

The Single Market Review

SUBSERIES II: IMPACT ON SERVICES

Volume 6:

**Telecommunications:
liberalized services**



MEMORANDUM



The Single Market Review

IMPACT ON SERVICES

TELECOMMUNICATIONS:
LIBERALIZED SERVICES

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The Single Market Review

I M P A C T O N S E R V I C E S

TELECOMMUNICATIONS:
LIBERALIZED SERVICES

The Single Market Review

SUBSERIES II: VOLUME 6

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This report is part of a series of 39 studies commissioned from independent consultants in the context of a major review of the Single Market. The 1996 Single Market Review responds to a 1992 Council of Ministers Resolution calling on the European Commission to present an overall analysis of the effectiveness of measures taken in creating the Single Market. This review, which assesses the progress made in implementing the Single Market Programme, was coordinated by the Directorate-General 'Internal Market and Financial Services' (DG XV) and the Directorate-General 'Economic and Financial Affairs' (DG II) of the European Commission.

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by

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It does not, however, express the Commission's official views. Whilst every reasonable effort has been made to provide accurate information in regard to the subject matter covered, the Consultants are not responsible for any remaining errors. All recommendations are made by the Consultants for the purpose of discussion. Neither the Commission nor the Consultants accept liability for the consequences of actions taken on the basis of the information contained herein.

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Table of contents

List of tables	xi
List of figures	xiii
List of abbreviations	xv
Acknowledgements	xvi
1. Summary	1
1.1. Scope and aims of the study	1
1.1.1. Mobile telephony	1
1.1.2. Value added data transmission services	2
1.1.3. Added value voice services	2
1.1.4. Services linked to satellites	2
1.2. The approach followed	3
1.2.1. Pan-European services have developed and improved for the benefit of users	5
1.2.2. The European service industry has strengthened and has developed a pan-European dimension, enabling it to deal successfully with aggressive international competition	5
1.2.3. The establishment of a homogeneous environment, facilitating comparisons contributing to the overall efficiency of the sector	6
Part I: Efficiency of the measures taken with a view to integrating the single market	11
2. Overview of EU rules applicable to non-reserved services	13
2.1. Rules applicable to terminal equipment	13
2.1.1. Liberalization of terminal equipment	13
2.1.2. Mutual recognition of tests then approvals	13
2.2. Rules applicable to services	13
2.2.1. Telecommunications services on wired infrastructures	13
2.2.2. Satellite telecommunications services	13
2.2.3. Mobile services	14
2.3. Open Network Provision (ONP)	14
2.3.1. The Framework Directive	15
2.3.2. Application to leased lines	15
2.3.3. Council Recommendation 92/383/EEC of 5 June 1992	15
2.3.4. Council Recommendation of 5 June 1992	16
2.3.5. Council Directive 95/62/EC of 13 December 1995	16
2.4. Mobile communications frequencies	16
2.4.1. Global system for mobile communications (GSM)	16
2.4.2. One-way radiopaging (ORP)	16

2.4.3.	Digital European cordless telephony (DECT)	17
2.5.	Public contracts in the excluded sectors	17
2.6.	Application of EU competition rules	18
2.7.	Conclusion	20
3.	Application of EU rules in Member States	21
3.1.	Summary tables	21
3.2.	Analysis of the level of implementation nationally	25
3.2.1.	Countries ahead of schedule in terms of Community requirements	25
3.2.2.	Intermediate status countries	26
3.2.3.	Countries behind schedule in the European timetable	27
4.	Barriers to the application of the directives	29
4.1.	Overview: the general barriers currently remaining in terms of implementing the Terminal, Services, ONP and Public Contract Directives	29
4.2.	The barriers: directive by directive	29
4.2.1.	Gauging the questions regarding the effectiveness of the Commission's measures	29
4.3.	Review of the obstacles: directive by directive	30
4.3.1.	Directive 88/301: liberalization of telecommunications terminal equipment	30
4.3.2.	Directive 91/263: mutual recognition of terminal equipment approval	30
4.3.3.	Directive 90/388 and Directive 94/46: liberalization of some of the terrestrial and satellite services	31
4.4.	Barriers resulting from the choice which the Member States are allowed in terms of telephone services	31
4.5.	The existing barriers for the liberalization of non-reserved services (VANS)	31
4.6.	Existing barriers to the liberalization of basic data transmission services	32
4.6.1.	Directive 90/387: ONP framework	32
4.6.2.	Directive 92/44: ONP leased lines	33
4.7.	Barriers due to institutional problems	33
4.7.1.	Barriers which have been moved: the Commission's competence to impose market liberalization	33
4.7.2.	Current barriers resulting from the regulation imposed by the directives: delay in adopting the texts caused by institutional problems	33
	Part II: Impact of EU measures on the performance of services open to competition	35
5.	Mobile telephones	37
5.1.	Context	37
5.1.1.	List of measures taken by the Commission	37
5.1.2.	The structural factors in the sector	38
5.2.	Detailed analysis	38
5.2.1.	The internationalization of sales and activities	38
5.2.2.	The internationalization of supplies and geographical effects	40
5.2.3.	Productivity and competitiveness	43
5.2.4.	Concentration and development of competitive conditions	45

5.2.5.	Reduction in costs and prices	46
5.2.6.	Interrelative ties	50
5.3.	Conclusions	51
5.3.1.	Main trends observed	51
5.3.2.	Changes attributable to the single market	52
6.	Data	55
6.1.	Context	55
6.1.1.	The structural factors in the sector	55
6.1.2.	General trends on the European market	56
6.2.	Detailed analysis	57
6.2.1.	The internationalization of sales and activities	57
6.2.2.	The internationalization of supplies and geographical effects	58
6.2.3.	Productivity and competitiveness	59
6.2.4.	Scale and dimension effects	59
6.2.5.	The concentration and development of competitive conditions	60
6.2.6.	Cost and price reductions	62
6.3.	Conclusions	64
6.3.1.	Key trends identified	64
6.3.2.	Changes attributable to the single market	65
7.	Voice telephony	67
7.1.	Context	67
7.1.1.	Inventory of measures taken by the Commission	67
7.1.2.	Structural factors in the sector	67
7.2.	Detailed analysis	68
7.2.1.	The internationalization of sales and activities	68
7.2.2.	The internationalization of supply and geographical effects	68
7.2.3.	Scale and dimension effects	69
7.2.4.	Concentration and development of competitive conditions	70
7.2.5.	Reduction in costs and prices	70
7.2.6.	Interrelative ties	73
7.3.	Conclusions	74
7.3.1.	Major trends observed	74
7.3.2.	Changes attributable to the single market	75
8.	Satellites	77
8.1.	Context	77
8.1.1.	The structural factors in the sector	77
8.1.2.	General trends in the European market	78
8.2.	Detailed analysis	79
8.2.1.	The internationalization of sales and activities	79
8.2.2.	The internationalization of supply and geographical effects	82
8.2.3.	Scale and dimension effects	83
8.2.4.	Concentration and change in competitive conditions	83
8.2.5.	Television: diversification without a change of players as yet	84
8.2.6.	Reduction in costs and prices	85
8.2.7.	Interrelative ties	85

8.3.	Conclusions	86
8.3.1.	Major trends observed	86
8.3.2.	Changes attributable to the single market	87
9.	Overview of the impact of the single market	89
9.1.	Pan-European services have developed and improved for the benefit of users	89
9.1.1.	The first pan-European services are appearing	89
9.1.2.	Services are improving	89
9.2.	The European service industry has strengthened and has developed a pan-European dimension, enabling it to deal successfully with aggressive international competition	89
9.3.	The establishment of a homogeneous environment facilitating comparisons contributing to the overall efficiency of the sector	90
9.3.1.	Contraction and convergence of prices	90
9.3.2.	Emergence of new entrants	90
9.3.3.	Job creation	91
9.4.	Many of these developments can also be directly attributed to the European actions, which have had consequences of two kinds	92
9.4.1.	A motor effect has speeded up the development of the single market	93
9.4.2.	A facilitating effect of technical and regulatory standardization has been achieved	93
	Part III: Strategies of players	95
10.	Mobiles	97
10.1.	Introduction	97
10.1.1.	A non-deregulated sector, but heavily influenced by Community policy	97
10.1.2.	Three main kinds of players	97
10.2.	The manufacturers	98
10.2.1.	Strategy of the manufacturers	98
10.2.2.	Impact of EU measures	98
10.3.	The operators	99
10.3.1.	Strategy of the operators	99
10.3.2.	Impact of EU measures	102
10.4.	The service companies	102
10.4.1.	Strategy of the service companies	102
10.4.2.	Impact of EU measures	103
10.5.	Barriers still to be removed	103
11.	Data	105
11.1.	The regulatory environment	105
11.2.	Growth in competition	105
11.2.1.	A closed circle competition	105
11.2.2.	Possible conflicts of interest	105
11.2.3.	Growth limited by technical constraints	106
11.2.4.	Hegemony on the part of certain players on the scene	106
11.2.5.	Impact of Commission measures	106
11.3.	Markets targeted by the new entrants	106

11.3.1.	Targeting around customer size and network structures	106
11.3.2.	The general imposition of sectoral targeting	106
11.3.3.	Impact of Commission measures	107
11.4.	Strategies used	107
11.4.1.	Defensive strategies initiated by the PTOs	107
11.4.2.	Aggressive strategies	107
11.4.3.	Impact of Commission measures	108
11.4.4.	Partnership strategies	108
11.5.	Mutual independence of the regulatory bodies and the national operators	109
11.6.	Conclusion	109
12.	Voice telephony	111
12.1.	Strategy of the resellers of traffic	111
12.1.1.	The regulatory context	111
12.1.2.	Description of Phase 1	111
12.1.3.	Description of Phase 2: increasing the range of services offered by deploying European networks	113
12.2.	Strategy of the PTOs	114
12.2.1.	Introduction	114
12.2.2.	The defensive strategy of the PTOs in their country of origin	114
12.2.3.	Aggressive strategy of the PTOs abroad	116
12.2.4.	Conclusion	118
12.3.	Impact of Commission measures	119
12.4.	Barriers still to be eliminated	119
Part IV:	Analysis of employment in the sector and the impact of technology	121
13.	Employment trends in the sector	123
13.1.	Introduction	123
13.2.	Analysis of the impact of structural factors in the sector	127
13.3.	Impact on allied sectors	129
13.4.	Changes in employment structure	130
13.5.	Conclusions	132
13.5.1.	Main changes in employment	132
13.5.2.	Impact of Commission measures	132
Appendix A.	Case studies	135
A1.	SES/Astra	135
A1.1.	Profile	135
A1.2.	Principal dates	135
A1.3.	Key figures	136
A1.4.	Comments	136
A1.5.	Future positioning	137
A1.6.	Pan-European problems	138
A2.	Esprit Telecom	139
A2.1.	Profile	139
A2.2.	Comments	139

A2.3.	Development	139
A2.4.	The problems of competition	140
A2.5.	A real opening of the market	141
A3.	Mannesmann Mobilfunk	142
A3.1.	Profile	142
A3.2.	Principal dates	142
A3.3.	Key figures	143
A3.4.	Principal subsidiaries and shareholdings	143
A3.5.	Commentary	143
A3.6.	The problems of competition	144
A3.7.	Services offered	144
A3.8.	The real market opening	145
Bibliography		147

List of tables

Table 1.1.	Illustration of major developments in the single market in telecommunications services open to competition between 1987 and 1995	7
Table 1.2.	Effect of underlying trends in the telecommunication sector on the key changes noted over the period 1987 to 1995	8
Table 1.3.	Impact of the European programme on the various trends observed for each of the types of telecommunication services open to competition	10
Table 2.1.	EU regulations on services	14
Table 2.2.	Legal regimes for the networks and services not covered by the Services Directive	14
Table 3.1.	Text transposition status (mid-1996)	22
Table 3.2.	Transposition methods and texts for the European provisions	23
Table 3.3.	Text transposition dates	24
Table 3.4.	Main problems and deficiencies	25
Table 4.1.	Obstacles to the free movement of goods (Article 37 of the Treaty on European Union)	30
Table 4.2.	Obstacles to the free provision of services (Article 59 of the Treaty on European Union)	30
Table 5.1.	Turnover per employee according to number of subscribers	44
Table 5.2.	Price segmentation depending on monthly consumption for GSM and PCN services in Europe	49
Table 5.3.	Summary of effects on the mobile telephony segment	54
Table 6.1.	Main suppliers for data networks	58
Table 6.2.	Trend in prices of international X.25 transmissions between 1988 and 1995	63
Table 6.3.	Impact of the Commission's measures on the data sector	66
Table 7.1.	Trend in the price of calls to the United States	71
Table 7.2.	Impact of the Commission's measures on the voice telephony segment	76
Table 8.1.	Satellite systems covering Western Europe in mid-1994	80
Table 8.2.	Satellite systems covering Western Europe in mid-1994	81
Table 8.3.	Concentration of the VSAT market	84
Table 8.4.	Concentration of the TV market using satellites	84
Table 8.5.	Impact of the Commission's measures on the satellite sector	88
Table 9.1.	Illustration of major developments in the single market in telecommunications services open to competition between 1987 and 1995	91
Table 9.2.	Effect of underlying trends in the telecommunication sector on the key changes noted over the period 1987 to 1995	92
Table 9.3.	Impact of the European programme on the various trends observed for each of the types of telecommunication services open to competition	93

Table 9.4.	Overview: impact of the Commission's measures on the four effects analysed	94
Table 9.5.	Overview: impact of 'external factors' on the four effects analysed	94
Table 12.1.	Effects of the price rebalancing in the United Kingdom (1992 = 100)	114
Table 12.2.	Trend in PSTN rates over the period 1990/95 in Europe	115
Table 12.3.	Strategy of the PTOs	116
Table 12.4.	Presence of foreign operators in France	116
Table 12.5.	Review of the 'voice' offers of the main operators in France	117
Table 13.1.	Employment trends in Europe among service operators	123
Table 13.2.	Employment trends from 1990 to 1994	126
Table A.1.	Financial values (in million LF)	136
Table A.2.	Financial values (in million DM)	143
Table A.3.	Market shares of GSM distributors in Germany (September 1995)	145
Table A.4.	The range of services of Mannesmann Mobilfunk	146

List of figures

Figure I.1.	Value added services	1
Figure II.1.	Methodology	36
Figure 5.1.	Number of mobile telephone subscribers in the EU: total number of subscribers (in million)	37
Figure 5.2.	Proportion of foreign investments and intra-EU and extra-EU share	39
Figure 5.3.	Number of intra-EU GSM roaming agreements	39
Figure 5.4.	Impact of frequency management on the structure of the industry	40
Figure 5.5.	Origin of manufacturers of switching equipment and base stations for mobile networks	41
Figure 5.6.	European market share of switching equipment and GSM base station manufacturers	42
Figure 5.7.	Distribution of cellular subscribers by standard in 1994	43
Figure 5.8.	Turnover per employee according to number of subscribers	44
Figure 5.9.	Growth in number of mobile subscribers in Portugal and Germany	45
Figure 5.10.	Growth in number of mobile subscribers in Italy and Luxembourg	46
Figure 5.11.	Price of GSM communications in the EU in August 1995	46
Figure 5.12.	Trend in the price of GSM communications per minute in the EU: 1992 and 1995	47
Figure 5.13.	Prices of GSM communications compared with the price of one minute PSTN	48
Figure 5.14.	Price of GSM communications compared with the price of two Mbit/s connection	48
Figure 5.15.	Relationship between price of GSM service and rate of penetration of public mobile telephony taking account of purchasing power parity	50
Figure 5.16.	Mobile telephony: conclusions	51
Figure 6.1.	The market for VANS in Europe	56
Figure 6.2.	The market share of VANS operators in the EU	57
Figure 6.3.	Increase in the number of foreign operators in European countries as a function of the number of years following deregulation	58
Figure 6.4.	Income per employee on VANS services in Europe	59
Figure 6.5.	Top ten of the VANS in 1991	60
Figure 6.6.	Market share of the top VANS suppliers in the EU	61
Figure 6.7.	Market share of the top five in 1991, according to type of service	61
Figure 6.8.	Diversification of operators of data network services	62
Figure 6.9.	Average cost of 2 Mbits/s semi-circuits from certain countries to all other EU countries	63
Figure 6.10.	Price of leased domestic connections in 1995	64
Figure 6.11.	Data: conclusions	65
Figure 7.1.	Market share of calling-card operators in Europe	69
Figure 7.2.	Development in the average price of calls to the United States from EU countries	71

Figure 7.3.	Trend in the price of calls to the United States (extreme and average examples)	72
Figure 7.4.	Price of calls to the United States in 1995	72
Figure 7.5.	Comparative fall in the cost of calls to the United States in the periods 1991–93 and 1993–95	73
Figure 7.6.	Voice telephony: conclusions	75
Figure 8.1.	Use of satellite capacity in 1994 (in percentage of turnover)	78
Figure 8.2.	Growth in the number of VSAT aerals in Europe	79
Figure 8.3.	Market share of satellite system providers for VSAT in Europe	81
Figure 8.4.	Market share of European satellite constructors in the world	82
Figure 8.5.	Market share of constructors of satellite systems in the world in 1994	82
Figure 8.6.	Cost of acquiring satellites according to size	83
Figure 8.7.	Change in the cost of the transponder on construction	85
Figure 8.8.	Division of income of satellite operators per type of transponder use	86
Figure 8.9.	Satellites: conclusions	87
Figure 10.1.	Mobiles: added value chain	97
Figure 10.2.	Growth in the number of licensed cellular operators in the EU	99
Figure 10.3.	Development priorities for mobile services	100
Figure 12.1.	Gross margin by destination for resellers	112
Figure 12.2.	Main linkages among telecommunications operators	118
Figure 13.1.	Contribution of sectors of activity to job creation in Europe: 1990/94	124
Figure 13.2.	Contribution of European countries to employment trends (jobs x 000)	125
Figure 13.3.	Relationship between employment trends and growth of the network	126
Figure 13.4.	Link between employment trends and degree of implementation of the measures	128
Figure 13.5.	Link between level of digitization and trends in staffing patterns	128
Figure 13.6.	Link between growth in digitization and staffing trends	129
Figure 13.7.	Changes in employment structure: Dutch post and telecommunications service	131
Figure 13.8.	Employment trends 1985–92: Telstra	131
Figure 13.9.	Employment trends 1992–94: France Télécom	132

List of abbreviations

AMPS	Advanced Mobile Phone System
ACTE	Approvals Committee for Terminal Equipment
BT	British Telecom
CCITT	International Telephone and Telegraph Consultative Committee
CDC	Central distribution company
CEPT	European Conference of Postal and Telecommunications Administrations
CJEC	Court of Justice of the European Communities
CUG	Closed user group
DCS 1800	Digital cellular system for 1.800 MHz
DECT	Digital European Cordless Telephone
DGPT	Direction générale des postes et télécommunications
DM	Deutschmark
ECU	European currency unit
EDI	Electronic Data Interchange
ETSI	European Telecommunications Standards Institute
EUR-12	Total of the countries of the EC before 1 January 1995
FF	French franc
GDP	Gross domestic product
GSM	Global system mobile
ISDN	Integrated services digital network
IVPN	International virtual private network
LEO	Low earth orbit (satellite)
LF	Luxembourg franc
LL, DL	Leased lines, dedicated lines
MMDS	Multipoint multichannel distribution service
NMT	Nordic Mobile Telephone
OECD	Organization for Economic Cooperation and Development
ONP	Open Network Provision
ORP	One-way radiopaging
PABX	Private Automobile Branch Exchange
PCN	Personal communication network
PSDS	Public switched data service
PSTN	Public switched telephone network
PTO	Public telecommunications operator
SMC	Service marketing company
US\$	US dollar
VANS	Value-added network services
VPN	Virtual private network
VSAT	Very small aperture terminal

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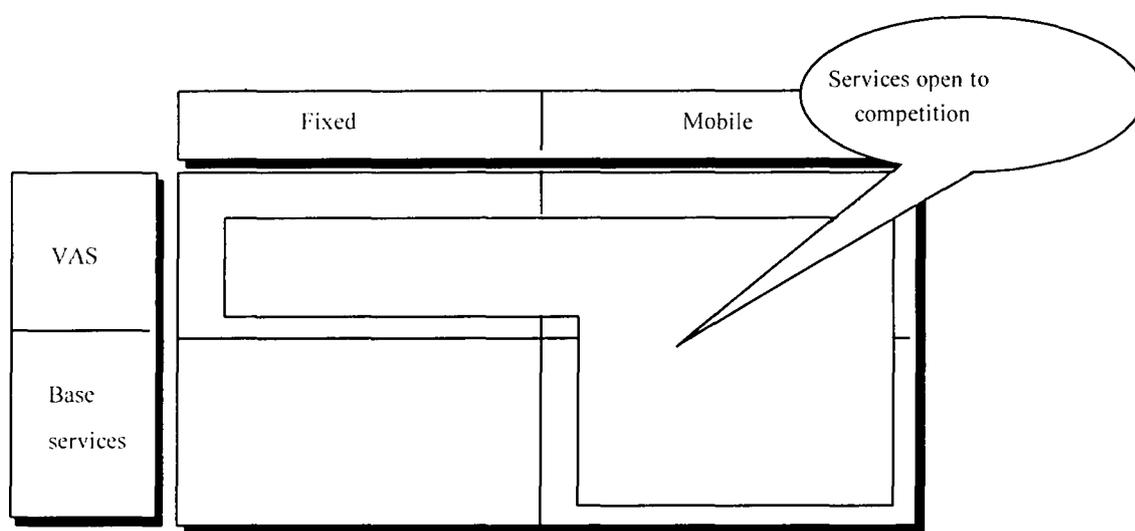
1. Summary

This report contains the findings of a study on the impact of the European Commission's measures on the development of telecommunications services open to competition.

1.1. Scope and aims of the study

The scope of the study can be represented as in the diagram below, in which VAS stands for value added services (L-shaped box):

Figure 1.1. Value added services



Four kinds of competing services have been chosen.

1.1.1. Mobile telephony

This segment has experienced considerable development over the period in question, with the emergence and take-off of digital radiotelephony on the global system mobile (GSM) standard. The Green Paper on mobile and personal communications¹ which has just been published is intended to encourage this development. These services are still very much confined to the national level, in spite of the possibility of international traffic which was opened up by the standardization of the interface with the terminals. However, some internationalization is taking place in the sector: foreign players are taking out financial shareholdings when new players make their appearance, and some service marketing companies (SMCs) evidently have pan-European strategies.

In this light, we will consider:

- (a) analogue cellular public telephony;
- (b) digital cellular public telephony.

¹ COM (94) 145.

1.1.2. Value added data transmission services

This segment is certainly the most significant in terms of international exchanges within the Community. Moreover, it has been directly affected by the Community measures, liberalization of services, Open Network Provision (ONP), and terminals.

This segment includes, in particular:

- (a) data network services (X.25, frame-relay, etc.);
- (b) electronic data interchange (EDI);
- (c) paging;
- (d) others (Videotex, etc.).

1.1.3. Added value voice services

This developing segment is still largely controlled by public operators. Moreover, the services which account for the largest revenues (free calls, vocal virtual private networks) are purely national in origin.

This segment includes, in particular:

- (a) call-back;
- (b) calling cards;
- (c) re-routing of calls.

1.1.4. Services linked to satellites

Satellite services are essentially international. Over the period in question the Community's measures seem to have had little impact on this sector (which is still modest in its earnings, and heavily conditioned by the strategy of the few operators in the field). The strategies of these players are at present influenced more by profitability factors and the financial risk of projects than by the drawbacks of their regulatory environment.

Under this heading we will examine:

- (a) the space segment: satellite capacity;
- (b) the terrestrial segment: television broadcasting services and very small aperture terminals (VSATs).

These four services account for between 10 and 15% of telecommunications services in the European Union, with significant variations as between Member States.

The geographical scope of the study covers the 15 countries of the European Union (including Sweden, Finland and Austria).

The aims of this study are:

- (a) To assess the degree of progress and of practical implementation of European and national provisions to liberalize telecommunications services.
- (b) To arrive at a qualitative and quantitative estimate of the sectoral changes which have taken place, and the individual strategies operated by the various parties involved.

(c) To analyse the impact of the Commission's measures on developments in the sector.

1.2. The approach followed

In order to achieve this aim, a four-phase approach has been followed.

The first phase establishes the level of regulatory development in each of the Member States in the light of a number of key regulatory parameters. We describe, in particular, the degree to which European directives and Council recommendations have been incorporated into national law, and the time taken for transposition into national legislative systems.

At the end of this phase, it has been possible to classify the Member States according to the degree of their regulatory development for a given type of service (mobile services, satellites, data communications, etc.).

The second phase consists of an analysis of the significant changes found to have occurred in the various services under examination, in the four segments on which our study focuses, and an analysis of the impact of the Commission's measures.

This examination takes place through seven focal areas:

- (a) the internationalization of sales and activities;
- (b) the internationalization of supplies and geographical effects;
- (c) productivity and competitiveness;
- (d) scale and dimension effects;
- (e) the concentration and evolution of competitive conditions;
- (f) reductions in costs and prices;
- (g) interrelative ties.

At the end of each sector, we give an overview of the impact of the Commission's measures on that sector.

We also examine the other factors which go to explain the changes which have occurred.

The third phase considers the strategies adopted by the players (public telecommunications operators (PTOs) and new entrants) in each of the segments under study.

The fourth phase looks at job losses and gains in the sectors under study, and examines the impact of the 'single market' and of technology.

This sectorial study examines changes in the single market for telecommunication services open to competition over the period 1987 to 1994.

Four kinds of services have been studied, leaving out services which are not yet open to competition such as base telephony:

- (a) Mobile telephony services, including changes in GSM services.
- (b) Added value data transmission services, including network services of the X.25 type and associated EDI type services and paging.
- (c) Telephony services open to competition, especially call-back, re-routing and calling cards for international communications.

- (d) Services linked to satellites, TV or VSAT for the space segment and the terrestrial segment.

The EU has undertaken a number of specific actions in this sector since the 1987 Green Paper on Telecommunications.

This regulatory action of Community origin falls into two categories:

- (a) *Induction activities*, such as the publication of communications and recommendations intended to create a consensus on the key topics in communications (for example, the Green Paper on the development of the common market for telecommunications services and equipment (COM(87) 290), the Green Paper on a common approach to the field of satellite communications in the EU (COM(90) 490), the Green Paper on a common approach in the field of mobile and personal communications in the EU (COM(94) 415), and the Green Paper on the liberalization of the telecommunications infrastructure and cable television networks (Parts I and II) (COM(94) 440 and COM(94) 682)).
- (b) *Regulatory action* of a more binding nature, such as:
- (i) directives intended to compel Member States to comply with a number of common rules. These include the 46 major directives already adopted,² including those on terminals, services and ONP, and the significant technical interventions, especially that on standardization;
 - (ii) bilateral action against certain Member States which are behind the rest of the Community, in order to ensure that the rules on competition and market opening are respected, such as the action taken to open up a second GSM licence in Italy and Belgium.

All the EU countries have now reached a significant but variable level of implementation of these European Community rules.

The study identifies three groups of countries in terms of actual implementation of the EU rules in 1994:

Countries ahead of Community requirements: including the United Kingdom, Sweden, and to a lesser extent, Finland, Denmark or even France. A distinguishing feature in these countries is the advanced state of liberalization of their telecommunications services, in some respects exceeding the current requirements of the Community. The most significant example is that of the United Kingdom, which since 1982 has granted a public operating licence to an operator competing with British Telecom.

Countries in an intermediate position: including Germany, the three Benelux countries, Ireland and Spain. In most of these countries, transposition of Community measures is held back mainly by a lack of independence between the regulatory body and the dominant public operator.

Countries behind the European schedule: including Portugal, Greece, Austria and Italy. There are differences in this category between the countries which have already benefited from

² See *Directory of Community legislation in force*, 29th edition, Luxembourg, Office for Official Publications of the European Communities, 1997.

adjustments to the European schedule (Greece, Portugal) and those which have not completed the process of opening up to competition (Italy).

During this period, the single market in non-reserved telecommunications services has developed along the following lines:

1.2.1. Pan-European services have developed and improved for the benefit of users

The first pan-European services are appearing

As regards mobile services, the transition to the GSM standard has transformed cellular telephony in the EU from a set of fragmented national services, which are not interoperational, into a pan-European service pattern for the end-consumer. The number of roaming agreements rose from 70 to 471 between 1992 and 1995.

The liberalization of data transmission services in all countries has enabled operators to build up pan-European infrastructures and offer users standardized end-to-end services.

Competition for international voice message services for the business sector is now prompting even the main operators to develop virtual private network offers on a pan-European basis for voice telephony.

Services are improving

The need to differentiate among offers has prompted operators to improve their services, to the greater benefit of the end-users. For instance, the operators are now proposing to offer information services linked to calling cards or to mobile telephony, and virtual private networks which provide a multiplicity of functions.

1.2.2. The European service industry has strengthened and has developed a pan-European dimension, enabling it to deal successfully with aggressive international competition

The development of mobile telephony on the GSM standard has enabled European manufacturers to acquire know-how in this technology and to develop economies of scale. This has made them leaders in the digital market, now exporting to the entire world. The internationalization of offers for data transmission has benefited European operators, who have been able to compensate for the opening up of their domestic markets with a stronger presence on the international scene.

In the field of voice transmission, the public operators have mostly reacted with defensive strategies geared to loyalty selling on their local market, and to developing new uses; and to various degrees, with aggressive strategies for deployment abroad (BT is the most advanced example in this respect).

- 1.2.3. The establishment of a homogeneous environment facilitating comparisons which contribute to the overall efficiency of the sector

Contraction and convergence of prices

Prices fall more sharply where the level of deregulation is higher

The introduction of a more significant level of competition has led to price reductions (illustrated particularly in the case of international telephony) and an increase in package price offers: prices on international calls to the US have fallen on average by 42% in all European countries between 1990 and 1995.

At the same time, the anticipation by public operators of the liberalization of infrastructures has enabled users to benefit from a 22.3% reduction on long-distance calls.

Prices are also converging, gradually reducing the effect of borders

Apart from a reduction in prices, which has occurred in the various services open to competition, there has also been a discernible convergence in prices. What has happened is that the most backward countries have begun to align themselves on the prices prevailing in the other Member States. For example, the ratio between the highest and the lowest prices for international telephone calls was reduced between 1991 and 1994 from four to two.

Emergence of new entrants

Liberalization has enabled new players to emerge, in spite of the predominance of public operators on the national scene...

The development in competitive conditions in the mobile sector has led to an increase in the number of players (30 licensed operators in 1994, against 22 in 1991). New operators of satellite services for professional use have emerged (especially on the VSAT offers) and television broadcasting by satellite has made startling progress (55 channels in 1990, 180 channels in 1995). New entrants have appeared in the voice segment (call-back companies, resellers).

... but the lack of a European infrastructure is still holding back to a considerable extent the development of these new entrants, and tends to promote the domination of public operators

At present, according to interviews and case studies, new entrants are limited in their development by:

- (a) the price and availability of connections leased internationally for international telephone services and data transmission;
- (b) the price of connections leased nationally for access to international networks and for mobile services.

In the absence of competition on infrastructures, the public operators have at least the advantage over the new entrants that they can plan their development in awareness of the future availability and prices of these leased connections, especially for high throughput.

The 1998 date for complete liberalization of voice telephony is therefore being awaited impatiently by the new entrants, who will be able to by-pass the routes presently open to them and use their own networks, which will have a definite impact on costs.

Job creation

All the developments occurring in the field of services open to competition have led to a net gain in employment estimated at 28,500 new jobs between 1990 and 1994 both with public operators and with the new entrants, especially in the mobile communication services.

However, these new jobs have not yet compensated for the jobs which at the same time have been eliminated by the public operators on non-deregulated services; these are outside the scope of the study. These job losses have been estimated at 115,500 over the same period, and have occurred chiefly in technical operation areas in the public networks.

Table 1.1. Illustration of major developments in the single market in telecommunications services open to competition between 1987 and 1995

Sector	Mobile	Data transmission	Telephony	Satellites
Effect of single market				
Creation of pan-European services	GSM standard, and increase in roaming agreements from 70 to 471 between 1992 and 1995	Development of pan-European infrastructures by public operators and, at a lesser level, by US operators	Development of card services and international virtual private networks	Pan-European services by nature
Reinforcement of the European industry	European industrialists and operators have become market leaders in digital services based on the GSM. Development of intra-European agreements	Growth in market share of international players of European origin from 12 to 23% between 1991 and 1993	Creation of international consortia with a strong presence of European operators	Maintenance of the European virtual monopoly
Homogeneous environment and efficiency of the sector				
Contracting and converging prices	Annual fall of 12.5% in the price per minute of GSM communications between 1992 and 1995	Disparate price reduction	Reduction of prices of calls to the US by 42% between 1990 and 1995. Reduction in the ratio between the highest and the lowest price from four to two	Relative fall in prices with equal capacity
Emergence of new entrants	Growth in number of licensed operators from 22 to 30 between 1991 and 1994	Reduction in the market share of the five largest players from 56 to 48% from 1991 to 1993	Emergence of many call-back and traffic reselling companies since 1993	Growth in number of VSAT operators and increase in TV channels from 55 to 180 between 1990 and 1995
Job creation	Creation of 21,000 jobs at PTOs and the new entrants from 1990 to 1994	Creation of 5,500 jobs at PTOs and the new entrants from 1990 to 1994	Recent creation of several hundred jobs in Europe	Not significant

These changes of course reflect certain underlying trends in the telecommunications sector, more or less independently of the European programme.

Technological changes have improved the quality and reduced the cost of equipment, thus permitting the development of new telecommunications services. For example, the digitization of networks and access points, the integration of electronic components and a better command of radio techniques have had an impact on the various services studied.

The industry standards for telecommunications, approved by the International Telephone and Telegraph Consultation Committee (CCITT) at international level, influence changes in equipment and services. They usually occur as a result of proposals originating in Europe or the US.

The globalization of the economy has had an impact on telecommunications services because of the internationalization of trade and the growth in needs, especially for the transmission of computer data.

The strategies of the dominant players, public operators, manufacturers of telecommunications equipment and computer designers, are directly associated with changes in the sectors under study.

The role of the national regulators results in certain local changes, especially in the grant of licences for services open to competition, and through the local interpretation of Community rules.

Table 1.2. Effect of underlying trends in the telecommunication sector on the key changes noted over the period 1987 to 1995

External factors	Technological developments	Industry standards	Globalization of the economy	Strategy of key players	Role of national regulators
Effects of single market					
Creation of pan-European services		Standards of terminals and networks for homogeneous pan-European services	Development of a pan-European demand by companies	Internationalization of public operators. Pan-European entry strategy of US players	
Reinforcement of the European industry				Opening up to the advantage of public operators	
Homogeneous environment and efficiency of the sector	Improvement of services on offer. Improvement of the relationship between functions and costs	Interoperability of networks and services. Entry of new players	Standardization by the market (benchmarking)	Key role on cost changes of leased connections and the service tariff	Effects sometimes negative due to local interpretation of market opening conditions

However, many of these developments can also be directly attributed to the European actions, which have had consequences of two kinds.

Through its various actions, whether to encourage or to compel, the Commission has had two forms of effect on the development of the single market in telecommunications services open to competition.

- (a) A motor effect has speeded up the development of the single market, thanks to:
 - (i) action to encourage developments, such as announcements which lead the various players in the field to anticipate a new strategic framework. For example, the effects of the Green Paper (COM(87) 290) on the development of telecommunications services by 1992 and the present positioning of all the key players in anticipation of the proclaimed deregulation of infrastructures and services in 1998;
 - (ii) regulatory action such as the Framework Services (90/388/EEC) and ONP (90/387/EEC and 92/44/EEC) Directives, which have led to a simultaneous standardization of market conditions in all the Member States, thus bringing about a block effect which justifies the development and reinforcement of a European service industry. Without this simultaneous opening, it is probable that the US players, having already acquired sufficient stature in their large deregulated market, would have taken advantage of a gradual opening, country by country.
- (b) A facilitating effect of technical and regulatory standardization has been achieved, leading to greater efficiency in the markets in terms of prices, competition and employment, through:
 - (i) induction of the standardization kind, accompanying key standards;
 - (ii) general regulatory actions, such as the ONP Directives.

These effects have varied according to the sectors under study.

The mobile telephony sector, although governed by a legal system determined at the bequest of the Member States themselves, has benefited from the climate created by the Commission for the multiple grant of GSM licences. By supporting the standard, the Commission has contributed to the development of a pan-European service from which users have benefited, and has enabled European constructors to become leaders. Moreover, some kinds of bilateral action have been taken to prompt certain Member States to grant a second licence.

The market in data transmission services has acquired a pan-European dimension. Since Council Directive 90/387/EEC on the establishment of the single market for telecoms services through the implementation of open network provision (ONP Framework Directive) and Commission Directive 90/388/EEC on competition in the markets for telecommunications services (Services Directive), the market has been internationalized: the share of non-domestic actors in deregulated data transmission services has gone up from 24 to 35%, and this trend has benefited actors of European origin, whose market share has increased from 12 to 23%.

The 1990 Green Paper (COM (90) 490) recommending the liberalization of the land segment, unrestricted access to space capacity, commercial freedom for operators of satellite systems, and the mutual recognition of national permits, as well as the 1994 directive (94/46/EC) which liberalizes the system of satellite services, have resulted in some deconcentration in the space segment. Above all, however, they have facilitated the arrival of new service providers on the land segment. The development of space activity is heavily dependent on the television sector, which has really taken off since the 1989 directive on 'television without frontiers' (89/552/EEC).

The Council Resolution of 22 July 1993, on a review of the situation in the telecommunications sectors, fixed the liberalization of the telephony market for 1998. Anticipation of this date by the call-back companies and resellers of traffic, and a broad interpretation of the concept of Closed User Groups, has enabled re-routing and virtual private network (VPN) offers to emerge. These have had a marked impact on the development of alternative telephony services for international communications, and on price reductions.

Table 1.3. Impact of the European programme on the various trends observed for each of the types of telecommunication services open to competition

Sector	Mobiles	Data transmission	Telephony	Satellites
Effects of single market				
Creation of pan-European services	A motor effect through induction, standard setting through the European Telecommunications Standards Institute (ETSI) and its support for allocation of the 900 MHz waveband	A facilitating effect through induction. Recommendation 92/283 and regulatory action in the Directives on Services 90/388, and ONP 90/387 and 92/44	A facilitating effect through regulatory action in the Directives on Services 90/388, and ONP 90/387 and 92/44	
Reinforcement of the European industry	A facilitating effect through bilateral regulatory action to open up certain markets	A motor effect through regulatory action in the Directives on Services 90/388 and ONP Leased Lines 92/44	A motor effect through induction – 1993 Council Resolution	A facilitating effect through regulatory action of the Satellite Directive 93/97
Homogeneous environment and efficiency of the sector	A facilitating effect through induction, standard setting and standardization of markets	A motor effect through regulatory action in the Directives on Services 90/388, ONP 90/387 and Leased Lines 92/44	A motor effect through induction – 1993 Council Resolution	A motor effect through induction: Green Paper on Satellites (COM (90) 490) and regulatory action in the Satellite Directive 93/97

Part I: Effectiveness of the measures taken with a view to integrating the single market

Introduction

The Commission has intervened progressively in the field of telecommunications, dealing in turn with the various segments of the sector:

- (a) **terrestrial** services, forming the main subject of the 1987 Green Paper (COM (87) 290) (cf. list below), on the basis of which the relevant harmonization and liberalization directives will be implemented;
- (b) **satellite** telecommunications, in turn the subject of a Green Paper in 1990 (COM (90) 490), also leading to liberalization and harmonization directives being adopted;
- (c) **mobile** communications, dealt with in a third Green Paper in 1994 (COM (94) 145); and
- (d) **infrastructures**, with the publication of a Green Paper in 1995 (COM (95) 158).

It should be noted that the last two Green Papers have not yet been implemented as directives.

The 1987 Green Paper is the foundation of the Commission's active intervention in telecommunications. It includes ten key points, presented as proposals, which are:

- (a) agreeing to uphold the principle of exclusivity or special rights of the telecommunications administrators in terms of tendering and operating the network infrastructure;
- (b) accepting to uphold the principle of exclusivity or special rights to the benefit of the telecommunications administrators for the voice telephony service;
- (c) open tendering of all other services;
- (d) strict requirements relating to standards;
- (e) clear definition of the general requirements for use of the network (ONP);
- (f) open tendering of terminal equipment;
- (g) division of the regulation and operating activities;
- (h) application of the Community competition rules to telecommunications administrators;
- (i) application of the Community competition rules to private service providers;
- (j) application to telecommunications of the Community common commercial policy.

After being debated by the Member States and the Commission, the ten proposals were implemented as directives to be transposed to national law.

This section presents the rules put forward at Community level for terminal equipment, services and network access.

It then examines the Community competition rules and the main Commission application cases and reviews the actual transposition of these rules to the Member States' legislation (detailed in Chapter 3).

The last part gives an overall examination of the obstacles which are still to be removed, with a view to fully implementing the Commission directives and recommendations regarding non-reserved services.

2. Overview of EU rules applicable to non-reserved services

2.1. Rules applicable to terminal equipment

2.1.1. Liberalization of terminal equipment

Directive 88/301/EEC opens the telecommunications terminal equipment markets to competition. It abolishes exclusive rights to import, market, connect and commission terminal equipment. It requires that operating and regulatory activities be separated.

Adopted on 16 May 1988, it was to be transposed to the internal legislation of the Member States by 1 July 1989 at the latest.

2.1.2. Mutual recognition of tests then approvals

In the terrestrial sector

The first directive, 86/361/EEC, dated 24 July 1986, was abrogated by Directive 91/263/EEC of 29 April 1991. This directive sets up a procedure for mutual recognition of approvals (in addition to just tests), the common technical regulations being adopted by the Commission and by the regulatory committee ACTE (Approvals Committee for Terminals Equipment). Adopted on 29 April 1991, it was to be transposed to Member States' legislation by 6 November 1992.

In the satellite sector

Directive 93/97/EEC of 29 October 1993 extends the last-mentioned directive to ground station equipment for satellite communications. This directive was to be transposed before 29 October 1994.

2.2. Rules applicable to services

Pursuant to the proposals of the 1987 Green Paper, the Commission has required the liberalization of some telecommunications services.

2.2.1. Telecommunications services on wired infrastructures

Directive 90/388/EEC of 28 June 1990 opens to competition the provision of telecommunications services on wired infrastructures, with the exception of the voice telephony service. It grants the Member States the opportunity to wait until 1 January 1993 before opening basic data transmission to competition, and grants them the right to subject the use of these services to an authorization system provided with a public service schedule.

On 18 October 1995, the Commission furthermore adopted a directive (95/51/EC) authorizing the use of cabled networks for tendering services which had already been liberalized.

2.2.2. Satellite telecommunications services

Directive 94/46/EC liberalizes the satellite services sector.

2.2.3. Mobile services

Directive 96/2/EC regarding mobile and personal communications services was adopted on 16 January 1996.

Table 2.1 gives an overview of the legal provisions governing telecommunications services in Europe, as well as the ways of applying them at Member State level.

Table 2.1. EU regulations on services

Legal system for infrastructures and services	Procedures
Possible monopoly for infrastructures (until 1 January 1998 in most Member States, 1 January 1996 for cabled networks)	Member States free to choose the procedures
Possible monopoly for voice telephony	Member States free to choose the procedures
Liberalization of package or circuit data switching services – value added network services (VANS)	<p>Opportunity for the Member States to subject this liberalization to authorization or declaration procedures entailing a public service schedule intended to respect:</p> <ul style="list-style-type: none"> • essential requirements; or • commercial legislation relating to conditions of continuity, availability and quality of service; or • measures intended to safeguard the general economic mandate which they entrusted to a telecommunications body regarding data switching, if the action of the private service providers risks compromising this mandate <p>These conditions must be objective, transparent and without discriminatory effects (Article 3 of the Services Directive)</p>
Liberalization of other services (apart from the voice telephony service)	Opportunity for the Member States to subject this liberalization to authorization or declaration procedures intended to respect essential requirements. Authorization must be granted on the basis of criteria which are objective, transparent and without discriminatory effects

Table 2.2. Legal regimes for the networks and services not covered by the Services Directive

Mobile sector	States free to choose the legal system so long as the regulatory framework of the European Union is respected
Cable sector	States free to choose the legal system so long as the regulatory framework of the European Union is respected, until 1 January 1996

2.3. Open Network Provision (ONP)

The purpose of the ONP is to ensure that the telecommunications bodies and the other telecommunications providers have equal access to the new telecommunications markets. It appeared necessary to adopt common principles relating to the general network access conditions because the historical telecommunications operators are both network monopoly holders and providers, in competition with others, of non-reserved services offered using this network.

The general principles of the ONP were defined in a 1990 Framework Directive and were subsequently applied specifically to leased lines, to integrated services digital network (ISDN) and to packet transmissions (see Section 2.3.1).

2.3.1. The Framework Directive

Directive 90/387/EEC puts forward the principle of providing an open telecommunications network. Its purpose is to harmonize the ISDN conditions for public telecommunications networks. The conditions for provision of access to the public network and public telecommunications services should thus satisfy certain basic principles:

- (a) they must be based on objective criteria;
- (b) they must be transparent and published;
- (c) they must guarantee equal access;
- (d) they must not be discriminatory.

These conditions apply:

- (a) to technical interfaces;
- (b) to provision and utilization conditions (maximum supply time scale, quality of service, capacity resale, shared use conditions and conditions for interconnection with public and private networks);
- (c) to the principles governing tariffs.

It entered into force on 1 January 1991.

2.3.2. Application to leased lines

Directive 92/44/EEC applies the ONP concept to leased lines.

The purpose of this document is to harmonize the conditions for tendering leased lines, and thereby to establish open access to these lines (ONP concept). Also to be published are the conditions concerning the information relating to the order procedure, the standard provision time scale, the contractual period, the standard repair time and any method of reimbursement. Any refusal to provide lines can be justified only on the basis of essential requirements, i.e. security, integrity and interoperability of the services.

The same provision conditions are fixed by the Member States. A minimum volume of leased lines must be offered in all Member States. The leased line tariffs must respect the principle of fair pricing (appropriate accounting system).

2.3.3. Council Recommendation 92/383/EEC of 5 June 1992

This Council recommendation relates to the provision of harmonized ISDN access opportunities and to a minimum number of ISDN tenders according to the ONP principles. The recommendation invites the Member States to give a domestic guarantee of the provision of an ISDN offering harmonized access opportunities and a minimum number of services according to the ETSI standards, as well as appropriate and efficient interoperability between ISDNs so as to allow commercial use throughout the Community. The information relating to this tender must be published (order procedure, standard delivery time scale, standard repair time, contractual period, reimbursement procedure and target value of the quality indicators).

2.3.4. Council Recommendation 92/382/EEC of 5 June 1992

This Council recommendation relates to the harmonized tendering of a minimum number of packet data transmission services (PSDS) according to the ONP principles. The recommendation invites the Member States to give a domestic guarantee of a minimum number of packet-switched data communication services with harmonized technology, in accordance with commercial demand. The information relating to this tender must be published (order procedure, standard delivery time scale, contractual period, standard repair time, reimbursement procedure and target values of the quality indicators).

2.3.5. Directive 95/62/EC of 13 December 1995

This Directive relates to the ONP applied to voice telephony: this directive, relating to the harmonization of fixed public telephone networks and services, applies to mobile networks and services only in the context of interconnecting them with fixed networks. The document includes a very wide range of areas qualifying fixed telephone services, ranging from terminal equipment connection to tariff principles, including criteria relating to quality of service, advanced service provision, interconnection conditions, numbering principles, etc.

2.4. Mobile communications frequencies

The European Community has intervened in the mobile sector by fixing the frequency bands to be used in order to offer pan-European mobile services.

It has adopted the following documents.

2.4.1. Global system for mobile communications (GSM)

Council Directive 87/372/EEC of 25 June 1987 on the frequency bands to be reserved for the coordinated introduction of pan-European cellular digital land-based mobile communications in the Community (OJ L 196, 17.7.1987, p. 85)

The Member States were required to assign the 905–914 MHz frequency bands, or equivalent parts of the 890–915 and 935–960 bands, exclusively to digital cellular public mobile communications services before 1 January 1991. This service should eventually use all of the 890–925 and 935–960 MHz bands.

Council Recommendation 87/371/EEC of 25 June 1987 on the coordinated introduction of pan-European cellular digital land-based mobile communications in the Community (OJ L 196, 17.7.1987, p. 81)

The pan-European digital cellular mobile communications system must satisfy a number of conditions relating, amongst other things, to traffic flow, transmission quality, choice of the transmission system, network architecture, etc.

2.4.2. One-way radiopaging (ORP)

Council Directive 90/544/EEC of 9 October 1990 on the frequency bands designated for the coordinated introduction of pan-European land-based public radiopaging in the Community (OJ L 310, 9.11.1990, p. 28)

According to the European Conference of Postal and Telecommunications Administrations (CEPT) Recommendation T/R 25-07, the Member States were to designate four channels in the 169.4 to 169.8 MHz band, and preferably the 169.6 MHz, 169.65 MHz, 169.7 MHz and 169.75 MHz channels, before 18 October 1991. They were to ensure that plans be prepared as soon as possible in order to allow the pan-European terrestrial public service for ORP to occupy the entire band from 169.4 to 169.8 MHz according to commercial requirements.

Council Recommendation 90/543/EEC of 9 October 1990 on the coordinated introduction of pan-European land-based public radiopaging in the Community (OJ L 310, 9.11.1990, p. 23)

The pan-European public terrestrial system for one-way radiopaging is to be set up in coordination while taking into account the work by ETSI and respecting certain conditions relating, amongst other things, to the number of users, connection to PSTN, PSN, etc.

2.4.3. Digital European cordless telecommunications (DECT)

Council Directive 91/287/EEC of 3 June 1991 on the frequency band to be designated for the coordinated introduction of digital European cordless telecommunications (DECT) into the Community (OJ L 144, 8.6.1991, p. 45)

According to CEPT Recommendation T/R 22-02, the Member States were to designate the 1880–1900 MHz frequency band for European cordless telephony by 1 January 1992. According to the CEPT recommendation, DECT takes priority over other services in the same band and is protected in the designated band.

Council Recommendation 91/288/EEC of 3 June 1991 on the coordinated introduction of digital European cordless telecommunications (DECT) into the Community (OJ L 144, 8.6.1991, p. 47)

Digital European cordless telephony is to be set up in coordination while respecting certain conditions which, amongst other things, relate to user requirements, the number of systems which can operate simultaneously, and the choice of transmission system.

Commission Directive 96/2/EC of 16 January 1996 amending Directive 90/388/EEC with regard to mobile and personal communications (OJ L 20, 26.1.1996, p. 59)

Article 2 of the directive requires the Member States to grant, on request, licences for the operation of DCS 1800 systems (by 1 January 1998) and Pointel systems, and to ensure effective competition between operators of competing systems in the markets in question.

2.5. Public contracts in the excluded sectors

The process of opening the European public markets was initiated in 1971 by the adoption of Directives 71/304/EEC and 71/305/EEC, relating to public works and supply contracts.

However, the telecommunications sector did not enter the field of application of this process until 1990, when the Council adopted Directive 90/531/EEC relating to the procedures for awarding contracts in the water, energy, transport and telecommunications sectors. This directive concerns both public contracts, and contracts undertaken by private entities holding exclusive or special rights. It was later supplemented by Directive 92/13/EEC of 25 February

1992, coordinating the legislative, regulatory and administrative provisions relating to the application of Community rules to the procedures for awarding contracts to entities operating in the water, energy, transport and telecommunications sectors, and by Directive 92/50/EEC of 18 June 1992, coordinating public service contract award procedures.

One characteristic of the telecommunications sector, which has long been under monopoly control, is the desire in each Member State to conclude contracts with the national providers and to protect their respective telecommunications industries. These directives thus have an industrial dimension. Contracts are often awarded with unequal competition. In particular, the contracting authority often enters into close long-term relationships with a limited number of providers and reaches an agreement with them with the aim of achieving certain objectives, for example to improve product quality and reliability and to develop new products. Since technology develops and products become upgraded, manufacturers have to invest considerable resources in research and development, with the result that the customer contributes to the financing of research.

However, walling off the national markets in this field is not conducive to the development of an open single market. One of the aims of the Community telecommunications policy is to open up the telecommunications supply and works markets effectively. The directives mentioned above therefore put forward conditions regarding the procedures to be adopted for awarding contracts. The intention is to guarantee transparency and competition.

2.6. Application of EU competition rules

The Community competition rules (Article 85, 86 and 90 of the EU Treaty, and the Merger Regulation) apply to the telecommunications sector.

- (a) Article 85 prohibits inter-company agreements which may affect trade between Member States and whose purpose or effect is to prevent, restrict or vitiate competition within the Common Market. An individual exemption may be granted when the Commission deems that such agreements which restrict competition may nevertheless help improve production or distribution of products or promote technical or economic progress while keeping an equitable share of the resulting profit for the users, and without competition being fully eliminated.
- (b) Article 86 prohibits any abuse by one or more companies in a dominant position over the Common Market or a substantial part of it.
- (c) Regulation No 4064/89, relating to concentration controls, prohibits concentrations which create or reinforce a dominant position leading to the restriction of effective competition over the Common Market or a substantial part of it.

The first application of these Community competition rules to the telecommunications sector concerned BT in 1985. The case related to the abuse of the dominant position, since BT required the telex agencies to pay the message retransmission tariffs.

In view of the evolution of the telecommunications sector in the 1990s, on 26 July 1991 the Commission adopted a communication entitled 'Guidelines concerning the application of EC competition rules in the telecommunications sector' (91/C233/2). These guidelines were expressly provided for in the Commission programme of 9 February 1988 relating to the implementation of the 1987 Green Paper on the development of the single telecommunications services and equipment market.

The purpose is to clarify the application of the competition rules to public and private telecommunications operators, so that these operators can quickly decide on their actions while respecting the competition rules.

The guidelines thus set out the general principles of the competition rules applicable to telecommunications bodies (Articles 85 and 86 of the Treaty on European Union), as well as the link between these provisions and the competition rules applicable to the States (Article 90) and other Community provisions (ONP texts). They present examples of agreements which restrict competition, as well as cases in which exemption may be justified. They also specify the concept of an abuse of dominant position by giving the following examples: refusal to grant access to a network, discrimination, cross-subsidization of non-reserved activities, abuse in standardization and refusal to provide interfaces.

In particular, the Commission specifies that it will take into account the market position of the companies in question when determining the impact on competition due to agreements and abusive behaviour by companies operating in the telecommunications sector. It will then assess this market position by taking into account interrelations between activities (services and equipment for public networks) and the interaction between the Community and world markets. When the two parties to an agreement are members of the Community, the Commission may take into account the competition which may take place outside the Community (global competition). So long as competition is not globally compromised, the co-operation agreements and the joint ventures may therefore be authorized even if the market shares which they hold are very considerable within the Community.

The Commission used this analysis method in the case of the agreement between BT and MCI, and in the cases of Eunetcom and Atlas.

- (a) BT-MCI agreement: by its decision of 13 September 1993, the Commission decided that the taking of a 20% share in the capital of MCI (US\$ 4.3 billion) by BT, and the creation of a joint company Newco, did not constitute a reprehensible concentration in the sense of the Merger Regulation.
Newco is to become involved in the high-level or value added network services intended for large multinational companies, enterprises with a very wide geographical range and major users of telecommunications services nationally and abroad. These services will be provided using intelligent international networks. The market in question is to cover a number of cross-border global services already in existence, and in particular virtual network services, high-speed data transmission services and subcontracted global telecommunications solutions especially designed to meet the needs of target customers.
- (b) France Télécom – Deutsche Bundespost Telekom agreement: on 3 June 1993 the Commission received notification of the creation of a joint venture ‘Eunetcom’ between France Télécom and Deutsche Bundespost Telekom. Eunetcom is intended to offer international business networks to private users and VANS. After preliminary examination, the Commission deemed that this venture could be classed as an agreement restricting competition.
- (c) France Télécom – Deutsche Bundespost Telekom (DBPT) agreement: on 16 December 1994, the Commission received notification of a joint venture project between France Télécom and Deutsche Bundespost Telekom, referred to as Atlas. This venture was to offer global communications services to companies throughout the world, including data transmission services, national and international virtual private networks, global

externalization and services using a VSAT microterminal. The parties are to merge their current worldwide sales organizations within Atlas, with the exception of France and Germany where Atlas is to create its own sales organization and is to conclude distribution agreements with France Télécom and DBPT.

After preliminary examination, the Commission deemed that this agreement could constitute an infringement of Community competition rules, since the two operators would thereby reinforce their dominant position in their respective country through Atlas. The Commission furthermore deems that the Atlas project will not extend beyond national markets and questions its European and international dimension.

The Commission therefore first refused to accept this agreement and demanded amendments by the parties. In particular, the two protagonists undertook not to merge their packet data transmission activities before 1 January 1998.

- (d) Unisource – Telefonica agreement: the Commission requested clarification of the agreement concluded at the start of 1995 between Unisource and Telefonica. Finally, after giving a reasoned agreement to the merger (2 February 1996), the Commission declared that the Merger Regulation was not applicable to this operation (1 March 1996).

The mobile communications sector has also been examined in detail by the Commission:

- (a) CMC–Talkline agreement: the project, concluded on the basis of Talkline (German SMC) and Norauto (automotive equipment sales and installation in France) taking a share in the capital of CMC (SMC created jointly by Matra Communications and Cellcom), provided various arrangements in terms of market sharing, in addition to strict financial details. The Commission demanded that some of these arrangements be withdrawn, in particular the non-competition agreement between the new shareholders and the consortium, and the limitations placed on the activities of CMC in France.
- (b) The Commission has also intervened in the scope of agreements made between industry and operators which consisted in integrating components with a view to restricting their use to a specified network. After starting in the United Kingdom for personal communication networks (PCN), this phenomenon has begun to spread to Germany and France.

2.7. Conclusion

The Commission therefore intervenes in the telecommunications field at various levels. Its lines of action can be broadly categorized into three groups:

- (a) **Binding measures** (in particular directives) which generally specify the methods and timetable for applying target measures throughout the countries of the European Union.
- (b) **Measures of encouragement** (recommendations, communications) setting out the desired directions for the fields in question throughout the European Union.
- (c) **Bilateral actions between the European Commission and certain Member States**, often in the context of improper measures (e.g. abuse of dominant position).

3. Application of EU rules in Member States

There is a great disparity in the degree to which the rules enacted by the European Commission have been applied in different countries. Nevertheless, the analysis to which this part is given over allows three major patterns to be identified in terms of national legislation not conforming to European requirements:

- (a) Regulatory and operating activities which are not separated. This category includes Germany, Belgium, Spain, the Netherlands, and Italy.
- (b) VANS and basic data transmission services which are not liberalized. This category includes only Italy.
- (c) ONP concepts (transparent tendering conditions, minimum provision) which are not applied to leased lines. This category includes – in terms of incomplete transposition – Belgium, Denmark, Finland, Ireland, and Italy, and – in terms of transposition underway – Greece.

3.1. Summary tables

The following tables summarize the efforts made by the various Member States of the European Community to adapt their legislation to the requirements of directives relating to the telecommunication fields.

Table 3.1: Transposition status of the texts:

- texts applied in full;
- ▲ texts being transposed;
- texts partially transposed;
- untransposed texts.

Table 3.2: Transposition methods and texts for the European provisions.

Table 3.3: Text transposition dates.

Table 3.4: Main problems and deficiencies observed for each country.

After the tables, the individual situation of each of the Member States of the Community is examined in terms of transposition of the European law to its own legal system and in the practice of its participants (official bodies and operators).

Table 3.1. Text transposition status (mid-1996)

Sectors	Terminals		Services					ONP Network access					Public procurement	
	Directive 88/301 ¹	Directives 91/263 ² and 93/97 ³	Directive 90/388 ⁴ (terrestrial sector)					Directive 90/387 ⁵ (framework)	Directive 90/387 (framework)	Directive 92/44 ⁶ (leased lines)	Recommendation 92/382 ⁷ (packets)	Recommendation 92/383 ⁸ (ISDN)	Directive 90/531 ⁹	Directive 92/13 ¹⁰
References	Imposes liberalization	Approval recognition	Imposes separation of regulation and operation	Imposes VANS liberalization from 1990	Imposes liberalization of simple data transport starting 1 January 1993	State selection for infrastructures	State selection for telephony	Imposes liberalization	Access condition requirements; objective, transparent, equal access, non-discriminatory	Imposes publication of tender conditions, minimum tendering, fair pricing for tariffs	Advises minimum tendering, publication of tender conditions	Advises minimum tendering, publication of tender conditions (quality indicators)	Competition transparency	
Austria	■	■	○	■	■	M	M	■	○	■	■	■	○	○
Belgium	■	■	○	■	■	M	M	○	○	○			■	■
Denmark	■	■	■	■	■	M	M	■	■	○	■	■	■	○
Finland	■	■	■	■	■	M	M	■	■	○	■	■	■	■
France	■	■	■	■	■	M	M	■	■	■	■		■	○
Germany	■	■	■	○	■	M	M	■	■	■			■	■
Greece	■	▲	▲	■	■	M	M	▲	■	▲	■	■		
Ireland	■	■	■	■	■	M	M		■	○		■	■	■
Italy	■	■	○	▲	▲	M	M	○	▲	○			▲	○
Luxembourg	■	■	■	■	■	M	M	■	■	■	■	■	n.a.	n.a.
Netherlands	■	▲	○	■	■	M	M	▲	■	■			■	■
Norway	■	■	■	■	■	M	M	▲	■	■	■		○	○
Portugal	■	■	■	■	■	M	M	n.a.	n.a.	■		n.a.	n.a.	n.a.
Spain	■	▲	○	■	■	M	M	■	○	■	■	■	■	delay
Sweden	■	■	■	■	■	C	C	■	■	■	■	■	■	■
UK	■	■	■	■	■	C	C	■	■	■	■	■	■	■

M: monopoly. ■ fully transposed (or *de facto* applied).
C: competition. ▲ being transposed (or partially applied).
 ○ partially transposed.
 □ not transposed.

¹ OJ L 131, 27.5.1988, p. 73.

² OJ L 128, 23.5.1991, p. 1.

³ OJ L 290, 24.11.1993, p. 1.

⁴ OJ L 192, 24.7.1990, p. 10.

⁵ OJ L 192, 24.7.1990, p. 1.

⁶ OJ L 165, 19.6.1992, p. 27.

⁷ OJ L 200, 18.7.1992, p. 1.

⁸ OJ L 200, 18.7.1992, p. 10.

⁹ OJ L 297, 29.10.1990, p. 1.

¹⁰ OJ L 76, 23.3.1992, p. 14.

Table 3.2. Transposition methods and texts for the European provisions

	Terminal equipment		Services		ONP			
	Directive 88/301	Directives 91/263 and 93/97	Directive 90/388	Directive 94/46	Directive 90/387	Directive 92/44	Recomm. 92/382	Recomm. 92/383
Austria	1993 law	1994 decree	1993 law	not transposed	1993 reform	1993 reform	applied without specific text	applied without specific text
Belgium	1991 operator and State contract law	not transposed	1991 operator and State contract law	not transposed	1991 law	1991 law, operator and State contract	not applied	not applied
Denmark	1989 and 1992 law and order	1992 law and order	1990 law	1992 law	operator contracts concluded	transposed	contracts	ministry operator agreement
Finland	1992 law	1992 law 1994 regulations	1992 law and decree	pending	1987 law	1987 law	applied	applied
France	transposed	transposed	1990 law, decree, orders	1990 law	1990 law, terms and conditions	1993 decree orders	1993 order	not transposed
Germany	1989 law	1991 decree, modified in 1992	1989 law, amended in 1994	1989 law, amended in 1994	transposed in 1992	transposed in 1992	not applied	not applied
Greece	1994 law	decision pending	1994 law	decision pending	1994 law	decree pending	<i>de facto</i> application	<i>de facto</i> application
Ireland	transposed	legislative instrument pending	1992 legislative instrument	not transposed	1992 legislative instrument	1994 legislative instrument	not applied	not applied
Italy	1991 law, 1992 decrees	1992 decree	decree pending	not transposed	1993 and 1994 decrees	1994 decree	not applied	not applied
Luxembourg	transposed	transposed	transposed	transposed	contracts	contracts	contracts	contracts
Netherlands	1989 law	pending	1989 law	pending	<i>de facto</i>	transposed	not applied	not applied
Portugal	transposed	1993 decree	transposed	information not communicated	no information	1994 decree	information not communicated	information not communicated
Spain	1987 law	1994 royal decree	1992 law	royal decree (12/95)	1992 law, subsequent resolutions	decree (1995)	1992 law, 1993 law, 1993 order	<i>de facto</i> application
Sweden	transposed	transposed	law, ruling of 1993	law, order, regulation, admin. decision	law, order, regulation, admin. decision	law, order, regulation, admin. decision	information not communicated	information not communicated
United Kingdom	transposed	regulation	<i>de facto</i> application	<i>de facto</i> application	<i>de facto</i> transposition	1993 regulation	1992 direction	transposed

Table 3.3. Text transposition dates

	Terminals		Services		ONP			
	Directive 88/301	Directives 91/263 and 93/97	Directive 90/388	Directive 94/46	Directive 90/387	Directive 92/44	Recomm. 92/382 (packet)	Recomm. 92/383 (ISDN)
Austria	1993	1994	1994	not transposed	1993	1993	indirect transposition	not communicated
Belgium	1991	not transposed	1991	not transposed	1991	1991	not applied	not applied
Denmark	1989-92	1992	1990	1992	not communicated	1993	not communicated	not communicated
Finland	1992	1992-94	1992	pending	1987	1987	not communicated	not communicated
France	1988	1992	1990	1990	1990	1993	1993	not applied
Germany	1989	1991-92	1989-94	1989-94	1992	1992	not applied	not applied
Greece	1994	pending	1994	pending	1994	pending	not communicated	not communicated
Ireland	1990	pending	1992	not transposed	1992	1994	not applied	not applied
Italy	1991-92	1992	pending	not transposed	1993-94	1994	not applied	not applied
Luxembourg	not communicated	not communicated	not communicated	not communicated	not communicated	not communicated	not communicated	not communicated
Netherlands	1989	pending	1989	pending	1989	not communicated	not applied	not applied
Portugal	not communicated	1993	not communicated	not communicated	not communicated	1994	not communicated	not communicated
Spain	1987	1994	1992	1995	1992	1995	1992-93	not communicated
Sweden	not communicated	not communicated	not communicated	1993	1993	1993	not communicated	not communicated
United Kingdom	not communicated	1994	1982	not communicated	not communicated	1993	1992	1993

Table 3.4. Main problems and deficiencies

Austria	texts transposed but effective application still limited market still not widely open to external access
Belgium	interpretation at minimum of Commission directives <i>delay in transposing some directives (e.g. satellites)</i>
Denmark	-
Finland	technical problems and delays in transposing the ONP Framework Directive
France	insufficient texts relating to public contracts
Germany	<i>tariffs still high (in particular long-distance telephone and dedicated links)</i> cross-subsidization (in particular support for Datex-P) extensive definition of 'reserved services' definition at minimum of ONP specifications
Greece	late text implementation (mostly 1994) <i>no public contract text transposition</i>
Ireland	Telecom Eireann still holds 'centralizer' role (monopoly on mobile services until the end of 1995, on satellite services, management of the ISDN numbering plan, etc.)
Italy	lack of regulatory authority significant deficiency in transposing the Services Directive (in particular terrestrial and satellite services) limited transposition of the ONP texts
Luxembourg	directive transposition mainly based on contract between operator and its clients
Netherlands	is the ministry really independent of the operator? ill-defined legal boundaries between reserved and non-reserved services
Portugal	extensive definition of basic services <i>virtually no ONP text transposition</i>
Spain	deficiencies in transposing some directives (ONP) <i>partial application of some texts</i>
Sweden	no legal distinction between the concepts of networks and services
UK	BT contests ONP/Leased Line Directive interpretation

3.2. Analysis of the level of implementation nationally

A detailed examination of the effective transposition of Community directives into law, and into practice, in the Member States demonstrates a highly contrasting situation. A summary of the situation in the main Member States allows the following distinctions to be drawn.

3.2.1. Countries ahead of schedule in terms of Community requirements

The case of the United Kingdom and, to a lesser extent, that of Sweden are exemplary in this regard.

As early as 1982, the United Kingdom granted a public telephony operator licence to a competitor of British Telecom, Mercury. The mobile services market was liberalized at the same time (two licences granted to BT/Cellnet and Racal/Vodafone) together with the added-value network services. The year 1991 marked another milestone towards full market liberalization, since the 'cosy duopoly' between BT and Mercury was abolished: 111 licence applications were filed between the duopoly revision in 1991 and the end of 1994, of which 60 have been granted and 33 were under appraisal at the start of 1995.

For its part, Sweden has liberalized its telecommunications market very quickly and very fully, starting from a traditional situation with a single public operator monopoly (Televerket, renamed Telia when it was made a company in 1993). Placed under the independent authority of the Post and Telecommunications Agency, the sector was already widely open to

competition even before the Community directives appeared, Sweden not yet having joined the European Union when its market was liberalized. It is also interesting to note that the texts relating to terminal equipment could not be transposed because a monopoly did not exist in this field.

Although somewhere behind, Finland and Denmark can be ranked together with Sweden and the United Kingdom, given that these two countries have fully revolutionized their telecommunications systems, and, in the case of Finland, to such an extent that almost all the provisions enacted by the Community were applied even before it became a member.

Lagging somewhat behind, France nevertheless is a country which has undertaken extensive action to implement the Community directives, being ahead of schedule for some of the Commission requirements (1987 liberalization of VANS and analogue radio-communications). However, some difficulties encountered by the new entrants show a relative delay in effective application of a few directives:

- (a) This is true, in particular, of the ONP Framework Directive (90/387) and the Leased Line ONP Directive (92/44), for which application was deemed to be too restrictive. The two main complaints were that France Télécom was not sufficiently in line with the transparency rules required by the directive, and that there were difficulties in making the public operator responsible to the courts.
- (b) Similarly, the Commission has reproached France for not transposing Directive 93/38 on public procurement, and has directed a reasoned opinion against them.

3.2.2. Intermediate status countries

These are mainly Germany, the three Benelux countries, Ireland and Spain.

Germany has adopted a slow process for reforming its telecommunications system.

In spite of its liberalism, Germany has not yet fully implemented the European telecommunications legislation, and in some regards it is continuing to deviate substantially from the principles put forward by some of the directives. This is particularly true as regards independence of the regulatory authority from the dominant operator, since the Ministry of Post and Telecommunications has the remit both of being a regulator and of protecting Telekom AG. Likewise, a detailed examination of German legislation confirms that the European legislation for service liberalization and ONP recommendation application is lacking.

For its part, Belgium is marked by tentative or even deficient application of the European directives, and by delays in implementing some of the measures (the mobile service market was finally opened only under injunction by the Commission). The most critical points are the questions of true regulator independence and failure to transpose the ONP directives and recommendations. Nevertheless, these points have not yet caused any significant practical problems.

The position of the Netherlands is ambiguous, since although liberalization is relatively advanced, the principles enacted by the European Commission do not seem to be obeyed strictly. In particular, control of the dominant operator appears lax.

Even though an irregularity procedure was brought against Luxembourg for not transposing the Services Directive (90/388/EEC) and the Mutual Recognition Directives (91/263/EEC and 93/97/EEC), it currently seems to be broadly in line with the directives and recommendations from the European Community, especially since the Council Resolution of 29 June 1993 on the review of the situation in the telecommunications sector and the need for further development in that market.

In Ireland, although the Commission directives and recommendations have essentially been incorporated into law, a number of arrangements still seem necessary for the situation to become truly equitable (clear pricing rules, quality of service targets, etc.). With a view to fully opening the market, Ireland furthermore intends to reduce the grace period (2003) obtained from the Commission to the year 2000.

Finally, Spain is making efforts to catch up quickly, in particular by virtue of the number of measures taken in 1994 and 1995. There are still a number of infringements of the principles held by the Commission (in particular representatives of the regulator being present in the Telefónica Administration Council) but the public authorities are obviously keen to make the necessary adjustments, as evinced by the decision to bring the liberalization date forward to 1998 for the voice telephony market.

3.2.3. Countries behind schedule in the European timetable

These are countries such as Portugal, Greece, Austria and, above all, Italy.

Because of their delay in developing telecommunications compared to most other European countries, Portugal and Greece have been granted grace periods for a number of measures.

In contrast to Sweden and Finland, Austria, which has also recently entered the European Union, did not anticipate the Commission measures in terms of telecommunications. The country is consequently behind schedule for most of the requirements (in particular ONP).

The Italian situation is more ambiguous. In spite of a clear effort to modernize the sector, from the start of the 1990s (the basic equipment level is currently equivalent to that of Belgium, and the development in the cellular service is outstanding), for the most part the non-reserved services are still not open to competition.

There are actually many examples of the failure of Italy to implement European legislation:

- (a) no creation of a specific authority to regulate the sector;
- (b) no effective transposition of Directive 90/388 on Terrestrial Services for lack of decrees to apply the transposition law;
- (c) provision of additional restrictions (to cases beyond those provided by the directive) on the delivery of leased lines.

The limitations most frequently put forward in practice essentially relate to three fields: defining and applying the ONP principles, tariffs and leased line access, and independence of the regulator from the historic operator.

There are a number of problems regarding the first point. Firstly, some countries, such as Germany, have adopted a minimalistic definition of the ONP, with the result that the practical

possibilities for interconnection are consistently behind the opportunities afforded by new technologies. However, one of the arguments put forward in this case in favour of maintaining the status quo is that this matter of principle will in any case become outmoded as soon as the infrastructure market is opened. This theory is confirmed by the countries where the market is more fully open (United Kingdom and Sweden in particular), in which the obligations created by the ONP seem to be a 'luxury' entailing a redundant proliferation of legislation.

In some countries, for example Belgium and Luxembourg, where the ONP principles are unclear or ill-defined, they nevertheless seem to have been applied *de facto*. The situation in France is almost the opposite, since the problem lies with practical application, in particular using technical interfaces.

Regarding the second point (pricing and leased line access), this complaint is raised in almost all countries, including those which seem to be the most advanced and where the leased line tariffs are lower than the European average. This is so in the case of Sweden and Denmark. This question therefore seems to constitute an ultimate barrier after the open market has been fully sanctioned by law, and the new entrants will encounter it all the more sharply for having benefited from the other aspects of a 'liberal' environment.

The last point, the question of the regulator being truly independent, is also a recurrent problem. Four scenarios can be identified in this regard:

- (a) countries in which the regulator is truly independent, and beyond government influence (the typical example is Oftel in the United Kingdom);
- (b) countries in which the regulator is truly independent of the operator but still dependent on the government (for example France and Germany, which are proposing an evolution towards more autonomous structures in their draft legislation);
- (c) countries in which the regulator and the operator still retain official ties (for example Spain, with the Ministry represented on the Telefónica Administration Council);
- (d) finally, countries in which the regulatory authority does not exist *per se*, for example Italy.

The main question to be addressed for each of these points basically amounts to the individual responsibility of the Member States.

4. Barriers to the application of the directives

4.1. Overview: the general barriers currently remaining in terms of implementing the Terminal, Services, ONP and Public Contract Directives

It is not enough for the directives simply to be transposed: this must also happen on time, throughout the Member States and in the spirit of the directives. The following factors generally raise problems when transposing the directives:

- (a) differences in interpretation between the Commission and some of the States;
- (b) differences in interpretation between the States themselves;
- (c) differences in the transposition time scale;
- (d) differences in the transposition mechanism;
- (e) differences in the remit assigned to the national regulatory bodies;
- (f) differences in the criteria for the independence of the national regulatory body;
- (g) effects of transposition delays on operator action; and
- (h) even if the rules have been transposed, there may be problems due to misunderstanding and lack of knowledge regarding these rules.

There are still many obstacles to coherent application of the Commission measures, as the following analysis shows. A distinction should be drawn between deficiencies relating to the texts themselves and those involving application in the Member States. It is also important to bear in mind that the Commission policy, intended to harmonize a fairly diverse European market, is inherently progressive. Although we have paid particular attention to the measures taken at the end of the 1980s (Green Paper, COM (87) 290) and at the start of the 1990s in Chapter 3, we have also mentioned a number of actions which were decided upon more recently and will not have full impact until the next few years.

Table 3.4 gives a country by country breakdown of the main problems and deficiencies.

4.2. The barriers: directive by directive

4.2.1. Gauging the questions regarding effectiveness of the Commission's measures

In the 1987 Green Paper (COM (87) 290), the Commission set out the following three goals to be pursued by the Community policy implemented in the telecommunications sector:

- (a) to promote the creation of an advanced European telecommunications infrastructure;
- (b) to assist the creation of a single market for services and equipment on a Community-wide scale;
- (c) to assist the competitiveness of industry and service providers in Europe.

The Commission furthermore points out that the 1985 White Paper (COM (85) 310) laid down the principle that the telecommunications policy was to improve market efficiency in general.

The effectiveness of the measures taken by the Commission should thus be analysed in respect of the basic constitutional freedoms of the European Union: in particular the freedom of movement of goods set out in Article 37 of the Treaty on European Union, and the freedom to

provide services, set out in Article 59 of the Treaty. An overview of these questions is given in the following tables:

Table 4.1. Obstacles to the free movement of goods (Article 37 of the Treaty on European Union)

Transposition of the directives governing telecommunications terminal equipment		
Source	Directive 88/301 ¹ Liberalization of the offer of terminal equipment	Directive 91/263 ² Mutual recognition of approval
Nature	Historic operator remains the dominant provider	Delay in adopting standards by ETSI

¹ OJ L 131, 27.5.1998, p. 73.

² OJ L 128, 23.5.1991, p. 1.

Table 4.2. Obstacles to the free provision of services (Article 59 of the Treaty on European Union)

Transposition of the directives governing telecommunications services			
Source	Directive 90/388 ¹ Liberalization of services	Directive 90/387 ² ONP framework	Directive 92/44 ³ ONP/leased lines
Nature	understanding the definition of the telephone service LL pricing for VANS and data transmission services and curbing the operators for the latter	telephony service tariffs too high field of application	accounting system tariffs too high insufficient leased line (LL) capacity offered

¹ OJ L 192, 24.7.1990, p. 10.

² OJ L 192, 24.7.1990, p. 1.

³ OJ L 165, 19.6.1992, p. 27.

4.3. Review of the obstacles: directive by directive

4.3.1. Directive 88/301: liberalization of telecommunications terminal equipment

The purpose of this directive is to liberalize the telecommunications terminal equipment market, allowing any economic provider to import, market, connect, commission or service terminal equipment. However, this terminal equipment should conform to technical specifications, and the Member States may impose technical qualification requirements on the operators.

In practice, transposing this directive has had little effect in terms of the first telephone set connected. Furthermore, in the vast majority of the Member States, competition exists but the historic operator is still the dominant provider. Beyond the 'cultural' reasons for which users, in particular residential users, still turn to the operator for an all-in service, the operators themselves put forward arguments with varying justification, for trying to impose their equipment on the market (maintenance in particular).

4.3.2. Directive 91/263: mutual recognition of terminal equipment approval

The purpose of this directive is to ensure free movement of telecommunications terminal equipment and thus to conform with the principle set out in Article 37 of the Treaty on European Union. Any terminal meeting the technical specifications laid out by ETSI, and on these grounds approved by a body in the State in which it is distributed, must be allowed to be

distributed in the other States without any particular control procedures. Approval given in one State is therefore to be recognized by the other Member States.

Effective implementation of this directive is hindered by the delay in ETSI adopting technical specifications for approval. The first standard was only adopted in January 1994.

4.3.3. Directive 90/388 and Directive 94/46: liberalization of some of the terrestrial and satellite services

The purpose of these directives was to liberalize the value added network services market, classed as non-reserved services, and the basic data transmission market. This requires that the principle of free provision of services, laid out in Article 59 of the Treaty on European Union, be respected for all the services. Being a general interest activity in the sense of Article 90(2) of the Treaty, the telephone service was exempted from application of this free movement of service principle and was classed as a 'reserved service'.

4.4. Barriers resulting from the choice which the Member States are allowed in terms of telephone services

The choice which Member States are allowed in terms of the legal system for the telephone service has raised questions in terms of understanding the definition of a telephone service. The Commission has actually put forward the following definition:

The term 'voice telephony service' means a service available to the public for the commercial provision of direct transport of real-time speech via the public switched network or networks such that any user can use equipment connected to a network termination point at a fixed location to communicate with another user of equipment connected to another termination point. (*Source*: COM(96) 419 (Proposal for a European Parliament and Council Directive on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment.)

Not all the Member States have the same interpretation of the concept of 'commercial exploitation for the public', and some of them have decided that this definition includes the offering of a closed user group (CUG) telephone service, and have therefore not liberalized these services. Furthermore, by omission, the text indicates that a service connected to one of the ends of a dedicated link is not a reserved service.

These questions have been debated by the Commission and the following States: Belgium, Germany, Ireland, Luxembourg, the Netherlands, Greece, Italy, Portugal and Spain; and have been settled by mutual consent.

4.5. The existing barriers for the liberalization of non-reserved services (VANS)

In practice, effective liberalization of the VANS is hindered by access and rental pricing of leased lines. The historic operators have often tried to impose unjustified delays in providing dedicated links to third-party operators, or even to refuse to provide them under some circumstances.³

³ Telefónica first refused to lease a 512 kbit/s link to Esprit Telecom, on the grounds that its use would probably be misappropriated to offer telephony. The Commission ruled in favour of Esprit Telecom.

For its part, the question of tariffs is one of the major problems found in a number of countries, and more particularly in Germany (the cost of dedicated links here being two to three times more than in other countries of the Union, cf. Figure 6.10).

4.6. Existing barriers for the liberalization of basic data transmission services

Basic data transmission services essentially correspond to X.25 services. In States which have not liberalized their infrastructures, these services correspond to the resale of leased lines.

By the Community compromise of 7 December 1989, the States have obtained the right of not having to liberalize these services until 1 January 1993 (with further extensions for some countries) in order to have time to re-balance their tariffs and prevent competition from causing elitism which would be unfavourable to them.

In actual fact, opening the market was of further benefit to historic operators who, starting from their respective national bases, extended their network to the pan-European level (e.g. BT or France Télécom/Transpac).

4.6.1. Directive 90/387: ONP framework

Tariffs

Annex II of this Directive stipulates that 'the tariffs shall be based on objective criteria and in particular, for services subject to special or exclusive rights, shall be in principle cost-oriented, it being understood that fixing the same tariff level lies within the jurisdiction of national legislation ...' It is therefore up to the Member State to ensure that the telecommunications bodies apply this principle.

In practice, a trend towards re-balancing tariffs has been observable, but this is hampered by various problems: on the one hand, cost-based tariffs presuppose an accurate method of evaluating these costs, and the rules governing this are numerous; while on the other, re-balancing tariffs weakens the operators in certain market segments:⁴ logic therefore frequently dictates a compromise between economic and strategic approaches.

Furthermore, on the pan-European market level, the 'boundary effect' is still very significant: a three-minute peak-period call from one Member State to another costs on average 2.5 to 3 times more than the most expensive long-distance national call.

Field of application

Implementing the directive has raised a problem in Finland because, in this State, the infrastructures are liberalized and each operator has the right to construct its own infrastructure. On the other hand, the operators do not benefit from any particular conditions governing access to their competitors' networks. The ONP Directive is therefore difficult to apply because of the market structure which this country has chosen. Nevertheless, this

⁴ The success of cable telephony in the United Kingdom is largely due to the new entrants' capacity to offer lower local tariffs than BT.

situation is being amended, and three operators have recently gained the right to access their competitors' networks, without having the right to construct their own infrastructure.

4.6.2. Directive 92/44: ONP leased lines

A cost accounting system must be set up, making it possible to distinguish between direct costs and common costs and to align tariffs with costs. All the Member States are having difficulties in implementing this requirement.

Tariffs

The tariffs for high-capacity leased lines (two Mb/s links) in the European Union are on average ten times higher than those set for equivalent capacities over similar distances in North America. They can vary by a factor of two between different Member States, and in many cases lines of this type are not offered at all. Further to the fact that differences in network geography may explain some of these disparities, this phenomenon illustrates the problem in working with coherent cost calculation methods.

4.7. Barriers due to institutional problems

The impact of the Community telecommunications directives is also limited by institutional problems.

4.7.1. Barriers which have been moved: the Commission's competence to impose market liberalization

Implementation of Directive 88/301, relating to liberalizing the terminal equipment market, and Directive 90/388, relating to liberalizing the service market, have both been the subject of an action before the Court of Justice of the European Communities (CJEC) to find the Commission without competence to alone adopt directives of this type (on the basis of Article 90(3) of the Treaty on European Union). These actions were initiated by France, Belgium, Greece, Italy and Germany, regarding Directive 88/301, and by Spain supported by France, Belgium and Italy, as regards Directive 90/388.

However, the CJEC twice, in 1991 and in 1992, found in favour of recognizing the Commission's competence to adopt on its own directives of this type, requiring liberalization of the national markets in question.

4.7.2. Current barriers resulting from the regulation imposed by the directives: delay in adopting the texts caused by institutional problems

The impact of the directives adopted by the Commission may be restricted by other intended directives not being adopted.

The services and ONP directives require other directives to be adopted in order to fulfil their objective (creation of a single market in telecommunications services). The 1987 Green Paper thus provided for the adoption of a directive regarding mutual licence recognition and the adoption of a directive applying the ONP to voice telephony. It has not so far been possible to adopt these texts, in particular because of problems in assigning competence between the European authorities and the Member States.

Mutual recognition of licences: the problem of subsidiarity

The implementation of Directive 90/388 (Services Directive) as regards the freedom to offer services, calls for the mutual recognition of licences among Member States, as licence types and licensing procedures vary considerably from one State to another, which limits the options for cross-border services.

A 1992 draft directive (COM(92) 254) proposed the mutual recognition of licences, but the directive has still not been adopted, although adoption was initially intended for late 1994. This delay has resulted in the key requirements being defined on a national basis, with every State being free to include these requirements in its licences, according to the principle of subsidiarity. These requirements relate to the security and integrity of the network, the prevention of interference between frequencies, the efficient use of the spectrum, the interoperability of services, and data protection.

Community regulatory authority: the problem of subsidiarity

Likewise, the actual implementation of the Services Directive and the future directive on the mutual recognition of licences raises the problem of setting up a European regulatory authority to be responsible for regulating telecommunications. This again raises issues of subsidiarity among the powers held by the Community institutions and those held by the Member States.

Open network provision and voice telephony: the problem of the distribution of powers between the European Parliament and the European Commission

The first draft directive on ONP and voice telephony has not been adopted, as the European Parliament and the Council of Ministers have not succeeded in reaching agreement on the extent of the Parliament's competence with regard to committology and the framing of secondary norms. However, a subsequent draft (COM(95) 575) was successfully adopted on 27 November 1995.

Part II: Impact of EU measures on the performance of services open to competition

Introduction

This document presents the findings of phase II of our study, a systematic analysis of the impact of the integration of the single market on the telecommunications services sector.

Rapid developments have taken place in the recent years in the telecommunications services sector. New services have emerged, multiplying the number of players and possibilities on offer. It is therefore of interest to consider the impact of the single market and of the directives, recommendations and actions taken by the European Commission on the development of markets, on the players, and on the services offered to the end-users.

Four categories of services have been selected, constituting a full range of telecommunications services and meeting criteria for deregulation and liberalization:

- (a) Mobile telephone:
 - public analogue cellular telephone;
 - public analogue digital telephone.
- (b) Data: value added data transmission services:
 - data network services (X.25, frame relay);
 - EDI;
 - paging;
 - others (videotex, etc.).
- (c) Voice services:
 - call-back;
 - calling cards;
 - call re-routing.
- (d) Satellites:
 - space segment: satellite capacity;
 - terrestrial segment: TV broadcasting services and VSAT.

Each of the above categories of services has been studied according to the seven following areas of focus:

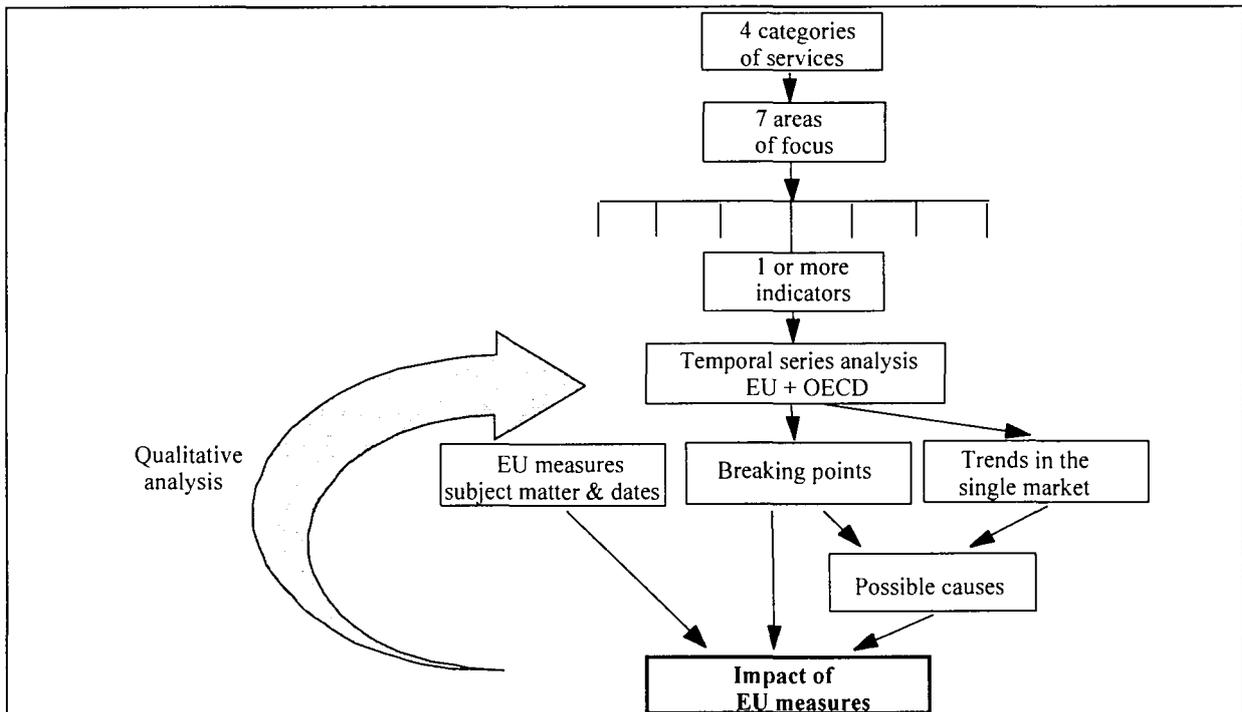
- (a) the internationalization of sales and activities;
- (b) the internationalization of supplies and geographical effects;
- (c) productivity and competitiveness;
- (d) effects of scale and dimension;
- (e) concentration and development of competitive conditions;
- (f) cost and price reductions;
- (g) interrelative ties.

At the beginning of each chapter is a review of the European measures taken in the sector, followed by a description of the structural factors underlying the trends identified.

For each area of focus, a temporal series analysis of one or more indicators enables us to identify the trends on the single market and the breaking or bending points. By putting these indicators alongside the Commission's measures (subject matter and dates of introduction), it is possible to isolate, among the possible causes, the impact of the EU measures and recommendations.

Finally, we summarize the chief trends noted in the sector, and analyse the changes which can be attributed to the 'single market'.

Figure II.1. Methodology

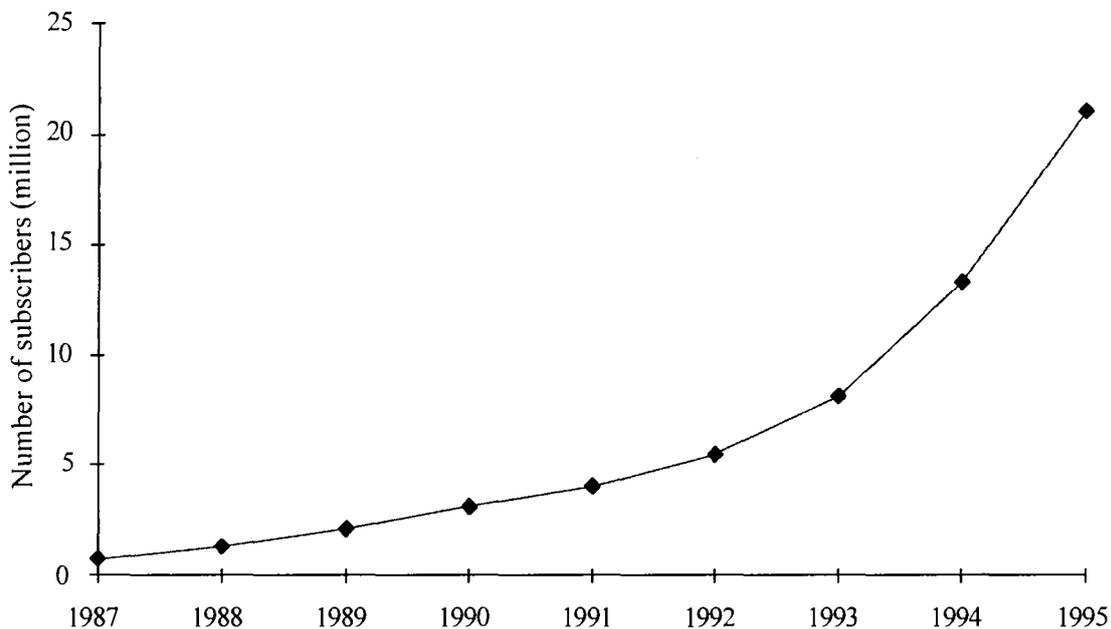


5. Mobile telephones

5.1. Context

Mobile telephony has expanded considerably in the EU since the introduction of the GSM standard (see Figure 5.1). The number of subscribers has risen dramatically, reaching 21 million in 1995. As so many new licences have been granted, this trend will continue for several years.

Figure 5.1. Number of mobile telephone subscribers in the EU: total number of subscribers (in million)



Source: Idate.

In this section, we list the measures taken by the Commission in the mobile telephone sector, and in Section 5.2, we identify the main developments in this sector.

In conclusion, we list the chief trends we have identified on this market in Europe, and determine how many of the changes in the sector can be attributed to European measures rather than to 'natural' growth.

5.1.1. List of measures taken by the Commission

A feature of the mobile sector is that there is no framework directive. However, the Commission has taken action in several different ways:

- (a) a 1987 Green Paper on mobiles;
- (b) the establishment of the ETSI (1987 Green Paper);
- (c) the 1987 Council recommendation on the co-ordinated introduction of mobile communications and the frequency bands to be reserved for them;

- (d) the 1990 directive on services did not deal explicitly with public mobile telephony. However, this service was not described as a 'reserved service', as was fixed wire line telephony;
- (e) bilateral action to open up markets;
- (f) a directive on mobile and personal communications, amending Directive 90/388, was adopted on 20 December 1995. However, action by the European Commission, especially through the Green Paper on mobiles in 1987, was considerably ahead of this publication and has contributed to introducing a degree of competition in all countries.

5.1.2. The structural factors in the sector

The mobile telecommunications sector has developed under the influence of several factors which can be observed at the world level:

- (a) the structural role played by national regulators in granting licences;
- (b) technological progress associated with a better command of radio techniques and a higher degree of integration of components, leading to an overall improvement in the cost/quality ratio of all mobile systems;
- (c) geographical deployment of the key players: outside their national territories, operators are looking to develop in the countries with the most growth potential. Mention might be made of Airtouch in Germany and Portugal, US West in the United Kingdom, and France Télécom in the Lebanon, Poland and Belgium.

It should be noted that action taken by the Commission before 1995 was primarily in the form of accompanying measures, without binding force.

5.2. Detailed analysis

5.2.1. The internationalization of sales and activities

The market is still built around national players. There are two clear findings:

- (a) The infrastructures are still national ones; there is no pan-European network.
- (b) The service providers continue to be national; foreign operators do not enter the new markets except through minority capital shareholdings.

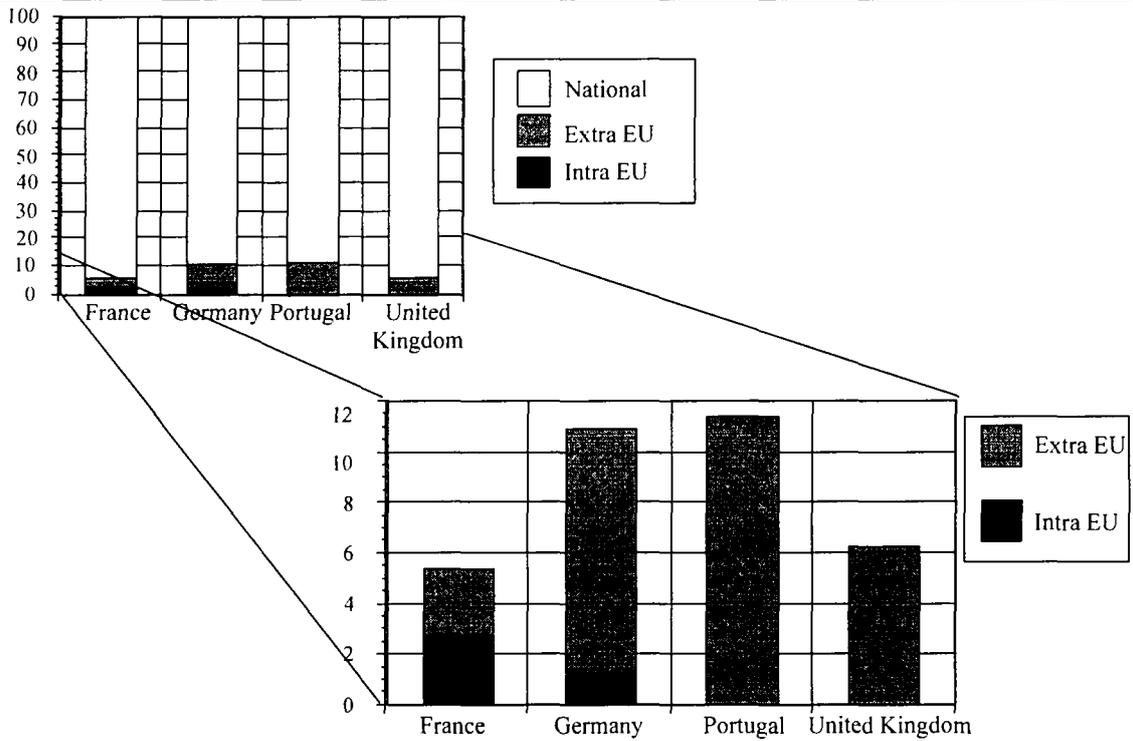
Figure 5.2 shows that most subscriptions are still held by national capital, with over 85% of subscribers. This is due to the influence exerted by historic operators, the procedure for granting licences according to qualitative variables, which allows discretionary decision-making, and the impossibility of reselling licences without the consent of local regulatory bodies.

A genuine pan-European service availability

However, in spite of the national character of infrastructures, the GSM standard has enabled a pan-European service to emerge. Although the networks are domestic and fragmented, a user who has taken out a GSM subscription in an EU country can reuse his terminal and gain access to the GSM service in all countries where operators have entered into agreements with the operator of the initial country. This 'roaming' function, which means that the continuity of the service can be guaranteed in a number of different countries, has been made possible by the use of a common standard, the GSM, and by the establishment of bilateral agreements

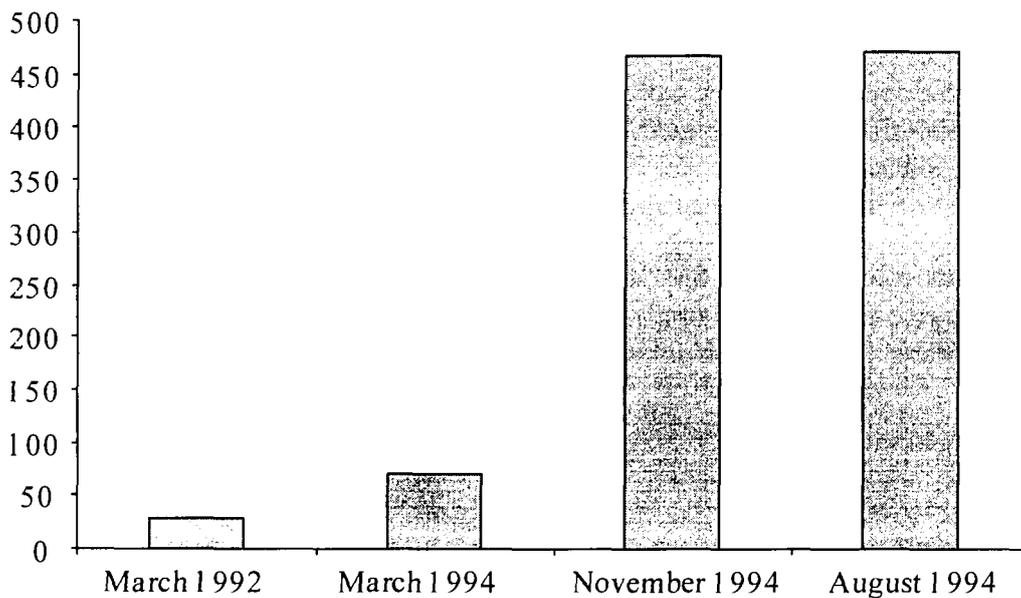
among the various mobile operators. The pan-European quality of the GSM service only became truly effective from 1994, the year in which most of the agreements were signed (see Figure 5.3).

Figure 5.2. Proportion of foreign investments and intra-EU and extra-EU share¹



¹ Figures for May 1995.

Figure 5.3. Number of intra-EU GSM roaming agreements

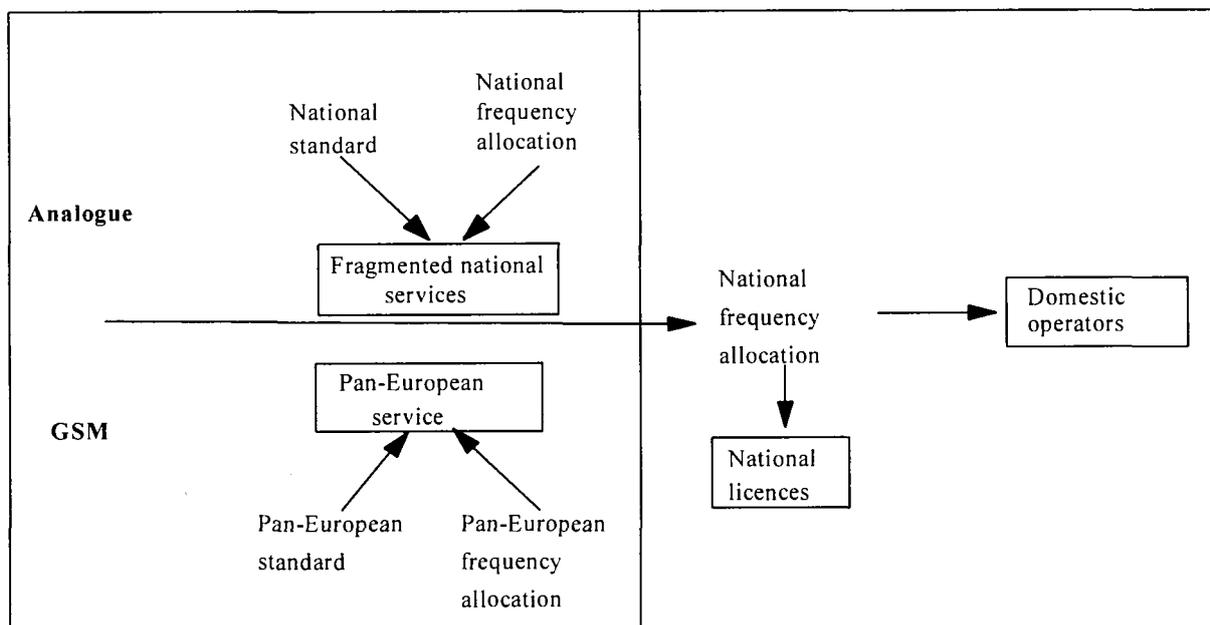


Source: Idate.

The proportion of income gained from roaming by comparison with the total income from mobile services in Europe varies considerably from one country to another: a small country such as Luxembourg makes almost 90% of its income from roaming, whereas in larger countries such as France, Germany or the United Kingdom, roaming represents only 10% of income.

Hence the development of the GSM standard has taken European mobile telephony from the level of fragmented national services to a pattern of a pan-European consumer service. Figure 5.4 shows how this has happened.

Figure 5.4. Impact of frequency management on the structure of the industry



Greater internationalization of distributors

Although non-domestic players have no significant role in the networks, they are more important in the distribution segment, a trend similar to that observed in the share of foreign SMCs among subscribers. In France and Germany this share is almost 30% on the GSM, and in the UK 15% on the GSM and analogue taken together.

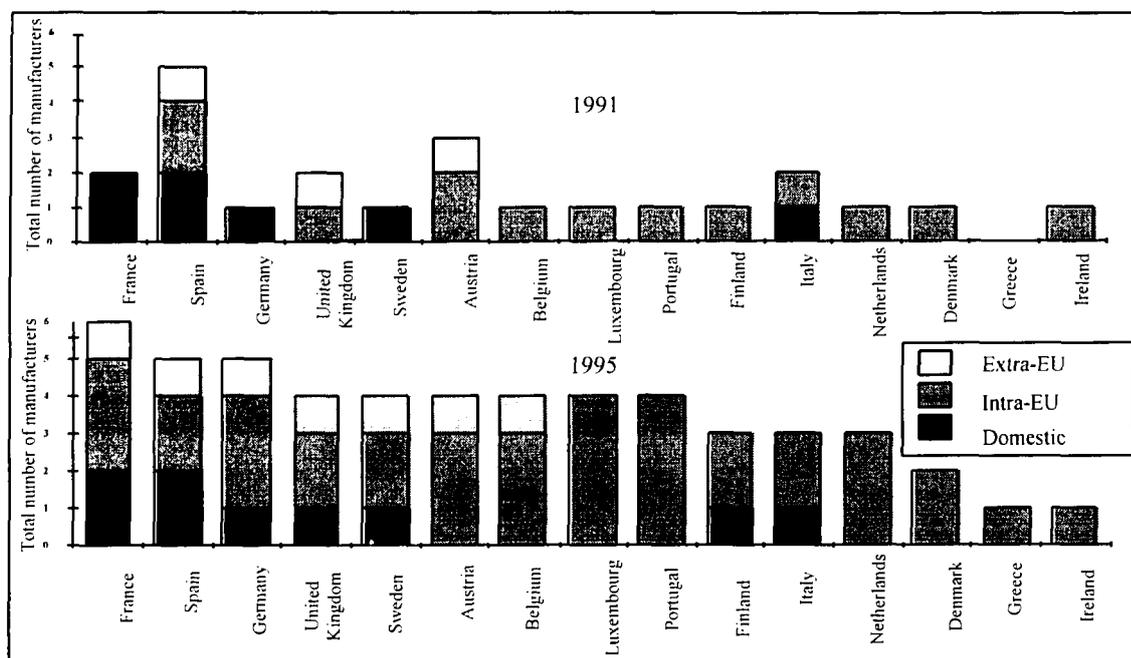
This significant role of foreign SMCs points the way to the development of a pan-European end-to-end service for mobiles (single window, standard pricing, pan-European VANS), but it would be desirable for them to maintain their independence towards the operators.

5.2.2. The internationalization of supplies and geographical effects

The internationalized supplies

As shown in Figure 5.5, in 1995 operators supplied their service on an open, European basis. All countries make use of non-domestic suppliers, and in each country most of the non-domestic supplies come from intra-EU manufacturers.

Figure 5.5. Origin of manufacturers of switching equipment and base stations for mobile networks



Source: Idate.

In this respect the cases of France, Germany, Sweden and Finland are illustrative. The following developments took place between 1991 and 1995:

- France added three European manufacturers and an international manufacturer to its domestic manufacturers.
- Similarly, Germany added to its domestic manufacturers three European manufacturers and one international manufacturer.
- Sweden added two European manufacturers and one international manufacturer.
- Finland added two European manufacturers.

More generally, we note that between 1991 and 1995 the number of manufacturers of switching equipment and base stations for mobile networks in the Member States rose from an average of 1.5 to 3.5.

A trend favourable to European industrialists

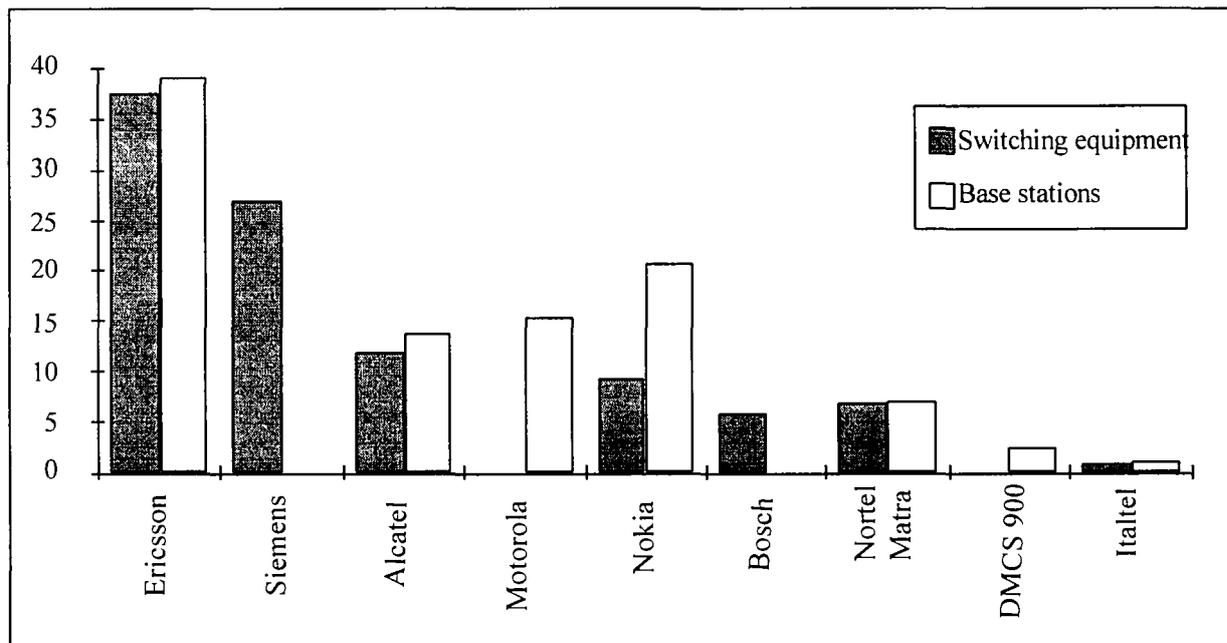
The development of the GSM on the European market has been beneficial to European industry, as we see from Figure 5.6. Only EU manufacturers are present on the switching equipment and the base station markets, and the only non-EU operator, Motorola (with 15% of market share), has set up production facilities in Europe.

European technology is being exported outside the EU:

- Asia/Pacific: the GSM accounted for 20% of digital subscribers in 1994;
- Middle East: the GSM accounted for 80% of digital subscribers in 1994;
- Africa: the GSM accounted for 100% of digital subscribers in 1994;

- (d) American operators (American Personal Communications, American Portable Telecom, Bell South, Intercel, Omnipoint, Pacific Bell and Western Wireless) have joined together in an interest group, the NAIG (North America Interest Group) to promote the GSM standard in the United States.

Figure 5.6. European market share of switching equipment and GSM base station manufacturers¹

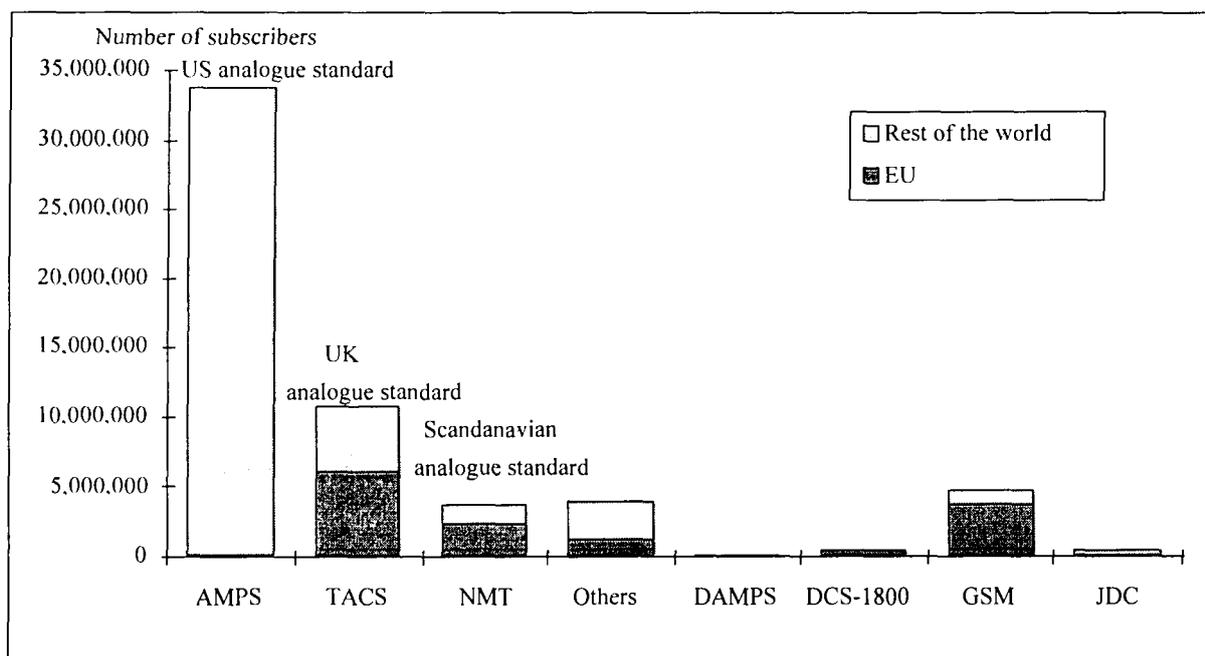


¹ Motorola mobile network equipment is manufactured in Europe.

Source: Idate.

Although the extra-EU markets now represent only 20% of GSM subscribers, 146 operators worldwide have adopted the standard. Moreover, the GSM technology has won contracts on markets which previously used the traditional analogue technique: some countries have swung from the AMPS American analogue standard to the GSM (e.g. Australia, Vietnam) and some countries have swung from the TACS (UK) or NMT (Nordic countries) analogue standards to the GSM (e.g. Kuwait, Iran).

Hence the GSM technological breakthrough, a standard promoted by the EU, has proved a valuable rival to the experience acquired by suppliers in analogue technology with a much larger installed base than the GSM (see Figure 5.7).

Figure 5.7. Distribution of cellular subscribers by standard in 1994

Others: Comvik 450, RC 2000, RTMS, NTT, MATS, C-450.

Source: Idate.

5.2.3. Productivity and competitiveness

Productivity increases with the size of the operator

The number of subscribers seems to have an impact on productivity (see Table 5.1 and Figure 5.8). For where operators have fewer subscribers than 500,000, productivity varies considerably, and tends to depend on the use made of subcontracting (e.g. SFR, when launching its GSM tender made heavy use of subcontracting). Where operators have more than 500,000 subscribers, there is a discernible scale effect, and productivity increases with the number of subscribers. Cellnet stands out very clearly, with a turnover of 800,000 ECU/employee in 1994.

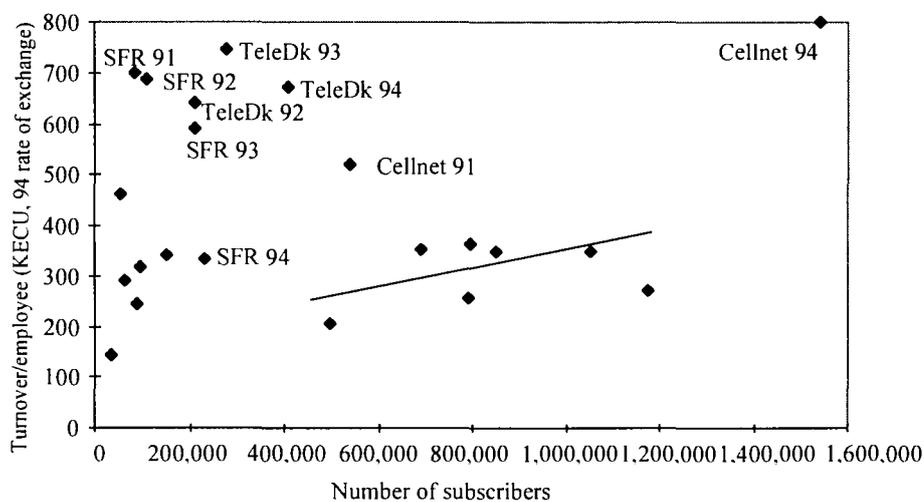
It is important to note that the transition from fragmented analogue systems to the pan-European GSM standard has resulted in:

- a scale effect on the R&D costs of terminals and infrastructures;
- a bunching effect: a fall in the cost of terminals and infrastructures due to a larger volume being produced;
- a medium-term technological effect: the cost of digital technology is falling each year by between 20 and 30%, because of the falling cost of components.

Table 5.1. Turnover per employee according to number of subscribers

	Turnover/employee ('000 ECU, 1994 rate of exchange)	Number of subscribers (in '000)
SFR 1990	463	53
SFR 1991	700	85
SFR 1992	688	111
SFR 1993	592	142
SFR 1994	333	233.2
Mannesmann 1993	207	495
Mannesmann 1994	349	850
Vodafone 1991	352	689.5
Vodafone 1992	367	795
Vodafone 1993	351	1062
Vodafone 1994	340	1638
Cellnet 1991	519	540.6
Cellnet 1994	799	1560
DeTemobil 1994	296	1596
TMN 1993	291	62
TMN 1994	318	97
Europolitan 1994	90	70
Telecel 1993	143	32.7
Telecel 1994	245	88
Telia Mobitel 1993	255	791.4
Telia Mobitel 1994	271	1176
Tele Danmark Mobil 1992	641	210.4
Tele Danmark Mobil 1993	744	276.2
Tele Danmark Mobil 1994	672	410.4
Sonofon 1994	103	99

Source: Idate.

Figure 5.8. Turnover per employee according to number of subscribers

Source: Idate.

5.2.4. Concentration and development of competitive conditions

An increase in the number of players confined to the national framework

The grant of new licences has enabled non-telecom investors to come on the scene:

- (a) Kinnevik (1981): paper;
- (b) Générale des Eaux (1987): water distribution;
- (c) Mannesmann (1991): heavy industry, energy, machine tools;
- (d) E-Plus (1994) including Thyssen (heavy industry) and Veba (electricity), each holding 28.4%;
- (e) Bouygues (1995): construction;
- (f) Olivetti (1995): computers.

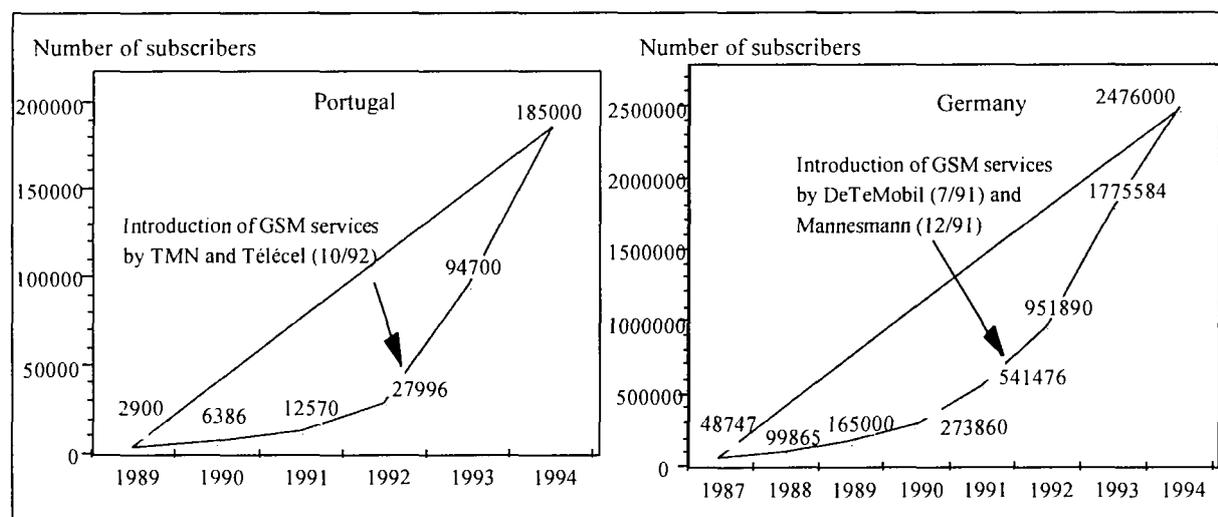
The second GSM or DCS1800 licences for mobile operators in the EU are granted largely to consortia led by local investors of the type above, associated with foreign operators.

This situation is largely brought about by the procedures for granting licences, which are still based on qualitative criteria and offer little opportunity to foreign operators wishing to compete for licences as leaders of consortia. Shareholding is therefore the only means of entering foreign markets. For instance, Veba (operator E-Plus) is present in the capital of One-2-One and Bouygues Télécom. The strategies for making pan-European tenders may be reflected on the secondary market for licences.

The change in competitive conditions has had beneficial effects on the numbers of subscribers:

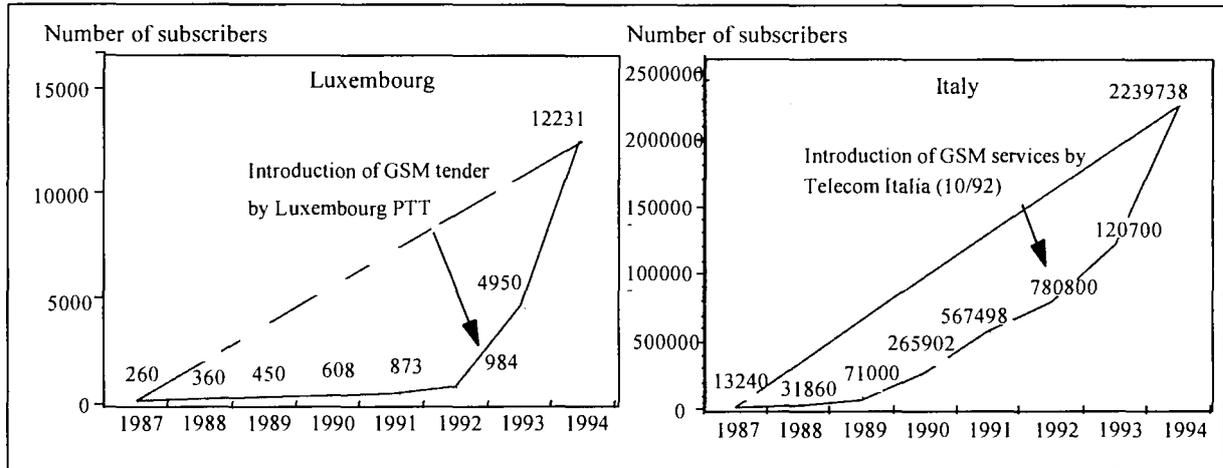
- (a) because of the emergence of new operators, as in Germany and Portugal (see Figure 5.9);
- (b) because of the historic operator making a digital tender to compete with the traditional analogue offer, as in Italy and Luxembourg (see Figure 5.10).

Figure 5.9. Growth in number of mobile subscribers in Portugal and Germany



Source: Idate.

Figure 5.10. Growth in number of mobile subscribers in Italy and Luxembourg



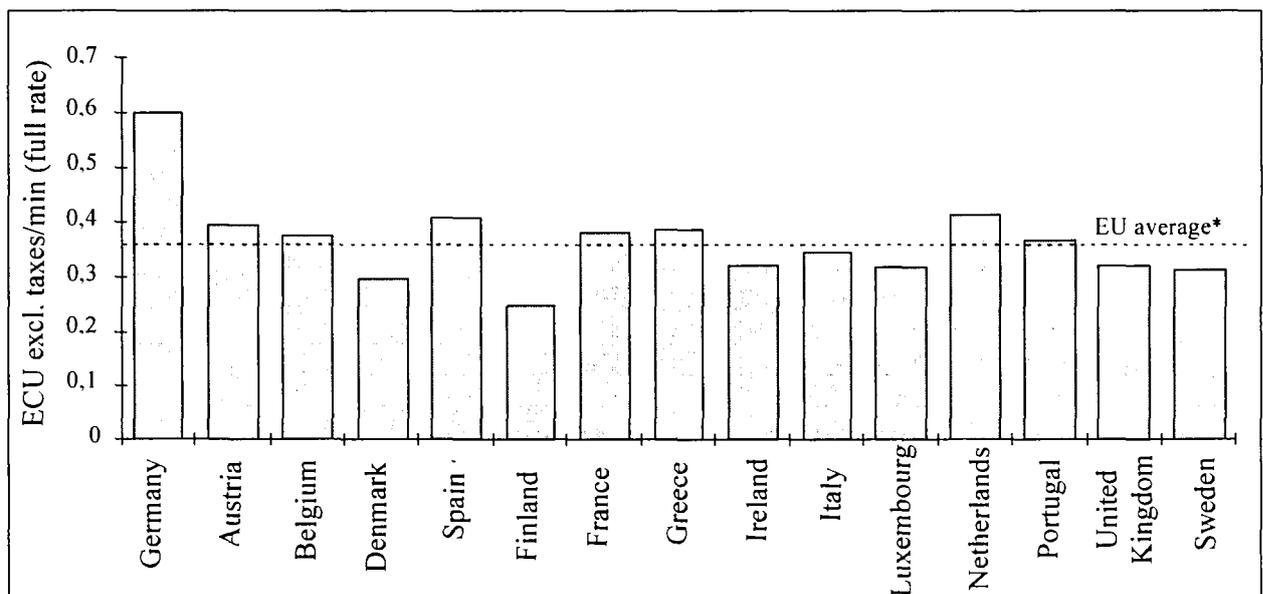
Source: Idate.

5.2.5. Reduction in costs and prices

Complex price/cost relationships

Prices for one minute's communication are relatively standard throughout the countries of the Union (see Figure 5.11). Apart from Germany, where prices are markedly higher than those in the rest of Europe, and in the Nordic countries, where prices are lower, the other countries of the Union charge rates within a range of approximately 15% from the European average. On the other hand, there is a marked disparity with monthly subscriptions, where the range varies between +132% (P&T Luxembourg) and -61% (Radiolinja) from the European average. As regards connection charges, here again there is a significant disparity: from +51% (Belgacom Mobile) to -552% (Telecom Finland) in relation to the European average.

Figure 5.11. Price of GSM communications in the EU in August 1995

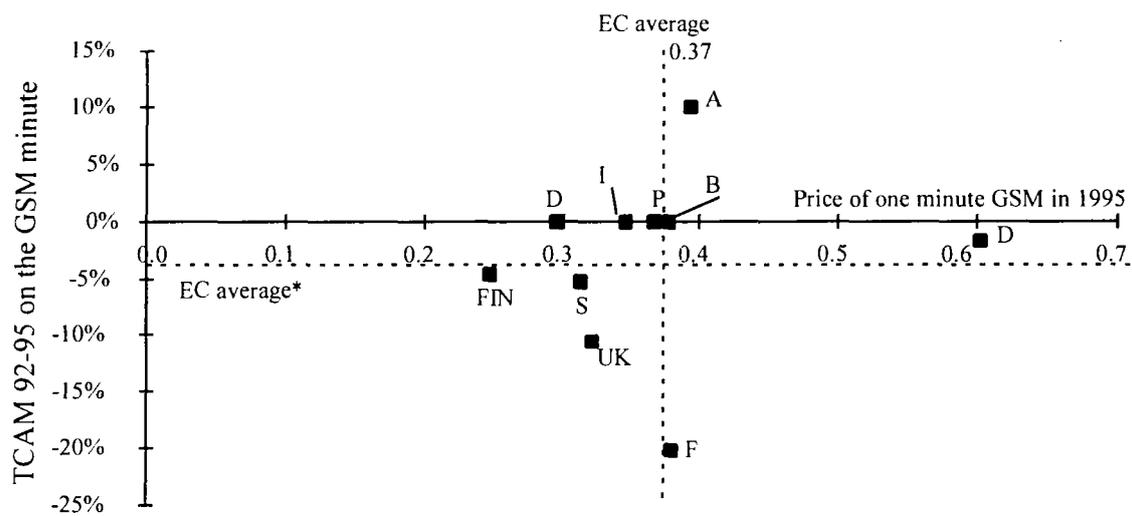


* not weighted

Source: Idate.

Since 1992, the price of one minute's communication has fallen by an average of 4% a year, as shown in Figure 5.12. Hence no fall in the price of communications can be discerned, except in France where, since the DCS1800 licence has been granted to Bouygues, the prices charged by France Télécom and SFR for one minute's communication have fallen quite markedly.

Figure 5.12. Trend in the price of GSM communications per minute in the EU: 1992 and 1995



* Average of ten countries.

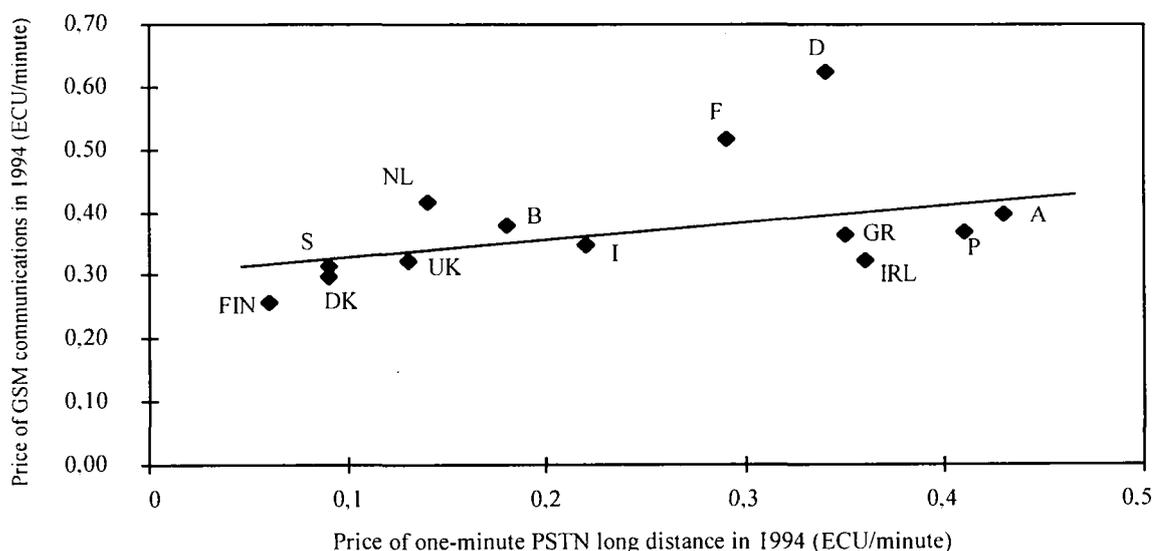
Source: Idate.

Figure 5.13 compares the price of GSM communications in the EU with the PSTN price. It will be seen that the GSM price increases slightly with the PSTN price. This interrelationship is due to the interconnection tax component, which generally increases with the price of the PSTN, but also to the fact that, from a marketing point of view, the GSM price is closely linked to the fixed telephone price.

On the other hand, the impact of dedicated lines is more difficult to demonstrate, and there seems to be no obvious relationship between the price level for dedicated lines in the various countries and the price of GSM communications (see Figure 5.14). However, the cost of dedicated lines represents at least 20% of the cost of mobile operators.

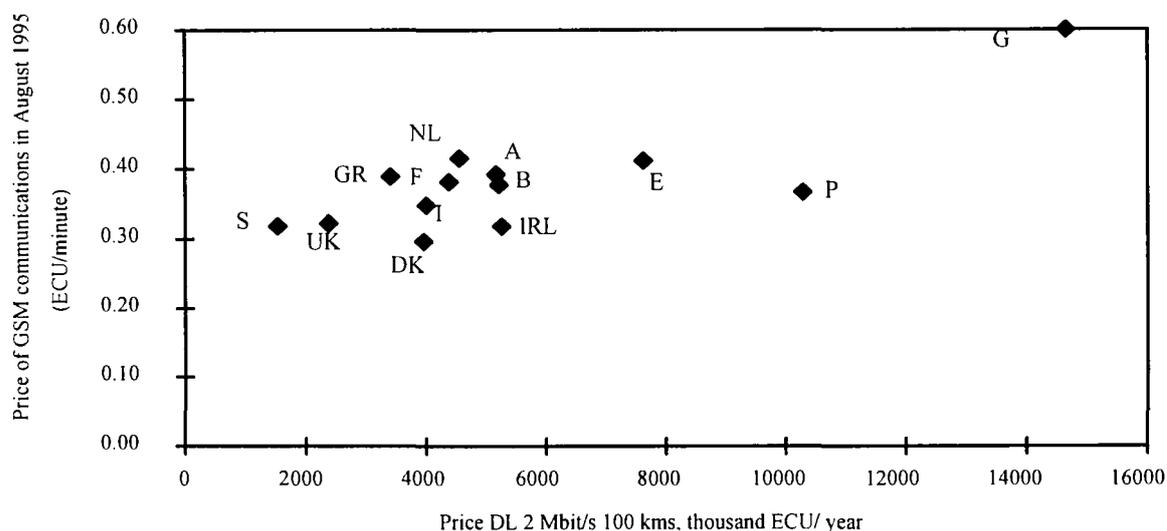
The price of roaming is still higher than the price of the domestic mobile telephone, and involves a communications surcharge for the customer of about 15%. This is due to the number of processes involved between operators (declaration, re-invoicing, etc.).

Figure 5.13. Prices of GSM communications compared with the price of one minute PSTN



Source: Lynx & GSM MoU.

Figure 5.14. Price of GSM communications compared with the price of two Mbit/s connection



Source: Lynx & GSM MoU.

Competition has had the effect of reducing prices to the public

The introduction of competition (new operators or new licences granted to existing operators) has several effects on pricing. Firstly, the price of communications is falling:

- (a) a 50% fall in prices between 1993 and 1995 for France Télécom et SFR in France, following the announcement of the grant of the licence to Bouygues;

- (b) an anticipatory effect in the case of the United Kingdom: a 28.5% fall in Vodafone prices before the competing Cellnet service was launched;
- (c) in Germany, the introduction of the E-Plus DCS1800 service has led to a 7% fall in Mannesmann prices.

There has also been a fall in the cost of access to services, through cross-subsidies between services and terminals, so that terminals can be offered at much reduced or nil prices. This is a decisive factor in the decision of subscribers to buy.

The third effect is a segmentation of pricing offers, through niche price setting which enables more subscribers to be brought in. The operators quote different prices for subscriptions and for communications, according to the pattern of consumption by users. Table 5.2 illustrates this price diversification, which sometimes involves three or even four offers by a single operator.

Table 5.2. Price segmentation depending on monthly consumption for GSM and PCN services in Europe

Country	Operators	Number of packages
Austria	PTV Austria	1
Belgium	Belgacom	3
Denmark	Sonofon Tele Danmark	1 1
Finland	Radiolinja Telecom Finland	2 2
France	FT Mobiles SFR	2 1
Germany	DeTemobil E-Plus Mannesman	2 2 3
Greece	Panafon Stet Hellas	1 1
Ireland	Eircell	1
Italy	Telecom Italia	1
Luxembourg	PTT Luxembourg	2
Netherlands	Dutch post and telecommunications service	2
Portugal	TMN	3
Sweden	Comviq Europolitan	1 3
United Kingdom	Cellnet One-2-One Orange Vodafone	2 2 4 2

Source: Operators – September 1995.

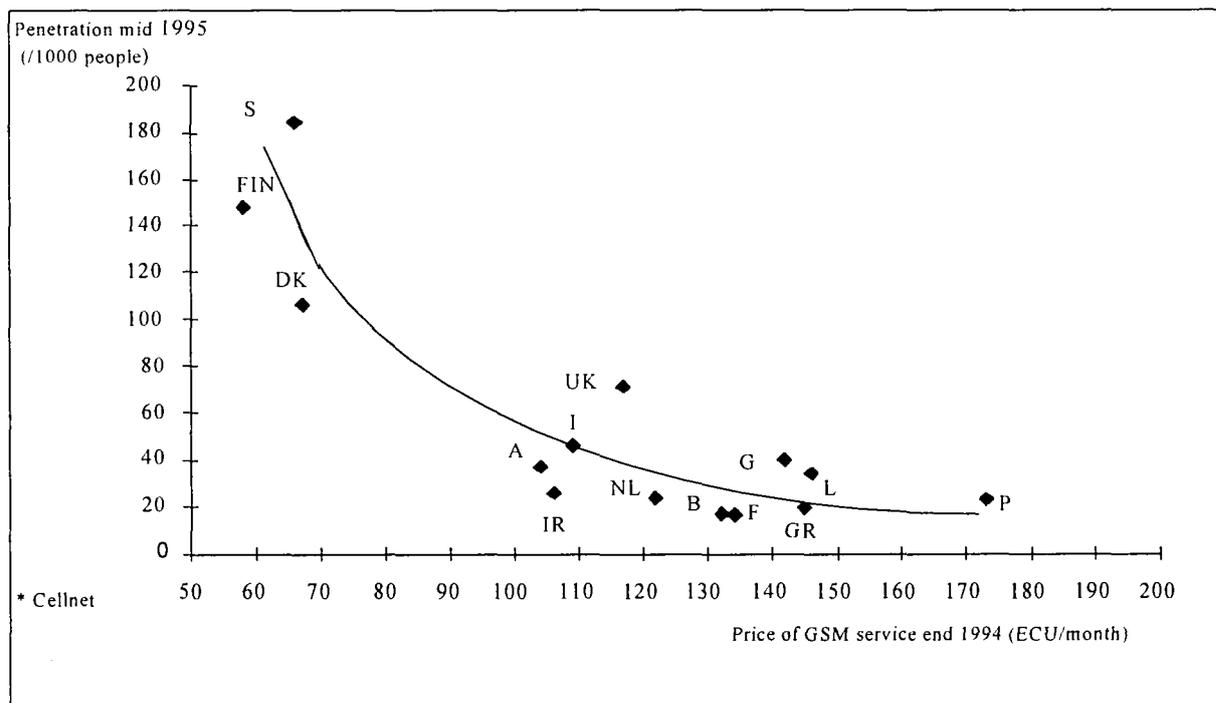
These effects all contribute to the increase in the total number of subscribers. Users are in fact highly sensitive to price, as shown in Figure 5.15.

A strong relationship between the price of the service and its penetration

In Sweden, Finland and Denmark it is found (Figure 5.15) that the rates of penetration of mobile telephones are markedly higher than in the rest of Europe. These rates are not due to any significant fall in prices, which dropped only slightly between 1992 and 1995 (cf. Figure

5.12) in the Nordic countries, but rather to the fact that the level of prices was always very low. This reflects the operators' business strategy of opting for a longer term rate of return on investment.

Figure 5.15. Relationship between price of GSM service and rate of penetration of public mobile telephony taking account of purchasing power parity



Note: Prices include: (a) 220 minutes of peak time conversation; (b) monthly subscriptions; (c) connection charges spread over one year.

The price is then weighted by the comparative levels of GDP prices in each country to take account of the differences in purchasing power (OECD base = 100).

Source: Sofrecom and OECD.

5.2.6. Interrelative ties

The operators used the services of SMCs to distribute the services more effectively. In Germany and France, the share of SMCs accounts for 35% of all subscribers, but they sell only GSM. In the United Kingdom, SMCs offering both digital and analogue handle 45% of subscribers.

However, the tendency is for the operators to take over the SMCs, in order to control the entire chain of added value. Some major takeovers have occurred, in particular on the British market in recent years.

The need for access to the public at large has resulted in the emergence of new players in traditional large scale distribution: the CDCs (central distributing companies), which do not manage subscriptions and whose role is confined to ordering the service.

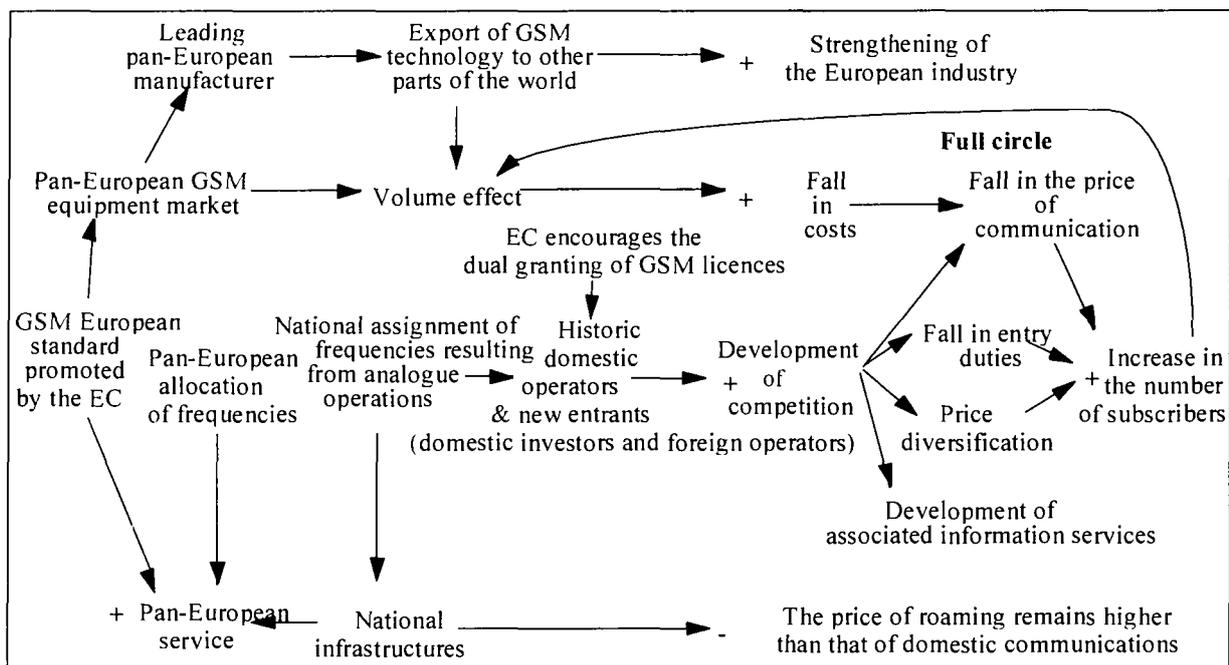
The 1995 Green Paper states the intention of giving distributors greater freedom of manoeuvre *vis-à-vis* the operators, but the effects are still limited.

In addition, as a result of competition in mobile services, the operators are tending to differentiate what they have to offer through added value services. On top of the basic telephone service, there are now information services (financial and traffic reports, etc.) which result in link-ups between operators and those who provide the contents.

5.3. Conclusions

Figure 5.16 summarizes the main lessons learned about developments in the mobile telephony sector and the influence of the Commission's measures on these developments.

Figure 5.16. Mobile telephony: conclusions



5.3.1. Main trends observed

The main trends observed in the sector of mobile telecommunications in Europe are:

- Infrastructures continue to be national.
- The procedures for granting licences (assignment of frequencies) continue to be national, and are largely based on qualitative criteria which permit discretionary decisions.
- The operators are mostly national.
- The new licences have been granted to the historic mobile operators, or to consortia led by major local investors, in association with foreign operators with minority shareholdings.
- New players are appearing on the scene, some being strangers to the telecommunications sector, such as Mannesmann in Germany.
- The development of competition has had several effects. It has led to a fall in the price of communications, a fall in entry duties (a reduction in subscriptions, cross-subsidies for terminals and services) and price diversification (segmentation of rates according to consumption). The consequence of all three effects is to increase the number of subscribers, who are especially sensitive to the price of the service.
- A pan-European service offer is emerging.

- (h) Although the networks continue to be national and fragmented, roaming allows for pan-European service coverage. In 1995, the number of GSM roaming agreements within the EU was 17 times what it had been three years earlier. Mannesmann, for instance, signed roaming agreements in 1995 with 35 operators in 22 countries (see case study in Appendix A.3).
- (i) The development of the GSM standard is favourable to the European producers, who hold 85% of the market for switching equipment and base stations in Europe (Motorola 15%) and export their technology outside the EU (almost 150 operators worldwide have adopted this standard).

5.3.2. Changes attributable to the single market

In the light of our analysis, we believe that the Commission has had a threefold impact in the field of mobile telephony services:

A basic standardization role as regards the GSM, with the result that a pan-European market has been created and a European mobile telephony industry

The GSM standard is undeniably the product of strong European collaboration, in which ETSI has played a distinct role. The Commission cannot itself insist on the standard being set. But its action in support of ETSI, and subsequently its action in support of pan-European allocation of the 900 MHz band, has made a major contribution to the preparation and adoption of a single pan-European standard. The Commission's action to encourage the opening of markets for equipment has also encouraged the effective introduction of the standard on all European markets.

Nowadays users enjoy a genuinely 'pan-European' mobile telephony service, which is freeing itself from the domestic character of infrastructures; a user can telephone with his GSM equipment wherever he happens to be in Europe (the roaming function). The extra cost of this function is about 15%, representing approximately the extra management cost. Without the GSM, the market could develop in two ways:

- (i) using analogue norms, which are not mutually compatible – this would result in markets being fragmented from one country to another or between groups using different standards; and
- (ii) using a US digital standard, which would have made it impossible to develop a European industry, as it would have had two drawbacks: a lack of experience and lower volume.

It therefore seems certain that the GSM has succeeded in creating a pan-European telephony service.

The development of the GSM has taken place in tandem with the diversification of supplies of cellular operators from a large number of European manufacturers. This trend has created a strong and effective European industry, able to export its technology successfully (about 150 operators worldwide have already adopted or are testing the GSM standard).

The role of a catalyst and accelerator of the development of mobile telephony in Europe, resulting in the creation of a dynamic telephone service industry throughout Europe, which has subsequently proved a successful exporter

In the first place, the Commission's active promotion of competition in the mobile telephony sector has resulted in strong and homogeneous development of mobile telephony in most European countries. Each Member State has always remained in charge of its own cellular licensing policy. However, the Commission has sometimes engaged in sustained bilateral action to ensure that the market is opened quickly (Italy, Belgium). In almost all cases, our information shows a rapid market development following the announcement of forthcoming competition, or once it has been introduced. The introduction of competition into the sector cannot be attributed to the Commission. Some countries have done it very early on their own initiative (United Kingdom, France). But the Commission has standardized the introduction of competition, thereby contributing to the European market becoming more homogeneous and more dynamic.

This broad-based action by the Commission for the development of the European mobile market and the adoption of the GSM standard has also contributed to strengthening the European cellular service industry. This has produced two results:

- (i) intra-European agreements, giving rise to a pan-European industry (agreements between Vodafone and SFR, Vodafone and E-Plus, Lyonnaise des Eaux and Mannesmann); and
- (ii) successful exports (South Africa, Poland, etc.).

Without a GSM standard, and without a dynamic European industry, it is likely that the US operators would have held the great majority of licences sold. Their advantages are experience of cellular telephony, significant financial influence and a large domestic market. In spite of the handicap of the standard, digital technology and a fairly dynamic market, they often have a presence in the consortia in Europe (Air Touch, BSC, US West). It therefore seems probable that outside Europe, the European industry would have had few successes. The know-how of the European operators has been turned to particularly good account in exports, because the standard adopted by foreign countries has been a European standard (the success of the GSM) and they have themselves been dynamic operators with a sound knowledge of the GSM standard. Through its role in promoting the GSM standard, and its role in the construction of a dynamic European industry, the Commission has therefore been partly responsible for the export successes of the European operators.

A contribution to the efficiency of the sector

The standardization of market conditions for mobile telephony services has made benchmarking among operators in the countries of the Union easier. Even if the market for each operator remains a national one, comparisons among markets are facilitated by their homogeneity. These comparisons serve to spur productivity, to reduce costs and cut prices, and could be described as competition via osmosis. In this respect, there has been a striking convergence in cellular rates over the past five years. It is probable that this competition by osmosis will continue to operate in areas such as interconnection terms, the establishment of fixed infrastructures, roaming rates, etc.

Before the adoption of the GSM, the analogue market involved major disparities among countries (the prices of terminals varying by a factor of ten between France and the United

Kingdom), and prices per minute were very different as between Germany and Sweden, etc. The Commission, through its induction activities which have resulted in standardizing and homogenizing the European market, has therefore contributed to the overall efficiency of the sector. This contribution has not had equal benefits for all operators, having tended to benefit most the least dynamic countries (France, Italy, Portugal, Belgium) which are thus enabled to rejoin the more dynamic. It will also be noted that the GSM operators in Europe are as efficient as the US cellular operators: in 1994 Vodafone, SFR and TMN had a turnover per employee of, respectively, ECU 340,000, 333,000 and 318,000 (see Table 5.1 and Figure 5.8) compared with ECU 327,000 for the US operator SBC Communications.

Table 5.3. Summary of effects on the mobile telephony segment

	Commission measures			External factors		
	Directives	Recommendations	Bilateral action	National regulators	Technological progress	Activity by key players
National infrastructures				■		
A majority of national operators				■		
Emergence of new players			○	□		□
Fall in prices and diversification of services on offer, along with a more marked penetration than was expected		●	○	□		
Emergence of a pan-European service offer		■				
Creation of a pan-European industry of equipment and servicing	●	□				
Development of added value services					□	

■ Strong motor effect. ● Strong facilitating effect.
 □ Moderate motor effect. ○ Moderate facilitating effect.

6. Data

In this chapter we define the main changes in the data transmission sector in Europe. In the last part, Section 6.3, we show how far these changes are attributable to European measures rather than to natural growth in the sector (as a result of factors which are also discernible in a global sense).

6.1. Context

6.1.1. The structural factors in the sector

Regardless of the Commission's measures, the data transmission sector has developed under the impact of several factors.

Standardization

The main standards have been approved at the international level (CCITT) and taken up by industry in general, both in Europe and in the other major regions. In particular, for suppliers the X.25 standard has been used as a reference for the packet transmission of data for more than ten years.

Actual standards for a large amount of specialist equipment, especially modems, have also been approved by the CCITT: most developments in this field have benefited chiefly the US industry.

Technological development

The large number of networks and modes of access has made it possible to offer higher rates of throughput and to improve the reliability of transmission, and this has directly resulted in an expansion of the services on offer.

Development of user enterprises

The growing needs of users for data transmission is closely associated with the increasing recourse to computers, a general phenomenon throughout the industrialized world, which is especially marked in North America.

The globalization of the economy, and the growth in services in relation to industry, have increased the need for international exchanges, consisting partly of trade in physical goods but also, and increasingly, exchanges of information.

Development strategy of the key players

The key national players, the PTOs, have endeavoured to promote new applications (e.g. Videotex) to make the best use of the new infrastructures available.

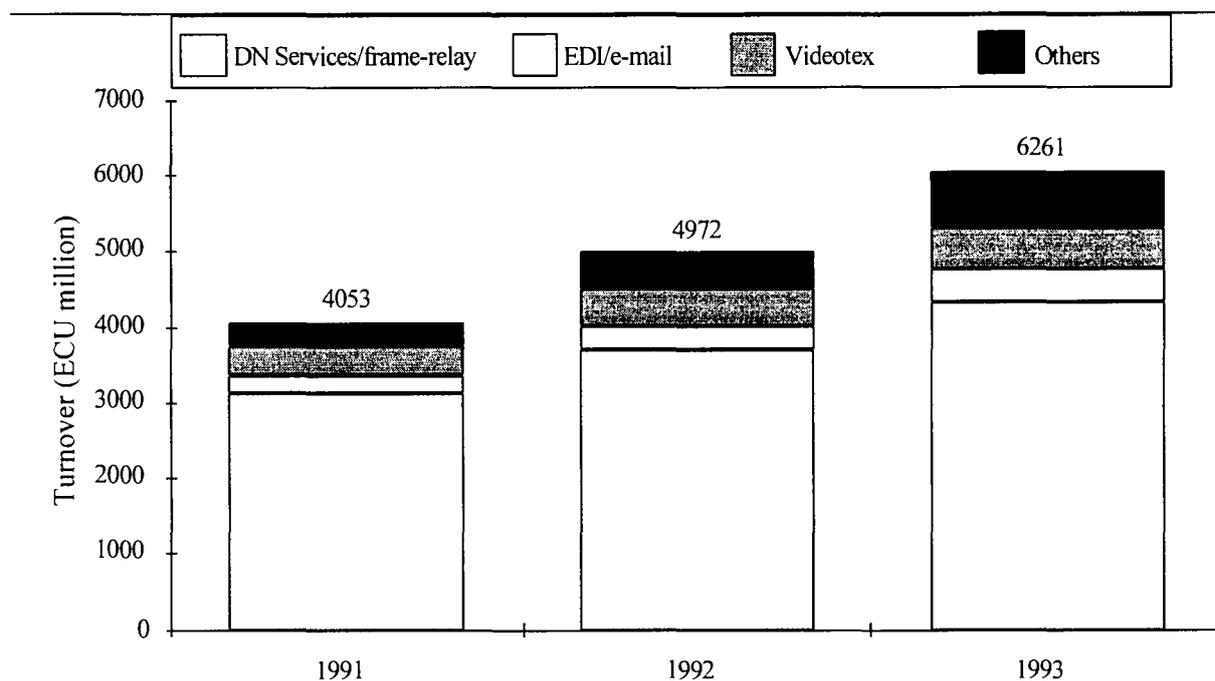
The world players, who are usually of US origin and come from the computer world (e.g. IBM, EDS, GEIS), have striven for development at the international level, and since the mid-1980s Europe has been one of their favourite areas for growth.

6.1.2. General trends on the European market

A rapid growth sector

The value added network services linked to data (VANS), with a market of ECU 6.3 billion in 1993 (see Figure 6.1) account for 6% of the total market in telecom services in Europe. This is a very dynamic sector with growth rates of 22% and 26% for 1992 and 1993 respectively. In this market, the share of data network services (headed by X.25 packet switching) is still predominant (70% in 1993), although its growth is less vigorous.

Figure 6.1. The market for VANS in Europe



Source: OVUM 1995.

The 1990 directive on services dealt directly with the development of this market, and recommended:

- (a) complete liberalization of the data transmission services;
- (b) the elimination of local barriers which require a minimum threshold of service activity to be maintained, the ratio turnover (service) : turnover (service + transport) to remain above a threshold level.

6.2. Detailed analysis

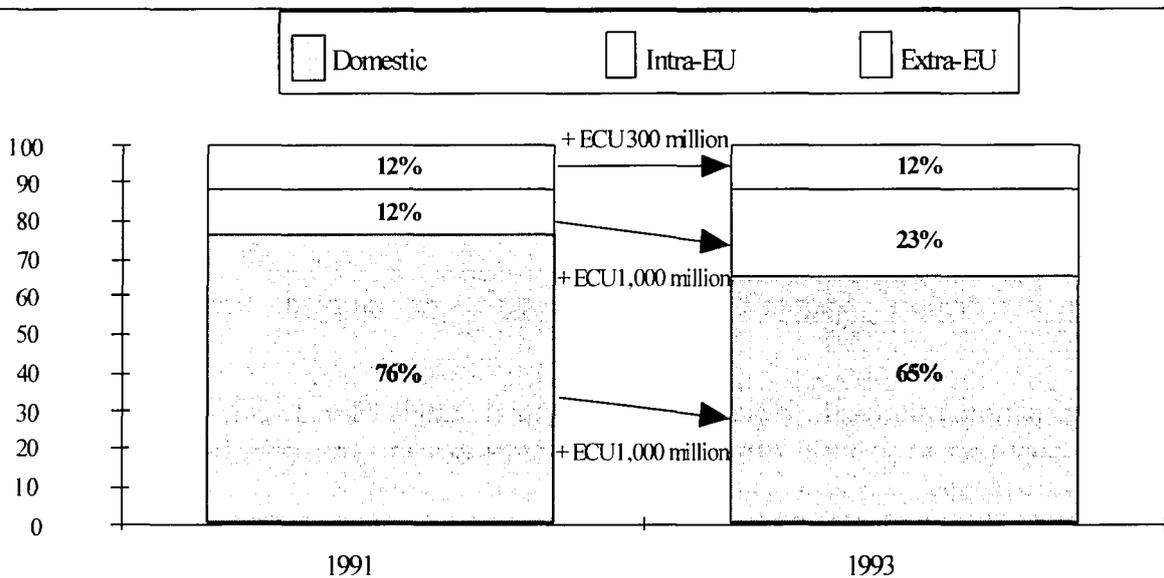
6.2.1. The internationalization of sales and activities

There has been an internationalization of sales and activities which has benefited EU operators

The internationalization of sales and activities is effective within the EU. Foreign operators, such as IBM, BT, AT&T, SITA, are present mostly through pan-European infrastructures and international services.

The trend towards internationalization is growing, as shown in Figure 6.2, and EU operators are losing market share on their domestic market.

Figure 6.2. The market share of VANS operators¹ in the EU



¹ Top 50.

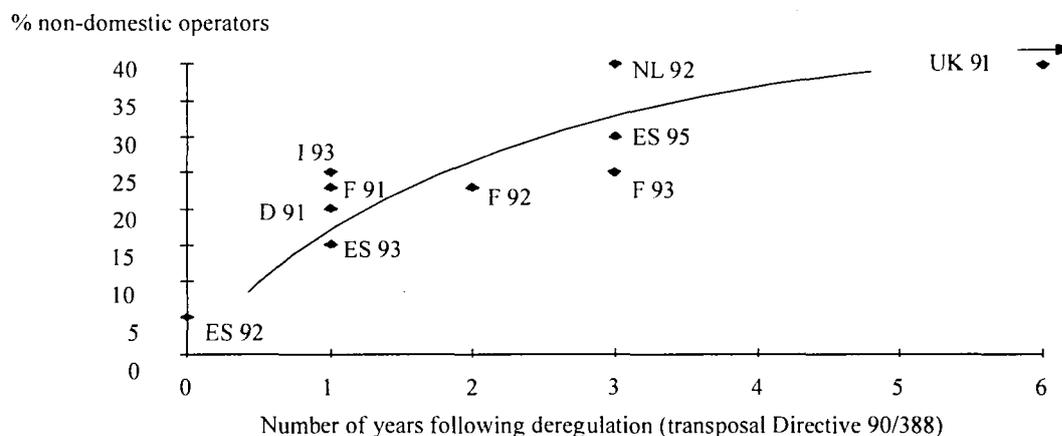
Source: OVUM 1994.

However, the losses on domestic markets are benefiting other EU operators, who are internationalizing the services they offer. Between 1991 and 1993 the turnover of EU operators rose by ECU 1 billion for local services and ECU 1 billion for international services, whereas the turnover of operators outside the EU grew by only ECU 0.3 billion at the same time. Hence, since the 1990 directive, the market has been becoming increasingly international, and European operators are benefiting.

A necessary time lag between deregulation and the actual entry of foreign operators into the new markets

The market is currently opening up, and all markets became open in 1995. However, following deregulation, it takes two or three years in each country (as can be seen in Figure 6.3), before there is any significant growth in competition.

Figure 6.3. Increase in the number of foreign operators in European countries as a function of the number of years following deregulation



Source: OVUM/Idate.

6.2.2. The internationalization of supplies and geographical effects

Contrasted realities

There are two distinct trends in the supply of materials for the production of data (see Table 6.1).

On the traditional domestic networks, the operators supply themselves for preference from national suppliers (e.g. TRT, OST and Alcatel materials for Transpac, Siemens material for Deutsche Telekom).

On the international data networks, on the other hand, the supplies come almost entirely from US operators (e.g. Stratacom, Tymnet, NET, NT, Telenet, used by IBM, Sprint, BT, Unisource, etc.).

Table 6.1. Main suppliers for data networks

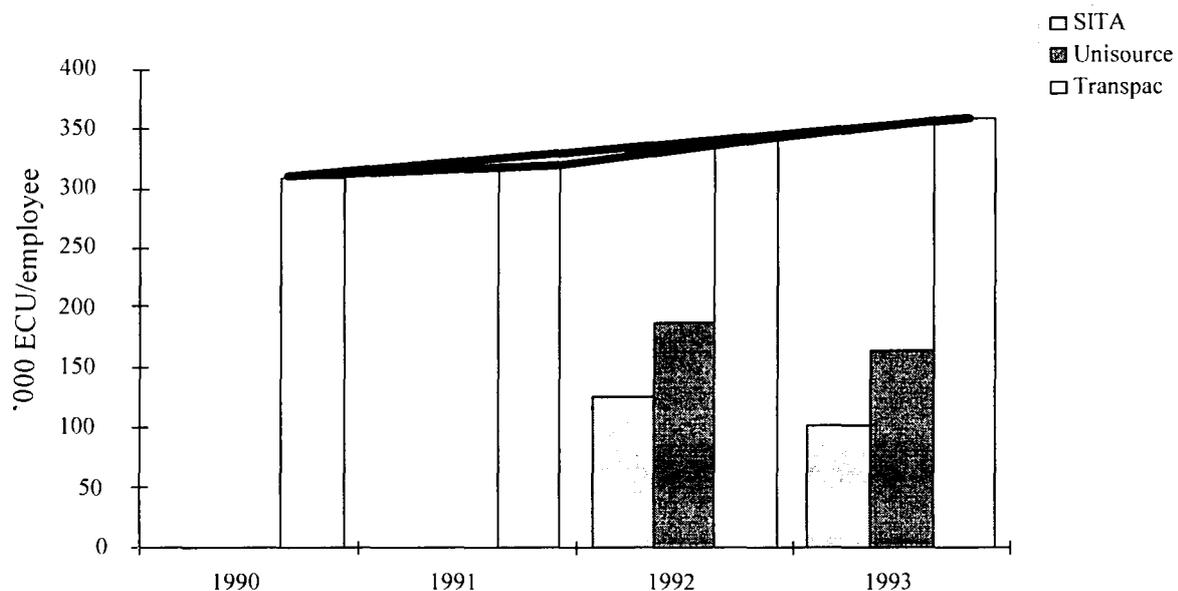
Network operators	Suppliers			
AT&T	Stratacom			
BT	Telematics	Stratacom		
Deutsche Telekom	Siemens	NT		
GEIS	Stratacom			
IBM	NET			
Infonet	NET			
SITA	NT			
Sprint	Telenet	NET		
Swift	NT			
Transpac	Alcatel	TRT	OST	Cap Sesa
Unisource	Stratacom			

6.2.3. Productivity and competitiveness

A 'competition' effect which is difficult to identify

Reliable relationships on the pattern of productivity of the operators in the light of external parameters are difficult to identify. However, Figure 6.4 illustrates the fact that competition appears to have stimulated Transpac, an operator which is already highly productive.

Figure 6.4. Income per employee on VANS services in Europe



Source: Idate.

6.2.4. Scale and dimension effects

Two distinct realities

The companies present are the traditional international operators who are familiar with the job and the market and who enjoy high investment capacity (e.g. IBM, BT, AT&T, Sita). This situation illustrates a scale effect which is crucial in supplying data transmission services.

As for dimension effects, two kinds of added value services are in evidence. In the first place, services akin to transmission, or the dimension effects with the latter, are significant. This applies to EDI and paging, in which, as shown in Figure 6.5, there are no independent service providers. In the second place, content services where there is no dimension effect with the transmission activity.

Figure 6.5. Top ten of the VANS in 1991

Data network services	EDI	Paging
- France Télécom	- GEIS	- BT
- Deutsche Telekom	- INS ¹	- Mercury
- Telefonica	- AT&T	- GEIS
- Reuters	- Intesa ²	- IBM
- BT	- IBM	- Infonet
- IBM	- Sligos	- STET
- Swift	- GSI	- Unisource
- Unisource	- Sprint	- GSI
- STET	- Unisource	- France Télécom
- GEIS	- EDS	- Telecom Danmark

¹ GEIS + ICL in the UK.

² IBM + Fiat in Italy.

Source: OVUM.

The 1990 directive, by liberalizing both transmission and VANS, did not therefore constrain these dimension effects.

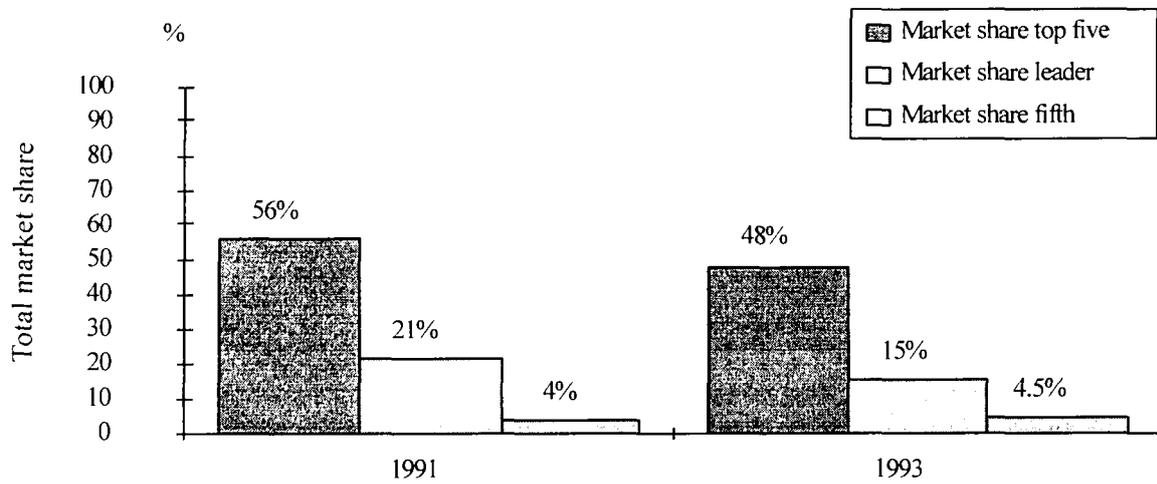
6.2.5. The concentration and development of competitive conditions

The introduction of competition has led to the deconcentration of the sector and the diversification of the players

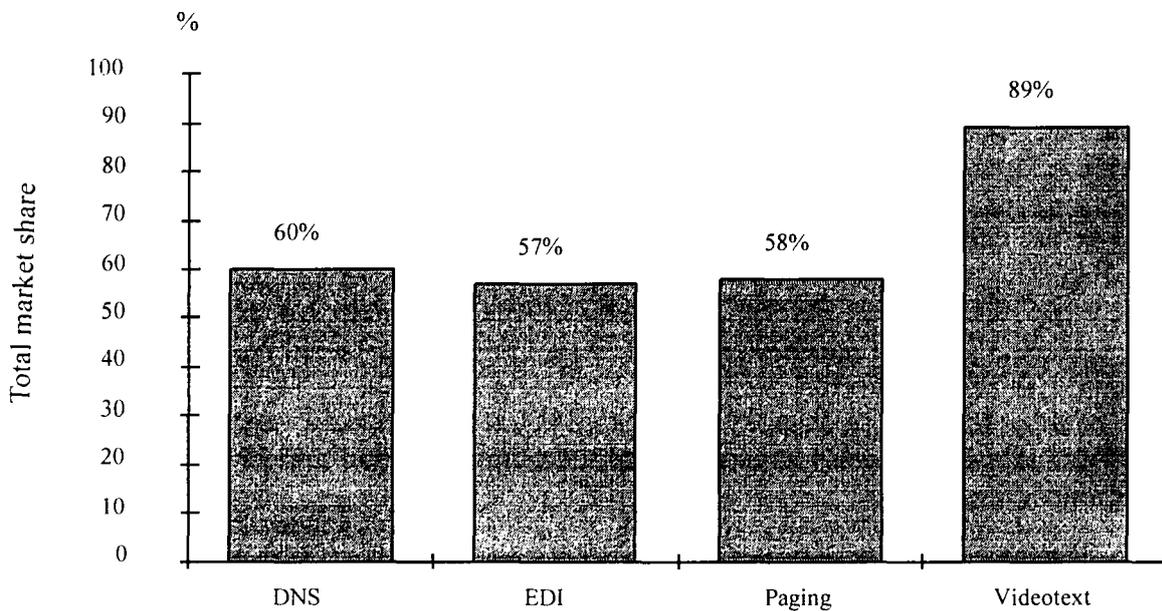
The introduction of competition has brought about a tendency for the added value services available to be split up into a number of different players, and for the standardization of the size of the dominant players, as shown in Figure 6.6. The market share of the five largest suppliers in the EU fell from 56% in 1991 to 48% in 1993, with a 6% loss in market share of the dominant operator. These levels of concentration are also found in the main VANS services (see Figure 6.7).

The trend among data network operators is to diversify into services with higher added value where there are advantages of scale: EDI and paging (see Figure 6.8).

There is still virtually no European on-line industry, the 'Europe On-line' service, the main initiative so far, was scheduled for launch at the end of 1995 (but failed before being launched). On the other hand, US competition is being stepped up: by the end of 1994 the Compuserve network already had 100,000 subscribers in Europe, and the US On-line service (in association with Bertelsmann) was scheduled for launch in Germany and France in early 1996. The lack of a directive on these services is therefore already being keenly felt.

Figure 6.6. Market share of the top VANS suppliers in the EU

Source: OVUM 1994.

Figure 6.7. Market share of the top five in 1991 according to type of service

Source: OVUM 1994.

Figure 6.8. Diversification of operators of data network services

Traditional DNS players	F relay	EDI	Paging
- Transpac	X	X	X
- Deutsche Telekom	X	X	X
- Telefonica	X	X	X
- Reuters	-	-	-
- BT	X	X	X
- IBM	-	X	X
- Swift	-	-	-
- Unisource	X	X	X
- STET	X	X	X
- GEIS	X	X	X
- SITA	X	X	X

Source: OVUM.

6.2.6. Cost and price reductions

Price effects not clearly discernible

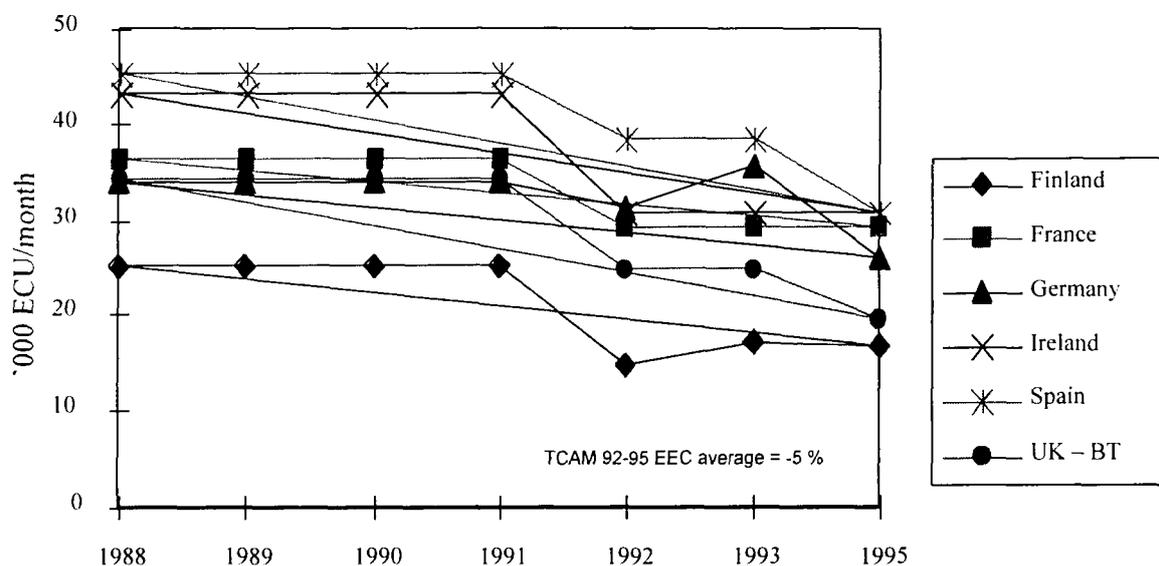
In 1992 there was an almost universal fall in the price of leased connections at the international level, prices having been stagnant for many years. This fall, shown for six countries in Figure 6.9, has been followed by an average fall in prices of 5% a year since 1995.

However, the falling price of international connections has not been reflected in the price of international X.25 communications, as Table 6.2 shows. Some variations can be distinguished in 1992 for the price of the kilo segment, but the variations are as much upwards as downwards, and for most operators the price of the kilo segment is still between ECU 2 and 3.

At the national level, price disparities for leased connections remain very marked (see Figure 6.10). Price ranges for domestic leased connections are between 1 and 10 for 2 Mbits/s and 1 to 14 for 64 Kbits/s.

Domestic X.25 tariffs are a poor reflection of the cost of leased connections (e.g. they are expensive in the United Kingdom), and they depend on the operator's attitude to the positioning of his X.25 network services and dedicated lines, and on the degree of competition on the market. In Spain, for instance, Telefónica introduced a new tariff offer in 1994, two years after BT had bought up the Santander Bank, resulting in a two-thirds cut, in some cases, of the cost of X.25s.

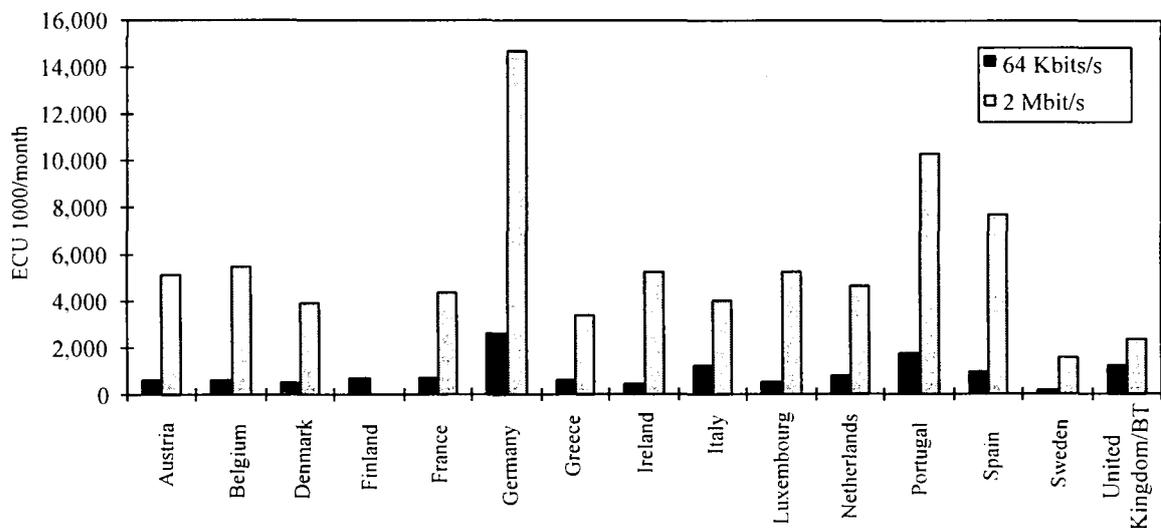
Figure 6.9. Average cost of 2 Mbits/s semi-circuits from certain countries to all other EU countries



Source: Idate.

Table 6.2. Trend in prices of international X.25 transmissions between 1988 and 1995

Country	% price change 1988-95
Germany	15
Austria	0
Belgium	0
Denmark	7
Spain	-8
Finland	-9
France	22
Greece	0
Ireland	0
Italy	-13
Netherlands	56
Portugal	-4
United Kingdom - BT	56
Sweden	0
Switzerland	0

Figure 6.10. Price of leased domestic connections in 1995

Source: Idate.

6.3. Conclusion

6.3.1. Key trends identified

The key trends identified in the field of data services in Europe during recent years are therefore:

- a splitting of the market, which has mainly benefited the major historic European operators (in the context of their internationalization strategy, following the example of Transpac), and also players of US origin;
- a pronounced opening of the market, enabling foreign players to apply directly for licences outside their countries of origin (unlike what we note in, for instance, the case of mobile telephones);
- the maintenance, and indeed the strengthening, of European industry, at the expense of the specialist US groups who have been trying since the mid-1980s to build up their presence on the European market;
- a continuing marked dependency on US manufacturers as regards the supply of specialist equipment, especially end point equipment and the private networks;
- the establishment of pan-European end-to-end networks and services to ensure that systems are interoperational.

These trends are illustrated in Figure 6.11.

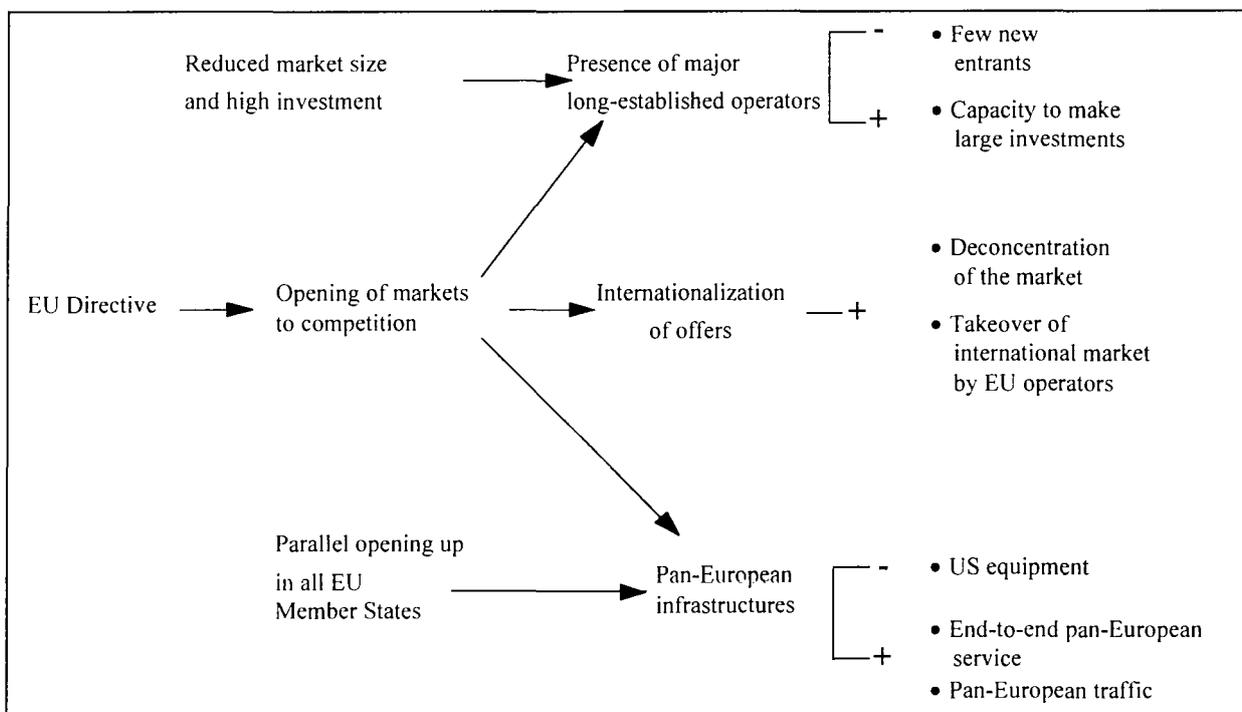
The EU directive on services, and its transposition in the various countries, has enabled markets to be opened up to competition. The first consequence of the opening up of markets has been the internationalization of offers. EU operators have lost market share on their domestic markets. However, the losses on the domestic markets have taken place to the advantage of EU operators, who have internationalized their offers. Finally, the market being a positive one overall (with a growth rate of over 50% in two years), the earnings of EU operators have risen considerably (+ ECU 2 billion in two years).

The EU directive on services has enabled operators, through the virtually simultaneous opening up of all markets to competition, to devise strategies based on the deployment of international infrastructures. These infrastructures provide the end-users with pan-European end-to-end services.

On the other hand, the emergence of new networks of international data has not benefited European manufacturers, as for the moment the international infrastructures consist almost entirely of equipment of US origin.

The very sizeable investment called for in setting up these infrastructures, and the relatively modest scale of the markets connected with them, has dampened the zeal of new operators and confirmed the predominance on this market of the major historic operators who possess significant financial capacity.

Figure 6.11. Data: conclusions



6.3.2. Changes attributable to the single market

Each of the major trends identified depends more or less heavily either on the Commission's measures or on the 'external' factors listed in the introduction to this part. Table 6.3 attempts to bring out the weight of each of these factors by distinguishing, as for the other sectors, between activities which have had a motor function (either strong or moderate) and those which have had a facilitating role.

As regards the fragmentation and the opening up of European markets (especially through the directive on services), it is clear that the Commission's measures have played a crucial galvanizing role, while progress in standardization and technology has naturally had a facilitating role.

As for the reinforcement of the European industry, this is due both to certain Commission measures (above all the special conditions in the Services Directive on the grant of licences) and to the strategies of the European players themselves (see Part III).

The dependency on US suppliers is, of course, largely due to the shortage of European supplies. The European Commission must without doubt focus its endeavours on enhancing the availability of European network equipment supplies.

Finally, the presentation of a pan-European offer is dependent on a combination of many different factors. It seems, however, that the Commission's measures have tended to play a facilitating role, while the 'external' factors (especially standardization and strategies of players) have been the most decisive. Transpac in particular has definitely relied on regulatory advantages to put into effect a strategy aimed primarily at creating an international network from a national base which is already very strong.

Table 6.3. Impact of the Commission's measures on the data sector

	Commission measures			'External' factors		
	Directives ¹	Recommendations ²	Horizontal measures ³	Standardization	Technology	Strategies of players
Fragmentation of the market	■		○	■		
Opening up of markets	■	●		□	□	
Reinforcement of European industry	■					■
Dependency on US manufacturers						●
Pan-European networks and services	●	●		■	●	■

■ Strong motor effect. ● Strong facilitating effect.
□ Moderate motor effect. ○ Moderate facilitating effect.

¹ Directives on Services (90/387) and ONP Leased Lines (92/44).

² Council Recommendation of 5 June 1992 (92/383).

³ Articles 85, 86, 90 of the Treaty on European Union, and Merger Ruling.

7. Voice telephony

7.1. Context

The total turnover of traditional public switched telephone network (PSTN) services, amounting to ECU 80 billion in the EU in 1995 (including 10 to 15% for international calls), still accounts for 80% of the earnings of telecommunications operators.

7.1.1. Inventory of measures taken by the Commission

A market still largely reserved

Two interventions by the Commission have exerted an impact mainly on the development of this market:

- (a) The broad interpretation of the concept of the closed user group (CUG) adopted in various countries means that offers can be made for the re-routing of traffic and VPNs internationally. This interpretation shows marked disparities from one state to another: for instance, Germany has opted for a strict definition of the concept of CUG, with France adopting a more flexible position.
- (b) The Council Resolution of 22 July 1993 on the review of the situation in the telecommunications sector set the date for liberalizing the telephony market as 1998 (with transitional periods for some Member States).

7.1.2. Structural factors in the sector

Other factors not of a regulatory origin have influenced the sector.

The development strategies of independent entrepreneurs

The development entry strategy of US entrepreneurs is based on brokerage in international rates: call-back and re-routing offers. These strategies are practised initially by US, then by national players.

The development strategies of the dominant players

- (a) An aggressive internationalizing strategy: to ensure growth and offset the market share losses which can be forecast on their own market.
- (b) A defensive strategy: the re-balancing of rates and the development of loyalty offers (these two points are explained in Part III).

Technological change

Several technological developments have resulted in new services being placed on the market (call-back, re-routing, VPNs) based on the infrastructures of the public operators:

- (a) digitization, which enables the necessary information for re-routing to be transferred;
- (b) compression, which means that more traffic can be directed along fewer infrastructures, reducing the cost of transport;

- (c) intelligent routing, reflected in new functions developed on the Private Automatic Branch Exchange (PABX), represented in the emergence of intelligent operating centres.

7.2. Detailed analysis

In the rest of this chapter we will be looking at call-back services, the re-routing of calls and calling cards. It is important to use qualitative analysis here, because of the scarcity of information and of temporal series about services which have emerged only very recently.

7.2.1. The internationalization of sales and activities

Offers which have emerged recently have only so far captured a marginal share of the turnover of the key players

The market for calling cards is extremely open to foreign operators, who have been first in offering them in Europe, with US operators now holding 36% of the total stock (see Figure 7.1).

There are virtually no cards available for the whole of Europe. European operators such as BT offer calling card services, but they are sold only in the countries of origin of the operators. So far, the US operators have been selling mainly to expatriates (most of the cards sold in the UK are used by employees of the United States army). In 1994 Unisource was the first company to introduce calling cards. Two other pan-European operators, Ameratel and Interglobe, have less than 3% market share between them.

Call-back activities are intended for the international communications market, with a preference for communications directed to the American continent. In France, call-back emerged in 1991 and experienced real growth from 1992 onwards, reaching a turnover figure of FF 100 million in 1994, the equivalent of 0.7% of France Télécom's international turnover.

Re-routing services, introduced more recently (Spring, 1994 in France and the United Kingdom, 1995 in Germany and the Netherlands), already account for a more significant share. In France Sprint has a turnover of FF 75 million via its Fondirect service, which represents about 0.5% of the international traffic of France Télécom.

In France overall, France Télécom estimates that 3–5% of its turnover on international business has been eroded by foreign operators and re-routing companies.

7.2.2. The internationalization of supply and geographical effects

The internationalization of supply has benefited US operators

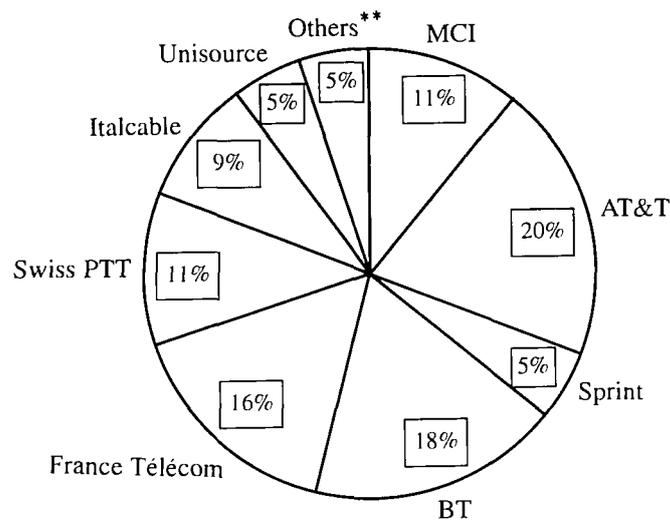
The supply question which arises here is the purchase of minutes: who is selling the traffic.

In call-back activities, minutes are bought by local companies from US operators, involving a loss of traffic and therefore of turnover for the PTOs. This lost turnover is partly offset by the system of allocation taxes now practised among the international operators. However, this system is obsolete and is likely to be overhauled in the near future.

In the re-routing activity of Sprint or the equivalent for BT or C&W, minutes are bought in the United States or in the United Kingdom.

Figure 7.1. Market share* of calling card operators in Europe

Top five = 75% of the market



* in numbers of cards.

** DT, Italtel, Ameratel, Interglobe.

Source: Idate.

7.2.3. Scale and dimension effects

Large operators exist alongside small companies

Size plays a significant role in the business of calling cards related to traditional telephony. The major traditional operators are virtually the only players.

Call-back is an activity which generates significant scale effects. The price obtained by the call-back company depends directly on the total volume generated. In France, ITC, the biggest retailer, offers the most attractive prices.

The rule of proportionate returns plays an important role in the scale effects generated by the US operators⁵ and is incorporated in the calculation of production costs for minutes of communications.

7.2.4. Concentration and development of competitive conditions

The introduction of competition has led to a reduction in prices and has increased price offers

On the calling card market AT&T, MCI and Sprint control 35% of the European market (in numbers of cards).

The call-back companies are mostly small, independent companies which engage in retail selling of minutes of telephone time. However, call-back services are designed only for sections of SMEs and individuals, as they are too inflexible for large organizations. The large companies prefer the highly functional virtual private networks (VPN) or re-routing services.

In the VPN segment, some pan-European services are emerging (BT's Concert, France Télécom's GVPN, Unisource) and the sector is becoming heavily concentrated, tending to the establishment of three global offers, with linkages between the extra-EU and intra-EU ones:

- (a) AT&T/Unisource;
- (b) Deutsche Telekom/France Télécom/Sprint;
- (c) BT/MCI.

7.2.5. Reduction in costs and prices

The emergence of new players on the international communications segment has had an impact on the prices per minute of international calls. Figure 7.2, showing the development in the prices of calls to the United States, illustrates this very clearly. Prices fell on average by 8% a year between 1988 and 1995. However, the fall was very uneven between 1988 and 1991 (an average annual fall of 1%) and 1991 and 1995 (an average annual fall of 13%). The transition between these two periods is in fact marked, between 1991 and 1992 (the breakpoint), by the emergence of call-back operators and resellers of calls in most EU countries. The competition effect is very evident here.

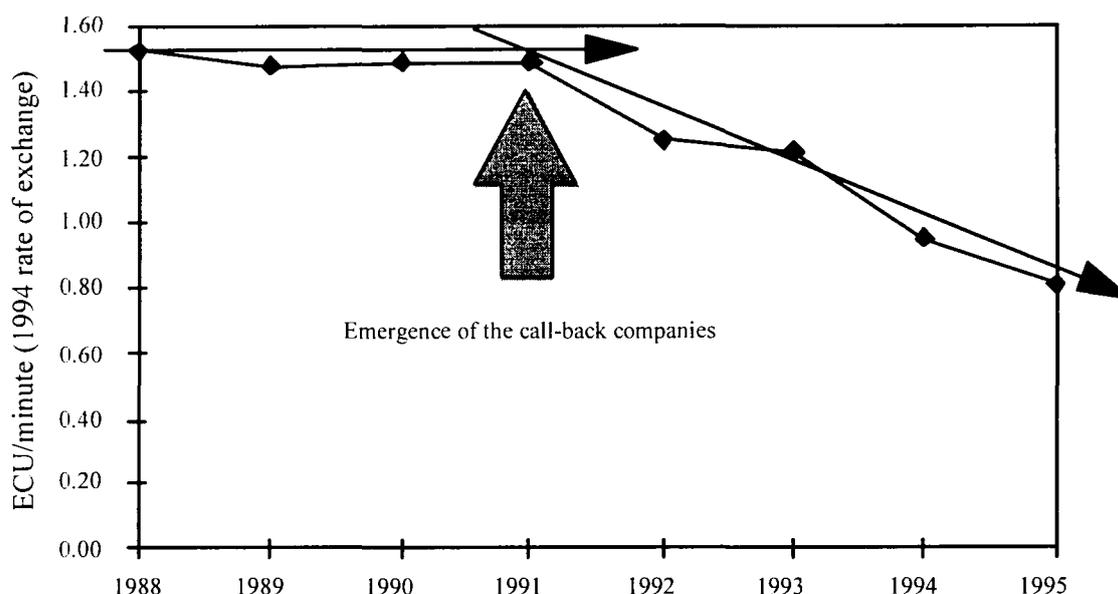
The fall in prices is observable throughout the EU countries (see Table 7.1 and Figure 7.3). It has led to a relative standardization in pricing (see Figure 7.4), which has most benefited the users in countries which started off with the highest prices. For example, the following dramatic falls have taken place:

- (a) Belgium: 57% in two years;
- (b) Spain: 54% in three years;
- (c) Luxembourg: 63% in four years.

⁵ The three US international operators (Sprint, MCI and AT&T) divide the traffic coming in from another country in proportion to the volumes of traffic sent towards that country. So, the more traffic one of the three operators sends to a third country (via call-back or calling cards), the more it will get in return. On this return traffic, it will invoice the sending country according to the rule for allocation taxes in force, and will thus increase its turnover. The prices per minute offered by the operator will also take account of this extra turnover, and will be calculated as a 'net settlement'.

As we see from Table 7.1 and Figure 7.3, the emergence of the call-back companies on the one hand, and the Council Resolution on the other, have had a marked impact on 'price convergence' and on the standardization of European international calling rates.

Figure 7.2. Development in the average price of calls to the United States from EU countries



Source: Idate.

Table 7.1. Trend in the price of calls to the United States

	88-95 (%)	88-91 (%)	91-95 (%)
Germany	-10.5	0.0	-17.6
Austria	-4.5	0.0	-7.8
Belgium	-13.1	0.0	-21.7
Denmark	-10.5	0.0	-17.6
Spain	-10.9	-0.7	-17.9
Finland	-6.3	0.0	-10.8
France	-5.8	1.6	-11.0
Greece	-3.8	0.0	-6.5
Ireland	-9.7	0.0	-16.3
Italy	-10.4	0.0	-17.5
Luxembourg	-11.5	0.0	-19.2
Netherlands	-9.2	-8.1	-10.1
Portugal	-6.5	0.7	-11.6
Sweden	-1.5	0.0	-2.6
United Kingdom	-9.1	-6.9	-10.7
Average	-8.2	-0.9	-13.3

Figure 7.3. Trend in the price of calls to the United States (extreme and average examples)

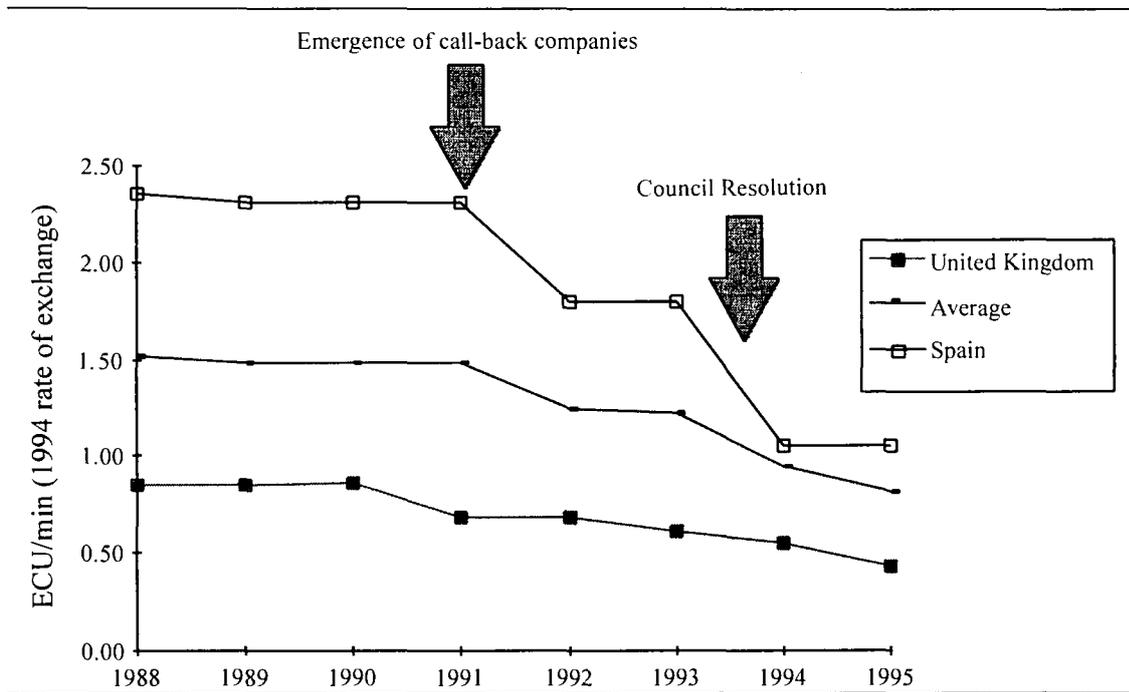
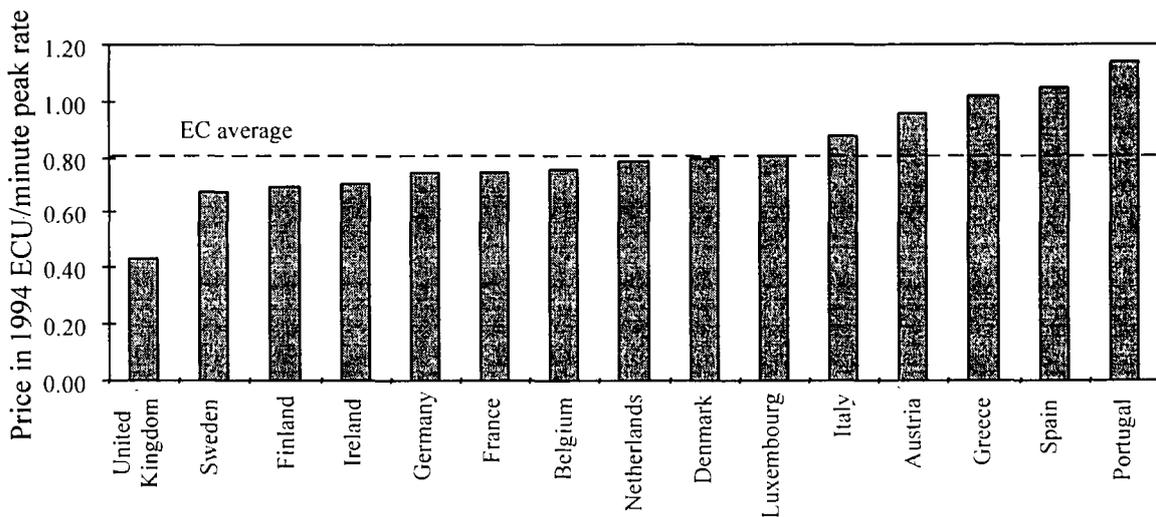


Figure 7.4. Price of calls to the United States in 1995



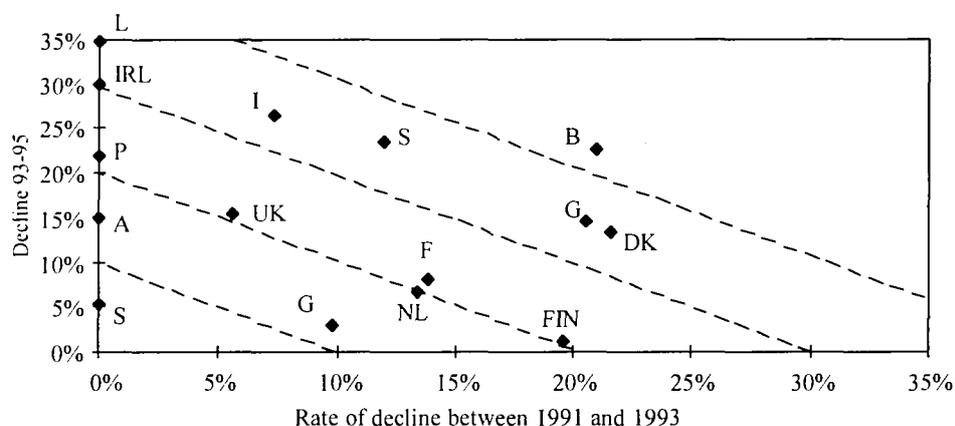
Source: Idate.

Only two countries have experienced significant falls between 1988 and 1991, caused by regulatory reforms:

- (a) a 20% fall in communications prices in the United Kingdom following the abolition of the BT/Mercury duopoly in 1991, which allowed new players to enter the market (call-back companies, resellers);
- (b) a 23% fall in communications prices in the Netherlands, following the 1989 Law on the organization of the telecommunications sector.

The general fall in prices after 1991 has been spread variably over time from one country to another, as shown in Figure 7.5.

Figure 7.5. Comparative fall in the cost of calls to the United States in the periods 1991–93 and 1993–95



Source: Idate.

The second effect set off by the arrival of the new entrants is the increase in the price offers made by various operators. In France, for instance, France Télécom has the following offers:

- (a) international virtual private network (Colisée International);
- (b) tariff packages (Modulance, Primaliste);
- (c) calling cards.

It is important to emphasize the tax factor. The difference in VAT between the United States and European countries increases the attractiveness of call-back services. For instance, Mastercom, a call-back company in France, offers reductions to the US which rise from 52% without tax to 60% inclusive of tax if VAT is included. The reduction for calls to the other countries of Europe rises from 24% without tax to 36% with tax.

7.2.6. Interrelative ties

Many partnership agreements

The need to find local networks for selling calling cards (in order to reach a wider public) has encouraged foreign operators to use national players for distribution. These national players are recruited either within the telecommunications sector (e.g. the distribution of AT&T cards

by Mannesmann in Germany) or outside it (e.g. negotiations by Unisource with travel agencies and airlines).

Competition in the market for calling cards impels the operators to differentiate their services by providing value added services. They become more complex in terms of content, providing information services such as MCI's World Phone (financial information) or AT&T's World Plus (travel advice and paging).

Invoicing is another area of differentiation, and the operators join with banking groups in order to invoice calling cards:

- (a) BT with Visa;
- (b) Mercury with American Express.

Hence, the introduction of competition has led to the emergence of new players indirectly involved in the sector.

7.3. Conclusions

7.3.1. Major trends observed

Emergence of new services

VPNs designed for large multi-site enterprises, loyalty pricing schemes for all segments.

Emergence of new players

Arbitrage services are offered by small domestic companies, whereas calling cards or re-routing of calls, which require heavy investment, are offered by traditional telecommunications operators (in the United States or the United Kingdom).

Reaction of the key operators: two approaches

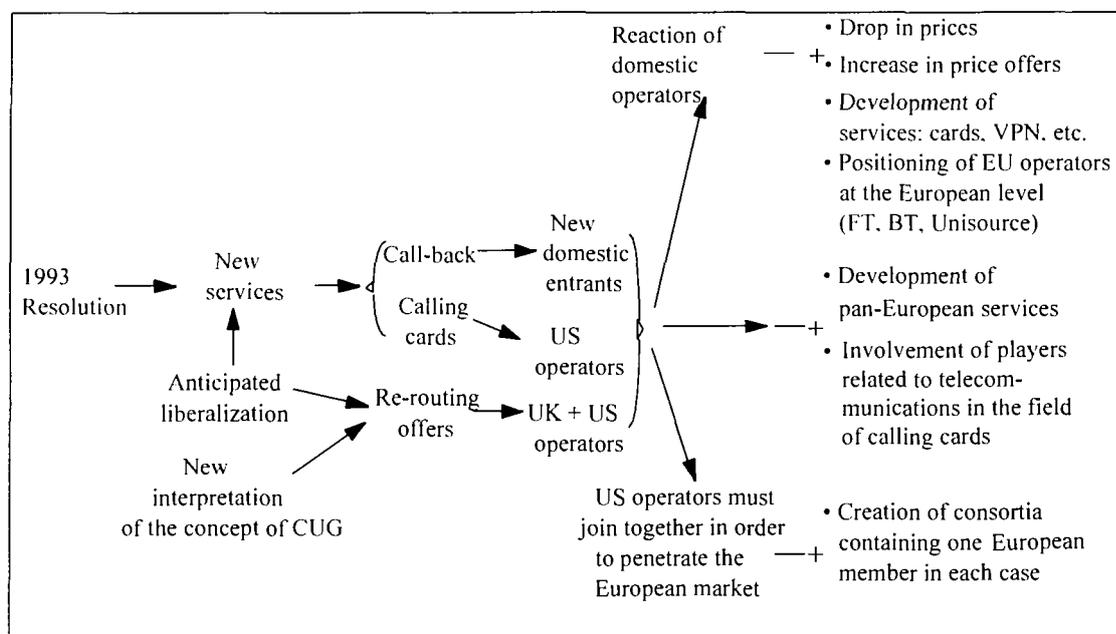
- (a) Defensive: re-balancing prices and developing loyalty pricing schemes. The increasing intensity of competition which has resulted has set off a reaction among European operators, who have reduced the cost of international calls, increased their price offers, and developed services linked to telephony (calling cards, virtual private networks, etc.), positioning themselves internationally.
- (b) Aggressive: a strategy of forming alliances and developing subsidiaries abroad. The determination of US operators to penetrate the European market, on the one hand, and the need to have European or indeed world infrastructures in order to offer services on the international scale, on the other hand, has led to the creation of world consortia with one or more European players in each consortium.

Net gain for the consumer

- (a) A fall in international call charges: these charges (to New York) fell on average by 42% in all European countries between 1990 and 1995. There has been a fall in prices for long-distance calls following the price re-balancing exercise (see Chapter 6).
- (b) Availability of pan-European services.

Figure 7.6 summarizes what has been learnt about changes in the voice telephony sector and the influence of the Commission's measures on these changes.

Figure 7.6. Voice telephony: conclusions



However, the lack of liberalization in infrastructures in Europe is now tending to hold back the development of pan-European voice telephony services such as cards or IVPN (international virtual private networks). Moreover, access by the historic operators to dedicated lines is felt by some new entrants to be discriminatory (see the Esprit Telecom case study in Appendix A.2). The year 1998 is therefore being awaited with impatience by the new entrants, who will then be able to bypass the routes presently open to them and use their own networks. This will have a definite impact on costs.

In the present situation, and until that date, the domination of the PTOs in their own countries is assured, for the following reasons:

- (a) the US operators (MCI, ATT, Sprint) are obliged to route calls via nodes which are not economically optimal, and therefore offer international prices (cost per minute) which are not competitive with those offered by the domestic operators;
- (b) the European operators benefit from the distribution of their cards, which are used by Europeans abroad and are invoiced at very advantageous rates. (The distribution of the cards is a means of deploying abroad without infrastructures.)

7.3.2. Changes attributable to the single market

The Council Resolution of 1993 calling for the liberalization of telephony in 1998 has had an accelerating effect:

- (a) on the re-balancing of prices undertaken in the European countries (a drop in international and long-distance call charges and a rise in subscriptions),
- (b) on the development of loyalty pricing schemes (pricing options),

(c) on the development of European alliances undertaken by the PTOs.

The liberal interpretation of the concept of CUG has had a facilitating effect:

- (a) on the development of VPN offers intended for large multi-site companies,
 (b) on the development of competition focused on re-routing services.

Table 7.2. Impact of the Commission's measures on the voice telephony segment

	Impact of single market			Other impacts		
	Services Directive	ONP 90/387 92/44	1993 Council Resolution	Entrepreneur strategies	PTO strategy	Technology
1 Fall in prices	●		■	□	■	
2 New players	○	○	■	■		○
3 Internationalization of players			■		■	
4 Pan-European services	○	○				○
Global impact	○	○	■	■	■	○

■ Strong motor effect. ● Strong facilitating effect.
 □ Moderate motor effect. ○ Moderate facilitating effect.

8. Satellites

In this chapter we identify the main changes in the satellite services sector in Europe.

In the last part of this chapter (Section 8.3) we determine how far these changes are attributable to the European measures by comparison with natural developments in the sector, associated with globally identifiable factors.

8.1. Context

8.1.1. The structural factors in the sector

Irrespective of the Commission's measures, the satellite services sector has evolved under the influence of several factors:

Technological change

- (a) Progress in compression, together with the numbering of the signal, have made it possible to gear down transmission capacity, which has resulted both in a considerable development of services on offer and in a reduction in the size of receiving equipment (e.g. VSAT aerials).
- (b) In connection with the progress mentioned in point (a), direct broadcasting has spread, both in the audiovisual field (for residential viewers) and in telecommunications (for professional use).

A change in habits

- (a) The growing need of users for private networks has prompted a quest for alternative solutions appropriate to each case. Especially where point-multipoint connections are concerned, satellites seemed to be one of the best solutions.
- (b) Because satellites can reach some areas which are difficult for land networks to reach (for topographical or economic reasons), they are increasingly being used as relays for cable or wire broadcasting (for example, multipoint multichannel distribution service (MMDS) for television or the future low earth orbit (LEO) networks for global mobile communications).
- (c) The development of telecommunications in the emerging countries (the Eastern Bloc and Latin America) depends, in meeting initial demand (in this case professional demand), on networks which can be rapidly established; mobiles and satellites then seem to be the most immediate answer.

Development strategy of the key players

The 'historic' satellite operators are increasingly becoming 'capacity suppliers' and depend largely on the suppliers of content or service providers who lease access; consequently, the new entrants seek to combine the various activities in the field, especially through financial partnerships (e.g. the capital organization of LEO projects or TV broadcasters).

8.1.2. General trends in the European market

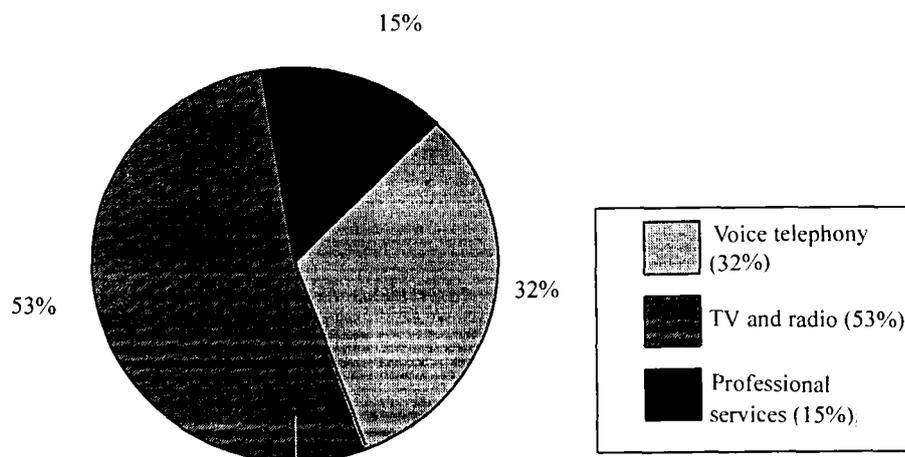
The satellite sector can be divided into two segments: the space segment and the terrestrial segment.

The space segment is occupied by operators of satellite systems (Intelsat, Astra, TDF, etc.) which own, manage and exploit satellites and resell capacity. In 1995, the income of operators of satellite systems in Europe amounted to ECU 1.2 billion.

The terrestrial segment is occupied by companies providing services by buying satellite capacity:

- (a) television and radio services, which account for most of the earnings of satellite operators (see Figure 8.1 which presents their share of the market);
- (b) voice services to transport the traffic of telephone calls, mainly international; and
- (c) professional services (TV for professional use and VSAT), which are rising steadily (see Figure 8.2).

Figure 8.1. Use of satellite capacity in 1994 (in percentage of turnover)



Source: CIT research.

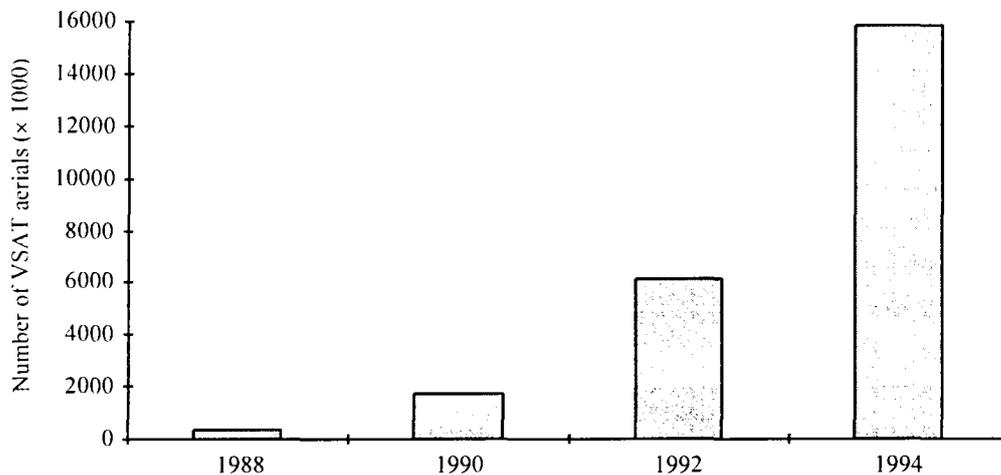
The field of satellite telecommunications is awash with regulations. The Green Paper of December 1990 on satellites (COM (90) 490) and the Council Resolution of November 1991 recommend:

- (a) the liberalization of the terrestrial segment;
- (b) unrestricted access to the capacity of the space segment and commercial freedom for the operators of satellite systems;
- (c) mutual recognition of national permits or licences.

The Satellite Terminal Equipment Directive (93/97/EEC) was published in 1993. The year 1994 saw the emergence of the Directive on Satellite Services and Terminals (94/46/EEC) to put an end to exclusive and special rights and to liberalize the regime of satellite services and equipment.

The Directive on Television Without Frontiers (89/552/EEC) was published in 1989, to liberalize the supply of cross-border satellite television services.

Figure 8.2. Growth in the number of VSAT aerials in Europe



Source: Comsys.

8.2. Detailed analysis

8.2.1. The internationalization of sales and activities

A pan-European market

As Tables 8.1 and 8.2 show, there exists pan-European satellite services market. Of the 12 operators (apart from Inmarsat) which operated above Europe in mid-1994, seven were offering pan-European coverage and two (Eutelsat and Astra) were making it their prime target.

European players are first in the field for total satellite capacity available above Europe, with a share of transponders which by mid-1994 had reached 83%.

Operators outside the EU have only a very marginal share of the VSAT segment. As for the terrestrial segment, the services are sold almost exclusively by companies from within the Community (the market share of VSAT operators outside the EU is below 5%). Finally, for the space segment, the only non-European supplier is Intelsat, which holds 15% of the market, but where European operators hold 40% (see Figure 8.3).

The television services are mainly national programmes, and of the 180 television channels using the satellite in Europe, the pan-European channels (CNN International, MTV Europe, etc.) represent less than 5% of the turnover.

The use made by the PTOs of satellite capacity for transmitting voice messages is primarily – 84% – for international calls.

Table 8.1. Satellite systems covering Western Europe in mid-1994

	Coverage		
	Pan-European	Domestic (a single country)	Europe and the rest of the world
Eutelsat			
Intelsat			
Astra			
DFS-1&2, TV-SAT2			
Telecom 1&2			
Hispasat			
Tele-X			
PanAmSat: PAS1			
THOR			
TDF 1&2			
Stasionar4			
ORION			
Italsat			
Turksat			

Key:

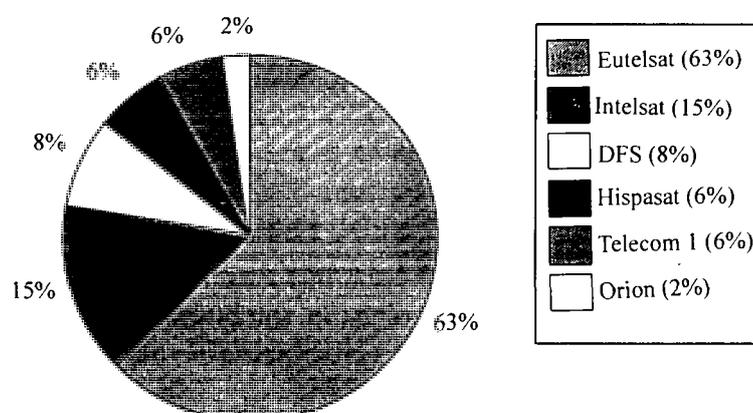
	= Principal market targeted.
	= Secondary market targeted.
	= Not active on this market.

Source: Euroconsult, Logica, Idate.

Table 8.2. Satellite systems covering Western Europe in mid 1994

Satellite capacity in Europe										
Operator		Country	No. of operational satellites			No. of transponders				
			End 92	Mid-93	End 93	Mid-92	End 92	Mid-93	End 93	Mid-94
Eutelsat	Consortium Europe	Europe	5	8	7	7	112	150	136	128
Intelsat	Consortium Monde	World	9	9	10	9	106	126	132	108
Astra	Société Européenne des Satellites	Luxembourg	2	2	3	3	32	32	50	50
DFS-1&2 TV-SAT2	DT	Germany	3	4	4	4	31	44	44	44
Telecom 1&2	FT	France	3	3	2	2	28	28	29	29
Hispasat		Spain	0	1	3	3	0	15	28	28
Tele-X	Swedish Space Corp.	Denmark	1	1	1	2	7	7	7	12
PanAmSat: PAS1	Panamsat	US	1	1	1	1	6	6	6	6
THOR	Telenor	Sweden/Finland	0	1	1	1	0	6	6	6
TDF 1&2	TDF	France	2	2	2	2	4	4	4	4
Stasionar4	Intersputnik	Russia	4	4	4	1	4	4	4	1
ORION	ORION Satellite Corp.	UK/Japan/ Canada/US/Italy	0	0	0	0	0	0	0	0
Italsat	Telecom Italia	Italy	1	1	1	1	6	6	6	6
Turksat	Turkish post and telecommunication service	Turkey	0	0	0	0	0	0	0	0
Total			31	37	39	36	336	428	452	422

Source: Euroconsult, Logica, Idate.

Figure 8.3. Market share¹ of satellite system providers for VSAT in Europe

¹ According to the number of terrestrial stations using the systems.

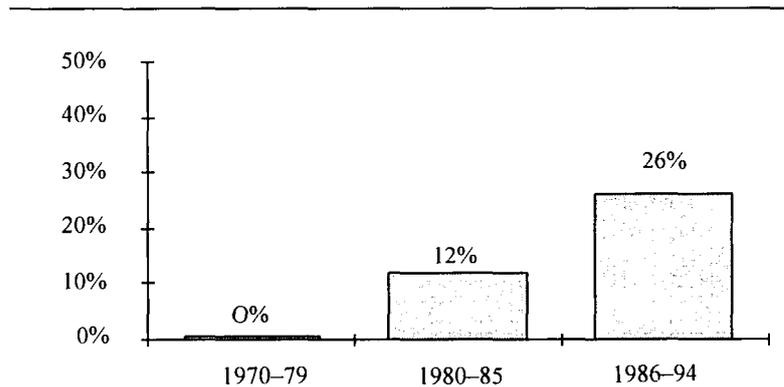
Source: Idate.

8.2.2. The internationalization of supply and geographical effects

The growing share acquired by constructors is now threatened

Figures 8.4 and 8.5 show that the growth of the space industry has benefited European constructors. The share of the European industry on the world satellite market went up from 0% in the 1970s to 26% in the period 1986–94.

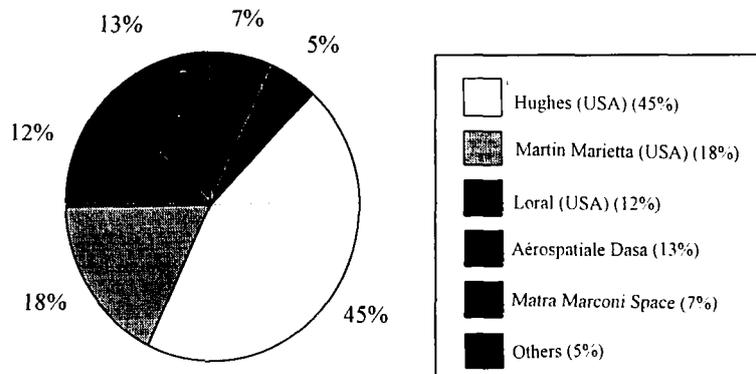
Figure 8.4. Market share¹ of European satellite constructors in the world



¹ In number of launches.

Source: CIT research.

Figure 8.5. Market share of constructors of satellite systems in the world in 1994



Source: Tribune Desfossés 1994.

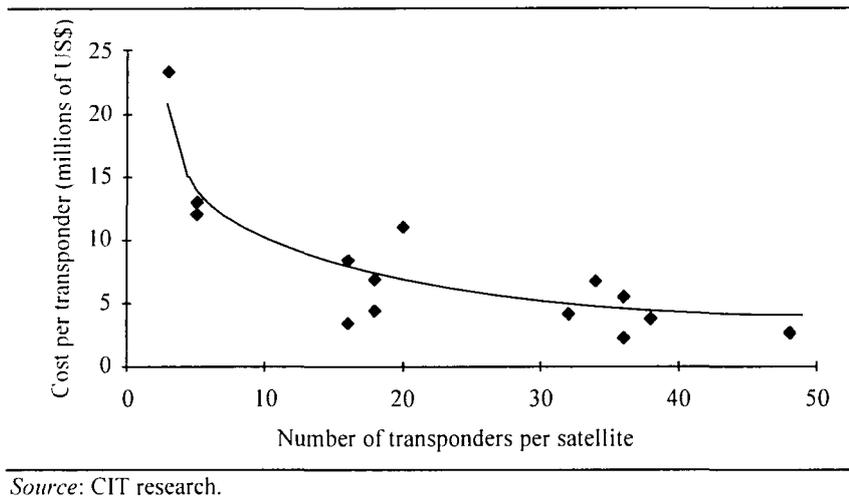
However, it is likely that in future years this share of the European market will contract, as the new consortia in mobile communication satellites (Iridium, Globalstar and Odissey) rely mainly on US technology. European constructors have not yet devised any investment strategy for integrated service offers.

8.2.3. Scale and dimension effects

Obvious scale effects

Figure 8.6 shows a very marked volume effect in space activity: the cost of acquiring the transponder falls sharply with the total capacity of the satellite launched.

Figure 8.6. Cost of acquiring satellites according to size



Hence, the increased demand resulting from the accelerated development of television services has stimulated volume effects.

Among operators of satellite systems, providing capacity for VSATs remains a secondary activity. Apart from Intelsat, which derives most of its income from voice services, the chief activity of those supplying capacity for the VSATs is the transport of television programmes:

- (a) Eutelsat (60% of turnover);
- (b) DFS (66%);
- (c) Hispasat (63%);
- (d) Télécom 1 (75%).

Television is and will remain the largest market. The introduction of VSAT services at competitive prices will therefore invariably be linked to the growth in television; dimension effects are crucial. In the United States, the GTE strategy illustrates this phenomenon: the GTE operator offers competitive prices on VSAT while keeping 70% of its turnover in activities associated with television.

8.2.4. Concentration and change in competitive conditions

Space segment: a highly concentrated market

The market for satellite system operators is highly concentrated, although it is tending to open up. In mid-1994, the leading player, Eutelsat, had 30% of total capacity (33% in 1992) and the top five operators had 85% (92% in 1992).

The low level of dispersal of this market is due to its capital intensive nature and the risk inherent in the activity. The significant technological risk, which requires insurance premiums of between 10 and 15% of the cost of the satellite, and the need for a back-up satellite (FF 600 million at least for each satellite) has led to the cooperative management of systems (e.g. Intelsat, Eutelsat).

However, new players with considerable potential are emerging such as:

- (a) Turksat, which has very high pan-European capacity;
- (b) Inmarsat, which is opening up to the provision of mobile terrestrial services (which already account for 31% of income) and which is the only European virtual operator of mobile services as compared with the Iridium, Globalstar and Odyssey projects.

Liberalization has brought about some deconcentration of the space segment, but by the very nature of the sector, it is bound to remain limited.

The terrestrial sector: a greater division of the market

The concentration of the market on VSAT services is declining (see Table 8.3) and new players are making rapid progress. On the interactive VSAT segment, Hub/star for example, Kingston Satellites has a 15% market share after eight months' activity, and BT has 6% after one year.

Table 8.3. Concentration of the VSAT market

VSAT market share (in number of stations)	February 1994	February 1995
Top five	64%	53%
1st player	33%	25%
5th player	6%	6%

Source: Analysis.

8.2.5. Television: diversification without a change of players as yet

The number of television channels using the satellite has increased steadily, from 55 in 1990 to 180 in Europe in March 1995. This has been made possible by advances in technology, and has been encouraged by the liberalization of the sector and the Directive on Television without Frontiers which, by setting up single windows for the registration of channels, has brought about a simplification in procedures. However, the market is still fairly concentrated, the five largest broadcasters possessing 72% of the European market in 1994 (see Table 8.4).

Table 8.4. Concentration of the TV market using satellites

TV broadcasting market share (in turnover)	1993	1994
Top five	74%	72%
1st player	30%	27%
5th player	5%	5%

Source: CIT research.

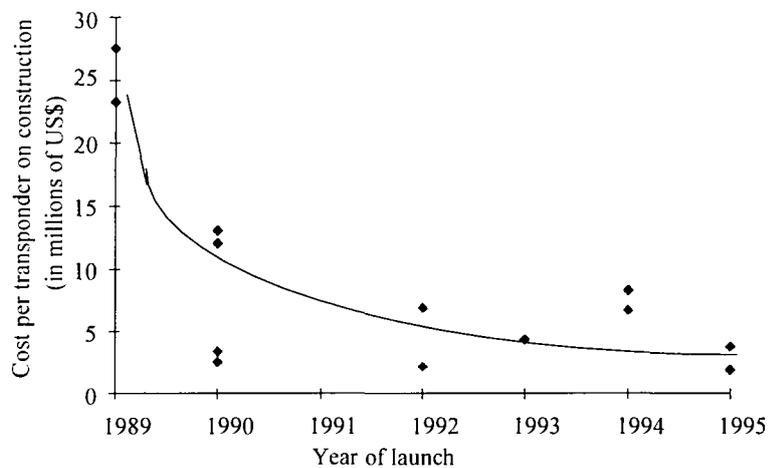
Thus, the Green Paper of 1990 and the directives of 1993 and 1994 have enabled new players to emerge in the VSAT services segment. As for the growth in TV services, it has been chiefly the outcome of liberalization concerning contents.

8.2.6. Reduction in costs and prices

A reduction in observable costs

The price of satellite capacity has fallen partly because of a marked technological effect (see Figure 8.7), but also because of a better division of the pass band (customization), which has been made necessary by the increase in demand.

Figure 8.7. Change in the cost of the transponder on construction

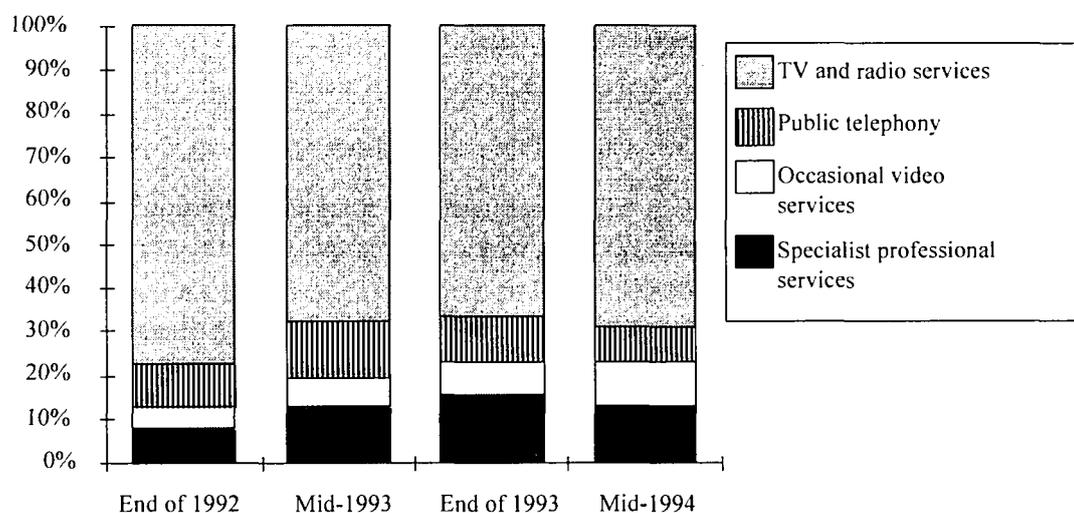


Source: CIT research.

8.2.7. Interrelative ties

The satellite capacity sector has been directly influenced by the growth in television, which accounts for most of the satellite capacity in use (see Figure 8.8).

Barriers which are now in existence, or which will be created in future, will be, as far as the programmes are concerned, largely responsible for the future of the satellite services.

Figure 8.8. Division of income of satellite operators per type of transponder use

Source: Logica.

8.3. Conclusion

8.3.1. Major trends observed

The major trends observed in the field of satellite services in Europe in recent years are:

- (a) the deconcentration of VSAT services; the simplification of consent procedures and the freeing, in some cases, of new frequency bands for the VSAT networks have enabled the market to develop rapidly;
- (b) in parallel, the emergence of new service providers has set off a process of competitive imitation;
- (c) in order to respond to the new demand for capacity, the use and division of the pass band have been optimized;
- (d) at the same time, the rise of competition has brought about a reduction in costs and, in correlation, in the prices of satellite services;
- (e) finally, the space segment being partitioned geographically, the European industry has profited directly from the development of the regional market.

These tendencies are shown in Figure 8.9.

technological progress (the reduction in the size of receiving equipment in particular) having played a facilitating role.

The emergence of new service providers, especially in the field VSATs, is the direct result of the Commission's actions (the Green Paper on Satellites and the Services Directive) and of the express intention of some groups to diversify.

The better use of the pass band therefore seems to be the consequence of previous actions and is made possible, in particular, by technological progress (compression, channelling, etc.).

Another consequence of the expansion in demand and competitive pressure, the fall in costs, is an indirect consequence of the Commission's measures and of technological development.

Finally, the development of the European industry is closely associated with the Commission's actions to harmonize and de-partition the single market, and with the strategies of some particularly dynamic players (see the case study on Astra in Appendix A.1).

Table 8.5. Impact of the Commission's measures on the satellite sector

	Commission measures			'External' factors		
	Directives ¹	Recommendations ²	Horizontal measures ³	Standardization	Technology	Strategies of players
Deconcentration of VSATs		■			●	
New service providers	■				●	■
Optimization of the pass band	□				●	■
Falling costs	□				□	
Development of a European industry	■	○				□

■ Strong motor effect. ● Strong facilitating effect.
 □ Moderate motor effect. ○ Moderate facilitating effect.

¹ Satellite Directives.
² Green Paper on Satellites.
³ Abuse of dominant position.

9. Overview of the impact of the single market

During this period, the single market in non-reserved telecommunications services has developed along the following lines.

9.1. Pan-European services have developed and improved for the benefit of users

9.1.1. The first pan-European services are appearing

As regards mobile services, the transition to the GSM standard has transformed cellular telephony in the EU from a set of fragmented national services which are not interoperational, into a pan-European service pattern for the end consumer. The number of roaming agreements rose from 70 to 471 between 1992 and 1995.

The liberalization of data transmission services in all countries has enabled operators to build up pan-European infrastructures and offer users standardized end-to-end services.

Competition for international voice message services for the business sector is now prompting even the main operators to develop virtual private network offers on a pan-European basis for voice telephony.

9.1.2. Services are improving

The need to differentiate among offers has prompted operators to improve their services, for the greater benefit of the end-users. For instance, the operators are now proposing to offer information services linked to calling cards or to mobile telephony, and virtual private networks providing a multiplicity of functions.

9.2. The European service industry has strengthened and has developed a pan-European dimension, enabling it to deal successfully with aggressive international competition

The development of mobile telephony on the GSM standard has enabled European manufacturers to acquire knowledge in this technology and to develop economies of scale. This has made them leaders in the digital market, now exporting to the entire world. The internationalization of offers for data transmission has benefited European operators, who have been able to compensate for the opening up of their domestic markets by a stronger presence on the international scene.

In the field of voice transmission, the public operators have mostly reacted by defensive strategies geared to loyalty selling on their local market and developing new uses, and to various degrees by offensive strategies for deployment abroad (BT is the most advanced example in this respect).

9.3. The establishment of a homogeneous environment facilitating comparisons contributing to the overall efficiency of the sector

9.3.1. Contraction and convergence of prices

Prices fall more sharply where the level of deregulation is higher

The introduction of a more significant level of competition has led to price reductions (illustrated especially in the case of international telephony) and an increase in package price offers: prices on international calls to the US have fallen on average by 42% in all European countries between 1990 and 1995.

At the same time, the anticipation by public operators of the liberalization of infrastructures has enabled users to benefit from a 22.3% reduction on long-distance calls.

Prices are also converging, gradually reducing the effect of borders

Apart from a reduction in prices which has occurred in the various services open to competition, there has also been a discernible convergence in prices. What has happened is that the most backward countries have begun to align themselves on the prices prevailing in the other Member States. For example, the ratio between the highest and the lowest prices for international telephone calls was reduced between 1991 and 1994 from four to two.

9.3.2. Emergence of new entrants

Liberalization has enabled new players to emerge, in spite of the predominance of public operators on the national scene

The development in competitive conditions in the mobile sector has led to an increase in the number of players (30 licensed operators in 1994, against 22 in 1991). New operators of satellite services for professional use have emerged (especially on the VSAT offers) and television broadcasting by satellite has made startling progress (55 channels in 1990, 180 channels in 1995). New entrants have appeared in the voice segment (call-back companies, resellers).

However, the lack of a European infrastructure is still holding back to a considerable extent the development of these new entrants, and it tends to promote the domination of public operators.

At present, according to interviews and case studies, new entrants are limited in their development by:

- (a) the price and availability of connections leased internationally for international telephone services and data transmission;
- (b) the price of connections leased nationally for access to international networks and for mobile services.

In the absence of competition on infrastructures, the public operators have at least the advantage over the new entrants that they can plan their development in awareness of the future availability and prices of these leased connections, especially for high throughput.

The 1998 date is therefore being awaited impatiently by the new entrants, who will be able to by-pass the routes open to them at present and use their own networks; this will have a definite impact on costs.

9.3.3. Job creation

All the developments occurring in the field of services open to competition have led to a net gain in employment estimated at 28,500 new jobs between 1990 and 1994 both with public operators and with the new entrants, especially in the mobile communication services.

However, these new jobs have not yet compensated for the jobs which at the same time have been eliminated by the public operators on non-deregulated services, and which are outside the scope of the study. These job losses have been estimated at 115,500 over the same period, and have occurred chiefly in technical operation areas in the public networks.

Table 9.1. Illustration of major developments in the single market in telecommunications services open to competition between 1987 and 1995

Sector	Mobile	Data transmission	Telephony	Satellites
Effect of single market				
Creation of pan-European services	GSM standard and increase in roaming agreements from 70 to 471 between 1992 and 1995	Development of pan-European infrastructures by public operators and at a lesser level by US operators	Development of card services and international virtual private networks	Pan-European services by nature
Reinforcement of the European industry	European industrialists and operators have become market leaders in digital services based on the GSM. Development of intra-European agreements	Growth in market share of international players of European origin from 12 to 23% between 1991 and 1993	Creation of international consortia with a strong presence of European operators	Maintenance of the European virtual monopoly
Homogeneous environment and efficiency of the sector				
Contracting and converging prices	Annual fall of 12.5% in the price per minute of GSM communications between 1992 and 1995	Disparate price reduction	Reduction of prices of calls to the USA by 42% between 1990 and 1995. Reduction in the ratio between the highest and the lowest price from four to two	Relative fall in prices with equal capacity
Emergence of new entrants	Growth in number of licensed operators from 22 to 30 between 1991 and 1994	Reduction in the market share of the five largest players from 56 to 48% from 1991 to 1993	Emergence of many call-back and traffic reselling companies since 1993	Growth in number of VSAT operators and increase in TV channels from 55 to 180 between 1990 and 1995
Job creation	Creation of 21,000 jobs at PTOs and the new entrants from 1990 to 1994	Creation of 5,500 jobs at PTOs and the new entrants from 1990 to 1994	Recent creation of several hundred jobs in Europe	Not significant

These changes have, of course, reflected certain fundamental trends in the telecommunications sector, more or less independently of the European programme.

Technological developments have improved the quality and reduced the cost of equipment and therefore brought about the development of new telecommunications services. For example, the digitization of networks and access points, the integration of electronic components and a better command of radio techniques have had effects on the various services studied.

The industry standards for telecommunications, approved by the CCITT at the international level, influence development in equipment and services. They usually result from proposals of European or US origin.

The globalization of the economy has had an impact on telecommunications services because of the internationalization of trade and growing needs for computer data transmission, in particular.

The strategies of key players, public operators, telecommunications equipment manufacturers and computer designers are directly linked to the changes in the sectors studied.

The role of national regulators is responsible for certain local changes, especially through the grant of licences to services open to competition and through the local interpretation of Community rules.

Table 9.2. Effect of underlying trends in the telecommunication sector on the key changes noted over the period 1987 to 1995

External factors	Technological developments	Industry standards	Globalization of the economy	Strategy of key players	Role of national regulators
Effects of single market					
Creation of pan-European services		Standards of terminals and networks for homogeneous pan-European services	Development of a pan-European demand by companies	Internationalization of public operators. Pan-European entry strategy of American players	
Reinforcement of the European industry				Opening up to the advantage of public operators	
Homogeneous environment and efficiency of the sector	Improvement of services on offer. Improvement of the relationship between functions and costs	Interoperability of networks and services. Entry of new players	Standardization by the market (benchmarking)	Key role on cost changes of leased connections and the service tariff	Effects sometimes negative due to local interpretation of market opening conditions

9.4. Many of these developments can also be directly attributed to the European actions, which have had consequences of two kinds

Through its various actions, whether to encourage or to compel, the Commission has had effects of two kinds on the development of the single market in telecommunications services open to competition.

9.4.1. A motor effect has speeded up the development of the single market

This is due to:

- (a) Action to encourage developments, such as announcements which lead the various players in the field to anticipate a new strategic framework. For example, the effects of the Green Paper on the development of telecommunications services by 1992 and the present positioning of all the key players in anticipation of the proclaimed deregulation of infrastructures and services in 1998.
- (b) Regulatory action, such as the Framework Services and ONP directives, has led to a simultaneous standardization of market conditions in all the Member States, thus bringing about a block effect which justifies the development and reinforcement of a European service industry. Without this simultaneous opening, it is probable that the US players, having already acquired sufficient stature in their large, deregulated market, would have taken advantage of a gradual opening, country by country.

9.4.2. A facilitating effect of technical and regulatory standardization has been achieved

This has led to greater efficiency in the markets in terms of prices, competition and employment, through:

- (a) induction of the standardization kind, accompanying key standards;
- (b) general regulatory actions such as the ONP directives.

These effects have varied according to the sectors under study, and are summarized in the following table.

Table 9.3. Impact of the European programme on the various trends observed for each of the types of telecommunication services open to competition

Sector	Mobiles	Data transmission	Telephony	Satellites
Effects of single market				
Creation of pan-European services	A motor effect through induction, standard setting through ETSI and its support for allocation of the 900 MHz waveband	A facilitating effect through induction, Recommendation 92/283 and regulatory action in the Services Directive 90/388 and ONP Directives 90/387 and 92/44	A facilitating effect through regulatory action in the Services Directive 90/388 and ONP Directives 90/387 and 92/44	
Reinforcement of the European industry	A facilitating effect through bilateral regulatory action to open up certain markets	A motor effect through regulatory action in the Services Directive 90/388 and ONP Leased Lines Directive 92/44	A motor effect through induction – 1993 Council Resolution	A facilitating effect through regulatory action of the Satellite Directive 93/97
Homogeneous environment and efficiency of the sector	A facilitating effect through induction, standard setting and standardization of markets	A motor effect through regulatory action in the Services Directive (90/388) and ONP (90/387) and Leased Lines (92/44) Directives	A motor effect through induction – 1993 Council Resolution	A motor effect through induction: Green Paper on Satellites (COM (90) 490); and regulatory action in the Satellite Directive 93/97

The following tables review again the summaries contained in the analysis, with the emphasis on the four effects:

- (a) a fall in prices and costs;
- (b) the emergence of new players;
- (c) the development of pan-European services;
- (d) the development or reinforcement of the European industry.

Table 9.4. Overview: impact of the Commission's measures on the four effects analysed

	Commission measures		
	Directives	Recommendations	Horizontal measures Bilateral action
1. Reduction in prices/costs	Voice: strong facilitator Data: moderate motor Satellites: moderate motor	Mobiles: strong facilitator	Mobiles: moderate facilitator Data: moderate facilitator Voice: strong motor
2. New players	Data: strong motor Voice: moderate facilitator Satellites: strong motor	Data: strong facilitator Voice: moderate facilitator Satellites: strong motor	Mobiles: moderate facilitator Voice: strong motor
3. Pan-European services	Data: strong facilitator Voice: moderate facilitator	Mobiles: strong motor Data: strong facilitator Voice: moderate facilitator	
4. Development of European industry	Mobiles: strong facilitator Data: strong motor Satellites: strong motor	Mobiles: moderate motor Satellites: moderate facilitator	Voice: strong motor

Table 9.5. Overview: impact of 'external factors' on the four effects analysed

	'External' factors		
	Standardization	Technology	Strategies of players
1. Reduction in prices/costs	Mobiles: moderate motor Data: strong motor	Satellites: moderate motor	Voice: strong motor
2. New players	Mobiles: moderate motor Data: moderate motor	Data: moderate motor Voice: moderate facilitator Satellites: strong facilitator	Mobiles: moderate motor Voice: strong motor Satellites: strong motor
3. Pan-European services	Data: strong motor	Mobiles: moderate motor Data: strong facilitator Voice: moderate facilitator Satellites: strong facilitator	Data: strong motor
4. Development of European industry			Data: strong motor Voice: strong motor Satellites: moderate motor

Part III: Strategies of players

10. Mobiles

10.1. Introduction

Since the arrival of the GSM standard, mobile telephony has undergone marked expansion. In the EU, the total number of subscribers in 1994 was 13 million, growing at a rate of 63%. Because of the many new licences granted, this trend is expected to continue for several years.

10.1.1. A non-deregulated sector, but heavily influenced by Community policy

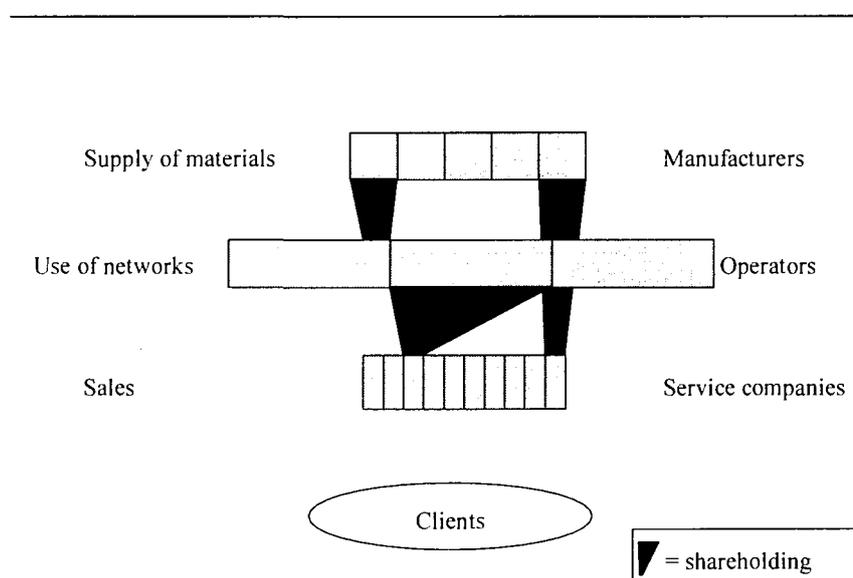
The legal system covering the mobile telephony sector is for states themselves to decide, but it must fit within the regulatory framework of the European Union.

The Green Paper on mobile and personal communications (COM (94) 145), which is intended to support current developments, was published in April 1994. However, action by the European Commission was largely ahead of its publication and has contributed to introducing a degree of competition in all countries.

10.1.2. Three main kinds of players

The provision of mobile telephony services to end-users implies three kinds of principal players (see Figure 10.1).

Figure 10.1. Mobiles: added value chain



The manufacturers

Mobile telephony systems in Europe are provided by companies which are mainly European and employ over 10,000 people. There are between one and six suppliers in each country, and a total of eight companies in the EU. Some manufacturers share in operating activities (e.g. Alcatel) or distributing activities (Motorola). Manufacturers of network equipment (switching

equipment and base stations) do not form part of this study, which focuses on services, but are mentioned here as players upstream in the sector.

The operators

The operators of mobile networks open to the public employ between a few hundred and a few thousand staff. In each country there are one to four operators, for a total of 30 licensed companies in the EU in 1994, and 50 networks in operation. The operators possess their own distribution channels (direct selling) and/or have shares in service marketing companies (see Chapter 5 and the Mannesmann Mobilfunk case study in Appendix A.3).

The service companies

The service marketing companies (SMC) employ several hundred people each. There are two or three dozen SMCs in each country. The SMCs are often present in several European countries at a time. They were originally developed in the United Kingdom to sell analogue services, and appeared in Germany and France only when the GSM standard was introduced.

10.2. The manufacturers

10.2.1. Strategy of the manufacturers

The manufacturers tend to form a closed circle, and there have been no new entrants in recent years. Supplies in the EU are open, and all countries use foreign suppliers. The share of non-domestic supplies is almost entirely accounted for by Community manufacturers and Motorola. The latter is the only non-European manufacturer, and has a 15% market share in base stations. There is one obvious leader, Ericsson, which alone has more than a third of the market in GSM equipment.

Under the direction of ETSI, European manufacturers have shared in the development of the GSM standard. They then have continued to develop individually, sometimes setting up consortia:

- (a) DCMS (ANT, Bosch, Philips);
- (b) ECR 9000 (AEG, Alcatel, Nokia).

The European manufacturers which lead in developing equipment and benefit from economies of scale have been able to become leaders in the GSM standard in Europe, and have exported to world markets, especially to south-east Asia (at the end of 1995, about 150 operators are testing the GSM standard or have already adopted it).

Motorola is diversifying its activities in services: it owns marketing companies in significant European markets (Germany, France, United Kingdom).

10.2.2. Impact of EU measures

By supporting the development of the GSM standard, the European Commission has enabled European manufacturers to take a leading role in technology. They have been able to keep their intra-EU market and to export their expertise throughout the world.

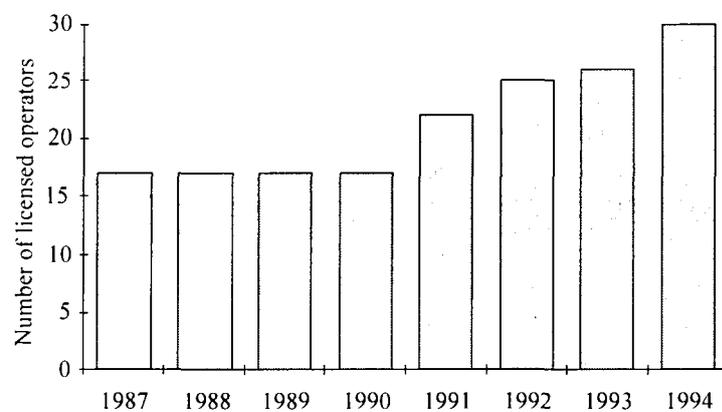
10.3. The operators

10.3.1. Strategy of the operators

Growth in competition

GSM and DCS 1800 (digital cellular system for 1800 MHz) licences have been granted to the historic analogue operators and to new entrants. This has had two effects: an increase in the number of services on offer (both analogue and digital) and an increase in the number of licensed operators, which has risen from 17 in 1990 to 30 in 1994 (see Figure 10.2). The number of networks in operation rose from 17 to 50 over the same period.

Figure 10.2. Growth in the number of licensed cellular operators in the EC



Source: Idate/Devotech analysis.

Targeted market segments

As the national regulator generally imposes strict constraints where licences are concerned (occupation of frequencies, minimum standards for reception), once the licences are granted the operators have only limited room for manoeuvre; the requirements of profitability call for the largest possible number of customers and therefore for maximum coverage. Hence, it is not possible for an operator to target a specific geographic market segment. This may change in the future, especially with the emergence of local radio link-ups.

Aggressive strategies

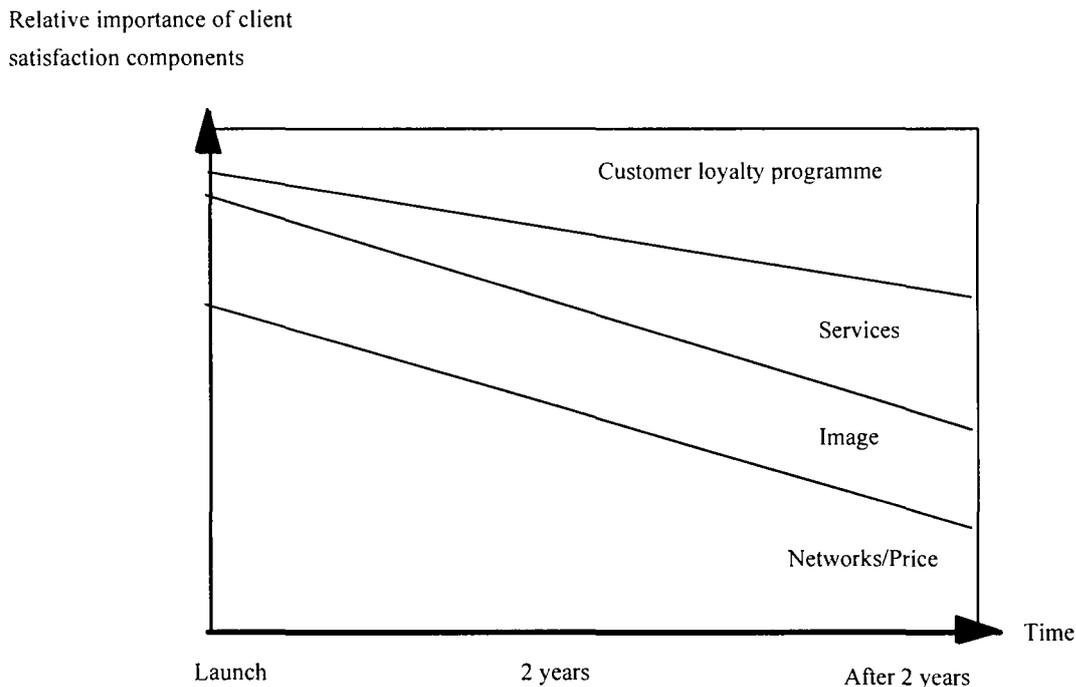
The main aggressive strategies deployed by historic operators faced with the new entrants are:

- (a) to bring in a maximum number of subscribers before the new services are opened up commercially, through:
 - (i) a reduction in the price of communications;
 - (ii) an increase in price offers;
 - (iii) a development of intensive marketing.
- (b) to increase coverage, which is a major criterion of differentiation by comparison with the 'new' offers;
- (c) to offer linked complementary services:
 - (i) financial information;

- (ii) traffic information;
- (iii) general information.

The following figure illustrates the trends in marketing strategies by operators over time:

Figure 10.3. Development priorities for mobile services



Source: Bossard Analysis.

The priority given to different activities may change depending on the customer satisfaction components: the deployment of networks and communication on pricing take priority during the 'conquest' phase, and customer loyalty programmes and service development then tend to replace them.

Defensive strategies

The operators buy up service marketing companies in order to achieve maximum added value.

The PTOs which own the historic mobile operators tend to hold back the arrival of new entrants by keeping the cost of dedicated lines and interconnection high, and offering the mobile operators connections at levels too high up in their networks, which has a strong impact on the cost of dedicated lines. This type of defensive strategy is a double weapon, because it applies both to independent mobile operators and to subsidiaries of the PTOs. However, the latter have one advantage, that the PTOs and the mobile operators are sited together. The technical conditions for the interconnections proposed by the PTOs are also criticized by the mobile operators.

Alliance strategies adopted

The new operators which appeared with the grant of GSM and DCS1800 licences are often consortia led by major local investors. These domestic companies have been joined by foreign operators gaining a foothold on international markets through financial participation, as the following examples show:

- (a) the presence of Airtouch, an American operator, on seven European networks;
- (b) the presence of Veba (a German E-Plus service) in the capitals of One-2-One, a British operator, and Bouygues Télécom, a French operator.

This situation can be explained:

- (a) firstly, by the reasoning of the players, who believe their chances will be better if they put a local player in the lead;
- (b) secondly, by the methods of granting licences, based on qualitative criteria.

This prompts the following conclusions:

- (a) there are no foreign operators leading consortia (e.g. BT is not present for the DCS1800 licence in France), the exception being where there are no local players (e.g. FT in Belgium);
- (b) shareholding remains in this context the most appropriate method for penetrating new markets.

Therefore, although there is no regulatory prohibition, the non-tariff barriers which already exist have prevented certain kinds of conduct and have not enabled pan-European infrastructures to be set up on the primary licence market.

In the present state of regulation, the emergence of pan-European mobile operators will only be possible in the context of the secondary licence market. However, the resale of mobile telephony licences is subject to the authorization of the regulators.

In the United States, inter-state networks have been set up as a result of a new method of granting licences on the primary market: AT&T bought licences throughout the eastern states during the auction sale of 1994. On the secondary licence market, AT&T, by buying up the operator MacCaw Cellular, has been able to cover the west of the country, thus obtaining global coverage.

Mutual independence of the regulators and the national operators

The independence of the national telephone operators from the regulators has had a very marked impact on the strategy of the mobile players, enabling fair competition to take hold. Requests for arbitration have become relatively frequent, and have often been to the advantage of the new entrants.

In France, for example, SFR filed a request for arbitration with the postal and telecoms authorities, the DGPT: the invoiced price of dedicated lines provided by France Télécom was considered to be too high. The DGPT agreed with SFR, and forced France Télécom to reduce its prices. The costs due to dedicated lines, which accounted for 50% of the budget of SFR before the arbitration, were brought down to 30%. In this example, it is important to appreciate

that the French regulator went to observe the German example for comparative purposes, which illustrates that there is a pan-European regulatory consciousness.

The regulators have also authorized recourse to alternative infrastructures and even, in some cases, to construction and operation by mobile operators of infrastructures specially designed to handle calls (with the possibility of reselling capacity to third parties).

10.3.2. Impact of EU measures

The Commission has played a significant role in the strategies of the mobile operators described above.

The Commission has also played an important role in the independence of regulators from public operators, and this has made it possible to seek out fair competition among players in the market, thus benefiting the end consumer.

As the procedures for granting licences are still based on qualitative criteria, there has inevitably been a national fragmentation of infrastructures. On the other hand, the EU support for ETSI on the GSM standard has made it possible, despite the national character of infrastructures, to offer users a roaming pan-European service.

10.4. The service companies

10.4.1. Strategy of the service companies

Growth in competition

The service marketing companies (or SMCs) belong to three categories of player:

- (a) the operators (Vodafone, Hutchinson, etc.);
- (b) the independent service companies (Martin Dawes,⁶ Debitel,⁷ Talkline,⁸ etc.);
- (c) the equipment suppliers (Motorola, etc.).

There has been a growth in the number of SMCs in recent years. A new kind of player has also emerged: the central distribution companies or CDCs (which sell but do not manage subscriptions).

Aggressive strategies

In recent years, the main initiatives taken by the service marketing companies have been geared to a fall in entry subscriptions for the end-user. Accordingly, thanks to cross-subsidizing between subscriptions and terminals, there have been many new offers of terminals at very reduced or nil prices.

However, this kind of practice is subject to the views of the regulator, who controls dumping practices.

⁶ Including FT.

⁷ Including Daimler Benz and Metro.

⁸ Including RWE.

Alliance strategies adopted

The marked presence of foreign SMCs (in France and Germany almost 30% of the total number of GSM subscribers) and the presence of certain distributors in several European countries (e.g. Hutchison in Germany, France and the United Kingdom) implies that an end-to-end pan-European service may soon be available (single window, standard pricing, etc.).

10.4.2. Impact of EU measures

The growth in competition has been influenced by the EU, because the SMCs have appeared in certain countries thanks to the introduction of the GSM standard.

The Green Paper on mobiles encourages a high degree of freedom in marketing:

- (a) the provision of mobile services must not be subject to the grant of licences, and must at most be declared to the local regulator;
- (b) there should be no obligation or restriction on the supply of services through independent companies or subsidiaries of operators;
- (c) the marketing companies must be free to offer combined services (e.g. telephony and paging) and services on the scale of the European Union.

However, the true impact is still difficult to verify and cannot be quantified for several years.

10.5. Barriers still to be removed

As we have seen, the Commission's actions have had a marked impact on the strategies of players in the EU. However, there are still certain areas calling for improvements.

To ensure that access to frequencies at the local level is open to genuine competition, it would be desirable to put an end to the grant of frequencies solely according to qualitative criteria. This can be done by bringing the grants together in the form of bids for services, including qualitative criteria and, to some extent, monetary criteria. One possibility would be, for example, to set up minimum specifications and to grant licences to the most promising operators. A procedure of this kind would also enable operators to establish pan-European strategies.

It would also be desirable to authorize the reselling of licences, to encourage the emergence of a second method of setting up pan-European infrastructures.

Given the impact of the price of communications on penetration by mobile telephony, the EU can also step up its pressure on the terms for interconnection of the mobile operators to the operators of fixed infrastructures. Action has already been taken at the instigation of the EU (through the obligation to keep local regulators independent of the PTOs) and this has brought about a reduction in the cost of dedicated lines. On the other hand, the interconnection charges have not yet been subjected to any form of arbitration by the regulators.

As regards the marketing of services, the purpose of the recommendations in the Green Paper is to give the distributors more room for manoeuvre; however, the effects are still limited. It would be desirable to bring in a more fundamental form of competition among distributors, for instance, by requiring separate accounting and a profitability requirement as between operating and sales activities for mobile operators.

11. Data

11.1. The regulatory environment

Directive 90/388/EEC opens to competition the supply of telecommunications services on fixed line infrastructures, except for voice telephony: it was therefore initially geared to the transmission of data and the value-added networks, which were to have been opened up by all Member States no later than 1 January 1993. However, each country remains free to include special clauses in the specifications of new operators, who may therefore be subject to different rules, both in the field of basic transmission (essential requirements, especially conditions of interconnection) and in the field of VANs (a mere declaration or an authorization in particular).

Moreover, apart from the ONP Framework Directive, the application to leased lines (Directive 92/94/EEC) and the Council Recommendation of 5 June 1992 on the offer of packet data services specify the conditions in which the public tender for data transmission support should operate.

Finally, transversal rules, especially on competition, have had a particular impact on certain operations (for example, the rejection of the planned combination of the X.25 activities of France Télécom and Deutsche Telekom in the framework of Atlas).

11.2. Growth in competition

11.2.1. A closed circle competition

The liberalization of the European market has reinforced protectionist tendencies among the main players on the scene. The tendency has been, in particular:

- (a) first, for the major national players, to take advantage of the opening up of foreign markets to expand their geographical hold (e.g. the strategy of Transpac in most European countries, or BT in France);
- (b) second, to look for cooperation among European players (e.g. Atlas, Unisource).

The strategies of extra-European entrants merely confirm this tendency. Although AT&T was able to gain a foothold directly in the services area, by buying up Istel, it chose the path of co-operation where the network was concerned, just as IBM has decided to join up with STET.

11.2.2. Possible conflicts of interest

The opening up of markets creates the possibility of increasing intervention for all players. Hence, some operations undertaken at a particular time may be regarded as 'competitive' or at least present certain areas of conflict with later developments. For instance, the position of Infonet, in which most of the major European PTOs join (with the noteworthy exception of BT) has been difficult to reconcile with groupings such as Unisource or Eucom/Atlas (France Télécom and Deutsche Telekom have transferred their holdings following their bilateral agreement). In this example, the absence of BT is itself open to question, because the main shareholder in Infonet is MCI, its key partner.

11.2.3. Growth limited by technical constraints

There is no real new development, mainly because of technical constraints in materials (there is some distrust with regard to 'foreign' materials, which may not work properly) and applications, which are often 'customized' and therefore specifically adapted to certain configurations.

11.2.4. Hegemony on the part of certain players on the scene

On the base segments, the influence of traditional players, in terms both of investment and market, is such that competition cannot develop in conditions of reasonable profitability (e.g. the position of Transpac in France).

11.2.5. Impact of Commission measures

The opening up of the market in data has admittedly created a new competitive framework, but it has to be recognized that:

- (a) for the genuinely competitive part, most of the movements had started before the 1990 directive;
- (b) liberalization is mainly to the benefit of the traditional operators who, on the pan-European level, form an oligopoly which is becoming more and more obvious.

The abuses of a dominant position are not defined as such, and before any alliance is authorized the Commission ascertains that the open market rules are being respected (e.g. the negotiations regarding Atlas in 1994–95 or those now taking place regarding the IBM-STET agreement). But the concrete impact of the operations certainly seems to be a limitation on availability.

11.3. Markets targeted by the new entrants

11.3.1. Targeting around customer size and network structures

For the new entrants, the competitive advantage lies in two main aspects: how closely provision matches the market, and the service/price relationship. Hence, targeting is done more in the light of company size and network structure than according to sectors. Thus, the new entrants address themselves initially to small and medium-sized enterprises, the large enterprises tending to be the focus of market rivalry among traditional operators or the establishment of cooperative networks. Moreover, genuine competition has developed in relation to special structures such as the VSAT. Only limited development has occurred, however, in the terrestrial networks because of the investment required.

11.3.2. The general imposition of sectoral targeting

The sectoral approach is not confined to the new entrants; it is found among all the players:

- (a) The traditional operators have attempted to respond to the segmentation of demand, either by joining together through specific sectoral developments (for example, FNA in the financial field) or through associations with service providers to develop dedicated applications (for example, participation by France Télécom in joint projects with GSI).

- (b) Private cooperative networks were established before public markets opened up (Swift, SITA). They were initially developed to meet specific sectoral needs. Today, the same networks are seeking to take advantage of the liberalization of markets in order to open up to third parties. Company networks (Air France or Daimler Benz) are following the same path.

11.3.3. Impact of Commission measures

The ONP rules allow the various providers to gain market access under equitable conditions, and have therefore clarified the competitive base. However, the market is still opaque, because the new entrants have only their flexibility and speed of action to rely on when confronted with the inertia (a decreasing phenomenon) of the traditional operators. On the other hand, the latter have an obvious advantage in their commanding upstream position, which will only be challenged if draconian rules are introduced – which would doubtless be unacceptable.⁹

11.4. Strategies used

11.4.1. Defensive strategies initiated by the PTOs

The PTOs had to react before the liberalization of markets, since they had to reply at an early stage to competitive offers coming mainly from the other side of the Atlantic, such as those from GEIS, IBM IN or EDS. Although to some extent this competition did not appear to be a destabilizing factor (the networks used PTO support and the markets gained were relatively small), it did bring home to the PTOs how important it was to control the network, and above all, the strategic nature of the control exercised by the end-user.

This concern prompted the PTOs to look for partnerships with developers of applications, or to go as far as possible themselves down the service road. One of the most significant examples in this area remains the example of Videotex in France, where the historic operator has succeeded in maintaining its central position although most of the added value is brought by the partner service providers. More precisely, the PTOs have attempted to remain in charge of the industry by acquiring shares in computer companies or controlling them (see Section 11.4.2).

11.4.2. Aggressive strategies

Positioning on foreign markets

The PTOs have also operated dynamic strategies by leaving their home markets and positioning themselves on foreign markets. There are two specific routes open to the PTOs:

- (a) first, an individual strategy of direct positioning, usually through takeovers, on the foreign market (for example, Transpac or BT);
- (b) second, a partnership strategy, by negotiating agreements with players already present on the various markets targeted.

⁹ In another field (the use of cable networks to provide telecommunications services), the possibility of PTOs being prohibited from sharing in the cable market had been mentioned, but was quickly stalled.

These two approaches are not mutually exclusive; indeed, as level-setting approaches, they seem to be complementary. Thus, on the network level, partnership takes pride of place (it is often the only economically viable approach) whereas in the field of applications, there is greater justification for control and acquisition strategies: AT&T is buying Istel but is negotiating a partnership with Unisource. On the other hand, when conducted together in the field of networks and services, the two strategies can be problematic (e.g. the obligation on Transpac to sell its German subsidiary Info AG because of the formation of Atlas).

A takeover of computer companies

The same PTOs have taken an interest in taking over companies, especially in the computer field, which give them the necessary additional skills to control the chain of added value. France Télécom has bought a 19% share in Sema-Group, one of the principal European SSIIs, STET has taken control of Finsiel, the main Italian holding company for computer services, and among the non-Europeans, AT&T has bought up Istel in the United Kingdom, followed by Infoplan in Germany and Dataid in France.

11.4.3. Impact of Commission measures

The Commission's measures play only an indirect role in the conduct of the PTOs, which tends to be dictated by reactions to the strategy of the new entrants and to the development of markets.

The Commission also has a right of inspection, through the investigation of planned partnership agreements (see Section 11.4.4).

11.4.4. Partnership strategies

Partnership strategies have taken various forms.

Vertical agreements to gain access to end markets

Each of the groups of players has an interest in these partnerships:

- (a) the network operators, most of whom do not possess the skills and flexibility needed to develop applications;
- (b) the service companies, which in any case have only a narrow margin of manoeuvre to gain access to the networks;
- (c) the users who, through these associations, have only to deal with one contact point.

Horizontal agreements for geographical expansion

Although most of the players are seeking to develop their international portfolio, few of them, except for the large PTOs, are capable of doing so individually. BT is virtually alone in having chosen this path.

On the contrary, most of them adopt a partnership model: France Télécom/Deutsche Telekom have set up Eucom, followed by Eunetcom and Atlas, and the Dutch and Swedish post and telecommunications bodies have set up Unisource. But these partnership agreements need to be backed up by cooperative arrangements with the service providers.

Sectoral agreements to respond to specific needs

These agreements are often entered into by large users who combine together or join with developers in order to obtain 'tailor-made' solutions to their needs. In most cases, some initial work is done on the standards, which may result in *de facto* norms being established.

Impact of Commission measures

Although the Commission has only a monitoring role with respect to significant partnership agreements (compliance with the competition rules, no abuse of the dominant position), it seems that some of these operations have been made necessary by the lack of fluidity on the market. The PTOs are still controlling the essential workings (base networks, interconnections, tariffs, etc.). Beyond the ONP rules on the liberalization of services, a number of measures are now under discussion (the liberalization of infrastructures) which seem likely to bring about more fundamental changes in the sector.

11.5. Mutual independence of the regulatory bodies and the national operators

Separating out the regulatory function has ultimately made it possible to offer the necessary guarantees to spur the interest of new entrants. The regulators have been called upon to define precisely the terms of competition on every market and to ensure that they are complied with. Taken as a whole, the machinery seems to have functioned well, in the field of added value services and in the field of networks, where virtually all requirements have been met (in some cases, these were mere formalities).

11.6. Conclusion

In conclusion, the opening up of the data market in Europe has produced mitigated effects: on the one hand, the arrival of new entrants on specific market segments or for specific kinds of provision and, on the other hand, a strong reaction on the part of the traditional operators who are tending, especially through partnership agreements, to bolster their own position. But although the organization of the industry has not been radically altered, the users will gradually be able to take advantage of this opening up through a regular steady fall in prices, a more appropriate range of offers and the concept of a 'single window'.

One feeling is particularly marked among the large users and the new entrants: the opacity and the control of the market by the PTOs still acts as a major constraint on the provision offered. From this point of view, the liberalization of the infrastructures will mark an important turning point.



12. Voice telephony

The strategic analysis of the sector focuses on two kinds of players:

- (a) the PTOs (European or otherwise);
- (b) the resellers of traffic (European or other).

12.1. Strategy of the resellers of traffic

12.1.1. The regulatory context

Directive 90/388/EEC authorizes resellers of telephone traffic to set up in the Member States. The resale of traffic on a specialized connection is permitted if one end of the connection is outside the national public network.

Against this background, with international voice telephony traffic being opened up to competition, many 'enterprising' operators have been encouraged to come onto the European market, offering discounts on international telephone charges. The chosen objective is to operate price brokerage, taking advantage of the 'pricing imbalance' which exists for a limited period in most European countries (low subscriber rates and high prices for long-distance calls).

In this light, there are two technical possibilities:

- (a) call-back: 'call-backers' buy traffic wholesale from the American PTOs AT&T, Sprint or MCI or from wholesalers (e.g. MTC) and pass on these rates to their customers through an automatic call-back procedure;
- (b) re-routing: the resellers use the United Kingdom as a transit point for transatlantic destinations. Traffic is routed directly through international connections from the country of departure (France, Germany, etc.) towards the transit country: the United Kingdom (transfer onto the BT/MCI network) or directly to the United States.

The resellers of traffic have adopted a two-phase entrance strategy:

- (a) Phase 1: setting up, focusing provision on profitable destinations.
- (b) Phase 2: increasing the offers made, deploying European networks.

12.1.2. Description of Phase 1

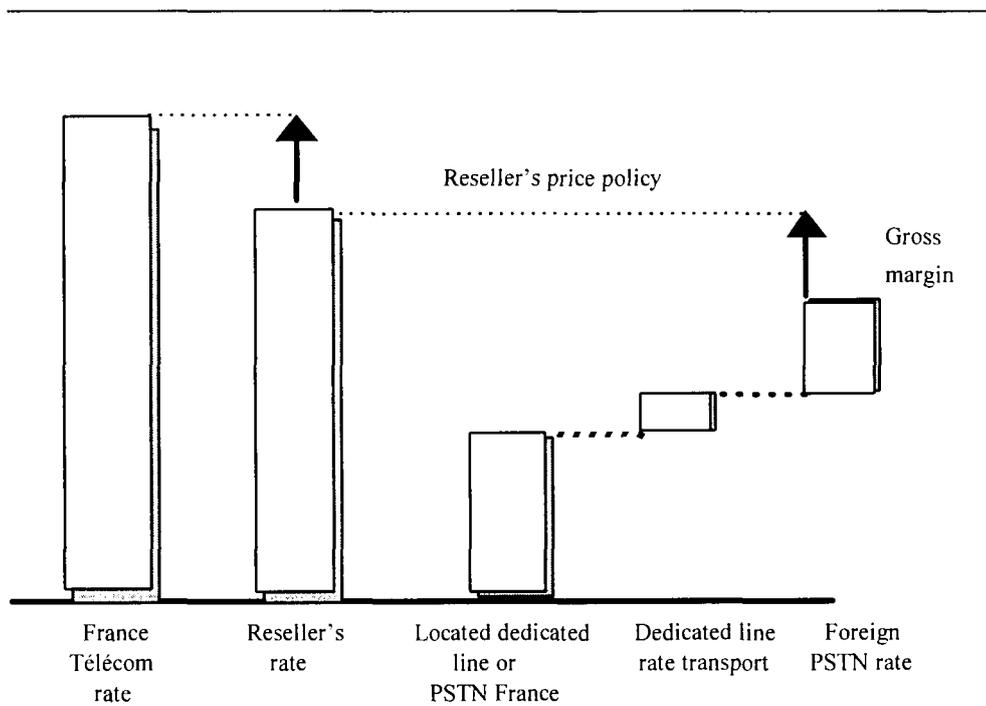
The strategy of these new entrants is based on prospects of profitability by destination

There are two elements to note:

- (a) *The volume of accessible traffic.* The resellers have focused their offers on destinations with a high volume of traffic (the United Kingdom and the United States) in order to take advantage of economies of scale (which are associated with investment and the degressive cost of circuits on dedicated lines).
- (b) *The gross margin sought by destination.* The reseller's margin is the gap between his prices and his costs. He therefore has to broker the PSTN prices of the country in which

he sets up business (and from which he makes his offer: -30% on PSTN) against the dedicated line rates and the cost of national access on departure and arrival (the factors which determine his costs).

Figure 12.1. Gross margin by destination for resellers



Source: Bossard Analysis.

In this context, the resellers have given priority to the following countries: France and Germany.

- (a) The volume of exiting traffic to the destinations (United Kingdom, United States) is significant, allowing a rapid return on investment.
- (b) The price gap between the PSTN in these countries and the rates applied in the United States and in the United Kingdom also makes it possible to offer services of the 'call-back' type.

The size of these players ranges from ECU 1 million to ECU 50 million for the largest (Telegroup and Viatel).

By focusing mainly on the large SMEs/SMLs with an annual international consumption of between ECU 4,000 and ECU 100,000

- (a) Below ECU 4,000 administrative and commercial expenses are difficult to recoup.
- (b) Over ECU 100,000 national operators have a 'virtual private network' offer which makes the reseller's offer non-competitive.

The present picture is now favourable to these resellers, since in countries like France, the proportion of exiting international traffic which escapes the national operators is around 5% for destinations like the US (Source: FT interview).

Conclusion

This initial entry phase has now been completed.

Between 1992 and 1995, the resellers made good profits. Their strategy is now developing towards Phase 2.

12.1.3. Description of Phase 2: increasing the range of services offered by deploying European networks

- (a) The profitable resellers have quickly strengthened their base offer by added value services: cards, an invoicing tool, a digitizing plan. For example, players such as Viatel, Telegroup or France Call-back (in France) offer services like these. Esprit Telecom (see Appendix A.2) focuses on operations of the intelligent network type.
- (b) The availability of discounted destinations is expanding, from the Asian and American regions to small European countries and the large Italian, German and Spanish urban areas.
- (c) Some companies are tending to deploy a dedicated line network, as in the case of resellers such as Viatel, which are locating increasingly in the main European cities.

Only players of the critical size needed to go beyond mere call-back service will withstand the complete opening-up which is forecast for 1998. In principle, the entry of the PTOs and the development of alternative operators should prove fatal to the small actors who are positioned merely as 'call-backers'. Among the alternative operators, the new entrants who have specialized in the international segment, like Esprit Telecom, will doubtless have great difficulty in imposing themselves,¹⁰ 'imprisoned' between the PTOs which are organizing in partnerships and national competitors who will probably look for direct methods of interconnection.

Conclusion

Directive 90/388/EEC and the positive effect of the announcement that 1998 is to be a final date have in fact encouraged the emergence of new players on the international voice telephony segment.

However, the 'resale of traffic' has been mainly beneficial to actors of US origin and in the United Kingdom, since the traffic is routed on their networks.

Although the overall size of these 'new players' has remained marginal, the mass communication which they have undertaken in the media has created a climate of competition. This has clearly incited PTOs in less deregulated countries to reduce their rates, and thus has directly:

¹⁰ The ambition of Esprit Telecom is ultimately to become the 'European MCI'.

- (a) permitted an alignment of prices on costs;
- (b) proved of great benefit to European consumers.

12.2. Strategy of the PTOs

12.2.1. Introduction

The regulatory environment has already been described. It has two main aspects:

- (a) The free interpretation of the concept of a closed user group (CUG). A CUG is equivalent in its composition to a stable economic grouping. The association between a company and its subsidiaries holding concessions or its suppliers meets this definition.
- (b) The liberalization of voice telephony value added services.

This environment enables the PTOs to offer voice telephony products such as cards, private networks and virtual private networks.

Attacked on their domestic market, the PTOs have launched a two-pronged strategy:

- (a) a defensive strategy in their country of origin with two objectives: to keep customer loyalty and to develop new practices;
- (b) an offensive strategy abroad to develop the traffic.

12.2.2. The defensive strategy of the PTOs in their country of origin

Two kinds of action have been carried out by PTOs in their country of origin to respond to the entry of resellers of traffic.

Rebalancing prices: reducing the price of the international PSTN in conjunction with a rise in local rates

This policy has considerably reduced the profitability of resellers and has made up for losses on international traffic by the gains recorded on local traffic. Table 12.1 illustrates the effects of the price rebalancing carried out in the United Kingdom by BT between 1982 and 1990.

Table 12.1. Effects of the price rebalancing in the United Kingdom (1982 = 100)

	1982	1990	Annual variation
Subscription	100	106	+ 0.7 %
Local communications	100	70	- 4 %
Long-distance communications	100	51	- 8 %
International communications	100	57	- 7%

Source: Analysys.

It is reflected in a slight increase in subscriber rates and very marked reductions in prices, especially for international and for long-distance calls.

This price rebalancing has been felt chiefly in the deregulated countries (Sweden, United Kingdom, Denmark) but has also taken place by anticipation in the main European countries

(Germany, France). In the two latter countries the prospect of alternative operators appearing by 1998 has encouraged operators to reduce their margins on the segments at greatest threat.

This price rebalancing (which is part of a defensive approach by the public operators) is also usually accompanied by an aggressive approach to the supervisory authorities in order to obtain a contribution by the new operators to financing the 'access deficit'. Table 12.3 summarizes the mechanism of price rebalancing and the argument about the 'access deficit'.

Apart from price rebalancing, the offer of increased services is an approach used by the PTOs in the framework of their strategy.

Increasing the offer of services in order to secure customer loyalty

This offer has developed around three types of products:

- (a) the international virtual private networks (IVPN);
- (b) price options: products with price reductions for some destinations, offered to customer segments threatened by competition;
- (c) the offer of associated VANS (value added services): developing an offer of associated services: a free breakdown of charges made, a digitizing plan, network management, incident management (these latter offers being developed more specifically in the context of the IVPN).

Table 12.2. Trend in PSTN rates over the period 1990/95 in Europe

	Long distance (%)	Subscription (%) ¹	Commentary
UK/BT	-52.70	14	Deregulation
France	-36.80	15	Anticipation of 1998
Sweden	-36.00	14	Deregulation
Germany	-25.00	0	Anticipation of 1998
Denmark	-20.50	0	Deregulation
Austria	-20.10	0	
Finland	-18.90	37	Deregulation
Luxembourg	-13.00	-12	
Belgium	0.00	35	
Netherlands	0.00	17	
Spain	17.20	16	
Italy	25.00	27	
Portugal	29.00	18	
Greece	51.40	0	

¹ Period 1992/95.

Source: Bossard/Idate.

Table 12.3. Strategy of the PTOs

1.	Reducing margins on highly profitable competitive segments (international and long distance)
2.	To remain competitive, the PTO reduces its rates on these segments (first phase)
3.	With a constant volume of calls, the share of earnings from communications which was used to finance the fixed costs of the local network is reduced
4.	The historic operator then seeks to 'compensate' for the share of lost revenue, and increases rates on services in the non-competitive segments
5.	The PTO asks to increase subscription rates and the price of local calls (second phase)
6.	On this sector, where the subscriber is captive, the PTO recovers the 'lost margin'
7.	The PTO calls for the supervisory authorities to set up a compensation system, which is justified by the 'access deficit'

Source: Bossard Consultants 1995.

12.2.3. Aggressive strategy of the PTOs abroad

Development of centres abroad: attack on the large accounts

The strategies used by the PTOs to deploy abroad have typically involved the establishment of subsidiaries of different sizes which usually run at a deficit, as Table 12.4 shows with the examples of operators active in France (1994).

Table 12.4. Presence of foreign operators in France

Operator	Number of employees	Turnover in million FF	Net earnings in million FF
BT France	354	375	-34.7
MCI	9	7.4	0.2
Sprint	20	20	-6.4

Source : Business reports.

The targeted segments are mainly the large accounts with considerable international traffic (more than FF 500,000 a year) or some sectors where the degree of maturity of telecommunications enterprises is very high (for example, the 'dealing rooms' in the banking sector).

The offers which are available are VPN, integration of voice and data, detailed statements, a volume rebate for off-net and on-net traffic, and cards.

The strategy of partnership agreements between national operators

From the viewpoint of the operators, access to lower cost infrastructures (in and outside their country of origin) is the 'warring element' in being able to become genuinely competitive.

From the viewpoint of demand, the clientele of the large international accounts (which contribute substantially to the operator's margin) is expecting a genuinely international offer from a single interlocutor.

In order to meet this need for a 'single window' and be able to offer international voice services at lower costs, since 1992 there has been a race to enter into partnership.

The result now is that the world has been more or less divided up into three dominant groups:

- (a) Uniworld (Unisource/AT&T) and AT&T World Partners (KDD, Singapore Telecom, Korea Telecom, DGT Taiwan);
- (b) the 'Phoenix' project, which has become Global One: FT/DT/Sprint;
- (c) the 'Concert' project: BT/MCI/VIAG.

Table 12.5. Review of the 'voice' offers of the main operators in France

	AT&T	BT	MCI	SPRINT
Re-routing of international traffic	–	Offer intended mainly for the large accounts.	–	'19BIS' offer
Virtual private network	Limited to interconnection with the VPN.	Virtual network services joint offer.	VNET in the US interconnection of the VPNs.	–
Cards	Cards sold mainly to US residents.	Not sold.	Cards sold to US residents.	Cards sold to US residents.
Remarks	A discreet operator in France up to now. The merger with Unisource and the Générale des Eaux should enable AT&T to establish itself from 1998.	This affects mainly the 300 large accounts in France.	The partnership agreement with BT is holding back the development of the French subsidiary MCI.	In spite of ambitious marketing and a full range of provision, Sprint is basically selling international telephony.

Source: Bossard analysis/interviews.

The partnerships between telecommunications operators, reflected in the creation of joint subsidiaries and overlapping shareholdings as Figure 12.2 illustrates, are giving rise to the development of world offers based on the exploitation of interconnected networks.

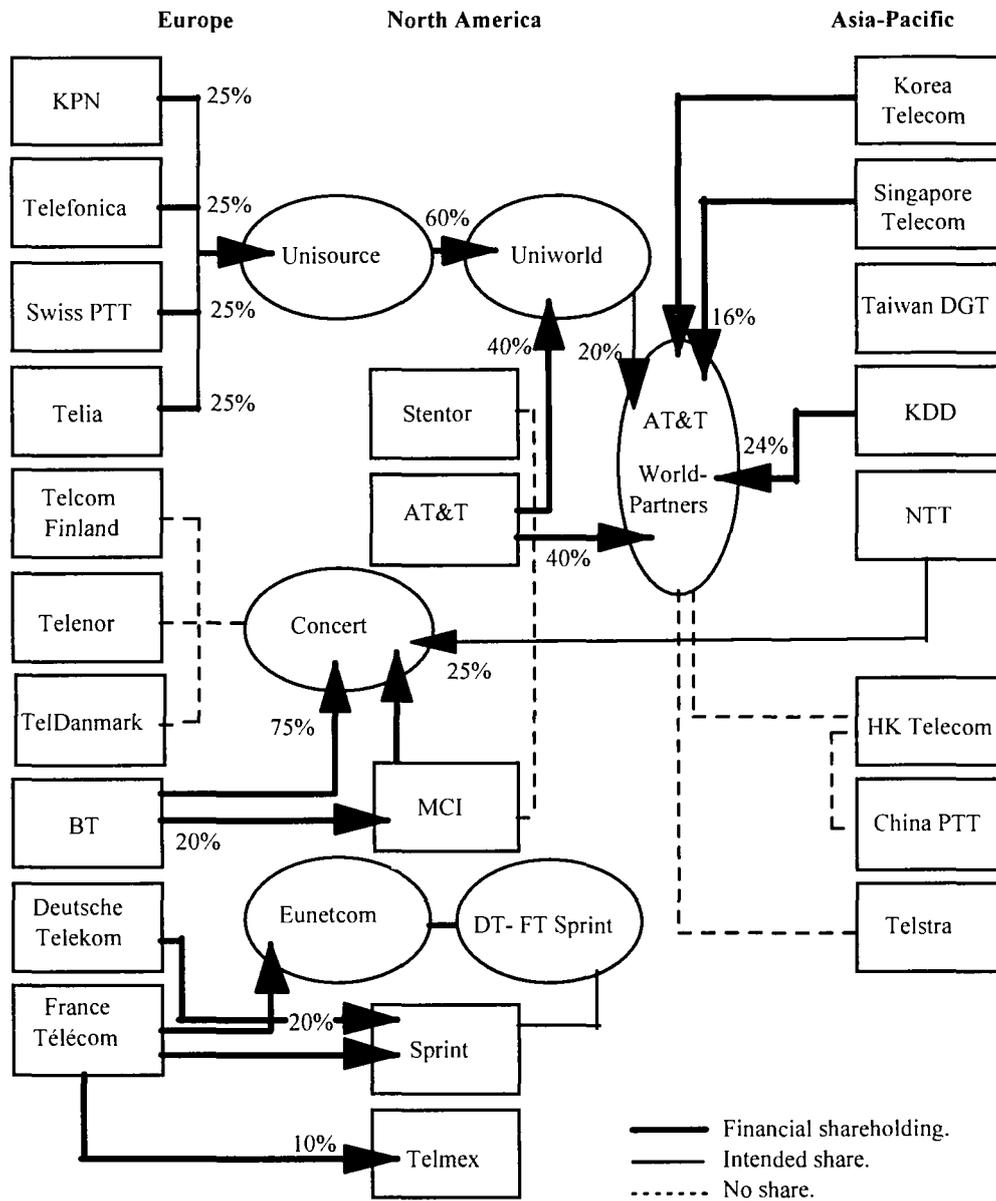
Europe as a whole benefits from this, being the seat of deployment of European networks, such as 'Cyclone' for BT/MCI or 'Açores' for France Télécom/Deutsche Telekom.

In parallel, we see the emergence in the main European countries of alternative operators who have not come from the telecommunications world, but who usually have rights of passage.

In Germany, the major electricity groupings (Viag, Veba and RWE) have formed partnerships respectively with BT, Cable & Wireless and Mannesmann/AT&T.

In France, CGE and Lyonnaise des Eaux et Bouygues have a wide strategic manoeuvre margin: CGE has joined with AT&T/Unisource by setting up Siris, a joint subsidiary, which is offering brokerage. Bouygues has linked up with Cable & Wireless/Veba for some re-routing services. EDF, SNCF and Sociétés Concessionnaires d'Autoroutes (SCA) are also acting as alternative suppliers of infrastructures.

Figure 12.2. Main linkages among telecommunications operators



Source: Bossard database 1995.

12.2.4. Conclusion

On the European market, we have found the following:

- the development of voice services offered by the PTOs such as the IVPNs;
- the creation of international consortia in which the dominant European players participate;

- (c) the development of an international offer based on 'European backbones' interconnected with the networks of the American or Asian partners;
- (d) the accelerating development of alternative operators looking towards the 1998 deregulation: for example: VIAG, VEBA in Germany, Compagnie générale des Eaux, Lyonnaise des Eaux, EDF, SNCF, and Sociétés Concessionnaires d'Autoroutes in France.

12.3. Impact of Commission measures

The contribution of the Commission, marked by the opening of voice telephony VANS and the definition of the concept of CUG, has had a beneficial effect in Europe:

- (a) by enabling new entrants to come into specific segments, with the emergence of call-backers on the SME segments and the development of re-routing services;
- (b) by stimulating competition, with the direct consequence of a steady drop in international prices for the benefit of European users;
- (c) by compelling the dominant players to react by developing the services they offer.

Through partnership strategies initiated by the dominant operators, the Commission's role is being felt more downstream than upstream.

The Commission does not initiate this type of agreement, but plays a subsequent monitoring role in order to prevent abuses of a dominant position.

12.4. Barriers still to be eliminated

The new entrants are emphasizing the lack of clarity in the concept of a CUG. If this idea were clarified, they would be able to define their strategy more clearly (a demand voiced especially by Viatel).

Another point of view is still being expressed by the large users and the new players: the opacity of the market and its control by the PTOs continues to place strong constraints on the development of offers on the market of voice telephony services. The reactions of operators such as Esprit, which has filed a case with the European Commission, illustrate well the difficulties encountered by new entrants in developing (see the case study on Esprit Telecom). It is therefore important to consider how interconnection charges can be reduced and prices brought closer to costs. From this point of view, the liberalization of infrastructures should be a major new landmark.

Part IV: Analysis of employment in the sector and the impact of technology

13. Employment trends in the sector

13.1. Introduction

The aim of this chapter is to analyse the impact of the single market on employment in the sector of deregulated services.

In Section 13.1, we attempt to calculate the numbers of jobs created in the new services and to compare them with jobs lost in traditional activities, while in Section 13.2 we look at the nature of the factors which explain these changes. We focus particularly on the two factors 'liberalization' and 'technological change'.

Taking all segments together, the telecommunications sector lost almost 87,000 jobs between 1990 and 1994.

Table 13.1. Employment trends in Europe among service operators

	PTOs	Of which mobiles	Of which VANS	Other PTOs (wired telephony)	Other operators mobile	Other VANS	Total
Germany	13.230	2.000	818	0	4.180	761	18.171
Austria	-1.173	140	0	0	0	0	-1.173
Belgium	1.085	150	60	0	0	200	1.285
Denmark	-1.300	181	0	0	260	0	-1.040
Spain	-3.143	600	358	0	0	376	-2.767
Finland	-2.012	351	0	-1.311 ¹	450	0	-2.873
France	949	2.000	675	0	575	930	2454
Greece	-3.946	0	0	0	306	0	-3.640
Ireland	-882	117	0	0	0	0	-882
Italy	2.208	3.400	178	0	0	336	2,544
Luxembourg	147	140	0	0	0	0	147
Netherlands	2.125	478	0	0	0	0	2.125
Portugal	-3.139	142	0	0	333	0	-2.806
United Kingdom	-89.400	1.900	219	3.212 ²	1.930	360	-83.898
Sweden	-15.378	812	85	0	686	113	-14,579
Total	-100.629	12.411	2.393	1,901	8.720	3.076	-86.932

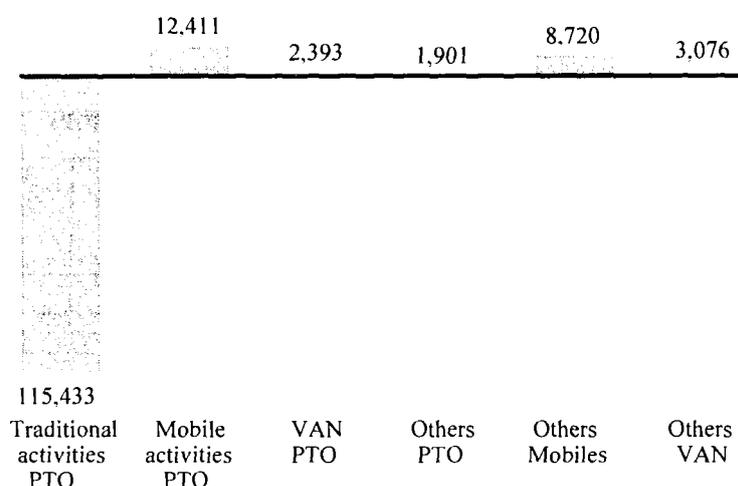
¹ Finnet.

² Mercury.

Sources: Information provided by the operators. For Italy, Spain and Portugal: UIT data. For Vodafone: Mannesmann Mobilfunk, SFR, DeTeMobil: UIT source, confirmed with OECD. For the new activities, where no figures are available: estimates made on the basis of average productivity ratios (physical output for mobiles: number of subscribers/employees, financial output for the VANS: turnover per employee). For the mobiles, these ratios have been calculated on the basis of the operator data, taking account of the development of the network. For the VANS, they are calculated from the data of the 40 leading European operators.

- (a) Over 100,000 jobs have been cut in the European PTOs in traditional activities (wired telephone network).
- (b) Over the period, 26,500 jobs were created in the new services: far from enough to make up for jobs lost in the traditional activities.
- (c) In the PTOs, the development of new activities in mobiles and in the VANS have generated in total almost 12,400 and 2,400 jobs respectively over the four years.
- (d) The jobs created among the new operators total 1,900 for the alternative operators, 8,700 for the other mobile operators, and 3,100 for operators on the VANS.

Figure 13.1. Contribution of sectors of activity to job creation in Europe: 1990/94



Source: Idate/Bossard.

However, these activities are growing rapidly, and will continue to generate new jobs in the years to come (see the Bipe study for an estimate of jobs generated by the year 2000).

The United Kingdom and Sweden have contributed most to the figures for job losses in Europe between 1990 and 1994.

When we look at these growth rates, we can distinguish three groups.

Countries which deregulated 'before time'

Over the period 1990–94:

- (a) In the United Kingdom, BT has cut its staff by 34.7 %.
- (b) In Sweden, Téliá has cut its staff by 29.1 %.
- (c) In Finland, job cuts amount to 15.2 %.

Countries which have been able to maintain stable or even increasing employment

One may mention:

- (a) Italy, which has benefited directly from the deficiencies of the Italian wired telephony network and the effort to catch up which started during the 1980s. Hence, over the period 1990 to 1994 Telecom Italia saw an increase in employment of 2.3%.
- (b) Germany, which has benefited from the efforts made by the network of the former GDR to adapt, and where employment has risen by 8.4%.

Intermediary countries

France or France Télécom initiated a modernization policy on its network at an early stage (the size of the network has doubled since 1978), while rapidly digitizing its infrastructures. Hence, steady growth has been possible, without any need for increasing staff.

Figure 13.2. Contribution of European countries to employment trends (jobs x 000)



Source: Idate/Bossard.

Figure 13.3 shows the relationship between growth of the network and the level of employment. It appears that countries which have some way to go to adapt and to increase the size of their networks have been better at maintaining the level of employment than countries which have already reached maturity such as Sweden, Denmark, the United Kingdom and, to a lesser extent, France.

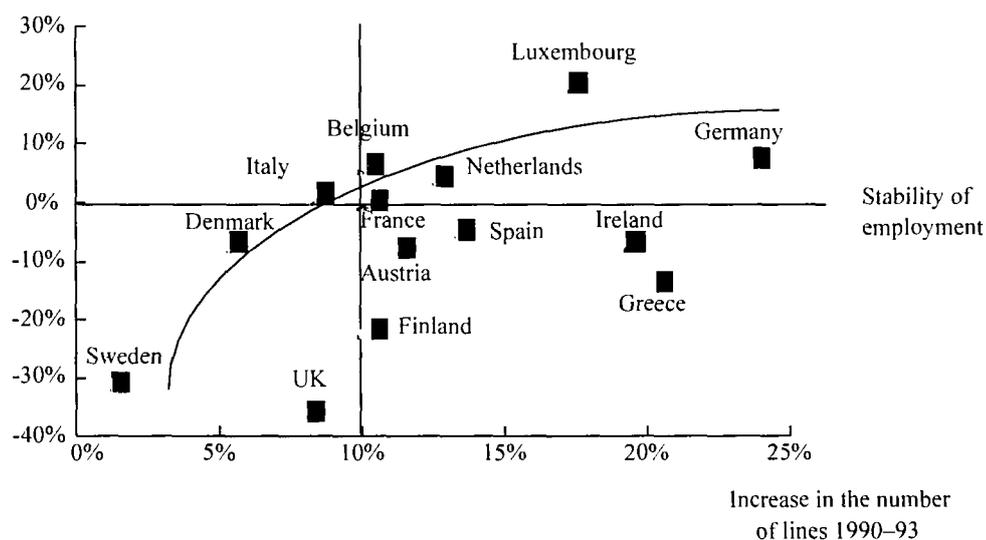
Table 13.2. Employment trends from 1990 to 1994

Country	% change
Austria	-6.4
Belgium	4.7
Denmark	-5.7
Finland	-15.2
France	1.4
Germany	8.4
Greece	-12.9
Ireland	-6.5
Italy	2.3
Luxembourg	20.3
Netherlands	6.6
Portugal	-12.2
Spain	-3.5
Sweden	-29.1
United Kingdom	-34.7
Total	-8.3

Source: Idate/Bossard.

Figure 13.3. Relationship between employment trends and growth of the network

Employment trends 1990–94
(% of staff total)



Source: Bossard.

13.2. Analysis of the impact of structural factors in the sector

Technological change has had a paradoxical impact on employment:

- (a) a positive impact due to the emergence of new services: these are mainly 'mobile' services and VANS;
- (b) a negative impact due to induced pooling of productivity.

When networks are digitized, the cost of maintaining the networks can be reduced, resulting in staff cuts in maintenance and repairs. In theory, digitizing networks means that maintenance costs can be reduced to a quarter of those incurred by similar systems. It therefore naturally generates productivity pools.

Technological progress therefore has a positive impact on the productivity of the operators, but a negative impact on employment.

The productivity gains recorded by certain European Union countries, especially Spain, are largely attributable to the digitizing carried out on the networks.

Operators with an expanding network can count on constant levels of staff, while improving their productivity. Operators with a stable network are obliged to resort to staff cuts if they want to improve their productivity. The good results recorded by Telefónica are associated with the growth in its network. The number of main lines increased in fact by 4.3% in 1994, as compared with 1.9% in France, 1.8% in the United Kingdom and 1.6% in Italy.

It is now found that only countries which are ahead in deregulation have so far exploited these productivity pools by getting rid of surplus jobs.

An important link between employment trends and the degree of implementation of the measures exists, as is shown in Figure 13.4.

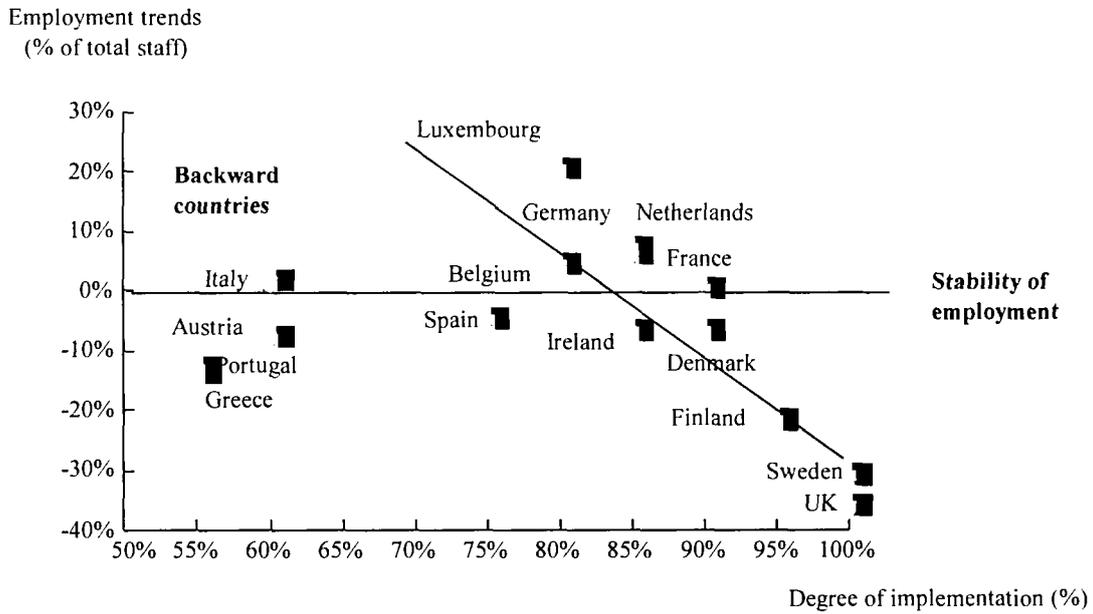
The extent to which the productivity pools are exploited varies considerably from one country to another:

- (a) The countries which are ahead in regulation, and are therefore competitive with traditional activities (the wired telephone network) have used them to considerable effect. These are the United Kingdom and Sweden, and, to a lesser extent, Finland.
- (b) The intermediary countries where the PTOs have few rivals for wired telephone activities have been able to maintain jobs. Network quality improvement has enabled them to develop new activities and to improve service quality. Hence, they have been able to improve customer loyalty, looking towards greater competition by the year 1998.
- (c) The countries which are backward in implementing the directives form a separate category: most of them have needed to deploy their network and for this purpose have used a sizeable labour force.

Other variables have been analysed to bring out the impact of technology on employment. The following conclusions emerge:

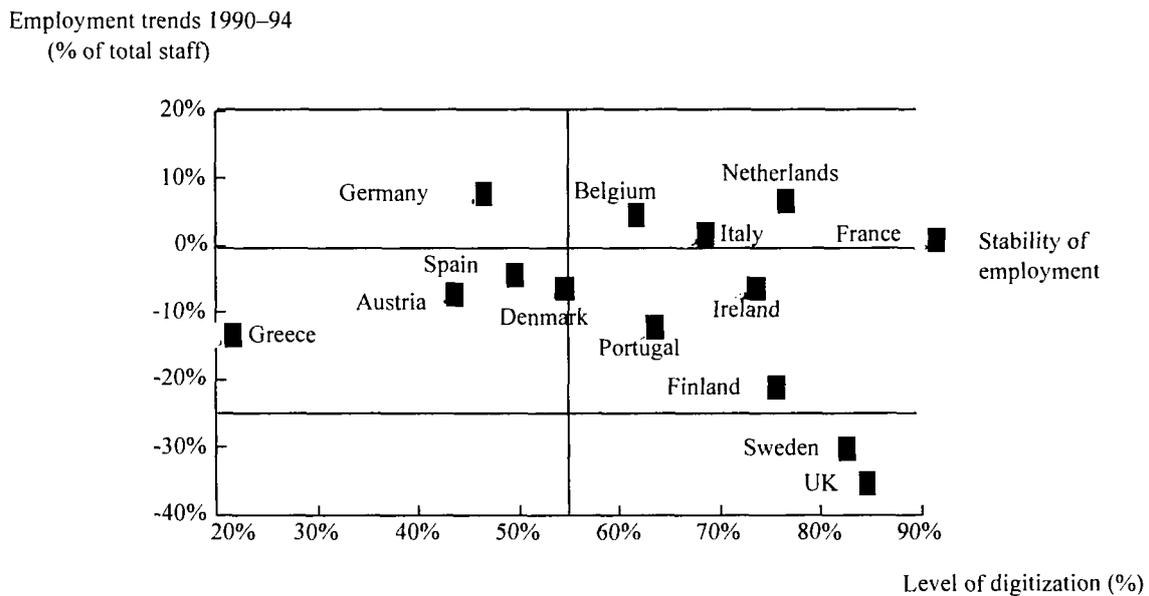
- (a) There is no apparent link between the level of a digitization achieved and staffing trends.
- (b) There is no apparent link between the growth in digitization and staffing trends.

Figure 13.4. Link between employment trends and degree of implementation of the measures

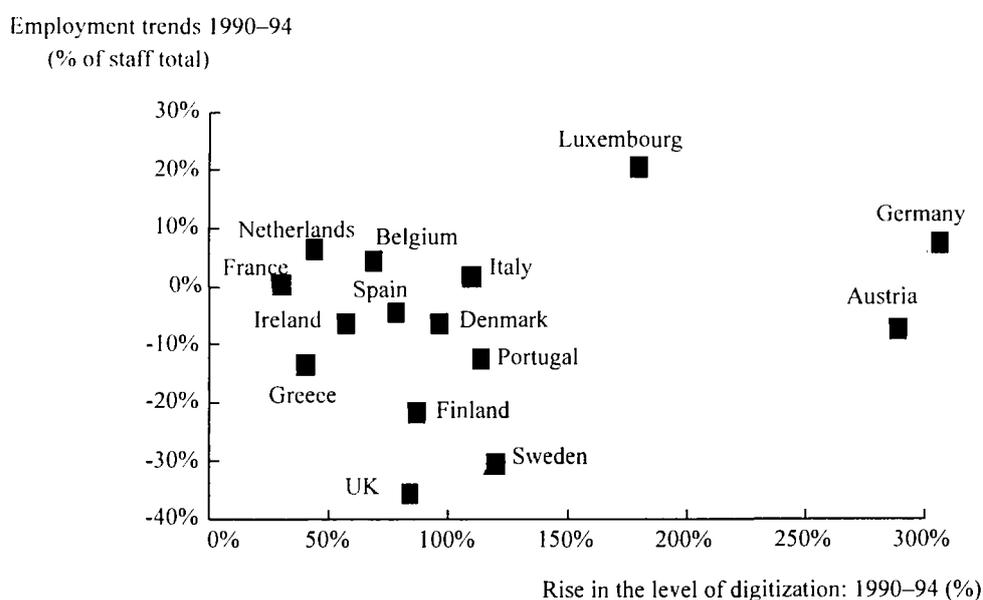


Source: Bossard.

Figure 13.5. Link between level of digitization and trends in staffing patterns



Source: Idate/Bossard.

Figure 13.6. Link between growth in digitization and staffing trends

Source: Idate/Bossard.

Conclusion: the negative effect of technology on employment occurs only in circumstances of high deregulation

Technological change does not directly explain employment trends. What it actually gives operators is productivity pools, which are exploited depending on the degree of competitive intensity on the market.

Without competitive pressure, the operators rely solely on the quality of the network to secure customer loyalty. In a competitive situation, the pressure on prices has a negative impact on the operators' margins and market shares. Maintaining the margins involves a reduction in costs and therefore a pressure on staffing.

The foregoing analysis illustrates well this phenomenon and brings out the existing correlation between employment trends and the implementation of the Commission's measures: the countries which are 'ahead' (the United Kingdom, Sweden, Finland, Denmark) are the countries which have reduced their staffing most.

However, we find that in most of the aforementioned countries, deregulation has been initiated by the Member States themselves, the European Commission not being involved in the process. This fact considerably limits the negative role which might be attributed to the Commission.

13.3. Impact on allied sectors

Other fields of allied activity have benefited indirectly from technological advances and liberalization, thus creating jobs.

Manufacturers of mobile equipment have benefited greatly from the growth in this sector, and their workforces have increased.

Likewise, in the field of electronic information services, almost 20,000 jobs have been created over the period 1990/94. Although some of these jobs are in value added services and have already been accounted for, another significant proportion stems from the availability of systems (access providers) or platforms (server centres).

Other sectors which may be mentioned are those where telecommunications provide a strategic tool: telemarketing or trading.

Finally, we note that in the user sectors, specialist internal functions are gradually being introduced in the purchasing and management of telecommunications services: at an initial estimate, the jobs created over the period under study total almost 1,500 for the whole of Europe. However, there are many specialist 'telecommunications' functions which actually represent transfers from existing computer functions. The final estimate should be brought down to 800 new jobs.

Alongside the productivity efforts mentioned above, the operators have increasingly resorted to skilled subcontracting or external services for some of the low added value functions, and this has resulted in staff being transferred to outside companies.

Services such as line installation or maintenance are now carried out by specialized companies. BT started the process by contracting out some of its logistical services in the early 1980s.

Other functions, such as sales or invoicing, may also be the subject of contracting out: on the commercial level, the example of the development of SMCs in 'mobiles' in Europe illustrates this desire (or necessity) of operators to contract out some of their functions.

13.4. Changes in employment structure

Throughout the sector, there has been an upheaval in the structure of employment and wages. Technological change has primarily affected low-skilled jobs: maintenance technicians, cable layers. At the same time, operators in a competitive environment or anticipating deregulation have recruited heavily in the 'support' functions of marketing, sales or finance.

These changes have not been entirely easy: the disappearance of low-skilled jobs is not compensated for by the number of skilled workers recruited, and the creation of new jobs does not help those whose jobs have been eliminated. Hence, the main problem to be dealt with by the PTOs is to remedy the mismatch between jobs and job seekers, by placing the emphasis on training or flexibility of work.

This change in the structure of employment is a phenomenon not confined to Europe, being found in all the mature countries.

Highly-skilled posts are increasing rapidly, especially among operators who have anticipated deregulation. The rate of highly-skilled employment is increasing among all the operators under review. However, with operators whose status has evolved 'before time' or who are already in a competitive situation, the waves of job cuts which affected staff *en masse* initially

are now affecting skilled workers. Reorganization schemes (inspired by re-engineering) which are being set up, aim in fact to reduce the intermediate hierarchical levels. For example, the proportion of skilled workers at France Télécom rose from 37% in 1976 to 52 % in 1990.

Figure 13.7. Changes in employment structure: Dutch post and telecommunications service

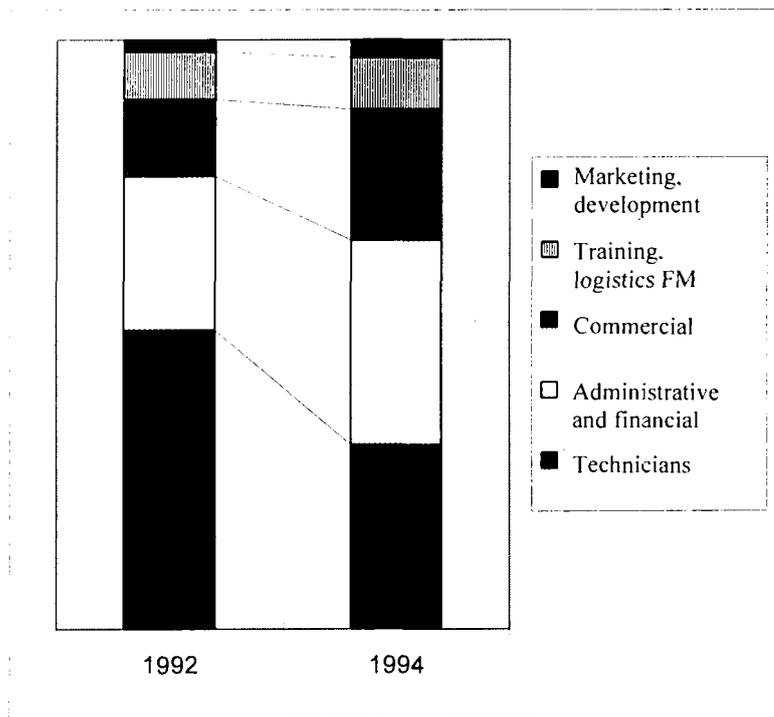


Figure 13.8. Employment trends 1985–92: Telstra

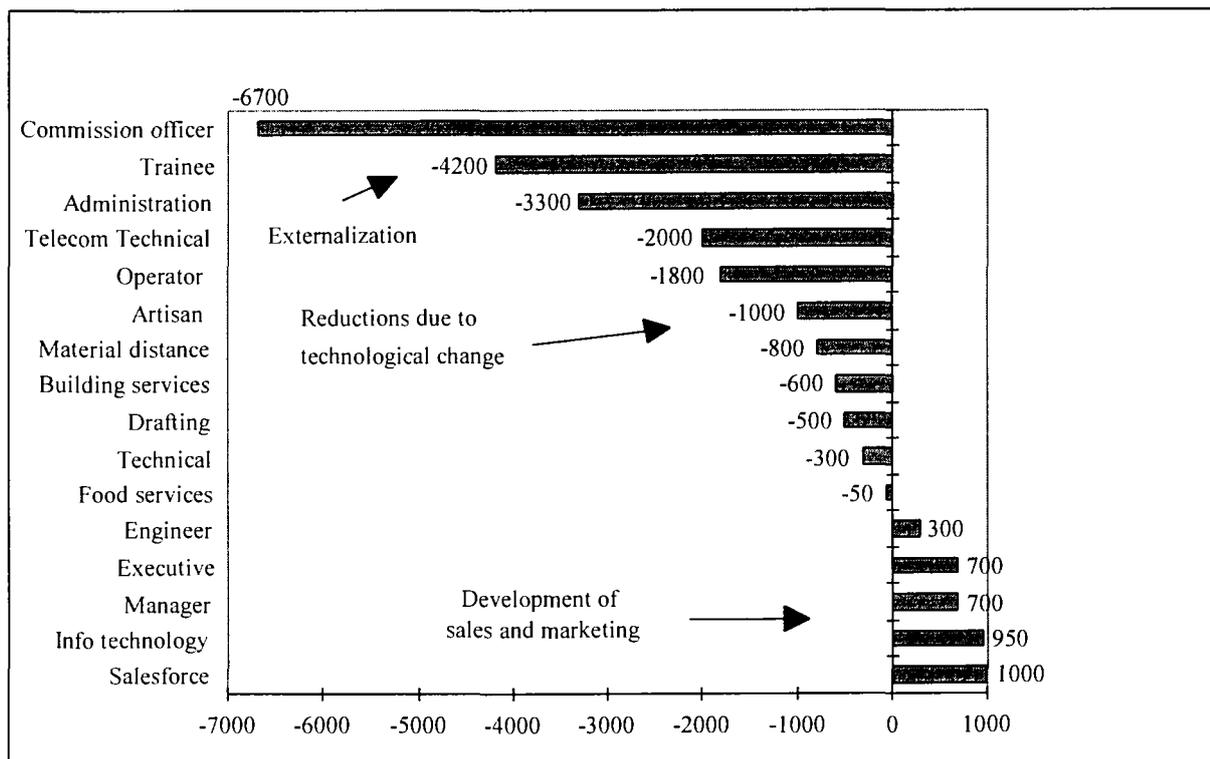
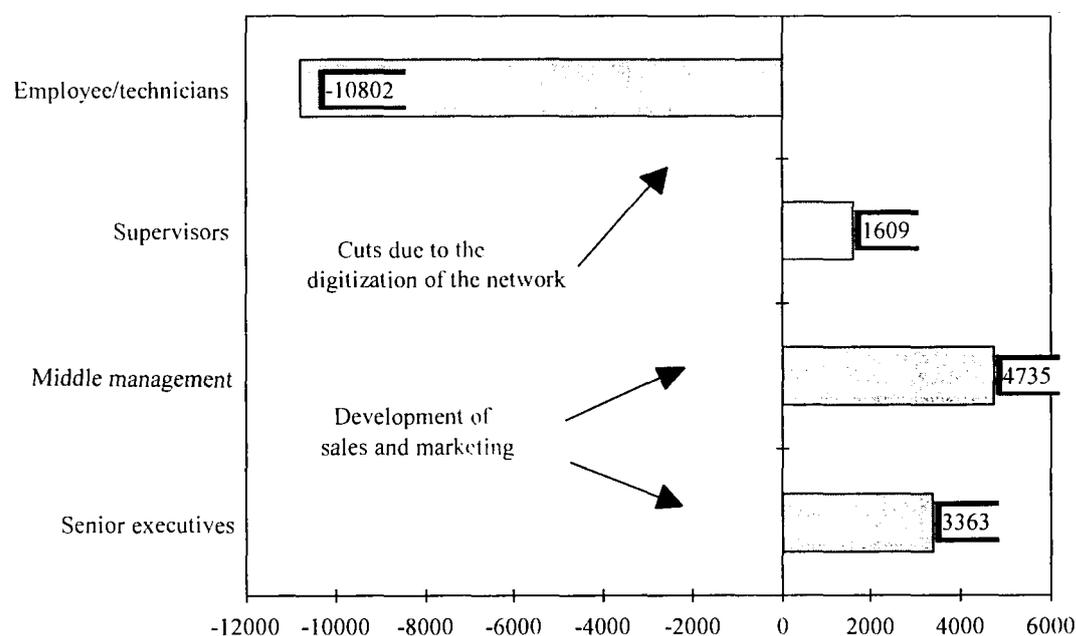


Figure 13.9. Employment trends 1992–94: France Télécom

13.5. Conclusions

13.5.1. Main changes in employment

In conclusion, the positive effect of the creation of 26,500 jobs in the new activities (new operators, mobiles, VANS) is far from enough to compensate for the jobs lost in traditional activities, totalling 100,600 jobs over the period 1990/94.

These losses are more significant in the countries which are ahead in deregulation and therefore subject to a high degree of competition. In fact, the negative impact of technology on employment occurs only where there is marked deregulation.

Deregulation also has a significant impact on the structure of jobs and wages in the sector: recruitment occurs in the commercial and marketing functions, and redundancies mainly affect maintenance technician posts and cable layers.

13.5.2. Impact of Commission measures

Up to now, the measures taken by the Commission have mainly affected the deregulated sectors (mobiles, data and satellites). However, these are the very sectors which create jobs. It may therefore be reasonably said that the Commission, by promoting the development of these services, has indirectly created new jobs (almost 12,000 in mobiles and data).

In the traditional sectors of telephony (voice services), the operators which have cut back on their staff have done so because of market conditions (intensity of competition) and the productivity pools brought about by digitization. The competitive conditions in these countries

(UK and Sweden) have been caused by initiatives taken there, not by recommendations from the European Commission.

Confining the period under review to 1990/94 of course makes it difficult to reach firm conclusions on the subject.

- (a) The countries which still have monopoly over wired telephony activities have not yet reacted to the entry of competition into their sector: in future years there will certainly be major job losses in the operators' traditional activities, as has been the case in the United Kingdom and Sweden. The recent announcement by Deutsche Telekom of the loss of almost 50,000 jobs gives a foretaste of the changes to be expected.
- (b) On the other hand, the mobile, data and satellite services, which are still far from maturity, continue to enjoy growth rates in two figure percentages and the creation of many jobs.

APPENDIX A

Case studies

A1. SES/Astra

A1.1. Profile

Société Européenne des Satellites
Château de Betzdorf
L-6815 Luxembourg

Principal directors

Chairman: Mr Romain Bausch
Financial Director: Mr Schulte
Technical Director: Mr Milton Torres
Marketing Director: Mr Yves Elsen

Shareholders

Luxembourg State	20%
Deutsche Telekom	17%
Pearson	6%
Tractabel	3%
Others	54%

The other shareholders of SES/Astra include more than 20 organizations, most of them from Luxembourg: Société Nationale de Crédit et d'Investissement, Banque et Caisse d'Epargne de l'Etat (Luxembourg), Deutsche Bank Luxembourg and Dresdner Bank Luxembourg, AXA, UAP, Aachener & Münchener, etc.

A1.2. Principal dates

1985	Establishment of SES, Société d'Exploitation de Satellite, the first private operator in Europe.
December 1988	Launch of the first Astra satellite, Astra 1A. Luxembourg grants SES an exclusive contract for satellite television at the orbital position 19.2° East. This contract will run until 2010.
February 1989	Astra broadcasts begin.
April 1990	3Sat is retransmitted from the Astra satellite and is the first public channel to link up with a private satellite.
February 1991	Launch of Astra 1B.

- December 1991 The Council of Ministers of the post and telecommunications services of the EUR-12 adopts a new directive on the European television broadcasting standard D2 Mac.
- April 1992 CNN links up with Astra.
- June 1992 Banexi joins the French SG Développement, Investissement, Finance et Développement, and the Compagnie Financière de Robas to take over the 7.6% holding of Kinnevik in Astra.
- February 1993 Astra borrows FF 220 million to finance its fifth satellite, Astra 1E. This follows the loan taken out in September 1992 for FF 135 million to finance Astra 1C and Astra 1D.
- May 1993 Launch of Astra 1C.
- September 1993 TNT Cartoon links up with Astra.
- May 1994 The Deutsche Bundespost Telekom takes a capital share of FF 1.5 billion in SES. There is a rider to the concession agreement to authorize the telephone operator to take 16.7% of the capital.
- Launch of Astra 1D.
- October 1995 Launch of Astra 1E, the first satellite fully dedicated to digital broadcasting.
- November 1995 A subsidiary opens in France, Astra Marketing France, to develop services on the French market.

A1.3. Key figures

Table A1. Financial values (in million LF)

On 31 December	1990	1991	1992	1993	1994
Turnover	1,523	3,488	5,443	6,714	8,881
Operating profit	ns	ns	ns	ns	ns
Net profit	361	1,306	2,446	2,920	3,991
Materials investment	ns	ns	ns	ns	ns
Staff numbers	95	110	126	nd	170

ns = figure not supplied

A1.4. Comments

Astra, the first satellite company in Europe, is one of the most successful satellite operating companies in the world. This good position is due largely to the diversity of services offered via the five Astra satellites which are now operational. At the end of 1995, these satellites were reaching about 60 million households across Europe, 20 million by direct reception and 40 million via cable network. According to Continental Research/Carat Astra Forecast, the number of households served by Astra would more than treble by the year 2000. The chief

markets for this operator are Germany, Central Europe, the United Kingdom, Scandinavia and Finland respectively. Southern Europe is also a promising market; in Spain for example, the direct reception market is almost entirely geared to Astra.

Astra's key activity is television and radio broadcasting. It is divided among three entities: the Satellite Operations Centre (SOC), the Network Operations Centre for analogue (NOC), and the Digital Network Operations Centre (DINO). The company has four satellites each with 16 channels; Astra 1E was launched last October, and is the first satellite entirely dedicated to digital broadcasting. A sixth and seventh satellite operating on the high band (11.70 to 12.75 GHz) are to be launched in mid-1996 and mid-1997, thus bringing Astra's digital capacity to 56 repeaters (sold). The leasing contracts for a repeater are generally concluded for a period of 10 years. In total, LF 81 billion have been invested in the development of digital television.

In order to increase its fundholding for new satellites, SES extended its range of shareholders in 1995 by selling 16.7% of its shares to Deutsche Telekom for about DM 500 million. The second stage is to be the quotation of the SES shares on the stock exchange in the first half of 1996. Astra is also intending to take full advantage of the synergy between cable, satellite and telephone, and may develop this latter activity.

A1.5. Future positioning

In spite of, or because of, its success, SES Astra has experienced (and is continuing to experience) quarrels among its shareholders. In 1994 the main (Luxembourg) shareholders of SES rejected the group chairman's project to grant all the channels in the next three satellites to four programmers associated with Murdoch and Kirch. In fact, they did not want a group of industrialists outside SES to take a controlling share in satellites and in the development of digital television in Europe. Pierre Meyrat was replaced in 1995 by Romain Bausch; SES finally transferred some of its shares to Deutsche Telekom; for the German operator, this is a highly profitable operation since the group is planning to develop multimedia services.

However, it seems that this instinct for independence may one day meet its limit. In fact, when a company includes, among its five main clients, audiovisual companies on an international scale, it is highly likely that they will want to take a share in their 'service company'.

The development of digitization, and the fact that Astra, with Telepiù, launched the first European offering in early 1996, should strengthen the development of the operator. However, SES may soon come up against technical problems. In fact, although the company is the only one in the world to offer such a wide range of services on the same orbital position, the 19.2° East position will be saturated with eight satellites. Luxembourg has asked ITU to give it eight new orbital positions, but this request will take some time to process. In the meantime, SES might share the orbital position of Deutsche Telekom, but this will no doubt raise legal and technical problems.

Today, the only aspect which enables the company to preserve a degree of unity in its shareholding is its profitability. The company needs new funds to finance its development. SES shares are soon to be launched on the stock market, but this will necessitate a change in the concession contract since it requires that no shareholder may hold more than 10% of the capital (except where a waiver is granted by the government of Luxembourg). This procedure is still the subject of stormy debate within the company's board of governors.

Moreover, if it sees the opportunity, SES may diversify its activities and its area of coverage.

A1.6. Pan-European problems

Astra's problems on the pan-European level are considerably different from areas dealt with in the other case studies.

First, from a technological point of view, the satellite makes it possible to offer pan-European coverage from the outset, either by direct reception or indirectly via cable networks.

From the linguistic point of view, which is an important natural barrier in audiovisual media, the capacity for offering programmes dubbed in the languages of each country are promising elements for the development of the system.

Again, from an economic point of view, Astra benefits from economies of scale due to the wide range of population it serves: more than 120 million households and a total of 60 million subscribers in 1995. The user interest has, moreover, been especially emphasized because the system, through its pioneer aspect, has received a unique orbital position which gives access to a very wide range of programmes in an extremely simple manner (there is no need for multi-heads or motorized receiving equipment!).

Thus, Astra seems to be the only system which has succeeded at the pan-European level, and it has a virtual monopoly: only Eutelsat is posing as a rival. Its success is based on its strong internal momentum, but above all on the inconsistencies of government policies in the field of satellite broadcasting, which has eliminated most serious competitors.

The Directive on Television without Frontiers adopted in 1989, presented a (minimum) regulatory framework in an attempt to harmonize the varying national regulations, or sometimes to substitute for them where they did not exist. For satellite television services which can be received in several states, the European Parliament is asking Member States to ensure that the cooperation rules initiated by the ITU are respected, relating to the allocation of frequencies and the ONP. In fact, satellite services often enjoy a more flexible regulatory framework than cable networks, which are subject to national regulation which is sometimes more restrictive.

Naturally, the development of domestic systems used for TV broadcasting tends to limit Astra's market power, but these systems are by nature confined to national markets and are based on a balance with the other uses of satellite. Hence, Astra preserves its head start, and its attraction will be intensified by the demand for pan-European broadcasting, including the share of national channels.

One risk for Astra is renewed competition for pan-European broadcasting, with the return of Eutelsat or at the initiative of a major private channel. From a more global point of view, the linkage between the broadcasting function and the programming function seems to have been reversed to the disadvantage of Astra, which is increasingly becoming a lessor of capacity, whereas the number of its customers tends to be confined to major operators of pay-TV in Europe.

A2. Esprit Telecom

A2.1. Profile

Esprit Telecom BV
World Trade Centre
Stravinskylaan 929
1077 XX Amsterdam
The Netherlands

Principal directors

Chairman: Michael Potter
DG Esprit Telecom UK: J. Hudson

Shareholders

Mitel
Walt Anderson (founder) and directors
Apax Partners (venture capital)

A2.2. Comments

Based in the Netherlands, the Esprit Telecom group carries out most of its activities in the United Kingdom, where in 1993 its local subsidiary obtained one of the first reselling licences for international traffic (ISR: International Simple Resale).

Its activities focus on providing international telecommunications services (telephone and fax) to large enterprises, but the group hopes to extend quickly to SMEs and to residential customers.

Esprit Telecom is also extending its geographical reach. Outside the United Kingdom, it already has offices in four other European countries (the Netherlands, Belgium, Spain and France) in which it has obtained permission to operate, and a network which extends beyond the Atlantic to the United States and Canada. It is also planning to establish a foothold in four new markets (Germany, Ireland, Italy and Switzerland) over the next 18 months, through a capital increase launched in November 1995 subscribed by Apax, which is increasing its shareholding, and by Hancock Venture, a new shareholder.

The company has ten years' experience on the American market. Esprit Telecom is resolutely within the spirit of the opening of the European market encouraged by the Commission. In its commercial presentation, one of the arguments is exactly that: 'the time of monopolies is over'.

A2.3. Development

Esprit Telecom has its own network between the main European capitals, which enables it to offer the services which it commands from end-to-end to medium- and large-sized European companies. For destinations outside this context, Esprit has negotiated special agreements with some of the large international operators.

The group is planning to hire connections from other operators (cable networks, railways, 'utilities') in order to reduce its costs. It could also construct its own connections in some circumstances; for the moment, only the United Kingdom offers this possibility at the regulatory level. In the immediate future, Esprit would be interested in opening its own connections in the Netherlands.

The group is speeding up its policy for European expansion, since it hopes to gain an advance on its potential competitors when there is a general opening up to competition in 1998.

The services offered by Esprit Telecom are addressed to companies with a volume of at least FF 20,000 a month in international communications. For the large accounts, contracts are carried out to order, on the basis of the customer's usage of international telephone communications. For clients with international bills between FF 20,000 and FF 80,000, there is a standard system of prices, which divides costs into three groups (Europe, North America, the rest of the world). The pricing principle is degressive, depending on the volume of calls. All the client's international communications (telephone and fax) pass in transit through the Esprit network by means of a computer system installed directly on the customer's telecommunications equipment, and which automatically directs outgoing calls to Esprit Telecom's national server.

The system seems to be relatively transparent. There is no special subscription, no equipment change, and no special numbering system.

Esprit Telecom is now present in a limited number of European countries (the United Kingdom, the Netherlands, Belgium, Spain, France) but its aim is to position itself in each of the countries of the European Union.

A2.4. The problems of competition

Supplies

Esprit Telecom itself only needs a relatively modest infrastructure, because its transmission capacity is leased from on-site operators. For switching, the group has been able to make a free choice among the offers available, and it has finally chosen Ericsson¹¹ to equip it up to the present time. In early 1996, the Swedish group had its US\$ 8 million contract confirmed for providing exchanges to serve intelligent network nodes for Europe from the London base of Esprit.

As regards the supply of transmission capacity, the problems are quite different and more complex. According to Esprit Telecom, access to the dedicated lines of the historic operators is still difficult and cumbersome. Moreover, in 1994, it brought a case to the Commission to compel Telefónica to lease to it an international circuit at 512 kbits/s. The group is planning to lease connections from other operators (cable networks, railways, utilities) in order to reduce its costs. It might also, in some circumstances, build its own connections; for the moment, only the United Kingdom offers this possibility at the regulatory level. In the immediate future, Esprit would be interested in opening its own connections in the Netherlands.

¹¹ The Swedish manufacturer is also the second supplier for BT.

A2.5. A real opening of the market

Although Esprit Telecom deliberately places itself in the line of opening of the European telecommunications market, its directors do not hesitate to proffer some ascerbic criticism of the way the competition actually functions, and of the dead weight of the former monopolies on the sector. According to Michael Potter, the chairman of Esprit Telecom, although the European Commission is trying to open up the European market, the monopolies are putting up a formidable degree of resistance.

Moreover, the group does not hesitate to intervene in the courts as soon as the need to do so is felt (see above). The firm has also filed a complaint with the European Commission about the plan by the Dutch government to 'open' the national market of voice telephony.

In public speeches, Michael Potter, the chairman of Esprit, explained that 'Enertel is simply going to position its prices in relation to those of the post and telecommunications services', adding that in early 1995, the Dutch post and telecommunications service itself had still not given the Dutch or Community authorities the information about its costs which had been requested one year before.¹² The fact that BellSouth is joining the consortium is not especially positive; according to the press, still quoting Mr Potter, the US operator has only limited experience on competitive markets (a monopoly on the telephone market in the United States and usually a duopoly in operations, especially mobiles, in which it takes part abroad).

In the context of the Atlas and Phoenix projects, Esprit has also put forward a number of arguments against Sprint joining with France Télécom and Deutsche Telekom. This agreement would give the US operator an unwarranted advantage over the other European companies pending the opening-up in 1998.

In the United Kingdom, the group is also vehemently opposed to Oftel's proposal to remove the constraints placed on Mercury in operating its international network. In recent press campaigns, Esprit leaders placed special emphasis on the constraints which continue to limit the ordinary development of competition in this sector: the high costs of specialist international connections, the insufficient opening of the infrastructure market (the liberalization called for in the Green Paper on the liberalization of the telecommunications infrastructure and cable television networks (Parts I and II) (COM(94) 440 and COM(94) 682)) is, of course, strongly supported by the group). More specifically, Esprit Telecom accuses Oftel of giving too much room for manoeuvre to Mercury in fixing its access costs and interconnection charges: overall, despite the competition from resellers of international traffic (ISR), Mercury has continually increased its presence on the market for international services in the United Kingdom for the past two years.

At the other end of the chain, Esprit will increasingly find itself confronted with competition from new operators, like Viatel. The group is speeding up its European expansion policy in order to gain an advance on its potential competitors when the market is generally opened up from 1998.

¹² For this, Esprit has also requested compensation and interest from the Dutch regulator. In this case, Esprit has obtained the support of the National Association of major telecommunications users. BTG.

A3. Mannesmann Mobilfunk

A3.1. Profile

Mannesmann Mobilfunk GmbH
Am Seestern 1
D-40547 Düsseldorf

Principal directors

Chairman: Jurgen von Kuczowski (previously deputy chairman; appointed in mid-1994 to replace Peter Mihatsch, who had been in office since 1990, conducting the entire development phase for the D2 network, and who was appointed a member of the governing body of the company)

Head of the services department: Armin Toepfer

Shareholders (October 1995)

Mannesmann AG	61.6%
AirTouch Communications	31.4%
Miscellaneous	7.0%

A3.2. Principal dates

December 1989	Licence granted by the Federal Ministry of Posts and Telecommunications for the D2 licence (second German GSM network).
January 1990	Creation of Mannesmann Mobilfunk GmbH and start-up of network construction.
June 1991	Beginning of technical tests in 15 cities.
June 1992	Commercial opening of the network.
End 1992	Coverage of 60% of the territory and 80% of the population (117,000 subscribers).
End 1993	Coverage of 80% of the territory and 90% of the population (490,000 subscribers).
End 1994	Coverage of 90% of the territory and 95% of the population (842,000 subscribers).
May 1995	Launch of the D2 Fun service for residential clients; finally reaches 1 million subscribers.
September 1995	Coverage of 92% of the territory and 97% of the population (1,200,000 subscribers).

A3.3. Key figures

Table A2. Financial values (in million DM)

On 31 December	1991	1992	1993	1994
Turnover	0	138	902	1.750
Operating profit		-343	-170	237
Net profit	-330	-340	-224	112
Material investments	296	491	737	667
Staff numbers	1,015	1,615	2,256	2,589
Subscribers (× 1,000)		117	490	842

A3.4. Principal subsidiaries and shareholdings

CERSA (Compañía Explotadora de Radiobúsqueda) radiomessaging (Spain) 5 %

A3.5. Commentary

In 1989, Mannesmann which was linked with national and international partners (PacTel, which has since become AirTouch; Cable & Wireless, DG Bank, etc.) set up the Mobilfunk consortium, which obtained a licence for the construction and operation of the second German digital cellular network, D2 Privat.

The following year, Mobilfunk was authorized to extend its network to the new *Länder*. Mannesman was granted the status of second national operator by the Ministry of Press and Telecommunications, which enabled the company to receive line leasing tariffs based on the costs of its access to the German fixed network.

The first D2 networks were open for technical tests in July 1991. Opened commercially in mid-1992, the network developed rapidly (see Section A3.3). Since August 1995, the number of subscribers to D2 is slightly above those for D1 (operated by DeTeMobil, a subsidiary of Deutsche Telekom, launched on the same date).

Following the resale of shares by various partners (in 1994, DG Bank sold its 10% to the other shareholders, and in 1995 Cable & Wireless withdrew following its linkup with Vebacom), Mannesmann and AirTouch remain the two main shareholders of Mobilfunk.

On the organizational plane, Mannesmann Mobilfunk GmbH has a general board, which defines the policy options of the group, and eight regional boards (the D2 centres). The group's commercial division is arranged into three customer groups: the large accounts, the small and medium-sized enterprises, and professional and residential customers. The distribution structure is in fact highly decentralized, with the company moreover relying on 13 service-selling companies and 2,000 distributors (selling cards and terminals).

Apart from the development of Mannesmann Mobilfunk, it is interesting to look at the strategy of the Mannesmann group in telecommunications.

Alongside its mobile activities, Mannesmann is interested more generally in the telecommunications market, taking part in various groups which may compete with Deutsche Telekom from 1997.

Since obtaining the D2 licence, Mannesmann has invested considerable sums in telecommunications. In 1993, investment in telecommunications accounted for 41% of the total investment of the Mannesmann group, for only 3% of the group's revenue. In total, the group plans to invest at least DM 2.5 billion in telecommunications over the period 1995–98 (more than has already been invested during the previous four years in the mobile network).

In 1993 Mannesmann (50%), RWE (number one in energy in Germany, 25%) and Deutsche Bank (25%) set up the GfD consortium (Gesellschaft für Datenfunk) in the field of mobile data transmissions, to respond to the bid launched by the Federal Ministry of Post and Telecommunications at the end of 1993. It was finally GfD which was chosen for the licence.

A3.6. The problems of competition

Supplies

Mobilfunk has made sizeable investments since its establishment, a total of DM 2.4 billion between 1991 and 1994, intended to promote very rapid take-off of the network (see main dates in Section A3.2). By the year 2000, cumulative investment in the network should be DM 4 billion.

Mobilfunk has had to go very fast to be competitive with respect to DeTeMobil, which had a certain head start, since it already had an analogue networking operation and very advanced investment potential. In fact, the advance of the D1 network has been slightly faster, but D2 has been able to establish a more balanced distribution, and even to gain a lead in the networks of the former East Germany.

Mobilfunk has looked to the opening of the market for its equipment, although it ultimately found itself with a much more concentrated set of suppliers than its competitor DeTeMobil. In this case, most of its infrastructure supplies (exchanges and base stations) come from Ericsson, while the subsidiary of Deutsche Telekom is broken up between Siemens (exchanges) and Philips, Alcatel and Motorola (base stations). Of course, this choice has an impact on costs, because of the economies of scale, but also on the quality of the network (quality of transmission and of security) which is regarded as being better for D2 in the light of tests carried out by an official inspection agency.

As another element in the services it offers, Mobilfunk is increasingly using its own Hertzian connections for linking its base stations to its exchanges 'in order to be able to offer economic, high quality connections'.

A3.7. Services offered

Mannesman Mobilfunk has also practised a dynamic policy for establishing new services. Four points will highlight this policy:

- (a) The distribution through SMCs (service marketing companies). Although the share of direct sales is above 40% (see Table A3), which is markedly higher than that of its

competitor DeTeMobil, this actually reflects a strong commercial dynamic within the company. However, the SMCs (led by Debitel) are increasingly attacking practices regarded as anti-competitive, whereby the operators announce price reductions for potential customers even before they are known to the distributors.

- (b) A highly dynamic policy of international agreements. By May 1995, Mannesmann Mobilfunk had negotiated international roaming agreements with 35 operators in 22 countries: Australia, Austria, Belgium, Denmark, Estonia, Finland, France, Greece, Hong Kong, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Norway, Portugal, South Africa, Sweden, Switzerland, Turkey and the United Kingdom.
- (c) A policy deliberately geared to added value services, services which are basically due to digital technology but which are rendered more competitive as the selection of materials and coverage have been brought under control. The services offered on the D2 network are divided into four major groups (see Table A4).
- (d) A rapid reaction to market changes. In May 1995, when E-Plus was just emerging from its start-up phase, Mannesmann Mobilfunk presented a new D2 fun service for individuals, offering particularly advantageous prices.

A3.8. The real market opening

The success so far encountered by Mannesmann Mobilfunk in its attempts to enter the telecommunications market raises the problem of genuine opening to competition. The choice of Mobilfunk for the GSM network and then of GfD for the mobile data network tends to reinforce duopoly, rather than producing a genuine market opening, especially as the third network, the micro-cellular E-Plus network, is experiencing only moderate success (120,000 subscribers after one year's commercial operation). Mannesmann's position on the fixed telephony market, although approved by the regulator, may well strengthen this impression of restricted competition, whereas it seems that the multiplication of the number of players in this segment is only transitory and that only a few can claim to be viable.

Table A3. Market shares of GSM distributors in Germany (September 1995)

GSM distributors	%
DI direct	17.0
D2 direct	22.0
Debitel Bosch	18.8
Martin Dawes	9.4
Dekraphone	8.1
Talkline	6.9
Mobilcom	5.0
Hutchison	4.7
Motorola Telco	4.1
TMG	2.7
Drillisch	0.4
E-Plus Service	0.9

Table A4. The range of services of Mannesmann Mobilfunk

GSM services	Basic	telephone fax and data text messages (short)
	Supplementary	call transfer call filtering call signal
Added value services		placing on hold information operator assisted calls reservation services traffic information repair services flight information travel service
Other services		letterbox international roaming

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The Single Market Review

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**Volume 6 Telecommunications:
liberalized services**

This report has been written as part of a major review of the Single Market undertaken by the European Commission. The 1996 Single Market Review assesses the progress made in implementing the Single Market Programme since 1992, through a series of 39 separate reports on specific business sectors or single market issues. This research amounts to the first extensive analysis of what has been happening to the European economy as a result of the Single Market Programme.

Written by leading subject experts under the coordination of the Directorates-General 'Internal Market and Financial Services' (DG XV) and 'Economic and Financial Affairs' (DG II) of the European Commission, this Review provides essential information to all those worldwide who are interested or involved in the development of the Single Market. It also gives invaluable insight into specific industry sectors for investors, analysts and corporate strategists.

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	3	Credit institutions and banking
	4	Distribution
	5	Road freight transport
	6	Telecommunications: liberalized services
	7	Advertising
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