COMMISSION OF THE EUROPEAN COMMUNITIES
Directorate-General for Regional Policies

REGIONAL DEVELOPMENT
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5

The economic and social impact of reductions in defence spending and military forces on the regions of the Community

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Directorate-General for Regional Policies

The economic and social impact of reductions in defence spending and military forces on the regions of the Community

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Preface

Each year, the Directorate-General for Regional Policies of the Commission of the European Communities launches a number of studies in the field of regional policy and regional planning. These studies mainly aim at providing a basis for policy formulation internally, as well as the preparation of programmes and initiatives and a basis for analysing the impact of current or planned activities. The most interesting or innovative of these will now be published in a series entitled *Regional Development Studies*. With this series the Directorate-General hopes to stimulate discussion and action in a wider sphere on the research results received. The publication of the studies is addressed to politicians and decision-makers at European, regional and local level, as well as to academics and experts in the broad fields of issues covered.

It is hoped that by publicizing research results the Commission will enrich and stimulate public debate and promote a further exchange of knowledge and opinions on the issues which are considered important for the economic and social cohesion of the Community and therefore for the future of Europe.

Readers should bear in mind that the study reports do not necessarily reflect the official position of the Commission but first and foremost express the opinion of those responsible for carrying out the study.

The economic and social impact of reductions in defence spending and military forces on the regions of the Community

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1.1. Executive summary

Purpose

The purpose of this study was to collect information on the dependence of the NUTS II regions of the Community and their vulnerability to cuts in defence spending. This process involved the research and analysis of vast amounts of published as well as unpublished data on employment in defence. The study's secondary aim was to use this information in order to provide guidance to policy-makers.

Overview of defence expenditure

Defence policy and defence spending are facing a period of change and uncertainty. Past trends are unlikely to be a reliable guide to the future. Political changes in Eastern and Central Europe and the former USSR, as well as arms control agreements and voluntary unilateral defence cuts, are likely to lead to fundamental reappraisals of defence policies and budgets. What is clear, however, is that the relative importance of defence spending is declining. Between the early 1970s and the late 1980s (i.e. even before the end of the cold war), defence expenditure as a share of GDP in the European Community as a whole declined from 3.7 to about 3.3 %.

Table 1.1.
Defence expenditure as share of EC GDP

(%)

1970–74	1975–79	1980–84	1985–89
3.7	3.6	3.6	3.3

Source: Sipri Yearbook, 1991 (excludes Spain for 1970-74 and 1975-79).

In 1991, current defence expenditure in the EC was ECU 148 billion which represented 2.3 % of GDP (and 4.7 % of total government expenditure). The following tables present real expenditure on defence and its annual change during the 1980s and early 1990s.

Table 1.2. **Total defence expenditure of the EC**
Constant 1988 prices

(billion ECU)

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
115.9	119.3	121.4	122.9	123.6	124.7	128.7	128.4	128.6	128.8	127.0

Sources: NATO 16 countries and Sipri yearbook, 1991, 1992.

Table 1.3. **Real growth in defence expenditure**

(%)

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1.0	3.0	1.8	1.3	0.6	0.9	3.3	– 0.3	0.2	0.1	– 1.5

Sources: Nato 16 countries and Spiri yearbook, 1991.

Real growth in defence spending stagnated in the latter part of the 1980s and is expected to fall by about 10 % by 1995 (compared with 1991) and by 25 % or more by the year 2000.

Germany, France and the United Kingdom are the three largest defence spenders in the EC. These three respectively comprised 25, 24 and 21 % of the total EC expenditure on defence in 1990. In terms of expenditure as a share of GDP, Greece ranks highest (defence expenditure was 5.7 % of GDP in 1989), followed by the United Kingdom (4.2 %), France (3.7 %) and Portugal (3.2 %). The weighted mean of the EC during that year was 3.3 %.

During the period 1985-89 defence ministries of the EC spent 49.2% of their defence budgets on manpower, 20.3% on equipment, 4.3% on infrastructure and 26.2% on other operating expenses. In 1989, Ireland, Luxembourg, Portugal and Belgium spent some 70% or more of their budget on manpower; the Netherlands spent 54%, Germany 51% and the United Kingdom spent the smallest percentage 39%. The three Member States which spent the largest proportions of their budget on equipment in 1989 were the United Kingdom (22%), Greece (22%) and Italy (20%). France is excluded from the EC average due to the fact that is does not break down expenditure in the same way as the NATO countries. In 1989, France spent 32% of its defence budget on manpower, 27% on procurement, 26% on maintenance and 15% on research and development.

In addition to defence expenditure reductions within EC Member States, there have also been reductions in arms exports. Exports' share of defence production during the 1980s peaked at 39% in 1983, but has since declined to around 5% in 1987. This has added to the EC defence industries' problems.

Throughout the EC, the 1990s are likely to be characterized by major changes in:

(i) spending on defence equipment with implications for the size, structure and location of defence industries; and

(ii) the size and regional allocation of armed forces.

Some adjustments are predictable. Defence industries will seek new business, reduce employment, close plants, and seek mergers. Some firms will leave the defence business. The ramifications of defence spending cuts are likely to be complicated by other developments, such as efforts to liberalize defence procurement in the EC. It is difficult to predict how the armed forces will respond, particulary in relation to the future regional distribution of military bases, but it is clear that rationalizations are already occurring (especially in regions hosting large numbers of foreign forces, such as Germany).

Regional dependence

This study distinguishes between defence industries and military bases or facilities. Both have some common features as sources of employment, but some differences in terms of local spending power. This study found that there were 0.68 million people directly employed in the defence industries in the EC in 1991. This represents 0.55% of the labour force. The aggregate number of Member States' domestic forces plus conscripts was found to be 2.2 million (or 1.77% of the labour force). Apart from the United Kingdom, Ireland, Denmark and Luxembourg, most Member States of the EC have substantial conscript forces. When foreign forces, civilians and dependants as well as local civilians are added to the domestic forces figure, the total is 2.3 million directly employed by the military (or 1.87% of the labour force). When direct employment in defence industries is added to total military employment, the total is 3 million, or 2.41% of the EC labour force.

For the purpose of this study regional dependence is the share of the labour force in a particular NUTS II region which is directly employed in defence (either defence industries, the military or a combination of the two). As depicted in Figures 1.1, 1.2 and 1.3, dependence can be calculated on a national and EC-wide basis as well. In order to calculate defence dependence, it was first necessary to obtain data on industrial defence employment and employment on military bases for each NUTS II region of the Community (however, we have excluded the eastern *Länder* of Germany and the overseas departments of France). In order to compare the relative dependence (in employment terms) of the regions, three rankings were established; one for defence industrial dependence (A), one for military dependence (B) and one for total defence-related dependence (C).

Using a threshold of twice the EC average, 19 regions were assessed to be dependent on industrial defence activity (Table 1.4), and 31 regions were assessed to be dependent on employment by the military (Table 1.5). Five regions were dependent on both (as they appear in both rankings). When defence industrial employment was added to military employment and the sum was com-

pared to total regional employment, 23 regions were assessed to be dependent on total defence-related activity (Table 1.6), but each of these regions also appeared on one or the other of the previous two rankings. The following graphs show which countries are relatively more dependent on defence activity than others. The first shows that France has the greatest share of defence industrial employment relative to its labour force, while Greece has the greatest share of military employment (including foreigners) relative to its labour force.

The EC averages, weighted averages of the dependent regions, and defence employment in dependent regions are as share of total defence employment (for both defence industrial and military employment) were calculated as well (Table 1.7).

Figure 1.1. Defence industrial dependence

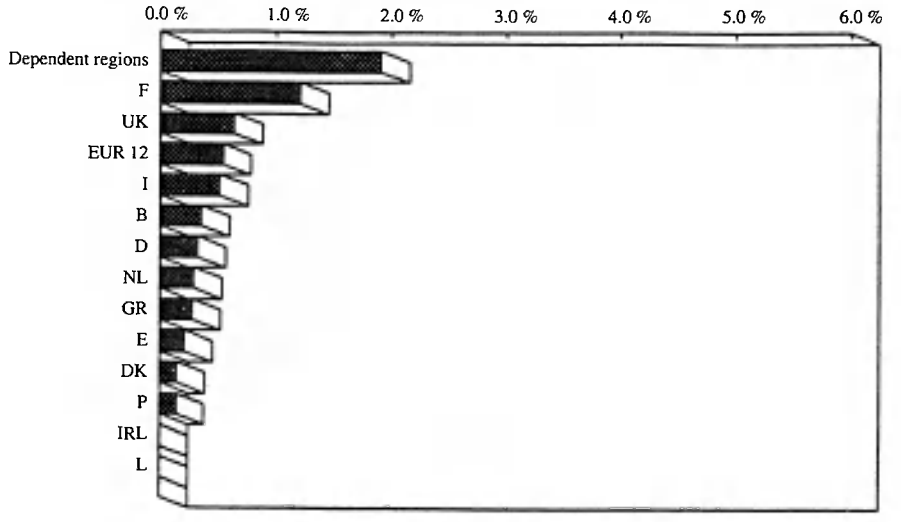


Figure 1.2. Military dependence

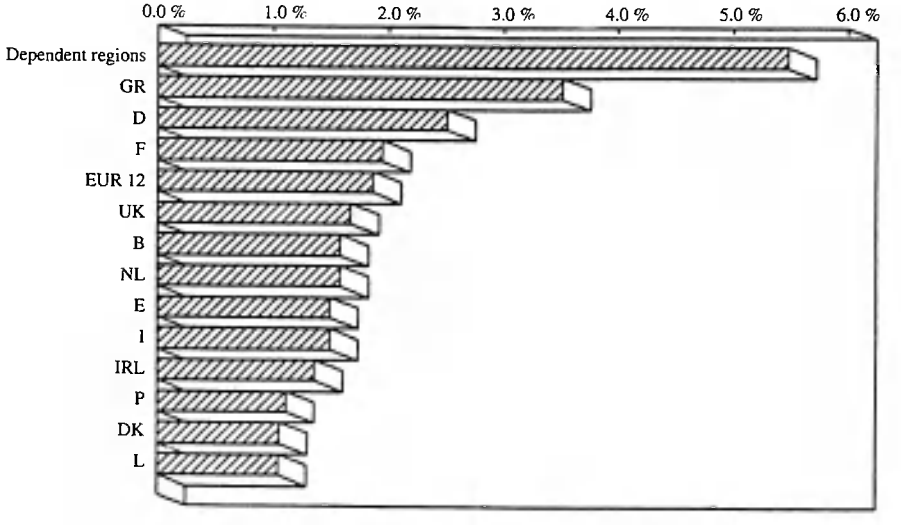
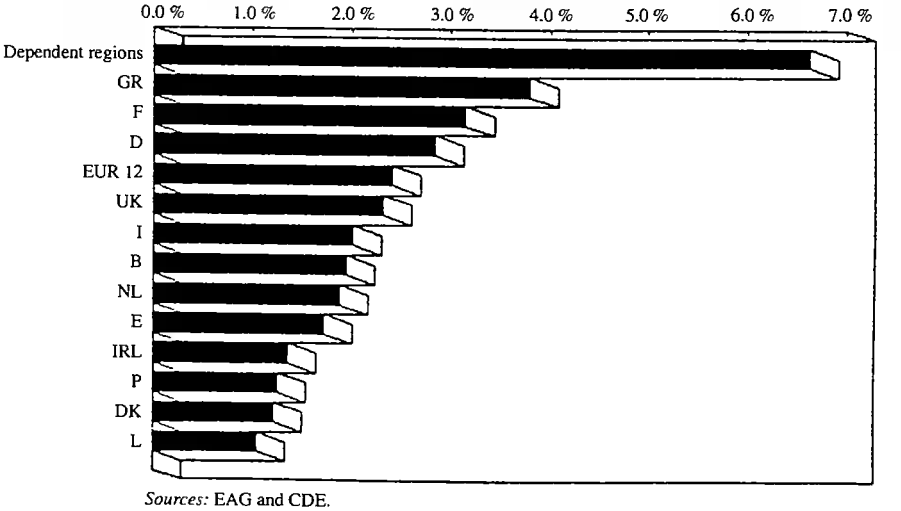


Figure 1.3. Total defence-related dependence



Sources: EAG and CDE.

Table 1.4. **Dependent NUTS II regions**
Ranking A: Defence industrial dependence

		NUTS II	Employment shares (%) Defence industries only	Military only	Total defence-related	Appearance in other rankings B	C
		(Twice EC average →)	1.10	3.72	4.82	B	C
1	UK	Cumbria	6.40	0.95	7.35		11
2	UK	Essex	2.78	1.14	3.89		
3	D	Bremen	2.74	3.14	5.84		18
4	F	Bretagne	2.51	3.59	6.05		16
5	F	Aquitaine	2.36	2.56	4.89		23
6	UK	Lancashire	2.35	0.27	2.62		
7	I	Liguria	2.16	2.28	4.42		
8	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	31	19
9	F	Centre	1.98	2.55	4.50		
10	F	Limousin	1.88	1.95	3.81		
11	F	Midi-Pyrénées	1.86	1.62	3.46		
12	F	Île-de-France	1.76	1.13	2.89		
13	I	Friuli-Venezia Giulia	1.65	8.98	10.57	8	6
14	D	Oberbayern	1.60	1.78	3.36		
15	UK	Cornwall, Devon	1.55	5.32	6.81	15	12
16	F	Basse-Normandie	1.47	1.32	2.78		
17	F	Haute-Normandie	1.43	1.02	2.44		
18	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	22	20
19	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	10	9
		Other regions profiled					
23	GR	Sterea Ellada	0.99	1.50	2.48		
33	E	Murcia	0.75	3.90	4.64	28	
34	B	Hainaut	0.73	0.61	1.33		
55	P	Lisboa e Vale do Tejo	0.44	1.21	1.65		

Note: In addition, regions profiled include the single highest ranking NUTS II regions in all Member States where dependence exceeds the EC weighted average. Lisboa has also been included in view of data availability problems.

Table 1.5. **Dependent NUTS II regions**
Ranking B: Military dependence

		NUTS II	Employment shares (%) Defence industries only	Military only	Total defence-related	Appearance in other rankings A	C
		(Twice EC average →)	1.10	3.72	4.82		
1	GR	Voreio Aigaio*	0.00	29.88	29.88		1
2	E	Ceuta y Melilla*	0.00	22.86	22.86		2
3	P	Açores	0.00	11.82	11.82		3
4	GR	Notio Aigaio*	0.00	11.27	11.27		4
5	GR	Kriti	0.00	10.61	10.61		5
6	GR	Dytiki Makedonia	0.07	10.39	10.46		7
7	GR	Anatoliki Makedonia, Thraki	0.05	10.06	10.11		8
8	I	Friuli-Venezia Giulia	1.65	8.98	10.57	13	6
9	D	Trier	0.07	8.72	8.78		10
10	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	19	9
11	UK	North Yorkshire	0.00	6.25	6.25		13
12	D	Koblenz	0.08	6.01	6.09		15
13	D	Lüneburg	0.08	5.87	5.95		17
14	E	Madrid	0.58	5.63	6.20		14
15	UK	Cornwall, Devon	1.55	5.32	6.81	15	12
16	D	Rheinhessen-Pfalz	0.09	5.08	5.17		21
17	D	Unterfranken	0.00	4.80	4.80		
18	F	Corse	0.02	4.61	4.62		
19	P	Madeira*	0.00	4.60	4.60		
20	D	Schleswig-Holstein	0.50	4.54	5.02		22
21	UK	East Anglia	0.18	4.34	4.51		
22	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	18	20
23	D	Gießen	0.00	4.10	4.10		
24	UK	Lincolnshire	0.00	4.10	4.10		
25	B	Luxembourg	0.56	4.01	4.55		
26	UK	Berkshire, Buckinghamshire, Oxfordshire	0.36	3.98	4.33		
27	I	Valle d'Aosta	0.00	3.95	3.95		
28	E	Murcia	0.75	3.90	4.64	33	
29	GR	Ipeiros	0.03	3.90	3.93		
30	F	Lorraine	0.09	3.85	3.93		
31	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	8	19
		Other region profiled					
42	NL	Utrecht	0.36	2.97	3.32		

Note: In addition, regions profiled include the single highest ranking NUTS II regions in all Member States where dependence exceeds the EC weighted average.
*Regions not profiled because of low absolute population (islands).

Table 1.6. Dependent NUTS II regions
Ranking C: Dependence based on total defence-related employment

		NUTS II	Employment shares (%)			Appearance in other rankings	
			Defence industries only	Military only	Total defence-related		
		(Twice EC average →)	1.10	3.72	4.82	A	B
1	GR	Voreio Aigaio*	0.00	29.88	29.88		1
2	E	Ceuta y Melilla	0.00	22.86	22.86		2
3	P	Acores	0.00	11.82	11.82		3
4	GR	Notio Aigaio*	0.00	11.27	11.27		4
5	GR	Kriti	0.00	10.61	10.61		5
6	I	Friuli-Venezia Giulia	1.65	8.98	10.57	13	8
7	GR	Dytiki Makedonia	0.07	10.39	10.46		6
8	GR	Anatoliki Makedonia, Thraki	0.05	10.06	10.11		7
9	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	19	10
10	D	Trier	0.07	8.72	8.78		9
11	UK	Cumbria	6.40	0.95	7.35	1	
12	UK	Cornwall, Devon	1.55	5.32	6.81	15	15
13	UK	North Yorkshire	0.00	6.25	6.25		11
14	E	Madrid	0.58	5.63	6.20		14
15	D	Koblenz	0.08	6.01	6.09		12
16	F	Bretagne	2.51	3.59	6.05	4	
17	D	Lüneburg	0.08	5.87	5.95		13
18	D	Bremen	2.74	3.14	5.84	3	
19	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	8	31
20	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	18	22
21	D	Rheinhessen-Pfalz	0.09	5.08	5.17		16
22	D	Schleswig-Holstein	0.50	4.54	5.02		20
23	F	Aquitaine	2.36	2.56	4.89	5	

* Regions not profiled because of low absolute population (islands).

Table 1.7. Averages of defence dependence and spatial concentration (%)

Weighted averages	Defence industries	Military	Total defence-related
EC average [1]	0.55	1.86	2.41
Average of dependent regions	1.92	5.48	6.63
Dependent regions' defence employment as a share of total EC defence employment	50.47	34.59	28.05

[1] Weighted by working population for defence industrial dependence and by working population + military for military and total defence-related dependence. *Sources:* EAG and CDE.

Defence industrial employment in dependent regions represents 50% of defence industrial employment in the Community while military employment in dependent regions represents 35% of total military employment in the Community. These data imply that the defence industries are concentrated in fewer regions than the military.

Whithin NUTS II regions dependent on defence industries, there are 55 NUTS III regions (out of 103) which have known concentrations of defence industrial activity. These represent 11.6% of the population in the EC. Likewise, there are 115 NUTS III regions (out of 149) with known military concentrations within militarily dependent NUTS II regions (home to 10.8% of the EC population). And there are 94 NUTS III regions (out of 118) which have a concentration of activity in either the defence industries, the military or both and are also part of NUTS II regions which have a share of total defence-related employment exceeding twice the EC average.

This study also attempted to identify areas of defence concentration outside the dependent regions. The greatest number of NUTS III regions with concentrations of military activity outside the dependent NUTS II regions were found to be in Germany (the greatest number in the NUTS I regions of Bayern, Nordrhein-Westfalen and Brandenburg). The United Kingdom had the next largest number of NUTS III regions with concentrations of military (in Scotland and Wales). Italy was found to have the most additional NUTS III regions with defence industrial activity (mostly in Centro and Lombardia). Belgium's Vlaams Gewest region was found to contain several NUTS III regions with defence industrial activity. There was no concentration of NUTS III regions with defence activity within a single NUTS II region outside the dependent regions (except in the former East Germany which was not part of the dependence study).

A large proportion of the NUTS III regions in which defence activity is concentrated (within dependent NUTS II regions) is not covered by Objective 1, 2 or 5b policy instruments. Approximately 50% of these NUTS III regions, based on each dependency ranking (A, B or C), are not eligible for assistance. A smaller proportion of the NUTS regions are only partially eligible, as depicted in Table 1.8.

Table 1.8. Number of NUTS III regions within dependent NUTS II regions eligible for Objective 1, 2 or 5b assistance

Objective	Eligibility	Defence industries	Military	Defence industries or military[1]
1	Eligible	3	27	20
2	Totally eligible	2	3	4
	Partially eligible	6	8	4
5b	Totally eligible	0	9	5
	Partially eligible	15	8	12
2 and 5b	Partially eligible	2	1	2
1, 2 and 5b	Not eligible	27	59	47
	Total	**55**	**115**	**94**

[1] NUTS III regions which are part of a NUTS II region with a share of total defence-related employment exceeding twice the Community average and having a concentration of activity in either defence industries or the military or both. *Sources:* EAG, CDE and DG XVI.

Vulnerability

In this study, the term vulnerability is used to indicate whether employment cuts have already been announced in a particular region, or whether cuts are probable over the short term. The term highly vulnerable is used to describe the former situation and vulnerable to describe the latter. In practical terms it is impossible to forecast future factory and base closures as announcements of rationalizations are highly controversial at the regional level for both the employees or military personnel made redundant and the local economies (and perhaps neighbouring economies) in which they are employed. Based on the definitions just described, however, Table 1.9 indicates which of the dependent regions of the Community are highly vulnerable or vulnerable to defence cuts and to which area of defence these descriptions apply (i.e. defence industries or the military).

Table 1.9. Regions vulnerable to defence cuts

Listed in order of defence industrial dependence, then military dependence

** = Highly vulnerable (i.e. cuts in employment have been announced). * = Vulnerable (i.e. cuts in employment are likely).

		Vulnerability of defence cuts		Appearance in dependence rankings [1]		
	NUTS II	Defence industries	Military	A	B	C
UK	Cumbria	**		1		11
UK	Essex	**		2		
D	Bremen	**	**	3		18
F	Bretagne	*	*	4		16
F	Aquitaine	*	*	5		23
UK	Lancashire	**		6		
I	Liguria	**		7		
F	Provence-Alpes-Côte d'Azur	**	*	8	31	19
F	Centre	**		9		
F	Île de France	*	**	12		
D	Oberbayern	**	**	14		
UK	Cornwall, Devon	**	*	15	15	12
F	Basse-Normandie		**	16		
F	Haute-Normandie		**	17		
UK	Avon, Gloucestershire, Wiltshire	**	**	18	22	20
UK	Hampshire, Isle of Wight		**	19	10	9
GR	Sterea Ellada	*		23		
D	Trier		**		9	10
D	Koblenz		**		12	15
D	Lüneburg		**		13	17
E	Madrid	**	**		14	14
D	Rheinhessen-Pfalz		**		16	21
D	Unterfranken		**		17	
D	Schleswig-Holstein	**	**		20	22
UK	Berkshire, Buckinghamshire, Oxfordshire		**		26	
F	Lorraine		**		30	

[1] These columns indicate where in the dependence rankings each region appears:
Ranking A: Defence industrial dependence,
Ranking B: Military dependence,
Ranking C: Dependence based on total defence-related employment.
Source: CDE survey.

In the short run, defence firms are likely to adjust to defence cuts by reducing employment; in the longer run, they may close plants or redistribute work between different locations depending on the relative competitiveness of those locations. Our industry survey found that most respondents are trying to avoid plant closures by seeking new markets although some firms have chosen to specialize in the defence business rather than to difersify into completely new civil markets. Adjusting to change takes time; typically an adjustment period of up to five years is needed.

The survey confirmed that for private firms, the regional implications of defence cuts will be determined by commercial criteria. For example, plants at sites with attractive and profitable alternative uses might be closed and sold to other users (e.g. for housing, office or shopping developments).

Regarding the closure of military bases, regions in Germany will clearly be subject to both closures and reductions in size. This is particularly true for regions containing high proportions of foreign forces, many or most of which are due to be withdrawn. Withdrawal of foreign forces will affect both German regions and those regions into which the forces are deployed or disbanded in their home countries. In most EC Member States detailed information on planned base closure is not available. However, any information which was available has been reviewed. Vulnerability does not necessarily mean that a particular region will face undue hardship. For example, certain military base closures in densely populated areas may alleviate land and housing shortages. In addition, the impact of cuts themselves will depend upon the structural characteristics of a region. Certain specialized and isolated subregions may be more adversely affected by defence cuts as they may be deprived of the certain stabilizing influences which come from being part of a larger integrated economic region.

Regional impact and response

The present study estimated the indirect employment effect of the direct employment calculated per NUTS II region. This effect is called the multiplier effect and is calculated as the ratio of total defence employment — including direct and indirect defence employment — to direct defence employment. Existing studies indicate that regional employment multipliers range from 1.75 to 2.00 for defence industries, and from 1.10 to 1.50 for military bases. Based on these data, a hypothetical 'worst case' scenario has been estimated for those regions where cuts in defence activity have already been announced (i.e. the highly vulnerable regions). This analysis puts an upper bound on the negative effects of defence expenditure cutbacks. In the 'worst case' scenario, Cumbria faces the possibility of losing 12.8% of its working population as the result of cuts in its defence industries. The second and third most affected regions in terms of defence industrial cuts are Essex (5.6% of the working population affected) and Bremen (5.5%). The top three affected by military cuts are Trier (13.1% of the working population), Hampshire, Isle of Wight (11.7%) and Koblenz (9.0%). There is one region which is dependent on both defence industries and the military and is highly vulnerable to cuts in both; cuts in defence could affect 8.8% of the working population of Avon, Gloucestershire, Wiltshire.

In the very short term the regional impact of defence cuts is confined to the direct losses in employment and income; these are then amplified by multiplier effects, but in the medium term they will tend to be counteracted by adaptive reactions; and in the long run these adaptive reactions may themselves be amplified by policy intervention. It is important to take into consideration the adaptive capacity of a region in order to conduct a more thorough analysis of the regional impact of defence cuts. The factors which were used in the present study to assess regional adaptability include regional economic structure (i.e. employment in industry as against agriculture), dependence on older resource-based industries, the natural rate of regional population growth, the change in economic potential resulting from European integration, unemployment, the percentage of adolescents in education and training and infrastructure endowment. All except the last two of these factors were selected on the basis of a rigorous statistical analysis of causal factors in regional 'success' between 1977 and 1988. The last two represent additional, potentially relevant indicators.

It might seem that unemployment would be the most obvious measure of a regional economy's adaptive capacity. The unemployment rate in all the defence dependent regions combined has declined relative to the EC average during the decade of the 1980s.

Table 1.10. Employment trends

Statistic	Area	1977-81	1981-85	1988-90
Population (million)	EUR 12	316.1	320.0	325.3
	Dependent regions	74.5	75.4	76.7
Unemployment (%)	EUR 12	5.9	9.6	9.0
	Dependent regions	5.6	8.8	7.7

Source: third and fourth periodic reports and EAG/CDE (figures for dependent regions are estimates).

However, regional unemployment rates, even averaged over several years, reflect not just local conditions but the national economic climate and they also reflect local events such as closures or investment, the effectiveness of local policy, or processes related to patterns of spatial restructuring (such as decentralization and European integration). A measure of adaptive capacity should reflect, so far as possible given the difficulties involved in its assessment, the underlying, systematic structural factors and abstract from aspects which are local in time or place. Hence the use of measures other than unemployment alone.

We found significant differences among regions in their capacity to adapt to defence cuts For example, lagging rural regions may be less adaptable than prosperous rural regions, and declining industrial regions and specialized isolated subregions may be less adaptable than regions with advanced indigenous industrial activity.

If new or adopted policy instruments are considered appropriate in the face of defence cuts, such instruments must be flexible as the actual regions of the Community which will be most severely affected by pending decisions are uncertain.

There are several alternatives to regional policy assistance in dealing with the negative impact of defence expenditure cuts. These include industrial and technology policies, social policy and training and employment. The location or relocation of military bases in problem areas may be an additional option, provided that this is in line with military objectives and policies. Relocating military bases from urban to rural areas could impose more severe problems if the urban areas have high unemployment and low adaptive capacity and/or if the relocation site was contamined from former defence industrial or military occupants. Decontamination could impose heavy costs, especially in Member States which have strict environmental regulations (such as Germany).

Some areas not covered by existing policy instruments are dependent on defence-related activity. Certain subregions could face severe economic consequences as the result of defence employment cuts, and for those regions with low adaptive capacity the economic and social impact of cuts could be very significant. Revisions to the territorial eligibility for assistance under Objectives 1, 2 or 5b may therefore be preferable to the development of new policy instruments. The nature of the regional policy response will depend on the degree of regional dependence on defence activity, the vulnerability of the region to cuts in expenditure and the economic and structural characteristics of the region. The drafting and implementation of national programmes will also have to take these issues into account.

Issues of conversion

One consequence of reductions in defence expenditure for both defence industries and the military will be the conversion of some operations from defence to civilian use.

There has been an ongoing adjustment and conversion debate characterized by a lack of deliberate action at the national level in each EC Member State. Adjustment has been left to individual companies to develop their own corporate strategies. Whils this has led to some differences in emphasis due to national factors a complex web of cross-national ownership is emerging.

There is virtually no practical experience of true industrial conversion in the EC despite the many economic

and other studies which have been commissioned to study its potential. Diversification may ultimately be a better stategy than conversion, initially buying in the requisite skills and products to complement an existing defence business. However, such a strategy requires access to capital to facilitate acquisitions and, with falling defence revenues, such capital itself may be severely limited.

With regard to the conversion of military bases, the range of uses to which sites could be converted include:

(i) agriculture, particularly large sites such as airfields;
(ii) housing;
(iii) industry and commerce;
(iv) natural, such as parkland, conservation areas;
(v) mixed use, combining two or more of the above.

Examples of all these types of use are have found in the EC (predominantly in the United Kingdom). Industry and commercial use provides the greatest long-term employment, both directly on the site and indirectly in the local economy. In some cases part of the employment is transferred from older industrial or commercial areas, leading to a smaller net impact. The conversion of military sites also taking agricultural land for industrial use, thus indirectly benefiting agricultural production. Most sites returned to agricultural use are incorporated back into existing farms, with little effect on employment.

Experience of base closures in the United States of America shows a similar range of uses, including industrial parks, airport, prisons, shopping centres, training and educational facilities, local government offices, parks and recreational facilities and medical centres.

Naval bases are unlikely to be converted into civilian dockyards in the face of overcapacity in shipbuilding, but are more likely to be used for marina-type development incorporating leisure facilities and housing, or for industrial purposes not associated with the dockyard nature of the site. Military training grounds are the most suitable facilities for conversion into leisure use or parks, but may also be used for housing depending on their location.

The choice of use depends on both supply and demand. Issues on the supply side are the location and nature of the facility. On the demand side, the relative value of the site and the planning and land-use issues will influence potential developments. A feature of military conversion is the long time period which may elapse between the site being vacated by the military and being developed for an alternative use. This reflects the role of demand in the conversion process. This study suggests that a policy of retaining land in trust for future use may be desirable where no immediate urgent need is identified.

1.2. Overall study methology

An essential requirement of this study has been the compilation of a constistent, Community-wide data set of defence-related activity. The measure of activity chosen was employment, with a distinction between defence industrial employment and military employment. Data have therefore been collected in relation to these two types of employment in all NUTS II regions of the Community, excluding the eastern *Länder* of Germany and the overseas *départements* of France.

Defence industries

A significant problem in collecting employment data on defence industries is the lack of current, reliable and published data on employment in the defence industries and their locations. There are also various definitions of defence industries and such variety complicates international cmparisons. Defence industries can be defined as those industries supplying the armed forces; or those key national assets required to maintain a defence industrial base. For the purposes of the present study, we have used a market-based definition — suppliers to the armed forces — which concentrates on companies producing equipment directly associated with military activity. The aim has been to identify the defence component of each company's total employment and to restrict the data to direct (as opposed to direct and indirect) defence employment.

Three types of data were collected and analysed:

- official data on the regional distribution of defence expenditure;
- Sipri (Stockholm International Peace Research Institute) and other data on the regional location of defence companies, compiled on the Centre for Defence Economics' (CDE) database at York University;
- general literature on defence activity, particularly previous case studies and information on smaller companies.

The United Kingdom, France and Germany have the largest (as well as the greatest number of) defence industries, followed by Italy. According to Sipri, dependence on military sales — defence intensity — at the company level is particularly high in the United Kingdom and France.

Military bases

Military bases differ greatly in size. In addition to military personnel of either national of foreign origin, they also employ civilians. The local economic impact of a military base depends on several things:

(i) its absolute and relative size;

(ii) its purchases from the local economy;

(iii) expenditure by military and civilian personnel in the local economy;

(iv) multiplier effects of local expenditures.

Any reduction in military activity in a locality will have the immediate effect of reducing those expenditures identified above.

The social and economic implications of reductions in military manpower, however, will vary according to the type of personnel involved. Short-term and conscripted forces may be more likely to return to their previous place of residence, so dispersing the unemployment effect away from the base at which they were stationed.

Military personnel stationed overseas (particularly the large numbers of Western allied forces in Germany) are likely to return home if demobilized. This also applies to civilian personnel (e.g. US support personnel).

Data problems associated with the regional distribution of bases are considerable. Base locations as well as the number of military personnel on each base are considered to be sensitive information by most Ministries of Defence. The methodology employed to overcome these problems involved the analysis of:

(i) published data (including local data sources such as telephone directories);

(ii) special studies undertaken by country defence experts;

(iii) existing studies, particularly on the disposition of US forces.

The figures estimated for regional employment at bases rely on a number of assumptions and judgments, including estimation of the ratio of foreign forces to civilian employees, and weightings for the local expenditure propensities of different types of personnel.

The definitions and assumptions used in the preparation of these data are specified in Chapters 3 and 4. Additional data at the NUTS III level have also been collected, where possible, in order to identify particular concentrations of defence-related activity. These data include the eastern *Länder* of Germany which are themselves the subject of a separate study sponsored by the Commission of the European Communities (CEC) and which are experiencing signficant reductions in military bases.

Regional dependence

Employment is considered a more reliable measure of defence activity than output because of the complexities of subcontractor relationships in the defence industries (leading to the possibility of 'double-counting' the output of subcontractors who supply prime contractors), and because of the unique nature of military bases. Using employment also allows compilation of relatively consistent data, based on direct employment only.

The general regional distribution of defence industries (defined in Chapter 3) and military bases across the Community was reviewed, prior to detailed analysis of employment at the NUTS II level. The next step in the analysis was to calculate defence-related employment as a proportion of total regional employment within each region in order to arrive at a measure of defence dependence.

Three separate measures of dependence were made (A, B and C) and the NUTS II regions of the Community were ranked accordingly. These three measures were as follows:

Ranking A: Defence industrial employment as a proportion of the regional working population;

Ranking B: Military employment as a proportion of aggregate regional employment (regional working population plus military manpower);

Ranking C: Total defence-related employment as a proportion of aggregate regional employment (regional working population plus military manpower).

It should be recognized that consistent data on defence activity at the NUTS II level are not generally available. A large part of the present study has therefore been concerned with the compilation of such a data set, which has necessarily involved the use of certain assumptions, and extrapolation of various other data. In particular, weightings were established for foreign versus domestic forces and for conscript versus professional forces. These weightings reflect the lower importance of foreign forces in local economies (because of savings and the return of salaries to home countries) and the lower spending power of conscripts (because of lower salary levels).

A more detailed analysis was then conducted on those NUTS II regions which exhibited a dependence on defence-related activity of more than twice the Community average based on either Ranking A or Ranking B (all regions exhibiting such a level of dependence based on Ranking C also appeared in one or both of Rankings A and B). With certain additions and exclusions, specified in Chapter 5, brief economic profiles were developed for each of these regions. These are given in the Appendix (available from the Commission on request).

Where specific cuts in either industrial employment or employment at military bases have already been announced, these have been identified in Section 5.5 and the profiles. The general industrial response to expenditure cuts was assessed via a survey, the findings of which are given in the Appendix, together with evidence from previous industrial and base conversion. Evidence of employment multipliers in defence-related activity has also been reviewed (in Chapter 6).

The final stage of analysis concentrated on the adaptive capacity of the profiled regions, whereby an adaptive 'rating' was established for each region. This analysis involved use of a regression model, the resulting coefficients of which were applied to relevant adaptability variables, including unemployment, infrastructure endowment and percentage of adolescents in education and training. Levels of defence dependence were plotted against changes in unemployment and against adaptive capacity. This analysis is included in the Appendix. The implications of this analysis for regional policy are assessed in Section 6.3.

Summary

Defence policy and defence spending are facing a period of change and uncertainty. Between the late 1970s and late 1980s, defence expenditure as a share of GDP in the EC as a whole declined from 3.7 to about 3.3%. This indicates that the relative importance of defence spending has been declining. The end of the cold war has ushered in prospects of greater medium- and long-term cuts. Real growth in defence spending is expected to fall by about 10% by 1995 (compared with 1991) and by 25% or more by the year 2000. This study found that there were about 0.68 million people directly employed in the defence industries in 1991 and 2.3 million employed in the military (including foreigners). Direct employment in defence represents about 2.41% of the EC

labour force. Cuts in defence spending will have a major impact on this employment as well as associated indirect employment.

This study set out to determine the defence dependence of each NUTS II region of the Community. Using a threshold of twice the EC average, 19 regions were assessed to be dependent on industrial defence activity and 31 regions were assessed to be dependent on employment by the military. When defence industrial employment was added to military employment and the sum was compared to total regional employment, 23 regions were assessed to be dependent on total defence-related activity, but each of these regions also appeared on one or the other of the previous two rankings.

This study also found that a large proportion of the NUTS III regions in which defence activity is concentrated (within dependent NUTS II regions) is not covered by Objective 1, 2 or 5b policy instruments. Approximately 50% of these NUTS III regions, based on each dependency ranking (A, B or C), are not eligible for assistance. A smaller proportion of the NUTS III regions is only partially eligible.

Vulnerability, the term used to indicate whether employment cuts have already been announced in a particular region, or whether cuts are probable over the short term, was investigated via a survey of defence companies. In practical terms it is impossible to forecast future factory and base closures as announcements of rationalizations are highly controversial at the regional level. The survey found that most respondents are trying to avoid plant closures by seeking new markets although some firms have chosen to specialize in the defence business rather than to diversify into completely new civil markets. Additionally, the respondents indicated that most adjustments would take at least five years. The survey confirmed that for private firms, the regional implications of defence cuts will be determined by commercial criteria.

Regarding the closure of military bases, regions in the Community (especially Germany) will be subject to both closures and reductions in size, particularly for regions containing high proportions of foreign forces, many or most of whom are due to be withdrawn. Vulnerability does not necessarily mean that a particular region will face undue hardship as certain military base closures in densely populated areas may alleviate land and housing shortages. The impact of cuts themselves will depend upon the structural characteristics of a region, with some isolated subregions more adversely affected by defence cuts than regions which are part of larger integrated economies.

In assessing the regional impact of and response to defence cuts is it essential to take into account the adaptive capacity of the regions affected. The factors relevant to a measurement of adaptive capacity include regional economic structure, dependence on older resource-based industries, the natural rate of regional population growth, changes in economic potential resulting from European integration and falling transport costs, unemployment, percentage of adolescents in education and training, and infrastructure endowment.

The process whereby indirect jobs and income associated with supplier companies are generated or lost are the result of direct defence employment is known as the multiplier effect. Multipliers vary between regions as a result of both region-specific factors and industrial or base-specific factors. However, a review of recent available data indicates multipliers in the range of 1.75 to 2.00 for defence industries and 1.10 to 1.50 for military bases.

A hypothetical 'worst case' scenario was estimated for each dependent region classified as highly vulnerable to defence cuts. This estimated the possible impact of such cuts on direct and indirect defence employment.

Any policy response to these changes requires flexibility on two fronts; area designation (since many dependent regions and areas of concentrated defence activity are not currently eligible for aid under structural Funds' objectives) and policy instruments (since new issues will be confronted that are peculiar to defence cutbacks). Local policy coordination will also be important, given the relative geographical isolation of many defence establishments.

The issue of the use of defence industries to import new technology and skills (i.e. technology transfer) has to be addressed. The policy challenge here is to define the conditions and rules which would facilitate technology transfer by other means, and to consider the competitive implications of such a development.

Finally, the issue of land redevelopment implies the deployment of specific skills in any new policy initiative. Much defence-related activity is land extensive. It may also involve problems of land contamination (for example from diesel fuel, toxic chemicals or minerals, as well as from discarded ammunition or nuclear-related activities). Consideration should be given to the costs likely to be incurred in decontaminating vacated sites, and the appropriate funding of such costs.

1.3. Rapport de synthèse

Objet

La présente étude a pour but de réunir des informations sur la dépendance des régions NUTS II de la Communauté à l'égard des activités de défense ainsi que sur leur vulnérabilité à la réduction des dépenses militaires. Cette démarche a nécessité la recherche et l'analyse de grandes quantités de données, publiées ou non, sur l'emploi dans le secteur de la défense. L'objectif secondaire de l'étude est de dégager de cette information des éléments d'orientation pour les décideurs.

Examen des dépenses militaires

La politique de défense et les dépenses militaires traversent une période de changement et d'incertitude. Il est peu probable que l'examen du passé fournisse des indications sûres pour l'avenir. Les changements politiques intervenus en Europe orientale et centrale ainsi que dans l'ancienne Union soviétique, de même que les accords sur le contrôle des armements et les réductions unilatérales et volontaires des dépenses militaires sont susceptibles de déboucher sur de profondes révisions des politiques et des budgets militaires. Il est certain, en revanche, que l'importance relative des dépenses militaires diminue: entre le début des années 70 et la fin des années 80 (c'est-à-dire avant même la fin de la guerre froide), le pourcentage des dépenses militaires par rapport au PNB est passé dans la Communauté européenne de 3,7 à environ 3,3 %.

Tableau 1.1
Pourcentage des dépenses militaires par rapport au PNB communautaire

(%)

1970-1974	1975-1979	1980-1984	1985-1989
3,7	3,6	3,6	3,3

Source: SIPRI Yearbook, 1991 (à l'exclusion de l'Espagne pour 1970-1974 et 1975-1979).

En 1991, les dépenses militaires de la Communauté se sont élevées à 148 milliards d'écus (courants), soit 2,3 % du PNB (et 4,7 % du total des dépenses publiques). Les tableaux qui suivent montrent les dépenses militaires réelles et leur évolution au cours des années 80 et au début des années 90.

Tableau 1.2 **Total des dépenses militaires de la CEE en prix constants de 1988**

(milliards d'écus)

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
115,9	119,3	121,4	122,9	123,6	124,7	128,7	128,4	128,6	128,8	127,0

Sources: OTAN 16 pays et *SIPRI Yearbook,* 1991, 1992.

Tableau 1.3 **Croissance réelle des dépenses militaires**

(%)

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1,0	3,0	1,8	1,3	0,6	0,9	3,3	– 0,3	0,2	0,1	– 1,5

Sources: OTAN 16 pays et *SIPRI Yearbook,* 1991.

La croissance réelle des dépenses militaires a stagné vers la fin des années 80, et on s'attend à une diminution d'environ 10 % d'ici à 1995 (par rapport à 1991) et de 25 % ou plus d'ici à l'an 2000.

L'Allemagne, la France et le Royaume-Uni sont les trois pays de la Communauté qui consacrent le plus d'efforts au secteur de la défense, puisqu'en 1990 ils représentaient respectivement 25, 24 et 21 % des dépenses militaires

globales de la Communauté européenne. En pourcentage des dépenses militaires par rapport au PNB, la Grèce arrive en tête, avec 5,7 % du PNB consacrés à la défense en 1989, suivie du Royaume-Uni (4,2 %), de la France (3,7 %) et du Portugal (3,2 %). La moyenne pondérée de la Communauté s'élevait, en 1989, à 3,3 %.

Au cours de la période 1985-1989, les ministres de la Défense de la Communauté ont consacré 49,2 % de leur budget militaire au personnel, 20,3 % à l'équipement, 4,3 % aux infrastructures et 26,2 % à diverses dépenses de fonctionnement. En 1989, l'Irlande, le Luxembourg, le Portugal et la Belgique ont consacré aux dépenses de personnel 70 % de leur budget, voire davantage, tandis que les Pays-Bas et l'Allemagne dépensaient respectivement 54 et 51 % et que le Royaume-Uni, avec 39 %, y consacrait le pourcentage le plus bas. Les trois États membres qui ont consacré la plus forte proportion de leur budget à l'équipement en 1989 ont été le Royaume-Uni (22 %), la Grèce (22 %) et l'Italie (20 %). La France n'est pas incluse dans la moyenne communautaire parce qu'elle ne ventile pas les dépenses de la même façon que les pays de l'OTAN: En 1989, la France a consacré 32 % de son budget militaire au personnel, 27 % aux achats, 26 % à l'entretien et 15 % aux études, recherches et prototypes.

Parallèlement à la réduction des dépenses militaires dans les États membres, il y a eu diminution des exportations d'armes. Au cours des années 80, la part des exportations dans la production de matériels de défense a culminé à 39 % en 1983, mais elle est tombée ensuite à environ 5 % en 1987. Cela n'a fait qu'ajouter aux difficultés des industries communautaires de défense.

Pour l'ensemble de la Communauté, les années 90 seront vraisemblablement caractérisées par de profonds changements relatifs:

a) aux dépenses d'équipement militaire, avec les implications que cela comporte en ce qui concerne la taille, la structure et l'implantation des industries de défense;

b) à l'importance et à l'affectation régionale des forces armées.

Certains ajustements sont prévisibles. Les industries de défense chercheront de nouveaux débouchés, supprimeront des emplois, fermeront des usines et opéreront des fusions. Certaines firmes abandonneront le secteur militaire. Les ramifications de la réduction des dépenses militaires seront vraisemblablement compliquées par d'autres évolutions, telles que les efforts de libéralisation des achats de matériel de défense dans la Communauté. Il est difficile de prévoir comment les forces armées réagiront, notamment en ce qui concerne la future répartition régionale des bases militaires, mais, de toute évidence, des rationalisations sont déjà en cours (spécialement dans des régions qui, comme l'Allemagne, hébergent des forces étrangères en grand nombre).

Dépendance régionale

La présente étude opère une distinction entre les industries de défense et les bases ou installations militaires. Elles ont en commun d'être des sources d'emplois, mais elles diffèrent par leur capacité de dépenser au niveau local. Il ressort de la présente étude que, en 1991, 0,68 million de personnes étaient directement employées dans les industries de défense de la Communauté. Cela représente 0,55 % de la population active. Le total des forces nationales des États membres, augmenté du nombre des appelés, a été chiffré à 2,2 millions (soit 1,77 % de la population active). (A l'exception du Royaume-Uni, de l'Irlande, du Danemark et du Luxembourg, la plupart des États membres de la Communauté font substantiellement appel au contingent.) Et si l'on ajoute aux chiffres des forces nationales les forces étrangères, y compris les civils et charges de famille, de même que les civils locaux, on obtient un total de 2,3 millions de personnes directement employées par les militaires (soit 1,87 % de la population active). Si l'on ajoute à l'emploi militaire total l'emploi direct dans les industries de défense, on obtient un total de 3 millions, soit 2,41 % de la population active de la Communauté.

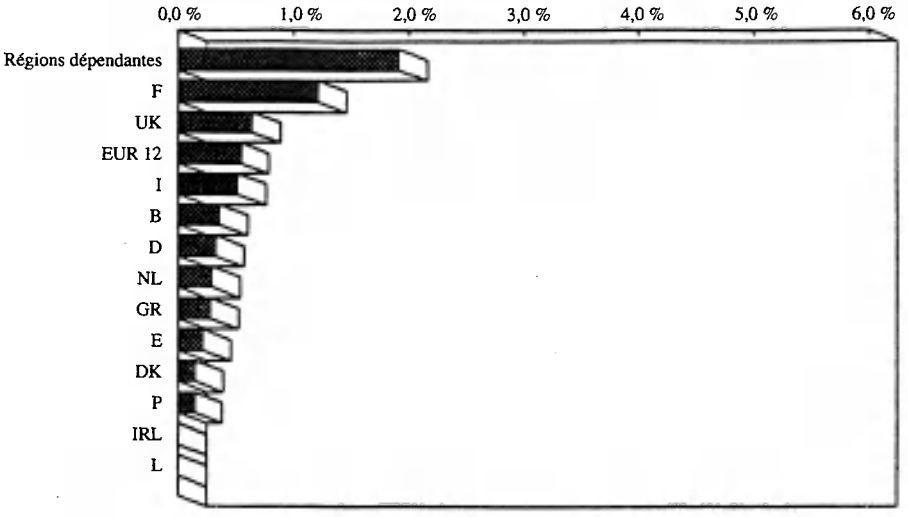
Aux fins de la présente étude, on entend par «dépendance» la part de la population active d'une région de niveau NUTS II qui travaille directement dans les activités de défense (qu'il s'agisse des industries de défense,

des activités militaires ou d'une combinaison des deux). Comme le montrent les graphiques 1.1, 1.2 et 1.3, la dépendance peut également se calculer au niveau national et au niveau de la Communauté. Pour calculer la dépendance à l'égard de la défense, il fallait d'abord recueillir des données sur l'emploi dans les industries de défense et dans les bases militaires pour chaque région NUTS II de la Communauté (ont cependant été exclus les Länder est-allemands ainsi que les départements français d'outre-mer). Afin de comparer la dépendance relative (en termes d'emplois) des régions, trois classements ont été opérés: le premier pour la dépendance à l'égard des industries de défense (A), le deuxième pour la dépendance militaire (B) et le troisième pour la dépendance à l'égard de l'ensemble des activités de défense (C).

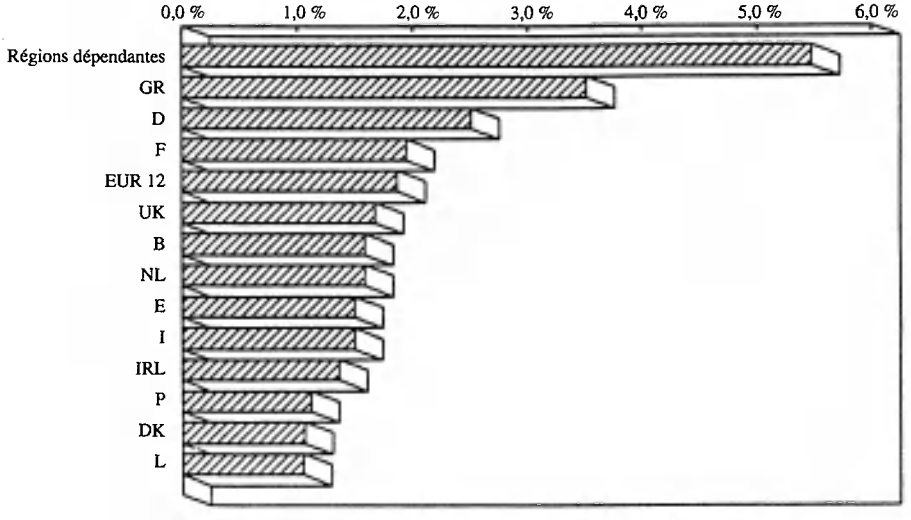
En prenant pour seuil le double de la moyenne communautaire, on a estimé que 19 régions étaient dépendantes de l'activité industrielle de défense (tableau 1.4) et que 31 régions étaient dépendantes des emplois militaires (tableau 1.5). Cinq régions sont doublement dépendantes (puisqu'elles figurent dans les deux classements). En additionnant les emplois dans les industries de défense et les emplois militaires et en comparant la somme obtenue avec les chiffres régionaux de l'emploi, on obtient 23 régions dépendantes de l'ensemble des activités de défense (tableau 1.6), mais chacune de ces régions figure également dans l'un des deux classements précédents. Les graphiques qui suivent montrent quels sont les pays relativement plus dépendants des activités de défense que les autres. Le premier montre que la France a, par rapport à sa population active, le pourcentage le plus élevé d'emplois dans les industries de défense, tandis que la Grèce a, par rapport à sa population active, le pourcentage le plus élevé d'emplois militaires (étrangers inclus).

Ont également été calculés les moyennes communautaires, les moyennes pondérées des régions dépendantes ainsi que le pourcentage des emplois de défense des régions dépendantes par rapport au total des emplois de défense (emplois industriels et militaires confondus). Ils font suite aux graphiques et aux tableaux ci-après.

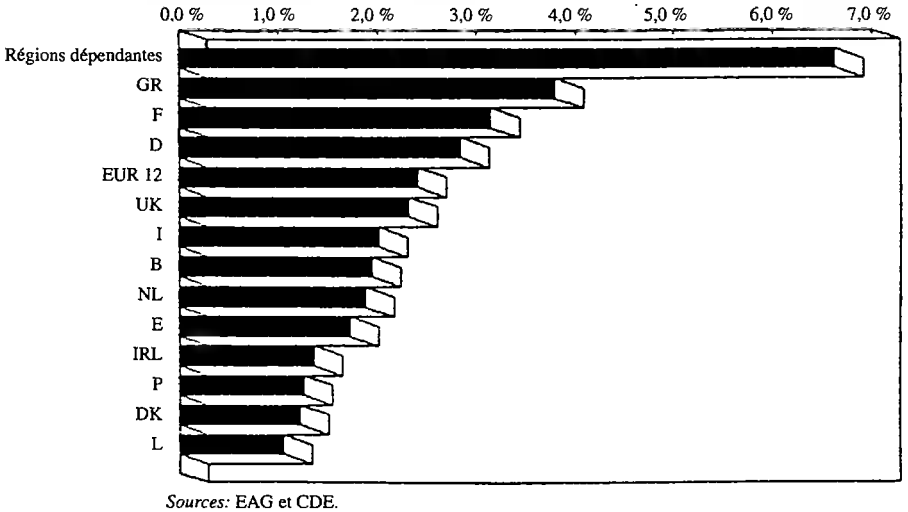
Graphique 1.1. Dépendance à l'égard des industries de défense



Graphique 1.2. Dépendance militaire



Graphique 1.3. Dépendance à l'égard de l'ensemble des activités de défense



Sources: EAG et CDE.

Tableau 1.4 **Régions NUTS II dépendantes**
Classement A: dépendance à l'égard des industries de défense

			Pourcentage des emplois			Apparition dans d'autres classements	
		NUTS II	Industries de défense uniquement	Militaires uniquement	Total des activités de défense		
		(doublement de la moyenne communautaire)	1,10	3,72	4,82	B	C
1	UK	Cumbria	6,40	0,95	7,35		11
2	UK	Essex	2,78	1,14	3,89		
3	D	Bremen	2,74	3,14	5,84		18
4	F	Bretagne	2,51	3,59	6,05		16
5	F	Aquitaine	2,36	2,56	4,89		23
6	UK	Lancashire	2,35	0,27	2,62		
7	I	Liguria	2,16	2,28	4,42		
8	F	Provence-Alpes-Côte d'Azur	2,08	3,80	5,83	31	19
9	F	Centre	1,98	2,55	4,50		
10	F	Limousin	1,88	1,95	3,81		
11	F	Midi-Pyrénées	1,86	1,62	3,46		
12	F	Île-de-France	1,76	1,13	2,89		
13	I	Friuli-Venezia Giulia	1,65	8,89	10,57	8	6
14	D	Oberbayern	1,60	1,78	3,36		
15	UK	Cornwall, Devon	1,55	5,32	6,81	15	12
16	F	Basse-Normandie	1,47	1,32	2,78		
17	F	Haute-Normandie	1,43	1,02	2,44		
18	UK	Avon, Gloucestershire, Wiltshire	1,26	4,25	5,48	22	20
19	UK	Hampshire, Isle of Wight	1,18	7,83	8,95	10	9
		Autres régions représentées					
23	GR	Sterea Ellada	0,99	1,50	2,48		
33	E	Murcia	0,75	3,90	4,64	28	
34	B	Hainaut	0,73	0,61	1,33		
55	P	Lisboa e Vale do Tejo	0,44	1,21	1,65		

Les régions représentées incluent, en outre, la région NUTS II la mieux classée de chaque État membre, dès lors que le degré de dépendance de cette région dépasse la moyenne communautaire pondérée. Lisbonne a été incluse en raison de l'impréeision des données disponibles.

Tableau 1.5

Régions NUTS II dépendantes
Classement B: dépendance militaire

		NUTS II	Pourcentage des emplois			Apparition dans d'autres classements	
			Industries de défense uniquement	Militaires uniquement	Total des activités de défense		
		(doublement de la moyenne communautaire)	1,10	3,72	4,82	A	C
1	GR	Voreio Aigaio*	0,00	29,88	29,88		1
2	E	Ceuta y Melilla*	0,00	22,86	22,86		2
3	P	Açores	0,00	11,82	11,82		3
4	GR	Notio Aigaio*	0,00	11,27	11,27		4
5	GR	Kriti	0,00	10,61	10,61		5
6	GR	Dytiki Makedonia	0,07	10,39	10,46		7
7	GR	Anatoliki Makedonia, Thraki	0,05	10,06	10,11		8
8	I	Friuli-Venezia Giulia	1,65	8,98	10,57	13	6
9	D	Trier	0,07	8,72	8,78		10
10	UK	Hampshire, Isle of Wight	1,18	7,83	8,95	19	9
11	UK	North Yorkshire	0,00	6,25	6,25		13
12	D	Koblenz	0,08	6,01	6,09		15
13	D	Lüneburg	0,08	5,87	5,95		17
14	E	Madrid	0,58	5,63	6,20		14
15	UK	Cornwall, Devon	1,55	5,32	6,81	15	12
16	D	Rheinhessen-Pfalz	0,09	5,08	5,17		21
17	D	Unterfranken	0,00	4,80	4,80		
18	F	Corse	0,02	4,61	4,62		
19	P	Madeira*	0,00	4,60	4,60		
20	D	Schleswig-Holstein	0,50	4,54	5,02		22
21	UK	East Anglia	0,18	4,34	4,51		
22	UK	Avon, Gloucestershire, Wiltshire	1,26	4,25	5,48	18	20
23	D	Gießen	0,00	4,10	4,10		
24	UK	Lincolnshire	0,00	4,10	4,10		
25	B	Luxembourg	0,56	4,01	4.55		
26	UK	Berkshire, Buckinghamshire, Oxfordshire	0,36	3,98	4,33		
27	I	Valle d'Aosta	0,00	3,95	3,95		
28	E	Murcia	0,75	3,90	4,64	33	
29	GR	Ipeiros	0,03	3,90	3,93		
30	F	Lorraine	0,09	3,85	3,93		
31	F	Provence-Alpes-Côte d'Azur	2,08	3,80	5,83	8	19
		Autre région représentée					
42	NL	Utrecht	0,36	2,97	3,32		

Les régions représentées incluent, en outre, la région NUTS II la mieux classée de chaque État membre, dès lors que le degré de dépendance de cette région dépasse la moyenne communautaire pondérée. Lisbonne a été incluse en raison de l'imprécision des données disponibles.

* Régions non représentées, l'importance de la population en valeur absolue étant trop faible (îles).

Tableau 1.6 **Régions NUTS II dépendantes**

Classement C: dépendance fondée sur l'ensemble des emplois de défense

			Pourcentage des emplois				
		NUTS II	Industries de défense uniquement	Militaires uniquement	Total des activités de défense	Apparition dans d'autres classements	
		(doublement de la moyenne communautaire)	1,10	3,72	4,82	A	B
1	GR	Voreio Aigaio*	0,00	29,88	29,88		1
2	E	Ceuta y Melilla	0,00	22,86	22,86		2
3	P	Açores	0,00	11,82	11,82		3
4	GR	Notio Aigaio*	0,00	11,27	11,27		4
5	GR	Kriti	0,00	10,61	10,61		5
6	I	Friuli-Venezia Giulia	1,65	8,98	10,57	13	8
7	GR	Dytiki Makedonia	0,07	10,39	10,46		6
8	GR	Anatoliki Makedonia, Thraki	0,05	10,06	10,11		7
9	UK	Hampshire, Isle of Wight	1,18	7,83	8,95	19	10
10	D	Trier	0,07	8,72	8,78		9
11	UK	Cumbria	6,40	0,95	7,35	1	
12	UK	Cornwall, Devon	1,55	5,32	6,81	15	15
13	UK	North Yorkshire	0,00	6,25	6,25		11
14	E	Madrid	0,58	5,63	6,20		14
15	D	Koblenz	0,08	6,01	6,09		12
16	F	Bretagne	2,51	3,59	6,05	4	
17	D	Lüneburg	0,08	5,87	5,95		13
18	D	Bremen	2,74	3,14	5,84	3	
19	F	Provence-Alpes-Côte d'Azur	2,08	3,80	5,83	8	31
20	UK	Avon, Gloucestershire, Wiltshire	1,26	4,25	5,48	18	22
21	D	Rheinhessen-Pfalz	0,09	5,08	5,17		16
22	D	Schleswig-Holstein	0,50	4,54	5,02		20
23	F	Aquitaine	2,36	2,56	4,89	5	

* Régions non représentées, l'importance de la population en valeur absolue étant trop faible (îles).

Tableau 1.7 **Dépendance moyenne à l'égard du secteur de la défense et concentration spatiale**

(%)

Moyennes pondérées	Industries de défense	Bases militaires	Ensemble des activités de défense
Moyenne communautaire (1)	0,55	1,86	2,41
Moyenne des régions dépendantes	1,92	5,48	6,63
Pourcentage des emplois de défense des régions dépendantes par rapport au total des emplois de défense de la Communauté	50,47	34,59	28,05

Sources: EAG et CDE.

(1) Pondérée de la population active pour la dépendance à l'égard des industries de défense et de la population active majorée des effectifs militaires pour la dépendance militaire et pour la dépendance à l'égard de l'ensemble des activités de défense.

Le nombre des emplois dans les industries de défense des régions dépendantes représente 50 % du total des emplois des industries de défense dans la Communauté, tandis que les emplois militaires dans les régions dépendantes représentent 35 % du total des emplois militaires dans la Communauté. C'est dire que les industries de défense sont concentrées dans un plus petit nombre de régions que les bases et les installations militaires.

A l'intérieur des régions de niveau NUTS II dépendantes des industries de défense, on compte 55 régions de niveau NUTS III (sur 103) qui présentent des concentrations connues d'activité industrielle de défense. Ces régions représentent 11,6 % de la population de la Communauté. De même y a-t-il 115 régions NUTS III (sur 149) qui présentent des concentrations militaires connues dans les régions NUTS II militairement dépendantes (où vit 10,8 % de la population de la Communauté). Et on compte 94 régions NUTS III (sur 118) qui présentent une concentration d'activité soit dans les industries de défense, soit dans les activités militaires, soit dans les deux, tout en faisant partie de régions NUTS II dont l'ensemble des emplois de défense dépasse en pourcentage le double de la moyenne communautaire.

La présente étude a également tenté d'identifier les zones de concentration des activités de défense hors des régions dépendantes. C'est en Allemagne qu'a été relevé le plus grand nombre de régions NUTS III présentant des concentrations d'activité militaire hors des régions NUTS II dépendantes (le plus grand nombre ayant été observé dans les régions NUTS I de Bavière, de Rhénanie-du-Nord-Westphalie et du Brandebourg). Le plus grand nombre de régions NUTS III présentant des concentrations d'activité militaire a été observé au Royaume-Uni (en Écosse et au pays de Galles). L'Italie est le pays où l'on trouve le plus de régions NUTS III supplémentaires ayant une activité industrielle de défense (surtout dans le Centre et en Lombardie). En Belgique, la Flandre-Occidentale contient plusieurs régions NUTS III ayant des activités industrielles de défense. Il n'y a pas une seule région NUTS II hors des régions dépendantes (à l'exception de l'Allemagne de l'Est, qui ne faisait pas partie de l'étude de dépendance) dans laquelle on ait constaté une concentration de régions NUTS III ayant des activités de défense.

Une forte proportion des régions NUTS III où sont concentrées des activités de défense (à l'intérieur de régions NUTS II dépendantes) ne sont pas visées par les instruments des objectifs nos 1, 2 ou 5b). Environ 50 % des régions NUTS III dépendantes à un titre ou à un autre (A, B ou C) n'ont accès à aucune aide. Une proportion relativement faible des régions NUTS III n'y ont que partiellement accès, comme le montre le tableau 1.8.

Tableau 1.8 Nombre de régions NUTS III, situées dans les régions NUTS II dépendantes, ayant accès aux aides au titre des objectifs nos 1, 2 ou 5b)

Objectif n°	Éligibilité	Industries de défense	Activités militaires	Industries de défense ou activités militaires(1)
1	oui		27	20
2	totale	2	3	4
	partielle	6	8	4
5b	totale	0	9	5
	partielle	15	8	12
2 et 5b	partielle	2	1	2
1, 2 et 5b	non	27	59	47
Total		**55**	**115**	**94**

Sources: EAG, CDE et DG XVI.

(1) Régions NUTS III, faisant partie d'une région NUTS II, dont l'ensemble des emplois de défense dépasse en pourcentage le double de la moyenne communautaire et qui présentent une concentration d'activité soit dans les industries de défense, soit dans les activités militaires, soit dans les deux secteurs.

Vulnérabilité

Dans la présente étude, le terme de *vulnérabilité* est utilisé pour indiquer si des suppressions d'emplois ont d'ores et déjà été annoncées dans une région donnée ou si elles sont probables à brève échéance. Le qualificatif *très vulnérable* est utilisé pour désigner le premier cas, le qualificatif *vulnérable* s'appliquant au second. Concrètement, il est impossible de prévoir les futures fermetures d'usines et de bases militaires, car les annonces de rationalisation suscitent au niveau régional de vives controverses concernant aussi bien les salariés ou le personnel militaire licenciés que les économies locales (ainsi, peut-être, que les économies voisines) qui les emploient. Le tableau 1.9 indique néanmoins, sur la base des définitions qui viennent d'être données, les régions dépendantes qui, dans la Communauté, sont vulnérables ou très vulnérables à la réduction des activités de défense ainsi que le secteur des activités de défense auquel ces qualificatifs s'appliquent (industries de défense ou activités militaires).

Tableau 1.9 Régions vulnérables à la réduction des activités de défense énumérées par ordre de dépendance à l'égard des industries de défense d'abord, de dépendance militaire ensuite

** = très vulnérable (des suppressions d'emplois ont été annoncées) * = vulnérable (des suppressions d'emplois sont probables)

		Vulnérabilité à la réduction des activités de défense		Présence dans les classements de dépendance (1)		
	NUTS II	Industries de défense	Activités militaires	A	B	C
UK	Cumbria	**		1		11
UK	Essex	**		2		
D	Bremen	**	**	3		18
F	Bretagne	*	*	4		16
F	Aquitaine	*	*	5		23
UK	Lancashire	**		6		
I	Liguria	**		7		
F	Provence-Alpes-Côte d'Azur	**	*	8	31	19
F	Centre	**		9		
F	Île-de-France	*	**	12		
D	Oberbayern	**	**	14		
UK	Cornwall, Devon	**	*	15	15	12
F	Basse-Normandie		**	16		
F	Haute-Normandie		**	17		
UK	Avon, Gloucestershire, Wiltshire	**	**	18	22	20
UK	Hampshire, Isle of Wight		**	19	10	9
GR	Sterea Ellada	*		23		
D	Trier		**		9	10
D	Koblenz		**		12	15
D	Lüneburg		**		13	17
E	Madrid	**	**		14	14
D	Rheinhessen-Pfalz		**		16	21
D	Unterfranken		**		17	
D	Schleswig-Holstein	**	**		20	22
UK	Berkshire, Buckinghamshire, Oxfordshire		**		26	
F	Lorraine		**		30	

Source: Enquête CDE.

(1) Ces colonnes indiquent le ou les classements de dépendance où chaque région figure:
— classement A: dépendance à l'égard des industries de défense;
— classement B: dépendance militaire;
— classement C: dépendance fondée sur l'ensemble des emplois de défense.

A brève échéance, les entreprises du secteur de la défense s'adapteront à la réduction des activités de défense en diminuant leurs effectifs; à plus long terme, elles seront peut-être amenées à fermer des usines ou à redistribuer les tâches entre leurs différents lieux d'implantation en fonction de la compétitivité relative de ces derniers. Il ressort de l'enquête sur les industries de défense, à laquelle il a été procédé, que la plupart des responsables interrogés essaient d'éviter les fermetures d'usine en cherchant de nouveaux marchés, encore que certaines firmes aient choisi de se spécialiser dans les activités de défense plutôt que de rechercher une diversification vers des marchés civils entièrement nouveaux. L'adaptation au changement demande du temps; on considère ordinairement que cela peut durer jusqu'à cinq ans.

L'enquête a confirmé que pour les entreprises privées les implications régionales de la réduction des activités de défense seront déterminées par des critères commerciaux. C'est ainsi que des usines situées dans des sites se prêtant à des usages intéressants et profitables pourraient être fermées et vendues à d'autres opérateurs (par exemple pour l'aménagement de quartiers d'habitations, de bureaux ou de commerces).

En ce qui concerne les bases militaires, il est certain que, dans certaines régions allemandes, on assistera à la fois à des fermetures et à des réductions d'activité. C'est vrai en particulier pour les régions hébergeant de fortes proportions de forces étrangères, dont une partie importante, sinon la plus grande partie, devra être retirée. Le retrait des forces étrangères touchera à la fois les régions allemandes et celles de leurs pays d'origine où elles seront déployées ou licenciées. Dans la plupart des États membres de la Communauté, on ne dispose d'aucune information précise sur les fermetures envisagées. Toutes les informations disponibles ont néanmoins été passées en revue. La vulnérabilité ne signifie pas nécessairement qu'une région donnée traversera des difficultés inacceptables. Certaines fermetures de bases militaires dans des zones à forte densité de population peuvent, par exemple, atténuer la pénurie de terrains et de logements. Au demeurant, l'impact des réductions d'activité proprement dites dépendra des caractéristiques structurelles de chaque région. Certaines sous-régions spécialisées et isolées risquent d'être plus durement touchées par la réduction des activités de défense si elles se trouvent ainsi privées des effets stabilisateurs que procure en toute hypothèse l'appartenance à une grande région économique intégrée.

Impact régional et réponse

Il s'est agi d'évaluer les effets des emplois directs sur les emplois indirects, calculés par région NUTS II. Cet effet, appelé *effet multiplicateur,* s'obtient par le calcul du rapport du total des emplois de défense — directs et indirects — aux emplois de défense directs. Les études existantes indiquent que les multiplicateurs régionaux de l'emploi s'échelonnent entre 1,75 et 2,00 pour les industries de défense et entre 1,10 et 1,50 pour les bases militaires. Sur la base de ces données, les conséquences d'un scénario pessimiste ont été évaluées pour les régions où des réductions de l'activité de défense ont d'ores et déjà été annoncées (régions très vulnérables). Cette analyse situe la limite supérieure des effets négatifs de la réduction des dépenses militaires. Dans le scénario pessimiste, le Cumbria risque, du fait des suppressions d'emplois dans ses industries de défense, de perdre 12,8 % de sa population active totale ayant un emploi. Les deuxième et troisième régions les plus touchées en termes de suppression d'emplois industriels de défense sont l'Essex (5,6 % de la population active ayant un emploi) et Brême (5,5 %). Les trois régions les plus touchées par les suppressions d'emplois militaires sont la région de Trèves (13,1 % de la population active ayant un emploi), le Hampshire et l'île de Wight (11,7 %). Il existe une région qui est dépendante à la fois des industries de défense et des activités militaires et qui est très vulnérable aux réductions d'activité dans les deux secteurs; la réduction des activités de défense pourrait ainsi frapper 8,8 % de la population active de l'Avon, du Gloucestershire et du Wiltshire.

A très court terme, l'impact régional de la réduction des dépenses militaires se limite aux pertes directes d'emplois et de revenus; ces pertes sont ensuite amplifiées par des effets multiplicateurs, mais, à moyen terme, elles tendent à être contrées par des réactions d'adaptation; et, à long terme, ces réactions d'adaptation

peuvent elles-mêmes être amplifiées par une intervention spécifique. Il importe de prendre en considération la *capacité d'adaptation* d'une région si l'on veut approfondir l'analyse de l'impact régional des réductions de dépenses militaires. Les facteurs utilisés dans la présente étude pour évaluer l'adaptabilité régionale sont: la structure économique régionale (c'est-à-dire le nombre des emplois dans l'industrie par rapport à l'agriculture), la dépendance à l'égard de vieilles industries exploitant les ressources naturelles, le taux de reproduction de la population régionale, l'évolution du potentiel économique résultant de l'intégration européenne, le taux de chômage, le pourcentage d'adolescents dans les systèmes d'enseignement et de formation ainsi que les dotations en infrastructures. Tous ces facteurs, à l'exception des deux derniers, ont été sélectionnés sur la base d'une analyse statistique rigoureuse des facteurs déterminants de la «réussite» régionale entre 1977 et 1988. Les deux derniers facteurs sont des indicateurs supplémentaires éventuellement pertinents.

On pourrait penser que le chômage constitue la mesure la plus évidente de la capacité d'adaptation de l'économie d'une région. Le taux de chômage de toutes les régions dépendantes des activités militaires a diminué par rapport à la moyenne communautaire au cours des années 80.

Tableau 1.10 Évolution de l'emploi

Statistique	Zone géographique	1977-1981	1981-1985	1988-1988
Population	EUR 12	316,1	320,0	325,3
	Régions dépendantes	74,5	75,4	76,7
Taux de chômage	EUR 12	5,9	9,6	9,0
	Régions dépendantes	5,6	8,8	7,7

Sources: Eurostat, troisième et quatrième rapports périodiques et EAG-CDE (les chiffres concernant les régions dépendantes sont des estimations).

Mais les taux de chômage régionaux, même en moyenne pluriannuelle, sont le reflet non seulement de la situation locale, mais aussi de la situation conjoncturelle au niveau national, de même qu'ils sont la résultante d'événements locaux: fermetures d'entreprises ou d'investissements, efficacité de la politique locale, processus lié à des schémas de restructuration spatiale (tels que la décentralisation et l'intégration européenne), etc. La mesure de la capacité d'adaptation devrait autant que possible, compte tenu des difficultés que comporte son évaluation, refléter les facteurs structurels systématiques sous-jacents et faire abstraction d'aspects ponctuels dans le temps ou dans l'espace. D'où l'utilisation d'éléments de mesure autres que le seul chômage.

Il a été constaté que la capacité d'adaptation à la réduction des dépenses militaires différait de façon significative d'une région à l'autre. C'est ainsi que les régions rurales en retard peuvent être moins adaptables que des régions rurales prospères et que des régions industrielles en déclin et des sous-régions spécialisées isolées peuvent être moins adaptables que des régions ayant une activité industrielle de pointe.

Si des instruments d'intervention nouveaux ou acquis sont considérés comme appropriés pour faire face à la diminution des dépenses militaires, il faut que ces instruments soient souples, car on ignore encore quelles sont les régions de la Communauté qui seront les plus durement touchées par les décisions à venir.

L'apport de la politique régionale dans la lutte contre l'impact négatif de la réduction des dépenses militaires peut se présenter sous différents aspects: politique industrielle et technologique, politique sociale, formation et emploi. L'implantation ou le transfert de bases militaires dans des zones en difficulté peut constituer une option supplémentaire, à condition que cela soit conforme aux objectifs militaires et à la politique de défense. Le transfert de bases militaires de zones urbaines vers des zones rurales risque de poser des problèmes si les zones urbaines ont un taux de chômage élevé et une faible capacité d'adaptation et/ou si le site abandonné a été contaminé par les industries de défense ou les forces militaires qui l'occupaient. Le coût de la décontamination peut être très élevé, surtout dans les États membres qui (comme l'Allemagne) sont dotés d'une réglementation rigoureuse en matière d'environnement.

Certaines zones qui ne sont pas visées par les instruments d'intervention existants sont dépendantes des

activités de défense. Certaines sous-régions risquent d'être frappées de plein fouet par la réduction des emplois de défense; pour les régions ayant une faible capacité d'adaptation, l'impact économique et social des réductions d'activité pourrait être particulièrement lourd. C'est pourquoi il vaut peut-être mieux réviser l'admissibilité territoriale au bénéfice des aides accordées au titre des objectifs nos 1, 2 ou 5b) plutôt que d'élaborer de nouveaux instruments. La nature de la réponse donnée au niveau de la politique régionale dépendra du degré de dépendance de la région considérée à l'égard de l'activité de défense, de sa vulnérabilité à la réduction des dépenses ainsi que de ses caractéristiques économiques et structurelles. L'élaboration et la mise en œuvre de programmes nationaux devront également prendre ces éléments en considération.

Problèmes de reconversion

L'une des conséquences de la réduction des dépenses militaires pour les industries de défense comme pour les activités militaires sera la reconversion de certaines installations militaires à un usage civil.

Le débat sur l'adaptation et la reconversion se caractérise dans tous les États membres par l'absence d'action méthodique au niveau national. En ce qui concerne l'adaptation, les entreprises ont dû élaborer leurs propres stratégies. Si ce processus a entraîné des disparités dues à des facteurs nationaux, on observe par ailleurs l'émergence d'un tissu complexe de rapports de propriété transnationaux.

Il n'y a pratiquement pas d'exemple concret d'une véritable reconversion industrielle dans la Communauté, en dépit des nombreuses études économiques et autres qui ont été commandées afin d'en étudier les potentialités. En définitive, la diversification, qui consiste en l'espèce à acquérir les compétences et les produits nécessaires pour compléter une activité de défense existante, constitue peut-être une stratégie préférable à la reconversion. Toutefois, une telle stratégie nécessite un accès aux capitaux pour faciliter les acquisitions; or, la diminution des revenus provenant des activités de défense peut entraîner une raréfaction de ces capitaux.

En ce qui concerne la reconversion des bases militaires, l'éventail des utilisations auxquelles les sites pourraient être reconvertis comprend:

— l'agriculture, cela valant particulièrement pour les grandes superficies telles que les aérodromes;

— le logement;

— l'industrie et le commerce;

— la conservation de la nature, notamment les parcs naturels;

— la combinaison de deux ou plusieurs des utilisations susmentionnées.

Des exemples de ces types d'utilisation ont été observés dans la Communauté (surtout au Royaume-Uni). C'est l'utilisation industrielle et commerciale qui fournit le plus grand nombre d'emplois à long terme, à la fois directement sur le site et indirectement dans l'économie locale. Dans certains cas, une partie des emplois sont transférés d'anciennes zones industrielles ou commerciales, ce qui réduit l'impact net. La reconversion de sites militaires permet aussi d'éviter l'utilisation de terres agricoles à des fins industrielles, ce qui profite indirectement à la production agricole. La plupart des sites réaffectés à un usage agricole sont incorporés dans des exploitations existantes, ce qui a peu d'effets sur l'emploi.

L'expérience des fermetures de bases militaires aux États-Unis se caractérise par des utilisations assez similaires: parcs industriels, aéroports, prisons, centres commerciaux, établissements d'enseignement et de formation, bureaux d'administration locale, parcs et installations de loisirs ainsi que centres médicaux.

Peu susceptibles d'être reconverties en docks civils en raison de la surcapacité des chantiers navals, les bases navales ont plus de chance d'être utilisées pour l'aménagement de ports de plaisance comportant des logements et des installations de loisirs ou à des fins industrielles sans rapport avec la nature portuaire des sites. Les terrains d'entraînement militaire se prêtent parfaitement à la conversion en parcs ou en zones de loisirs, mais peuvent aussi, selon leur situation, servir à la construction de logements.

Le choix de l'affectation dépend à la fois de l'offre et de la demande. Du côté de l'offre, l'emplacement et la nature de l'installation sont déterminants. Du côté de la demande, la valeur relative du site et les possibilités d'aménagement et d'utilisation de l'espace détermineront les exploitations potentielles. L'une des caractéristiques de la reconversion des bases militaires est le délai très long qui peut s'écouler entre l'évacuation du site par les militaires et son aménagement pour un autre usage. Cela reflète bien le rôle de la demande dans le processus de reconversion. Il ressort de l'étude qu'il peut être souhaitable de conserver des terrains en fiducie lorsqu'aucun besoin immédiat n'est perçu.

1.4. Méthodologie générale de l'étude

La présente étude a nécessité la compilation d'un important volume de données sur l'activité de défense qui soient cohérentes à l'échelle de la Communauté. Les données relatives à l'emploi ont servi d'unité de mesure de cette activité, une distinction étant opérée entre les emplois dans les industries de défense et les emplois militaires. Des données ont donc été recueillies pour ces deux sortes d'emplois dans toutes les régions de niveau NUTS II de la Communauté, à l'exclusion des Länder est-allemands et des départements français d'outre-mer.

Industries de défense

La collecte de données sur l'emploi dans les industries de défense est rendue difficile par l'absence de données courantes, fiables et publiées sur les emplois dans les industries de défense et sur leurs implantations. Il existe plusieurs définitions des industries de défense, ce qui complique les comparaisons entre pays. Les industries de défense sont définies tantôt comme étant celles qui fournissent les forces armées, tantôt comme étant les actifs nationaux essentiels pour maintenir une assise industrielle en matière de défense. La définition retenue aux fins de la présente étude — les fournisseurs des forces armées — est une définition rattachée au marché, qui englobe les entreprises produisant des équipements directement associés aux activités militaires. Le but était d'identifier la composante «activité de défense» de l'effectif total de chaque entreprise et de limiter les données aux emplois de défense directs (par opposition aux emplois indirects).

Trois types de données ont été recueillies et analysées:

— les données officielles sur la répartition régionale des dépenses militaires;

— les données du SIPRI et d'autres données relatives à l'implantation régionale des entreprises de défense, recueillies dans la banque de données du Centre for Defence Economics (CDE) à l'université de York;

— la littérature générale sur les activités de défense, en particulier les études de cas antérieures et les informations relatives aux PME.

Le Royaume-Uni, la France et l'Allemagne sont les trois États membres qui possèdent les industries de défense les plus fortes (et les plus nombreuses); elles sont suivies par l'Italie. Selon le SIPRI, la dépendance à l'égard des ventes militaires — intensité de l'activité de défense — au niveau de chaque entreprise est particulièrement forte au Royaume-Uni et en France.

Bases militaires

La taille des bases militaires est très inégale. Outre du personnel militaire national ou étranger, elles emploient aussi des civils. L'impact économique local d'une base militaire dépend:

— de sa taille absolue et relative,

— de ses achats auprès des entreprises locales,

— des dépenses des personnels militaire et civil dans le circuit de l'économie locale,

— des effets multiplicateurs des dépenses locales.

Toute diminution de l'activité militaire dans une localité aura pour conséquence immédiate une réduction des dépenses susmentionnées.

Les implications sociales et économiques des compressions de personnel militaire varient cependant en fonction du type de personnel concerné. Les militaires sous contrat de courte durée et les appelés sont plus que d'autres susceptibles de retourner à leur précédent lieu

de résidence, d'où une dispersion de l'effet sur le chômage loin de la base où ils étaient stationnés.

Le personnel militaire stationné outre-mer (et en particulier les nombreuses forces alliées occidentales en Allemagne) regagnera vraisemblablement le pays d'origine en cas de démobilisation. Il en va de même pour le personnel civil (c'est-à-dire le personnel américain de soutien).

Les problèmes de données liés à la répartition régionale des bases militaires sont considérables. L'implantation des bases et les effectifs de chaque base sont considérés par la plupart des ministères de la Défense comme des informations sensibles. La méthodologie utilisée pour surmonter ces difficultés a comporté l'analyse:

— de données publiées (y compris de sources locales telles que les annuaires téléphoniques);

— des études spéciales entreprises par des experts du pays en matière de défense;

— des études existantes, notamment sur la disposition des forces américaines.

Les évaluations relatives au nombre régional d'emplois dans les bases militaires reposent sur une série d'hypothèses et d'appréciations, cela valant également pour le rapport des forces étrangères aux emplois civils ainsi que pour la pondération de la propension des différents types de personnel à dépenser au niveau local.

Les définitions et les hypothèses retenues pour l'élaboration de ces données sont précisées aux chapitres 3 et 4. Des données supplémentaires au niveau NUTS III ont également été recueillies lorsque c'était possible, afin d'identifier des concentrations particulières d'activités de défense. Ces données concernent, notamment, les Länder est-allemands, qui font l'objet d'une étude séparée commanditée par le CEC et connaissent d'importantes réductions d'activité des bases militaires.

Dépendance régionale

L'emploi est considéré comme une mesure de l'activité de défense plus fiable que la production en raison de la complexité des relations de sous-traitance dans les industries de défense (avec le risque de «double comptage» de la production des sous-traitants approvisionnant les maîtres d'œuvre) et de la singularité des bases militaires. Le critère de l'emploi permet également la compilation de données relativement cohérentes, fondées exclusivement sur l'emploi direct.

La répartition générale des industries de défense (définie au chapitre 3) et des bases militaires dans les différentes régions de la Communauté a été examinée, préalablement à l'analyse détaillée des données relatives à l'emploi, au niveau NUTS II. L'étape suivante de l'analyse a consisté à calculer pour chaque région le pourcentage des emplois dans les activités de défense par rapport à l'emploi total d'une région, de manière à mesurer la dépendance à l'égard des activités de défense.

Trois mesures distinctes de la dépendance ont été effectuées (A, B et C), ce qui a abouti à un classement des régions NUTS II de la Communauté. Ces trois mesures étaient les suivantes:

A: pourcentage des emplois dans les industries de défense par rapport à la population active d'une région;

B: pourcentage des emplois militaires par rapport à l'emploi total d'une région (population active et personnel militaire);

C: pourcentage de l'ensemble des emplois de défense par rapport à l'emploi total d'une région (population active et personnel militaire).

Il faut reconnaître que l'on ne dispose pas de façon générale de données cohérentes sur les activités de défense au niveau NUTS II. L'étude a donc consisté, pour une bonne part, à compiler cette série de données, qui a nécessité le recours à certaines hypothèses ainsi que l'extrapolation à partir de diverses autres données. En particulier, des pondérations ont été effectuées pour le rapport des forces étrangères aux forces nationales et des appelés par rapport aux engagés. Ces pondérations traduisent la moindre importance des forces étrangères dans les économies locales (en raison de l'épargne et du rapatriement d'une partie des traitements) et la faiblesse relative du pouvoir d'achat des appelés (dont la solde est modique).

Ont ensuite fait l'objet d'une analyse plus détaillée les régions de niveau NUTS II qui présentaient une dépen-

dance à l'égard des activités de défense représentant plus du double de la moyenne communautaire d'après le classement A ou le classement B (toutes les régions présentant un tel degré de dépendance selon le classement C figuraient aussi au moins dans l'un des classements A et B). Sous réserve de certains compléments et exclusions précisés au chapitre 5, des profils économiques sommaires ont été établis pour chacune de ces régions. Ils sont reproduits dans les annexes.

Dans les cas où des suppressions d'emplois spécifiques, que ce soit dans les industries de défense ou dans les bases militaires, avaient déjà été annoncées, celles-ci ont été identifiées au point 5.5 et dans les profils. La réponse générale de l'industrie à la compression des dépenses militaires a été évaluée au moyen d'une enquête dont les conclusions figurent dans les annexes, conjointement avec les pièces relatives aux opérations de reconversion antérieures du secteur industriel et des bases militaires. Les éléments relatifs aux effets multiplicateurs des activités de défense sur l'emploi ont également été examinés (au chapitre 6).

La dernière phase de l'analyse a porté sur la capacité d'adaptation des régions dont le profil avait été établi, ce qui a permis la détermination d'un «coefficient» d'adaptabilité pour chaque région. Cette analyse a nécessité l'utilisation d'un modèle de régression, les coefficients obtenus étant appliqués aux variables d'adaptabilité pertinentes, notamment le taux de chômage, les dotations en infrastructures et le pourcentage d'adolescents dans le système d'enseignement et de formation. La courbe des degrés de dépendance à l'égard des activités de défense a été établie en fonction de l'évolution du chômage et de la capacité d'adaptation. Cette analyse figure en annexe. Les implications de cette analyse pour la politique régionale sont évaluées au point 6.3.

Résumé

La politique de défense et les dépenses militaires traversent une période de changement et d'incertitude. Entre le début des années 70 et la fin des années 80, le pourcentage des dépenses de défense par rapport au PNB est passé dans la Communauté européenne de 3,7 à environ 3,3 %. Cela montre que l'importance des dépenses militaires a diminué. La fin de la guerre froide a fait naître des perspectives de fortes réductions à moyen comme à long terme. On s'attend à ce que la croissance réelle des dépenses militaires diminue d'environ 10 % d'ici à 1995 (par rapport à 1991) et de 25 % ou plus d'ici à l'an 2000. Il ressort de la présente étude que, en 1991, 0,68 million de personnes étaient directement employées dans les industries de défense et que 2,3 millions de personnes étaient employées dans les bases et les installations militaires (étrangères incluses). L'emploi direct dans les activités de défense représente environ 2,41 % de la population active de la Communauté. La réduction des dépenses militaires aura une forte incidence sur ces emplois de même que sur les emplois indirects y associés.

L'étude commence par déterminer la dépendance de chaque région de niveau NUTS II de la Communauté à l'égard des activités de défense. En prenant pour seuil le double de la moyenne communautaire, on a estimé que 19 régions étaient dépendantes de l'activité industrielle de défense et que 31 régions étaient dépendantes des emplois militaires. En additionnant les emplois dans les industries de défense et les emplois militaires et en comparant la somme obtenue avec les chiffres régionaux de l'emploi, on a obtenu 23 régions dépendantes des activités de défense dans leur ensemble, mais chacune de ces régions figure également dans l'un des deux classements précédents.

L'étude a également montré qu'une forte proportion des régions de niveau NUTS III où sont concentrées des activités de défense (à l'intérieur de régions NUTS II dépendantes) n'étaient pas visées par les instruments des objectifs nos 1, 2 ou 5 b). Environ 50 % des régions NUTS III dépendantes au titre de l'un des classements (A, B ou C) effectués ne bénéficient d'aucune aide. Une proportion relativement faible des régions NUTS III n'y ont que partiellement accès.

La vulnérabilité, terme utilisé pour indiquer si des suppressions d'emplois ont déjà été annoncées dans une région donnée ou si elles sont probables à brève échéance, a été étudiée à travers une enquête sur les industries de défense. Concrètement, il est impossible de prévoir les futures fermetures d'usines et de bases, car les annonces de rationalisations suscitent au niveau

régional de vives controverses. Il ressort de l'enquête que la plupart des responsables interrogés essaient d'éviter les fermetures d'usines en cherchant de nouveaux marchés, encore que certaines firmes aient choisi de se spécialiser dans les activités de défense plutôt que de rechercher une diversification vers des marchés civils entièrement nouveaux. En outre, les sondés ont indiqué que l'adaptation durerait généralement au moins cinq ans. L'enquête a confirmé que, pour les entreprises privées, les implications régionales de la réduction des activités de défense seront déterminées par des critères commerciaux.

En ce qui concerne les bases militaires, dans certaines régions de la Communauté (surtout en Allemagne), on assistera à la fois à des fermetures et à des réductions d'activité. C'est vrai en particulier pour les régions hébergeant de fortes proportions de forces étrangères, dont une partie importante, sinon la plus grande partie, devra être retirée. La vulnérabilité ne signifie pas nécessairement qu'une région donnée traversera des difficultés inacceptables. Certaines fermetures de bases militaires dans des zones à forte densité de population peuvent, par exemple, atténuer la pénurie de terrains et de logements. L'impact des réductions d'activité proprement dites dépendra des caractéristiques structurelles de chaque région, certaines sous-régions isolées étant plus durement touchées par la réduction des activités de défense que des régions appartenant à des économies intégrées de plus grande dimension.

L'évaluation de l'impact régional et de la réponse à la compression des dépenses militaires implique l'examen de la capacité d'adaptation des régions concernées. Les facteurs permettant de mesurer la capacité d'adaptation sont: la structure économique régionale, la dépendance à l'égard de vieilles industries exploitant les ressources naturelles, le taux de reproduction de la population régionale, l'évolution du potentiel économique résultant de l'intégration européenne et de la diminution des frais de transport, le taux de chômage, le pourcentage d'adolescents dans les systèmes d'enseignement et de formation, ainsi que les dotations en infrastructures.

On appelle «effet multiplicateur» le processus de création ou de perte d'emplois indirects ou de revenus de la sous-traitance qui résulte des emplois directs dans les activités de défense. Les effets multiplicateurs varient d'une région à l'autre en raison tant des facteurs spécifiques de chaque région que des facteurs spécifiques de l'industrie de défense ou de la base militaire concernée. L'examen de données disponibles récentes indique toutefois que les multiplicateurs s'échelonnent entre 1,75 et 2,00 pour les industries de défense et entre 1,10 et 1,50 pour les bases militaires.

Les conséquences d'un scénario pessimiste ont été évaluées pour chacune des régions dépendantes classées comme très vulnérables aux réductions des activités de défense. Cela a permis d'évaluer l'impact éventuel de telles réductions sur les emplois de défense directs et indirects.

Toute réponse politique à ces changements nécessite de la souplesse sur deux fronts: la désignation de la zone (étant donné que de nombreuses régions dépendantes et zones de concentration de l'activité de défense ne sont pas actuellement admissibles aux aides accordées au titre des objectifs des fonds structurels) et les instruments d'intervention (étant donné qu'il s'agit d'affronter des difficultés nouvelles, propres à la compression des dépenses militaires). La coordination de la politique locale jouera également un rôle en raison de l'isolement géographique relatif de nombreux établissements de défense.

La question de l'utilisation des industries de défense pour l'importation de technologies et de compétences nouvelles (transfert de technologies) doit être abordée. Le défi à relever consiste en l'espèce à définir les conditions et les règles facilitant le transfert de technologies par d'autres moyens, ainsi qu'à examiner les implications d'une telle évolution au regard de la concurrence. Enfin, la question du réaménagement du territoire implique que des compétences spécifiques soient mises en œuvre dans toute initiative nouvelle. Les activités de défense occupent souvent de grandes superficies. Elles peuvent aussi être à l'origine d'une contamination des sols (notamment par le gasoil, par des produitschimiques ou des minéraux, de même que par des munitions abandonnées ou des activités en rapport avec l'armement nucléaire). Il conviendrait d'examiner le coût probable de la décontamination des sites évacués et le mode de financement approprié de ces coûts.

2. Overview of defence expenditure

Purpose

The purpose of this chapter is to describe the context in which recent cuts in defence spending and employment are taking place. Therefore, this chapter reviews trends in defence expenditure and military force numbers, the regional implications of these trends and future defence expenditure projections.

2.1. Background

Defence policy and defence spending are experiencing a period of change and uncertainty. Following the changes in Eastern and Central Europe and the former USSR, as well as the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, the 1990 CFE Treaty and the more recent voluntary unilateral defence cuts, the European members of NATO will be adjusting their defence budgets. There are real prospects of a disarmament race as nations and their electorates seek the benefits of the 'peace dividend'.

Although the future is unknown and unknowable, it is likely to be characterized by continuing cuts in defence budgets reflecting changes in the size, composition and traditional roles of the armed forces. The number, size and distribution of military bases will be subject to change. Smaller defence budgets will also affect equipment orders and consequently defence contractors. Some projects will be cancelled, whilst others will be delayed and 'stretched out' over a longer period. There will be fewer new projects and reduced orders will lead to shorter production runs and reduced requirements for support and spares. All of these changes will affect various regions of the Community.

This chapter sets the scene by describing the importance of defence spending in EC Member States. Defence spending means the purchase of 'inputs', including manpower, equipment and infrastructure to provide national security and protection. Defence ministries and their armed forces are major buyers of labour. They enter the labour market to purchase or conscript significant numbers of men and some women, particularly in the younger age-groups, and the labour they recruit (human capital) is of differing skill levels.

The armed forces are also major buyers of equipment, ranging from simple items, such as food, clothing and batteries to high technology products such as combat aircraft and guided weapons. As a single buyer or monopsonist, a defence ministry's procurement choices can have a major impact on its national industries. Its purchasing decisions can determine technological progress, the size and structure of an industry, entry or exit, ownership and location. Those decisions also impact the performance of defence industries (Hartley, 1991; Kirby and Hooper, 1991).

In addition to buying defence equipment, defence ministries purchase the infrastructure required for their armed forces. They need a range of defence facilities, particularly bases and communications systems. The results are reflected in army garrisons and training areas, military airfields and naval dockyards, together with radar and communications sites. These facilities are required by a nation's armed forces as well as by NATO forces based overseas (e.g. United Kingdom and US forces in Germany). The construction, repair, maintenance and modification of these facilities imposes substantial demands on construction industries.

The various demands of the armed forces are reflected not only in factor and product markets but also in the regional location of these markets. A company's defence activities tend to be nationally rather than transnationally based although there is a developing trend towards international collaboration on major projects (e.g. aerospace). Military bases are distributed in a variety of regions throughout Member States but with some localization. For example, naval ports and dockyards will be located at strategic points on the coast, whilst military airfields are likely to be in rural areas.

This study distinguishes between defence industries and military bases or facilities. Both have some common characteristics:

(i) They are sources of employment. Military facilities employ foreign or domestic service personnel and civilians whilst defence plants employ local civilian workers. Either or both might be major employers in a local economy.

(ii) They are sources of spending power in the local economy. This creates indirect employment effects both 'backwards' in the supplier chain and directly through employees' expenditures.

(iii) They are at risk from cuts in defence spending in terms of reduced activity or closure. In the case of defence bases in some EC States, decisions about closure will be made by overseas governments (e.g. British, American and former Soviet troop withdrawals from Germany).

During this period of change, some groups will inevitably lose from cuts in defence spending. The rest of this chapter outlines recent trends in defence spending in the EC Member States as well as numbers of armed forces and the importance of American forces in Europe.

The overriding purpose of the study has been to collect data on employment (as well as cuts in employment) in defence industries and the military for each NUTS II region of the Community in order to determine each region's relative defence dependence and vulnerability to cuts. Its secondary aim is to provide guidance to policy-makers in assessing which regions are likely to suffer most from cuts in defence spending and military forces. The following outline of trends provides the necessary background to assist in analysing the potential size of the problem facing Member States.

2.2. Trends in expenditure and manpower

Figure 2.1 shows total military expenditure in the EC (in billion ecus at constant 1988 prices) for the period 1980-90. The figure indicates that total military expenditure stagnated after 1987: its rate of increase fell from an average of 1.51% per annum during the early 1980s to 0.84% per annum during the late 1980s to early 1990s.

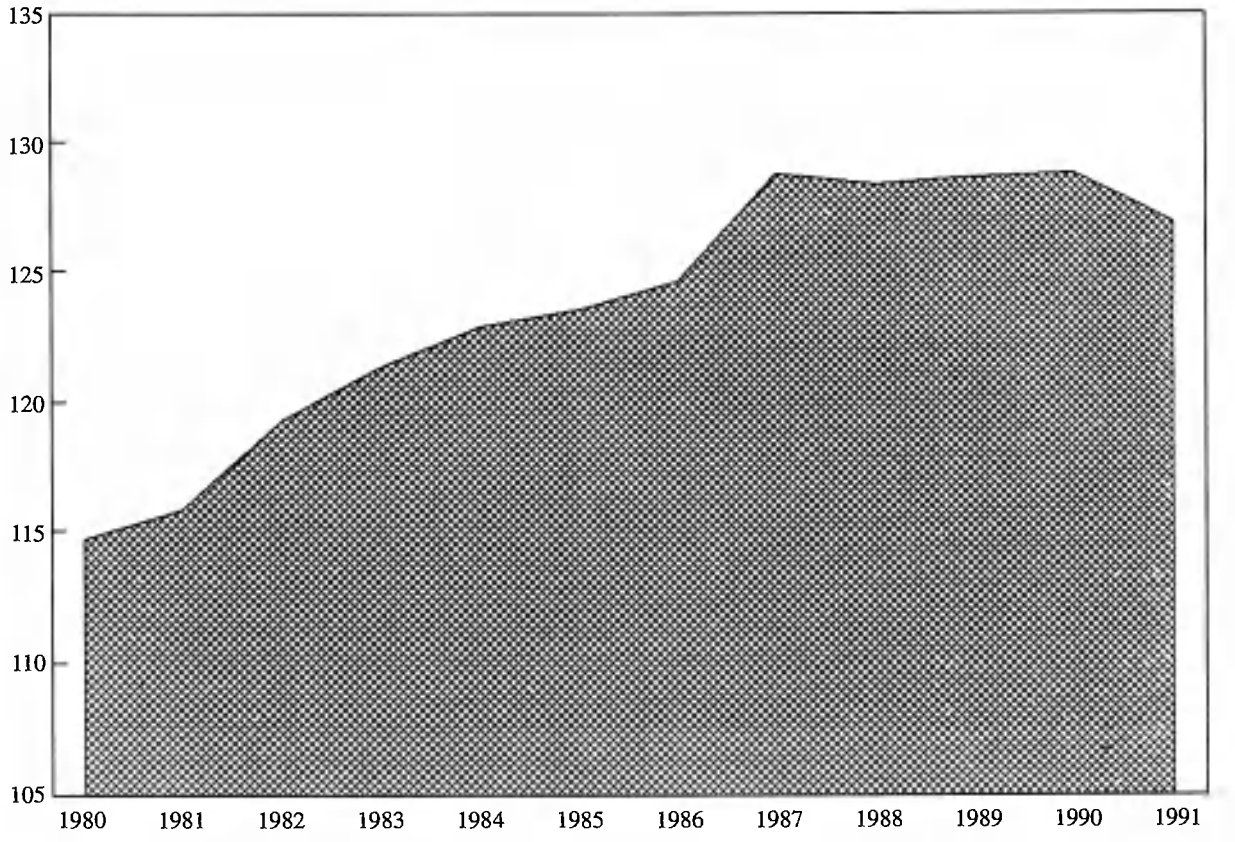
France, Germany and the United Kingdom are the three biggest military spenders accounting for 74% of the EC total in 1970 although this share had fallen to 69% by 1990. Italy is the fourth largest military spender accounting for nearly 14% of the EC total while Portugal, Ireland and Luxembourg account for a negligible proportion of the EC total. Spain has seen the biggest change increasing its share from 2.5% in 1970 to over 5% by 1990.

Figure 2.2. shows defence expenditure as a proportion of GDP (i.e. the 'defence burden'). On this basis, Greece, the United Kingdom and France have borne relatively high burdens compared to other EC States. Some nations have experienced reductions in their burdens, namely Portugal and Germany, whilst others have borne relatively small burdens (Italy, Spain, Denmark, Ireland and Luxembourg). The defence burden rose in five countries during the early 1980s, the largest increases occurring in the United Kingdom and France. The United Kingdom figures reflect the Falklands conflict and its commitment to the NATO 3% target increase in defence spending. While the United Kingdom and Ireland have all-volunteer forces, other EC States have substantial conscript forces, so their defence burdens are likely to underestimate the opportunity costs of defence.

Data on production levels in the defence industry measured as a share of GDP for the decade of the 1980s are depicted in Figure 2.3. The ranking of the top three countries based on their defence industrial expenditure match the rankings based on expenditure as a share of GDP (Greece, the United Kingdom and France) — and all experienced reductions in defence expenditure during 1988-90. The next highest ranking country is the Netherlands. Its ranking in this figure contrasts with its ranking of sixth in defence expenditure as a share of GDP. Portugal and Belgium are two countries whose defence expenditure relative to GDP during the 1980s placed them among the top seven countries in the EC; their expenditure on equipment, however, placed them seventh and tenth respectively during the same time period. Every country depicted (except Ireland and Luxembourg as no data were available for these countries over the specified time periods) experienced declines in defence industrial production between 1987-88 and 1989-90.

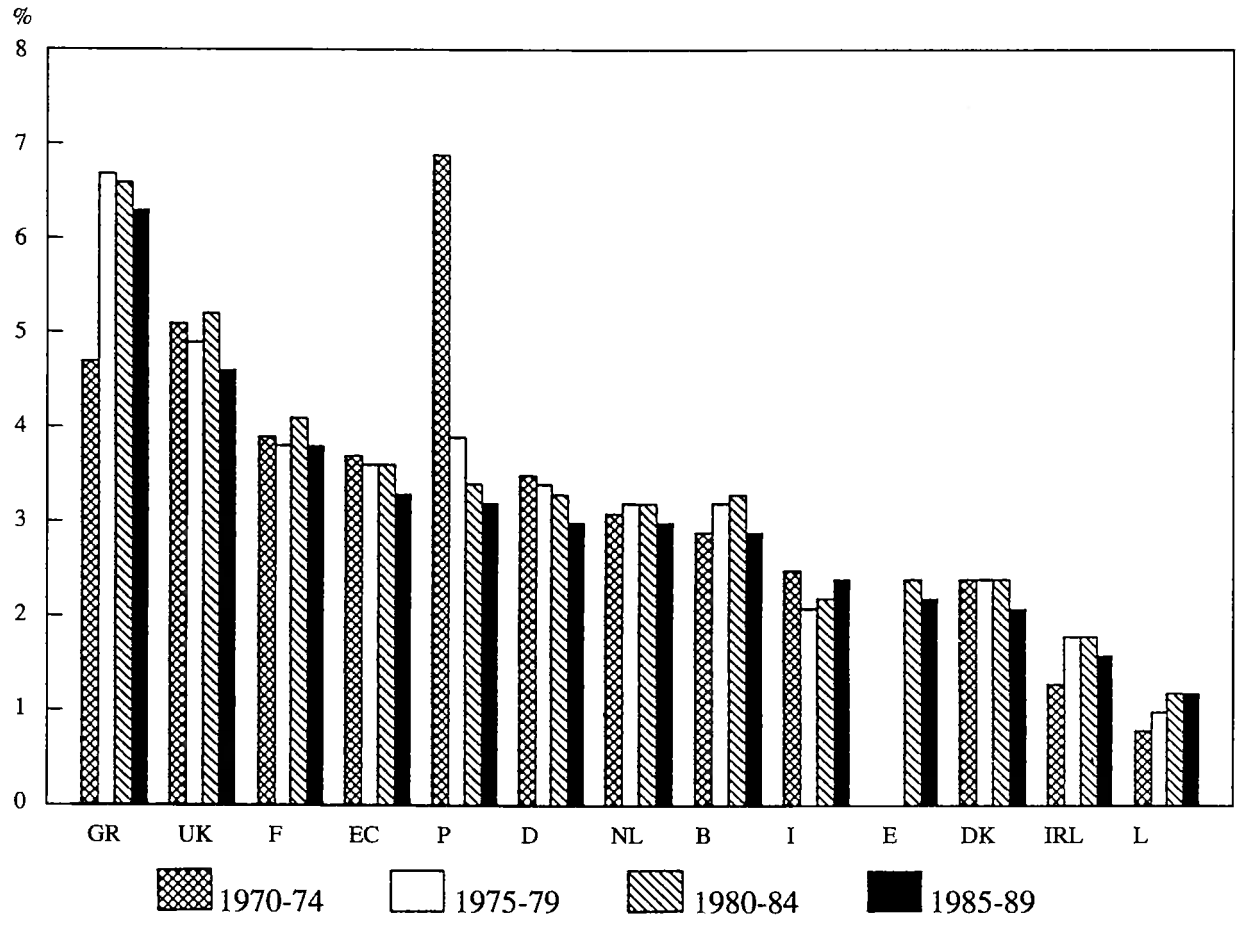
Figure 2.1. Total military expenditure of EC Member States

Constant 1988 prices (in billion ECU)



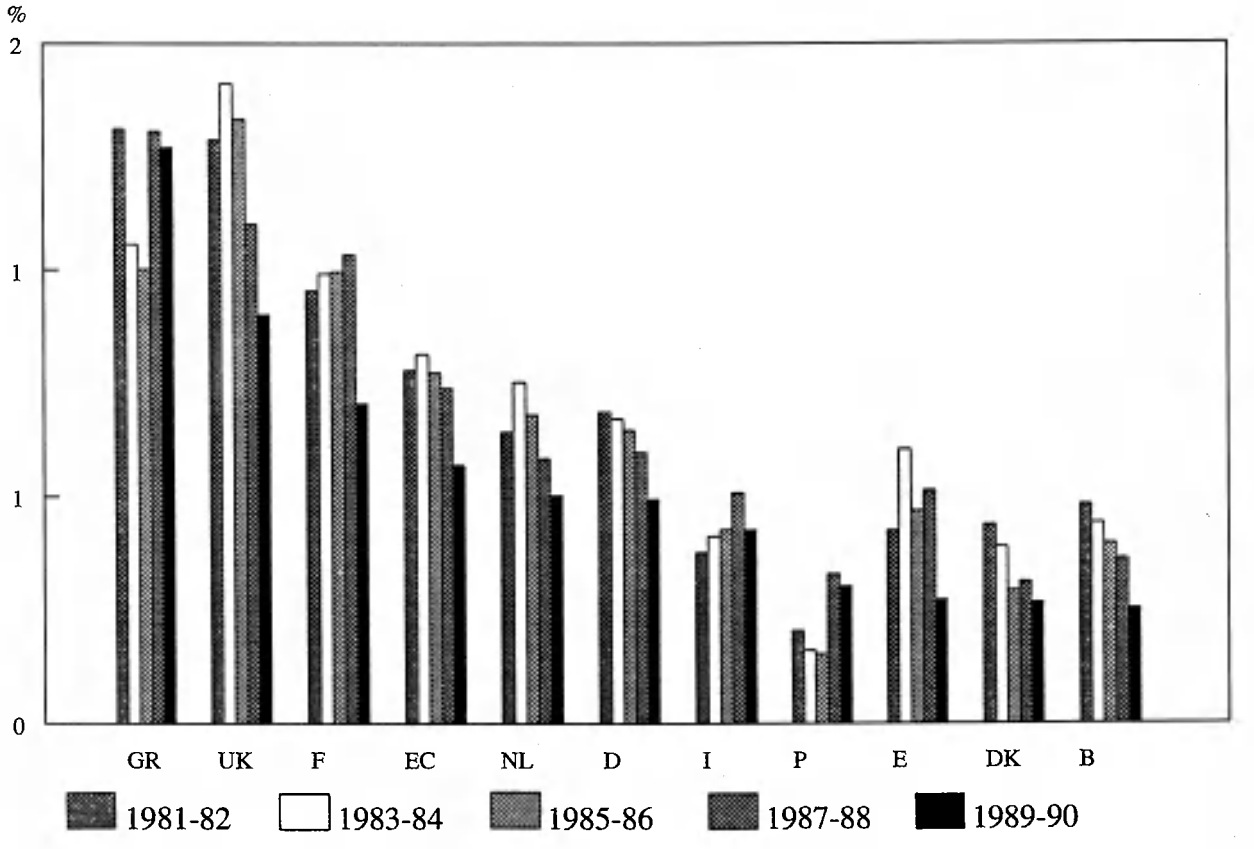
Sources: NATO 16 nations (various years), *World military expenditure,* Saadet Deger and Sipri yearbook, 1991

Figure 2.2. Defence expenditure as share of GDP
1970-89



Note: EC weighted average excludes Spain for 1970-74 and 1975-79.
Sources: NATO 16 nations (various years), *World military expenditure*, Saadet Deger and Sipri yearbook, 1991

Figure 2.3. Defence industries' output as share of GDP
1981-90



Note: EC weighted average excludes Ireland and Luxembourg due to unavailability of data.
Sources: Sipri yearbook, 1991 and Eurostat.

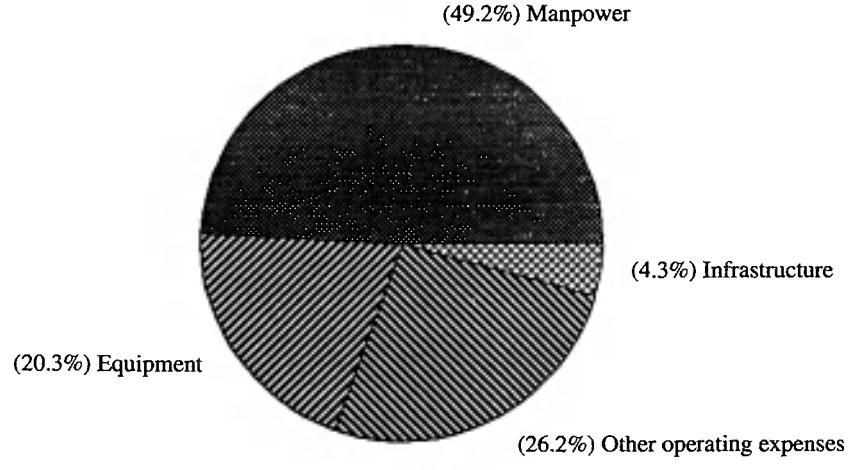
Figure 2.4 shows how the defence budget is distributed among the major categories of expenditure. Within the EC, manpower accounts for the largest share of the budget, followed by other operating expenses and equipment. In 1989, Ireland, Luxembourg, Portugal and Belgium spent some 70% or more of their budget on manpower; the Netherlands spent 54%, Germany 51% and the United Kingdom spent the smallest percentage, 39%. Keeping in mind the impact of equipment spending on defence industries, the three Member States which spent the largest proportions in 1989 were the United Kingdom (22%), Greece (22%) and Italy (20%). France is excluded from the EC average due to the fact that it does not break down expenditure in the same way as the NATO countries. In 1989, France spent 32% of its defence budget on manpower, 27% on procurement, 26% on maintenance and 15% on research and development.

The proportion of expenditure on equipment has increased from 12 (1974-75) to 16% (1985-89) for EC Member States as a whole. Most countries' equipment spending peaked in the mid-1980s. It peaked earliest in Denmark (1980) and latest in Portugal (1989). For Member States seeking to support and maintain domestic defence industrial bases, export markets are important. As depicted in Figures 2.5 and 2.6, the major EC arms exporters are France, the United Kingdom and Germany,

followed by Italy, Spain and the Benelux countries. However, between 1986 and 1990, the major Member States experienced reductions in their arms exports, particularly France whose arms exports declined from some USD 4 billion in 1986 to about USD 1.8 billion in 1990 (at constant 1985 prices: Sipri yearbook, 1991). Increasing excess capacity in European defence industries in combination with smaller markets available to firms in the USA and former Warsaw Pact nations will result in an increasingly competitive environment in the world's export markets. Figures 2.7 and 2.8 show exports' share of defence production and total export expenditure of the EC during the 1980s. The trends are somewhat erratic; however over the past few years, the export market for European defence industrialists has declined from 20% of their defence production to less than 10% between 1984 and 1987, or from ECU 10 billion in 1984 to ECU 2 billion in 1988 (at constant 1985 prices).

In 1989, military manpower in the 12 EC Member States was 2.75 million. Between 1975 and 1979, the number of

Figure 2.4. Shares of defence budget
EC average 1985-89



Note: Calculation excludes France.
Sources: NATO 16 nations (various years), *World military expenditure*, Saadet Deger, and Sipri yearbook, 1991.

Figure 2.5.
Exports of EC countries
1981-85
(billion USD)

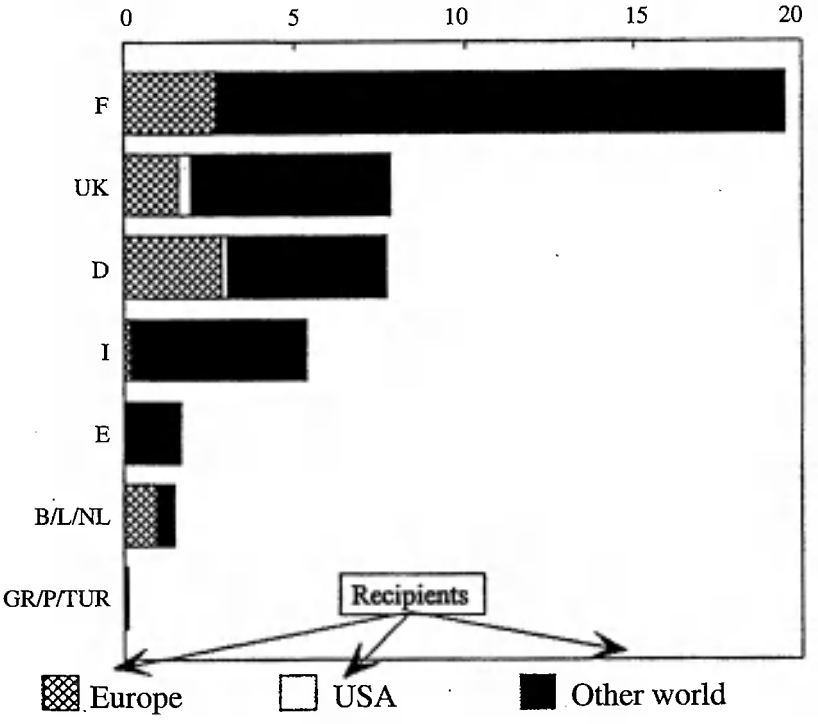
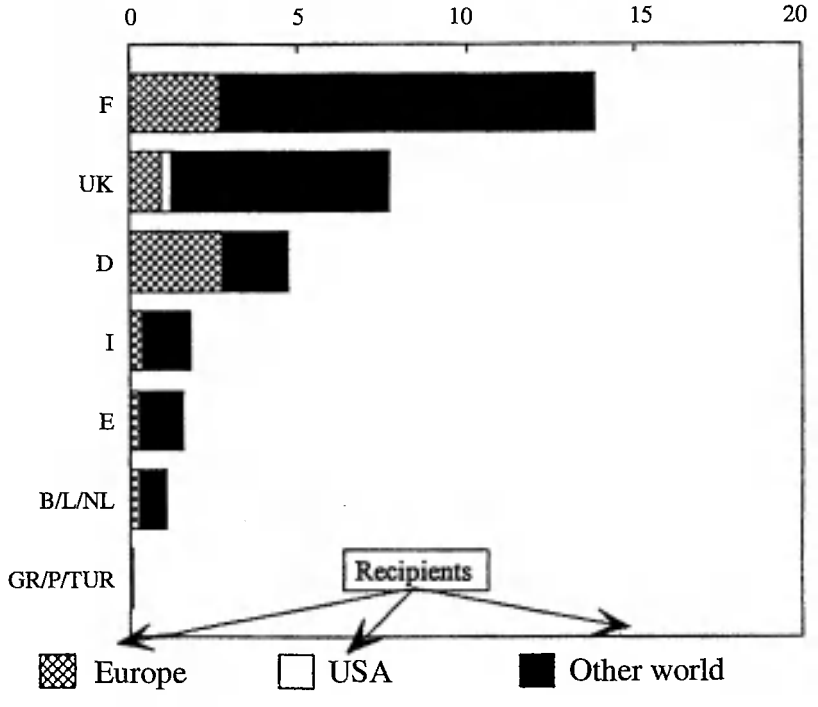


Figure 2.6.
Exports of EC countries
1986-90
(billion USD)

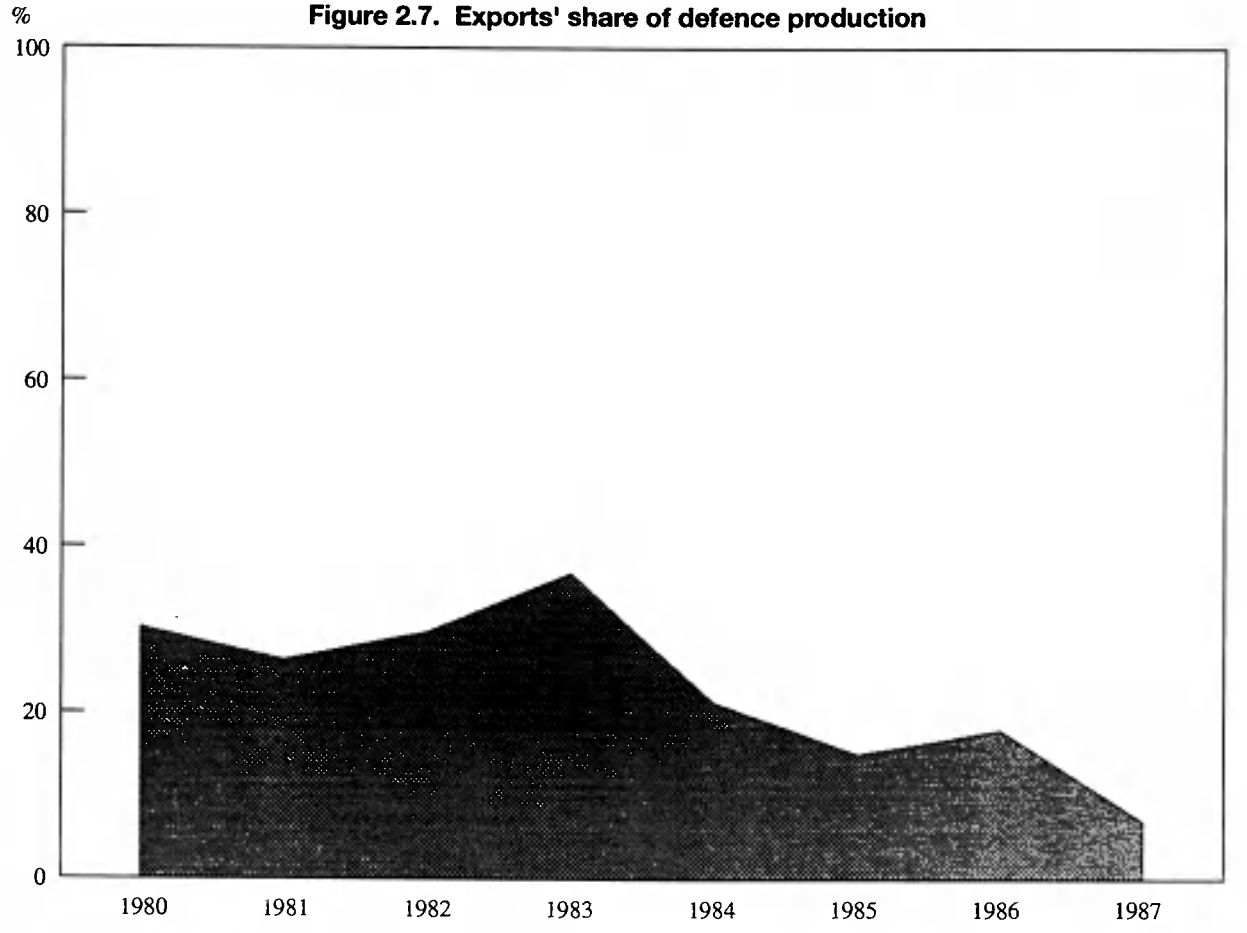


Note: Data are in constant 1985 US dollars.
Sources: Sipri yearbook, 1991.

European forces fell by 10%; this is largely attributed to the two-thirds reduction in the size of Portugal's armed forces. The number of forces then increased marginally in the 1980s. France, Italy and Germany presently have the largest armed forces; Denmark and Luxembourg have the smallest.

Figure 2.9 shows the numbers of civilian and military personnel expressed as a proportion of the labour force for the years 1970 to 1989. Those proportions fell rapidly during the 1970s and have since fallen at a slower rate. Greece had the highest proportion of military and civilian personnel in the labour force — 5.8% average for the period 1985-89, followed by France with 2.9% and Italy with 2.8%. The countries with the smallest proportions are Denmark (1.4%), Ireland (1.0%) and Luxembourg (0.8%). US direct defence expenditure on goods and services in the EC amounted to ECU 7.82 billion in 1987. Germany accounts for 71% of this total, the United Kingdom 12% and Italy 6%. Less than 1% goes to France. Greece and Italy experienced significant reductions in US defence expenditure in recent years whilst Denmark, Spain and Germany experienced gains.

Figure 2.7. Exports' share of defence production

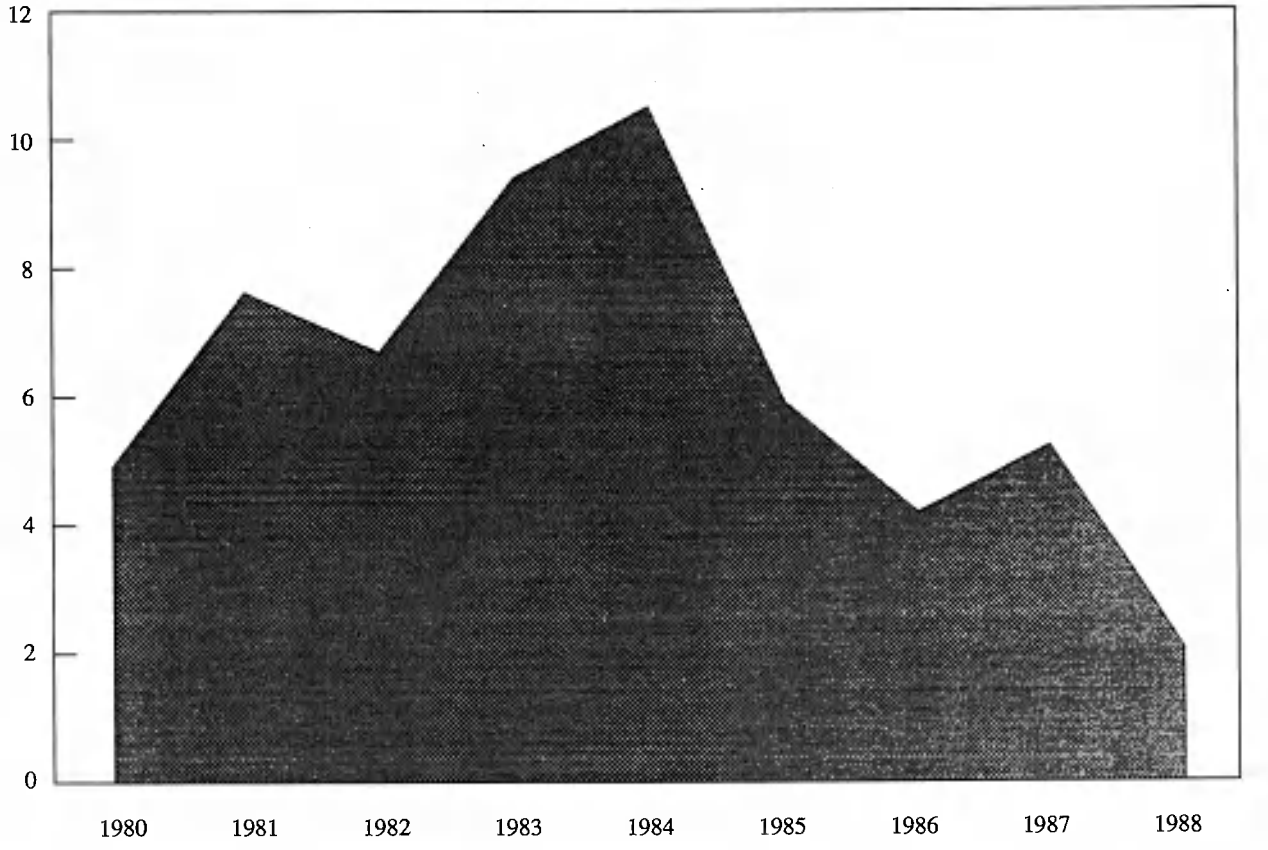


Note: Excludes Greece and Luxembourg.
Sources: US ACDA, *World military expenditure* and Sipri yearbook, 1991.

In 1987, the largest proportion of US expenditure (40%) was spent on equipment and construction, 30% was spent on operations and maintenance and the remaining 30% was spent on personnel. Some 95% of US expenditure on bases and facilities is allocated to Germany, the United Kingdom and Italy. Ireland does not host any US forces or receive expenditure for bases or facilities. In 1987, Germany accounted for 80% of US forces in Europe, the United Kingdom hosted 9%, Italy 5% and Spain 3%. The proportions in other EC Member States are negligible. In Germany, 83% of US personnel were in the army while in the United Kingdom 90% were in the air force. The concentration of US forces in Germany (and their announced withdrawals) highlights the vulnerability of West German regions. There are additionally substantial numbers of British army and air force personnel deployed in West Germany. These forces are to be reduced by half or more, and these reductions will involve further base closures. Similar base closures will be experienced in the former East Germany following the withdrawal of the former Warsaw Pact forces.

Figure 2.8. Total defence exports of the EC

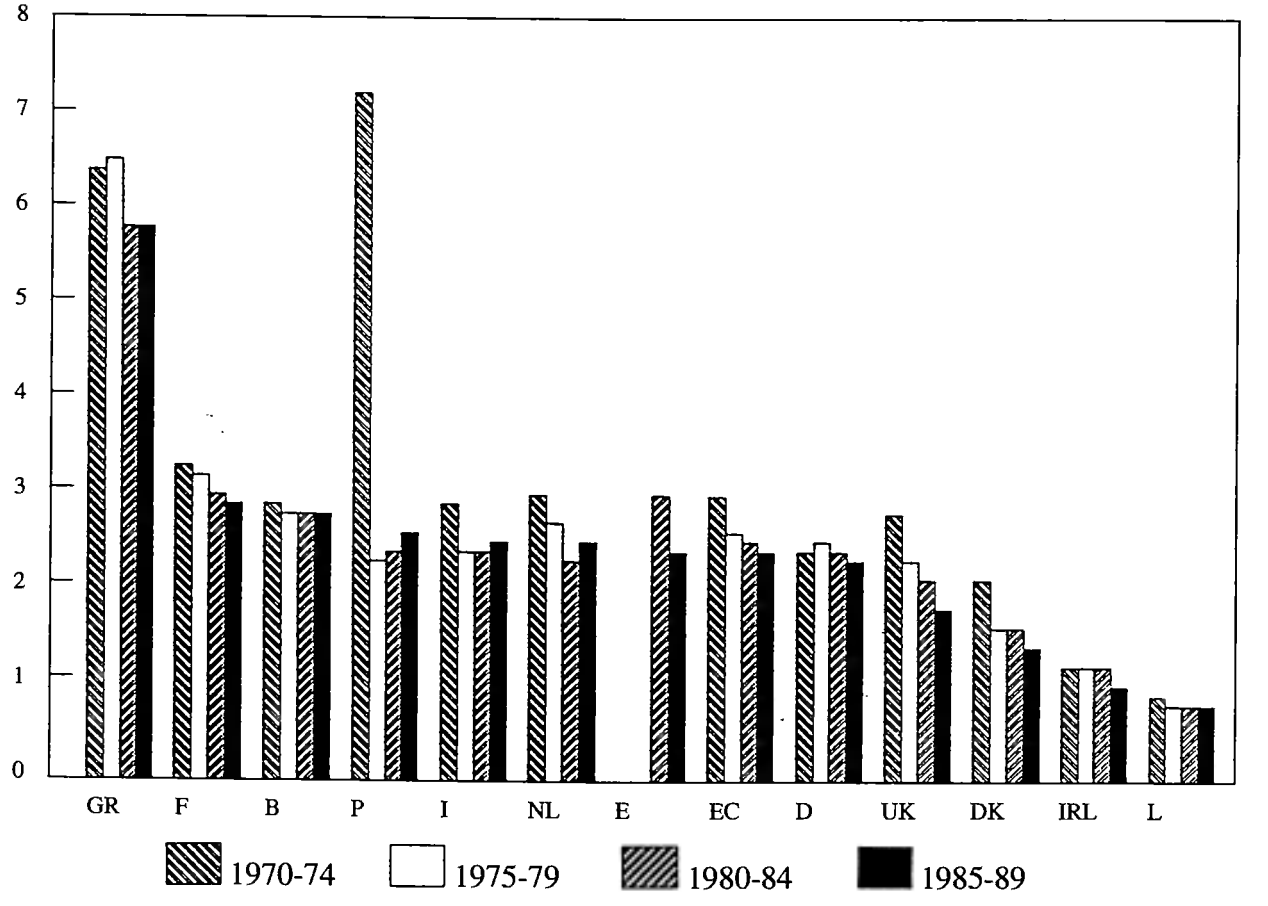
Constant 1988 prices (in billion ECU)



Sources: US ACDA, *World military expenditure* and Sipri yearbook, 1991.

Figure 2.9. Military as share of labour force

1970-89



Note: Military includes both military and civilian personnel. EC weighted average does not include Spain for 1970-74 or 1975-79.
Sources:NATO 16 nations (various years), *World military expenditure,* Saadet Deger and Sipri yearbook, 1991.

2.3. Regional implications of trends

Uncertainty about the future defence policies and levels of defence spending in EC Member States means that past trends are unlikely to provide reliable insights into future spending levels. The end of the cold war arms race might be the start of a disarmament race in which case major changes are likely to occur during the 1990s such as the following:

(i) The size and regional allocation of armed forces within and between EC Member States (e.g. the withdrawal of foreign troops from Germany). Such changes are likely to affect the urban-rural balance of economic activity. Air force bases are usually located in rural areas and their closure may have serious adverse economic consequences in areas where there are few alternative sources of employment for the civilian labour force.

(ii) Equipment spending with implications for the size, structure, location and product mix of defence industries in EC States. In the longer term, these changes are likely to be accentuated by pressures to create an EC defence policy and a single market for defence equipment.

The prospects of budget cuts and rising equipment costs will force nations to reappraise their traditional procure-

ment policies. It is possible that they will become more willing to open up their national markets, buy from abroad and collaborate on major programmes. The average defence burden of EC Member States is currently 3% of GDP. The maximum overall impact of a complete elimination of defence spending would thus be no more than 3% of GDP, and in reality is likely to be under 1%, representing a reduction of up to one-third of defence spending. However, this rough estimate masks wide variation among States, both in absolute expenditure and in the burden it represents.

France, Germany and the United Kingdom have the largest absolute defence budgets, together accounting for some 70% of the EC total. These countries are likely to see the largest defence cuts. Two of them — France and the United Kingdom — also have the highest shares of GDP devoted to defence, surpassed only by Greece. However, for most EC States a reduction in defence spending signals the intensification of an existing trend, rather than a change in direction. Assessing trends in individual countries is made more difficult by the timing decisions of the various States. Some countries have reacted quickly to international changes with announcements of force reductions and lower military spending. Germany, for example, is on the verge of scrapping plans to produce the European Fighter Aircraft (EFA) and replacing it with cheaper aircraft. The regional implications of dropping the EFA will be most severe for Bayern, which employs most of the 10 000 defence industry jobs involved in the project.[1]

Others have taken longer to assess the implications, or have political systems which require more time to reach consensus on issues which can involve significant costs as well as benefits (for example, in the accommodation of forces returning from overseas). Such delays are particularly likely in those countries where the impacts may fall more heavily on some regions than on others.

Should a disarmament race emerge, the regional implications are likely to include an intensification of the effects of the current first round of defence cuts. Those regions which were the recipients of the largest defence expenditures and were the locations of major defence activity (military and industrial) will feel the effects more than those where the defence expenditure has been smaller. Countries which have not yet planned major cuts in defence may also decide to disarm, resulting in further regional defence expenditure reductions.

Reduced defence spending will almost certainly mean reduced demand for all types of defence equipment, though there are exceptions. These include new growth markets resulting from the shift to defensive forces and equipment and also the substitution of equipment for manpower. Arms control and contractorization in the armed forces may also create new markets for defence industries (e.g. inspection, surveillance and disposal of equipment). Moreover, for defence industries, the regional impact of budget cuts will depend on how successful defence firms are in obtaining new military and or civil business. The industry is likely to be characterized by a search for new business, job losses, plant closures, mergers, international alliances, prime contractors becoming subcontractors and by exits.

In addition, the continuing integration of Europe into a single market can be expected to progressively extend to defence. If a single competitive EC defence market were created, regions which would benefit in terms of defence would be those in which the most efficient defence companies were located. Firms which traditionally have operated in protected national markets will find it difficult to survive in competitive markets. Similarly, the regional implications of creating a centralized EC procurement agency will depend on the specific purchasing objectives of such an agency (e.g. whether it can obtain economies of scale by purchasing standardized equipment for all EC States; whether it would act as a competitive buyer or whether it would allocate work on the basis of juste retour). Inevitably, though, the opening-up of EC defence equipment markets will mean that some industries, firms and regions will be losers. Such groups and regions will oppose changes which may make them worse off. They will demand

[1] 'München-based Deutsche Aerospace is the main German contractor, through its subsidiaries Messerschmit-Bölkow-Blohm and Motoren- und Turbinen-Union. Deutsche Aerospace said that it would have to close 14 domestic plants if Germany withdraws from the project'. *Financial Times*, 12 June 1992.

'managed and fair' competition, work-sharing and other arrangements to protect and compensate them from any potential adverse effects of change.

With regard to regions, the policy question is whether to assist or to prevent change. Should regions likely to lose from defence cuts be offered alternative defence work, new civil work or should resources, particularly manpower, be reallocated to other regions? Changing defence policy will mean changing requirements for defence facilities. Whilst some bases will be closed, others may expand to undertake new roles and missions. There may be substitution effects as a nation's forces move into 'superior' bases vacated by departing foreign forces (e.g. US forces closing well-equipped air bases). Once again, this will affect the urban-rural balance of economic activity. The need for training areas and the desire to economize on defence spending by releasing valuable defence land in urban areas might be favourable for rural areas. For example, the forces could shift their facilities to rural areas (see Chapter 6).

Whilst current changes might be the start of more fundamental shifts in defence policy and budgets, it is worth remembering that:

(i) Major changes are likely to be introduced over time rather than instantly. Member States will differ in their willingness to cut defence spending and speed of adjustment. A country's perception of additional security threats will determine whether it retains 'strong defences', its mix of equipment and manpower (among its army, navy and air force), and its decisions about full-time versus reserve forces. Contractual commitments to armed forces manpower and defence contractors will also affect the speed of adjustment. In general, adjustment to the current round of cuts in defence spending might take up to five years. But the current round of cuts could well be the start of more substantial future cuts in defence budgets with major long-term implications for service personnel, defence contractors and the regions in which these are located.

(ii) We have been here before. The European armed forces and defence industries experienced massive adjustments following the end of World Wars I and II and the Korean War. Nor are such changes unique to defence. The civil sector is repeatedly adjusting to change as firms and industries decline, often with major regional impacts (e.g. the decline of coal, steel and shipbuilding in the EC).

2.4. Future defence expenditure

The change in international relations, which may be summarized as the end of the cold war, means that future defence expenditure will not be a simple projection of past trends. A reduced threat, the opportunity for a lower state of operational readiness, an evolving NATO policy, increasing interest in the development of EC collective security arrangements and the possibility of a disarmament race replacing the cold war arms race mean that the future is dominated by uncertainty. None the less, some general trends are beginning to emerge.

Defence expenditure in the medium term is expected to mean lower real spending, leading to a 'peace dividend', i.e. resources which would have been devoted to defence would become available for other uses. The general expectation is for cuts in defence spending of up to 10% by 1995 (compared with 1991). Adjustment cannot be made instantaneously; it takes time and money to adjust to changed circumstances. This means that over the short term (to 1993), cuts are likely to be relatively small, possibly of the order of 3 to 4% in real terms. Indeed, in some nations, defence budgets might increase in the short term, reflecting transitional or adjustment costs (e.g. redundancy payments to military and civilian personnel, cancellation of equipment project costs, new accommodation for forces relocated from foreign bases, and new equipment for new roles).

Over the medium to long term (1995 to 2000 and beyond), more substantial cuts are likely. Assuming no new threats emerge, cuts in defence budgets of up to 25% or more are likely by the year 2000 (compared with 1991 levels). Much will depend on whether the EC States move towards common security which would open up opportunities for further savings from the 'cost of non-Europe.'

Many countries have not yet finalized their plans for defence expenditure; announcements of cuts so far may be only the first round in the transition to new levels of spending. With the overall expectation of lower expenditure, different countries will follow different adjustment paths. While some forecast reductions in real expenditure over the next five years, like Belgium (10 to 20%), the United Kingdom (3%), and the Netherlands (6%), in some cases cuts are expected to even exceed inflation, leading to nominal reductions in expenditure (as is expected in Germany). Countries which expect no nominal changes, and therefore negative real changes are Greece, Italy, Ireland and Portugal.

Changes in international relations have added an extra dimension of uncertainty to these scenarios. While the direction of change in defence spending is almost certain to be downward, the extent of that change and the transition paths for individual countries remains less clear.

Summary

Compared with growth in the early 1980s, total military expenditure stagnated after 1987. That growth rate declined from 1.51% per annum in the early part of the decade to 0.84% during the latter part of the decade. The largest spenders on defence in the EC are France, Germany and the United Kingdom. Greece spends more on defence relative to GDP than any other Member State, followed by the United Kingdom and France. All EC countries (except Ireland and Luxembourg) experienced reductions in defence industrial production during the late 1980s. Manpower accounts for the largest share of defence spending in the EC (49.2%), followed by operating expenses (26.2%), equipment (20.3%) and infrastructure (4.3%). The United Kingdom, Germany, France and Italy are the biggest spenders on equipment. The largest exporters are France, the United Kingdom and Germany. During the late 1980s, major exporting Member States experienced reductions in exports, as the export markets of the USA and the former Warsaw Pact countries contracted and became more competitive.

Employment in the military (including civilians employed in the military) fell rapidly during the 1970s and has since fallen at a slower rate. Greece had the highest proportion of military and civilian personnel in the labour force with a 5.8% average for the period 1985-89, followed by France with 2.9% and Italy with 2.8%. The USA is an important employer in Germany and the United Kingdom. Its announced withdrawal highlights the vulnerability of certain regions in these countries.

The end of the cold war arms race might be the start of a disarmament race in which case the size and regional allocation of armed forces within and between EC Member States will change during the 1990s. Such changes are likely to affect the urban-rural balance of economic activity as air force bases are usually located in rural areas and their closure may have serious adverse economic consequences in areas where there are few alternative sources of employment for the civilian labour force. Also, equipment spending will decline with implications for the size, structure, location and product mix of defence industries in EC States. In the longer term, these changes are likely to be accentuated by pressures to create an EC defence policy and a single market for defence equipment.

Defence expenditure in the medium term is expected to mean lower real spending, leading to a 'peace dividend'. It is expected that defence spending will decline by 10% by 1995 (compared with 1991). Since this adjustment cannot be made instantaneously, this means that over the short term (to 1993), cuts are likely to be relatively small, possibly of the order of 3 to 4% in real terms and in some nations defence budgets may increase in the short term, reflecting transitional or adjustment costs. Over the medium to long term (1995 to 2000 and beyond), more substantial cuts of up to 25% or more are likely by the year 2000 (compared with 1991 levels).

3. Defence industries

Purpose

This chapter discusses the methodology used in collecting employment data in the defence industries and reviews recent trends in defence industrial employment in the EC. It includes discussion of the definitional difficulties inherent in such research and the lack of comparable published data among Member States.

3.1. Introduction

There is little published up-to-date information on the EC's defence industries (Creasey and May, 1988; Todd, 1988; Hartley and Hooper, 1990). One exception is the recent study on West European arms production (Anthony et al., 1990). This provides an analysis of the 100 largest European arms producers. Sipri's *World armaments and disarmament* is another important source as it estimates job losses in the defence industries over the past few years as well as projections of job losses in the medium term. The major losses are expected to be in shipyards and producers of land systems, whilst high technology sectors such as electronics may benefit.

Sipri estimates that during the three years 1987 through 1989, as many as 100 000 defence industrial employees out of about 1.5 million lost their jobs in Western Europe.[2] Assuming that additional arms control and disarmament treaties are concluded and military spending reduced decisively, Western European arms industry sales (including exports) could fall by 15 to 30% during the first half of the 1990s, with job losses rising even higher, 425 000 to 560 000 by 1995.[3] Anthony and Wulf estimate that employment in the arms industry in European NATO countries will be halved in the period 1985-95 (from 1.5 million in the mid-1980s). Their estimates are based on the following assumptions:

(a) a second CFE Treaty will require deep cuts in conventional arms in NATO countries;

(b) reductions in procurement budgets will accelerate to 5% annually as a result of the international climate and successful arms control;

(c) competition in the world arms market will increase and the European NATO countries trade balance in major conventional arms will shrink by 5% annually; and

(d) annual productivity gains in the arms industry will amount to 2%.[4]

Kirby and Hooper (1991) assess Europe's defence budgets and choices, its defence industries and procurement options, and the policy issues associated with economic adjustment. Elsewhere, current data on EC defence industries and their companies are difficult to obtain. The Sipri yearbook is a useful source of information on defence policies, budgets, equipment spending, international trade and the major arms producers (Sipri, 1991). Similarly, company annual reports provide some insights into the activities of the major defence contractors. Typically, though, these reports do not provide the detailed information required by this study. Most companies are diversified groups with a range of military and civil activities, with little, if any, published information on the skill composition and geographical distribution of their labour forces in their defence businesses.

There is also no generally accepted definition of what constitute defence industries. Different studies have adopted those definitions which are thought to be most appropriate for the particular issues being studied. Attempts to produce a conceptual definition result in concepts which are difficult if not impossible to apply empirically. Attempts to define defence industries do so with reference to both defence companies' customers and types of product supplied (e.g. Ministry of Defence (MoD) and strategic military-specific equipment).

Defence industries can be defined most simply as those industries which supply the military. This is clearly a market-basket definition rather than one based on industry sectors. As such it raises two initial difficulties.

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[2] Sipri Yearbook 1991: *World armaments and disarmament*. Western Europe includes Norway, but excludes Ireland (not significant), Sweden or Switzerland.

[3] Renner, M. *Economic adjustment after the cold war: Strategies for conversion*, Unidir, 1992.

[4] Anthony, I. and Wulf, H. 'The future of the industry: a medium-term prognosis', in Brzoska, M. and Lock, P. (eds), *Restructuring of arms production in Western Europe*, Oxford University Press, 1992.

(i) The military buys a vast range of products from large specialized items such as nuclear submarines to food, fuel and cutlery. In peacetime, there may be a temptation to divide items between strategic and non-strategic (such as the NATO or CoCom lists); in wartime, fuel is certainly strategic and food probably so, again leaving uncertain the question of the boundary of the defence industries.

(ii) Some clearly 'defence' goods are produced within industries that may not in total be defence-based. For example, a few companies may produce specialized strategic castings or forgings which form a small percentage of the output of the industry; most members of the industry might not undertake defence production. Dual-use goods and technologies are a further complication.

This suggests that a definition of defence industries should include defence intensity: the share of a company's output which is made for defence. In practice there is a continuum of defence intensiveness from industries such as nuclear submarines with 100% defence use to non-defence items. Again, the problem arises over the point on the continuum at which defence-intensiveness signifies membership of the defence industries.

There is a further difficulty. Companies are assigned to industry classifications according to their principal product. Taking the example of nuclear submarines, a company which specializes in such vessels will list them as its principal product and hence be assigned to the nuclear submarine industry, which will be defence intensive. On the other hand, if nuclear submarines are made by shipbuilders, defence intensity will depend on the relative levels of production of military as opposed to civilian vessels.

The Eurostrategies report on dual-use industries in Europe (CEC, 1991) considered 'strategic' defence-related industries to include all enterprises involved with armament production and the production of dualuse goods and technologies. Strategic dual-use involves civilian goods and technologies which may be used for lethal purposes or to improve overall military capability. As such they could also be defined as combat-related goods and technologies.

Non-strategic defence-related industries are all enterprises supplying the Ministries of Defence with non-armaments related goods and services. Housing, clothing, food and administrative goods and services are not considered to contribute directly to overall military capability. These definitions are very broad and the distinction between strategic and non-strategic requires an element of judgment in its application.

Economic theory would suggest one way of dividing industries between strategic and non-strategic by using the concept of opportunity cost. Those industrial capabilities considered to be of strategic value are those which the military are prepared to support by forgoing other expenditures. In other words, strategic industries would be those in which the military considers an industrial capability to be of such importance that they are prepared to forgo extra equipment, facilities or manpower in order to keep that industrial capability in existence (Hooper, 1990).

However, unless faced with a loss of suppliers, the military may not consider the value of defence industrial capability. Whether or not industrial capability is considered essential may also depend on the size of the defence budget. If forces and equipment are already squeezed by budget constraints then the opportunity cost of maintaining domestic defence industrial capacity will be high. In times of less stringent financial constraints the opportunity cost in terms of extra equipment or manpower may be lower.

As well as analysing defence industries, defence economists also use the associated concept of a defence industrial base. Hartley (1991) suggests there are at least three possible definitions of the defence industrial base:

(i) firms receiving Ministry of Defence contracts;

(ii) a minimum core of key national assets;

(iii) a free market view, in which the defence industrial base is determined by market forces.

The debate about the defence industrial base usually occurs in the context of government support for industries: whether some industrial capability which is at risk should

be supported by the government to maintain a capability for military purposes. The concept of a defence industrial base is thus not synonymous with defence industries, which are those industrial capabilities which exist, rather than those deemed to be essential by some usually undefined criteria. Hartley's discussion highlights again the combination of customer orientation (military or non-military) and type of product (strategic or non-strategic) which feature in many definitions.

An alternative view sees the defence industrial base as consisting of 'those industrial assets which provide key elements of military power and national security' (Taylor and Hayward, 1989, p. 1). In considering these definitions, Taylor and Hayward identify three groups of products: lethal and destructive equipment which is produced for the military for use in war (or in deterring war); non-lethal equipment directly associated with military activity; and goods produced for the civil market and also used by the military. Most analysis of defence industries focuses on the first two of these product groups, trade in which is subject to strict control by most governments. Taylor and Hayward also raise the issue of whether all firms currently supplying the MoD should be included, and whether some non-suppliers are really part of the defence industrial base.

For the present study, no distinction has been made between 'strategic' and 'non-strategic' defence industries, since cuts in defence expenditure probably affect both. However, in order to make data collection practicable, the present study has concentrated primarily on the first two product groups defined by Taylor and Hayward, namely lethal equipment and non-lethal equipment directly associated with military activity such as transport and communications equipment. Non-equipment items such as food, fuel and clothing are excluded although they are part of total defence procurement. This working definition of defence industries also relates to the objective of the study — to assess the regional implications of reductions in defence spending. For reductions to be significant for an individual region, that region must be dependent on military activity. The defence industry is thus defined by reference to the defence equipment component of each company's total employment and the aggregation of those components in any one region.

Most national statistics are based on contracts issued by MoD procurement agencies based upon the value of their contracts with defence companies. Where government sources are unavailable, data have been collected from company information on direct employment, or by estimating output and converting this to employment. Estimates such as these include employment in all defence-related activity such as subcontract work, rather than just the MoD's direct orders. Nevertheless, as the sample of companies used in such analyses is typically limited to major defence companies, the extent of indirect employment included in such estimates is limited.

Although it is far from comprehensive, official information on military purchases by region gives some indication of those regions (as opposed to companies) which have significant defence industry employment. Some data on the larger defence companies, which account for a large share of defence output and employment, are known. The regions in which their plants are located can be identified. Areas where other smaller companies are important can be deduced by comparing the location of major company activity with the regional data on military purchases. Microeconomic analysis has then been undertaken to determine the defence components of company employment.

Defence industries definition

1. Market-based definitions are more relevant than those based on industrial sectors; i.e. those industries that supply the military are in the defence market.
2. No distinction has been made between 'strategic' and 'non-strategic' defence industries since cuts in defence expenditure would affect both. However, the study concentrates on equipment directly associated with military activity.
3. The aim has been to identify the defence equipment component of each company's total employment.

3.2. Methodology and data for industry review

The methodology used to compile a data set on the regional distribution of defence industries' employment involved an iterative approach. Firstly, existing data from national governments and other published sources showing the regional distribution of defence expenditure were assembled. The data are based on national regional classifications so the government departments concerned were approached to see if such data could be prepared at NUTS II level. These data are usually based on contract payments by these government departments and as such relate to prime contractors and direct suppliers only.

Secondly, data were collected on the regional location of the top 100 defence companies in Europe as identified by Sipri (Anthony et al., 1991), supplemented by data which were available on other companies. The accumulation of these data represents one source of the precise locations of defence activity within the broad regions identified in the national payment data. Defence company data, however, are not directly comparable with the payments data which formed the primary source of regional analysis. Many defence companies do not publish information on the location of their military activity. Companies and individual plants also often undertake both military and civil activities. Indeed diversification has been a deliberate strategy for many companies. Data which are available, for example from company reports and accounts, often refer to the total activity of a company, division or site (location), rather than the output which is related to military use.

Many companies are both direct suppliers to the military and act as suppliers and subcontractors to prime contractors. Data on the output of military-related products and activity by such companies would thus comprise an element which is included in the purchase-based data obtained from government sources, and a subcontracted element which is not directly included. Such indirect defence output would eventually appear as a purchase from a prime contractor or a direct supplier who might be in a different region. Here again, the implication is that data obtained from company reports and accounts cannot simply be aggregated to provide an alternative to government data.

The Centre for Defence Economics (CDE) database includes information for major EC defence companies which overcomes some of the deficiencies of the published reports and accounts. It includes information on approximately 3 000 companies. This information has been built from published sources and discussions with defence companies over a number of years and has been supplemented for this study by extensive analysis by a team of defence country experts.

Thirdly, the literature on defence activity, particularly case studies of industries or regions was also used to identify the location of defence production. This literature is not comprehensive for all regions of the EC, and in some instances is not based on statistical analysis. It does, however, provide valuable additional and reliable information which identifies locations which are dependent on defence industries. The most commonly used definition of defence employment is 'direct' employment and, for the sake of consistency, we have used this definition wherever possible in preparing the data set for the analysis of regional dependence. Evidence from previous studies of the multiplier effect of indirect employment (which is not included in the data set or analysis of dependent regions) is reviewed in Section 6.2. Other literature examined, particularly in relation to smaller companies, is included in Section 7.1.

Major defence contractors

There have been a number of estimates of defence-related employment amongst the major contractors in the EC. The regional analysis for this study confirms a grouping of Member States in terms of direct employment:

Group I is composed of the United Kingdom, Germany and France which have the largest defence industries.

Group II consists of Italy.

Group III is composed of Belgium, Spain, the Netherlands and Greece.

Group IV is composed of the remaining countries with little, if any, defence industrial employment (Denmark, Ireland, Luxembourg and Portugal).

According to Sipri, in 1989 35 of the 100 largest defence companies were in EC Member States compared with 37 in 1988. Sweden (four companies) and Switzerland (three companies) were the only European non-EC States with companies in the top 100 in 1989. Six out of the 14 countries represented in the list were EC members, with the United Kingdom, France and Germany taking second, third and fourth place respectively after the USA.

In terms of industrial sectors, Sipri found that electronics companies continued to receive a growing share of defence procurement in 1989, at the expense of aircraft producers and the traditional land and sea system prime contractors (e.g. tanks and ships). This trend is likely to continue.

The analysis also highlights the increasing internationalization of defence companies through acquisitions and collaborative agreements. In Europe certain sectors are increasingly becoming dominated by individual companies or collaborative groups, notably in aerospace, helicopters, engines, missiles and electronics. The trend is towards a smaller number of large defence contractors in the EC, with a range of defence and civil activities, acting as prime contractors and systems integrators, supported by a network of subcontractors and suppliers.

A list of the top 100 arms producing companies in Europe in 1988 (Anthony et al., 1990), rather than in the world, shows that 86 of the 100 are in EC Member States.

Table 3.1.
Ranking of top 100 European arms producing companies

	Companies in top 100	
	Number	Rank
United Kingdom	28	1
Germany	25	2
France	17	3
Italy	6	4
Netherlands	4	5 =
Spain	4	5 =
Belgium	2	6 =
Denmark	0	
Greece	0	
Ireland	0	
Luxembourg	0	
Portugal	0	

Source: Anthony et al., 1990

Any such ranking of European defence companies will be affected by changes in the structure of industries, such as the takeover in 1989 of MBB by Daimler Benz in Germany and the merger of Aeritalia with Selenia to form Alenia in Italy. Such restructuring on both a national and international basis is an important and continuing feature of the European defence industries. In some instances, such as the MBB-Daimler Benz merger, the number of companies included for a particular country will obviously be reduced. Other mergers may bring new groups into the list, perhaps displacing existing members.

The dependence of defence contractors on military sales (defence intensity) is, on average, particularly high for the major defence companies in the United Kingdom and France (40% or more), and low for Germany (under 10%). Sipri suggests that 12 of the major European defence companies rely on the defence market for over 70% of their sales, and six of these rely on that market for 90% of their sales.

The size of the major European defence companies and their rankings among the world producers, together with the trend towards internationalization, suggest that the major companies will survive the expected reduction in equipment requirements. However, while the major companies may survive, many of their existing production facilities may not. Also, their survival may come at the expense of smaller defence contractors which are more likely to leave the defence sector through conversion, merger or closure. An assessment of industrial vulnerability to lower defence spending must therefore take into account smaller defence com-

panies and the individual production plants of larger companies. This smaller scope of defence activity has been taken into account in the present study through use of the CDE database and available relevant literature.

Summary

There is no generally accepted definition of what constitute defence industries. However, in order to make data collection practicable, the present study has concentrated primarily on lethal and non-lethal equipment directly associated with military activity. This working definition of defence industries also relates to the objective of the study — to assess the regional implications of reductions in defence spending. For reductions to be significant for an individual region, that region must be dependent on military activity. The defence industry is thus defined by reference to the defence equipment component of each company's total employment and the aggregation of those components in any one region.

The methodology used to compile a data set on the regional distribution of defence industrial employment involved an iterative approach. Firstly, existing data from national governments and other published sources showing the regional distribution of defence expenditure were assembled. Secondly, data were collected on the regional location of the top 100 defence companies in Europe as identified by Sipri, supplemented by data which were available on other companies. The accumulation of these data represents one source of the precise locations of defence activity within the broad regions identified in the national payment data. Thirdly, the literature on defence activity, particularly case studies of industries or regions, was also used to identify the location of defence production. The literature provided valuable additional and reliable information which identified locations which are dependent on defence industries. The most commonly used definition of defence employment is 'direct' employment and, for the sake of consistency, we have used this definition wherever possible in preparing the data set for the analysis of regional dependence.

4. Military bases

Purpose

This chapter presents the methodology used in gathering data on regional military employment in the Community. In addition, available data on planned force numbers are given, together with the categories of military employment included in the data-gathering process. Issues relating to the economic impact of military bases on their local economies are also discussed.

4.1. Introduction

The data-collection process yielded an aggregate number of Member States' domestic forces plus conscripts of 2.2 million (or 1.77% of the labour force). Apart from the United Kingdom, Ireland, Denmark and Luxembourg, most Member States of the EC have substantial conscript forces. When foreign forces, civilians and dependants as well as local civilians are added to the domestic forces figure, the total is 2.3 million directly employed by the military (or 1.87% of the labour force). Germany currently has the greatest number of domestic military personnel in Europe with approximately 500 000 in the Bundeswehr. In addition, there are nearly 400 000 Western allied military personnel in Germany occupying over 400 bases. France, Italy, the United Kingdom and Spain all have over 300 000 domestic military personnel.

The next group of countries, comprising Greece, Belgium, the Netherlands and Portugal each have over 100 000. Finally, Denmark, Ireland and Luxembourg have much smaller numbers of military personnel. Greece has by far the largest level of military personnel in relation to its population (200 000 or about 2%) followed by Belgium, France and Portugal, which have around 1% each. With the exception of Greece, Ireland and Luxembourg all EC force levels are expected to be reduced significantly over the next five years. These redundancies can be summarized briefly as follows:

Belgium
Overall manpower reduction of 19.7% (12.9% for professional forces) during 1990-95. *Source:* Plan Chaler-bis. The government has recently announced the establishment of a purely professional army by 1994 and has placed a ceiling (below the current level of BFR 99 billion) for at least five years. *Source:* Ministry of Defence

Denmark
Reductions in conscript levels, including activity reductions in Jutland and Greater Copenhagen. *Source:* Defence Agreement, effective as of 1.1.1993.

Germany
Bundeswehr manpower in West Germany to be reduced from 500 000 to 310 000, or 38% (and from 103 000 to 60 000 in the East) by 1994. *Source:* FBIS-WEU, May 1991. Former East German navy personnel will be reduced from 8 700 to approximately 2 000.

Greece
No significant reductions are expected.

Spain
Reductions in length of service for conscripts and reserves, although population growth limits manpower reductions in the short term. *Source:* Military Service Reform Law, 1991.

France
Overall reductions expected, including major withdrawals from Germany and 20 to 24% reduction in army manpower 1991-97. Official Programme Law detailing these reductions has been delayed in publication.

Ireland
No significant reductions are expected.

Italy
Army and MoD manpower to be reduced by 20 to 30% within next five years; air force and navy manpower to be reduced by 10 to 20%. Conscription to be reduced by 47%. *Source:* Italian Ministry of Defence military attaché.

Luxembourg
No significant reductions are expected in NATO staff (approximately 100).

Netherlands
Overall manpower reduction of approximately 15% (all services) 1991-95. *Source:* Defence White Paper, 1991.

Portugal
No overall manpower reduction likely, although expenditure on manpower likely to be reduced as costs for reserves (one-third of military manpower is in this category) shift from the defence budget to the social security budget. *Source:* Ministry of Defence.

United Kingdom
Service personnel and MoD civilian manpower reductions of 25% (including major withdrawals from Germany) 1991-95. *Source:* Options for change, 1990.

The popular concept of a military base is the permanent home from which forces undertake their various duties and activities. This is reflected in the dictionary definition of a base used for military purposes: 'a place from which an operation or activity is directed' (Oxford, 1990).

For this study the term military base is used to indicate this broad concept. A base may, however, be anything from a small spares or maintenance depot to the largest army, navy or air force communities. Using this broad definition there are several thousand military bases across the European Community. Some may encompass a number of separate facilities in a base 'complex.' To analyse the economic and social impact of every facility would thus clearly present an impossible task, and one which is outside the scope of the present study.

The extent of the task can be limited by referring back to the objective of the study, namely assessment of the impact of military bases (and reductions in such) on regional economies. To have a significant impact, bases must be large relative to other economic activity.

The regional economic impact will depend on the expenditure associated with these bases. Most data which are available, however, relate to military employment rather than expenditure. Employment has been used as the primary indicator of military base size. Where precise numbers are not available, the size of a base or facility can be estimated by the number and type of units located there — e.g. a regiment or battalion at an army base.

Three categories of military employment can be distinguished:

(i) members of the armed services;

(ii) civilian employees of the armed services;

(iii) other military-related personnel

Members of the armed services are characteristically divided between the three services: army, navy, and air force. Other classifications, however, have been adopted where appropriate for this study; for example, professional forces versus conscripts and domestic versus foreign forces. In many countries there are paramilitary forces in addition to the armed services, which may be included under some definitions of military manpower.

Civilian employees of the armed services are employees who work for the military at military facilities but are not members of the armed services and are not subject to military orders to the same extent as members of the armed services. They thus have no obligation to be posted to other facilities, transfer to other jobs or take part in conflicts. Civilian employees are usually recruited from the local population near a military facility. Unlike members of the armed services, civilian employees are part of the local labour market and may move into and out of military employment more easily, although in regions that are heavily dependent on military bases, alternative employment may not be abundant.

Other military-related personnel include those employees working for and paid by the military who do not enter into the two previous categories. They include paramilitary forces not considered as part of military manpower, government employees of the Ministry of Defence, retired military personnel, and reservists.

Local economic impact

The impact of a military base on a local economy will depend on a number of factors, which can be categorized as follows:

(i) the absolute and relative size of the base;

(ii) the purchases by the base from the local economy;

(iii) the expenditure by the military employees in the local economy;

(iv) the payments to civilian employees;

(v) the local multiplier effects resulting from each type of initial expenditure.

Specific local economic impacts depend on the size of the initial expenditure and how much base-generated spending remains within the locality, rather than leaking to other regions or overseas. Any reduction in military activity in a locality will have an immediate effect by reducing the types of expenditure identified above.

The implications of manpower reductions will vary according to the type of personnel involved. Military personnel stationed in their home countries will typically be released from service at the camp at which they are last serving. When released they may stay in that locality, return to the place where they lived before entering the service, or move elsewhere. There is little published information on the experience of resettlement, but anecdotal evidence from the United Kingdom suggests certain characteristic responses. Short-term and conscripted military personnel are perhaps more likely to return to their previous place of residence; those at or near retirement are likely to stay in the area of their last posting; and those with younger families may move to the area from which one of the parents originated, often the home of the wife. Other factors taken into account are levels of existing unemployment in the area of demobilization and in the area of origin. Tracing the regional impact of reductions in military manpower is therefore an extremely complex task which would necessitate extensive research into relocation intentions (which is beyond the scope of the present study).

Military personnel stationed in other European countries often return to their home countries prior to being released from service. Certain locations with appropriate camps and other facilities may see even more servicemen entering their local civilian community and labour force than were previously stationed there.

When civilian employees are released from their jobs, it is generally the case that those who were recruited from the local labour market will remain in the area and re-enter the local labour market. Those near retirement age and some married women leave employment if jobs are scarce.

Where civilian employees are part of the families of overseas servicemen, or in cases where overseas forces recruit civilian employees from their home countries, these civilians are generally expected to return to their (new) family's country of origin, with a few exceptions who choose and are able to settle in the country in which they served.

Reducing the size of the armed forces may also have localized consequences for areas which traditionally provided recruits for the armed forces and where a significant proportion of the potential labour force joined the services instead of entering the civilian labour market. The impact of this aspect of military employment is not thought to be a significant element in regional activity when compared with the effect of base closures, and has thus not been pursued in this study.

4.2. Methodology and data for bases review

The methodology for the review of bases adopts a similar approach to that for the review of defence industries in that it relies on official data, published studies and original data collection.

It is necessary to stress that data problems are considerable. The locations of bases and the numbers of military personnel at each site are sensitive issues and are considered to be confidential by many governments. Some details are available for US forces in Europe. For other forces the best data indicate the number in a region, without identifying the locations (NUTS II regions) within that region. Some countries do not make a list of their military facilities publicly available, although most if not all can be readily identified through sources which are public, such as the telephone directories. Where the location of bases can be identified, there are

often no published data on the number of service and civilian personnel employed at each.

The scope of published data on regional military employment varies among Member States, but no country publishes detailed data by NUTS II regions. In some instances, however, data exist from which an analysis at NUTS II level can be derived. This is true for Ministries of Defence data in Belgium, Denmark, France, Ireland and the United Kingdom.

Published data on civilian employees is extremely sparse, although two typical ratios have been established.

These ratios are as follows:

Ratio of foreign forces to foreign civilians and dependants	1 : 1
Ratio for foreign forces to locally recruited civilians	4.15 : 1

Source: Greenwood, D. *The economics of US bases and facilities in Western Europe*, Table 5.3, p. 85.

In addition it has been important to weight both foreign forces and conscripts against domestic professional forces to reflect the fact that they spend less than domestic professional forces in the local economies in which they are based. Members of foreign forces, especially US forces in Germany, either save a large proportion of their salary, send it home or spend it in local US supply stores rather than spend it in the host region in which they are based. Conscripts inevitably have lower spending power than their professional counterparts because of their lower salary levels.

From previous studies, the ratios associated with local purchasing activity are as follows:

US forces in Germany versus domestic professional forces	0.25 : 1
US forces elsewhere and other foreign forces versus domestic professional forces	0.45 : 1

Source: Bebermeyer, H. and Thimann C. *The economic impact of the stationing of US forces in the Republic of Germany*, p. 102-103.

Domestic conscript versus domestic professional forces	0.40 : 1

Source: Kerstens, K. and Meyermans, E. 'The draft versus an all-volunteer force; Issues of efficiency and equity in the Belgian draft', unpublished paper, October 1991.

In other words, foreign forces and conscripts have been downweighted and the numbers used for analysis reduced according to the above ratios. These ratios have been applied to the data on regional employment used to assess dependence on defence-related activity at the NUTS II level.

The scope for special studies to be undertaken for this project was limited by the time-scale of the project. In Germany and Spain, country defence experts conducted studies of local authority data. In Portugal, the Ministry of Defence produced some data for the study, but what they were able to accomplish was limited by the time available. In Italy, work has been carried out in order to update the only available published data which relate to 1981, and in Greece, the country defence expert conducted a study of existing Ministry of Defence and other data.

The contribution of existing studies has also been limited at the NUTS II level. However, the studies which do exist are important in providing input into efforts to prepare NUTS II data from national classifications, and in checking the analysis of regional dependence.

Nevertheless, the statistical ranking of NUTS II regions by military employment relies heavily on estimated data incorporating a number of assumptions and judgments. Wherever possible, these assumptions have been based on the qualitative findings of interviews with ministry officials, military attachés and NATO personnel.

Some countries have progressed further than others in their consideration of defence policy under the changed international situation following the end of the cold war. In some countries, planning has progressed as far as force structure, size and location. In others, more basic issues have yet to be resolved. Additionally, policies which have been formulated may not have been made public. The immediate effects of the new policies may

run counter to the longer-term implications; for example, when the size of national bases increases to accommodate forces returning from overseas in the short term prior to longer-term reductions in force sizes and eventual base closures.

For all of these reasons, information on the vulnerability of military facilities must be considered tentative. The regions which can be most reliably identified as vulnerable to short-term reductions are mostly in Germany and the United Kingdom. In both countries reductions have been announced and involve both domestic and overseas, particularly US, forces.

The impact of reductions in force levels may not all occur in the region where forces are located. The withdrawal of forces takes income from the local economy in the form of lost work for local companies following base closures, loss of jobs for locally employed civilians and reduced spending in local shops. However, unlike a factory closure, closing a military base may not result in a large number of servicemen seeking employment in the area of the base closure. Many servicemen may transfer to another base or return to their home country before being released from service. Others may decide to leave the area to return to their family home or to move to an area with better employment prospects, better schooling or other attractive characteristics, rather than stay where they have been serving.

In Germany, the withdrawal of US and other allied forces will have a significant impact on local economies. However the relationship between the scale of this impact and the size of the base which is reducing its activity or closing is not a straightforward one. Larger bases tend to be more self-sufficient and hence contribute proportionately less to a local economy than smaller bases. Since there have been announced closures in every dependent German NUTS II region, all of them may be considered highly vulnerable to reductions in military activity.

Summary

The data collection process yielded an aggregate number of domestic forces plus conscripts of 2.2 million (or 1.77% of the labour force) in the EC. When foreign forces, civilians and dependants as well as local civilians are added to the domestic forces figure, the total is 2.3 million directly employed by the military (or 1.87% of the labour force). Germany currently has the greatest number of domestic military personnel in Europe as well as 400 000 Western allied military personnel occupying over 400 bases. France, Italy, the United Kingdom and Spain all have over 300 000 domestic military personnel. With the exception of Greece and Luxembourg, all EC force levels are expected to be reduced significantly over the next five years.

This study estimates the number of forces, civilians and dependants stationed at military bases. The term military base is used to indicate anything from a small spares or maintenance depot to the largest army, navy or air force communities. There are several thousand military bases across the EC. The regional economic impact of a particular base (and its closure) will depend upon its associated expenditure in the local economy.

Three categories of military employment have been distinguished in the study, including members of the armed services, civilian employees of the armed services and other military-related personnel (such as MoD employees). There are considerable problems associated with the collection of military employment data including confidentiality and lack of sufficient regional breakdown. In order to estimate civilians employed by the foreign military two ratios were established: one estimates the number of foreign civilians and dependants relative to foreign forces, and the other estimates the number of locally recruited civilians relative to foreign forces (the ratios are 1:1 and 4.15:1 respectively). Foreign forces and conscripts have been downweighted in the calculation of defence dependence in order to reflect their lower local purchasing activity.

Information on the vulnerability of military facilities must be considered tentative. The regions which can be most reliably identified as vulnerable to short-term reductions are mostly in Germany and the United Kingdom. In both countries reductions have been announced and involve both domestic and overseas, particularly US, forces. The impact of reductions in force levels may not all occur in the region where forces are located as

the withdrawal of forces takes income from the local economy and the impact of manpower reductions will vary according to the type of personnel involved. When released from service, troops may remain in the locality in which they are based, return to the place where they lived before entering the service, or move elsewhere.

In Germany, the withdrawal of US and other allied forces will have a significant impact on local economies. However the relationship between the scale of this impact and the size of the base which is reducing its activity or closing is not a straightforward one. Larger bases tend to be more self-sufficient and hence contribute proportionately less to a local economy than smaller bases. Since there have been announced closures in every dependent German NUTS II region, all of them may be considered highly vulnerable to reductions in military activity.

5. Regional dependence

Purpose

The purpose of this chapter is to present the methodology used to determine defence employment per region of the Community and to calculate regional defence dependence. All regions of the Community were ranked by three measurements, namely defence industrial dependence, military dependence and total defence-related dependence. A cut off of twice the EC average was used to establish three short-lists of dependent regions. The maps in Section 5.2 indicate not only which NUTS II regions of the Community are dependent on defence, but by which measure they are dependent (defence industrial, military or both) as well as areas of defence activity at the NUTS III level. Section 5.3 presents dependence by Member State and by objective region (Objectives 1, 2, 5b and all objectives). This section concludes with a comparison of the aggregate employment data on defence industries and the military calculated from the data-gathering exercise of the present study versus published national employment data.

Section 5.4 identifies five general types of dependent region and gives examples of where they are predominantly located. Section 5.5 discusses the concept of vulnerability, and identifies in which dependent regions defence cuts have already been announced, and in which regions further cuts are probable.

5.1. Analytical approach

Defence dependence is a term used to indicate that share of a region's employment, expenditure or output that is directly related to defence. In considering all three variables as a measure of regional defence dependence, we found that of these three, available published employment data were most consistent. Employment data also avoid potential 'double counting' of prime and subcontractors' output.

In some instances, data on defence industries were provided by Ministries of Defence or other published sources at the NUTS II level. Greece and Italy were countries which had regional defence industrial data available. In other cases, the most recent national data on direct employment were gathered from country experts (who often obtained these data from Ministries of Defence). The data were then allocated to NUTS II regions based upon employment data per company from the Centre for Defence Economics' database. This data collection process was used for Germany and the United Kingdom. Regional defence industrial employment for France were available as regional shares of industrial employment; therefore calculation of defence employment per region applied these shares to regional industrial employment.

In the case of the Netherlands, national defence industrial data were broken down by defence expenditure. In only one instance, Belgium, was it necessary to break down national data into NUTS II data due to the lack of regional breakdown or company data. National data were not available for Portugal or Spain; therefore their defence industrial employment data were estimated from company data in the CDE database (and regional authorities in the case of Spain). A complete list of sources for defence industrial employment as well as military employment is provided in Section 7.2.

Military employment is composed of several types which are important to distinguish for expenditure reasons (professionals earn more than conscripts and thus spend more in their regional economies). The categories of military include the following:

Domestic bases	**Foreign bases**
Domestic forces	Foreign forces
Conscripts	Foreign conscripts
Local civilians	Foreign dependants
	Local civilians

We have also included employees of the Ministries of Defence in each of the Member States where data were available. All foreigners included in the calculations of defence dependence are appropriately weighted to reflect a reduced propensity to consume in their regions

relative to domestic forces (as they are likely to save a significant amount of their income in their home countries). Likewise, conscripts are appropriately weighted. These weightings are given in Chapter 4.

A region's defence activity may be vulnerable to cuts in expenditure (the likelihood of closures or reductions in activity may be quite high), while the region itself may not be dependent on such activity. The implications of this are that such a region's vulnerability may be of less concern than that of a region which has a higher proportion of its total employment associated with defence activity and is hence assessed as being more defence dependent.

The reverse is of course also true. A region may be defence dependent while not being vulnerable to cuts in expenditure. The next section of this chapter deals with defence dependence, not vulnerability. Those regions which are at this stage considered to be vulnerable to defence cuts are given in Section 5.5.

Methodology

The basic steps followed to arrive at a regional assessment of defence dependence were:

(i) Calculation of working population per NUTS II region

The total working population provided by Eurostat (called 'Total economically active population') was examined but it was found that there was considerable inconsistency in reporting years. (For example, the most recent available data for Greece are for 1983 but for the United Kingdom 1988.) An alternative calculation of total working population was therefore developed as follows:

Total working population =
Total population x Labour participation rate
— the unemployed

The source used for total population is Eurostat, where the most recent data are for 1988. These data are harmonized across all Member States of the Community. The labour participation rate was obtained from Eurostat's regional profiles, also for 1988, which indicate that share of the population which is economically active, or with wage-earning capability. The unemployment rates are from Eurostat 1988.

(ii) Calculation of defence industrial employment per NUTS II region

The regional breakdown of defence industrial employment data was obtained by the means described above.

(iii) Calculation of military manpower per NUTS II region

The military manpower data described above have been obtained from Ministries of Defence or EC Member States, combined with estimates of regional breakdowns from the country experts. Military manpower has then been added to the total working population figures to arrive at an aggregate employment figure for each region.

(iv) Defence share of total employment

The data for defence industrial employment and military manpower have been combined to give a figure for total defence-related employment. This has then been divided into the aggregate employment for each region to arrive at the defence share. Calculations were also made of the employment share of defence industries alone and the military alone (see Figure 5.1).

(v) Rankings of defence dependence

Based on the calculations described above, three separate rankings were established for all NUTS II regions in the Community. These are described in the box below:

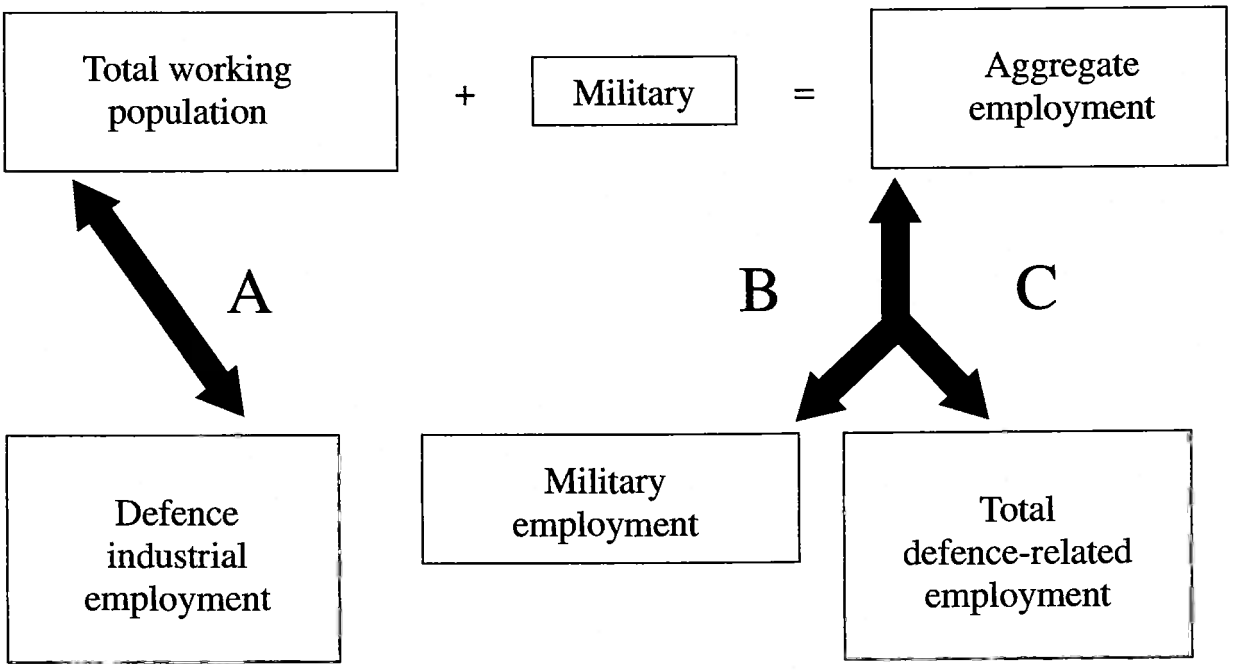
Rankings of defence dependence

A: Defence industrial employment as a proportion of the regional working population.

B: Military manpower as a proportion of aggregate employment (regional working population plus military manpower).

C: Total defence-related employment as a proportion of aggregate employment (regional working population plus military manpower).

Figure 5.1. Measures of defence dependence: Three rankings



5.2. Dependency rankings by NUTS II

Criteria for selection of dependent NUTS II regions

After ranking all regions of the Community by the three methods, the three distributions were examined to see if there were any 'natural' breaks. Since the distributions are smooth, it was decided that defence dependent regions would include those which had employment shares in defence which were twice the EC average in any of the three categories — defence industrial, military or both. The cut off points for the three measures of dependence were therefore the following:

1.10% for defence industries;
3.72% for the military;
4.82% for total defence-related employment.

With the exception of four regions which fell into the military Ranking B, we have examined the economic trends of each of the other regions, made an attempt to determine the vulnerability of each and assessed the economic adaptability — or ability to change in the face of shocks — of each. The four regions excluded from examination were two regions in Greece (Voreio Aigaio, Notio Aigaio), one in Spain (Ceuta y Melilla) and one in Portugal (Madeira). Each of these is an island region with low aggregate population and apparently few or no foreign forces (whose departure could have a detrimental impact on an island region such as the Açores).

Four additional regions were added to Ranking A for coverage reasons. It was our intention to include the top ranking region in every Member State in either defence industries or the military if their rankings were above the EC average (but below twice the average). The four

regions are Sterea Ellada, Murcia and Hainaut in Ranking A and Utrecht in Ranking B. Since there is significant defence activity in Lisboa e Vale do Tejo (relative to the rest of Portugal), but the extent of its dependence is not known, we have included a profile of this region in Ranking A as well.

When these additional regions are taken into account, we have 49 defence dependent regions (see Tables 5.1, 5.2 and 5.3): Ranking A includes 23 regions, Ranking B has 32 and Ranking C has 23. Every region in Ranking C appears in one or the other (or both) of Rankings A and B. There are six regions which appear in both Rankings A and B. Of the 49 dependent regions, 44 are profiled in the Appendix.

There are instances where a region appears on more than one ranking. For obvious reasons, a high ranking region based on either the military or defence industries will also appear on the total defence-related employment ranking. Five regions appear on all three rankings, indicating that they have defence industrial employment and military employment shares which are over twice the EC average. These regions are:

Avon, Gloucestershire, Wiltshire (UK)
Cornwall, Devon (UK)
Friuli-Venezia-Giulia (I)
Hampshire, Isle of Wight (UK)
Provence-Alpes-Côte d'Azur (F)

The last two columns in each ranking indicate not only that a region may appear in another ranking but where in that ranking the region lies (Cumbria ranks first in Ranking A (defence industrial dependence) and 11th in Ranking C (total defence-related dependence).

Table 5.1. **Dependent NUTS II regions**
Ranking A: Defence industrial dependence

		NUTS II	Employment shares (%) Defence industries only	Military only	Total defence-related	Appearance in other rankings B	C
		(Twice EC average →)	1.10	3.72	4.82	B	C
1	UK	Cumbria	6.40	0.95	7.35		11
2	UK	Essex	2.78	1.14	3.89		
3	D	Bremen	2.74	3.14	5.84		18
4	F	Bretagne	2.51	3.59	6.05		16
5	F	Aquitaine	2.36	2.56	4.89		23
6	UK	Lancashire	2.35	0.27	2.62		
7	I	Liguria	2.16	2.28	4.42		
8	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	31	19
9	F	Centre	1.98	2.55	4.50		
10	F	Limousin	1.88	1.95	3.81		
11	F	Midi-Pyrénées	1.86	1.62	3.46		
12	F	Île de France	1.76	1.13	2.89		
13	I	Friuli-Venezia Giulia	1.65	8.98	10.57	8	6
14	D	Oberbayern	1.60	1.78	3.36		
15	UK	Cornwall, Devon	1.55	5.32	6.81	15	12
16	F	Basse-Normandie	1.47	1.32	2.78		
17	F	Haute-Normandie	1.43	1.02	2.44		
18	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	22	20
19	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	10	9
		Other regions profiled					
23	GR	Sterea Ellada	0.99	1.50	2.48		
33	E	Murcia	0.75	3.90	4.64	28	
34	B	Hainaut	0.73	0.61	1.33		
55	P	Lisboa e Vale do Tejo	0.44	1.21	1.65		

Note: In addition, regions profiled include the single highest ranking NUTS II regions in all Member States where dependence exceeds the EC weighted average. Lisboa has also been included in view of data availability problems.

Table 5.2. **Dependent NUTS II regions**
Ranking B: Military dependence

			Employment shares (%)				
		NUTS II	Defence industries only	**Military only**	Total defence-related	Appearance in other rankings	
		(Twice EC average →)	1.10	3.72	4.82	A	C
1	GR	Voreio Aigaio*	0.00	29.88	29.88		1
2	E	Ceuta y Melilla*	0.00	22.86	22.86		2
3	P	Acores	0.00	11.82	11.82		3
4	GR	Notio Aigaio*	0.00	11.27	11.27		4
5	GR	Kriti	0.00	10.61	10.61		5
6	GR	Dytiki Makedonia	0.07	10.39	10.46		7
7	GR	Anatoliki Makedonia, Thraki	0.05	10.06	10.11		8
8	I	Friuli-Venezia Giulia	1.65	8.98	10.57	13	6
9	D	Trier	0.07	8.72	8.78		10
10	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	19	9
11	UK	North Yorkshire	0.00	6.25	6.25		13
12	D	Koblenz	0.08	6.01	6.09		15
13	D	Lüneburg	0.08	5.87	5.95		17
14	E	Madrid	0.58	5.63	6.20		14
15	UK	Cornwall, Devon	1.55	5.32	6.81	15	12
16	D	Rheinhessen-Pfalz	0.09	5.08	5.17		21
17	D	Unterfranken	0.00	4.80	4.80		
18	F	Corse	0.02	4.61	4.62		
19	P	Madeira*	0.00	4.60	4.60		
20	D	Schleswig-Holstein	0.50	4.54	5.02		22
21	UK	East Anglia	0.18	4.34	4.51		
22	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	18	20
23	D	Giessen	0.00	4.10	4.10		
24	UK	Lincolnshire	0.00	4.10	4.10		
25	B	Luxembourg	0.56	4.01	4.55		
26	UK	Berkshire, Buckinghanshire, Oxfordshire	0.36	3.98	4.33		
27	I	Valle d'Aosta	0.00	3.95	3.95		
28	E	Murcia	0.75	3.90	4.64	33	
29	GR	Ipeiros	0.03	3.90	3.93		
30	F	Lorraine	0.09	3.85	3.93		
31	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	8	19
		Other regions profiled					
42	NL	Utrecht	0.36	2.97	3.32		

*Regions not profiled because of low absolute population (islands).

Note: In addition, regions profiled include the single highest ranking NUTS II regions in all Member States where dependence exceeds the EC weighted average.

Table 5.3. **Dependent NUTS II regions**
Ranking C: Dependence based on total defence-related employment

			Employment shares (%)				
		NUTS II	Defence industries only	Military only	Total defence-related	Appearance in other rankings	
		(Twice EC average →)	1.10	3.72	4.82	A	B
1	GR	Voreio Aigaio*	0,00	29.88	29.88		1
2	E	Ceuta y Melilla	0.00	22.86	22.86		2
3	P	Açores	0.00	11.82	11.82		3
4	GR	Notio Aigaio*	0.00	11.27	11.27		4
5	GR	Kriti	0.00	10.61	10.61		5
6	I	Friuli-Venezia Giulia	1.65	8.98	10.57	13	8
7	GR	Dytiki Makedonia	0.07	10.39	10.46		6
8	GR	Anatoliki Makedonia, Thraki	0.05	10.06	10.11		7
9	UK	Hampshire, Isle of Wight	1.18	7.83	8.95	19	10
10	D	Trier	0.07	8.72	8.78		9
11	UK	Cumbria	6.40	0.95	7.35	1	
12	UK	Cornwall, Devon	1.55	5.32	6.81	15	15
13	UK	North Yorkshire	0.00	6.25	6.25		11
14	E	Madrid	0.58	5.63	6.20		14
15	D	Koblenz	0.08	6.01	6.09		12
16	F	Bretagne	2.51	3.59	6.05	4	
17	D	Lüneburg	0.08	5.87	5.95		13
18	D	Bremen	2.74	3.14	5.84	3	
19	F	Provence-Alpes-Côte d'Azur	2.08	3.80	5.83	8	31
20	UK	Avon, Gloucestershire, Wiltshire	1.26	4.25	5.48	18	22
21	D	Rheinhessen-Pfalz	0.09	5.08	5.17		16
22	D	Schleswig-Holstein	0.50	4.54	5.02		20
23	F	Aquitaine	2.36	2.56	4.89	5	

* Regions not profiled because of low absolute population (islands).

Mapping of dependent regions

Cartographic representations of profiled dependent regions are presented in the following nine maps. They show which NUTS II regions are dependent, the criterion upon which that dependence is based and some indication of where the different types of defence activity are concentrated at the NUTS III level. Each profiled dependent NUTS II region in each Member State is outlined in one of three colours:

(i) Green represents defence industrial dependence (i.e. NUTS II appears in Ranking A);

(ii) Yellow represents military dependence (i.e. NUTS II appears in Ranking B);

(iii) Pink represents dependence upon both defence industries and the military (i.e. NUTS II appears in both Rankings A and B).

Within each dependent NUTS II, certain NUTS III regions are coloured as well. NUTS III regions coloured green have a concentration of defence industrial activity; those coloured yellow have a concentration of military activity; and those coloured pink have concentrations of both defence industrial and military activity. However, NUTS III colouring does not necessarily represent dependence at the NUTS III level; unlike the NUTS II colouring, that for NUTS III regions reflects absolute rather than relative measures of activity.

For example, a NUTS II region may be dependent on the military only but have concentrations of defence industrial activity in some NUTS III regions and concentrations of both defence industrial and military activity in other NUTS III regions. A hypothetical example of such a NUTS II region is given below. The lack of colour in a NUTS III region indicates that no significant concentration of defence activity is believed to be located in that region.

[NUTS II dependent on the military]

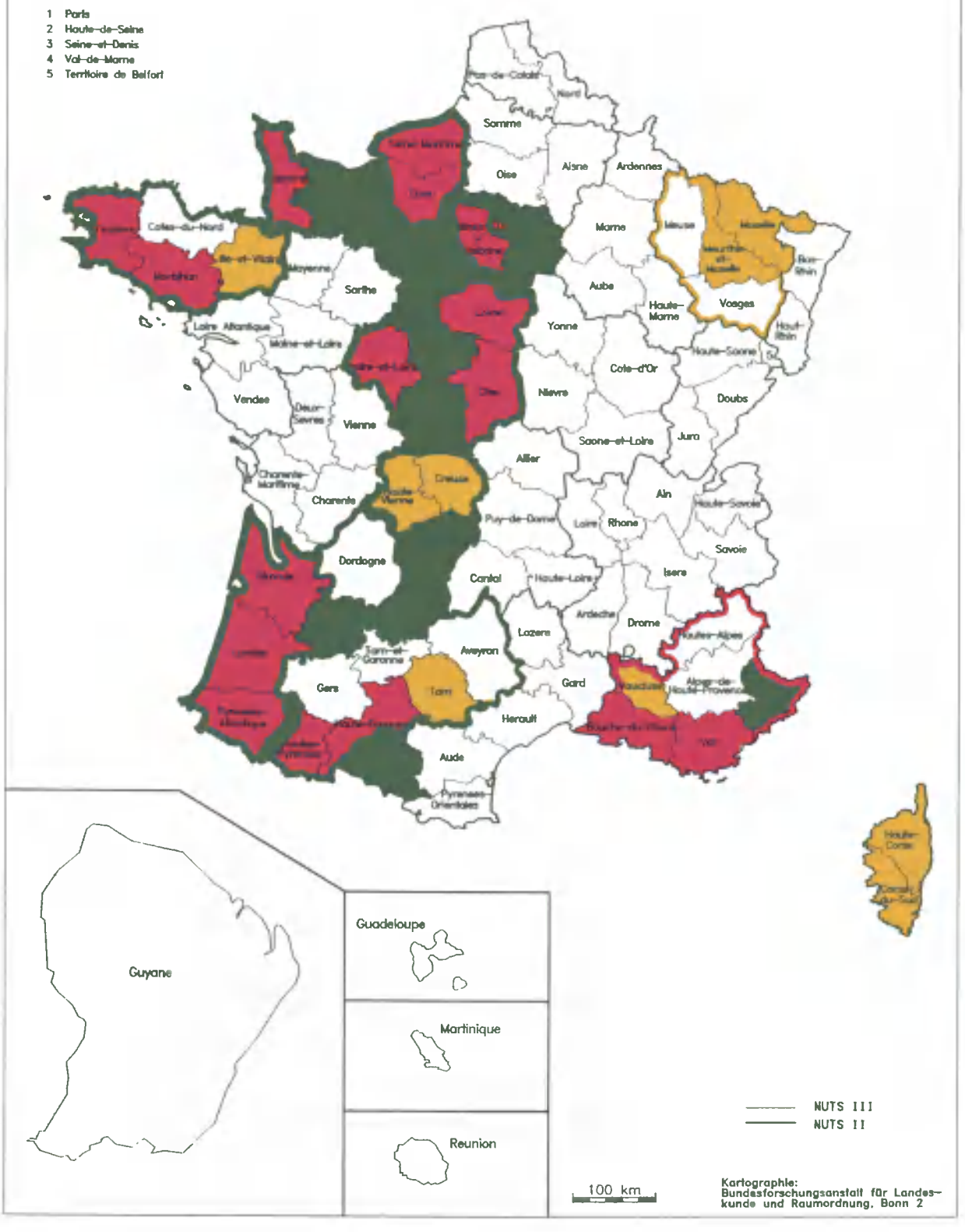
NUTS II with defence industrial concentration	NUTS III with military concentration
NUTS III with concentrations of both industrial and military concentration	NUTS III with no known defence concentration

Map 5.1. **Defence activity in dependent NUTS II regions**
Belgium, Luxembourg, and the Netherlands — NUTS III level

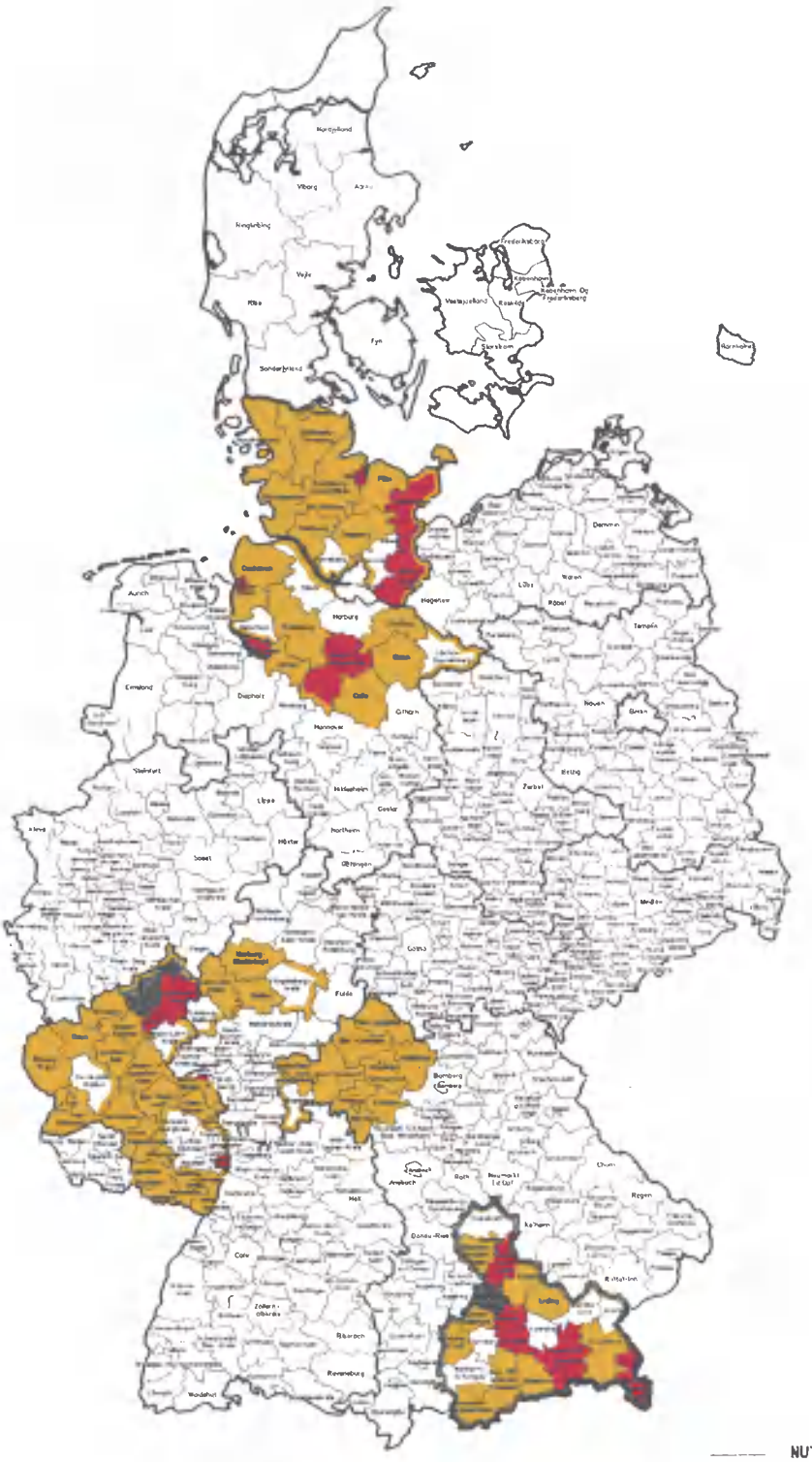
Kartographie:
Bundesforschungsanstalt für Landeskunde und Raumordnung, Bonn 2

Map 5.2.

Defence activity in dependent NUTS II regions
France — NUTS III level



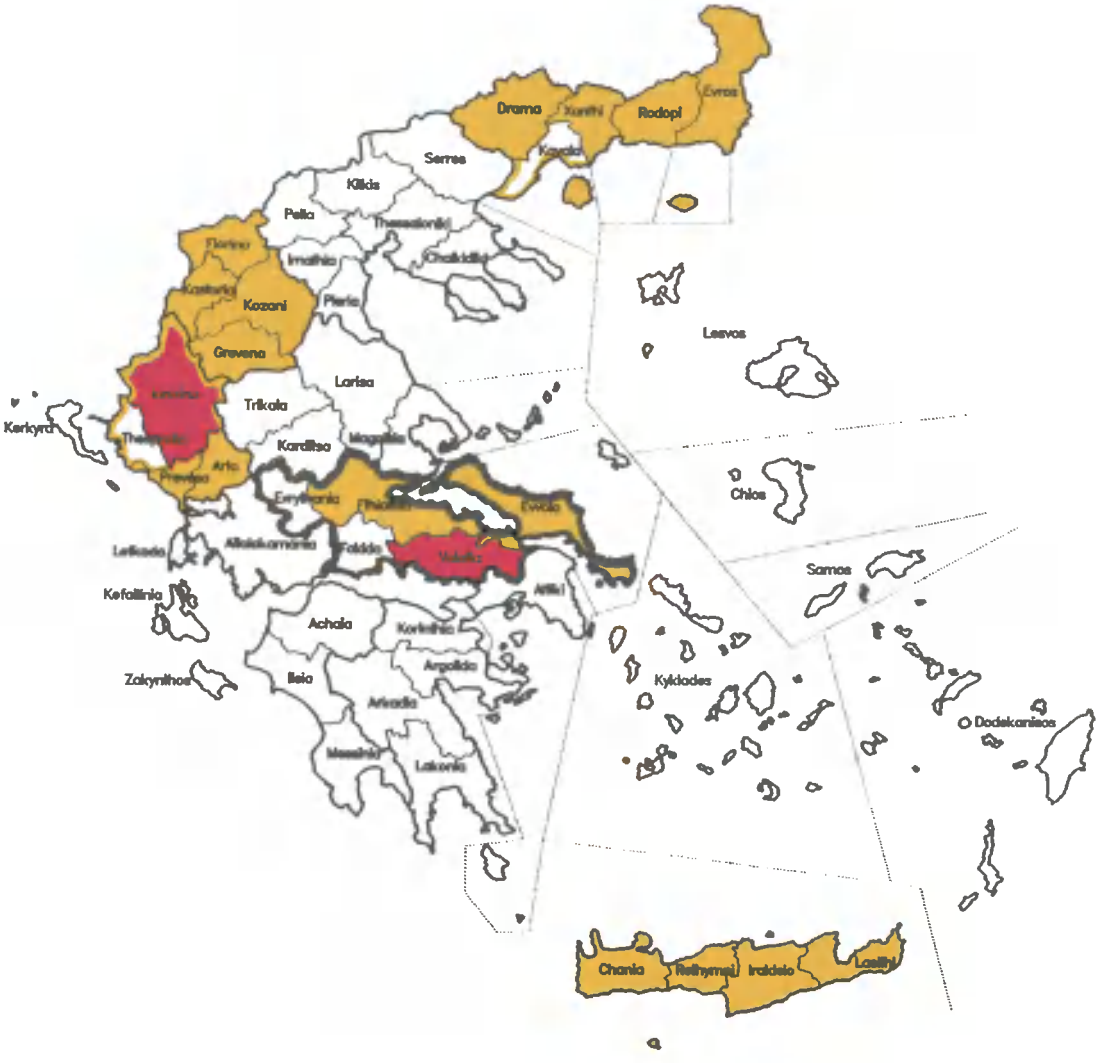
Map 5.3. **Defence activity in dependent NUTS II regions**
Denmark and West Germany — NUTS III level



Kartographie:
Bundesforschungsanstalt für Landeskunde und Raumordnung, Bonn 2

Map 5.4.

Defence activity in dependent NUTS II regions
Greece — NUTS III level



Kartographie:
Bundesforschungsanstalt für Landeskunde und Raumordnung, Bonn 2

100 km

NUTS III
NUTS II

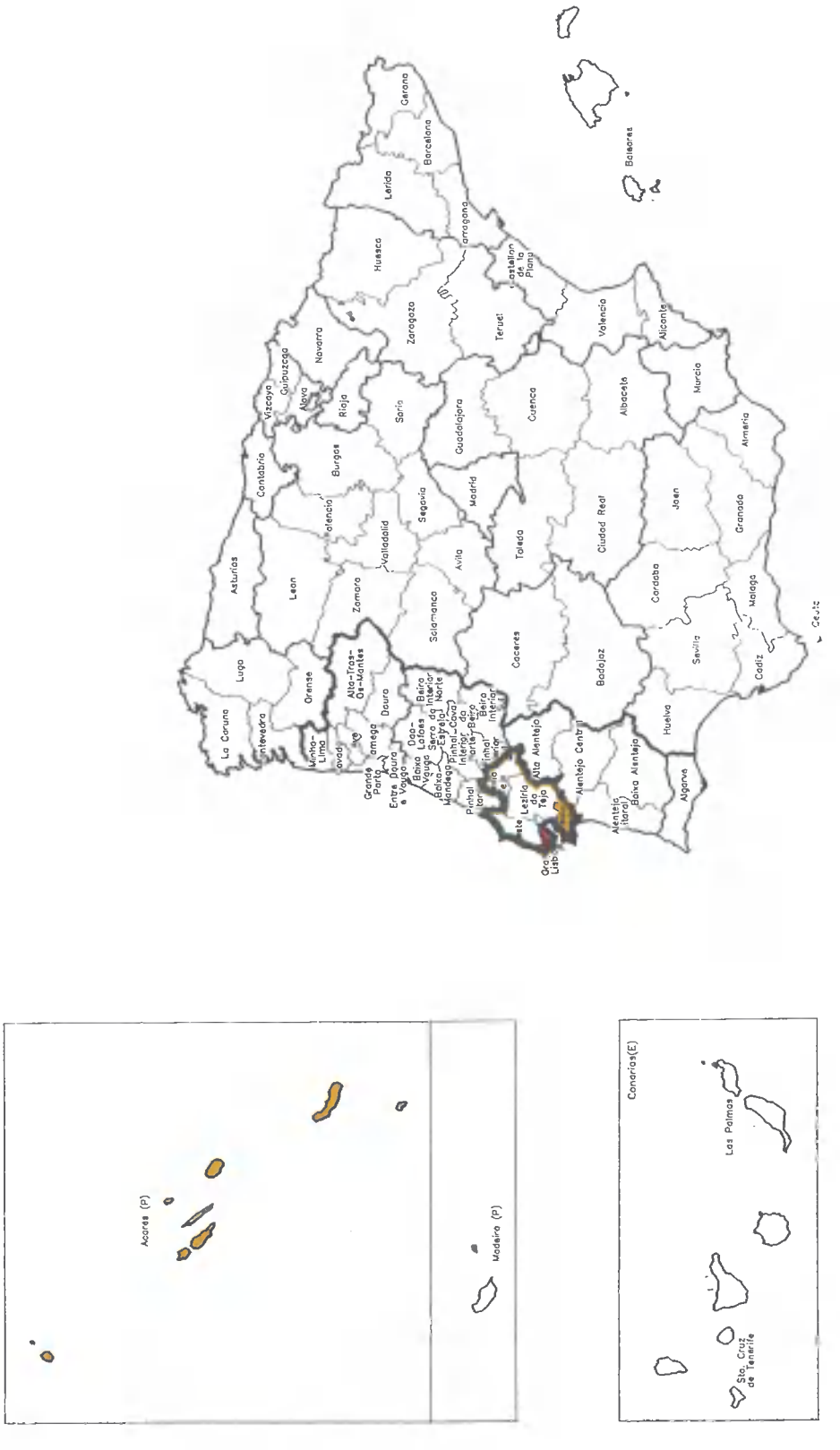
Map 5.5. **Defence activity in dependent NUTS II regions**
Italy — NUTS III level

Map 5.6.

Defence activity in dependent NUTS II regions
Belgium, Luxembourg and the Netherlands — NUTS III level

Map 5.7.

Defence activity in dependent NUTS II regions
Spain and Portugal — NUTS III level



Map 5.8.

Defence activity in dependent NUTS II regions
Spain and Portugal — NUTS III level

Map 5.9. **Defence activity in dependent NUTS II regions Ireland and the United Kingdom — NUTS III level**

Kartographie:
Bundesforschungsanstalt für Landeskunde und Raumordnung, Bonn 2

5.3. Dependence by Member State and objective region

In addition to examining defence dependence at the NUTS II level, calculations were made of dependence at the national level based on the NUTS II data. In these calculations, dependence is weighted by either working population or else aggregate employment (depending on the measure of defence dependence). The results are displayed in Table 5.5. They show that Greece ranks highest in total defence-related dependence (3.79%), followed by France (3.15%), Germany (2.84%) and the United Kingdom (2.31%). The weighted average percentage of people employed in defence-related activity for the EC as a whole lies between Germany and the United Kingdom at 2.41%.

When defence industrial dependence is examined, the ranking of Member States changes; France is first with 1.21% of the working population in defence industries, followed by the United Kingdom (0.65%) and Italy (0.52%). Then come Belgium and Germany.

Looking at military dependence, again the rankings change with Greece taking the number one spot (3.51%), followed by Germany (2.51%), France (1.95%) the EC weighted average (1.87%), Belgium (1.72%) and the United Kingdom (1.68%).[5]

To get an idea of the degree of spatial concentration of defence employment, the following ratios were calculated: defence industrial employment in defence dependent regions as a share of total Community defence industrial employment and military employment in defence dependent regions as a share of total Community military employment.

Table 5.4. Percentage of Community defence employment within dependent regions

	Defence industries	Military
A. Employment in EC	683 100	2 349 100
B. Employment in dependent regions	344 800	821 500
C. B. ÷ A	50%	35%

Source: EAG and CDE.

NUTS II regions dependent on defence industries are home to half the Community's defence industry employment, while those NUTS II regions dependent on the military are home to 35% of the Community's military employment. These data imply that the defence industries are concentrated in fewer regions than the military.

In addition, the proportion of defence dependent regions that are covered by Objective 1, 2 or 5b policy instruments was calculated by identifying which NUTS III regions in dependent NUTS II regions contained defence activity (carried out by EAG/CDE) and comparing this list to NUTS III regions eligible for assistance under the objectives (carried out by DG XVI). The results show that among the 55 NUTS III regions with defence industrial activity located in NUTS II regions dependent on defence industries, 9% are totally eligible to one or more of the objectives, 42% are partially eligible and 49% are not eligible for any objective. The proportions of the EC population which these three categories involve are 1.1, 4.7 and 5.9% respectively (1989 population statistics).

With regard to the 115 NUTS III regions with concentrations of military activity located in NUTS II regions dependent on the military, 34% are totally eligible for assistance, 15% are partially eligible and 51% are not eligible for any objective assistance. The first of these categories covers 1.5% of the EC population, the second 4.1% and the third 5.2%.

And lastly, of the 94 NUTS III regions which have concentrations of either defence industrial employment or military employment or both and which are located in NUTS II regions whose share of total defence-related activity exceeds twice the Community average, 31% are totally eligible for assistance under at least one objective, 19% which are partially eligible and 50% which are not eligible. These categories involve 0.9% of the EC population, 4.6 and 3.6% respectively.

[5] Calculation of military dependence include weighted conscripts and foreign forces, civilians and dependants.

Table 5.5. **Share of employment in defence for EUR 12, Member States and objective regions**

	Share of employment (%)		
	Defence industries only	Military only	Total defence-related
EUR 12	0.55	1.86	2.41
Belgium	0.36	1.59	1.95
Denmark	0.15	1.06	1.21
Germany	0.33	2.51	2.84
Greece	0.28	3.51	3.79
Spain	0.22	1.50	1.72
France	1.21	1.95	3.15
Ireland	0.00	1.36	1.36
Italy	0.52	1.50	2.01
Luxembourg	0.00	1.05	1.05
Netherlands	0.30	1.59	1.88
Portugal	0.15	1.12	1.26
United Kingdom	0.65	1.68	2.31
Objective 1	0.29	1.75	2.04
Objective 2	0.59	1.67	2.27
Objective 5b	0.55	2.21	2.75
All objectives	0.49	1.88	2.37

Source: EAG Regional Defence Employment Matrix.

Figure 5.2. **Total defence-related share of employment**

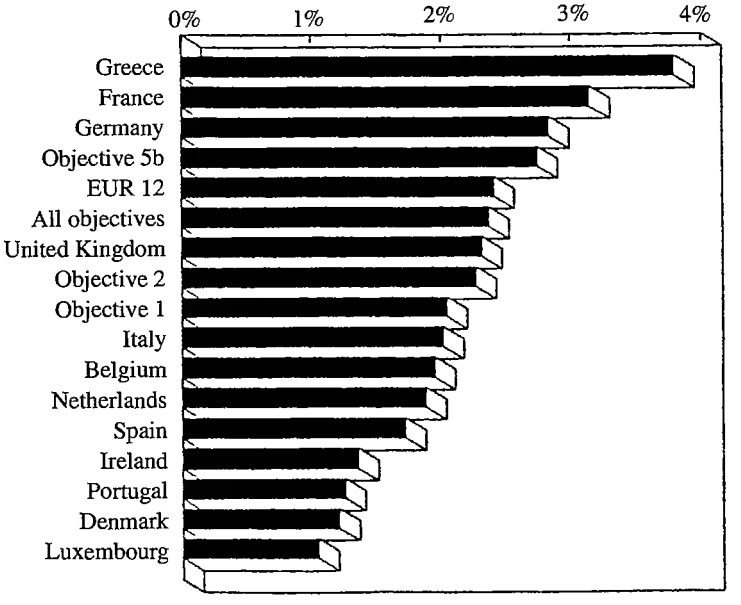
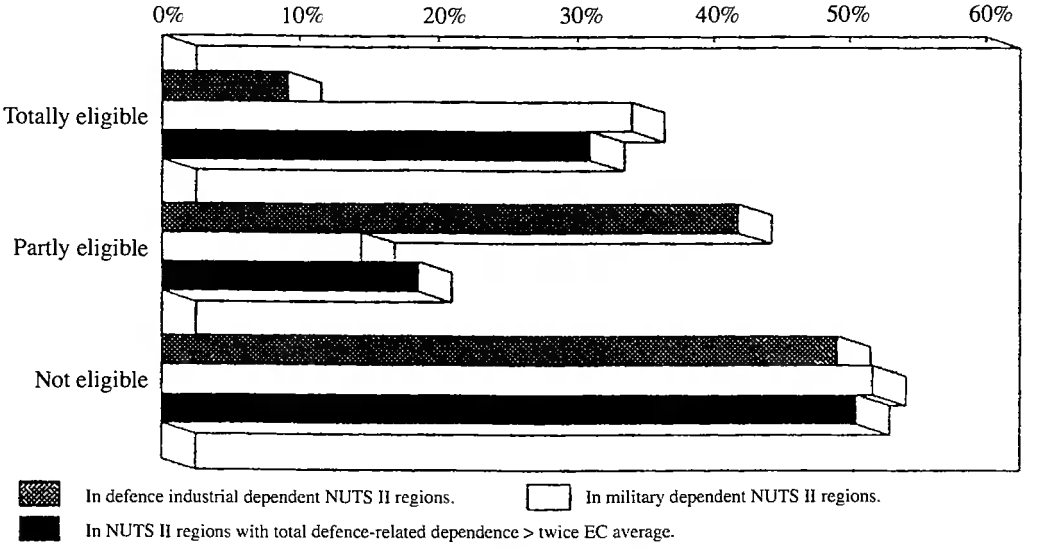


Table 5.6. **Proportion of defence-dependent regions that are covered by Objective 1, 2 or 5b policy instruments**

	Defence industries		*Military*		*Total defence-related*	
	NUTS III	%	NUTS III	%	NUTS III	%
Totally eligible	5	9.1	39	33.9	29	30.9
Partly eligible	23	41.8	17	14.8	18	19.1
Not eligible	27	49.1	59	51.3	47	50.0
Total	55	100.0	115	100.0	94	100.0

Source: EAG, CDE and DG XVI.

Figure 5.3. **Proportion of NUTS III regions with defence activity in dependent NUTS II regions**
Eligible under Objectives 1, 2 or 5b



Comparison of regional aggregates to national defence employment data

The table below provides a comparison between aggregated NUTS II data gathered and analysed by the Centre for Defence Economics and EAG versus national totals appearing in the Sipri Yearbook (the sources of which are publications, conferences, papers and Ministries of Defence).

The reason that aggregate defence industrial figures for Belgium, France, the Netherlands and the United Kingdom are less than their Sipri counterparts is that the Sipri national totals include both direct and indirect defence employment, whereas the regional aggregates take only direct employment into account.

Sipri's estimate of defence industrial employment for Greece does not include the private sector, hence it is less than the regional aggregate figure.

The aggregate defence industrial figure for Italy is a combination of employment in both private defence

companies and State-owned companies. The Sipri source does not indicate its definition of defence industrial employment in Italy.

The reason the aggregate figures for defence industrial employment in Spain differ from Sipri is mainly due to the fact that there are no official data available. The Spanish Sipri data are from a 1988 Spanish publication referring to previous years and are consequently some what out of date.

Most of the regional aggregate figures for the military are less than the Sipri figures. This is probably due to the fact that the Sipri figures are for 1988 and the CDE/EAG data are as current as possible (in many cases they are 1991 estimates). Since 1988, military manpower has been falling in most countries.

Table 5.7. Comparison of regional aggregates to national defence employment data

	Defence industries			Military (including conscripts)		
	Regional aggregates	National totals	Difference	Regional aggregates	National totals	Difference
B	12 500	33 000	20 500	61 191	110 000	48 809
DK	4 000	na	—	28 800	31 000	2 200
D	86 470	191 000	104 530	396 108	495 000	98 892
GR	10 407	9 000	(1 407)	210 000	199 000	(11 000)
E	25 774	66 000	40 226	281 585	304 000	22 415
FR	263 031	400 000	136 969	439 002	550 000	110 998
IRL	0	na	—	13 107	13 000	(107)
I	109 783	103 000	(6 783)	409 600	390 000	(19 600)
L	0	na	—	1 331	1 000	(331)
NL	17 500	33 000	15 500	85 821	107 000	21 179
PT	6 500	na	—	61 623	104 000	42 377
UK	147 174	620 000	472 826	215 620	342 000	126 380
Total	683 139	1 455 000	782 361	2 203 788	2 646 000	442 212

Note: na = not available.
Sources: Regional aggregates: EAG/CDE Defence Employment Matrix. National totals: Sipri Yearbook 1991.

5.4. Categories of dependent regions

Characterizing and categorizing defence dependent NUTS II regions in general terms at the NUTS II level is complicated by the geographic and economic diversity within many of these regions. The analysis is easier for certain smaller areas within those NUTS II regions or dependent NUTS II regions which are geographically small. In general, subregions or smaller NUTS II regions may be identified as belonging to one or more of the following categories:

Categories of defence-dependent regions

1. Lagging rural
2. Prosperous rural
3. Declining urban industrial
4. Specialised isolated sub-region
5. Advanced indigenous industrial

Each of these categories will be described more fully, with examples drawn from the profiled defence dependent regions (contained in the Appendix).

Rural areas are often a small part of a NUTS II region, and frequently agriculture employs the smallest proportion of the workforce in NUTS II regions (relative to manufacturing industry or services). Lagging rural subregions are often identified by their coverage by EC Objective 1 or 5b aid and are predominantly located in the dependent NUTS II regions of France, Greece, Spain and Germany. The subregions in France include central and southern Bretagne, southern Centre, western, central and southern Aquitaine, all of Limousin, southern Midi-Pyrénées, and northern Provence. Murcia, in Spain, belongs to this group also.

The rural subregions of dependent German NUTS II regions generally have a smaller proportion of their workforce in agriculture and higher per capita incomes in comparison to France; however Trier is predominantly an Objective 5b region. Smaller subregions of western Lüneberg, northern Unterfranken and Schleswig-Holstein have lagging rural areas despite low unemployment, high GDP per capita and high adaptive capacity. The only dependent British NUTS III region which fits into this category well is Cornwall.

Only in the Greek mainland regions (Dytiki Makedonia, Anatoliki Makedonia, Sterea Ellada and Ipeiros), Corse and Greek islands does agriculture play a major role in terms of employment in a region's economic structure. These small regions of very high defence dependence are without exception lagging regions with low adaptive capacity.

Prosperous rural regions are located primarily in the United Kingdom and Germany. Though much of the physical landscape of these NUTS II regions may be rural, their economies rarely depend significantly on agriculture for employment. In the United Kingdom, no region had more than 5.2% of its workforce in agriculture in 1987. With the exception of the German regions mentioned above, the other dependent German regions have a greater proportion of their workforces in agriculture than the United Kingdom, but still no more than about 5.2%.

Declining industrial regions are not uncommon amongst the regions identified as dependent on defence industries. Such regions or subregions typically contain concentrations of heavy engineering and manufacturing. But they also contain urban centres often with well-equipped and functioning infrastructures. Education and training are readily available so that if redundancies do occur in a sector, alternatives are available (although they may not lead to immediate alternative employment). Declining industrial regions are often covered by EC Objective 2 aid. French and British regions dominate this category, including the following industrial centres: Genova in Liguria and Tarbes in Midi-Pyrénées, Bremen, Le Havre in Haute Normandie, Plymouth in Cornwall/ Devon and Manchester in Lancashire.

Certain subregions of the Community are both isolated and specialized in particular industries — often in 'metal-bashing' activities. Typical of these subregions is the presence of naval ports and shipbuilding which are often isolated from other major conurbations. Isolated industrial subregions generally have weaker infrastructures than larger prosperous industrial areas; and consequently have higher unemployment and lower adaptive capacity. A prime example of such a subregion is Barrow-in-Furness in Cumbria — which is also the predominant area of defence activity in this NUTS II (and III) region. Another example might be St Brieuc in Bretagne. Even Kiel might be classified into this group.

There are many dependent NUTS II regions which contain areas of advanced indigenous industrial activity. British, German and French dependent regions dominate this category. Madrid might also be included. The industrial cities of advanced industrial regions generally have a well developed infrastructure and relatively high GDP per capita. Education and training are also readily available leading these regions to possess relatively high adaptive capacity. Examples of advanced industrial subregions in the United Kingdom are Bristol and Gloucester in Avon, Gloucestershire, Wiltshire; Oxford and Reading in Berkshire, Buckinghamshire, Oxfordshire; Norwich, Ipswich and Cambridge in East Anglia; and Southampton in Hampshire, Isle of Wight.

An obvious example in France is Paris and the Île-de-France region. Toulouse and much of the surround-

ing NUTS III, Haute-Garonne region is another example. It is probably most appropriate to include Bordeaux and much of the surrounding NUTS III, Gironde, in this type of region. After all not only is there a significant advanced electronics and aerospace sector in Bordeaux, but it is the leading region in one increasingly technological industry in which France has a world lead, oenology. Munich in Oberbayern, Germany and Utrecht in the Netherlands are further examples of regions of this type.

5.5. Regional vulnerability to cuts

When defence companies close plants or lay off workers, this can have a significant impact on regional economies. The present study includes an interview survey of defence firms which provided information regarding their likely responses to cuts in defence spending. The sample comprised firms with 57 plants in dependent NUTS II regions which varied in size and specialization. Some firms provided detailed but confidential information on their future plans for plant closures.

The survey found that most respondents are trying to avoid complete closures by searching for new markets. Other firms have chosen to specialize in the defence business rather than diversify into completely new civil markets. There is no clear regional or sectoral pattern to this distinction or to the planned reductions in activity that were disclosed during the interviews. Rather, the survey confirmed that for private firms, the regional implications of defence cuts will be determined by commercial criteria. Plants at sites with attractive and profitable alternative uses, for example, may be closed and sold for other uses (e.g. for housing, office or shopping developments). Land prices and the availability of regional aid also influence such decisions.

The survey findings have been analysed to establish some broad indication of where plant closures (and therefore redundancies) are already known to be planned. The regions in which such plants are currently located have been classified as 'highly vulnerable'. Those regions in which plant closures are likely (but not certain) have been classified as 'vulnerable'. It should be stressed that these findings are not definitive and are intended only as a broad indication of regional industrial vulnerability. The picture will also change over time. Survey data are included in the Appendix.

With regard to the closure of military bases, it is clear that regions in Germany will be subject to both closures and reductions in size. This is particularly true for regions containing high proportions of foreign forces, many of whom are due to be withdrawn. Withdrawal of foreign forces will affect both German regions and the regions into which the forces are deployed or disbanded in their home countries.

Some details of base closures in Germany, affecting both domestic and allied forces stationed there, have been announced. In other countries, however, many decisions regarding the future distribution of bases have not been made. In some cases manpower reductions will take the form of reductions in activity at a number of locations, rather than the closure of a single base. In other cases, activity may be transferred from one base to another, with a net reduction in employment but a gain for the base receiving the transfer. We have not evaluated this effect.

Information on likely US base closures in Europe have been collected from the Pentagon and other published sources. However, again not all these closures will necessarily have a negative impact on their local economies. Some vacated American bases will be occupied by domestic forces transferred from other less well equipped bases.

Analysis of available data has enabled a preliminary identification of those dependent regions that are certain to experience base closures ('highly vulnerable') and those that are likely to experience such closures ('vulnerable').

As with the defence industry analysis, this is not a definitive assessment of regional vulnerability. It does, however, provide a broad indication of where, on the basis of current information, cuts are most likely to occur within dependent NUTS II regions. Where possible, specific details of industrial and base locations are given in the regional profiles contained in the Appendix.

The following Table 5.8 indicates whether a region is 'highly vulnerable' or 'vulnerable' (or neither) to cuts in defence activity. As reference the last three columns of the table list where in the defence dependence rankings (A, B and C) each region appears.

Table 5.8. Regions vulnerable to defence cuts
(Listed in order of defence industrial dependence, then military dependence)

** = Highly vulnerable (i.e. cuts in employment have been announced). * = Vulnerable (i.e. cuts in employment are likely).

			Vulnerability of defence cuts		Appearance in dependence rankings[1]		
		NUTS II	Defence industries	Military	A	B	C
1	UK	Cumbria	**		1		11
2	UK	Essex	**		2		
3	D	Bremen	**	**	3		18
4	F	Bretagne	*	*	4		16
5	F	Aquitaine	*	*	5		23
6	UK	Lancashire	**		6		
7	I	Liguria	**		7		
8	F	Provence-Alpes-Côte d'Azur	**	*	8	31	19
9	F	Centre	**		9		
10	F	Limousin			10		
11	F	Midi-Pyrénées			11		
12	F	Île de France	*	**	12		
13	I	Friuli-Venezia Giulia			13	8	6
14	D	Oberbayern	**	**	14		
15	UK	Cornwall, Devon	**	*	15	15	12
16	F	Basse-Normandie		**	16		
17	F	Haute-Normandie		**	17		
18	UK	Avon, Gloucestershire, Wiltshire	**	**	18	22	20
19	UK	Hampshire, Isle of Wight		**	19	10	9
20	GR	Sterea Ellada	*		23		
21	E	Murcia			33	28	
22	P	Lisboa e Vale do Tejo			55		
23	GR	Voreio Aigaio				1	1
24	E	Ceuta y Melilla				2	2
25	P	Açores				3	3
26	GR	Notio Aigaio				4	4
27	GR	Kriti				5	5
28	GR	Dytiki Makedonia				6	7
29	GR	Anatoliki Makedonia, Thraki				7	8
30	D	Trier		**		9	10
31	UK	North Yorkshire				11	13
32	D	Koblenz		**		12	15
33	D	Lüneburg		**		13	17
34	E	Madrid	**	**		14	14
35	D	Rheinhessen-Pfalz		**		16	21
36	D	Unterfranken		**		17	
37	F	Corse				18	
38	P	Madeira				19	
39	D	Schleswig-Holstein	**	**		20	22

Table 5.8. Regions vulnerable to defence cuts
(Listed in order of defence industrial dependence, then military dependence)

** = Highly vulnerable (i.e. cuts in employment have been announced). * = Vulnerable (i.e. cuts in employment are likely).

			Vulnerability of defence cuts		Appearance in dependence rankings[1]		
		NUTS II	Defence industries	Military	A	B	C
40	UK	East Anglia				21	
41	D	Giessen				23	
42	UK	Lincolnshire				24	
43	B	Luxembourg				25	
44	UK	Berkshire, Buckinghamshire, Oxfordshire		**		26	
45	I	Valle d'Aosta				27	
46	GR	Ipeiros				29	
47	F	Lorraine		**		30	
48	NL	Utrecht				42	

[1] These columns indicate where in the dependence rankings each region appears:
Ranking A: defence industrial dependence,
Ranking B: military dependence,
Ranking C: dependence based on total defence related employment.
Source: CDE Survey.

Summary

Defence dependence is a term used to indicate that share of a region's employment, expenditure or output that is directly related to defence. In considering all three variables as a measure of regional defence dependence, employment data were found to be most consistent among available published data.

After collecting defence employment data and weighting certain categories of employment based on their relative propensities to spend in their local economies, defence dependence was calculated for each NUTS II region and all regions ranked based on three measures: defence industrial dependence, military dependence and total defence-related dependence. Regions which exhibited a level of dependence which was twice the EC average (or greater) were short-listed and classified as the most dependent regions of the Community.

For coverage purposes, the top ranking dependent region in every Member State in either defence industries or the military was included if their rankings were above the EC average (but below twice the EC average) and there was no other higher ranking region in that country in either defence industries or the military; 49 regions were therefore included as defence dependent: 23 for their defence industrial employment, 32 for military employment and 23 for total defence-related employment. Every region in the third ranking appears in one or the other of the previous two (five appear in all three rankings).

In addition to examining defence dependence at the NUTS II level, calculations were made of dependence at the national level based on the NUTS II data. Greece ranks highest in total defence-related dependence (3.79%), followed by France (3.15%), Germany (2.84%) and the United Kingdom (2.31%). The weighted average percentage of people employed in defence-related activity for the Community as a whole lies between Germany and the United Kingdom at 2.41%. When defence industrial dependence is examined alone, the ranking of Member States changes; France is first with 1.21% of the working population in defence industries, followed by the United Kingdom (0.65%) and Italy

(0.52%). With regard to military dependence, Greece is most dependent (3.51%), followed by Germany (2.51%), France (1.95%), the EC weighted average (1.87%), and the United Kingdom (1.68%).

In addition, the proportion of defence-dependent regions that are covered by Objective 1, 2 or 5b policy instruments was calculated by identifying which NUTS III regions in dependent NUTS II regions contained defence activity. This list was then compared with the NUTS III regions eligible for assistance under the Objectives. The results show that among the 55 NUTS III regions with defence industrial activity located in a NUTS II region dependent on defence industries, 9% are totally eligible for one or more of the Objectives, 42% are partially eligible and 49% are not eligible for any Objective. The proportions of the EC population which these three categories involve are 1.1%, 4.7% and 5.9%, respectively (1989 population statistics).

One hundred and fifteen NUTS III regions have concentrations of military activity located in NUTS II regions dependent on the military; 34% are totally eligible for assistance, 15% are partly eligible and 51% are not eligible for any Objective assistance. The first of these categories covers 1.5% of the EC population, the second 4.1% and the third 5.2%.

Of the 94 NUTS III regions which have concentrations of either defence industrial employment or military employment or both, and which are located in NUTS II regions whose share of total defence-related activity exceeds twice the Community average, 31% are totally eligible for assistance under at least one objective, 19% are partly eligible and 50% are not eligible. These categories involve 0.9% of the EC population, 4.6% and 3.6%, respectively.

In comparing published national defence employment data to the national estimates of EAG/CDE (calculated by aggregating the NUTS II data), there is a large gap between the two in terms of defence industries (of about 780 000). This is due to problems of definition (published national totals for Belgium, France, the Netherlands and the United Kingdom include indirect as well as direct employment). Most of the regional aggregate figures for the military (the EAG/CDE data) are less than the published national figures due to the fact that EAG/CDE are three years more recent than the published figures (since 1988, military manpower has been falling in most countries).

Practically all the defence-dependent regions fall into one or more of the following categories; lagging rural, prosperous rural, declining urban industrial, specialized isolated subregion and advanced indigenous industrial.

A survey was conducted covering firms with 57 defence plants in dependent NUTS II regions of the Community to determine which had already or were likely to lay off workers. The regions in which such plants are already due to close have been classified as 'highly vulnerable'. Those regions in which plant closures are probable or likely (but not certain) have been classified as 'vulnerable'. It should be stressed that these findings are not definitive and are intended only as a broad indication of regional industrial vulnerability. The picture will also change over time. The results indicate that of the 49 dependent regions, 12 are highly vulnerable to cuts in defence industries, 16 in the military and five to both. Four regions are vulnerable to cuts in defence industries and four to cuts in the military.

6. Regional impact and response

Purpose

This chapter discusses the impact that defence expenditure reductions may have on dependent regions (taking into account their economic characteristics and whether they are dependent on defence industries, the military or both) and a range of possible responses to those cuts. The concept of adaptive capacity is defined and the methodology used for its measurement discussed.

Section 6.2 reviews the multiplier effect which includes additional indirect employment resulting from direct defence employment. One range of multipliers is established for defence industrial employment and one for the military. In order to establish an upper bound to the impact of defence cuts on regional employment a 'worst case' scenario is calculated taking into account the multiplier effects.

Section 6.3 suggests some study implications for regional policy including the following topics: recommendation of flexibility in area designation, policy instruments and policy coordination, technology transfer and land redevelopment.

6.1. Overview of methodology

The impact of any global cuts in defence expenditure on regional and subregional economies is the product of many factors. First we need to know the dependence of the regional economy on defence-related employment and the vulnerability of particular types of defence-related employment to cuts. Measures of the first of these variables are presented in Chapter 5. The problem of reliably and systematically identifying the present and future vulnerability of different sectors and facilities to actual cuts has already been identified.

Together, however, the dependence of a regional economy on defence employment and the incidence of the cuts which actually take place will determine the direct change in regional defence-related employment. How this initial change in employment translates into a change in incomes, however, will be moderated by the regional structure of defence employment; is it closure of a large conscript-dependent base at one extreme or of a high value-added research facility at the other?

Initial direct changes in regional employment and incomes will have local multiplier effects as local services and industries, subcontractors and, ultimately, activities dependent on the indirect employment, contract. The local or regional multiplier is a familiar concept and many studies have attempted to quantify these effects, both in general, and in the context of particular events. Some of these studies are reviewed in Section 6.2 where plausible upper bounds of regional dependency, including multiplier effects, are discussed.

This, however, is not the end of the story. Local, like national economies, have self-correcting feedback mechanisms giving them a natural resilience. Localized events such as job losses (or job creation) trigger off changes in behaviour. Workers seek work outside the area affected; new businesses are set up; existing businesses for which labour supply was previously a constraint may expand; the cost of premises falls and labour is more available, encouraging an inflow of new employers; unemployed workers may migrate or take early retirement, disappearing entirely from the local workforce and unemployment; policy may intervene directly to encourage new employment.

The range of adaptive reactions is considerable and varied, but their net impact appears to be relatively systematic. Thus, in the very short term the regional impact is confined to the direct losses of employment and income; these are then amplified by multiplier effects; but then in the medium term they will tend to be counteracted by adaptive reactions; and in the long run these adaptive reactions may themselves be amplified by policy intervention. Thus in the long run a full analysis of the regional impact of defence cuts should, in principle, include an analysis of the likely policy response and the local efficiency of policy administration — the ability of local, national and supranational agencies to convert

policy expenditures into effective action to achieve policy goals. This, however, is beyond the scope of the present study.

While local multiplier analysis is familiar, the concept of 'adaptive capacity' (Cheshire and Hay, 1989; Cheshire, 1990) is less so despite the fact that regional policy has increasingly focused on improving the supply side response of local economies; in other words, on improving their adaptive capacity.

A quite simple example demonstrates the importance of taking into account local adaptive capacity, as well as estimating the size of initial economic shocks, if an accurate idea of the importance of a closure to a local economy is to be gained. In 1980 two large steel plants were closed in England. Both were in small free-standing towns heavily dependent on steel making. The plants were of comparable importance to their local economies. Both closures triggered off very similar policy responses. One town, Corby, in the East Midlands, was, however, in a relatively prosperous region with a generally more skilled labour force, newer industrial structure, lower unemployment and close to advanced metropolitan regions, and less remote from the central regions of Europe. The other closure was in Consett in the North — a region of long-term decline and heavy industry. Although the North is not at the polar extreme to the East Midlands on the spectrum of European regions, it certainly has less favourable economic characteristics leading to lower adaptive capacity.

Figure 6.1 shows the adjustment path of unemployment through time in the local labour markets (travel to work areas) relative first to the surrounding Level 3 region (the county) and secondly to the surrounding Level 1 region. It will be seen that while in Corby unemployment in the local area, relative to the surrounding Level 3, had returned to its pre-closure level within 18 months, in Consett it still had not done so after four years. The adaptive capacity of regions is important in determining the medium-term impact of local economic disturbances, and thus the need for a policy response.

It may be noted, however, that in the present instance a case can be made for not concentrating policy assistance too exclusively on regions of low adaptive capacity. A distinction can be made between long-term strategic regional policy, the aim of which is to improve lagging areas with low adaptive capacity and shorter term policy reacting to specific regional problems or shocks (such as shipbuilding or coal areas). For programmes designed as a response to particular events — such as defence cuts — more may be achieved with fewer resources if policy assists areas of high adaptive capacity rather than solely targeting low adaptive capacity areas which may be more effectively served by general strategic regional policy. It may be that improving regional adaptive capacity is appropriate as a long-term strategic goal of regional policy; in so far as this is accepted, then for long-term strategic purposes resources designed to improve regional adaptive capacity should be focused on regions where that is lowest.

The concept of adaptive capacity, how it may be best measured, and its application to the issue of the appropriate regional policy response to defence cuts is considered in more detail in the Appendix. The factors which were used to assess regional adaptability include regional economic structure (industry versus agriculture), dependence on older resource-based industries, the natural rate of regional population growth, change in economic potential resulting from European integration and falling transport costs, unemployment, percentage of adolescents in education and training and infrastructure endowment. All except the last two of these factors were selected on the basis of a rigorous statistical analysis of causal factors in regional 'success' between 1977 and 1988 (Cheshire, 1990). The last two represent additional, potentially relevant indicators. All measures used harmonized data.

In Section 6.3 some general conclusions are drawn about the types of regional economies dependent on defence; the types of defence expenditures that are involved, and the policy implications of defence cuts. Apart from the question of adaptive capacity, the incidence of problems will also reflect the type of defence dependence and the spatial structure of the regions that are affected. Are regions dependent on military bases or on industry? Is that industry new high technology in-

Figure 6.1. **Ratio of total unemployment to that of surrounding areas**

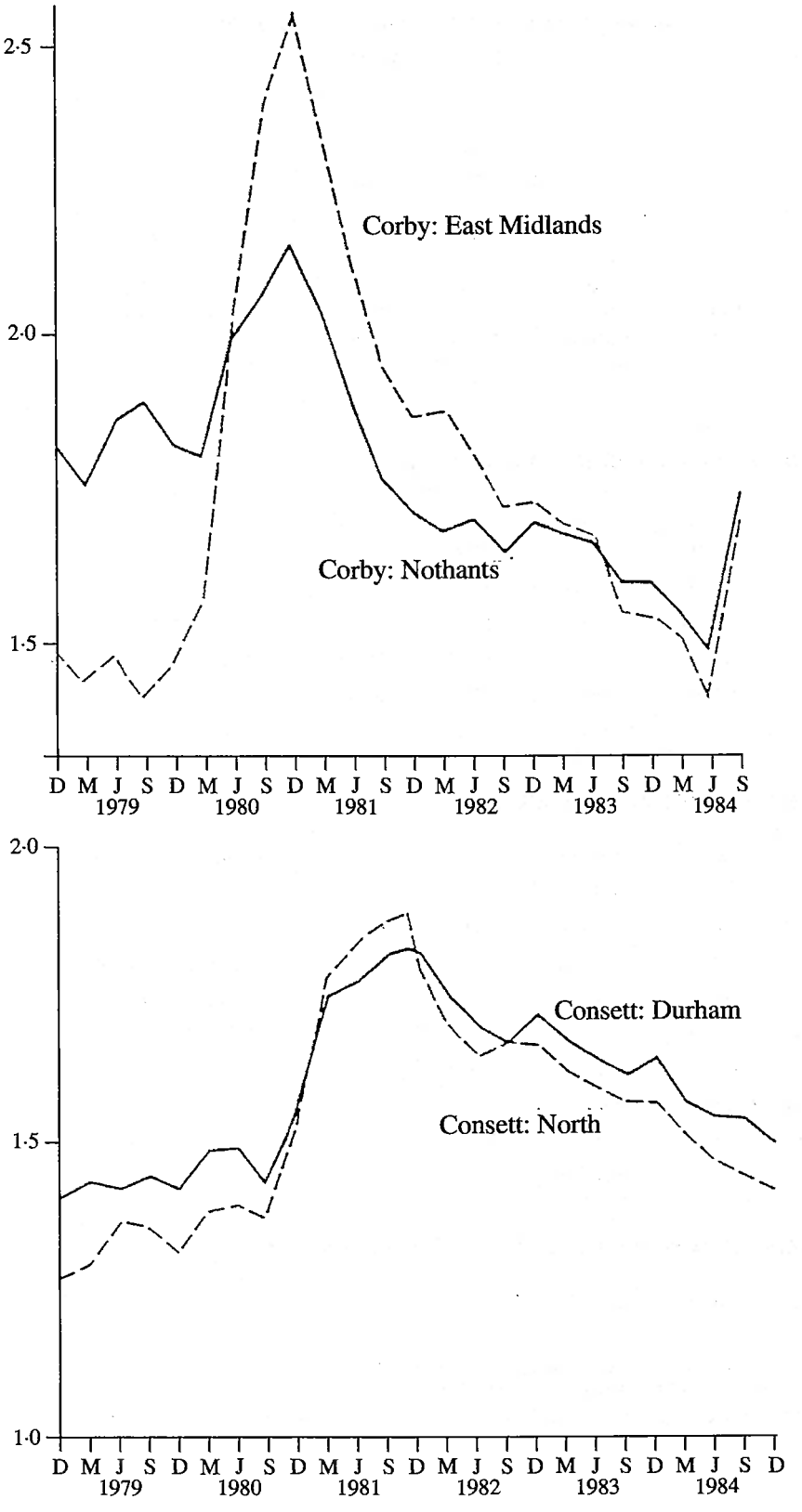


Table 6.1. **Hypothetical impact on employment of defence cuts in highly vulnerable regions**

			Multipliers Industries: 2.00 Military: 1.50					The 'worst case' scneario
			Defence industries		Military			
Dependent and highly vulnerable NUTS II regions	Working population	Working Pop. + domestic forces + weighted foreigners	Regional defence employed	Number affected Multiplier = 2.0	Total military employed	Number affected Multiplier = 1.5	Both industry & military affected	% of working population affected
	(1)	(2)	(3)	(4) (3) x (2.0)	(5)	(6) (5) x (1.5)	(7) (4) + (6)	(8) (4 or 6 or 7)/ (1 or 2)
Highly vulnerable to cuts in defence industries								
Cumbria	204 100	204 309	13 071	26 142	1 949			12.81
Essex	515 300	519 669	14 307	28 614	5 925			5.55
Bremen	288 480	293 360	7 912	15 824	9 215			5.49
Lancashire	519 700	520 647	12 235	24 470	1 417			4.71
Liguria	617 451	623 911	13 332	26 664	14 254			4.32
Centre	856 372	869 496	16 943	33 886	22 168			3.96
Oberbayern	1 772 553	1 791 285	28 203	36 606	31 936			3.19
Highly vulnerable to cuts in the military								
Trier	184 248	195 391	128		17 034	25 551		13.08
Hampshire I. of. W.	664 100	698 354	7 831		54 674	82 011		11.7
Koblenz	589 167	611 576	494		36 741	55 112		9.01
Lüneburg	648 700	673 251	500		39 537	59 306		8.81
Madrid	1 486 903	1 517 825	8 634		85 453	128 180		8.44
Rheinhessen-Pfalz	816 342	845 677	755		42 952	64 428		7.62
Unterfranken	568 969	587 121	0		28 186	42 279		7.20
Schleswig-Holstein	1 123 221	1 157 147	5 590		52 546	78 819		6.81
Berks. Bucks., Ox.	855 600	878 275	3 062		34 932	52 398		5.97
Lorraine	863 563	881 858	741		33 937	50 906		5.77
Highly vulnerable to cuts in defence industries and military								
Avon, Glous., Wilts	860 100	878 324	10 797	21 594	37 293	55 940	77 534	8.83

Sources: Col. (1): calculation based upon Eurostat data (see Section 5.1).
Col. (2), (3) & (5): EAG/CDE defence employment matrix.

Note: Shading indicates that a region is not highly vulnerable to cuts in a particular area (defence industries or military).

dustry or older, more traditional industry? Is the defence activity concentrated in isolated, and perhaps remote, subregions or are regions that are defence-dependent typically metropolitan regions with stronger interdependent local labour markets where the effects of defence cuts will quickly be diffused? These are the key questions relating to the regional impact of and response to defence cuts.

6.2. Review of regional multipliers

The income and employment effects of defence industrial activity as well as military bases are, in fact, greater than their direct employment figures suggest. The companies which supply both are often highly (and sometimes totally) dependent upon either defence companies or military installations. The process whereby indirect jobs and income associated with supplier companies are generated or lost as the result of direct defence employment is known as the multiplier effect.

Multipliers may vary among regions for two reasons. The first is region-specific; if it is highly integrated into the economies of neighbouring regions, the multiplier may be smaller, as certain economic activity 'leaks' into neighbouring areas and reduces the full impact of either increases or decreases in economic activity. The second reason is industrial or base-specific. The more self-sufficient a defence company (i.e. certain industries tend to build entire systems and some tend to have many subcontractors), the lower the multiplier. Likewise, the less a military base relies upon a local economy for provisions, the smaller the impact of cuts on the local economy. (These factors have not been taken into account in the hypothetical cases presented below.) Multiplier effects can be calculated by one of two ways: examining the additional income generated as the result of direct employment in defence or by examining the additional employment generated. Much of the existing empirical work on multipliers in general tends to focus on income multipliers, but there have been many recent estimates made regarding the employment multiplier. Some of these estimates relate to defence industries and some to the military, as the multipliers often differ between the two categories. We have found that, in general, defence industrial employment multipliers are greater than military base employment multipliers - and may range any where from 25% to 90% greater. From a review of recent available data on defence multipliers, the following range of multipliers were calculated for the two categories:

[Defence employment multipliers]

	Range
Defence industries	1.75–2.00
Military	1.10–1.50

Where the multipler = (Δ = change in)

$$\frac{\Delta \text{Direct} + \Delta \text{Indirect}}{\Delta \text{Direct employment}}$$

The reasons why the two categories of defence employment differ in terms of their multipliers are first, that local service employment partly depends on the incomes generated in defence (i.e. demand push effects) and second, that defence industries often have multiple suppliers located near them, who often depend heavily on a single or a few defence company customers (i.e. a supply generated effect). The multiplier (which combines both effects) will be large when one large defence company is the major employer in a region, such as BAe in Kingston, United Kingdom where a multiplier of 1.5 was calculated from the data presented. [6] As a result of a closure in this area, a recent study estimated that 10% of manufacturing employment would be lost between 1991 and 1997. An IFO study on the impact of direct employment in western Germany revealed that for every direct job in defence industries there were 1.1 indirect jobs created (multiplier = 2.1). [7]

In the City of Wirral, England (County of Merseyside), shipbuilding and related companies account for 12% of manufacturing employment in the region. An almost equal number of individuals are employed in supplier companies which are directly dependent on the shipyards, yielding a multiplier of 1.96. [8] Somewhat smaller

[6] 'Changing the Future', Aztec Training and Enterprise Council, January 1992.
[7] 'Conversion in the FRG', IFO, February 1992.
[8] The impact of reduced military spending on local economic activity, Association of District Councils and Association of Metropolitan Authorities.

multipliers have been calculated as well; for example Eurometal NV of the Netherlands is responsible for 0.33 indirect jobs for every direct job in the area (multiplier = 1.33). And in Medway, Kent, GEC Avionics generates 0.27 indirect jobs for every direct job (multiplier = 1.27). [9]

The impact of a military base in a small rural community can be significant as well, but in general, the data indicate that the number of indirect jobs generated from bases is not as large as the number created by defence companies. For example, many American bases located in remote rural areas of western Germany are practically self-sufficient. Besides the local civilians directly employed on those bases, there may be little additional impact. Conversely, on other bases where entire towns are dependent on a single base for employment — both direct and indirect — the multiplier effect may be as high as 2. [10] More often the multiplier is somewhat smaller than that; for example, in East Anglia, the multiplier associated with the US Airforce Base there is 1.15. [11] In the Netherlands, multipliers for different types of establishments were estimated, ranging from 1.1 to 2.1. In general, naval bases were at the higher end of the range and rural army and airforce bases were at the lower end. The average for all bases in the Netherlands was 1.4. [12]

Hypothetical impact of defence cuts on direct and indirect employment

The present study has measured defence dependence of NUTS II regions by direct employment only; it has not taken indirect employment into account. In the event of defence cutbacks, however, indirect employment would be affected as well as direct. In order to get a rough idea of the size of such impacts on employment in defence-dependent and highly vulnerable regions, we calculated what total (direct and indirect) employment would be per region. In doing so, we applied the higher end of each of the multiplier ranges (2 for defence industries and 1.5 for military) to the relevant category of employment in the highly vulnerable regions (i.e. in Table 6.1, multiplying Column (3) by 2 and/or Column (5) by 1.5). It should be stressed that these are 'worst case' estimates, providing an estimate of the upper limits of the regional impact of defence cuts since implicitly all defence activity is assured to be cut.

The resulting number of direct and indirect defence employees appears in Column (4) or (6) or (7), depending upon whether a region is dependent on defence industries, the military or both. The total number of defence employees affected is then divided by either the working population (for defence industrial dependence) or aggregate employment (working population plus the military for military dependence or dependence on both industry and the military). Column (8) gives the resulting percentage of a region's working population which could be affected by defence cuts. This hypothetical analysis is more complicated than Column (9) suggests, as, especially in the case of the military, job losses in one region may not appear in that region at all. Troops may move back to their home countries or towns or unemployed defence industrial workers may migrate to different areas. No matter where they move to, the figures in Column (9) suggest that for the most highly dependent regions in each category 12.8% of the working population in Cumbria could lose their jobs in the near future; Trier could lose 13.1% and Avon, Gloucestershire, Wiltshire could lose 8.8%.

6.3 Study implications for regional policy

Flexibility in area designation

To a significant extent regions where defence industries are concentrated and which are therefore potentially vulnerable to the economic effects of reduced defence expenditures are not presently eligible for aid. The reasons for this are not hard to understand. Important elements of defence industries are new industries which have experienced substantial growth during the cold war

[9] The impact of reduced military spending on local economic activity, op cit.
[10] Greenwood, *The economics of US bases and facilities in Europe*, p. 89.
[11] The impact of reduced military spending on local economic activity, op. cit.
[12] Paul Rusmann, Dutch defense economist.

era and brought prosperity to their regions. Typically regions in which such activities were concentrated were not those associated with industrial decline. Some defence sectors — such as naval shipbuilding, small arms or armoured vehicles — used traditional skills and are concentrated in older 'metal-bashing' or engineering areas, but even within these regions, the defence industries were not always in the 'traditional', or less successful parts.

The 'new' industries associated with defence — electronics or the aerospace industries, for example — have been concentrated in new and successful regions or subregions; mainly in what might be called advanced metropolitan regions. There are many regions or subregions which are geared to specialized defence sectors and which are dependent and now appear highly vulnerable. It is even possible that some entire 'new' industrial sectors, such as microchip manufacture, might be vulnerable. New defence industries are often concentrated in regions not usually considered to be problematic and are therefore not covered by Objective 2. Even where defence industries are heavily represented in declining industrial regions designated for aid under Objective 2, frequently the concentration is in subregions not designated.

The following table demonstrates that even though some NUTS III regions which contain defence activity (defence industrial or military) are totally covered by policy instruments, there is a high percentage with no coverage whatsoever. Of NUTS III regions with concentrations of defence industrial activity (in dependent NUTS II regions), only 15% are either totally or partly covered by Objective 2 instruments; 27% of these NUTS III regions are actually partly covered by Objective 5b instruments, while 49% are not covered by any objective instruments.

Table 6.2. Number of NUTS III regions within dependent NUTS II regions eligible for Objective 1, 2 or 5b assistance

Objective	Eligibility	Defence industries	Military
1	Eligible	3 (or 5%)	27 (or 23%)
2	Totally eligible	2 (or 4%)	3 (or 3%)
	Partially eligible	6 (or 11%)	8 (or 7%)
5b	Totally eligible	0	9 (or 8%)
	Partially eligible	15 (or 27%)	8 (or 7%)
2 and 5b	Partially eligible	2 (or 4%)	1 (or 1%)
1, 2 and 5b	Not eligible	27 (or 49%)	59 (or 51%)
	Total	55	115

Source: EAG, CDE and DG XVI.

There is greater coverage on the military side as 23% of NUTS III regions with military concentrations (within dependent NUTS II regions) are eligible for Objective 1, 11% are totally or partially eligible for Objective 2 and 15% are either totally or partially eligible for Objective 5b. However, this still leaves 59% of NUTS III regions in this category with no objective coverage at all.

In terms of areas of eligibility, then, the impact of defence cuts has radical implications. A substantial proportion of the most dependent areas are outside existing designated areas. Effective reaction by the Community — where it is necessary — must therefore be flexible. Just as Rechar designated rural mining areas so, should any Community initiative be deemed necessary in the face of defence cuts, new areas may have to be designated. Such areas may typically be current areas of 'new' but defence-dependent industry or non-problem rural areas with economies heavily dependent on military personnel. In addition, new subregions might need to be designated. The need

for flexibility in area designation is reinforced by the difficulty of predicting the size and incidence of defence cuts. If one programme were cut — perhaps, for example, the European Fighter programme — the regional implications would be very different from cuts in another large programme; helicopters or radar, for example.

Regional policy instruments are one means of assisting regions adversely affected by defence cuts. There may be other instruments in addition to or other than regional policy to assist affected regions, but the size of the problem will depend to a significant degree on the size of regional employment cuts in defence. This will determine if the size of the problem is sufficiently large to merit regional policy or other support (like industrial policy or technology policy) or whether a solution could be found within the military domain.

Policy instruments and policy coordination

Not only is there a need to be flexible in regional designation for aid in the face of defence cuts but the implications are that there should be flexibility of policy instruments and also policy coordination. Existing frameworks within, for example, Community initiatives — and existing instruments — are extensive. Current structural Funds regulations already permit the application of a broad range of policy instruments under the various objectives (including 5b). Flexibility will be required both at the Community level, i.e. items of territorial eligibility for and availability of the Funds' resources, and at the national level, i.e. in the drafting and implementation of programmes including actions that sometimes may lie outside the precincts of national regional policy.

The new industrial areas may pose a problem of eligibility, but generally the labour force involved tends to have marketable skills and is located in more buoyant and adaptable local economies. The situation needs to be carefully monitored but the most serious problems of adjustment are likely to occur where defence industry cutbacks are in presently prosperous pockets of older declining industrial areas and affect 'metal bashing' or traditional skills. This will be especially true where the labour force affected is older. Much of the industrial infrastructure associated with such industrial complexes is likely to be highly specialized and may pose serious problems of site decontamination. Much of the labour force involved is not likely to be readily re-employed without substantial retraining. There will be a need for a wide range of policy measures directed to environmental improvement, site decontamination and clearance and reskilling as well, perhaps, as assisted mobility.

Reductions in military personnel, on the face of it, might seem likely to pose less intractable problems. There may be exceptional sites which pose serious problems but much decontamination that could be potentially present will be dealt with by military personnel. Bases generally have quite low densities of development and can be converted to industrial uses or to housing or even recreational uses quite readily. In many of the areas concerned, land for development is already at a premium and the closure of military bases may be perceived as an opportunity — even a commercial opportunity — rather than a problem. It may be desirable in such cases for regional policy to favour maintaining military bases in rural areas and to encourage the scaling-down or even the closure of military facilities in urban or other more congested areas. The extent of the opportunity will depend, in part, on the buoyancy of the local economy, the level of cuts in local defence industries, and whether the loss of income and employment from the base closure is substantial in relation to current levels. Any of these circumstances may make conversion more difficult to secure. It may be necessary to balance certain economy-seeking intentions of the military (e.g. the military may wish to close certain smaller rural bases and consolidate closer to a major urban centre) with regional economic and social objectives.

The novelty — in policy terms — of reductions in military personnel is likely to be the extent and comparative isolation of the sites involved, the character of the labour force involved (predominantly young, less educated but disciplined and male) and the character of the local

economies concerned. These economies are often much more rural and more isolated than is the case with major industrial job losses, and beyond the sphere of influence of major conurbations where training facilities are concentrated and where job opportunities are most diverse. Although nearly all conscripts and most regular personnel are likely to disperse if bases close, the civilian employees are likely to remain, as will those in the locality who are indirectly dependent on the base for their livelihood. Thus, successful conversion will frequently depend on *in situ* delivery of training and redevelopment of the sites involved. This may require instruments and skills which are not presently a common feature of regional policy. It will also require a level of resourcing and a range of policy instruments not envisaged for regional assistance under Objective 5b.

As well as flexibility in regional designation, therefore, there is a need to be flexible with policy instruments. The range of relevant policy instruments and agencies is likely to be considerable. The policy instruments listed below can all be used within the framework of current EC regional policy; they only need to be included in the regional development plans and programmes proposed by the Community Member States.

Regional policy instruments, sectors and agencies

(i) Traditional regional policy instruments/agencies;
(ii) Training and employment;
(iii) Social policy;
(iv) Technology policy;
(v) Industrial policy;
(vi) Environmental policy;
(vii) Land redevelopment.

In reality, land redevelopment or recycling policy can only be implemented when a particular site is in the public domain (under a public agency). This could pose problems especially in urban areas where much contamination has occurred as the result of defence establishments.

This, in turn, implies a need for local coordination, given the relative isolation of many defence establishments. Some of the types of policy identified above will be more generally relevant than others. For example, environmental policy may be relevant where large tracts of land are released or in some industrial closures where there are serious pollution and waste disposal problems, but environmental policy is likely to have less in general to contribute than regional, social, industrial or technology policy.

The particular contribution of different policy areas will depend crucially on which facilities are in fact closed. In the case of a whole high technology sector which could be vulnerable technology policy would be central. It would also be important in many other areas of the 'new' defence industries which might be vulnerable. Effective response to base closures, especially in more isolated contexts where there was significant direct and indirect civilian employment, would depend more on training, social and regional policies with land redevelopment skills also being important. There is thus a need both for flexibility in the application of policy sectors and instruments and a need for (local) coordination of those policies.

New policy challenges: technology transfer and industrial conversion

In some parts of the Community the development of defence industries has been partly motivated by a desire to achieve technology transfer and economic development. At the risk of oversimplification, the view has been taken that given national and European defence spending there were benefits to regional and national economies of developing a high technology defence capability. This most commonly took the form of a technology transplant — a local facility of an international, high technology defence firm — or subcontracting. It has been suggested, for example, that a significant part of the electronics industry in Spain was originally developed on the back of defence industries. In Portugal it is suggested subcontracting in the aerospace industry is seen as potentially playing a similar role; i.e. giving access to new imported technologies and skills which have spin-off benefits to civilian industry.

In as far as this form of technology transfer has been important in the economic development of once lagging regional or national economies two questions arise. The first is, what will be the reaction of governments in these countries to an increasingly tight defence market? The second is, if defence spending ceases to play this role of technology transfer, how and should it be replaced?

The first of these questions is relevant since it could influence the extent to which any defence cuts create more serious and deep-rooted problems in the advanced industrial regions. If the reaction of governments in the less developed countries of the Community is to reinforce the position of their high technology defence industries, this would make the overall defence market even more competitive and make the problems of the advanced industrial regions more intractable.

The second question potentially poses an even greater challenge to Community and national (regional) development policies. Are there other ways, even more effective ways, of achieving technology transfer? In principle one might expect an indirect route — such as the use of defence spending — to be less effective than a direct one such as the establishment of new industries, transplants, etc. The problem is that defence spending, at least until the full implementation of the Single European Act, has been an 'acceptable' method of achieving technology transfer. It has been acceptable both in terms of international norms of behaviour, in terms of international trade agreements and within the framework of Community rules. It may be for these reasons rather than because it is intrinsically efficient as an instrument of technology transfer that it has been adopted. The challenge for Community policy is to define conditions and rules which would facilitate technology transfer by other means. Again many different policy areas might need to be involved. Apart from those already identified there might be implications for the rules governing competition.

There are virtually no examples in the Community of true industrial conversion from defence to civil applications, although many companies are pursuing strategies of diversification. Issues of conversion are discussed more fully in the Appendix but may pose as additional policy challenges in the future. The interaction of policy initiatives with corporate strategies will be key to this.

Land redevelopment

Much defence-related activity is land extensive. The extreme case is exercise areas (which have often become, because of their protection from the environmental ravages of intensive farming, important wildlife habitats) but bases are also generally land extensive. Even defence-related industry tends to be more land intensive than civilian equivalents because of the degree of shelter that has been enjoyed from market pressures and rising land prices.

As was noted above, in many regions this may be as much of an opportunity as a problem but an opportunity which it will only be possible to exploit if the necessary skills are applied and policy is adapted to take account of the particular problems involved. These problems include some traditional concerns of regional policy, such as infrastructure provision and access to capital (the EIB could have a significant role) but they also include other skills not so familiar to Community policy. At the local level there is increasing familiarity with land redevelopment skills in the policy-making community. Urban policy and local economic development initiatives have increasingly emphasized public-private partnership approaches. But quite specific skills are needed. In addition, again as noted above, in redeveloping defence land, there are likely to be widespread problems of contamination.

Land contamination is a more serious problem than is commonly realized. For example, the costs of clearing the mineral oil residue from the soil of a longstanding vehicle depot might be so high as to entirely eliminate development profit. Defence industries have frequently occupied the same site for extended periods and used toxic chemicals or minerals. The costs of making such sites safe for redevelopment may be high. This is to say nothing of the extreme cases of establishments where there might be changes from ammunition or nuclear contamination. In these situations, the industrial con-

cern which originally caused the pollution might be responsible for its removal, but the precise responsibility will rest with whomever the parties to a sale of industrial sites decide will bear that responsibility (this may be complicated if the party responsible is either bankrupt or long gone from the site). For military sites the application of the widely accepted 'polluter pays' principle would suggest that the costs of closure should include the costs of decontamination. A policy principle that might be invoked is that national defence budgets should bear such costs. It is not easy to see how such a policy could be applied to industrial sites, however, so there could be a case for any Community initiative to include a budget line for site decontamination.

Summary

In assessing the regional impact of and response to defence cuts it is essential to take into account the adaptive capacity of the regions affected. The factors relevant to a measurement of adaptive capacity include regional economic structure, dependence on older resource-based industries, the natural rate of regional population growth, changes in economic potential resulting from European integration and falling transport costs, unemployment, percentage of adolescents in education and training, and infrastructure endowment.

The process whereby indirect jobs and income associated with supplier companies are generated or lost as the result of direct defence employment is known as the multiplier effect. Multipliers vary between regions as a result of both region-specific factors and industrial or base-specific factors. However, a review of recent available data indicates multipliers in the range of 1.75 to 2.00 for defence industries and 1.10 to 1.50 for military bases.

A hypothetical 'worst case' scenario was estimated for each dependent region classified as highly vulnerable to defence cuts. This estimated the possible impact of such cuts on direct and indirect defence employment.

Any policy response to these changes requires flexibility on two fronts; area designation (since many dependent regions and areas of concentrated defence activity are not currently eligible for aid under structural Funds objectives) and policy instruments (since new issues will be confronted that are peculiar to defence cutbacks). Local policy coordination will also be important, given the relative geographical isolation of many defence establishments.

The issue of the use of defence industries to import new technology and skills (i.e. technology transfer) has to be addressed. The policy challenge here is to define the conditions and rules which would facilitate technology transfer by other means, and to consider the competitive implications of such a development.

Finally, the issue of land redevelopment implies the deployment of specific skills in any new policy initiative. Much defence-related activity is land extensive. It may also involve problems of land contamination (for example from diesel fuel, toxic chemicals or minerals, as well as from discarded ammunition or nuclear-related activities). Consideration should be given to the costs likely to be incurred in decontaminating vacated sites, and the appropriate funding of such costs.

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7.2. Data sources

The following table lists the primary sources for direct employment in defence industries and employment in the military. Where it was necessary to break national or NUTS I data down to the NUTS II level, the basis upon which a breakdown was made is described as well.

Table 7.1. Sources for defence, industrial and military employment

Country	*Defence industries*	*Military*
Belgium	GRIP (peace research organization). There are no official estimates of defence industrial employment. The GRIP estimate is based on interviews with defence companies and published sources. National data was broken down by ACDA data. NUTS II breakdown is by industrial employment.	MoD and W. Struys (country defence experts).
Denmark	MoD and T. Pedersen (country defence expert).	MoD.
France	MoD for national total; broken down by percentages given in dual use report and regional industrial employment given by percentages in DG XVI's 'Regional Profiles', March 1991.	MoD and H. P. Hebert (country defence expert).
Germany	National estimates from IFO. Broken down by company employment data from CDE's database of companies.	MoD (by base, aggregated up to NUTS III, NUTS II, NUTS I and country). US forces from the Pentagon; other forces from Sharp, 'Europe after an American withdrawal'.
Greece	MoD (provited at the NUTS II level).	MoD for domestic and foreign forces as well as domestic civilians on bases (provided at the NUTS III level).
Ireland	No defence industries.	MoD.
Italy	Two published sources provided data at the NUTS II level: M. Pianta and G. Parani, 'L'industria militare in Italia', 1990 for private defence industries and Catalano, 'L'effecienza dell'area industriale della Difesa', Ministry of the Treasury, Rome 1990 for MoD defence industrial employment. (There are no official data.)	Published source at the NUTS II level: 'Quello che i Russi gia sanno e gli Italiani non devono sapere', IRDISP, 1983 for domestic forces. Foreign forces: British defence attaché in Rome, Pentagon and Sharp, op. cit.
Luxembourg	CDE company database.	MoD.
Netherlands	National total is an estimate based on company reports, publications and interviews. Breakdown is based on MoD's regional contract database and Hoffmann (country defence export).	MoD and Hoffmann (country defence expert). Foreign forces from Sharp, op. cit.
Portugal	There are no official data. The estimate is based on company information collected by the MoD.	National data from MoD estimate. Broken down by estimates per military unit in known locations. Foreign forces from Sharp, op. cit.
Spain	Data based on a survey of companies, publications, interviews and regional authorities.	National figure from MoD; broken down by clerical staff data from General Secretary of Labour and Statistics, 1988, published February 1991. Foreign forces data Sharp, op. cit.
United Kingdom	Statement on the Defence Estimates, 1991 for MoD UK standard (NUTS I) regions. NUTS II breakdown based on company data from CDE database.	Domestic forces from MoD; civilians on naval bases from statement on the defence estimates. Other cilivians from MoD. Foreign forces from Sharp, op. cit.

MoD: Ministry of Defence.

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