply. On the one hand, the deregulation in the television and telecommunications sector has attracted a large number of new players in high growth areas such as broadcasting. On the other hand, significant investment requirements and economies of scale due to the capital-intensive nature of the industry are prompting industry consolidation across the EU.

In addition, there are an increasing number of large EU companies such as Bertelsmann (D) and PolyGram (NL) which aim to emulate the US "majors" by horizontal diversification into new audio-visual and multi-media activities.

### Production process

Technological developments are major drivers of demand for audio-visual services. The digitalisation of pictures and sounds is an innovative process which is already having a major impact on the different media (e.g. the success of CDs). Furthermore, with the introduction of digital television channels, digital transmission is likely to have a significant influence on developments in the next decade.

The first European digital broadcasts are expected in France and Germany in 1996. Through a process of compression and transmission of binary elements, Digital TV systems enable the transmission of up to one hundred times more information on one channel. The immediate result is a significant reduction in the costs of transmission and a better quality of image.

Furthermore, the launching of digital channels will speed up the introduction of interactive services such as video-on-demand and home shopping. Current hardware research and testing revolve around the creation of a "set-top box" which will serve both as a TV program decoder and as an interface for interactive communication through the TV set.

## INDUSTRY STRUCTURE

### Companies

In 1994, out of the 50 leading European companies, 44 were active in radio and television broadcasting. Among them three German groups, ARD, KirchGruppe and Bertelsmann, were the most important. Other leading television companies included BBC (UK), CLT (L), Canal Plus (F), Fininvest (I) and BSKyB (UK). Pay-TV channels achieved some of the highest growth rates between 1993 and 1994 (41.3% for BSKyB and 23.8% for Canal Plus Espaa).

The top of the list was dominated by three groups which are all active in the record industry: PolyGram (NL), Bertelsmann (D - also active in television) and Thorn-EMI (UK). A few film distribution companies also appeared in the rankings, among them Rank (UK), UIP (UK) and Time Warner Entertainment's British affiliate.

According to the European Audio-visual Observatory, German companies accounted for 31% of the audio-visual turnover of the 50 leading groups. UK companies and French companies followed with respective shares of 24% and 11%. Central Europe's share amounted to 10%.

The imminent introduction of digital channels has led to a change in the strategic objectives of many European groups. Most companies are looking for "first mover" advantages, notably in the German digital television market.

CLT (L) and Bertelsmann have agreed to join their audio-visual businesses in a new joint-venture. BSKYB (UK), which first had agreed to operate together with Canal Plus (F) and Bertelsmann (D) a number of digital channels in Germany, finally decided to join Bertelsmann's competitor on this market, the Kirch-Group (D), in order to launch a digital multi-channel package called DF-1.

Bertelsmann (D), Canal Plus (F) and BSKYB (UK) have already agreed to jointly operate a number of digital channels in Germany. Furthermore, CLT (L) and Bertelsmann have agreed to join their audio-visual businesses in a new joint venture.

Besides the desire to diversify into new growth areas, strategies of major European groups have focused around the need to achieve critical mass and to secure access to larger international markets. A series of important mergers and acquisitions have taken place, though many have been limited to a national scale (e.g. Bertelsmann or Fininvest).

Within each media segment, the specific drivers behind this consolidation have varied. In music recording (e.g. PolyGram or Thorn EMI) and in film distribution (e.g. UFA or Rank Odeon), expansion strategies have derived from the need to secure a strong local and international network. In TV and film production, a recognition of the need to counter American professionalism has prompted much of the restructuring.

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## ENVIRONMENT

Environmental issues are not of great relevance to the audio-visual services sector. Concerns only arose in the USA regarding the use of certain packaging materials in the music recording sector which were never used in Europe.

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## REGULATIONS

Three European bodies contribute to the EU film industry through targeted programmes: the EU Commission's Media Plan II (funding to help national producers and technicians adopt a European scope); Eurimages, which is an initiative from the Council of Europe (funding of European multilateral co-productions, with a budget over ECU 23 million); and Eureka (incentives to use new technologies, education and co-operation with Eastern Europe).

The Commission has presented a Green Paper on "Strategy options to strengthen the European programme industry in the context of the Audio-visual policy of the European Union". Furthermore, a new Green Paper on new audio-visual services is currently being prepared, which deepens the discussion on the protection of minors of human dignity, as well as on the cultural and linguistic diversity in the context of Information Society Services.

Finally, the Commission proposed the revision of the 1989 Television Without Frontiers Directive in order to update certain provisions and improve the level of legal security. The Common Position of the Council of Ministers takes account of a large number of the wishes expressed by the European Parliament in its first reading of the proposal.

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## OUTLOOK

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Despite the effects of recession in recent years, prospects for the audio-visual sector continue to look positive. However, it appears that there is an increasing convergence with other sectors such as electronics and information technology, thus making any precise forecasts difficult.

In order to remain competitive in the twenty-first century, the European audio-visual industry will have to deal successfully with a number of key issues:

- the need to remain at the forefront of the technological revolution in transmission and reception (including digital systems, HDTV and multi-media tools)
- the need to capitalise on a strong position in the home markets in order to compete successfully on a global scale.

Emerging markets are likely to play a very important role in years to come. American and Asian companies are already achieving consolidation of their position in large markets such as China and India. The future of the EU audio-visual industry in the next century might thus depend on the ability of European companies to get a foothold in Central European, South American and Asian markets

Written by: LEK

# Film and video

## NACE (Revision 1) 92.11, 92.12

The film and video industry faces competitive pressures due to the US higher market share in the EU and to changing consumers' preferences towards the individual viewing of films on TV screens.

Important challenges for the EU are upgrading cinema's services in order to offer a competitive alternative to TV viewing and, for film-makers, the development of films able to attract an international audience. To this purpose, the industry outlook is rapidly evolving and the development of large, integrated and often multimedia groups, is likely to increase EU producers' ability to offer products with the potential of targeting international markets. Such alliances, which integrate the various production to distribution stages, can plan their return on investment over the complete life-cycle of a film. While ticket sales contribute significantly to the cash flow during the first year of a box office release, in subsequent stages, revenues originate from different channels such as video, Pay TV, Pay per view, international sales.

### INDUSTRY PROFILE

#### Description of the sector

The film and video industry is represented by NACE Revision 1 groups 92.11 (Motion picture and video production) and 92.12 (Motion picture and video distribution).

Three types of activity are involved: production, manufacturing and distribution of films. Production involves the managing by "producers" of the financial and artistic conception of motion pictures and TV fictions from inception to release. EU producers are concentrating both horizontally (through alliances) and downstream (through integration of operational/commercial activities).

The manufacturing of films is supported by a host of specialised contractors. It includes studios, laboratories, equipment manufacturers, and sound specialists. Since many producers are also involved in manufacturing, both subsectors can be merged.

Finally, distribution is the commercial release of films performed by cinema operators (either networked or independent), by video publishing companies and through portfolio management of stocked works.

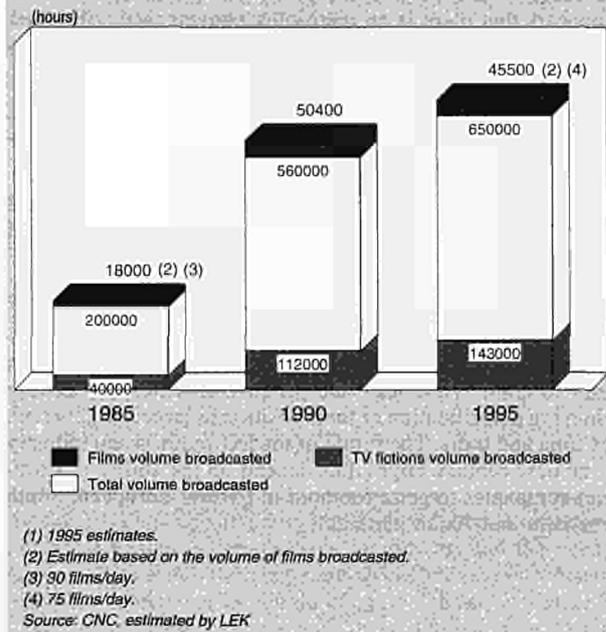
These activities are frequently consolidated through the development of large groups combining production and technical capabilities such as Granada (UK), Bavaria (D) and SFP (F), or production and distribution such as Gaumont (F). Multimedia conglomerates are also seeking to add value to their distribution assets by entering into production (Bertelsmann (D), Canal+ (F), Bouygues (F), PolyGram (NL), Fininvest (I)).

In 1994, France had a 25% share of EU feature film production, followed by Italy (21%), the UK (16%) and Germany (13%). Germany, France and the UK represented 57% of total EU cinema admissions in 1994. For videos, the UK, Germany and France represented two-thirds of the EU market. The UK and France also represented more than half of EU sales of pre-recorded videocassettes while rentals remained important in Ireland and Denmark.

#### Recent Trends

The yearly average number of films produced in the EU between 1986 and 1994 was 496. In 1994, however, production reached its lowest level since 1986 since only 445 films were

Figure 1: Film and video  
TV fictions and films in the EU (1)



produced. This represented a 13.8% decrease over 1993. Particularly relevant was the constant decline in Italian production, from around 129 films in 1991 to 95 in 1994.

While the number of films produced has decreased, the average investment per production in the EU tended to increase slightly and stood at around ECU 2.1 million in 1994. The UK and France tend to have the highest average investment per production in the EU. Co-productions in Western Europe over the past 10 years have increased from around 10% to as much as 20% of total production.

The market share of imported works, particularly from the USA, increased steadily since the early 1980s. In 1985, extra-EU films represented 56% of the EU market and this number has increased to over 76% in 1994. Over the last ten years, American films have most notably increased their market share in France and Italy.

The decline in EU production runs parallel to an increase in the production of fictional products for television (e.g. a doubling over the last ten years in France), which in turn has served as a spearhead for a growing involvement of multimedia groups in movie production.

Despite the continuing existence of small/medium companies specialised in manufacturing, increasing capital expenditure needs have led to a growing trend towards acquisition of these manufacturing contractors by larger holdings such as Rank (UK), Virgin (UK) or VDM (F).

Since 1993, although good theatrical distribution network (cinemas), there is an increasing tendency towards the growing importance of TV screen viewing as a channel of access to movies. Cinema screens in the EU decreased from 21 867 in 1986 to 18 754 in 1991. This trend has been reversed since 1992 and there were 19 492 cinema screens in 1994. The number of viewers declined from 687 million in 1986 to 583 million in 1992 but there was a noted 7.5% annual increase in attendance from 1992 to 1994.

In terms of total consumer spending on movies, the share of cinemas has stagnated at roughly 35%, the share of Pay TV has grown rapidly from 25.2% in 1992 to 31.6% in 1994, mainly at the expense of video rentals which have decreased

**Table 1: Film and video**  
**Worldwide cinema industry**

(units)	1985	1990	1991	1992	1993	1994
<b>Number of long length feature films produced including co-productions</b>						
Belgique/België	7	12	3	12	10	9
Danmark	11	15	12	15	14	17
Deutschland	64	48	72	63	67	60
Ellada	33	13	15	14	18	20
España	77	47	64	52	56	44
France	151	146	156	155	152	115
Ireland	2	3	1	4	6	19
Italia	89	119	129	127	105	95
Luxembourg	1	1	4	1	2	3
Nederland	13	17	13	18	19	12
Österreich	10	20	13	17	17	10
Portugal	9	9	8	7	16	9
Suomi/Finland	13	13	12	10	13	11
Sverige	20	16	30	19	19	20
United Kingdom	47	47	46	42	60	70
EUR 15	547	526	578	544	574	514
USA	356	477	583	519	450	N/A
Japan (1)	319	239	230	240	238	251
Australia	42	34	27	30	23	29
<b>Number of feature films released</b>						
Belgique/België	136	327	304	376	378	444
Danmark	227	172	147	134	152	121
Deutschland	309	303	334	288	263	263
Ellada	304	145	150	148	144	165
España	409	328	329	318	306	345
France	456	370	438	381	359	387
Ireland	N/A	N/A	N/A	N/A	N/A	N/A
Italia	345	495	430	437	397	373
Luxembourg	N/A	N/A	220	216	228	164
Nederland	297	187	184	184	205	237
Österreich	384	292	272	249	249	238
Portugal	226	289	280	244	201	181
Suomi/Finland	218	174	174	150	168	163
Sverige	247	212	221	194	203	208
United Kingdom	248	277	283	227	236	N/A
EUR 15 (2)	(3) 288	(3) 271	269	253	250	(3) 251
USA	426	401	404	379	440	420
Japan	583	704	697	617	590	553
Australia	212	254	239	227	236	N/A
<b>Film production investment (million ECU)</b>						
Belgique/België	14.3	25.7	14.9	19.5	8.7	15.9
Danmark	15.1	14.6	16.4	19.9	37.7	16.7
Deutschland	106.9	97.5	117.0	107.4	144.6	162.5
Ellada	4.1	5.3	N/A	N/A	6.7	N/A
España	65.8	50.9	96.2	60.6	62.4	42.0
France	305.0	475.7	540.2	533.5	469.7	437.3
Ireland	N/A	19.1	3.0	N/A	63.1	81.9
Italia	192.0	220.5	302.1	239.3	196.2	216.1
Luxembourg	N/A	N/A	2.0	0.7	1.5	0.0
Nederland	12.2	N/A	N/A	N/A	N/A	N/A
Österreich	N/A	N/A	N/A	N/A	20.8	7.9
Portugal	4.8	2.8	3.6	4.3	4.6	1.8
Suomi/Finland	N/A	N/A	3.4	4.1	3.2	3.7
Sverige	N/A	N/A	N/A	N/A	N/A	N/A
United Kingdom	172.2	203.0	228.2	185.3	169.6	334.3
EUR 15 (4)	930.5	1 163.6	1 378.3	1 253.0	1 218.3	1 350.4
USA	3 266.7	3 586.2	4 002.9	3 412.4	3 612.3	4 114.5
Australia	N/A	86.3	73.1	45	34.7	88.1

(1) Films released during the reference period.

(2) Average number of films released. Excluding Ireland.

(3) Estimates excluding Sweden.

(4) Estimate.

Source: Eurostat, National source, Others

**Table 2: Film and video  
Market share of American films in the EU**

	1985	1989	1990	1991	1992	1993	1994
Belgique/België	61.0	68.9	68.4	79.1	78.6	69.3	75.7
Danmark	58.4	63.6	77.0	83.3	77.7	74.1	67.0
Deutschland	58.7	65.7	83.8	80.2	82.8	87.8	81.6
Ellada	N/A	86.0	87.0	88.0	92.0	N/A	N/A
España	58.5	71.4	72.5	68.7	77.1	75.7	72.3
France	39.2	55.5	56.9	58.0	58.3	57.1	60.0
Ireland	N/A	85.0	87.0	91.5	N/A	N/A	N/A
Italia	48.6	63.1	69.4	58.6	59.4	70.0	61.4
Luxembourg	N/A	87.0	80.0	85.0	78.0	80.0	84.0
Nederland	74.3	75.6	85.8	92.5	78.8	89.3	90.0
Österreich	48.0	51.8	N/A	N/A	N/A	N/A	N/A
Portugal	N/A	67.4	63.5	67.8	68.4	61.2	N/A
Suomi/Finland	60.8	70.0	80.0	80.0	63.0	63.0	81.5
Sverige	N/A	69.3	82.3	70.5	65.5	73.6	67.5
United Kingdom	76.7	86.2	88.0	89.0	90.5	94.2	90.2
EUR 15 (1)	61.3	71.1	77.2	78.0	74.6	75.9	76.9

(1) EUR 15 average: Estimates excluding Ireland for 1985, 1992-94 and Austria for 1990-94.  
Source: Eurostat, National sources, Others

from 24.6% to 14.9%. Although the share of video rentals has decreased, the share of sell-through videocassettes has increased from 14% in 1992 to 18.5% in 1994.

Revenues from sales of videocassettes have exceeded revenues from rentals since 1992. Indeed, the sector has been characterised since 1990 by the growing importance of sell-through transactions as opposed to rentals. In current prices, total turnover in EU video retail increased by nearly 5% annually from 1989 to 1993; from 1993 to 1994, the sector increased by more than 9%. The video sector faces a threat from private television channels which play more films and from the developments of technologies (cables, satellites) which might modify the market structure.

In 1994, total distributor revenues from pay TV in the EU reached approximately ECU 396 million, the UK and France being the most important consumers. Over a ten year period (1985-1995) the average global EU offering on all networks increased from 30 to 85 films per day.

### International Comparison

The number of admissions to cinemas in Western Europe is less than half the North American total although the total population of the former is 25% larger. In 1994, an average EU citizen went on 1.83 times to the cinema, compared to 4.5 times in the USA and 0.97 times in Japan. In the Triad, the EU represented with ECU 2 989 million nearly 34% of cinema gross box office revenue in 1994, while the USA/Canada represented 51% and Japan 15%. The average cinema ticket price in Japan (ECU 10.28) is probably the highest in the world.

### Foreign Trade

The trade balance deficit of the EU against the USA in the audio-visual sector (cinema, television, video) has increased over the last five years. This deficit deteriorated from ECU -1.8 billion in 1988 to ECU -3.2 billion in 1993. The negative trade balance of the video sector has worsened at a yearly compound rate of -11% from 1989 to 1993. Intra-EU trade is insignificant when compared to the importance of extra-EU imports from the USA. The fact that the USA movie industry represented 74% of world-wide film production investments in 1994 illustrates the dependence of the whole industry on American productions.

In the Triad, the USA account for the highest ratio of screens to million population (102.2 cinema screens per million popu-

lation). In 1994, the USA produced 420 films compared to approximately 496 in the EU and 251 in Japan. North America is the only region expected to produce more films during the 1990s than it did during the 1980s.

The sales and rental of pre-recorded videocassettes are linked to the penetration of VCRs in households with a television. In 1994, VCRs had a 61% penetration rate in the EU, while this rate stood at 82% in the USA and 77% in Japan.

## MARKET FORCES

### Demand

While the global demand for movies has never been as strong as it is today, EU consumer preferences in terms of product content and viewing mode are not supporting a strengthening of the EU film and video industries. EU producers are faced with the need for a wider geographical diffusion and higher-budget films to compensate for a narrowing national audiences.

The EU audio-visual consumer, provided with an unprecedented offerings of movies on TV screens, has considerably increased his consumption. It is estimated that the average individual spectator watches 50 movies per year on TV compared to 2 in a cinema.

In current ECU terms, the average EU admission price to cinemas has risen at an annual average rate of 4% from 1986 to 1994 but stagnation is registered over the period 1992-1994. While this price increase has softened the impact of attendance decline on cinemas' revenue, especially in France, it has rendered cinemas expensive access to films. Nevertheless, increasing cinema admissions in 1993 and 1994 show that there is a renewed interest in cinema: there were 676 million admissions to cinemas in the EU in 1994, the highest attendance level since 1987.

The demand for US films has been strengthened by extensive marketing operations and large-budget films well targeting consumer preferences. Indeed, the high marketing and finance budgets available to US producers (more than four times the EU average) and the type of films produced have contributed to US films popularity in the EU. In Italy, between 1992 and 1993, the penetration rate of US films increased by 10 percentage points. France, on the other hand, managed to keep the penetration rate of American films below 60%.

**Table 3: Film and video  
VCR market**

(thousand units) VCR Sales	1985	1990	1991	1992	1993	1994
Belgique/België	163	282	257	258	247	204
Danmark	104	235	225	210	195	200
Deutschland	1 500	3 300	3 325	3 230	3 010	3 000
Ellada	50	175	175	120	47	50
España	560	760	950	950	925	900
France	820	2 250	2 175	2 250	2 150	2 300
Ireland	60	75	80	85	85	85
Italia	235	1 450	1 800	1 600	1 650	1 650
Luxembourg	7	9	10	10	10	9
Nederland	325	420	650	560	520	550
Österreich	135	210	275	250	250	260
Portugal	80	100	125	125	140	140
Suomi/Finland	110	150	175	130	102	125
Sverige	120	270	275	210	275	275
United Kingdom	1 805	2 150	2 160	2 210	2 400	2 500
EUR 15	6 074	11 836	12 657	12 198	12 006	12 248

**Total number of video households (thousands)**

Belgique/België	523	1 509	1 817	2 012	2 171	2 302
Danmark	345	840	995	1 115	1 087	1 173
Deutschland (1)	5 445	13 315	17 630	19 030	20 395	21 540
Ellada	142	839	971	1 061	1 096	1 133
España	1 436	4 751	5 177	5 796	6 183	6 543
France	2 752	9 392	10 997	12 676	13 954	14 620
Ireland	256	512	564	606	644	678
Italia	657	5 132	6 572	7 692	8 806	9 879
Luxembourg	23	60	65	70	74	77
Nederland	1 264	3 000	3 423	3 543	3 834	4 078
Österreich	253	1 042	1 280	1 489	1 700	1 763
Portugal	458	883	977	1 058	1 146	1 258
Suomi/Finland	303	977	1 122	1 198	1 278	1 311
Sverige	843	2 238	2 364	2 584	2 612	2 765
United Kingdom	8 435	14 271	15 027	15 690	16 230	16 730
EUR 15	23 135	58 761	68 981	75 620	81 210	85 850

**VCR Penetration rate in TV households (%)**

Belgique/België	16.3	42.0	50.0	55.0	59.0	61.8
Danmark	16.2	39.2	45.7	49.5	47.0	51.0
Deutschland (1)	22.4	50.3	53.3	57.0	59.6	61.9
Ellada	6.3	26.9	29.2	31.7	30.6	31.1
España	18.4	44.9	47.2	50.9	53.4	55.8
France	14.5	46.2	53.0	60.4	66.1	68.5
Ireland	27.2	50.2	53.9	56.7	59.7	61.5
Italia	3.3	24.9	31.8	37.2	42.4	47.5
Luxembourg	18.4	44.1	47.1	50.0	52.1	53.8
Nederland	23.7	51.0	57.1	58.2	62.3	65.3
Österreich	9.5	37.3	43.2	50.1	59.0	60.5
Portugal	18.9	32.0	34.1	35.9	37.6	41.8
Suomi/Finland	15.6	46.9	53.1	56.3	59.4	59.8
Sverige	24.0	60.6	63.5	68.7	68.8	71.9
United Kingdom	40.9	67.0	70.1	72.3	73.0	74.5
EUR 15	19.9	46.4	51.1	55.4	58.6	61.2

(1) German data includes former East Germany (from 1991 onwards).  
Source: Eurostat, IVF

**Supply and competition**

As the economics of film-making change with the diversification of distribution channels, players in the industry adjust their approach to multimodal viewing and the necessity to reduce financial risk through international distribution. During the 70s, US producers went through a restructuring phase and are now reaping the rewards. In the late 80s the EU began a similar reorganisation of the films and video industry and further strategic changes are planned for the 90s.

The key challenge for EU film-makers is to develop a capacity to engineer films likely to attract a large international audience. However obstacles are language barriers for German, Spanish, Italian or French films; limited financing which prevents producers expensive casting, special effects, market testing; dependence on government support especially in France, Germany and Spain.

**Table 4: Film and video**  
**Overview of video cassette market**

(million ECU)	1988	1989	1990	1991	1992	1993	1994
<b>Rental</b>							
Belgique/België	57.6	67.1	59.5	45.4	39.8	40.4	45.9
Danmark	89.8	75.7	73.4	72.3	43.3	36.6	37
Deutschland	530.3	473.4	555.5	488.1	445.5	382.2	374.1
Ellada	84.0	72.7	31.5	22.2	14.2	10.7	N/A
España	338.7	375.8	290.5	175.9	188.7	156.9	159.4
France	140.1	177.1	217.4	234.9	194.8	195.5	171.3
Ireland	49.0	48.9	58.6	56.0	46.0	45.0	50.4
Italia	69.0	71.8	56.5	69.9	66.3	52.2	46.8
Luxembourg	0.8	1.8	1.8	1.5	1.4	1.4	N/A
Nederland	79.2	69.8	75.3	87.8	83.1	90.1	82.5
Österreich	38.7	38.4	40.7	40.7	40.5	35.2	41.9
Portugal	41.2	44.4	50.8	45.9	48.7	26.1	22.1
Suomi/Finland	40.5	46.6	48.4	35.0	25.8	20.2	19.5
Sverige	165.7	154.9	133.0	120.3	99.6	84.4	98.7
United Kingdom	719.4	845.1	790.1	776.0	692.8	585.9	564.7
EUR 15 (1)	2 444.0	2 563.5	2 483.0	2 271.9	2 030.5	1 762.8	1725.7
<b>Purchase</b>							
Belgique/België	44.6	56.5	72.7	85.9	95.3	129.4	154.8
Danmark	2.9	3.7	21.8	42.9	N/A	58.4	65.2
Deutschland	53.0	70.0	146.2	312.1	287.1	428.6	493.6
Ellada	0.0	0.0	0.0	0.0	0.7	1.2	N/A
España	10.9	35.7	48.9	70.8	82.0	118.4	163.6
France	443.7	531.2	688.6	832.9	951.1	1 026.7	1 106.1
Ireland	2.6	10.3	13.0	15.6	13.1	16.3	20.2
Italia	12.2	60.5	122.5	178.7	192.6	145.2	161.7
Luxembourg	0.0	0.3	0.8	1.5	2.0	2.3	N/A
Nederland	6.3	10.7	21.6	42.0	58.9	83.7	101.9
Österreich	2.7	6.9	12.5	25.8	29.5	30.8	54.1
Portugal	0.0	8.5	11.8	14.0	15.4	18.1	24.9
Suomi/Finland	5.1	7.4	14.4	18.0	18.1	17.9	32.5
Sverige	4.1	9.9	16.0	20.1	21.2	41.7	64.1
United Kingdom	276.9	512.4	523.9	627.7	686.0	824.4	899.9
EUR 15	865.0	1 324.0	1 714.7	2 288.0	2 507.9	2 997.1	3 346.1

(1) Estimate including Greece and Luxembourg for 1994.  
Source: Screen Digest

In the future, the EU film supply will be focused on two types of production. First, there will be low-budget, low-revenue movies reflecting for example element of national cultures. Second, there will be commercially conceived productions which are adequately financed to sustain a large and international audience. The financing, casting, directing, technical making and marketing of such films are likely to be based on EU or EU/US ventures.

### Production Process

New technologies (video, digitalisation, HDTV) are being integrated into the production process (e.g. synthetic imaging). This development leads to a reduction in technical differences between cinema and TV. Their final impact is therefore likely to boost the move towards private viewing on TV screens. Nevertheless, the new generation of multiplex cinemas (the combination of at least eight screens in one large cinema complex), interactive entertainment, 3-D screens, giant screens, new sound systems and simulators are enhancing the unique character of the cinema experience.

Rationalisation and reorganisation are in the direction of spreading operating costs in multiplex theatres, while advertising and marketing expenses are covered by the large networks.

## INDUSTRY STRUCTURE

### Companies

As a consequence of losses of market share, EU producers are increasingly organising into larger groups with control over distribution or production facilities. Increasingly, national groups are being created through M&A integrating production and technical contracting. Examples are Granada in the UK, Bavaria in Germany, and SFP in France. But the USA still account for high market share in the EU: 90% market share in Germany, 80% in Spain and 60% in France. The seven largest film companies, which include Sony, Warner, Buena Vista, Universal, Fox, Paramount and Metro Goldwyn Mayer (MGM, owned by Credit Lyonnais (F) but to be sold before 1997), control 90% of US film production.

Other large film production groups have developed from the growing interest of industrial, financial or audio-visual companies in film investments: CANAL+, Bouygues and Chargeurs in France; Kirch, Bertelsmann (operating under the name UFA Film- und Fernseh-GmbH), Scriba & Deyhle, Neue Constantin in Germany, PolyGram in the UK, Penta and RCS in Italy. One should note that PolyGram (75% owned by Philips, NL) is the only EU-based company with its own marketing and theatrical distribution network in the USA.

The five leading EU video distributors are also controlled by important US producers. In 1994, it is estimated that Buena

**Table 5: Film and video  
International comparisons**

	Cinema screens			Cinema admissions (millions)			Cinema gross box office (million ECU)		
	1983	1993	Evolution (%)	1983	1993	Evolution (%)	1983	1993	Evolution (%)
Belgique/België	461	426	-7.6	21.4	18.6	-13.1	61.6	85.1	38.1
Danmark	455	310	-31.9	13.8	10.2	-26.1	43.0	51.4	19.5
Deutschland	3 664	3 709	1.2	125.3	130.5	4.2	384.2	604.2	57.3
Ellada	980	280	-71.4	35.0	12.0	-65.7	40.8	31.3	-23.3
España	3 820	1 791	-53.1	141.0	87.7	-37.8	224.6	272.1	21.1
France	4 857	4 397	-9.5	198.9	133.3	-33.0	650.2	681.2	4.8
Ireland	177	182	2.8	6.0	9.3	55.0	25.5	30.3	18.8
Italia	6 361	3 567	-43.9	162.0	92.2	-43.1	374.2	412.3	10.2
Luxembourg	13	17	30.8	0.8	0.7	-12.5	2.0	3.3	65.0
Nederland	586	468	-20.1	22.1	16.6	-24.9	77.3	86.4	11.8
Österreich	532	386	-27.4	17.9	12.0	-33.0	54.0	59.4	10.0
Portugal	415	187	-54.9	24.3	7.8	-67.9	26.8	16.6	-38.1
Suomi/Finland	368	335	-9.0	9.1	5.8	-36.3	34.9	29.2	-16.3
Sverige	1 220	1 163	-4.7	17.3	16.6	-4.0	69.1	99.7	44.3
United Kingdom	1 304	1 890	44.9	65.7	114.4	74.1	212.1	456.0	115.0
EUR 15	25 213	19 108	-24.2	860.6	667.7	-22.4	2 280.3	2 918.5	28.0
Canada	1 159	1 723	48.7	85.8	79.0	-7.9	315.8	297.1	-5.9
USA	18 884	25 757	36.3	1 196.9	1 244.0	3.9	4 230.4	4 252.8	0.5
Japan	2 239	1 734	-22.6	170.4	130.7	-23.3	881.5	1 257.8	42.7
Australia	863	940	8.9	31.7	52.8	42.3	142.9	242.2	69.5
Total 19	48 358	49 242	1.8	2 350.8	2 174.2	-7.5	7 850.9	8 968.4	14.2
World (1)	129 000	90 000	-30.2	33 429.8	15 202.2	-54.5	9 585.8	14 115.3	47.3

(1) Estimate including China, India and former USSR.

Source: Eurostat, Others

Vista had a 17.4% market share, followed by Warner Home Video (14%), CIC Video (11%) and Columbia TriStar (8.2%). Nonetheless, companies such as PolyGram Video are active as EU distributors. Furthermore, the following EU competitors have maintained a significant market share in their national market: BBC Video in the UK, TF1 Video in France, Scanbox in Denmark and Penta in Italy.

### Strategies

The 1990s have seen the penetration of important communication conglomerates in the film industry, most notably Bertelsmann in Germany and Polygram in the UK. They are primarily interested in the synergy between their core activities (publishing, TV, radio, video, multimedia) and the impact that

films have on "global entertainment", especially the film and video markets. The film unit of Bertelsmann (UFA) entered international production by forming a partnership with Paramount.

The emergence of private channels in the mid-1980s, the dominance of the advertising and the subscriber-led television in the 1990s have significantly affected the film industry. In order to increase their domestic programming offer, several channels are also investing in films, either through co-production or rights acquisitions. In the UK, some TV companies diversified early in film production: these include BBC Films, Channel 4 and Granada. The same phenomena occurred in

**Table 6: Film and video  
Video expenditure in the EU**

(ECU)	1988	1989	1990	1991	1992	1993
Average expenditure per video household for video cassettes purchase and rentals						
Belgique/België	85.45	94.50	87.61	72.26	67.15	78.21
Danmark	163.89	121.22	113.45	115.68	84.13	87.40
Deutschland	54.51	46.54	52.70	45.39	38.49	39.75
Ellada	125.75	93.81	37.54	22.86	13.95	10.86
España	102.16	98.78	71.44	47.65	46.69	44.53
France	95.38	92.03	96.47	97.10	90.40	87.59
Ireland	134.73	130.68	139.84	126.95	97.69	95.19
Italia	28.12	33.54	34.86	37.83	33.65	22.41
Luxembourg	16.33	38.89	43.33	46.15	48.57	51.35
Nederland	37.72	29.09	32.30	37.92	40.08	45.33
Österreich	58.20	53.86	51.06	51.95	47.08	38.88
Portugal	80.78	70.35	70.89	61.31	60.49	38.57
Suomi/Finland	67.61	66.10	64.28	47.24	36.64	29.81
Sverige	102.66	86.97	66.53	59.39	46.75	48.28
United Kingdom	81.19	101.22	92.07	93.41	87.88	86.89
EUR 15	75.07	75.91	71.44	66.10	59.96	57.95

Source: Eurostat, IVF

**Table 7: Film and video  
Cinema expenditure in the EU**

Average cinema expenditure per capita	1985	1990	1991	1992	1993
Belgique/België	5.64	6.52	6.76	7.19	8.45
Danmark	7.51	8.06	8.12	7.85	9.92
Deutschland	5.69	5.10	6.00	5.50	7.46
Ellada	4.09	4.05	3.92	2.55	3.02
España	5.11	5.63	6.20	7.04	6.97
France	11.65	9.78	9.78	10.01	11.84
Ireland	6.46	7.13	8.07	7.59	8.51
Italia	6.11	6.91	7.56	7.30	7.22
Luxembourg	4.92	6.07	6.77	6.67	8.35
Nederland	4.27	4.88	5.25	4.79	5.67
Österreich	6.28	5.32	5.83	5.41	7.46
Portugal	2.32	1.59	1.43	1.59	1.68
Suomi/Finland	7.19	7.54	7.36	5.97	5.78
Sverige	10.46	12.28	13.18	12.22	11.47
United Kingdom	3.68	6.51	7.34	7.44	7.84
EUR 15	6.30	6.57	7.11	7.00	7.90

Source: Eurostat

France with Canal+ (through Studio Canal+) and Bouygues-TF1 (with Ciby 2000).

Concentration in the film industry is also accompanied by vertical integration. In order to increase revenues, some production companies, such as PolyGram, are extending and diversifying their distribution operations. When one includes solely box office revenues, few producers cover their costs. In order to cover these costs companies participate to complementary activities such as video making, TV games, film paraphernalia, and operation of cinemas. In 1994, the EU video retail market was approximately 1.6 times larger than the cinema market.

For distribution, the major companies are expanding their activities outside their domestic markets in order to have access to European spectators: 4 of the 7 companies expanding their activities abroad are American. They include UCI, AMC, Showcase and Warner. European distributors such as Bert-Clayes (B), UGC (F) and Chargeurs-Path (F) have adopted a more aggressive strategy on the continent. In 1995, Chargeurs bought MGM's Dutch cinemas and merged them with its Path chain, indicating a trend towards the concentration of the theatrical distribution network in the EU.

Also, many cinema chains modernised and adapted their proprietary cinema theatres to attract customers. Projects to build multiplex cinemas in Europe is part of this strategy. Amongst

the most active companies, Warner in Portugal, Virgin Cinemas, through the acquisition of the MGM chain in the UK, and other like United Artists or AMC Entertainment.

Eastern Europe is creating new opportunities: in 1996, several projects of multiplex cinemas in Russia, the Czech Republic and Hungary have been enhanced.

## REGULATIONS

Three European bodies contribute to the EU film industry through targeted programmes: the EU Commission's Media Plan II, directed the European audio-visual industry, which aims to help film and programme makers adapt to the requirements of a single audio-visual market and to develop new synergies and links; Eurimages, an initiative from the Council of Europe enhancing EU multilateral co-productions, with a budget over ECU 23 million; and Eureka, aimed at incentivising the use of new technologies, improving education and co-operation with Eastern Europe.

Within the context of the Television without Frontiers Directive, to be mentioned the ongoing debate about binding quotas of EU-produced films imposed on EU television networks. At a national level, some countries such as France also impose on national TV channels the obligation to invest in domestic film production.

**Table 8: Film and video  
Public subsidies by type for the production of films in the EU**

	Systematic subsidies	Writing	Selective subsidies Development	Production	Credit facilities	Tax-shelter
Belgique/België	(3) X	(2) X	(2) X	(2) X		
Danmark		(2) X	(2) X	(2) X		
Ellada	(3) X	(2) X		(2) (3) X		X
España	(3) X	(3) X			X	
France	(1) X	(3) X	(3) X	(2) (3) X	X	X
Italia	(3) X				X	X
Nederland		(3) X		(2) X		X
United Kingdom		(2) (3) X	(3) X	(2) X		X

(1) Obligation to reinvest.

(2) Repayable.

(3) Notrepayable.

Source: CNC

According to the International Video Federation, the EU video industry lost an estimated ECU 810 million in 1994 due to copyright theft. In this context initiatives enforcing existing national regulations have been taken.

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## OUTLOOK

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The EU film and video industry will continue to face important challenges. There is a need for pan-EU alliances between major EU producers to support the high risk inherent in the production of films suitable to the international scene.

EU film production though, will remain dependent on legal and financial programmes planned by the EC and national institutions. Nevertheless national governments, while supporting national cultures, should create more incentives for the production of films more internationally oriented. Also, cinema distribution must continue to upgrade its service in order to offer a competitive alternative to TV viewing.

Written by: LEK

# Television

## NACE (Revision 1) 92.2

Over the past ten years, structural weaknesses have prevented EU production from keeping up with the rise in demand for television programmes. In the field of broadcasting, the last decade saw the rapid emergence of private channels, in part due to the liberalisation policies of the 1980s. Although Hertz-transmission remained predominant, cable and satellite penetration rates increased rapidly.

### INDUSTRY PROFILE

#### Description of the sector

Following NACE Revision 1 classification, the television industry is included in the group 92.2 representing all radio and television activities.

The television industry comprises three major activities: production of programs, development of methods for transmission and reception, and broadcasting. Regional aspects are not particularly relevant; production and broadcasting tend to follow national rather than regional patterns.

#### Production

Films, game shows, series, cartoons - all the television programmes which count for more than three and a half hours of viewing time daily - are produced by independent companies and multimedia groups. The smaller independents rely extensively on service providers and specialists in audio-visual equipment to whom they subcontract the technical aspects of production.

#### Transmission and reception

There are three main standards of analogue transmission in use today: NTSC in North America, Pal in the EU, and Secam in France and French speaking countries. Hertz transmission

is still predominant in the EU but poor reception and limited frequency capacity have led to the development of cable and satellite transmission systems.

The development of digital transmission services, the first digital channels should start broadcasting in 1996, will speed up the introduction of new interactive services such as Video-On-Demand and Interactive Home-Shopping. Though digital compression will enable radio spectrum to be exploited more efficiently, the transition for all broadcasters from analogue to digital transmission is not expected to be completed before 15 to 20 years. Furthermore, in terms of technology and spectrum availability, the introduction of digital services through cable and satellite is easier to achieve than through Hertz transmission.

#### Broadcasting

In the EU, television channels are operated by public as well as private broadcasters. In 1994, there were 88 channels with a nation-wide coverage in the 15 Member States. Approximately 53% of those channels were private; they included pay-channels, specialised channels as well as private generalist channels competing directly with their public counterparts.

#### Recent trends

##### Production

The production of programmes industry in the EU has not been able to keep up with the rapid growth in broadcasting demand in the 1980's and the beginning of the 1990's. Between 1985 and 1993, the volume of programs broadcast grew from 205 000 hours to 720 000 hours. In contrast, available EU supply increased by a little more than 60%. This explains the important share of repeat showings (estimated at 28% in 1995) and the significant development of purchases of TV programmes outside the EU (about 40% of total TV programs in 1994).

##### Transmission and Reception

In the EU, the penetration rate of television grew from some 90% in 1986 to more than 96% in 1994. More than 139 million EU households were thus equipped with a television

**Table 1: Television**  
Number of national origin TV channels in the EEA (nation-wide, regional, local)

	1985	1990	1991	1992	1993	1994
Belgique/België	16	17	18	19	19	19
Danmark	36	55	66	59	64	68
Deutschland	27	55	62	66	66	66
Ellada	3	N/A	N/A	N/A	140	160
España	5	(1) 14	(1) 14	(1) 14	(1) 21	(1) 24
France	6	18	21	29	34	41
Ireland	2	2	2	2	2	2
Italia	(2) 6	800	800	800	800	800
Luxembourg	4	5	6	6	8	8
Nederland	2	3	3	5	8	9
Österreich	2	2	2	2	2	2
Portugal	4	4	4	5	6	6
Suomi/Finland	3	5	5	5	6	5
Sverige	2	24	25	27	29	34
United Kingdom (1)	5	21	23	32	42	4
EUR 15 (3)	123	1 085	1 141	1 191	1 247	1289
Island	1	2	2	2	2	2
Norge	(2) 1	108	123	104	107	105
EEA	125	1 195	1 266	1 297	1 356	1392
Schweiz/Suisse	7	7	7	7	8	10

(1) Not included all the local television channels accessible on cable and satellites.

(2) Not included local television channels.

(3) Included local television estimates for Greece (1990-92).

Source: Eurostat

**Table 2: Television**  
Total television revenues in the EEA

(million ECU)	1990	1991	1992	1993	1994
Belgique/België	464	491	495	562	590
Danmark	167	195	193	227	260
Deutschland	3 142	3 742	4 368	5 247	5 625
Ellada	112	153	205	313	419
España	1 500	1 598	1 661	1 907	2 013
France	3 237	3 620	3 764	4 411	4 677
Ireland	88	92	93	110	116
Italia	2 748	3 187	3 442	4 249	4 707
Nederland	205	266	334	437	494
Österreich	379	393	418	475	482
Portugal	151	197	247	330	380
Suomi/Finland	254	267	274	319	337
Sverige	272	342	384	604	681
United Kingdom	3 558	3 861	4 119	5 227	6 036
EUR 15 (1)	15 372	17 402	18 921	23 020	25 967
Island	15	17	17	16	19
Norge	79	95	119	152	169
EEA (1)	15 466	17 514	19 057	23 188	26 155
Schweiz/Suisse	326	358	350	420	438

(1) Excluding Luxembourg.

Source: Eurostat, European market and mediact

set in 1994. About 23% of television households had a cable connection whereas 10% were equipped to receive satellite programs. Major differences appear between Southern Europe, where cable is practically non-existent for Italy, Portugal and Greece, and more northerly Member States such as Holland and Belgium where cable penetration rates are 90%. Satellite penetration follows a similar geographical pattern, although the most cabled countries are not always the ones with the highest satellite penetration rates.

Wide-screen TV (16:9 format) and improved definition receivers have recently entered the market; total EU sales of 16:9 television for 1995 are estimated at 253 000, up 90% from 1994. Finally, High Definition Television (HDTV), the new standard for television reception, is expected to be a major development in the beginning of the twenty-first century.

### Broadcasting

In the 1980's, deregulation policies led to the increasing emergence of private channels in the EU. The number of channels with a national broadcasting capacity grew from around 38 in 1981 to more than 88 in 1994, 53% of which were private.

Furthermore, technological developments reduced the costs of transmission and prompted an explosion in the number of regional and local stations. In 1994, there were approximately 60 regional channels and more than 1141 local stations operating in the 15 Member States.

### International comparison

The USA have the highest rate of penetration of television equipment in the world: 2.2 television sets per household and a penetration rate of 82% for video recorders. Close behind

**Table 3: Television**  
Penetration of cable and satellite in Europe, 1993-1994

	Households with TV (thousands)		Households connected to satellite dish (thousands)		Penetration rate (%)		Cable connections (thousands)		Penetration rate (%)	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgique/België	3 680	3 723	33	40	0.9	1.1	3 549	3 594	96.4	96.5
Danmark	2 311	2 299	570	700	24.7	30.4	614	640	26.6	27.8
Deutschland	34 200	34 669	6 800	7 300	19.9	21.1	13 500	14 600	39.5	42.1
Ellada	3 580	3 640	(1) 2	20	0.1	0.5	N/A	N/A		
España	11 573	11 728	145	300	1.2	2.6	130	130	1.1	1.1
France	21 096	21 346	806	902	3.8	4.2	1 305	1 626	6.2	7.6
Ireland	1 078	1 102	48	62	4.4	5.6	456	516	42.3	46.8
Italia	20 752	20 786	(1) 30	60	0.1	0.3	0	0	0.0	0.0
Luxembourg	142	143	(1) 2	20	1.4	14.0	112	131	78.9	91.6
Nederland	6 159	6 245	251	319	4.1	5.1	5 657	5 799	91.8	92.9
Österreich	2 883	2 916	662	805	23.0	27.6	978	1 003	33.9	34.4
Portugal	(1) 2 987	3 007	(1) 100	(1) 110	3.3	3.7	10	10	0.3	0.3
Suomi/Finland	2 153	2 194	91	126	4.2	5.7	759	798	4.2	5.7
Sverige	3 799	3 847	387	481	10.2	12.5	1 825	1 873	48.0	48.7
United Kingdom	22 247	22 446	2 664	2 950	12.0	13.3	611	909	2.7	4.1
EUR 15	(1) 138 640	140 091	12 591	14 185	9.1	10.1	29 508	31 631	21.3	22.6

(1) Estimates.

Source: Eurostat, Others



**Table 4: Television**  
**Worldwide televisual habits, 1993**

	Number of TV households			Number of VCR households			Number of households connected to cable		
	1986	(thousands) 1990	1993	1986	(thousands) 1990	1993	1986	(thousands) 1990	1993
Deutschland	24 270	26 457	34 200	7 590	13 315	20 395	1 570	8 100	13 500
España	(1) 9 241	10 588	11 573	1 888	4 751	6 183	(2) 0	110	130
France	19 034	20 317	21 096	3 574	9 392	13 954	145	515	1 305
Italia	19 883	20 641	20 752	880	5 132	8 806	0	0	0
United Kingdom	20 705	21 311	22 247	9 727	14 271	16 230	20	149	611
EUR 15	(2) 118 031	126 629	138 640	(3) 28 731	(3) 57 922	(3) 80 114	(2) 9 647	(3) 20 947	(3) 29 508
USA	85 962	91 569	94 200	22 780	57 414	73 565	39 900	50 500	55 500
Japan	35 568	38 582	41 371	15 152	26 930	31 028	N/A	(1) 6 788	8 750

(1) Figure for 1987.

(2) Estimates.

(3) Excluding Greece.

Source: Eurostat, Others

are the Japanese, with 1.9 television sets per household and a penetration rate of 78% for video recorders. On the other hand, the EU averages just over 1.25 television sets per household and 57.5% video recorder penetration rate; but there are significant differences among Member States (Italy with 44% and the UK with 71%) that reflect discrepancies between average income and average viewing time per head as well as a different evolution process of the television industry.

#### Foreign trade

The EU trade deficit for program production was ECU 1.25 billion in 1993. On average the EU imports two thirds of its fictional broadcasts consumption. For some particular channels, extra-EU imports is even higher (90% for the French channel M6 and even 100% for Antenna 3, the Spanish broadcaster).

US producers dominate several segments of programming in the EU, and notably fictional broadcasts; however the importance of Japanese products is increasing, particularly in fictional series for children and cartoons. In a survey including 88 television channels, the imports of fictional broadcasts from the US represented 69% of total imports of fictional broadcasts.

## MARKET FORCES

### Demand

#### Production

It is estimated that in 1995 approximately 50% of the budgets allocated to television programs by EU broadcasters were spent on internal productions. Purchases and co-productions accounted for the remaining 50%. The high ratio of repeat showings, estimated at 28% of the hourly broadcast volume in 1995, is a measure of the potential demand for new programs.

#### Transmission and reception

In the EU, only 38% of television households are equipped with more than one television set, as opposed to 70% in the USA and 67% in Japan. Although there is already more than one television set per household in the EU there are prospects for further expansion of the market, due to the decrease in equipment prices, the rise in purchases of video games and the foreseen introduction of digital interactive services.

Nevertheless other factors are likely to restrain the growth in the installed base of television sets in the future. For example, the Mediamat Institute has indicated a 20% reduction in viewing time between 1990 and 1993 by young Europeans

**Table 5: Television**  
**Top 18 channels, turnover**

(million ECU)		1987	1988	1989	1990	1991	1992	1993
ARD	D	2 405	2 509	2 547	2 840	3 193	4 320	5 075
BBC	UK	1 891	2 174	2 307	2 366	2 614	2 716	2 741
RAI	I	1 380	1 584	1 722	1 968	2 211	2 286	1 963
Publitalia	I	1 218	1 330	1 417	1 526	1 707	1 962	1 409
TF1	F	533	685	756	843	938	1 069	1 199
ZDF	D	730	746	775	871	892	1 135	1 177
Canal +	F	491	616	763	898	883	937	1 131
RTL TV Germany	D	23	60	142	337	493	727	953
BSkyB	UK	-	-	69	297	517	N/A	860
NOS	N	-	-	-	-	539	573	817
RTVE	E	743	1 003	1 211	1 070	836	931	750
France 3	F	432	449	472	541	571	657	691
Sat-1	D	18	56	149	267	391	505	665
France 2	F	402	403	410	441	490	N/A	658
Channel 4	UK	244	260	330	348	354	342	421
Thames TV	UK	369	467	547	564	538	532	N/A
Central TV	UK	358	377	485	470	426	453	N/A
LWT	UK	333	344	376	412	362	385	N/A
Granada TV	UK	331	338	434	428	402	351	N/A

Source: Eurostat/Screen Digest, Others

**Table 6: Television  
TV advertising expenditure in the EEA**

(million ECU)	1990	1991	1992	1993	1994
Belgique/België	262.3	270.0	273.9	308.3	379.8
Danmark	65.2	87.6	92.6	112.7	149.7
Deutschland	1 420.8	1 901.5	2 113.3	2 631.9	3 250.4
Ellada	63.6	102.2	152.8	249.4	534.8
España	1 487.6	1 553.7	1 549.3	1 710.5	1 071.6
France	1 871.6	2 049.1	2 067.0	2 421.0	2 857.0
Ireland	55.8	59.2	60.2	72.6	100.2
Italia	2 221.9	2 552.7	2 732.8	3 327.1	2 413.1
Nederland	55.8	103.8	166.7	243.4	459.3
Österreich	215.2	225.4	256.2	286.9	345.1
Portugal	150.8	197.9	247.7	329.6	419.9
Suomi/Finland	113.9	116.0	118.8	140.9	148.5
Sverige	32.2	67.3	120.4	177.6	247.8
United Kingdom	2 342.1	2 437.5	2 437.3	2 898.4	3 242.3
EUR 15 (1)	9 997.5	11 315.1	11 893.5	14 304.9	15 619.5
Norge	15.7	29.2	47.1	69.2	117.9
EEA (2)	10 374.5	11 753.0	12 435.9	14 979.5	15 737.4
Schweiz/Suisse	115.5	118.4	113.4	131.5	184.5

(1) Excluding Luxembourg.

(2) Excluding Luxembourg and Iceland.

Source: Eurostat/IE, European market and mediafact

in the 14 to 20 age range. This decrease appears to be the result of the development of the electronic games market and, to a lesser extent, the multi-media market.

#### Broadcasting

The commercial successes of Pay-TV and specialist channels such as Canal Plus, MTV and Eurosport show how viewers' preferences tends towards a selected diversification of programmes. Television viewers also appear to be increasingly interested in the possibility of customising their viewing, notably through the development of interactive systems. Recent as well as on-going experiments in the EU and the USA show that viewers respond positively to interactive services, but are still reluctant to pay the proposed prices which are generally considered too high.

#### Supply and competition

##### Production

The production of programmes industry in the EU is suffering from structural weaknesses. In addition, the few large EU production companies have not been able to invest in high-risk projects, thus profiting from the rapid growth in broadcasting demand between 1985 and 1994.

Despite financial contribution from national governments and the EC, broadcasting and production directives and EC initiatives such as Media, the level of EU production is largely insufficient, especially in some programme areas such as cartoons, drama and fictional programming (series), or creative documentary.

##### Broadcasting

Between 1980 and 1994, the number of television channels in the EU grew by more than five times. But in addition, between 1983 and 1994, total spending on television advertising increased by 230% in 14 Member States (not including Luxembourg). As a result, growing competition between television channels led to financial problems for a number of broadcaster, due to reduction in advertising revenue. This in turn led to the development of new services such as pay channels and specialised channels. European Audiovisual Observatory data on 27 Pay-TV channels in 12 Member States show that the annual rate of growth in the number of Pay-TV subscribers has been close to 20% from 1990 to 1994.

#### Production process

The development of a digital transmission technology and the gradual introduction of interactive television services are the two most important recent developments in the television technology field.

Digital TV systems, through a process of compression and transmission of binary elements, have numerous advantages. With digital transmission, it is possible to compress up to one hundred times more information on a channel, i.e. between three to eight programs. The immediate result is a reduction in the cost of transmission of these programs. Furthermore, the information is evenly recorded and interference between channels presents less of a problem. This creates the possibility of broadcasting on the same frequency from different locations. Digital production, transmission and reception thus offer a better and more constant quality of image.

Research on interactive processes encompasses hardware as well as software development. Hardware research and testing revolve around the creation of a set-top box which will serve as a decoder and as an interface for interactive communication. Developers of such decoders include Philips (NL) and Nokia (FI). Software applications are expected to be provided by an increasing number of joint ventures between broadcasters and computer software groups.

#### INDUSTRY STRUCTURE

##### Companies

##### Production

Among EU countries, Germany, France, Italy and the UK are the only Member States in which national television producers of substantial operational size are active.

Television production in France is financed by broadcasters, the CNC (Centre National de Cinematographie) and the producers' own investments. Independent producers such as Hamster and AB Production are creating profitable TV fictions for French television. Furthermore, the oldest and largest French production company, SFP, recently went through a restructuring process aimed at improving efficiency.

Television production in Germany is increasingly integrated by broadcasters. Producers are often subsidiaries of broad-



**Table 7: Television**  
**Number of national origin nation-wide TV channels (private and public) - International comparisons**

(units)	1985	1990	1992	1994
Belgique/België	5	6	7	8
Deutschland	2	10	11	17
Ellada	1	4	6	8
France	4	6	6	7
Italia	6	6	12	12
EUR 15	41	62	75	88
USA	21	28	30	31
Japan	6	7	7	7
Turkey	2	2	6	14
Russia	2	2	2	3

Source: Eurostat, Others

casting channels and public channels have recently acquired large studios to run their own productions. Television channels in the UK are among the most involved in domestic productions. As a result, approximately 70% of programs broadcast for BBC and ITV are British productions.

Finally in Italy, virtually the entire production volume can be attributed to either RAI or the Fininvest group. Independent producers are having difficulties in imposing their know-how, with the exception of those with a previous cinema production experience.

#### Transmission and Reception

There are three main types of companies currently involved in the development of new technologies and techniques for transmission and reception: Electronic groups such as Philips and Thomson in the area of HDTV equipment; Satellite operators such as Eutelsat and SES in the area of satellite compositioning techniques; Pay-TV operators such as Canal Plus, News Corp and Nethold who are active in the field of digital encryption technologies.

#### Broadcasting

In the EU, there are six major broadcasting groups with stakes in around 100 channels: Bertelsmann (D) - ECU 3.2 billion turnover in 1993 - with controlling stakes in RTL Plus, Premiere and Vox, focused on the German market; the Kirch group (D) - ECU 1.16 billion turnover in 1993 - which holds stakes in Sat 1, Premiere, DSF, Pro 7 and Kanal Kanal, also focused on the German market; Fininvest (I) - ECU 2.4 billion audio-visual turnover in 1993 - controls three channels in Italy (100% of Canale 5, and Rete 4, 55% of Italia 1). Fininvest is also present in the German market (21% of Tele 5) and the Spanish market (25% of Tele Cinco); CLT (L) - ECU 1.99 billion audio-visual turnover in 1993 - remains the group with the most extensive presence in the EU: 66% of the Belgian channel RTL TVI, 25% of RTL 4 (NL), 25% of M6 (F), 46% of RTL Plus (D) and 29% of RTL Luxembourg.

In addition, the two following groups are present in the Pay-TV market: Canal Plus (F) - ECU 1.53 billion turnover in 1993 - which owns 25% of Canal Plus Espagne, 42.7% of Canal Plus Belgique and 35.7% of Premiere in Germany; News Corp (UK) - ECU 2.8 billion audio-visual turnover in 1993 - which enjoys a quasi-monopolistic situation in the British Pay-TV market with BSkyB.

A number of smaller players with a cross-border strategy are currently emerging in the EU television environment. Among them Nethold, a Swiss - South African company registered in Netherlands, is probably the most important. Nethold is one of the first groups to have booked significant satellite transmission capacity and placed important orders for digital decoders in 1995. SBS - Scandinavian Broadcasting Services - is another increasingly active player. Backed by ABC - Capital Cities, its parent company, SBS is present in Sweden, Norway and Denmark and has recently expanded in Belgium and Holland in the field of generalist channels.

#### Strategies

##### Production

The increasing number of joint ventures between producers in the past couple of years comes as the result of the efforts to cope with important investment requirements. This trend is likely to continue in the near future.

Another important development is the increasing involvement of TV channels in the operational and financial aspects of production. However, as the costs of transmission equipment decrease, more and more producers are considering a vertical diversification into broadcasting. Although this has not become a major trend yet, an increasing number of producers like AB Productions (F) raise their stakes in broadcasting companies or set up their own channels.

**Table 8: Television**  
**Origin of TV programmes in the EU**

(%)	Hourly volume	1990 Broadcaster budget	Hourly volume	(1) 1995 Broadcaster budget
Internal productions	30	54	29	49
Repeat showings	27	0	28	0
Purchases	38	30	37	29
Co-productions	5	16	6	22
Total	100	100	100	100

(1) Estimated.

Source: J.N. Dible L'Europe de l'audiovisuelle



**Table 9: Television  
Television taxes and licences in the EEA, 1994**

	Annual fees in ECU TV licences	Type of receivers and uses Radio and television licences
Belgique/België	122	Black and white receiver, private use
	175	Color receiver, private use
Danmark	101	Black and white receiver, private use
	157	Color receiver, private use
Deutschland		
Old Länder	149	Black and white or color receiver, private or public use
New Länder	138	
Ellada		All users pay a fee calculated on the basis of their electricity bill
España		No television licences or taxes
France	62	Black and white receiver, private use
	96	Color receiver, private use
Ireland	55	Black and white receiver, private or public use
	78	Color receiver, private or public use
Italia	82	Black and white or color receiver, private use
Luxembourg		No television licences or taxes
Nederland	85	Black and white or color receiver, private use
Österreich	229	
	244	Black and white or color receiver, private or public use
Portugal		No television licences or taxes
Suomi/Finland	86	Black and white receiver, private use
	153	Color receiver, private use
Sverige	185	Black and white or color receiver, private or public use
United Kingdom	36	Black and white receiver, private use
	108	Color receiver, private use
		Additional licence for car television receiver
Island	311	Black and white receiver, private use
	346	Color receiver, private use
Norge	84	Black and white receiver, private use
	185	Color receiver, private use
Schweiz/Suisse	161	Black and white or color receiver, private use

Source: Eurostat/EBU

### Transmission and reception

With the full liberalisation of the telecommunications market in 1998, telephone and cable operators are expected to compete in the television transmission market. As phone and cable penetration rates will be key success factors, the major players in both fields are already expanding their cable and fibre optics networks in order to gain competitive advantages.

### Broadcasting

All the major European television groups have changed their strategic objectives and short-term tactics in view of the imminent introduction of digital channels. Satellite capacities and large program catalogues seem to constitute, together with access to decoding technologies, a main key to success in a digital television environment. Another important factor in terms of strategy is the ownership of transmission rights for major sports events (such as the Kirch group's payment of 3.4 billion DEM for rights for the football world championships in 2002 and 2006)

One of the most important recent developments in that field is a deal bringing BSkyB and Kirch Groups DF-1. Kirch is the owner of Europe's largest transmissions rights library

(films, soap operas, sports etc.), and recently concluded a co-operation deal with Viacom/Paramount.

Other similar alliances are to be expected in the near future. CLT and Bertelsmann have already agreed to merge their audio-visual businesses in a new joint venture. Furthermore, CLT has agreed with French channel M and public France Television to create a bouquet of digital channels meant to compete directly with Canal Plus. A third digital "bouquet", run by AB Productions (F) is supposed to start at the end of 1996.

In the new digital television market, control of decoding standards is likely to be the central issue, at least in the short term. Rival groups will try to impose their own standards to as many broadcasters as possible in a limited period of time. The following two years are thus expected to be crucial for the future of the EU television map. Furthermore, the German market is an immediate battleground for major EU television groups; what goes on now in Germany may be indicative of what the situation will be like in the rest of the EU at the end of the decade.

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## REGULATIONS

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The 1989 "Television Without Frontiers" Directive rules in three key issues: quotas (channels must broadcast a majority of European productions "where practicable"); responsibilities (a broadcaster is subject to the laws of the Member State from which it broadcasts); advertising (precise rules govern the interruption of programmes by TV advertising).

In February 1996, the European Parliament voted for a series of amendments to the Directive introducing a compulsory aspect for quotas (EU channels must broadcast a majority of EU production in any case, and not just "where practicable"); extended responsibilities for Member States (a clearer set of criteria for the determination of the legal nationality of the broadcaster is set forth, i.e. the localisation of decision and production centres); new rules for the protection of minors from advertising.

The Common Position of the Council of Ministers in Luxembourg, on June 11, 1996, did not take into consideration the Parliaments wish to extend the Directive's coverage to VOD (video on demand) since it considered that these services do not meet the definition of broadcasting (see Art.1.a). however, in order to stimulate the discussion on possible regulation, the Commission is preparing a Green Paper on new audiovisual services in the context of the development of the Information Society services.

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## OUTLOOK

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With the launching of the first European digital channels in 1996, the EU television industry is entering a new era. Viewers stand to benefit from an increased diversity in programs and channels, as well as from the availability of new interactive services.

The major television groups have recently taken important strategic restructuring responding to these significant developments. A large concentration process is underway, and with it the possibility of new investments required for digital television.

Unlike EU producers, EU broadcasters are not threatened at the moment by their US counterparts. However in the future the television industry is likely to accounts for a larger proportion of international market, thus broadcasters focusing only on the EU market will be penalised. Non-EU groups are already looking for alliances and agreements with Asian operators; for example the Chinese market is a target for a number of large international players. The ability to achieve global economies of scale will be a key success factor for the television industry in the medium to long run.

Written by: LEK

# Music recording

## NACE (Revision 1) 92.32

*The EU music industry has experienced a nominal growth rate in retail sales of nearly 9% in 1994.*

*The EU has a strong position in this sector since three of the five major global music companies are part of European groups: PolyGram, Bertelsmann Music Group and EMI Music. These three companies follow a strategy of internationalisation in Asia and Eastern Europe while trying to consolidate their position in North America.*

*The music sector is facing the challenge of the ongoing convergence of the computer, telecommunication, media, broadcasting and entertainment sectors in anticipation of the era of electronic distribution and multi-media.*

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### INDUSTRY PROFILE

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#### Description of the sector

The recording industry ranges from the selection, management and production of artists to the manufacturing, marketing and distribution of Long Plays or Singles recorded on media such as Compact Discs, Vinyl Discs and Compact Cassettes. With twelve Member States (EU-12), sales of music recordings represented nearly ECU 8.2 billion in 1994; with the inclusion of three new Member States (EU-15), this number increases to ECU 8.8 billion. Three European groups control over 40% of the world market: Bertelsmann Music Group (Bertelsmann, D), EMI Music (Thorn EMI, UK) and PolyGram (Philips, NL). Germany, the UK and France represent almost 68% of EU-15 consumption and about 20% of the world market.

#### Recent trends

This sector follows a long-term cycle which is closely linked to the introduction of new hardware technologies, such as the audio CD in the late 1980s. Vinyl LPs peaked with 1.2 billion units sold world-wide in 1981 and then declined; cassettes reached 1.5 billion units sold in 1989 and then lost their momentum; CDs have reached more than 1.7 billion units in 1994 and further growth is still expected. Philips' DCC and Sony's MiniDisc so far have failed to compensate for the momentum gradually lost by the cassette carrier format.

In nominal value terms, EU sales have increased at an annual compound rate of 13.5% from 1985 to 1991. In 1992, sales decreased by -6.6%, partly because of the general European economic downturn which occurred at that time. From 1992 to 1994, the market recovered and the annual growth rate stood at almost +7.5%.

#### International comparison

The world market of music recordings amounts to nearly ECU 30 billion. In 1994, the EU represented around 30% of world sales, ahead of Japan (with 16%) but behind the USA (35%). Consumption patterns remain different in these markets: the importance of record rental in Japan (where there are as many rental shops as record retail outlets) is combined with the highest CD household penetration rate in the world (132.5% in 1993). In 1994, Asia was the largest consumer of music cassettes with a 39% world market share while Latin Americans bought 51% of the world LP production. The EU was the first buyer of Singles (on CD or vinyl format) with a 36.4% market share while a third of the world CD production was sold in the EU.

#### Foreign trade

Because of their transnational market positions and the low cost of transport, record companies tend to organise manufacturing independently of national market locations.

Consequently, intra-EU customs statistics are not meaningful. Nevertheless, two trends are worth noting in extra-EU foreign trade. First, the domestic repertoire represents, on average, only 37.5% of sales in each Member State while the international repertoire has a 53.5% market share. The classical repertoire has the remaining 9%. There are notable exceptions in Greece, the UK, and Italy where the domestic repertoire has approximately a 50% market share. Second, there is a large market for pirate products, especially in Asia and Eastern Europe, and this illegal activity is not reflected in trade data.

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### MARKET FORCES

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#### Demand

General economic conditions have an impact on the demand of music recordings since there is a clear relationship between the economic health of individual economies and growth in music spending. It is often believed that younger age groups represent key buyers for the music industry. It appears that it was true when older generations had not had the opportunity to buy records in their youth. US data suggests that music buying habits are carried up through age groups: the share of music sales made to persons aged 15-19 years has fallen from 24% to 17% in the four years to 1991, while the amount accounted for by 30-39 years old increased from 19% to 23%. Europe's ageing population is expected to follow a similar pattern and, therefore, should not have too negative an impact on the sector's future growth.

The technological cycle seems to link demand to new hardware development. This is certainly true in the case of CDs but probably less so for DCCs and MiniDiscs. The move towards CDs has radically altered the balance of volume sales by media: in units, CDs have grown in the EU by a compound annual rate superior to 21% since 1989 while LPs have declined by at least 43% annually.

The demand for CDs is correlated with CD player penetration rates. In 1994, EU countries with the highest CD penetration rates included the Netherlands (127.3%), Germany (98.5%) and France (83.9%). Some other Member States have much lower penetration rates: Greece (17.2%), Portugal (24.9%) and Italy (25.1%).

The value impact of the switch to CDs, in nominal terms, has been to increase total European revenues by more than 8% annually since 1989. A positive effect of new sound carrier formats, such as CDs, is that they allow enhanced profits for record manufacturers. Increased value-added has led to higher price points, thus helping to increase market values in spite of limited volume growth in Europe.

#### Supply and competition

The music industry remains highly competitive with companies vying to discover and attract the most promising talent. Major EU companies attempt to combine a global presence through international artists with a strong national presence through local talents. The EU music industry can be considered as highly competitive since the three major EU players control over 40% of world music sales and have shown a strong performance: these same players also invest heavily in order to increase their market share in the North American market and to expand their positions in Asia and Eastern Europe.

With regard to capacity issues and the duplication process, over 74 CD production plants exist within the EU. Most duplication facilities are owned by major record companies but some independent companies, most notably MPO (F), are also active in this sector. Competitiveness in duplication is a direct

function of economies of scale, thus driving industry consolidation across Europe.

Sales of recorded music are the main source of revenue for the music industry, but publishing remains more profitable, mainly because it involves lower overheads. A music publisher can claim royalties when the music it "owns" is recorded, performed, broadcast or used in advertising. The five "majors" invest heavily in order to buy publishing rights and build up their catalogue and the publishing market has grown rapidly in the 1990s. This is partly due to the emergence of music markets in Asia and Latin America; and partly to the increase in the value of advertising rights. The leading music publisher in the world is EMI Music.

In some EU countries mass retail outlets have gained an important market share in the distribution of music recordings. Since their policy is generally to sell at low prices with high volumes, it becomes difficult for specialised stores to survive in those EU countries where mass retailers have a strong presence.

### Production process

CDs have rejuvenated the music market, quickly offsetting the LPs decline. No new carrier formats (i.e. Digital Compact Cassettes (DCC) or MiniDiscs) have seriously challenged the dominance of CDs. DCCs and MiniDiscs use digital technology to combine the best features of compact discs and audio cassette tapes. Sony has launched in 1995 its third generation of MiniDiscs, which are miniaturised compact discs that also offer recording capabilities. Sales of this device have so far proved disappointing and the MiniDisc has not reached the status of a mass market product. Philips has started to rationalise its distribution of DCCs in Europe and has reduced the number of retail outlets offering the device. Both DCC and MiniDisc face an uphill struggle in trying to revive consumer interest after disappointing launches.

Another technology worth mentioning is direct transmission of recorded music along cables, telephone lines or via satellites. Such systems (e.g. DMX/BSkyB or Digital Cable Radio Associates/Warner/Sony) are already operative in the USA.

## INDUSTRY STRUCTURE

### Companies

The companies with the largest shares of the audio software market are multinational organisations with recording and production facilities located in all main markets. The sector of music recordings is relatively concentrated, with the first six players (PolyGram, Sony, Warner, EMI, BMG, MCA (Canada)) controlling between 65% and 70% of the global music market. It is estimated that the first three competitors (PolyGram, Warner and Sony) each have a world market share of around 17%. These leaders are followed by BMG (14% market share) and EMI Music. One should note that market shares can fluctuate rapidly as the whole market or a single company's share can be influenced by the success of one or two albums.

### Strategies

The entertainment industry is in flux as intensive deal-making is leading to the emergence of global companies that straddle the converging sectors of computers, telecommunications, media, broadcasting and entertainment in anticipation of the era of electronic distribution. The major music companies now have diversified operations in related markets including film production, book publishing, broadcasting and retailing. Companies such as Sony and Philips are also vertically integrated since they manufacture and distribute the audio equipment necessary for playing the relevant software formats.

The combination of capital intensity with market internationalisation indicates that economies of scale are critical. Most

players have sought to secure a wider international position as well as to enrich their repertoire.

### PolyGram

PolyGram, which is 75% owned by Philips, is active both in the music (86% of total sales in 1995) and the film industry (14%, up from 9% in 1993). PolyGram is the world's largest music group, slightly ahead of Warner and Sony. In 1995, 52% of PolyGram's sales came from Europe, 24% from North America and 18% from Asia. In 1994, PolyGram employed over 6 000 people in Europe.

PolyGram has been building up its international network through the recent acquisition of several companies (A&M Records, Island Records, Motown and Rodven Records) and the opening of subsidiaries in Eastern Europe, Russia and India. The company is present in 40 countries. PolyGram is a leader in the classical department with international labels such as Decca/London, Philips Classic or Deutsche Grammophon, controlling around 40% of the global classical market.

Furthermore, in association with MTV Networks, the company launched MTV Asia, which transmits in Chinese to 20 Asian countries and in English to 39 countries.

PolyGram has started building a position in music publishing and, more importantly, in the movie production and distribution. The company's strategy is to transform itself into a global entertainment company to take advantage of the opportunities in multi-media.

### Bertelsmann Music Group

BMG captures 14% of the world market and ranks second in Europe and fourth in the world. In 1994, 36% of its sales were in the Germany/Austria/Switzerland area, 18% in other European countries and 31% in North America. International expansion over recent years has remained a key objective, owing to acquisitions of small and medium-sized labels such as Vogue (F), Avrep (F), Deutsche Harmonia Mundi (D) or joint ventures with Pressing (I), Stageway and Norsk (N) and Jive Records and LaFace Records (US). In 1994, BMG acquired the Italian recording house Ricordi. This was BMG's second biggest acquisition since RCA Records. This gave BMG a leading 30% share of the Italian market.

Expansion in extra-EU areas continued in 1995 as BMG began operations in India and Saudi Arabia. The company also invested with EMI Music in a leading music television channel in Asia, Channel V. BMG Classic also acquired the exclusive rights to the Melodiya label in Russia, giving it rights to an important music catalogue.

BMG is strengthening its position in new markets and is now present in most East European countries. The strategy pursued is twofold: growth through development of local artists and further acquisition of creative labels. The Sonopress division of BMG produced in 1995 1.6 million CDs daily and it is also the European leader in CD-ROM production. Indeed, BMG made the decision to enter the interactive entertainment market by selling products in the video games and "educational entertainment" markets.

### Thorn EMI

Thorn EMI is a diversified group that derived 48.6% of its ECU 5.4 billion revenues from music recording and music publishing in 1995. Within Thorn EMI, EMI Music is the business unit responsible for recorded music recordings with labels such as Blue Note, Capital Records and Virgin (acquired in 1992). EMI employed 8 228 employees world-wide in 1995.

The group is also diversified in music retailing through HMV (11% of turnover in 1995), which is established in seven countries. The Thorn unit is involved in the rental of electronic hardware such as TVs, VCRs and other home appliances. In early 1996, a projected de-merger of Thorn EMI was publicly

announced: the music operations of Thorn EMI would then become a separate entity. While EMI Music is ranked fifth in the world for sales of music recordings, it is also the number one music publisher in the world.

EMI has continued its strategy of international expansion. In 1994, it increased its shareholding of Toshiba-EMI (TOEMI) in Japan to 55% and acquired the TOEMI publishing business. EMI also acquired Intercord Tongesellschaft (D) and invested in Eastern Europe and the Philippines. In 1995, EMI derived 31% of its turnover from the USA, 22% from Japan and 9% from Germany. Other acquisitions included the purchase of the Dillons bookstore business in the UK by HMV.

EMI Music plans to challenge MTV in Latin America by launching two new video music channels as a joint venture with rival music groups. EMI also made with partners such as BMG a joint-venture investment in Channel V, a pan-Asian music TV channel broadcasting to over 50 million homes.

EMI continued its development in new technologies and launched two World Web sites to market new releases. IBM will put on-line EMI's catalogue of 290 titles and 16 000 copyrights. Clients will pay a fee and royalties in order to download the music digitally.

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## REGULATIONS

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Piracy is a major problem for this industry. The International Federation of the Phonographic Industry (IFPI) estimated that pirate sales in 1994 represented more than 4% of legitimate sales in the EU. Italy and France have the most important piracy rates in the EU.

The GATT Agreement on Trade-Related Intellectual Property Rights (TRIPS) has been a landmark in the development of international intellectual property protection. Now, substantive norms for protection and enforcement provisions represent a significant body of laws in order to shape the exercise of intellectual property rights and their defence throughout the world. Also, the music industry monitors closely possible changes to the EU Television Without Frontiers Directive or the proposed Directive on the Legal Protection of Databases which might affect the role of copyright related industries as content providers in the new information society.

A number of music-related R&D projects have been put in place by the European Commission through initiatives such as the ESPRIT programme. These projects aim at combining the efforts of major industry players such as manufacturers, associations and universities. An example of these efforts is the MUSE project which focuses upon the improvement of electronic delivery of sound recordings, text and artwork; or the IMPRIMATUR project which has the objective to outline the problems arising at the interface between IT, telecommunications and IPR's (Intellectual Property Rights).

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## OUTLOOK

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A challenge for the music industry comes from the development of on-line computer services such as the Internet: global computer networks can deliver music and visual images in digital form to personal computers in the home. Although this distribution channel remains marginal, it is commonly agreed that digital diffusion (through Internet or other means) will become an important part of the global market by 2005. Based on the emergence of global entertainment groups, it is believed that major music companies will also be involved directly or indirectly in the control of channels through which music is either distributed or played (radio, television, film, computer networks).

The emergence of digital diffusion might have an impact on the industry in two ways. First, copyright legislation would have to be modified since there is no legal mechanism for enforcing copyright protection for music distributed by digital means. One difficulty is that existing music copyright laws are administered nationally whereas on-line services are linked to international networks. Second, music companies might be able to lower their cost structure if music is sold directly to the home without going through distributors and retailers.

According to industry experts, it is expected that music sales in the EU should increase at an annual rate of 4% over the period 1995-2000, compared to a rate of 1% in North America, 17% in Asia and over 30% in Eastern Europe.

Written by: LEK



## NACE (Revision 1) 94

*In a constantly changing world, education is called upon to play an increasingly important role in preparing young people to enter the business world.*

*Public expenditure on education represents approximately 10% of total public expenditure in most EU countries, compared with figures of 12% in Japan, 14% in the USA, and Canada and almost 19% in Hungary. Europe's future will be built essentially on the quality of its human resources and therefore on the past and future ability of EU Member States and economic actors to develop and disseminate training at school level. Through its content, organisation and the quality of its training and formation, education is the most important factor in meeting the demand and the changing conditions on the labour market. In this sense, education is the most important investment in every country.*

### INDUSTRY PROFILE

#### Description of the sector

The sector comprised under NACE Rev.1 94 includes all structured teaching activities in schools or universities that issue diplomas at any level.

The structure and the evolution of the teaching sector reflect the way in which each country has responded to its demographic and economic characteristics (mainly in terms of activity and jobs), and has anticipated foreseeable developments.

The organisation of education varies across Member States, with different priorities given to technical and professional teaching, varying importance of part-time education, and country-specific systems of degree levels, diploma types and graduation ages, particularly in higher education. Also, the importance of private education varies considerably across Member States.

#### Recent trends

The share of students in the total population has stayed constant in most countries, though the growth rate is declining. The proportion of the population younger than 15 years old, is decreasing in most countries. This means that individuals receive education during a longer period of their life.

Demographic evolution in EU Member States is generally weak. Between 1980 and the mid nineties population growth has varied from almost zero percent in Belgium, Denmark and Portugal to 0.5% in France, Luxembourg and the Netherlands.

This lack of demographic vitality has resulted in a relative ageing of the population of the Member States and a decrease of the number of potential school entrants. Nevertheless, school attendance has remained almost constant. One reason for this are changes in the period of compulsory education. The duration of compulsory education varies from 8 years in Italy to 12 years in the Netherlands, Belgium and Germany.

Recent proposals for changes in the education system generally aim at extending the period of compulsory education, either by lowering the starting age (Belgium, Luxembourg) or raising the school-leaving age (Italy). Luxembourg has recently lowered the starting age from 6 years of age to 4 to help immigrant children to integrate better into the education system. Portugal has decided to extend the duration from 6 years to 9 years in order to raise the overall level of education of the population, reduce the very high illiteracy rate, and enable a greater number

of young people to enter higher education. Spain wishes to extend the period of compulsory education both to align with the other countries and to guarantee all its citizens a comprehensive basic education.

The increase in the number of people being educated is to a large degree caused by the extension of programmes (secondary technical and professional education, tertiary education) to meet needs in the job market and technical developments. However, this increase is also owing to the longer time periods that students have to spend (compulsory education) or need to spend in the education system. The trend of longer education periods reflects both an increasing need for higher education, as a protection against unemployment, and the political desire of many countries to offer as many students as possible the opportunity to complete secondary studies.

Between 1975 and 1991 enrolment in tertiary education expanded by 60%, whereas the number of students receiving primary education decreased by more than 23%. The drop in the total school population almost equals the difference between the fall in the number of primary students and the increase in the number of higher education students. In most countries the second of these opposite trends only partly compensates the negative effect of the first trend.

The participation of girls clearly catches up with that of boys, as is illustrated in Figure 3. Important differences between girls and boys remain, however, in the nature of education. In most countries girls are overrepresented in general education and underrepresented in technical/vocational studies.

#### Education as employment

About four million people were employed in the education sector in the EU in 1987-88 according to the OECD (taking into account only primary, secondary and special education and excluding administrative staff). About 1.5 million people worked in primary education schools, about 2.4 million in secondary schools and 0.1 million in special schools.

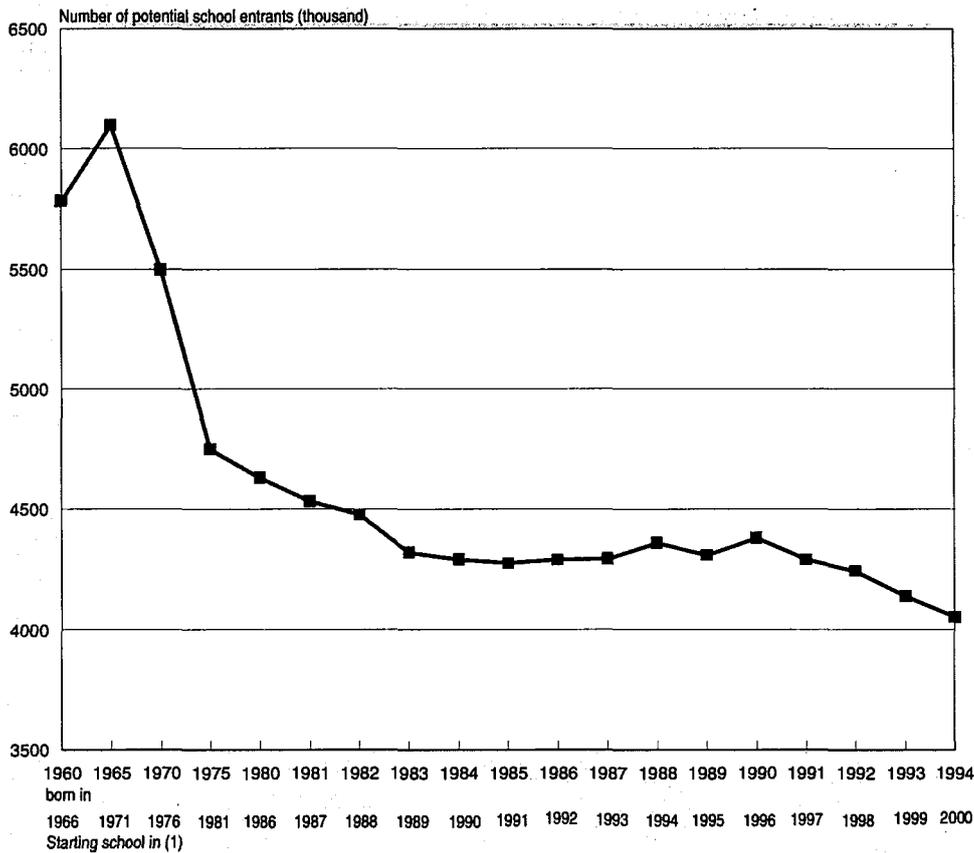
In 1992 almost 9 million people were employed in the education sector in the EC according to Eurostat (taking into account all types and levels of education). About 37% of the people worked in primary education schools, about 60% in secondary schools and 3% in special schools.

#### Private education

In Europe, private education, in other words education that is not directly under the authority of the State, exists in varying degrees across countries. Its importance is a function of the level of education provided and on the nature of the relationship with the State, particularly the involvement of the State in financing private education. The proportion of private education in Belgium and the Netherlands is very high. Thus, owing it to the fact that it is entirely financed by public funds. There are also hybrid formulas in which State participation methods vary. The higher the amount paid to private school financing by the State, the larger the proportion occupied by private schools in the education system. There are many reasons explaining why the private sector exists and the varying support given to it. These include religious and historical factors, along with a possible difference in quality, and the offering of special programmes.

Recently in France an agreement was reached with the Catholic education sector (17% of all pupils) on the recruitment and training of teachers, contributing to a greater equality of educational opportunities, irrespective of the type of school. In Denmark during the last ten to fifteen years, the number of municipal primary and lower secondary schools has undergone a drastic decline of 12%. On the other hand the number of

**Figure 1: Education**  
**Potential school entrants in the EU**



(1) Approximately

Source: Eurostat: Population, Migration, Employment and Unemployment

private schools has increased by 22.5%. The greater number of private schools means cost savings to the public authorities.

#### The pedagogic environment

There has been a trend towards a reduction in the number of students per teacher. This reduction is motivated by the pedagogic reason that teaching efficiency improves when there are fewer students, but also follows from the slow adjustment to demographic changes.

These numbers relate to national averages and hide important regional differences. The number of students per teacher falls in some regions due to population drops, but at the same time increases substantially in other regions, notably in suburban areas. Urbanisation is almost complete in countries in Northern Europe (97% urbanisation ratio in Belgium), but is continuing in other countries, particularly in the South (for example the urbanisation ratio is 32% in Portugal). This will result in further adjustments in the number of students per teacher.

#### Primary schools

Apart from Spain, there are no other countries where the structure of primary education is being changed. In the curricula most important changes relate to increasing attention to foreign languages, as is the case in Greece, France, Spain, Italy and Scotland.

In some countries health and environmental education are receiving greater attention.

#### Secondary schools

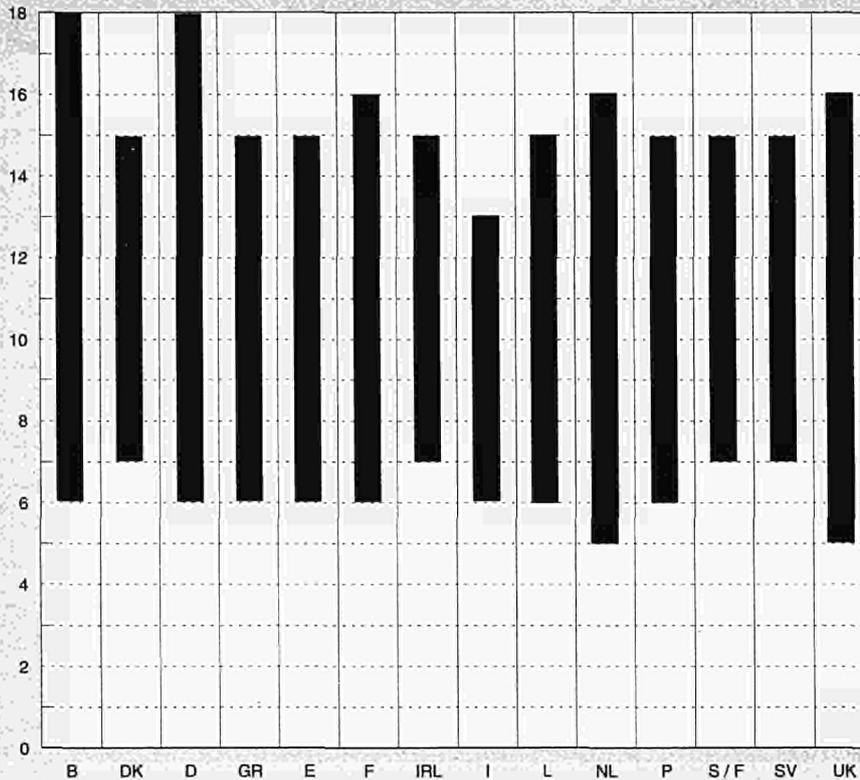
Secondary education is the sector where the largest differences between teaching in the various countries are found. These differences are related to subject matter (general or polyvalent compared with technical or professional), and also to its organisation (full-time and part-time or apprenticeships). This is also the sector where most attempts are made to improve effectiveness by changing the organisation of education.

There is a high level of agreement across countries regarding the importance of two subjects in secondary school: native (school) language and mathematics; the latter subject is viewed as one of the top priorities in all countries except the Netherlands. Some subjects, such as social studies receive very different rankings. Foreign languages receive an equally high ranking in all countries but the United Kingdom and the United States. The arts have the lowest priority in all countries except Switzerland and the United States, where technology/technical studies rank lowest. Technology/technical studies are generally ranked near the bottom. They receive their highest ranking in Austria, Portugal, Spain and the United Kingdom.

Two types of policy measures are observed. The first relates to the specification of the various education paths that provide access either to university or to advanced vocational training, depending on the path chosen. Such policies are focused on in France, the Netherlands and Spain. In other countries growing attention is paid to low-achieving pupils and the prevention of early school-leaving.

In the school year 1992/1993, general or polyvalent full-time education represented 40% of all education at the higher level of secondary education in the EU. This ratio varied from

**Figure 2: Education**  
**Duration of compulsory education in the EU, 1994**



Source: UNESCO Statistical Yearbooks

22% in Germany to 75% in Ireland and 81% in Portugal. This variation reflects differences in national policies, which emphasise in varying degrees technical and professional formation and therefore preparation for entry into the labour market.

As a whole, higher level secondary education in the EU is geared towards professional needs, but approaches vary greatly across countries.

#### Higher education

The challenges faced by the EU (relating to trade competition, research and development, demography) have already resulted in a drop in the proportion of unqualified labour. This trend will undoubtedly continue.

Higher education remains an important area of current concern. Issues include conditions of access, the provision of scholarships and bursaries, the autonomy of education and the need for reforms.

In general we see a clear growth in the number of students in higher education and the number of diplomas conferred. Participation in higher education varies across Member States. These differences largely follow from the initial situation, characterised in the case of Greece, Portugal and Ireland by a relatively low proportion of students in higher education. These countries are catching up. Higher education is for them an important factor in the political objective of creating the ability to meet the main economic and social challenges.

Enrolment rates of 18-21 year olds range from 38,8 in USA and 31,4 in Belgium to below 10 in Denmark. The proportion of women having received higher education increased from 40,4% in 1975 to 46,4% in 1985 (more than 50% in France and Portugal) therefore approaching the proportion of girls in the 5-24 year old population. Most countries even show

a higher proportion of women than men participating in tertiary education.

#### Scientific characteristics of the higher education

Given the changes in high level abilities related to new technologies the share of natural sciences and engineering students at universities is of particular interest. Table 9 shows the varying importance of science education in EC countries (the data do not include non-university science education, which exists in some countries, for example Engineering Schools in France). The large differences are determined by two sets of factors:

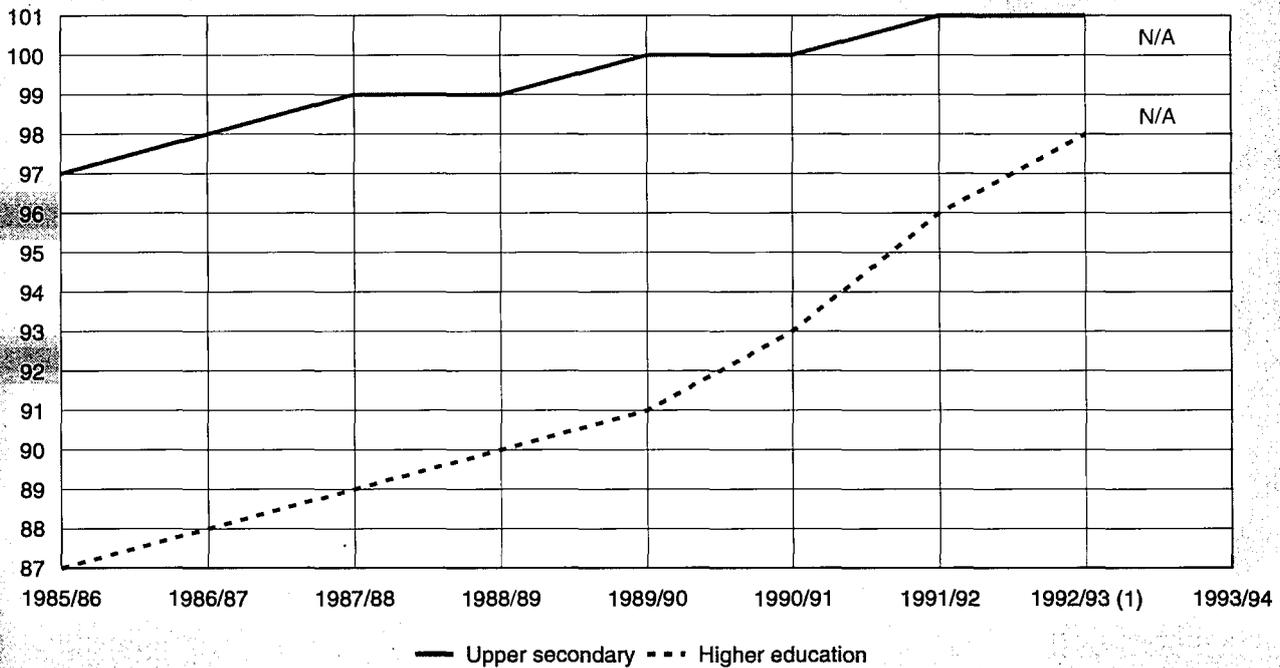
- historical and cultural factors, which partly explain the share that each country assigns to engineering sciences and natural sciences in university education compared with the total number of subjects, and the share of each of these sciences;
- socio-economic factors, relating to the importance given to engineers in economic activities. If this importance increases, the profession of engineering receives both higher esteem and reward. The case of Japan is an example in this respect.

#### Overseas students

There are very large differences in the presence of foreign students in higher education, both in absolute and relative terms. There is a very strong correlation between the origin of foreign students and the history of the host country (former colonies, common language, which is obvious in the case of France, Belgium and the Netherlands). The geographical mobility of students is still low, both globally and between countries in the EU. This is explained by:

- the fairly limited knowledge of the characteristics and possibilities of higher education in other countries;

**Figure 3: Education**  
**Girls per 100 boys in full-time and part-time education**



(1) Estimate  
 Source: Eurostat: Working conditions

- the non-existence of a genuine common labour market;
- the fear of additional financial costs;
- lack of understanding of the language.

**Economic factors**

Education is generally considered as a public consumption item, with a price close to zero and which, in any case, does not reflect the costs to produce it. However, it also exists as a private consumption item with a price determined freely by the providing schools. In addition, education is an investment item since it affects the future income of the individual and the nation.

The two main indicators of expenditures on education are public expenditures on education as a percentage of the Gross Domestic Product (GDP), and public expenditure on education as a percentage of total public expenditure.

The indicator of the ratio of public teaching expenditures to GDP shows a wide dispersion across countries (5.0 for Portugal, 5.1% for Belgium, 8.0 for Sweden). This is not surprising considering the difference in the development level of the observed countries. However these major differences are being reduced by the catching-up movement in less developed countries. Another influence to reckon with are the changes in compulsory education. It is interesting to note that in exactly the countries with the highest levels in the early 1970s (the United Kingdom, the United States and Canada) education expenditures dropped most during the period under consideration. The reverse phenomenon is true for countries with the lowest ratios, particularly Greece and Portugal. It is therefore right to conclude that a catching-up movement in the countries lagging behind contributed to convergence of expenditures on education. These countries increase efforts in education as a function of their economic development level.

It is also interesting to consider the differences in expenditures for primary and secondary versus tertiary education. The ratio of public expenditures on tertiary education to expenditures on primary and secondary education is lowest in Luxembourg (about 4%), followed by Portugal (21%) and Spain (23%) and highest in the Netherlands (almost 60%).

**Comparison by PPP**

The complex nature of education creates serious problems for the evaluation of education expenditures and quality, and makes comparisons between countries very difficult. In order to compare education expenditures between countries, a common measure is needed. The concept of Purchasing Power Parity (PPP) specific to education, recently developed by the OECD, allows to convert different foreign currencies into a same unit by taking into account the relative purchasing power of different currencies. Using this method, the relative effects of education expenditures and their changes may be analysed more precisely.

The first indicator (Table 13) shows the expenditure per student expressed as proportion of GDP per head, evaluated at PPP. In the early 80's the indicator revealed a difference between less developed countries in the EC and the more economically advanced countries. Now these differences seem to be vanished. The two fundamental reasons have already been mentioned: demographic changes and efforts made to reduce the differential by countries such as Portugal, which achieved an increase in expenditure by 100% between 1973 and 1988, followed by another increase in 1991. Greece however maintained its low level, probably being the lowest of EC members (except for the Netherlands for which only public and government-dependent private is taken into account). In most countries the indicator has been fairly stable. It therefore appears that, measured by the PPP method, a fairly constant relation between public expenditures per student and GDP



per capita has been maintained in recent years. This goes except for Ireland and the United Kingdom. Ireland experienced a major drop and also United Kingdom's expenditure decreased again after recovering a drop in 1991, representing the relative disengagement of these country's governments from financing education, in particular since the middle of the 1980's.

The second indicator (Table 14) shows the share of public education expenditures in total public expenditures, in PPP terms. This constitutes another approach to compare public education expenditures. The trend of the European countries studied is downward in nearly all cases, which would be a concern if part of this trend were the result of a relative reduction in the educated population.

Convergence of the indicator over the observation period (1980-1992) has resulted in lower values recorded for all countries. This decrease is also owing to the less important relative increase in education expenditures relative to other items in national budgets.

Considering demographic changes in European Community countries and the ratio of the 18 to 25 year olds within the total population, it is interesting to note the attitude of the various governments towards higher education. Real expenditure on higher education has been increasing in all countries studied, measured in PPP terms. However they can not be said to grow continuously. The conclusion is rather one of individual efforts (major infrastructure or education projects) succeeded by periods of stability. Considering the important economic challenges facing Member States, it would be interesting to evaluate the long run economic effects of public expenditures on higher education. Unfortunately, measurements of this effectiveness can often only be made based on economic and social results observed several years after the expenditures were made.

h. EU policies and Financing  
During the 1980s, the EU has launched a number of actions and programmes in the field of vocational training. Several training programmes were adopted, each having a precise aim: PETRA (initial training); FORCE (continuous training); COMETT (cooperation between firms and universities); EUROTECNET (promotion of qualifications linked to technological innovation).

On December 6, 1994 the European Council has adopted the LEONARDO programme which aims at setting up a global policy for vocational training in the EU. The programme has been endowed with a budget of 620 million ECU for the period 1995-99.

LEONARDO is based on the idea of life-long training. In this respect, initial and continuous training must be seen in the framework of a general conception of vocational training as a permanent process, aiming at ensuring the insertion and the evolution of the individual in the professional life.

In order to promote professional training at EU level, LEONARDO will put into practice three measures:

- the creation of transnational pilot projects for the setting up of common training models, the training of trainers, the anticipation of future needs, etc.;
- the creation of exchange and placing programmes, which will allow young people, students, trainers and human resources managers to follow part of their vocational training in another Member State;
- the development of knowledge in the field of vocational training, through a number of enquiries and analysis to be made at Community level, e.g. on the anticipation of future needs, the transparency of qualifications, new learning processes, etc.

In parallel to the LEONARDO programme, the EU has also developed the SOCRATES programme in the field of education. The programme aims at building on the achievements

of previous programmes in the field of education, such as ERASMUS, EURYDICE and LINGUA.

SOCRATES seeks to pursue several objectives:

- to develop the European dimension in education at all levels, so as to strengthen the spirit of European citizenship;
- to promote a quantitative and qualitative improvement of the knowledge of the languages of the EU, in particular those which are less widely used and taught;
- to promote intensive cooperation between institutions in the Member States at all levels of education;
- to encourage mobility of teachers and students;
- to encourage the academic recognition of diplomas, periods of study and other qualifications;
- to encourage open and distance education in the context of the programme;
- and to foster exchanges of information and experience.

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## OUTLOOK

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Education in the EU faces a number of developments, which simultaneously constitute tasks to be addressed.

The first development concerns higher education. In this respect European education systems must:

- increase the proportion assigned to scientific and technical programs in order to satisfy the needs of senior technicians and engineers in the various economic sectors;
- increase relations between economic sectors and education by making more use of the business world, well qualified staff, engineers and research workers from industry in education and by engaging them in common projects;
- better transparency and exchanges of good practice in curricula and curricula development. Teaching programmes between universities and countries in order to improve collective vitality while maintaining individuality

Some progress has already been made in these fields. These efforts must be increased and consolidated, and also made better known. The various EU projects contribute towards this.

The second development concerns improving the overall efficiency of education systems. This efficiency may be measured by the number of diplomas currently conferred, but in reality its effect as investment will be felt throughout the subsequent careers of the students graduated.

To advance in both tasks outlined above new education techniques (remote education, interactive computer assisted education, etc.) should be integrated, to allow teachers to concentrate on their main objective: to enlighten future workers on how to learn, i.e. to instruct them in self-training, which will prepare them for any needed adaptation throughout their professional careers.

The problems faced by the education system in adjusting to the labour market, which have contributed to the 15 million unemployed in 1990 (annual average), require urgent solutions. The young need methods of reinserting them into school activities (giving them the same opportunities as those that have been able to follow standard curricula), or to include them in training programs to acquire operational skills meeting the needs of economic sectors. For job seekers who have already had a professional activity, experience has shown that reconversion problems are better solved when they are anticipated. The example of companies that have implemented reconversion operations (possibly leading to diplomas), sometimes months or years before a reduction in the workforce materialises, demonstrates the benefits such programmes.

Finally, we should emphasise the effects, which will increase in future years, of the arrival into the secondary education systems of the smaller numbers of students currently in primary education. The question of a reorganisation or redeployment of infrastructures and teaching facilities, and of numbers and abilities of teachers, has already arisen in some countries and will arise in others. The ability of education systems to provide solutions will affect the qualitative and quantitative development of higher education.

In short, the basic tasks of education policies in the EU and in the Member States is to mobilise the needed financial resources and teachers to provide education that can promote competitiveness and social harmony within the EU.

Written by: Bakkenist Management Consultants

# Health care services

## NACE (Revision 1) 85.1

Health services account for approximately 8.1% of GDP in the EU, and 7.8% of EU employment in 1993. Although national health systems vary significantly across countries, on average about half of total expenditures on health is accounted for by hospitals. Around 20% is spent on pharmaceutical products, the remainder relating to "other" medical expenditures (including primary care).

Over the past decades, real health spending grew at a rapid rate, increasing its share of overall public expenditure and raising concern about the future financing of health services. About 78% of total spending on health is, indeed, covered by public insurance systems. The decade of the 1990s will likely see major changes in health systems aimed at further increasing the overall efficiency of these services (i.e. reducing the cost while maintaining and if possible increasing the quality of the services and the accessibility to all). Important changes in the regulatory environment have either recently been implemented or are going to be realised in the near future. All actors in this sector will have to adapt to these changes. Restructuring is already under way in two key segments of the market (hospitals and pharmacies).

### INDUSTRY PROFILE

#### Description of the sector

According to the new NACE classification, the sector of health care services includes hospital activities, medical practice activities, dental practice activities and other human health activities. More precisely, the sector of health care services contains services supplied by:

- medical doctors (generalists and specialists), dentists and veterinarians;
- pharmacists;
- drug stores;
- chemists;
- paramedical centres;
- hospitals, clinics and polyclinics;
- registered nursing homes, psychiatric institutions and other special treatment centres;
- first-aid centres and health centres;
- home medical services supplies;
- nursing services (including leased nursing care services);
- mobile medical equipment services;
- rehabilitation services.

On the other hand, two observations need to be made. Firstly, although total spending on health includes all personal medical services (by hospitals, paramedical service suppliers, doctors, etc., including purchases of medical products), and "collective" expenditures such as public health programmes and investment in medical equipment, the purchases of medical equipment and of pharmaceutical products are not considered. Medical equipment only accounts for a small share of total spending on health (about 1-1.5%). This is not the case of pharmaceutical products, but its production and sales are covered in a separate monograph (Chapter 6).

Secondly, although statistics on health exist in all EU Member States, caution has to be exerted in making international comparisons. This is the case because of the limited comparability

of data, and because of methodological problems arising from comparisons of data from different economic, institutional and demographic structures.

The statistical information available from national sources is thus neither consistent nor comparable across countries. The data source which is used for international comparisons here is the OECD. For many years indeed, the OECD has undertaken to harmonise health statistics and present them in a more comparable format than what is available from national sources. Another source of data is the pilot survey of European countries carried out by the Working Party for Comparative International Health Statistics.

#### Recent trends

In 1993, within the EU-12, total expenditure on health at current prices amounted to 447.9 billion ECU, representing 8.1% of GDP, or 10.1% of total private and public current expenditures.

On average, in the EU-12 1192 ECU are spent per year on health, on a per capita basis.

Until the mid 1980s, total expenditures on health were rising much faster than GDP or domestic demand, both in nominal and in real terms. In western Europe, the share of health spending in total private and public expenditure spending grew from 3.7% in 1960 to 5.1% in 1970, 7% in 1980 and 10.1% in 1993. Given that in most Member States it is public insurance systems which cover the lion's share of total expenditures on health, this rapid growth in demand became a major source of concern for national governments.

In the 1990s regulatory changes aimed at limiting the public sector deficits curbed both the demand and the supply of health services.

On the demand side, two main factors have pushed patients to reduce the number of visits to the doctor and the "average value" of the prescriptions. Firstly, changes in reimbursement systems have increased the share of the cost which is to be paid by the patient. Secondly, medical practices have been monitored in a closer way.

On the supply side, changes in the regulatory framework have obliged many small hospitals to close down and have decreased the number of pharmacies (through changes in ownership leading to an increased concentration of this sector). Moreover,

Table 1: Health Care Services  
Total expenditure, 1993

	Expenditure (billion ECU)	Per capita (ECU)
Belgique/België	14.9	1 480
Danmark	7.8	1 505
Deutschland	126.4	1 568
Ellada	3.5	338
España	29.8	762
France	104.5	1 816
Ireland	2.7	758
Italia	72.2	1 268
Luxembourg	0.7	1 772
Nederland	23.0	1 509
Österreich	14.4	1 880
Portugal	5.4	548
Suomi/Finland	6.3	1 263
Sverige	11.9	1 395
United Kingdom	57.0	983
EUR 15	480.5	1 306
USA	755.1	2 928
Japan	262.0	2 107

**Table 2: Health Care Services**  
**Public share in total expenditure on health**

(%)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 (1)	1992
Belgique/België	83.4	81.5	85.9	82.3	83.0	81.8	79.4	83.1	89.1	88.9	88.9	88.9	88.9
Danmark	85.2	85.0	85.4	84.8	84.5	84.4	85.5	84.3	83.6	83.2	82.8	81.5	82.0
Deutschland	75.0	75.0	74.7	73.3	73.0	73.6	74.1	73.7	73.9	72.2	71.6	71.8	71.5
Ellada	82.2	84.4	91.3	88.0	87.6	81.0	80.7	79.6	82.6	75.0	77.0	N/A	76.1
España	79.9	78.7	79.4	84.5	81.7	80.9	79.0	78.3	82.1	80.9	80.5	82.2	80.5
France	78.8	79.5	79.0	77.9	77.4	76.9	76.3	76.4	74.7	75.1	74.4	73.9	74.8
Ireland	82.2	82.8	81.8	79.7	78.0	77.4	76.4	74.7	72.7	73.0	74.8	75.8	N/A
Italia	81.1	79.4	78.6	78.8	78.1	77.1	75.9	77.6	78.0	76.8	77.6	77.5	75.2
Luxembourg	92.8	92.9	93.0	89.2	89.1	89.2	89.4	91.6	91.7	91.1	91.4	N/A	N/A
Nederland	74.7	75.2	76.0	75.3	75.6	75.3	72.4	73.6	72.6	72.2	71.3	73.1	76.6
Portugal	72.4	71.2	62.3	56.2	54.9	56.3	57.8	57.8	57.8	57.8	61.7	N/A	69.8
United Kingdom	89.6	89.1	87.8	87.5	86.9	86.3	84.9	84.3	90.4	83.6	83.5	83.3	84.4
EUR 12	81.4	81.2	81.3	79.8	79.2	78.4	77.7	77.9	79.1	77.5	78.0	N/A	N/A

(1) All figures are estimates.

Source: OECD Health Systems

fees charged by the suppliers of medical services have been controlled more severely in order to limit the growth in nominal spending.

All these measures, combined with the general effects of the economic slowdown on consumer spending, have spilled over to nominal and real income growth in the sector, and are now also having an impact on employment levels.

### International comparison

In terms of health care expenditure expressed in local currency, the EU spends more per capita on health care than Japan, but significantly less than the USA. However, currency exchange rates affect the comparison. Moreover, expenditures per capita do not represent a particular good indicator of the state of nations' health care programmes, but can be used to show the evolution of health care expenditure.

In 1993, total spending on health within the EU amounted to 447.9 billion ECU, which compares with a figure of 262 billion ECU for Japan and 755.1 billion ECU for the US. Per capita, average spending in the EU amounted to 1 192 ECU, slightly lower than the Japanese figure of 2 107 ECU figure and much lower than the US figure of 2 928 ECU. In fact, although per capita spending in the EU is generally considered to be excessive, the share of total expenditure on health in total private and public expenditure spending is, at about 10.1%, well below the USA figure of 16.7%.

Important differences between the EU and the US also exist both in terms of organisation of the health market and in terms of the financing sources. In the EU, approximately 78% of total expenditures on health are financed by the public sector, whereas in the US this share is only about 35%.

### Foreign trade

Trade in health services covers medical services provided in one country to residents of another country. This is the case for patients located near the borders or for migrants. It also includes emergency care during international transits and patients being treated in other countries because the required service cannot be provided domestically.

Intra-EU trade in health services is comparatively limited when compared to the total value of health services provided within the EU. Such trade is, however, not restricted to neighbouring countries, so that there is both intra-EU and extra-EU trade in this sector. Extra-EU exports of health services consist of all services provided by an EU health service organisations to residents from a non-EU Member State. Similarly, imports of health services are those expenditures on health services made by EU residents in a non-EU country.

It is generally recognised that the EU has a net surplus on its medical trade balance, although the exact magnitude of this surplus is difficult to ascertain. Data on trade in services are indeed somewhat unreliable, given that only a relatively small proportion of these "international" health services are subject to reimbursement by national health organisations. The "true" value of the services often goes undeclared.

## MARKET FORCES

### Structural trends

The increase in health spending actually reflects an increase in expenditure in real terms. Within Europe, price increases in the health service sector have, indeed, remained limited, largely as a result of regulatory controls. On average during the 1980s, the estimated rate of inflation on health services in western Europe was 0.5% higher than the overall rate of inflation in the economy, the difference for pharmaceutical products being -0.5% per year and for hospital and related services +1.1% per year. This last figure, however, does not appropriately reflect gains in productivity posted by hospitals, such that the true underlying price increase for health services is probably lower than the overall rate of inflation in the economy. In the USA, in contrast, the price index of health services (including pharmaceutical products) grew 2.7% per year faster than overall inflation, largely due to the rapid increase in pharmaceutical product prices (+3.8% per year faster than overall inflation in the economy) which have largely remained uncontrolled.

The growth in real spending in Western Europe amounted to 5.4% per year on average in the 1970s, and to 2.5% per year on average in the 1980s. The fast growth in real health expenditure within the EU during the 1970s was mainly attributable to a rapid expansion of services provided by the hospital sector (incl. specialised medical institutions). Over the same period, the share of pharmaceutical expenditures (which includes the margins on pharmacists) decreased, and so did "other" medical expenses. During the 1980s, hospital expenditures were brought back under control and the share of expenditure on pharmaceutical products remained broadly stable, while that of primary services grew rapidly. Two exceptions to this general pattern within the EU are Italy and the Netherlands, where expenditures on pharmaceutical products grew faster during the 1980s than other health related expenditures, including primary care.

In the 1990s, this trend in the evolution of real spending in the European health care service sector has continued. But it is attributed mainly to demographic developments and the increasing sophistication of modern medicine.

**Table 3: Health Care Services**  
Health care expenditure at current prices

(billion ECU)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	5.6	6.2	6.4	6.9	7.2	7.8	8.6	9.3	9.8	10.6	11.6	12.5	13.8	14.9
Danmark	3.2	3.5	3.9	4.1	4.4	4.8	5.0	5.6	6.0	6.2	6.5	6.9	7.9	7.8
Deutschland	49.1	53.1	57.2	62.5	67.8	71.2	77.4	83.1	89.3	89.3	98.1	108.3	120.3	126.4
Ellada	1.3	1.5	1.7	1.8	2.0	2.1	2.2	2.1	2.3	2.6	2.8	3.0	3.3	3.5
España	8.6	9.7	10.9	10.6	11.6	12.4	13.2	14.5	17.5	21.6	25.5	28.4	32.2	29.8
France	36.2	41.2	44.9	48.2	54.0	58.5	63.2	65.4	69.8	76.1	82.9	87.9	95.7	104.5
Irland	1.3	1.4	1.6	1.8	1.9	2.0	2.1	2.0	2.1	2.2	2.4	2.6	2.7	2.7
Italia	22.4	24.6	28.4	32.9	35.9	39.4	42.7	48.4	53.7	60.4	69.7	77.6	79.9	72.2
Luxembourg	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.7	0.7
Nederland	9.8	10.4	11.8	12.6	12.9	13.3	14.5	15.3	15.8	16.5	17.9	19.3	21.1	23
Österreich	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.5	12.9	14.4
Portugal	1.1	1.4	1.5	1.4	1.5	1.9	2.0	2.2	2.5	3.0	3.1	3.8	5.3	5.4
Suomi/Finland	N/A	9.0	7.7	6.3										
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	14.5	11.9
United Kingdom	22.3	27.9	29.4	31.7	33.5	36.1	34.5	36.1	42.5	45.8	47.7	54.2	56.6	57
EUR (1)	161.0	181.2	198.0	214.9	232.8	249.8	265.8	284.4	311.7	334.7	368.6	441.8	474	480.5

(1) EUR 15 from 1991.

Source: OECD Health Systems

Firstly, in 1990, the percentage of the total population aged over 65 ranged between 11.4% (in Ireland) and 15.7% (in the UK). In total, there were close to 49 million people aged over 65 in 1990 in the EU. With the increase in life expectancy and taking into account the present age structure of the EU population, the total number of individuals aged over 65 is currently rising at an average annual rate of about 1.5%. This clearly boosts total demand for health, particularly for nursing services (both domestic and external).

Secondly, nowadays health makes routine use of technologies unimaginable only two decades ago. New diseases have also been discovered, new treatments have been developed and new services have been introduced (such as screening programmes) adding to the problem of spiralling costs. Most of these developments have created and will continue to create a need for more specialised service providers. Finally, the cost of equipment increases continuously, which impacts that of medical supplies and treatments in general.

### Employment

The problem of assessing the number of people employed in the health services sector are at least as complex as the statistical problem in valuing the services provided. The definition of the categories of health service employees has tended to change over time, creating gaps or discontinuities in the time series and making difficult to establish international comparisons. Even where the number of individuals working in a given market segment is reported such as the number of nurses in hospitals or the number of physicians in activity, some of these (23.5% on average in the EU) only work on an occasional or part-time basis. In 1994 the share of part-time workers in the EU is the highest in the Netherlands (63%) and in the UK (43.6%). Finally, especially amongst the liberal professions, such as doctors, individuals often continue to be registered after reaching retirement age, even when they are no longer or only occasionally practising.

It is nevertheless estimated that within the EU as a whole the health sector provides employment to around 10.98 million people in 1994, representing around 8% of total employment.

In 1991, on average within the EU, physicians account for 13.5% of the total workforce in the sector, and dentists for 2.4%, whereas pharmacists represent 2.9% of total employment and nurses and midwives 27.8% of total employment.

The trend in employment by category is discussed into more detail below in the section on Industry Structure. The inter-

pretation of this trend is difficult, given that no figure was available for Italy until 1992, and the unification of Germany caused a discontinuity in the total employment trend in that country also. Nevertheless, it is safe to note that the number of people employed in the health sector has increased continually over time, in line with the growth in demand for these services.

### Government policies

Given that in most Member States it is public insurance systems which cover the lion's share of total expenditures on health, the rapid growth in demand from the second half of 1980s has become a major source of concern for national governments.

However, the objective of government policies in the health sector is not to limit costs but to maximise efficiency gains (i.e. improve the price/quality ratio). So the main policy issue for the sector is thus how to increase efficiency while ensuring social equity. In this respect, governments have to answer the following two specific questions:

- is there an optimal allocation of health services between public/private operators?
- how could an appropriate level of competition in the sector be established, while ensuring that quality services remain accessible to all at a socially acceptable cost?

Despite differences between EU countries, governments have in general pursued these objectives by:

- controlling prices;
- controlling demand;
- encouraging transfers of different types of expenditures from one segment of the market to another (reducing the length of stay in hospitals to substitute it by primary care, or increasing the number of drugs that can be purchased without a prescription, or encouraging self-medication).

The long-run effect of such measures on health spending is, however, largely unknown. There are, indeed, obvious trade-offs between short and long term health spending. The problem has to be analysed on a case by case basis.

To the purpose of controlling spending while at the same time guaranteeing to all access to quality services, new concepts have recently emerged, such as QALYs (or Quality-Adjusted Life Years). Cost-effectiveness studies are also gaining popularity.

**Table 4: Health Care Services**  
**Number of persons employed (1)**

(thousands)	1988	1989	1990	1991	1992	1993	1994
Belgique/België	201	202	204	225	212	377	389
Danmark	164	153	166	168	172	426	395
Deutschland	1 443	1 516	1 638	1 675	2 154	2 224	2 283
Ellada	113	117	121	124	126	155	161
España	372	416	428	467	466	570	582
France	1 370	1 361	1 313	1 311	1 357	2 071	2 156
Ireland	67	71	77	76	74	88	99
Italia	N/A	N/A	N/A	N/A	1 151	1 114	1 140
Luxembourg	7	7	7	6	7	10	10
Nederland	451	463	481	509	517	881	903
Portugal	109	115	116	129	194	198	199
United Kingdom	1 331	1 383	1 353	1 429	1 515	2 607	2 662
EUR 12 (2)	5 628	5 802	5 905	6 118	7 946	10 721	10 979

(1) Break in time series; data provided in NACE/Rev.1 from 1993. Includes social work activities.

(2) For 1988-1991: excluding Italy.

Source: Eurostat: Labour force survey

Monitoring compliance is also an increasingly important element of these analyses, as it has been demonstrated in a number of cases that the monitoring of compliance plus the expenditure on the drugs were all together cheaper "over the life-time" than the risks of non-compliance (which can lead to hospitalisation).

## INDUSTRY STRUCTURE

### Personal medical services (doctors, dentists)

In all EU Member States, the number of doctors in activity has increased continuously since the early 1970s. In 1991, there were 935 000 physicians in activity within the EU, compared to 635 000 in the US. The average number of doctors per 1 000 inhabitants in the EU hovers around three, although there are wide variations by country. The density of physicians is for instance comparatively high in Greece, Spain and Belgium, and comparatively low in Ireland, Italy and Luxembourg.

In comparison, there were 166 300 dentists in activity in 1991. The average number of dentists per 1000 inhabitants varying between 0.2 in Italy and Spain and 0.9 in Greece and Denmark, with an EU average of 0.48.

There are no reliable statistics on total income earned by physicians and dentists within the EU. In France, total private & public expenditure on medical services outside hospitals accounted for about 13% of total expenditure on health in 1991. In the Netherlands, the figure was a little lower, at about 11%. This compares with a figure of 19% in the US. The rate of reimbursement of these medical expenditures by the public sector was 62% in France, 53% in the Netherlands and 35% in the US.

The market for primary care is heavily regulated. The market is segmented by country, but the segmentation differs across countries as some services can be provided by one category of health providers in one country and by another in another country. In Spain, the Netherlands and the UK, for instance, only a generalist can refer patients to a specialist. In Belgium, people can go directly to the specialist without a prior consultation, which implies that there are certain medical acts which can be done by both.

Increased competition between sub-segments of the market has a mixed effect on the activity of physicians in terms of levels, but definitely changes the nature of the work they perform. On the one hand, new technological developments now make it possible to treat certain problems within the doctor's surgeries instead of being treated in hospitals. On the other hand, policies to encourage self-medication would

tend to reduce the number of visits to the doctor, thereby negatively influencing the sector's activity. The net effect on costs, especially on long term costs, is, however, largely unknown.

Another implication of the tightening of the regulatory environment for health is on training. At present, 95% of on-going training of doctors is financed by the pharmaceutical companies, who organise seminars, conferences and congresses to keep them informed about the latest developments in medical science. The sector fears that measures to reduce "advertising" expenditures by pharmaceutical companies will have a negative impact on overall expenditures spent on training in this sector. This could also have long term effects or shift the responsibility for on-going training onto public authorities.

### Hospitals, homes

Home-care probably existed before hospitals. In most EU countries, family doctor practices, which provided almost all primary care in the 1960s, were progressively replaced by health centres, until this trend stabilised in the late 1980s. There is now also an important trend of specialised physicians leaving the institutional environment to open practices in the community.

Hospitals, taken in the broad sense, account for the lion's share of total expenditures on health within the EU. There are very different types of hospitals within the EU. First of all, there are public and private hospitals. Moreover, differences also lie on the type of specialisation and on the size of hospitals.

The organisation of the hospital sector within the EU largely reflects national regulatory environments and national heritage. In general, private commercial hospitals are newer to the system and reflect developments in health insurance paid to private sickness funds or commercial insurance companies. They represent a complement to the public infrastructure by providing additional hospitals, clinics, day centres and nursing home facilities. In the UK, for instance, nursing home facilities are almost entirely private. In Italy, private hospitals are part of the general hospital system working under convention (law 833/78) within the national health services.

During the 1980s and early 1990s, the share of hospitals in total expenditure on health decreased slowly. The supply of hospital services, measured by the number of beds available, also decreased progressively. According to the OECD, the share of hospital expenditures in total spending on health. This is sharp contrast with the situation in the 1960s and 1970s when, despite strong macroeconomic pressures aimed at limiting the growth in expenditures, the growth in services

**Table 5: Health Care Services  
Employment structure, 1994 (1)**

(%)	Share of female workers	Share of employees	Share of part-time workers
Belgique/België	73.5	83.6	30.1
Danmark	85.0	97.1	39.9
Deutschland	77.0	88.3	25.4
Ellada	61.3	85.6	2.3
España	68.6	93.6	6.3
France	74.0	87.9	23.6
Ireland	76.8	94.3	19.8
Italia	53.9	86.2	5.8
Luxembourg	73.6	90.7	18.5
Nederland	76.9	92.4	63.0
Portugal	75.2	94.4	4.3
United Kingdom	81.1	92.9	43.6
EUR 12	74.5	90.0	29.4

(1) Data provided in NACE/Rev.1.  
Source: Eurostat: Labour force survey

provided by hospitals continued to increase faster than private consumption.

Major changes are currently underway within the hospital sector. In addition to the above trends, some Member States (in particular Germany and Belgium) have taken cost containment measures which imply a reduction in the number of hospitals and an increased concentration of existing hospitals into larger units. These measures were based on the observation that the average length of stay (and the total number of days spent in hospitals) increases the more beds were available in the country. The sector is likely to see further changes in the 1990s as the rate of occupancy of beds is still low in many areas.

Employment in the hospital sector is difficult to measure, as it includes different categories of personnel, a great part of which also exert a professional activity outside the hospitals. Available surveys on the trend in and level of employment by nurses and other specialised personnel reveal huge differences across countries. This reflects more the great diversity of structures and categories of personnel than fundamental structural differences.

### Nursing

The rising demand for health and the ageing of the EU population have increased the number of active nurses considerably, and have also led to significant changes in nurses' practice. This last evolution goes to two opposite directions. On one hand, there is a shift towards more basic forms of care (care provided to elders in residential services and the community). On the other hand, the development in medical technologies creates a demand for highly specialised, more technical forms of care in acute hospitals.

The fact that training and education systems still vary significantly across countries, as does the regulatory environment, means that there is a small degree of cross-country mobility among the personnel of the health sector (although there is a large body of Community directives which aim at facilitating workers' mobility). In the nursing sector, this implies shortages of staff in certain countries, namely in France and Portugal. Elsewhere, shortages of personnel did sometimes appear due to the rapid growth in demand for nurse care, but this has now either been re-absorbed, or demand itself has been curbed through regulatory measures. In Belgium, for example, the shortage of nurses is regulatory induced, in that the legal staffing norms (number of nurses per 30 hospital beds) are very tight (for cost control reasons).

The problem of inadequacy of demand and supply which still exists in many countries could be solved without increasing total health costs by using less-qualified caring personnel for a range of supportive tasks and for logistics aid.

### Pharmacists

In 1994, there were 188 662 pharmacists in activity within the EU-12. This represents roughly 1.7% of total health employment. Contrary to the trend in the number of physicians, the number of pharmacists has tended to remain stable in the past years.

Concerning the three new EU Member States, there were 3550 pharmacists in activity in Austria in 1993, 1085 in Finland and 750 in Sweden.

Moreover, there were 108 135 pharmacies scattered over the EU-12 in 1994. On average, each pharmacy covers about 3 200 people. This number varies significantly across Member States.

In 1993 there were 987 pharmacies in Austria, 575 in Finland and 750 in Sweden.

There are two EU directives which set minimum standards applicable throughout the EU. Firstly, Directive 85/432 aims at an increased harmonisation of the legislative, regulatory and administrative framework for the activities of pharmacies. Secondly, Directive 84/433 relates to the mutual recognition of diplomas and certificates which includes measures aimed at facilitating the establishment of pharmacists in the EU.

However, important differences still exist in the national regulatory environment which prevent pharmacists from circulating freely across the EU. Firstly, there are differences relating to the right of ownership. In some Member States, for example, pharmacies have to be owned by a pharmacist. This is the case in the Netherlands, Spain, Italy and Portugal. In France and Denmark, a license is required. In Luxembourg, there is a mixed system with some pharmacies owned by pharmacists coexisting alongside state (or personal) concessions giving the pharmacists a license to practice. In Belgium, more than 40% of the pharmacies belong to a commercial organisation, and there are others owned by non-pharmacists. Belgium, however, requires a dedicated pharmacist to run the business. In Ireland also, ownership and operation are dissociated. A non-pharmacist can own a pharmacy provided that he/she gives its management to a pharmacist. The same applies to the UK, where only one third of the pharmacies are owned by individual pharmacists.

**Table 6: Health Care Services**  
Share of manpower, 1992

(%)	Physicians	General practitioners	Specialists Consultants	Dentists	Pharmacists	Nurses
Belgique/België	17.1	7.0	N/A	3.3	38.5	N/A
Danmark	N/A	N/A	N/A	N/A	N/A	N/A
Deutschland	N/A	N/A	N/A	N/A	N/A	N/A
Ellada	30.7	N/A	17.1	8.3	N/A	29.0
España	33.5	N/A	N/A	2.5	17.7	35.4
France	9.5	4.8	4.7	2.3	1.5	19.1
Ireland	9.9	N/A	N/A	2.3	N/A	42.8
Italia	9.2	N/A	N/A	3.0	294.0	22.6
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A
Nederland	N/A	N/A	N/A	N/A	0.9	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	N/A
Portugal	25.3	5.4	10.4	1.6	10.9	26.2
Suomi/Finland	7.5	3.3	4.3	2.7	0.3	31.7
Sverige	6.3	1.1	4.3	N/A	3.0	20.7
United Kingdom	7.1	2.8	N/A	1.7	0.2	N/A
EUR 15	N/A	N/A	N/A	N/A	N/A	N/A

Source: OECD Health-Data (CREDES/OECD)

Secondly, in most Member States, the number of operating pharmacies is regulated, generally on the basis of population density or geographic criteria. Greece and Belgium for instance have the highest number of pharmacies per capita, and the possibilities for creating new ones are very limited. Similar criteria apply in Spain and in most southern Member States (including France). In the northern countries, in contrast, in particular in Germany, Ireland, the Netherlands and the UK, the opening of a pharmacy is not subject to such limitations. The pharmacies nevertheless have to be registered, with the registration body often acting as an advisor, although it is not entitled to reject applications on competition grounds.

Other regulations apply for instance to the preparation of medical products for human or animal consumption, or to the delivery of products or to the provision of certain services (advice to customers), or even to the list of products which can be sold in pharmacies.

Finally, mainly in the southern Member States, the profit margins by pharmacists are under regulatory control. This is part of the government control policy on pharmaceutical product prices. The margins to be applied in each country typically depend on the price of products and their nature (prescription pharmaceutical or over-the-counter). Differences in pharmacists' profit margins, in VAT rates and in pharmaceutical product prices across the EU thus explain a large part of the observed dispersion in pharmaceutical product prices to consumers.

More generally, past measures to control spending on medicines in Europe have typically taken the form of:

- price controls on prescription drugs;
- increased patient co-payment;
- the removal of products from reimbursement;
- restrictions on minor ailments being supplied with prescription treatment.

Given that the income earned by pharmacists depends on the authorised margin and on demand for pharmaceutical products, all the above measures have caused a fall in sales and incomes on prescription dispensing, the traditional activity of pharmacists. Prescription sales indeed still account for about 80% of the total turnover of pharmacists. These measures have also created strong incentives for pharmacists to diversify away from prescription pharmaceuticals into over-the-counter (OTC) drugs, cosmetics and other general health products.

Another development under consideration is to increase the responsibilities of pharmacists in providing medical advice, hopefully reducing in that way the number of primary visits. Such development could, however, have important consequences on the organisation of the sector and on the pricing of services. It is important to note that this trend is partly in conflict with another trend within the pharmacists business, which is to increase the emphasis on sales of OTC products on which margins are not controlled. In order to allow pharmacists to undertake an advisory role in an effective way one would expect that the service would have to be remunerated appropriately. In some Member State this will be difficult to achieve given the ongoing trend towards increased distribution of non-prescription drugs by retail stores, which puts downward pressure on the margins of these products.

## REGULATIONS

The health care system is organised on a national basis, with still wide variations in the organisation of the supply and the sources of financing across countries. The broad lines of the various national supply organisation are briefly described below, in particular the hospitals section. Differences in financing sources across countries are treated in the monograph on health insurance.

### Belgium

There is a national minister responsible for public health and social security and also health ministers for the three Communities and for the three Regions.

Primary health is provided by private general practitioners, pharmacists, dentists and nurses. There are health services (private or public) which are delivered at home. The patients have free access to health services, and free choice of the practitioner whatever the financial circumstances.

Most Belgian hospitals are either private (non-profit) organisations, or belong to the public sector (this applies mostly to the social assistance centres run by the communes). Private "for profit" hospitals do not exist anymore neither out of the system nor in the system. In addition, there are various preventive medicine services, such as industrial medicine and school medicine.

In terms of quality standards, hospitals have to be accredited and therefore have to conform to standards. However, they do not actually allow for a true Quality Assurance Programme.

**Table 7: Health Care Services**  
**Public Investment expenditure on medical facilities**

(million ECU)	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België	12.5	13.2	27.2	43.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Danmark	144.9	175.3	207.5	212.8	226.0	261.0	N/A	N/A	210.2	262.1	263.6
Deutschland	3 079.1	2 907.8	3 182.4	3 325.3	3 382.9	3 516.7	3 506.9	N/A	5 711.9	4 374.4	4 692.4
Ellada	77.5	98.4	103.8	108.2	92.2	90.9	80.0	63.3	78.1	105.0	N/A
España	280.8	305.3	357.4	366.7	424.8	494.1	790.4	925.5	1 037.5	878.5	N/A
France	1 262.3	1 294.0	1 351.0	1 467.7	1 616.5	1 783.6	1 895.0	2 029.2	2 468.7	2 783.7	3 110.6
Irland	74.1	77.1	79.7	87.2	78.7	61.9	54.1	39.1	41.7	51.3	N/A
Italia	565.4	708.0	748.3	963.7	946.0	1 017.4	1 188.2	1 383.8	1 758.2	1 459.6	1 190.5
Luxembourg	20.2	21.8	26.1	23.4	29.5	N/A	N/A	N/A	N/A	N/A	N/A
Nederland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Österreich	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	507.1	605.7	690.8
Portugal	68.9	53.9	43.1	54.1	48.6	43.0	45.1	60.7	80.2	122.2	133.3
Suomi/Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	349.0	243.7	N/A
Sverige	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	560.6	533.3	394.2
United Kingdom	1 461.6	1 606.8	1 713.1	1 612.7	1 421.9	1 515.6	2 027.3	2 203.5	2 335.2	2 166.6	1 305.1

Source: OECD Health Systems

A programme that will provide a comparison of hospitals activities is, however, being established.

### Luxembourg

There is a national minister and a secretary of State responsible for public health and social security.

Primary health is provided by private general practitioners, pharmacists, dentists and nurses, and, as in Belgium, there are health services (private or public) delivered at home. There are also various preventive services such as industrial medicine and school medicine. The patient normally has free access to health services, and free choice regardless of his/her financial situation. For different examinations, however, the patient needs the approval of the medical control.

Hospitals belong either to the private sector (mostly congregations) or to the public sector (run by communes). Others are institutions of public utility.

In terms of quality assurance, hospitals have to be accredited and, therefore, have to conform themselves to standards. However, an overall true Quality Assurance Programme will certainly be enforced after the comparison of hospital activities and the possible "synergies" will be known. Actually, a quality control exists for Laboratory activities.

### Denmark

The health system itself is organised at two levels: at county level and at district level. The 16 counties are responsible for running and planning the major health services, such as hospital services and primary health services. The 275 districts, on the other hand, are responsible for the running and planning of most of the social care systems and for certain local health services (such as home nurses, school health and dental services).

The Ministry of Health is the principal health authority and is responsible for legislation on various sector (hospitals, health insurance, etc.). The government has a central agency, the National Board of Health, which, besides certain executive functions in the administration of health services, has an advisory and supervisory role.

In accordance with the Hospital Act, each County Council is required to provide hospital services which most meet the requirements of society.

There were only two private fee-charging hospitals representing less than 0.5% of total hospital beds.

The country does not have a Quality Assurance Programme.

### France

Provision of treatment outside the hospitals can be provided either by physicians practising privately, chosen freely and paid by the patient, or by public dispensaries which are staffed by salaried physicians.

The French state's commitment to the national hospital programme is revealed by the fact that there are public hospitals (centres hospitaliers) in every major town in France. Private hospitals are numerous but small in size. Private hospitals concentrate on the more profitable therapies, as illustrated by the low percentage of long stay beds in the private sector. The share of the private sector is nevertheless progressively increasing in this market segment.

There is no National Quality Assurance in the country.

### Germany

The Federal Government has the authority to set legal guidelines for the hospital sphere.

The provision of health in Germany is primarily a public function, but can be carried out by local authorities or independent non-profit and private facilities.

The state and local governments account for less than half of the hospitals. Private hospitals compete on an equal footing with the public hospitals, as they obtain funds through a dual financing system. Funds for capital items are provided by the state and local governments, while other income comes from earnings against treatments. The fees are agreed between hospitals and local sickness fund organisations, and are calculated on a fee per day basis. In 1989, Germany (west) had 3 046 hospitals. The number of hospitals is now declining.

Some Quality Assurance projects are under way, but there is no national programme.

### Greece

Greece's National Health Service came into being in 1983, replacing the previous social security system. The new system puts greater emphasis on prevention and attempts to remove social inequalities in health services provision, as well as curbing the growth of the private sector.

At the moment, the provision of hospital services is considered as a state function. The private hospital as a business enterprise does not occupy a significant position in the delivery of patient care. In terms of distribution of beds by hospital ownership, it is noted that 30% of beds are in private hospitals, and the rest are in governmental hospitals.

**Table 8: Health Care Services**  
**Hospital beds (all medical institutions)**

(units)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Belgique/België (1)	90 790	89 589	88 554	N/A	93 245	97 844	61 180	60 200	59 930	59 840
Danmark	36 405	35 976	35 606	32 325	31 267	30 229	29 104	28 072	26 764	N/A
Deutschland	678 708	674 742	674 384	673 687	672 834	669 750	660 735	665 561	647 000	628 700
Ellada	57 081	54 438	52 864	51 575	51 587	51 448	51 329	51 297	51 477	51 400
España	179 192	175 410	171 860	171 155	170 076	168 514	165 897	164 451	161 537	N/A
France	588 377	579 750	574 612	569 184	563 100	558 693	552 800	546 400	540 100	533 100
Ireland	31 404	29 320	28 435	25 906	22 751	21 217	21 940	N/A	N/A	N/A
Italia	495 054	479 638	457 210	441 682	432 302	412 059	410 026	358 691	389 451	N/A
Luxembourg	4 688	4 587	4 616	4 661	4 669	4 642	4 483	4 438	4 429	4 560
Nederland	172 420	172 390	172 625	172 650	172 684	172 326	172 060	171 600	171 500	172 400
Österreich	N/A	82 388	82 443	81 721	80 984	80 462	78 945	77 643	77 059	75 563
Portugal	50 210	45 818	46 066	46 448	46 062	45 883	42 920	42 069	41 814	41 000
Suomi/Finland	N/A	(1) 62 000	68 220	67 246	66 645	64 412	62 424	56 537	55 338	50 900
Sverige (2)	N/A	114 202	111 091	106 885	104 145	101 809	98 009	93 679	57 778	52 991
United Kingdom	430 815	421 195	409 962	388 711	372 900	365 000	339 021	322 654	307 876	N/A
EUR 15	N/A	2 976 419	2 978 548	N/A	2 885 251	2 844 558	2 750 873	N/A	N/A	N/A

Hospital beds per 100 000 inhabitants

Belgique/België	N/A	709	694	683	629	619	615	603	598	594
Danmark	N/A	N/A	N/A	N/A	N/A	589	567	545	518	N/A
Deutschland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	835	806	776
Ellada	N/A	549	531	518	415	512	507	503	500	497
España	N/A	457	447	444	440	435	428	423	415	N/A
France	N/A	N/A	N/A	N/A	N/A	N/A	N/A	960	944	927
Ireland	N/A	827	803	731	651	645	626	N/A	N/A	N/A
Italia	N/A	847	808	780	764	727	723	680	686	N/A
Luxembourg	N/A	1 253	1 257	1 261	1 255	1 238	1 182	1 155	1 136	1 154
Nederland	N/A	1 193	1 188	1 181	1 174	1 164	1 155	1 143	1 134	1 131
Österreich	N/A	1 090	1 090	1 080	1 067	1 058	1 031	997	979	949
Portugal	N/A	441	440	443	440	440	433	426	424	416
Suomi/Finland								N/A	N/A	2

(1) Break in series in 1990.

(2) Elderly care not included from 1991.

Source: OECD Health Systems. From 1990 and for Austria, Sweden and Finland: Eurostat Living Conditions

The organisation of hospitals is plagued by the dual phenomena of critical manpower shortages and lack of expertise.

### Ireland

Health care is provided on a regional basis through eight health boards. A number of voluntary (non-state) organisations also assist in the provision of some health services including hospital care and services for the handicapped. The Department of Health has ultimate responsibility for the provision of health care. The eight health boards have responsibility for the provision of services in the first instance at local level.

In recent years, the Irish national health system has made efforts to contain health costs. In percentage of the GDP these expenditures decreased during the 1990s, from 9.3% in 1991 to 6.7% in 1993. In particular, a programme of rationalisation of the acute hospital system has been carried out, involving the merger of small hospitals with larger units. The basis of this rationalisation has been the concentration of expensive equipment, facilities and scarce skilled staff at large units in order to maximise the benefits for patient care.

Because Ireland's population is much younger than the EU average, the structure of demand for health services is very different from that of other Member States. Part of the reorganisation of the sector has thus also taken the form of a decrease in the number of in-patient facilities, and an increase in day care and out-patient facilities reflecting the latest trends in the delivery of hospital services.

The country does not have a national Quality Assurance Programme at present. However, individual initiatives are being

undertaken at local level including medical audit, outcome review and peer review.

### Italy

The Italian National Health Service (NHS) came into being in 1979, replacing a sickness fund service.

Political and administrative services, including the health service, are organised on four levels: the state, the twenty regional councils, the provincial councils and the town and city councils. Ministry of Health set the three-year planning goals of the national health service. The regional councils are responsible for co-ordinating health service operations in their area.

The State delegates responsibility for establishing the areas under the control of the various different local health care units to the regional councils, who must do so in consultation with the local bodies concerned, respecting two main criteria stipulated by the State: the population covered by the local health care unit must be between 50 and 300 thousand inhabitants; the boundaries delimiting the local health care unit must under all circumstances coincide with those of the town or city council, or suburban areas concerned.

Health is organised on a regional level. Of the private hospitals, 90% are permitted by the national health system to provide services to national health service patients. They work within a convention made by local health units (USL).

A law of December 1991 requires that for 1000 inhabitants there must be 5.5 beds, 1 of which must be for rehabilitation or long stay. The country does not have a Quality Assurance Programme.

**Table 9: Health Care Services**  
**Number of pharmacies and pharmacists, 1994**

(units)	Number of pharmacies	Number of Community pharmacists
Belgique/België	5 250	8 500
Danmark	339	1 127
Deutschland	20 327	40 480
Ellada	7 700	7 800
España	18 429	39 608
France	23 000	26 700
Irland	1 140	1 250
Italia	15 875	37 000
Luxembourg	76	349
Nederland	1 480	2 076
Österreich (1)	987	3 550
Portugal	2 428	2 772
Suomi/Finland (1)	575	1 085
Sverige (1)	750	750
United Kingdom	12 091	21 000

(1) 1993 data.

Source: Pharmaceutical Group of the European Community

### The Netherlands

Health in the Netherlands is decentralised and organised to a large extent by sickness funds and local authorities.

The federal government has responsibility and financial control of most aspects of the health services. In general, hospital and other health care is organised on basic, primary and secondary levels. Hospitals are maintained by associations or organisations, or by municipalities or provinces.

Public and privately owned hospitals operate under the same conditions. A part of their budget is provided by the Ministry of Health, and the rest comes from reimbursement given by the ziekenfondsen (sickness funds).

Most hospitals are private, although a great part is owned by religious groups or non-profit organisations. Most new major private hospital investments have been made by Dutch universities. Community care is provided mainly by the Cross Associations (private and religious in character), which run many nursing homes. The Netherlands has the most developed nursing home system in the EU. General practitioners provide most primary care. They are nearly all self-employed. Some have grouped to form health centres and obtain subsidies from the central and local governments.

Local and regional authorities are responsible for ensuring that the health services they provide comply with national standards.

### Portugal

The Portuguese health system is largely run by the public authorities. In 1990, a new health law was voted, which changed access and quality of the services in a major way. The administration of the services is organised at central, regional and local level: central authorities are responsible for planning and evaluating services, for developing norms for the functioning of institutions and services, and for carrying out technical inspections. Regional authorities are to implement health policy, to carry out certain investigations and for training and research in the health sector, among other. It is, however, the local bodies which are responsible for running the health centres.

The National Health System is funded from the State's general budget. The cost of assistance within the public health organisations is to a large extent met by the National Health Service. There is, however, still a private sector which operates

alongside the national system and which operates according to different rules.

During the 1980s, significant investments were made by the Portuguese authorities in order to upgrade the hospital sector. Several major new hospitals were thus built, in order to ensure that the population had a health service comparable to the rest of Europe.

At present, private hospitals contribute about 20% of the total number of beds. Many of these are run by institutions of religious and social character. Some specialised services such as dialysis centres have been set up by private companies, such as WR Grace.

### Spain

In Spain, there is a mixture of public and private health systems, the public one predominating. The social security system can contract services of other public and private hospitals as supply is not sufficient to meet demand, such that there is a strong private system which provides secondary coverage to millions of people.

The major Spanish public-owned hospitals have either regional or municipal status. These are supplemented by private hospitals owned by the Red Cross, universities, religious concerns and private companies. The number of private hospitals is much greater than the number of public ones. However, in terms of number of beds, private hospitals account for only about one third of the total hospital capacity.

Private enterprise hospitals of foreign and local ownership account for about 15% of all beds. Many have closed since the late 1980s, owing to the Ministry of Public health and Social Security's policy to make the public hospitals more efficient by increasing bed occupancy rates. However, this has allowed many new investors to establish themselves by buying up financially troubled private hospitals.

There is a national Quality Assurance Programme.

### United Kingdom

The United Kingdom has a mixed economy in Health care, with the National Health Service (NHS) created in 1948 which provides core coverage for the majority of the population, and a growing independent healthcare sector. There is a strong primary care system based on independent General Practitioner (GP) partnerships contracted to the local Health Authority, funded on a per capita basis. There are moves underway to expand primary care further, with GP partnerships building health centres with a mixed professional staff.

Secondary care in the NHS is purchased by local Health Authorities, although some budgets can be delegated to GPs, allowing them to exercise choice for their patients. An increasing proportion of secondary care is purchased privately: 19% of the population has private medical insurance. Roughly 20% of secondary care is privately provided, but in some specialties where NHS services are poor, the share is much higher. Long term residential and nursing care is purchased through a mixture of private and public expenditure, although by far the majority of provision is private.

Recently the government has attempted to introduce competition into the public health sector. This seems to have produced some innovations in service provision but has been controversial. It is unclear whether perceptions of the quality of service provided by the NHS have improved overall.

A wide range of quality assurance programmes are in use. Health authorities are scored on a set of over 400 performance indicators, a few of which cover some aspects of outcomes and quality of care. There are a number of quality assurance schemes used by hospitals, such as the Kings Fund Organisational Audit or the Hospital Accreditation Programme. There is also substantial use of BSEN ISO 9000.

**Table 10: Health Care Services**  
**Composition of EU spending on health care services , 1993**

(million ECU)	In-Patient	Ambulatory care	Pharmaceutical goods	Appliances
Belgique/België	5 230.0	5 510.1	2 477.2	326.0
Danmark	4 565.2	2 665.9	879.8	297.8
Deutschland	47 461.6	33 001.1	23 343.5	N/A
Ellada	N/A	N/A	N/A	N/A
España	N/A	N/A	N/A	N/A
France	46 440.7	28 741.5	17 579.2	2 589.1
Ireland	N/A	N/A	375.0	N/A
Italia	35 410.0	22 072.5	13 030.6	1 702.1
Luxembourg	206.4	384.6	N/A	N/A
Nederland	12 500.0	5 952.5	2 515.2	637.6
Österreich	4 312.5	3 660.7	1 550.8	323.8
Portugal	N/A	N/A	N/A	N/A
Suomi/Finland	N/A	N/A	N/A	N/A
Sverige	N/A	N/A	1 514.5	343.1
United Kingdom	N/A	N/A	8 484.7	N/A
USA	338 326.2	239 590.1	64 010.2	10 790.1
Japan	N/A	N/A	N/A	N/A

Source: OECD Health-Data (CREDES/OECD)

Concerning the three new EU member countries:

### Austria

The federal authorities are responsible for the basic legislation on hospitals and home care, while the execution process is under the responsibility of provincial authorities.

Primary health care are largely given by private doctors who mostly have a contract with the health insurance organs.

In terms of quality control, the federal authorities are currently establishing a national programme which includes norms of quality. Quality strategies have already been tested in a number of hospitals.

### Finland

The Ministry of Health and Social Affairs is responsible for the policy, legislation and the public share in financing in the area of health care services. However, local authorities supply, organise and buy most of the health services for the local population. Municipalities and federations manage health centres in order to guarantee primary health care (general practitioners, home care, long stay hospitalisation, dentistry) to around 15000 inhabitants. 22 federations of local authorities also possess most specialised hospitals, but these hospitals are suppliers of independent services who sell their services to local authorities. Public hospitals cover between 50000 and one million people on average.

An equal access to public health care services is guaranteed to all the population. High quality of services is the purpose and the responsibility of all suppliers of services. The national legal and health Council is responsible for the structural quality (provision of licence). This Council also includes a Committee which is in charge of analysing reclamations from patients and the risks related to treatments. The owner of health care equipment is responsible for the costs entailed by a possible unsuitable treatment, in accordance with the decisions of the Committee. All hospitals own the company responsible for the quality of laboratories.

### Sweden

The Central government establishes the basic principles for health and medical services by law. 23 general county councils and three municipalities decide of the resources allocation to health services. They also manage hospitals, health centres and other institutions. Besides, health care is also supplied by private doctors as well as by some private hospitals.

The national Council for health and welfare is the central governmental organisation of consultation and control in the area of health care services. They mainly control that these services correspond to the governmental objectives.

Quality Committees at management level are currently establishing systems in order to develop and to improve the quality.

### OUTLOOK

Future demographic developments in the EU will become an additional challenge to public authorities as they will likely translate into continued rapid growth in demand for health. Demographic trends are indeed dominated by a low birth rate in nearly all EU Member States, increased rates of participation of women to the labour force and the ageing of the population. In addition to this upward influence of demographic changes on demand for health one should add on-going progress in medical science, which also puts upward pressure on expenditures.

Without pre-judging the future organisation of the sector in the EU, what is nevertheless clear is that future growth in demand for these services will continue at a rate which is close to or slightly higher than the real GDP rate (about 3.5-4% per year), while the trend in prices will likely remain severely curtailed. This will stabilise the share of total expenditures on health in total private and public expenditure spending at around 7.5% in the long run, though with a decreased share of public financing. The latter will happen both because of the efforts to curtail nominal expenditure growth, and because of the progressive reduction in the share of expenditure which is reimbursed to the patients from the public health schemes, thereby continuing the trend observed since the mid to late 1980s.

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European Commission

**PANORAMA OF EU INDUSTRY — 1997**

*Volume 2*

Luxembourg: Office for Official Publications of the European Communities

1997 — 746 pp. — 21 x 29.7 cm

Volume 2: ISBN 92-827-9307-9

Price (excluding VAT) in Luxembourg: ECU 130 (Volumes 1 and 2)



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