COMMISSION OF THE EUROPEAN COMMUNITIES
Directorate-General for Regional Policies

REGIONAL DEVELOPMENT
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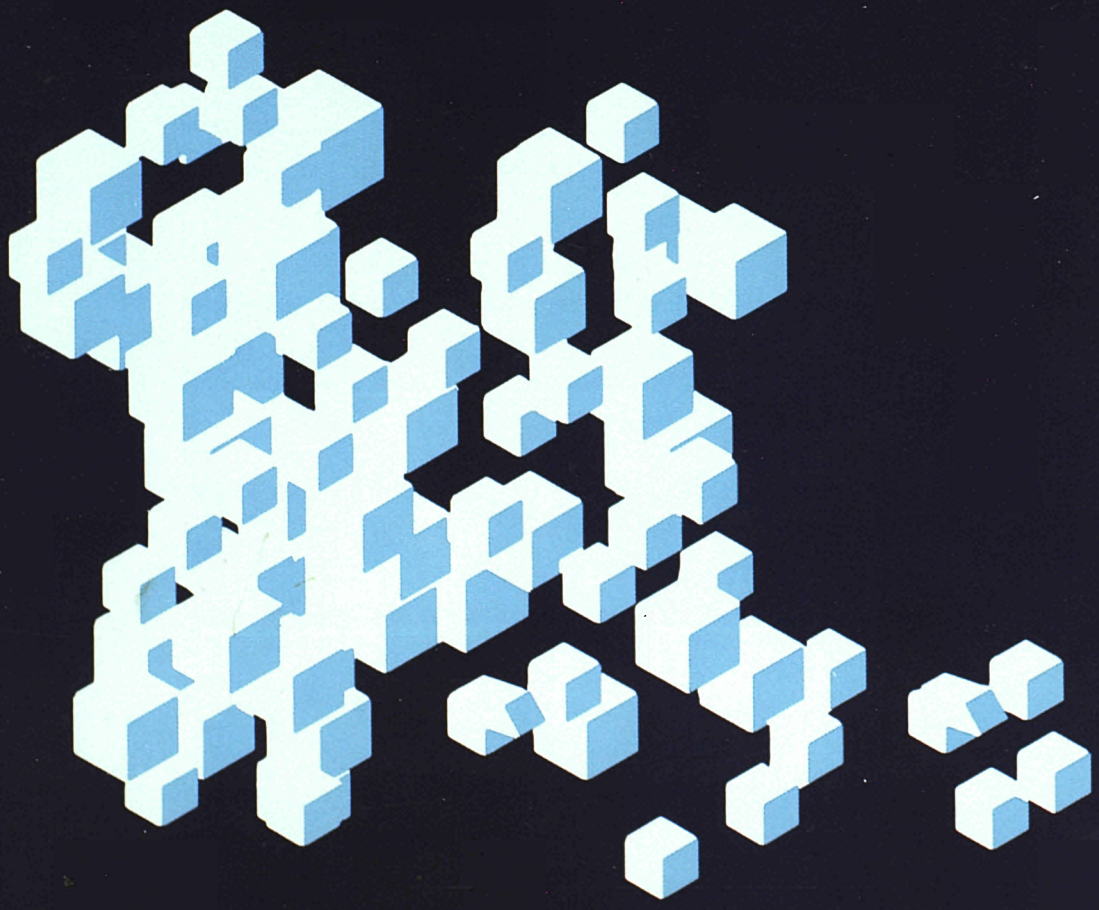

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Demographic evolution through time in European regions
(Demeter 2015)

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Demographic evolution through time in European regions (Demeter 2015)

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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.

DEMOGRAPHIC EVOLUTION THROUGH TIME IN EUROPEAN REGIONS (Demeter 2015)

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A UNIFIED GERMANY

SUMMARY

1. Context

Community Regional Policy is aimed at reducing socio-economic disparities between regions by promoting the economic development of lagging regions and the reconversion of industrial areas in decline. The size and composition of population and their long-term developments are key variables in a region's development potential. Developments in these variables also determine inter alia regional job requirements and infrastructures needed.

The third periodic report on the situation and development of regions demonstrated that demographic developments constitute an important determinant of labour force growth. These developments varied substantially among regions through the 1980s and will continue to do so in the 1990s and probably also in the more remote future. For that reason an insight into future long-term demographic trends on the regional level is a requirement of an efficient and forward-looking regional policy.

For some Member States, population projections on the regional level have been made, often by means of elaborate demographic models. As these projections are based on different assumptions and use different elements, they are not comparable, the less so because their time horizons also vary. For some countries, no projections are available at all.

In 1985/1986 a study was carried out by the Netherlands Economic Institute focusing on population and labour-force projections on the regional level. These projections have been obtained by using the projection model DEMETER that treats all countries in the same way and on the basis of the same set of elements and assumptions. The present report serves as an updating of the previous results and gives

projections for 164 regions[1)] in the EC-12. The base year is 1985, the most recent year for which sufficiently detailed and reliable data for all countries are available. The projection period covered is 30 years i.e. up to 2015.

2. Method

2.1. Two layers

The ultimate aim of the Demeter project is the projection of regional population developments for which the national projections serve as a framework. The analytical advantages of this two-layer approach are two-fold. First, by fitting the regional projections within the national total, the consistency of the system is guaranteed. Secondly, on the national level, statistical sources are much more satisfactory and reliable and produce more detail. This implies, however, that for both layers essentially the same procedure has to be followed using only information available on both the national and the regional levels for all countries.

2.2. Projections on the national level

The point of departure for the projection on the national level is the initial population at time t split up in males and females and divided into 5-year age brackets. The choice for 5-year age brackets had to be made because on the regional level no more detailed population data could be gathered. The implication is that projections

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1) There are currently 176 level II regions of the Community following a marginal revision to the Nomenclature of territorial units (NUTS) published in November 1989. For data availability reasons the present forecasts of population and labour force are based on the former situation.

can only be made for five-year periods, during which each population cohort just moves into the next group.

The elements constituting the course of future national population developments are death, birth and international migration.

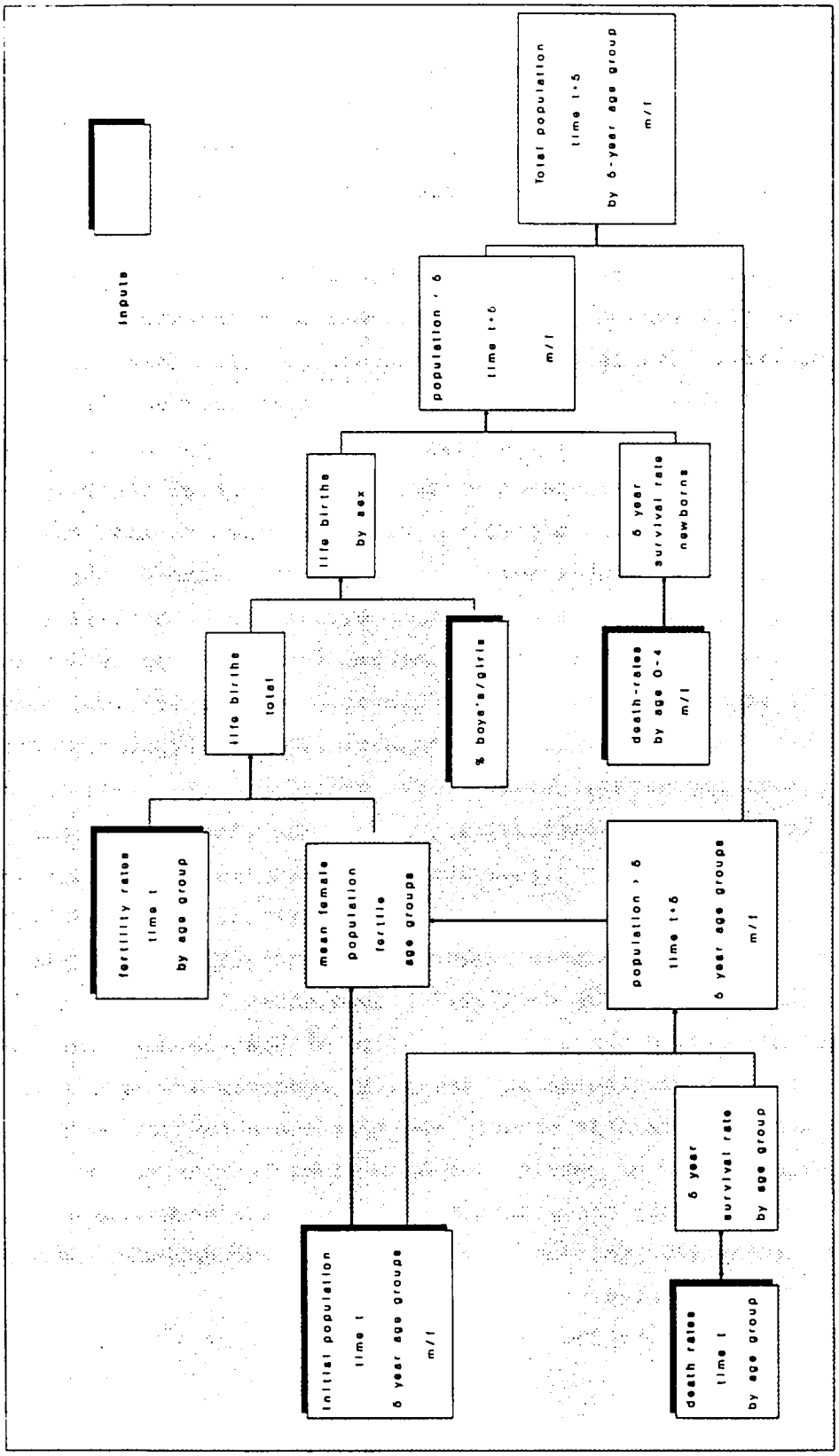
Death rates in the developed world of Western Europe show some variance over time but are in general fairly stable. Therefore these rates have been assumed to remain stable at the levels prevailing in the base year 1985.

Unlike death rates, fertility rates are marked by a non-stable pattern. For this reason, two variants have been developed. The 'stable fertility' variant assumes that age-specific fertility rates of 1985 are supposed to be maintained. The 'projected fertility' variant features non-stable age-specific fertility rates. This second variant served as a framework for the regional part of the study.

As to international migration, the assumption is made that in line with recent observable developments net migration in the countries of the EC will be as close to zero as to be negligible. As this might seem a rather strong assumption it must be pointed out, that at the prevailing low levels of international migration, future developments are highly determined by mortality and fertility patterns of the present population. However, two exceptions were made to the decision to ignore international migration. The first one regards Germany and was due to political changes in East-European countries leading to a great number of inhabitants emigrating to West-Germany. For the period 1985-1990 this number amounts to 1.172.000 people of which 460.000 from the DDR and 712.000 from other East-European countries. Related to the total population of West-Germany this means a growth of about 2%. The second exception concerns Ireland. Already for a number of years this country has been characterized by a considerable outflow of people. For both countries the decision was taken to consider only the international migration occurring during the period 1985-1990. For the 1990-2015 period the non-migration option was re-introduced.

The projection method is schematized in figure 1.

Figure 1. Projection method - national level



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2.3. Projections on the regional level

The projection method for regional population is essentially the same as the one on the national level with one important addition. Interregional migration plays a large role in the development of regional population, so it had to be explicitly taken up in the model. The set-up is given in figure 2.

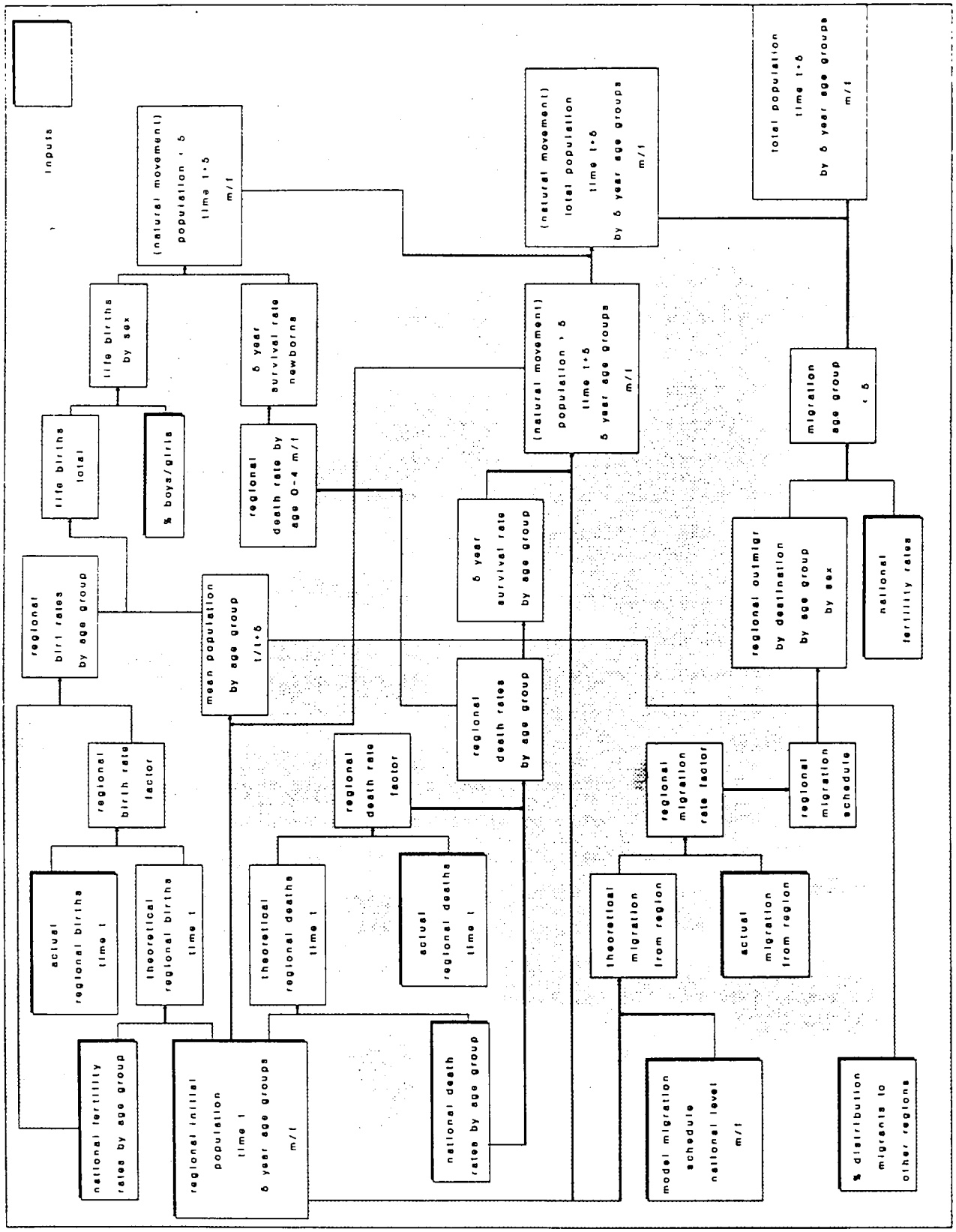
As regional death and fertility rates are not the same for all regions nor the same as the national figures a method has been developed to generate them. By applying the national death and fertility rates to the relevant regional population age groups a theoretical figure can be calculated for total death and total birth at time t. Comparing this figure to the observed reality a regional factor is derived which is used to make a correction for each region on the national death- and fertility rates. These rates then are used for the projection of the natural movement of the regional populations.

For interregional migration a submodel was developed, based on the concept of model migration schedules and taken up in figure 2.

Interregional migration forms the most uncertain factor as it is not only determined by demographic and economic circumstances but by policy measures as well. Where on the national level the absence of migration tends not to have serious consequences for the projection results, this is not the case on the regional level.

The assumption was made that a stable percentage of each age bracket moves out of a region each year, thus making the total outflow dependent on the composition of the regional population. The spread of these outflows over other regions and thus the inflow by region is determined by the 1985 patterns.

Figure 2. Projection method - regional level



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3. National results

According to the results of both fertility variants, in the long run each EC-12 country (with the exception of Ireland) will show declining populations. The extent of this decline is greater than the one projected for the same period in DEMETER 1986. In general, the stable fertility variant produces slightly higher population figures than the variant based on projected fertility. In table 1 annual average rates of growth are presented for two successive periods (based on projected fertility).

Table 1. Annual average compound rate of growth of population (projected fertility)

Country	Total			Male			Female		
	1990-2000	2000-2015	1990-2015	1990-2000	2000-2015	1990-2015	1990-2000	2000-2015	1990-2015
Belgium	-0.14	-0.41	-0.30	-0.16	-0.43	-0.32	-0.13	-0.38	-0.28
Denmark	-0.14	-0.40	-0.30	-0.16	-0.44	-0.33	-0.12	-0.36	-0.27
France	0.21	-0.04	0.06	0.19	-0.07	0.03	0.23	-0.00	0.09
Germany	-0.28	-0.75	-0.56	-0.22	-0.77	-0.55	-0.34	-0.73	-0.57
Greece	-0.04	-0.31	-0.20	-0.04	-0.29	-0.19	-0.05	-0.33	-0.21
Ireland	0.49	0.55	0.53	0.48	0.54	0.51	0.51	0.57	0.55
Italy	-0.07	-0.41	-0.27	-0.09	-0.43	-0.29	-0.06	-0.39	-0.26
Luxembourg	-0.22	-0.61	-0.45	-0.22	-0.68	-0.48	-0.21	-0.56	-0.42
Netherlands	0.26	-0.14	0.02	0.23	-0.19	-0.02	0.28	-0.09	0.06
Portugal	0.01	-0.22	-0.13	0.00	-0.21	-0.13	0.01	-0.23	-0.13
Spain	0.19	-0.08	0.04	0.18	-0.07	0.03	0.19	-0.05	0.05
United Kingdom	0.10	-0.09	-0.02	0.14	-0.08	0.01	0.06	-0.11	-0.04
EC-12	0.02	-0.27	-0.15	0.03	-0.29	-0.16	0.01	-0.26	-0.15

Apparently, after the year 2000 all EC-12 countries (except Ireland) will be confronted with negative population growth rates. If recent migratory movements in Germany (inward) and Ireland (outward) continue, perhaps at a somewhat reduced rate, this will imply some overestimation of the Irish population and some underestimation of the German population in the present forecast.

An important implication of declining or even slow growing populations is the shift in the population composition toward higher age groups. In all EC-12 countries the share of the young in total

population will decline in favour of the old. For the EC as a whole this means that 0-14 year olds constitute 15% of total population in 2015 vs. 20% in 1985. The percentage of the group 15-59 remains stable at 61%, but within this group the upward shift is clearly visible with those over 50, for example, increasing from 11,5% to 15,1% of the total population over the period. For some countries this shift to greying is more clearly in evidence as in others.

4. Regional results

The results of the national projections are highly reflected in the regional ones as the influence of national developments on the regions tends to be large. Nevertheless, population growth of decline within a country can vary strongly by region and thus cause a shift in the relative population concentrations. Map 1 shows the percentage change of the total population over the period 1985-2015 for all regions. As in this period the growth for the whole of the EC will be negative (-2.7%), the variance is quite large as shown in table 2, where growth for the top ten and the bottom ten regions is given.

The regional variations of the population growth or decline within a country are for the greater part caused by the effects of interregional migration. To establish the influence of this migration, regional projections based on the assumption of no interregional migration have also been carried out. The results of both projection methods have been compared, leading to a set of migration index figures. Map 2 reproduces the outcomes.

The map illustrates that especially in the metropolitan areas within Western Europe the outflow of population considerably outpaces the inflow, whereas coastal areas and regions with a tight labourmarket appear to be attraction areas.

Table 2. Regions with the most extreme population growth (positive and negative) during the period 1985-2015 (including interregional migration)

	Population (absolute) 1985 (x1000)	2015 (x1000)	change (%)
FLEVOLAND	170	279	63,6
NISIA ANATOLIKOU AIGAIOU	364	514	41,3
DEVON, CORNWALL	1424	1831	28,5
MURCIA	987	1235	25,0
CAMBRIDGE, NORFOLK, SUFFOLK	1952	2404	23,1
LANGUEDOC-ROUSILLON	1985	2426	22,3
PROVENCE-ALPES-COTE D'AZUR	4033	4858	20,5
CANARIAS	1416	1681	18,7
DORSET, SOMERSET	1067	1264	18,5
NORTHERN IRELAND	1554	1837	18,2
PIEMONTE	4412	3548	-19,6
RHEINHESSEN-PFALZ	1801	1410	-21,7
SAARLAND	1051	790	-24,8
ARNSBERG	3577	2685	-24,9
ANATOLIKI MAKEDONIA	397	297	-25,2
HAMBURG	1592	1178	-26,0
LIGURIA	1778	1313	-26,2
ALENTEJO	559	404	-27,8
BREMEN	666	477	-28,4
IPEIROS	441	264	-40,1

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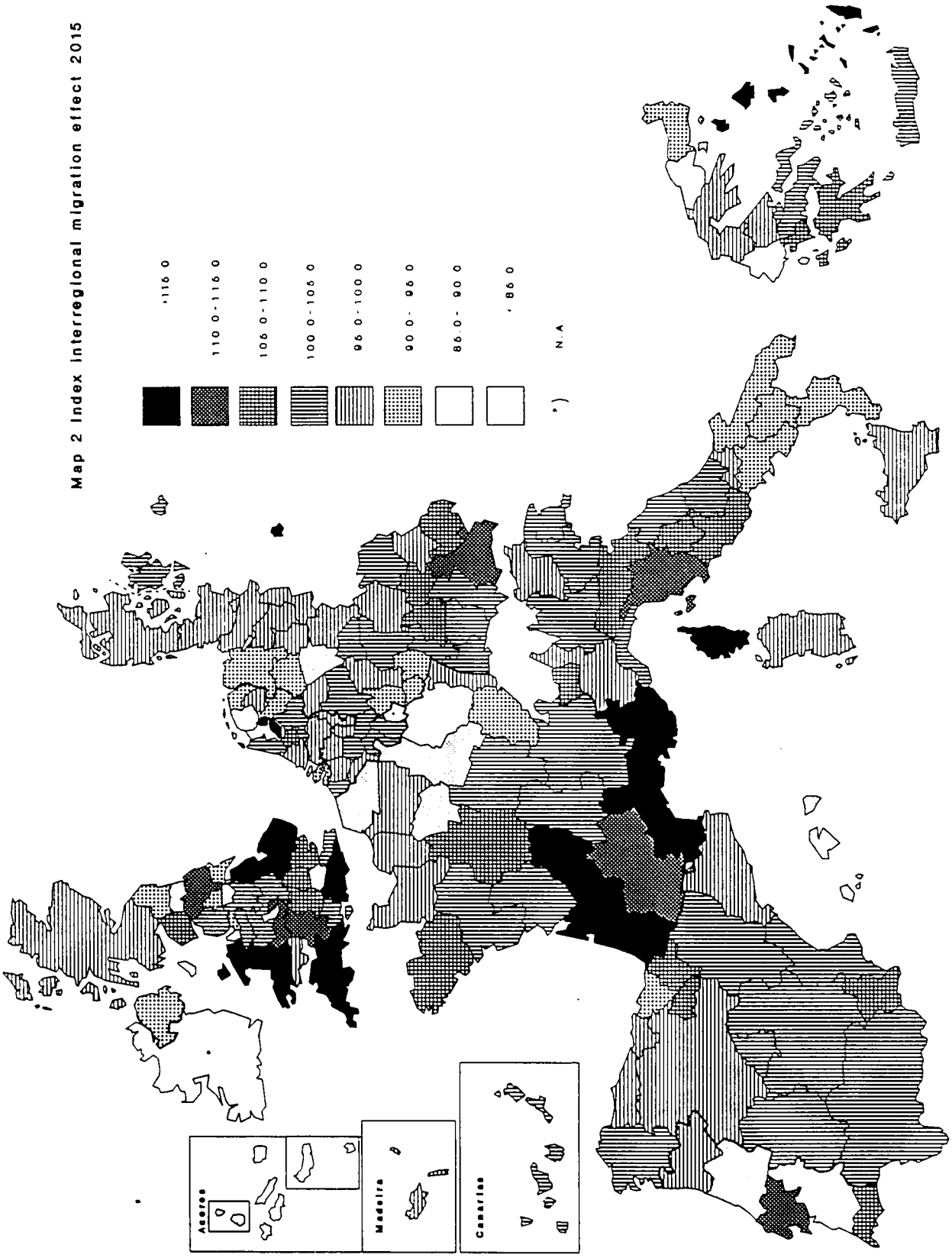
Map 1 Population growth, percentage change 1985-2015
Acores
Madeira
Canarias
> 30 0
20 0 - 30 0
10 0 - 20 0
0 0 - 10 0
-10 0 - 0 0
-20.0 - -10.0
-30 0 - -20 0
< -30 0
EC12 = -2.7


Map 2 Index interregional migration effect 2015
116 0
110 0-116 0
106 0-110 0
100 0-106 0
96 0-100 0
90 0- 96 0
86 0- 90 0
86 0
N.A.
Azores
Madeira
Canarias

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5. Labour force projections

One of the main features regarding population developments is the effect on labour force and consequently on the number of jobs necessary to maintain an acceptable level of employment opportunities. For this reason national and regional projected age specific populations were translated into active population by the application of age specific activity rates. A projection of these rates on the long term is beset with many uncertainties but can give an impression of the size of the pressure of labour supply on the regional level. For the medium term it can be assumed that trends in activity rates can be foreseen rather accurately.

A main issue for regional policy is the reduction of socio-economic disparities between regions. One of the key variables in this context is the regional unemployment level. A growing labour force is in need of an equally growing job capacity to maintain at least the present unemployment and is in need of a faster growing one to reduce it.

The present position of the regions in this respect can be assessed by combining the projected labour force growth for the period 1990-1995 with the unemployment rate prevailing at the start of the projection period. Regional unemployment levels for april 1989 were calculated by Eurostat[2)] following the ILO concepts used for the labour force sample surveys. For the EC12 as a whole unemployment at the beginning of 1989 amounted to 9.3% of the active population.

In table 3 the regions are grouped according to their positioning above or below this average and according to the projected labour force growth. Table 3A contains the regions with a projected labour force growth below the EC 12 average (0,25% per annum), whereas table 3B refers to regions with a growth above the average.

As to the pressure for job creation one can have differing opinions. Either the choice can be for the primacy of diminishing

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2) Greece 1987

present unemployment levels, or the emphasis lays on the integration of newcomers on the labour market. A combination of the two is probably most effective. Ranking of the regions depends on the choice made. In tables 3A en 3B the regions are ranked first according to their position with regard to labour force growth and next to prevailing unemployment levels, both in relation to the EC average.

Thus table 3A contains those regions where labour force growth is negative or below the EC average, while table 3B displays the regions with a higher than average labour force growth. It is clear that regions in the first column of tabel 3A are in a rather "favourable" position, while the last column of tabel 3B displays the regions in the most "unfavourable" position. For the columns in between the positioning is a matter of political choice.

Table 3A. Regional position regarding job requirements 1990-1995[a)]

Labour force growth rate,	Unemployment rate, 1989					
	Unemployment < EC12			Unemployment > EC12		
1990-1995	UNTERFRANKEN	-0.39	3.8	WEST MIDLANDS	-0.62	9.5
	OBERFRANKEN	-0.44	3.9	LIGURIA	-0.57	9.7
	DARMSTADT	-0.52	3.9	BREMEN	-1.22	10.9
	KARLSRUHE	-0.43	4.0	DURHAM, CLEVELAND	-0.37	11.3
	KOBLENZ	-0.62	4.6	SOUTH YORKSHIRE	-0.53	11.4
	RHEINHESSEN-PFALZ	-0.99	4.8	MERSEYSIDE	-0.69	14.0
	IPEIROS	-1.85	5.5	ALENTEJO	-0.84	14.5
	KASSEL	-0.61	5.7			
	TRIER	-0.58	5.8			
	LUENEBURG	-0.46	5.9			
< -.35	DETMOLD	-0.42	6.0			
	SCHLESWIG-HOLSTEIN	-0.51	6.7			
	ILE-DE-FRANCE	-0.42	6.7			
	ANATOLIKI MAKEDONIA	-0.76	6.8			
	GREATER LONDON	-0.69	7.2			
	KOELN	-0.54	7.3			
	HANNOVER	-0.64	7.5			
	BRAUNSCHWEIG	-0.67	7.6			
	MUENSTER	-0.56	7.8			
	ARNSBERG	-1.24	8.0			
	DUESSELDORF	-0.96	8.2			
	SAARLAND	-1.12	8.6			
	HAMBURG	-1.15	8.9			
	% of EC population	17.7			2.9	

Table 3A. Continue

Labour force growth rate,	Unemployment rate, 1989			
	Unemployment < EC12		Unemployment > EC12	
	LUXEMBOURG	-0.18	1.8	ANATOLIKI STEREA KAI	0.16	9.3
	STUTTGART	-0.13	2.9	UMBRIA	0.13	9.5
	TUEBINGEN	-0.01	2.9	LIMBURG	0.04	10.3
	SCHWABEN	-0.10	3.1	SCOTLAND	-0.05	10.4
	FREIBURG	-0.14	3.2	LORRAINE	-0.15	10.8
	OBERBAYERN	-0.07	3.5	LIMBURG	0.14	10.8
	CENTRO	0.13	3.5	CHAMPAGNE-ARDENNE	0.23	11.2
	THRAKI	-0.11	3.8	NORTH., TYNE & WEAR	-0.34	11.5
	HAMPSHIRE, ISLE OF WIGHT	0.03	3.8	LIEGE	0.09	12.7
	VALLE D'AOSTA	0.12	3.9	HAINAUT	0.19	14.9
	LOMBARDIA	0.12	4.1	GRONINGEN	0.24	15.0
	MITTELFRANKEN	-0.23	4.1			
	KENT	0.24	4.2			
	GIESSEN	-0.29	4.9			
	OBERPFALZ	-0.31	4.9			
	EMILIA-ROMAGNA	0.00	5.2			
	CUMBRIA	0.22	5.5			
-.35 - +.25	HOVEDSTADSREGIONEN	-0.21	5.8			
	THESSALIA	0.16	6.5			
	FRIULI-V. GIULIA	0.03	6.5			
	OOST-VLAANDEREN	-0.01	6.6			
	ZEELAND	0.24	6.7			
	PIEMONTE	-0.27	6.8			
	WEST YORKSHIRE	-0.18	7.1			
	MARCHE	0.15	7.2			
	BERLIN(WEST)	0.20	7.3			
	WESER-EMS	-0.25	7.5			
	VEST FOR STOREBAELT	0.24	7.6			
	DERBY-, NOTTINGHAMSHIRE	0.10	7.8			
	ANTWERPEN	-0.12	8.2			
	OEST FOR STOREBAELT	0.13	8.2			
	BRABANT	0.03	8.3			
	GREATER MANCHESTER	-0.24	8.7			
	GWENT, S, M, W-GLAMORGAN	0.05	8.8			
	HUMBERSIDE	-0.07	9.1			
	% of EC population	20.4			6.1	

a) Unemployment rates of the regions in Greece refer to 1987

Table 3B. Regional position regarding job requirements 1990-1995[a)]

Labour force growth rate,	Unemployment < EC12			Unemployment > EC12		
		Unemployment rate, 1989			Unemployment rate, 1989	
1990-1995	OXFORD-,BERK-,BUCK.SHIRE	0.42	1.5	MIDI-PYRENEES	0.57	9.4
	SURREY,W-SUSSEX,E-SUSSEX	0.68	1.8	CORSE	0.74	9.5
	ACORES	0.77	2.2	ZUID-HOLLAND	0.34	9.5
	BEDFORD-, HERTFORDSHIRE	0.63	2.4	BOURGOGNE	0.61	9.6
	KRITI	0.63	2.7	RIOJA	0.82	9.9
	TRENTINO-ALTO ADIGE	0.46	3.6	BASSE-NORMANDIE	0.55	10.1
	ESSEX	0.38	3.6	NOORD-HOLLAND	0.38	10.5
	NIEDERBAYERN	0.25	3.7	ABRUZZI	0.54	10.6
	HEREF. & WORC., WARW.SH.	0.67	3.9	BALEARES	0.43	10.6
	NORTH YORKSHIRE	0.45	3.9	AUVERGNE	0.36	10.6
	LEIC.-, NORTH.SHIRE	0.43	4.1	LAZIO	0.54	11.0
	AVON, GLOUC.-, WILTSHIRE	0.66	4.2	POITOU-CHARENTES	0.63	11.7
	WEST-VLAANDEREN	0.26	4.9	NAMUR	0.58	11.9
	VENETO	0.45	5.0	ARAGON	0.38	12.4
	SHROP-, STAFFORDSHIRE	0.29	5.1	PICARDIE	0.78	12.4
.25 - .85	ALGARVE	0.59	5.4	FRIESLAND	0.42	12.5
	ALSACE	0.36	5.7	HAUTE-NORMANDIE	0.63	12.5
	PELOPONNISOS KAI DYTIKI	0.74	6.2	GALICIA	0.78	12.8
	CHESHIRE	0.32	6.4	MOLISE	0.46	13.2
	LINCOLNSHIRE	0.64	6.6	NORD-PAS-DE-CALAIS	0.29	14.7
	KENTRIKI KAI DYTIKI MAK.	0.28	6.9	CATALUNA	0.68	14.8
	LANCASHIRE	0.25	7.0	CASTILLA-LA MANCHA	0.73	15.3
	DYFED,POWYS,CLWYD,GWYNED	0.75	8.1	NORTHERN IRELAND	0.83	16.7
	RHONE-ALPES	0.64	8.2	CASTILLA-LEON	0.41	18.0
	LUXEMBOURG	0.64	8.2	ASTURIAS	0.40	18.0
	TOSCANA	0.29	8.3	CANTABRIA	0.81	18.3
	DRENTHE	0.62	8.8	BASILICATA	0.55	20.0
	NOORD-BRABANT	0.44	8.8	PAIS VASCO	0.47	20.7
	FRANCHE-COMTE	0.43	8.9	EXTREMADURA	0.81	27.6
	OVERIJSSEL	0.48	8.9			
	LIMOUSIN	0.62	9.0			
	% of EC population	14.2			16.0	

Table 3B. continued

Labour force growth rate,	Unemployment rate, 1989 Unemployment < EC12			Unemployment > EC12		
	NORTE	1.14	3.4	GELDERLAND	0.85	9.4
	DORSET, SOMERSET	1.14	3.7	BRETAGNE	0.95	9.7
	CAMBR., NORFOLK, SUFFOLK	1.19	4.0	CENTRE	0.96	9.7
	MADEIRA	1.49	4.3	FLEVOLAND	2.81	10.8
	DEVON, CORNWALL	1.51	7.1	PAYS DE LA LOIRE	1.05	11.1
	NISIA ANATOLIKOU AIGAIOU	2.20	7.6	PROV.-ALPES-COTE D'AZ	1.05	11.6
> .85	LISBOA E VALE DO TEJO	0.91	8.3	NAVARRA	1.04	11.9
	UTRECHT	0.98	9.1	AQUITAINE	0.88	12.1
				MADRID	1.21	13.7
				PUGLIA	1.08	14.9
				LANGUEDOC-ROUSILLON	1.35	15.1
				COMUNIDAD VALENCIANA	1.22	15.8
				MURCIA	1.77	16.7
				IRELAND	1.39	17.2
				SARDEGNA	1.10	18.3
				SICILIA	0.89	21.1
				CAMPANIA	0.95	21.8
				CANARIAS	1.84	23.2
				CALABRIA	0.90	24.2
				ANDALUCIA	1.45	27.9
	% of EC population	4.1			18.6	

a) Unemployment rates of the regions in Greece refer to 1987.

The table is graphically displayed in map 3, which clearly shows that the problem regions in this respect are scattered all over Europe, but that apart from Ireland and the Netherlands the Mediterranean countries are in the most vulnerable position. Of course the size of the unemployment at the starting point (1989) is of main importance. The real pressure in the projection period is not all that certain as apart from the projected growth of the labour force a large role is played by developments of employment opportunities. In general one can note that these tend to go in the same direction as labour force developments, a certain amount of interdependency being present, but that the size of employment growth is smaller, thus leading to increasing pressure in those regions where labour force growth will be high.

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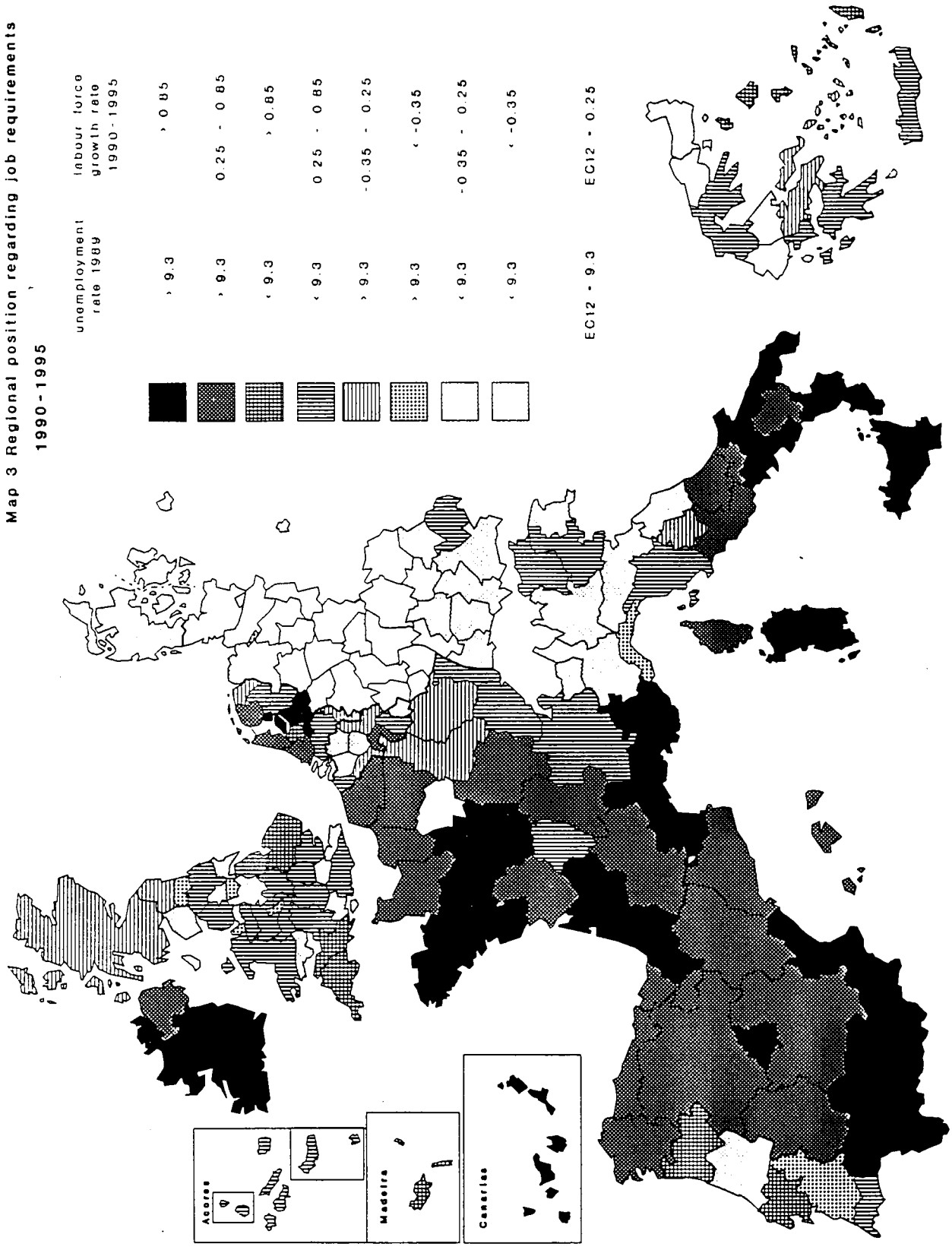
Comparing the regional classification in the table to the situation in 1986 it becomes clear that most regions remain in the same category, especially where it concerns the extreme cases.

Nonetheless a number of changes can be noticed. As the classification is based on two variables, labour force growth in the period 1990-1995 and the unemployment level at the start of this period, both can influence the position within the schedule. Moreover even when both factors remain unchanged, a change of position is possible as the classification is relative to the (changed) EC average.

As a result a number of German regions have switched to a class with lower than average labour force growth. The same applies to some Greek regions. In about half of the Spanish regions projected labour force growth (in 1986 below average) now is higher than the EC average. For many of the UK regions the same phenomenon occurs, while in between unemployment in large parts of the UK has dropped below average. In most of the French regions the unemployment situation is worse than in 1986 and now above average, while in the Netherlands unemployment dropped considerably. Finally a few Italian regions show higher unemployment especially in the lagging parts like Abruzzi an Molise. In general though the overall picture has not changed much.


Map 3 Regional position regarding job requirements
1990-1995
unemployment rate 1989
labour force growth rate 1990-1995
› 9.3
› 0.85
› 9.3
0.25 - 0.85
‹ 9.3
› 0.85
‹ 9.3
0.25 - 0.85
› 9.3
-0.35 - 0.25
› 9.3
‹ -0.35
‹ 9.3
-0.35 - 0.25
‹ 9.3
‹ -0.35
EC12 - 9.3
EC12 - 0.25
Açores
Madeira
Canarias

BK/I1533sum

RESUME

1. Contexte

La politique régionale de la Communauté vise à réduire les disparités socio-économiques entre régions en favorisant le développement économique des régions en retard et la reconversion des zones industrielles en déclin. L'importance et la composition de la population et les perspectives d'évolution à longue échéance en la matière constituent des variables essentielles du potentiel de développement régional. En outre l'évolution de ces variables détermine notamment les besoins régionaux en matière d'emploi et d'infrastructures.

Le troisième rapport périodique sur la situation et sur le développement des régions a démontré que les évolutions démographiques constituent un facteur important de l'accroissement de la population active. Cette évolution a beaucoup varié d'une région à l'autre pendant les années 80 et il en ira de même pendant la présente décennie, et probablement au-delà. Aussi est-il nécessaire d'examiner les futures tendances démographiques à long terme à l'échelon régional pour être en mesure de mener une politique régionale qui soit efficace et qui aille de l'avant.

Pour certains Etats membres, des projections démographiques ont été établies au niveau régional, souvent à l'aide de modèles démographiques perfectionnés. Etant donné que ces projections sont fondées sur des hypothèses différentes et qu'elles n'utilisent pas les mêmes éléments, elles ne sont pas comparables, d'autant qu'il s'agit de projections à échéances diverses. Pour certains pays, on ne dispose même pas de projections.

En 1985-1986, l'Institut économique néerlandais a effectué une étude mettant l'accent sur les projections en matière de population globale et de population active au niveau régional. Ces projections ont été obtenues à l'aide du modèle DEMETER, qui traite tous les pays de la même manière, sur la base des mêmes éléments et des mêmes hypothèses. Le présent rapport est une mise à jour des résultats antérieurs et il donne des projections pour

164 régions[1] dans la Communauté des Douze. L'année de base est 1985, c'est-à-dire l'année la plus récente pour laquelle on dispose, pour tous les pays, de données qui soient assez détaillées et assez fiables. La projection couvre la période de trente années qui s'achèvera en 2015.

2. Méthode

2.1. Deux strates

Le projet Demeter est axé en définitive sur la projection de faits démographiques régionaux, les projections nationales faisant office de cadre. Sur le plan analytique, cette approche à double stratification présente deux avantages. Le premier est que l'adéquation des projections régionales au total national garantit la cohérence du système, et le second que les sources statistiques au niveau national sont beaucoup plus satisfaisantes et fiables et qu'elles vont plus loin dans le détail. Il faut toutefois, pour l'essentiel suivre la même procédure pour les deux strates en utilisant exclusivement l'information disponible tant au niveau national que régional pour tous les pays.

2.2. Projections au niveau national

La projection au niveau national a pour point de départ la population initiale à l'instant t, subdivisée en individus de sexe masculin et en individus de sexe féminin et en tranches d'âge de cinq ans. Les tranches d'âge de cinq ans ont été retenues parce qu'il n'était pas possible de recueillir des données de population plus détaillées au niveau régional.

Il en résulte que les projections ne peuvent être établies que pour des périodes de cinq ans pendant lesquelles chaque sous-ensemble de la population ainsi subdivisée passe d'une classe d'âge à une autre.

Les éléments qui déterminent l'évolution future d'une population nationale sont la mortalité, la natalité et les mouvements migratoires internationaux.

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[1]Il existe actuellement dans la Communauté 176 régions de niveau II à la suite d'une révision mineure de la nomenclature des unités territoriales statistiques (NUTS) publiée en novembre 1989. Pour des raisons tenant à la disponibilité des données, les présentes prévisions en matière de population globale et de population active sont fondées sur la situation antérieure.

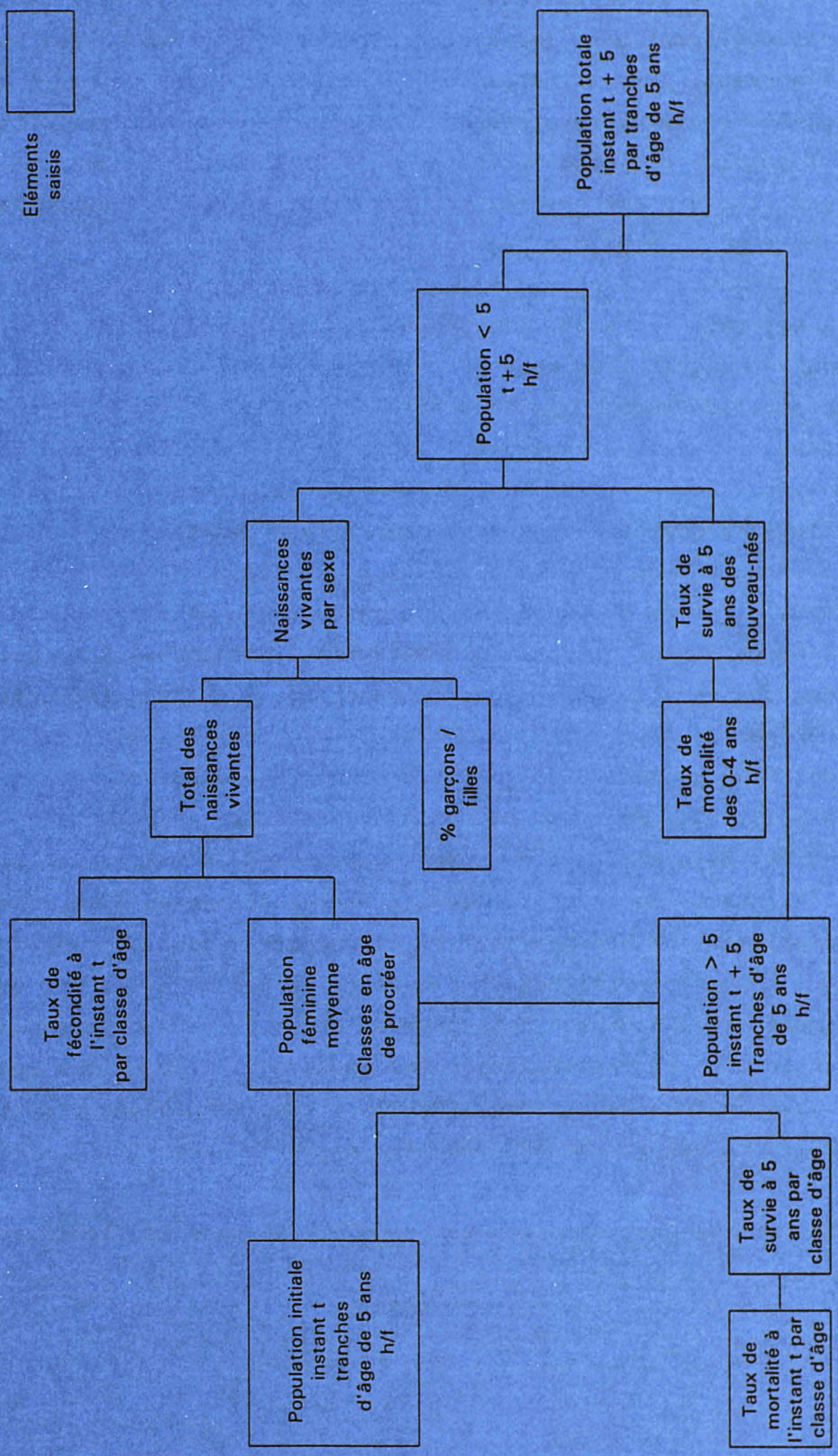
Les taux de mortalité dans les pays développés d'Europe occidentale varient un peu au fil du temps, mais ils n'en sont pas moins généralement assez stables. Aussi a-t-il été posé en hypothèse que ces taux se stabiliseraient aux niveaux enregistrés pour l'année de base 1985.

A la différence des taux de mortalité, les taux de fécondité se caractérisent par leur instabilité. C'est pourquoi deux variantes ont été élaborées. Dans la variante "fécondité stable", les taux de fécondité par classe d'âge enregistrés en 1985 sont censés persister. La variante "fécondité projetée" présente un scénario dans lequel les taux de fécondité par classe d'âge ne seraient pas stables. Cette seconde variante a servi de cadre pour la partie régionale de l'étude.

En ce qui concerne les mouvements migratoires internationaux, l'hypothèse retenue, étayée par des observations récentes, est que les soldes migratoires nets dans les pays de la Communauté européenne seront proches de zéro au point d'être négligeables. Cette hypothèse pouvant paraître assez audacieuse, il convient de souligner que compte tenu des bas niveaux actuellement enregistrés en matière de migrations internationales, l'avenir dépendra dans une large mesure des taux de mortalité et de fécondité propres à la population existante. Il a cependant été dérogé dans deux cas à ce choix délibéré d'ignorer les mouvements migratoires internationaux. La première exception, relative à l'Allemagne, a résulté des changements politiques qui sont survenus dans les pays de l'Est et qui ont permis à un grand nombre de leurs habitants d'émigrer vers l'Allemagne de l'Ouest. De 1985 à 1990, le nombre des émigrants considérés s'est établi à 1 172 000, dont 460 000 en provenance de la RDA et 712 000 venus des autres pays d'Europe de l'Est. Rapporté à la population totale de l'Allemagne de l'Ouest, cet afflux représente un accroissement de population de l'ordre de 2 %. La seconde exception concerne l'Irlande, pays qui se caractérise depuis plusieurs années déjà par une émigration importante. Pour les deux pays en cause, il a été décidé de prendre uniquement en considération les mouvements migratoires internationaux survenus dans la période 1985-1990. Pour la période comprise entre 1990 et 2015, on est revenu au postulat "migration zéro".

La méthode de projection est schématisée dans la figure 1.

Figure 1. Méthode de projection au niveau national



2.3. Projections au niveau régional

La méthode de projection utilisée pour la population régionale est la même, pour l'essentiel, que celle utilisée au niveau national, et dont elle ne se distingue que par une addition importante : les mouvements migratoires interrégionaux jouant un grand rôle dans l'évolution de la population régionale, il a fallu les intégrer explicitement dans le modèle, dont la structure est illustrée par la figure 2.

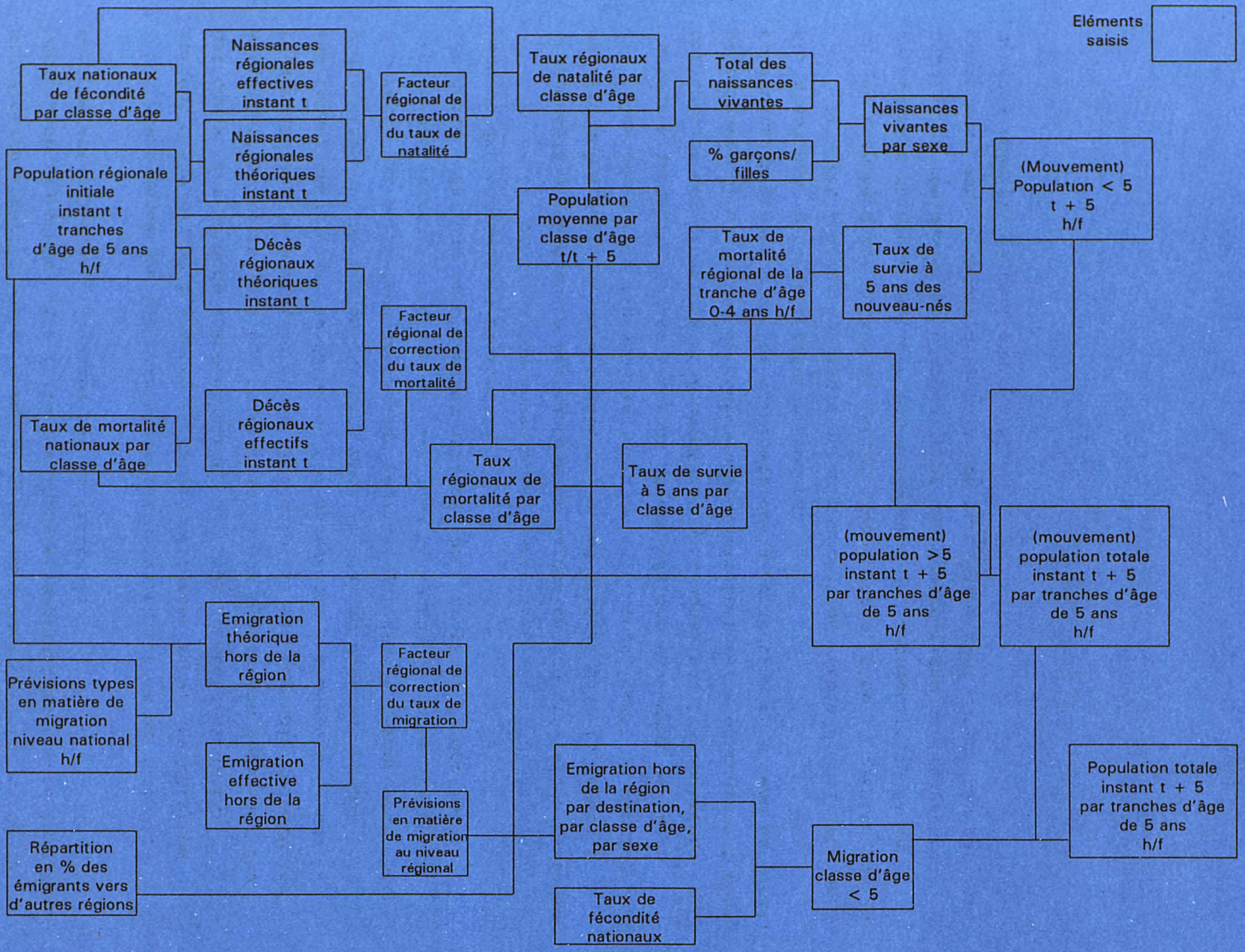
Etant donné que les taux régionaux de mortalité et de fécondité varient d'une région à l'autre et qu'ils diffèrent aussi des chiffres nationaux, une méthode a été élaborée pour leur détermination. En appliquant aux classes d'âge considérées d'une population régionale les taux nationaux de mortalité et de fécondité, il est possible de calculer les totaux théoriques des décès et des naissances à l'instant t. La comparaison du chiffre en question avec la réalité observée permet d'obtenir par dérivation un facteur régional qui sert à opérer pour chaque région une correction fondée sur les taux nationaux de mortalité et de fécondité. Ces taux sont ensuite utilisés pour projeter le mouvement naturel des populations régionales.

En ce qui concerne les mouvements migratoires interrégionaux, un sous-modèle a été élaboré sur la base de la notion des prévisions types en matière de migrations, sous-modèle qui a été intégré dans la figure 2.

Les mouvements migratoires interrégionaux constituent le premier facteur d'incertitude, car ils sont déterminés non seulement par la conjoncture démographique et économique, mais aussi par les décisions politiques. Si l'absence de mouvements migratoires reste généralement sans conséquences graves pour les résultats de la projection au niveau national, tel n'est pas le cas à l'échelon régional.

Il a été posé en hypothèse qu'un pourcentage stable d'individus de chaque tranche d'âge quitte sa région chaque année, d'où il résulte que la déperdition totale à ce titre est tributaire de la composition de la population régionale. La dispersion de ces déperditions sur les autres régions et donc l'apport de population par région sont déterminés par les données spécifiques de l'année 1985.

Figure 2. Méthode de projection au niveau régional



3. Résultats nationaux

Selon les résultats des deux variantes retenues en matière de fécondité, tous les pays de la Communauté des Douze (sauf l'Irlande) verront à long terme leur population diminuer. L'ampleur de cette décroissance dépasse la régression projetée pour la même période dans DEMETER 1986. En général, la variante "fécondité stable" aboutit en matière de population à des chiffres légèrement plus élevés que la variante fondée sur la fécondité projetée. Dans le tableau 1, les taux annuels moyens de croissance sont présentés pour deux périodes successives (sur la base de la fécondité projetée).

Tableau 1. Taux annuel moyen de croissance de la population (fécondité projetée)

	Total			Hommes			Femmes		
Pays	1990/ 2000	2000/ 2015	1990/ 2015	1990/ 2000	2000/ 2015	1990/ 2015	1990/ 2000	2000/ 2015	1990/ 2015
Belgique	-0,14	-0,41	-0,30	-0,16	-0,43	-0,32	-0,13	-0,38	-0,28
Danemark	-0,14	-0,40	-0,30	-0,16	-0,44	-0,33	-0,12	-0,36	-0,27
France	0,21	-0,04	0,06	0,19	-0,07	0,03	0,23	-0,00	0,09
Allemagne	-0,28	-0,75	-0,56	-0,22	-0,77	-0,55	-0,34	-0,73	-0,57
Grèce	-0,04	-0,31	-0,20	-0,04	-0,29	-0,19	-0,05	-0,33	-0,21
Irlande	0,49	0,55	0,53	0,48	0,54	0,51	0,51	0,57	0,55
Italie	-0,07	-0,41	-0,27	-0,09	-0,43	-0,29	-0,06	-0,39	-0,26
Luxembourg	-0,22	-0,61	-0,45	-0,22	-0,66	-0,48	-0,21	-0,56	-0,42
Pays-Bas	0,26	-0,14	0,02	0,23	-0,19	-0,02	0,28	-0,09	0,06
Portugal	0,01	-0,22	-0,13	0,00	-0,21	-0,13	0,01	-0,23	-0,13
Espagne	0,19	-0,06	0,04	0,18	-0,07	0,03	0,19	-0,05	0,05
Royaume-Uni	0,10	-0,09	-0,02	0,14	-0,08	0,01	0,06	-0,11	-0,04
CE-12	0,02	-0,27	-0,15	0,03	-0,29	-0,16	0,01	-0,26	-0,15

Il apparaît qu'après l'an 2000, tous les pays de la Communauté des Douze (sauf l'Irlande) connaîtront des taux négatifs de croissance démographique. Si les récents mouvements migratoires enregistrés en Allemagne (immigration) et en Irlande (émigration) devaient persister, peut-être à un taux légèrement moindre, les présentes prévisions surestimeraient légèrement la population irlandaise et sous-estimeraient quelque peu la population allemande.

Une conséquence importante du déclin ou même de la faible croissance d'une population est la croissance de la proportion de personnes âgées.

Pour l'ensemble de la Communauté des Douze, la proportion de jeunes diminuera alors que celle des personnes âgées augmentera : les moins de 14 ans représenteront 15 % de la population totale en 2015 contre 20 % en 1985. La classe d'âge comprise entre 15 et 59 ans reste stable à 61 %, mais on note un sensible infléchissement chez les plus de 50 ans, dont la part dans la population totale passe de 11,5 % à 15,1 % pendant la période considérée. Certains pays sont plus touchés que d'autres par ce vieillissement.

4. Résultats régionaux

Les résultats des projections nationales se reflètent largement dans les résultats régionaux, car les évolutions nationales influent généralement beaucoup sur les évolutions régionales. L'accroissement ou la diminution d'une population dans un pays peut néanmoins varier considérablement d'une région à l'autre et modifier du même coup les densités démographiques respectives. La carte 1 montre comment évoluera dans chaque région la part en pourcentage de la population totale pour la période 1985-2015. Comme il s'agit d'une période qui sera marquée pour l'ensemble de la Communauté par une croissance démographique négative (-2,7 %), on note des écarts importants illustrés par le tableau 2, qui indiquent la croissance pour les dix régions du peloton de tête et les dix régions les plus mal placées.

Les variations régionales de la croissance ou du déclin démographique d'un pays tiennent en majeure partie aux effets des mouvements migratoires interrégionaux. Pour établir les effets de ces mouvements, on a également effectué des projections régionales fondées sur l'hypothèse dans laquelle lesdits mouvements n'existeraient pas. La comparaison des résultats respectifs des deux méthodes de projection a débouché sur une série d'indices de migration. La carte 2 donne les résultats de cette opération.

La carte fait apparaître en particulier dans les grandes agglomérations de l'Europe occidentale que le nombre des départs l'emporte de beaucoup sur celui des arrivées, tandis que les zones littorales et les régions où le marché de l'emploi est étroit exercent un pouvoir d'attraction.

Tableau 2. **Régions accusant les croissances démographiques (positive et négative) les plus élevées pendant la période 1985-2015 (y compris les mouvements migratoires interrégionaux)**

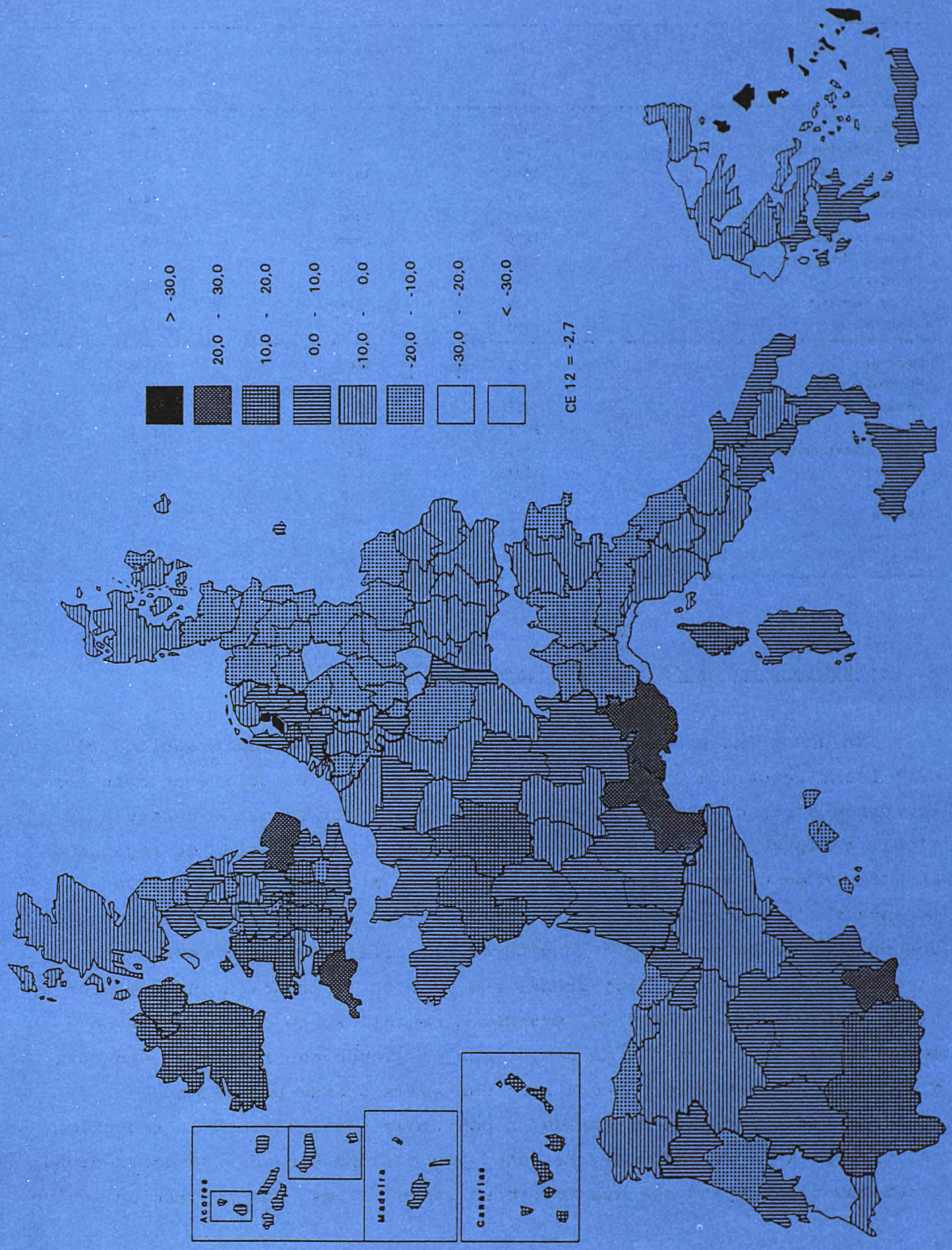
	Population 1985 (x1000)	(en valeur absolue) 2015 (x1000)	Evolution (%)
Flevoland	170	279	63,6
Nisia Anatolikou Aigaiou	364	514	41,3
Devon, Cornwall	1424	1831	28,5
Murcia	987	1235	25,0
Cambridge, Norfolk, Suffolk	1952	2404	23,1
Languedoc-Roussillon	1985	2426	22,3
Provence-Alpes-Côte d'Azur	4033	4858	20,5
Canarias	1416	1681	18,7
Dorset, Somerset	1067	1264	18,5
Northern Ireland	1554	1837	18,2
Piemonte	4412	3548	-19,6
Rheinhessen-Pfalz	1801	1410	-21,7
Saarland	1051	790	-24,8
Arnsberg	3577	2685	-24,9
Anatoliki Makedonia	397	297	-25,2
Hamburg	1592	1178	-26,0
Liguria	1778	1313	-26,2
Alentejo	559	404	-27,8
Bremen	666	477	-28,4
Ipeiros	441	264	-40,1

5. Projections en matière de population active

Un des principaux aspects concernant l'évolution démographique réside dans l'influence que celle-ci exerce sur la population active et donc sur le nombre d'emplois nécessaires pour que les offres se maintiennent à un niveau acceptable. C'est pourquoi des projections nationales et régionales en matière de classe d'âge ont été rapportées à la population active moyennant l'application de taux d'activité spécifiques des classes d'âge. Une projection de ces taux à long terme est affectée de nombreuses incertitudes, mais elle peut donner une idée de la pression qui s'exerce au niveau régional en matière de demandes d'emploi. En ce qui concerne le moyen terme, il est permis de penser que les tendances relatives aux taux d'activité peuvent être prévues avec une assez grande précision.

Un des principaux enjeux de la politique régionale est la réduction des disparités socio-économiques entre régions. Le taux de chômage régional constitue à cet égard une des variables essentielles. Une population active

Carte 1: Croissance de la population - Evolution en pourcentage 1985-2015



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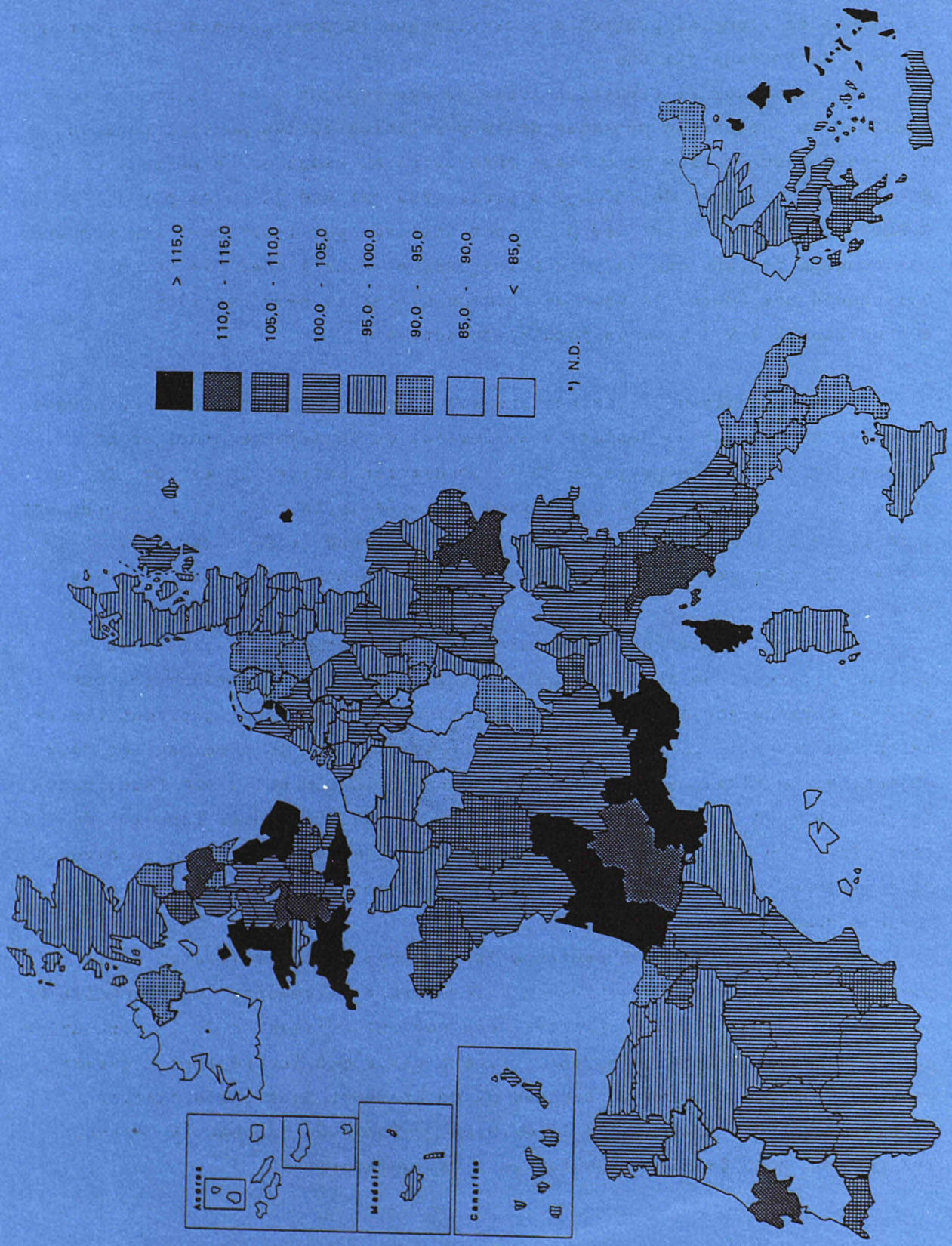
Carte 2: Indication des mouvements migratoires interrégionaux pour 2015



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en expansion doit bénéficier d'un marché du travail progressant au même rythme si l'on veut au minimum stabiliser le taux de chômage; il faut que le marché de l'emploi progresse plus vite que la population active pour que le taux de chômage diminue.

Pour évaluer la situation actuelle des régions à cet égard, on peut combiner la croissance projetée de la population active pour la période 1990-1995 avec le taux de chômage enregistré au début de la période de projection. Les taux de chômage d'avril 1989 ont été calculés par EUROSTAT(2), qui a suivi les principes utilisés par l'OIT pour les enquêtes par sondage portant sur la population active. Pour l'ensemble de la Communauté des Douze, le taux de chômage global au début de 1989 s'établissait à 9,3 % de la population active.

Dans le tableau 3, les régions sont regroupées en fonction du niveau où elles se situent au-dessus ou au-dessous de la moyenne précitée et suivant la croissance projetée de la population active. Le tableau 3A contient les régions où la croissance projetée de la population occupée est inférieure à la moyenne de la Communauté des Douze (0,25 % par an), et le tableau 3B vise les régions accusant une croissance supérieure à ladite moyenne.

En ce qui concerne la nécessité de créer des emplois, les avis peuvent diverger. Le choix consiste à privilégier soit la réduction des taux de chômage actuels, soit l'intégration des jeunes qui arrivent sur le marché du travail. Il est probablement plus efficace de combiner les deux objectifs. Le classement des régions dépend du choix qui a été fait. Dans les tableaux 3A et 3B, les régions sont classées d'abord en fonction de leur situation en matière de population active et ensuite selon le niveau de chômage qu'elles connaissent, ces deux éléments étant rapportés à la moyenne communautaire.

Ainsi, le tableau 3A présente les régions où la croissance de la population occupée est négative ou inférieure à la moyenne communautaire et le tableau 3B les régions caractérisées par une croissance de la population active supérieure à cette moyenne. Il est clair que les régions figurant dans la première colonne du tableau 3A se trouvent dans une situation plutôt "favorable", alors que la dernière colonne du tableau 3B regroupe les régions dont la situation est la plus "défavorable".

Tableau 3A. Situation des régions quant aux besoins en matière d'emploi 1990-1995[a)]

		Taux de chômage en 1989				
Taux de croissance de la population occupée		Chômage < CE 12			Chômage > CE 12	
1990-1995	Unterfranken	-0,39	3,8	West Midlands	-0,62	9,5
	Oberfranken	-0,44	3,9	Liguria	-0,57	9,7
	Darmstadt	-0,52	3,9	Bremen	-1,22	10,9
	Karlsruhe	-0,43	4,0	Durham, Cleveland	-0,37	11,3
	Koblenz	-0,62	4,6	South Yorkshire	-0,53	11,4
	Rheinessen-Pfalz	-0,99	4,8	Merseyside	-0,69	14,0
	Ipeiros	-1,85	5,5	Alentejo	-0,84	14,5
	Kassel	-0,61	5,7			
	Trier	-0,58	5,8			
	Lueneburg	-0,46	5,9			
< -,35	Detmold	-0,42	6,0			
	Schleswig-Holstein	-0,51	6,7			
	Ile-de-France	-0,42	6,7			
	Anatoliki Makedonia	-0,76	6,8			
	Greater London	-0,69	7,2			
	Köln	-0,54	7,3			
	Hannover	-0,64	7,5			
	Braunschweig	-0,67	7,6			
	Münster	-0,56	7,8			
	Arnsberg	-1,24	8,0			
	Düsseldorf	-0,96	8,2			
	Saarland	-1,12	8,6			
	Hamburg	-1,15	8,9			
	% de la population de la CE	17,7			2,9	

Tableau 3A. Suite

Taux de croissance de la population occupée	Taux de chômage en 1989				
	Chômage < CE 12			Chômage > CE 12	
	Luxembourg	-0,18	1,8	Anatoliki Sterea Kai	0,16	9,3
	Stuttgart	-0,13	2,9	Umbria	0,13	9,5
	Tuebingen	-0,01	2,9	Limburg	0,04	10,3
	Schwaben	-0,10	3,1	Scotland	-0,05	10,4
	Freiburg	-0,14	3,2	Lorraine	-0,15	10,6
	Oberbayern	-0,07	3,5	Limburg	0,14	10,8
	Centro	0,13	3,5	Champagne-Ardenne	0,23	11,2
	Thraki	-0,11	3,8	North,, Tyne & Wear	-0,34	11,5
	Hampshire, Isle of Wright	0,03	3,8	Liège	0,09	12,7
	Valle d'Aosta	0,12	3,9	Hainaut	0,19	14,9
	Lombardia	0,12	4,1	Groningen	0,24	15,0
	Mittelfranken	-0,23	4,1			
	Kent	0,24	4,2			
	Giessen	-0,29	4,9			
	Oberpfalz	-0,31	4,9			
	Emilia-Romagna	0,00	5,2			
	Cumbria	0,22	5,5			
-,35 - +,25	Hovedstadsregionen	-0,21	5,8			
	Thessalia	0,16	6,5			
	Fiuli-V. Giulia	0,03	6,5			
	Oost-Vlaanderen	-0,01	6,6			
	Zeeland	0,24	6,7			
	Piemonte	-0,27	6,8			
	West Yorkshire	-0,18	7,1			
	Marche	0,15	7,2			
	Berlin (West)	0,20	7,3			
	Weser-Ems	-0,25	7,5			
	Vest for Storebælt	0,24	7,6			
	Derby-, Nottinghamshire	0,10	7,8			
	Antwerpen	-0,12	8,2			
	Øst for Storebælt	0,13	8,2			
	Brabant	0,03	8,3			
	Greater Manchester	-0,24	8,7			
	Gwent, S, M, W-Glamorgan	0,05	8,8			
	Humberside	-0,07	9,1			
	% de la population de la CE		20,4			6,1

a) Les taux de chômage des régions grecques se rapportent à l'année 1987.

Tableau 38. Situation régionale quant aux besoins en matière d'emploi 1990-1995[a)]

Taux de croissance de la population occupée	Taux de chômage en 1989					
	Chômage < CE 12			Chômage > CE 12		
1990-1995	Oxford-, Berk-, Buck.shire	0,42	1,5	Midi-Pyrenées	0,57	9,4
	Surrey, W-Sussex, E-Sussex	0,68	1,8	Corse	0,74	9,5
	Açores	0,77	2,2	Zuid-Holland	0,34	9,5
	Bedford-, Hertfordshire	0,63	2,4	Bourgogne	0,61	9,6
	Kriti	0,63	2,7	Rioja	0,82	9,9
	Trentino-Alto Adige	0,46	3,6	Basse-Normandie	0,55	10,1
	Essex	0,38	3,6	Noord-Holland	0,38	10,5
	Niederbayern	0,25	3,7	Abruzzi	0,54	10,6
	Heref. & Worc., Warw.shire	0,67	3,9	Baleares	0,43	10,6
	North Yorkshire	0,45	3,9	Auvergne	0,36	10,6
	Leic.-, North.shire	0,43	4,1	Lazio	0,54	11,0
	Avon, Glouc.-, Wiltshire	0,66	4,2	Poitou-Charentes	0,63	11,7
	West-Vlaanderen	0,26	4,9	Namur	0,58	11,9
	Veneto	0,45	5,0	Aragon	0,38	12,4
	Shrop-, Staffordshire	0,29	5,1	Picardie	0,78	12,4
,25 - ,85	Algarve	0,59	5,4	Friesland	0,42	12,5
	Alsace	0,36	5,7	Haute-Normandie	0,63	12,5
	Peloponnisos Kai Dytiki	0,74	6,2	Galicia	0,78	12,8
	Cheshire	0,32	6,4	Molise	0,46	13,2
	Lincolnshire	0,64	6,6	Nord-Pas-de-Calais	0,29	14,7
	Kentriki Kai Dytiki Mak.	0,28	6,9	Cataluña	0,68	14,8
	Lancashire	0,25	7,0	Castilla-La-Mancha	0,73	15,3
	Dyfed, Powys, Clwyd, Gwyned	0,75	8,1	Northern Ireland	0,83	16,7
	Rhône-Alpes	0,64	8,2	Castilla-Leon	0,41	18,0
	Luxembourg	0,64	8,2	Asturias	0,40	18,0
	Toscana	0,29	8,3	Cantabria	0,81	18,3
	Drenthe	0,62	8,8	Basilicata	0,55	20,0
	Noord-Brabant	0,44	8,8	Pais Vasco	0,47	20,7
	Franche-comte	0,43	8,9	Extremadura	0,81	27,6
	Overijssel	0,48	8,9			
	Limousin	0,62	9,0			
	% de la population de la CE		14,2			16,0

Tableau 3B. Suite

Taux de croissance de la population occupée	Taux de chômage en 1989					
	Chômage < CE 12			Chômage > CE 12		
	Norte	1,14	3,4	Gelderland	0,85	9,4
	Dorset, Somerset	1,14	3,7	Bretagne	0,95	9,7
	Cambr., Norfolk, Suffolk	1,19	4,0	Centre	0,96	9,7
	Madeira	1,49	4,3	Flevoland	2,81	10,8
	Devon, Cornwall	1,51	7,1	Pays de la Loire	1,05	11,1
	Nisia Anatolikou Aigaiou	2,20	7,6	Prov.-Alpes-Côte d'Azur	1,05	11,6
> 85	Lisboa e Vale do Tejo	0,91	8,3	Navarra	1,04	11,9
	Utrecht	0,98	9,1	Aquitaine	0,86	12,1
				Madrid	1,21	13,7
				Puglia	1,08	14,9
				Languedoc-Roussillon	1,35	15,1
				Comunidad Valenciana	1,22	15,8
				Murcia	1,77	16,7
				Ireland	1,39	17,2
				Sardegna	1,10	18,3
				Sicilia	0,89	21,1
				Campania	0,95	21,8
				Canarias	1,84	23,2
				Calabria	0,90	24,2
				Andalucia	1,45	27,9
	% de la population de la CE		4,1			18,6

a) Les taux de chômage des régions grecques se rapportent à l'année 1987.

Le tableau a donné lieu à une représentation graphique (carte 3) où il apparaît clairement que les régions en difficulté dans le domaine de l'emploi sont réparties dans toute l'Europe, mais que si l'on excepte l'Irlande et les Pays-Bas, les pays méditerranéens semblent les plus vulnérables. Il va de soi que l'intensité du chômage pendant l'année de base (1989) revêt une importance extrême. La pression réelle qui s'exercera pendant la période de projection est des plus incertaines, car abstraction faite de la croissance projetée de la population active, l'évolution du marché de l'emploi joue un rôle considérable. Il apparaît d'une façon

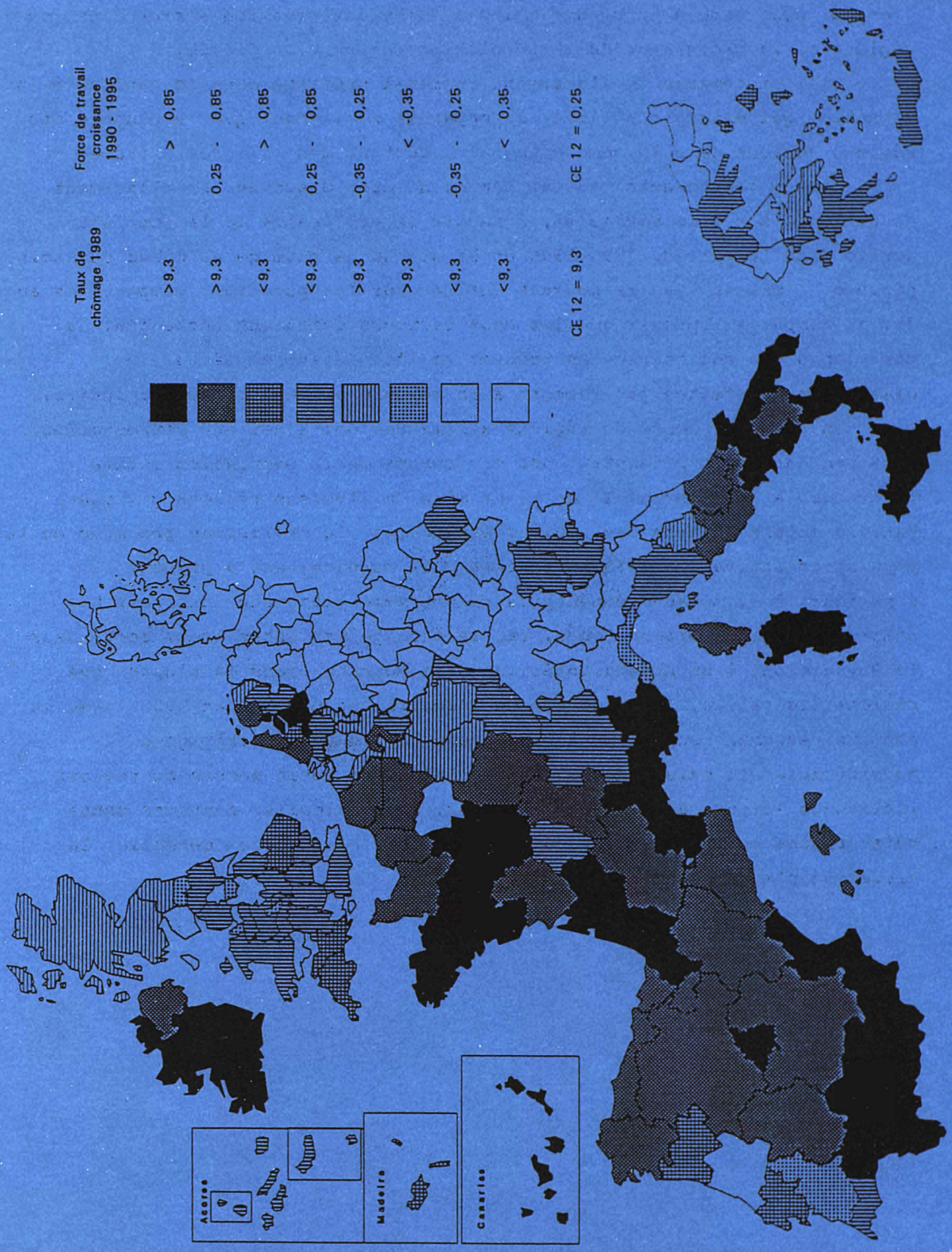
générale que cette évolution va de pair avec celle de la population active ou du moins qu'il existe un certain degré d'interdépendance, mais que l'emploi progresse à un rythme moindre, d'où une pression accrue dans les régions où la croissance de la population active sera élevée.

Si l'on compare le classement régional présenté dans le tableau à la situation qui existait en 1986, il apparaît clairement que la plupart des régions restent dans la même catégorie, surtout dans les cas extrêmes.

Divers changements peuvent néanmoins être observés. Le classement étant fondé sur deux variables, à savoir la croissance de la population active dans la période 1990-1995 et le niveau de chômage au début de ladite période, l'une et l'autre peuvent influer sur les positions respectives au fil du temps. A supposer que les deux facteurs demeurent inchangés, la position d'une région peut se trouver modifiée étant donné que le classement s'effectue par rapport à la moyenne communautaire (évolutive).

Un certain nombre de régions allemandes ont ainsi été rétrogradées dans une catégorie présentant une croissance de la population active inférieure à la moyenne. Il en va de même de diverses régions grecques. Dans la moitié environ des régions espagnoles, la croissance projetée de la population active (en 1986 inférieure à la moyenne) est à présent supérieure à la moyenne communautaire. Le même phénomène joue pour bon nombre de régions britanniques, car le chômage est entre-temps tombé dans le Royaume-Uni à un niveau inférieur à la moyenne. Dans la plupart des régions françaises, la situation de l'emploi est pire qu'en 1986, avec un chômage désormais supérieur à la moyenne, alors que le chômage a considérablement baissé aux Pays-Bas. Enfin, un petit nombre de régions italiennes voient le chômage s'aggraver, en particulier dans des zones défavorisées comme les Abruzzes et la Molise. D'une façon générale, la situation n'a cependant pas beaucoup changé.

Carte 3: Besoin en emploi par région 1990-1995



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1. INTRODUCTION

1.1. General context

A major objective of Community Regional policy is to reduce socio-economic disparities among regions located in the member countries of the EC-12. One way to realise this objective is by the optimum utilisation of indigenous resources. Size and composition of population are two of the most important factors of a region's indigenous development potential, for one thing because they have a significant influence on the size and growth possibilities of the regional labour force. There is indeed an urgent need to gain insight into the future development of population and labour force.

In 1985 the Netherlands Economic Institute was approached by the Commission of the European Communities with the request to carry out projections of national and regional populations for all the member countries of the EC up to the year 2010, and to estimate how the projected demographic developments would affect the labour force and, hence, the job requirements. The ensuing study resulted in 1986 in a report entitled 'long-term regional demographic developments up to the beginning of the next century, and regional policy', which contained estimates, on a national and regional scale, of the population and labour force up to 2010, broken down by sex and five-year age brackets.

Recently, the Commission requested our Institute to update the results of that study and make new projections up to 2015. To meet that request a two-stage study was undertaken, consisting of a national and a regional part. At the first stage the model (developed in 1985) was used to make projections on a national scale for all twelve EC countries on the basis of some specific assumptions. The exercise resulted in four sets of labour-force projections. One of these sets has been chosen to serve as input for the regional part of the model. During this second stage of the study population and labour-force projections had to be made on a regional scale.

1.2. Contents of the report

The present document reports on both stages. Chapter 2 up to chapter 6 refer to the first stage of the study, whereas in chapter 7 to 9 the second stage of the study will be the subject of attention.

Chapter 2 gives a short description of the part of the model used for the demographic projections on the national scale. The three input factors, and the differences between them in two projection variants, will be discussed in chapter 3. Chapter 4 presents the results of both sets of projections, pointing out where the two differ and how they compare with the results obtained in 1986. The chapters 5 and 6 resemble the previous ones in structure, but are focused on labour-force figures. Unlike the demographic projections, labour-force projections contain only one variable that can be manipulated, namely, activity rates. In chapter 5 two specific activity-rate variants are distinguished, which combine with the two demographic projections to produce four labour-force projections. In chapter 6 these projections are discussed and compared with those made in 1986.

In chapter 7 a description of the input-elements regarding the regional part of the model will be given. Chapter 8 presents the results of the regional population projections, while in chapter 9 attention will be focused on the results of the regional labour-force projections.

2. THE RELEVANCE OF POPULATION PROJECTIONS AND THE USE OF PROJECTION MODELS

That the alterations in size and composition of a country's or region's population depend on the three factors mortality, fertility (or number of births) and international/interregional migration, may be taken for granted.

While each individual factor has its own influence on the development of population figures, in most West-European countries their interaction has caused population growth to slacken in the last decade, and may even turn it negative eventually. Besides, the aging tendency of the population is changing its the demographic composition. As a consequence, public authorities find themselves confronted with some difficult problems, which need to be solved by policy measures.

Perhaps the most serious implication of the demographic changes observed is that the labour force, too, is changing in size and composition. An increased share of older working people has no doubt consequences for productivity and for the influx into the labour market. In view of the economic goal of full employment (or at least the lowest possible unemployment rates), a change in job requirements is the obvious result.

The second implication is that the need for services is shifting in many ways, ranging from an increasing demand for health care to a declining demand for youth education.

The consequences for physical planning are the third aspect worth notice. Changing demands on the housing market are but one example.

Obviously, to design policy measures that can solve the problems, a clear insight into the development of the population is indispensable. Efforts to estimate future population figures have therefore been carried on for many years, mostly with the help of projection models as a more or less scientific instrument. A full description of the various models used would exceed the aim of this

study; in the DEMETER 1986 study short descriptions of the so-called Malthus, Lotka and Leslie model can be found.

The present study builds on to the 1986 DEMETER model. The present projection model is practically the same as the one used in 1986, except that international migration, which had been totally left out in 1986, this time had to be considered as far as Germany and Ireland are concerned.

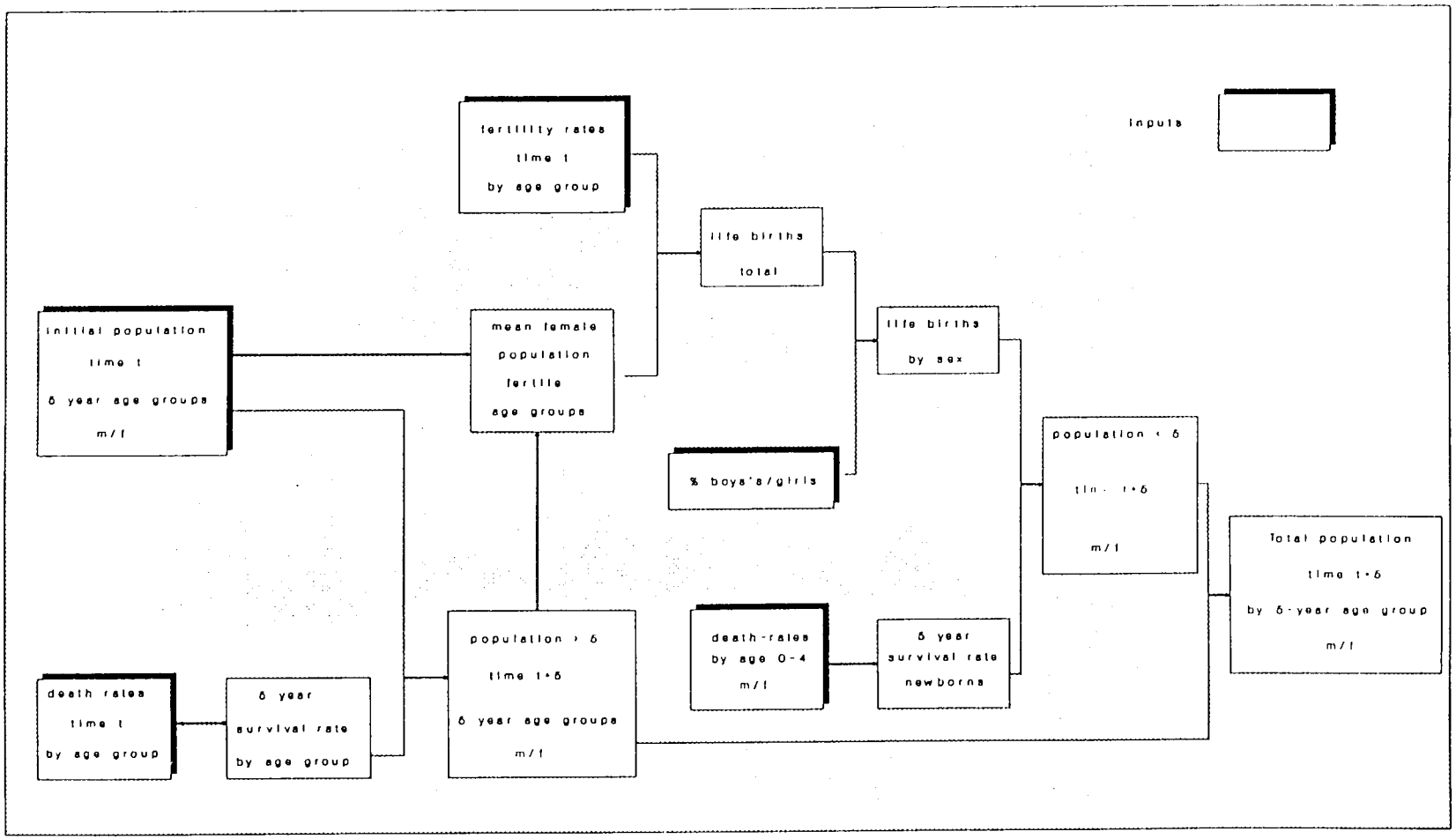
Figure 2.1 presents a diagram of the model; a full description can be found in the 'DEMETER 1986' report. A remark is in order concerning the basic variable in figure 2.1, 'initial population at time t'. By the initial population is understood in all cases the female and male population on the first of January in 1985, broken down by five-year age brackets. These basic data have been provided by the Eurostat Directorate of Demographic and Social Statistics. For Spain, the figures relate to the national totals minus the region 'Ceuta y Melilla'.

Although not directly relevant to the national part of this study, two remarks concerning the regional population are in order. For Greece, no regional figures were available about the year 1985. Since the regional figures must add up to the national total, the Greek regional population in 1985 has been estimated from the detailed regional figures of 1984 and the overall regional totals and detailed national figures of 1985.

The data for the Dutch regions were incomplete in that no correction had been made for the recently added 'twelfth' province of the Netherlands, the reclaimed areas called 'Flevoland'. With the help of figures provided by the 'Netherlands Central Bureau of Statistics' (CBS), the regional part could be successfully completed.

The regional division is the one prevailing in 1989. No account has been taken of the revision of NUTS published in november 1989.

Figure 2.1. Projection Method - National level



3. THE INPUT ELEMENTS FOR THE NATIONAL PROJECTION MODEL

3.1. Introduction

In the previous chapter some attention has already been paid to the primary input element of the model, namely, the population in the base year. Figure 2.1 shows that mortality and fertility are the principal influences on the future course of the size and structure of the population. Before dealing with these two factors, let us devote a few words on another input element, namely international migration.

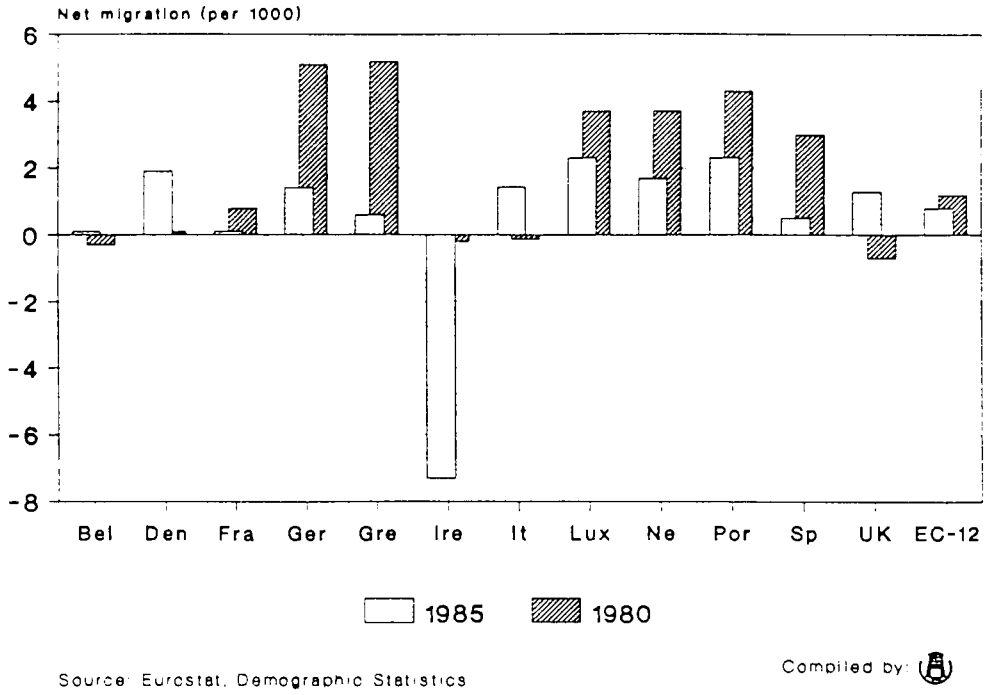
3.2. International migration

3.2.1. General remarks

Next to the factors of natural growth, fertility and mortality, international migration influences the growth of the population. Indeed, because migrants mostly are not an average reflection of society, population structure is even more sensitive to migration than to the other factors. In DEMETER 1986 the assumption was made 'that in line with observable developments net international migration in the EC will be as close to zero as to be negligible'. The same assumption will be adhered to here, with the exception of Germany and Ireland, as will be explained below.

International migration, already in 1980 a factor of minor importance, had become even less significant by 1985. That is at any rate the conclusion that can be drawn from figure 3.1.

Figure 3.1. Net migration per 1000 average population; 1985 versus 1980



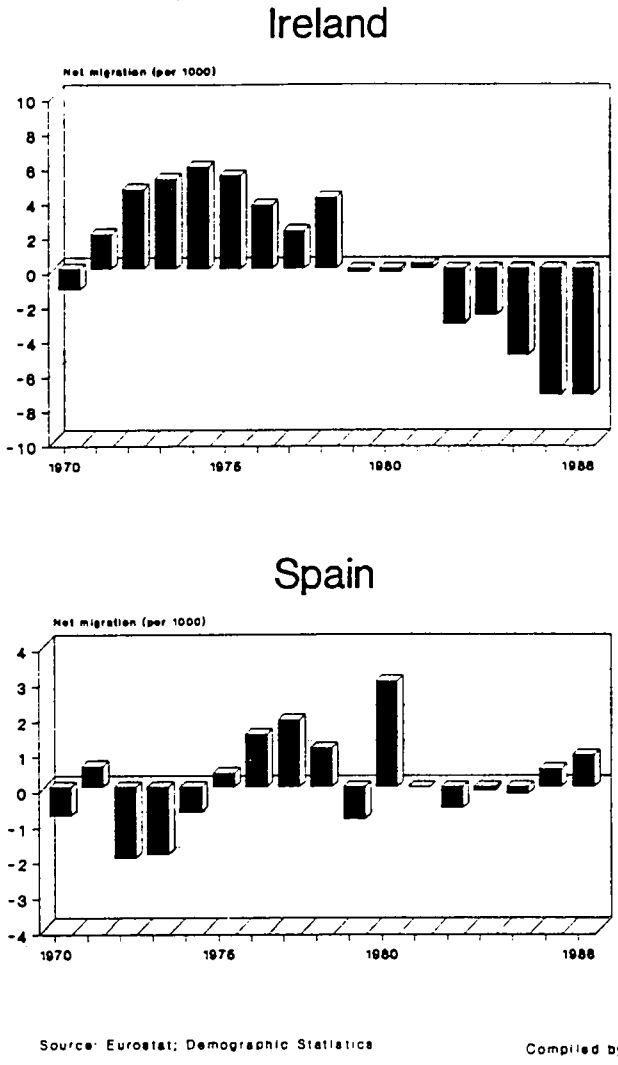
Source: Eurostat, Demographic Statistics

Compiled by:

The histogram indicates a clear decrease in the relative volume of migration in the majority of EC-12 countries. Slight deviations are exhibited by Italy, Denmark and the United Kingdom, Ireland being the only state diverging considerably from the average.

Apart from the overall diminishing significance of migration, wide fluctuations can be observed in some countries (see figure 3.2). Sometimes these fluctuations stretch over relatively long periods (for instance in Ireland), but sometimes the pattern seems almost random (for instance in Spain). These fluctuations make acceptable projections of migration very hard to draw up. The most that can be said is that much depends on the economic and social conditions both in the country of origin and in that of destination.

Figure 3.2. Development of net migration per 1000 average population (1970-1986)

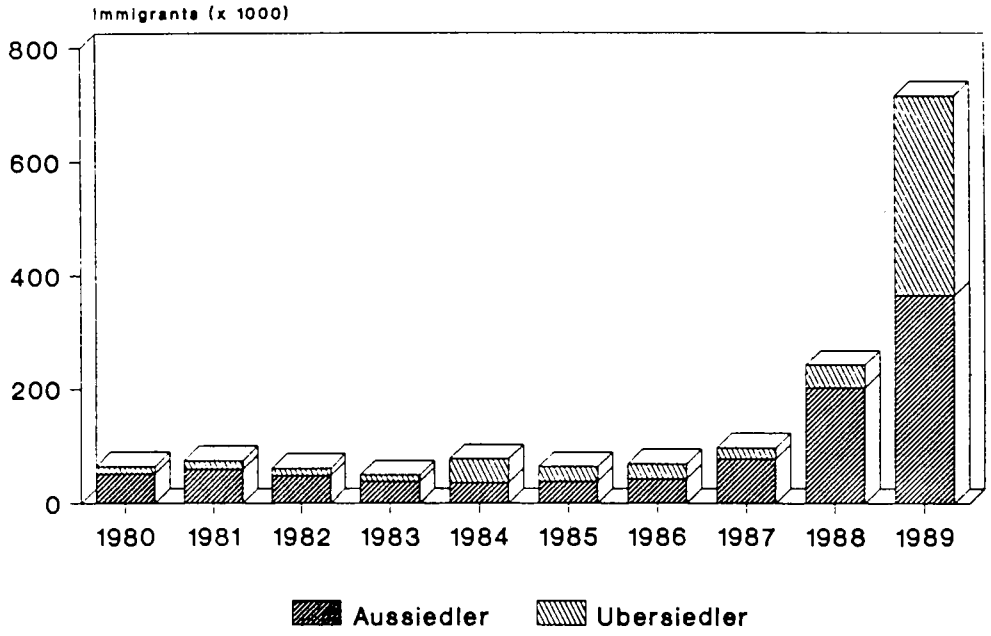


There is yet another argument for leaving international migration out of account. Actually, national migration figures are not difficult to obtain, though the breakdown by age and sex is not without problems for some countries. But the real problems will manifest themselves at the second stage of the study when <u>regional</u> figures come into the picture as origin and destination of migrants at the regional level generally is not recorded. Admittedly, this argument is not a decisive one, but merely complementary to the previous two.

3.2.2. Immigrants from Eastern Europe settling in Germany

Two exceptions had to be made to the decision to ignore international migration. The first refers to Germany. The political upheaval in East-European countries induced a growing number of their inhabitants to emigrate to Germany. The tendency reached a provisional climax in 1989 but, as figure 3.3 indicates, had started as far back as 1986. The relevant figures include the numbers of so-called 'Uebersiedler' (emigrants from the German Democratic Republic) as well as 'Aussiedler' (emigrants from the remaining East-European countries).

Figure 3.3. Immigration from Eastern Europe into Germany (1980-1989)



Source: Bundesausgleichsamt

The inflow has shown explosive growth (for the most part due to the 'Uebersiedler'), but its future course is hard to predict. No doubt, the economic and political developments in the country of origin dictate to a high degree the movements of those who are planning to leave their native country as well as those who are planning to return!. On the other hand, the conditions in the country destination are of great importance as well. Already there are

signs (in some regions more than in others) of increasing tension on the labour and housing markets, in spite of prosperous economic conditions.

Because a true estimate of future emigration to Germany is impossible to make, the decision has been made to leave German immigration in the period 1990-2015 out of the picture and consider only that in the first five-year period (1985-1989).

The size and composition (age, sex and region of destination) of the migration flows have been estimated from figures provided by the 'Bundesausgleichsamt'. From that institution the following data were obtained:

	1985	1986	1987	1988	1989
number	x	x	x	x	x
age specification	x	x	x	x	-
sex specification	x	x	x	x	-
region of destination	x	x	x	x	-
Ueber- vs. Aussiedler	x	x	x	x	x

x = available
- = not available

A few remarks are due.

- All figures available for 1989 are exclusive of the month of December, so we had to make our own estimate for that month.
- The Bundesausgleichsamt's age classification differed on some points from ours. With the help of the migration schedule used in 'DEMETER 1986' the original figures have been re-allocated.
  The immigrants of 1989 were distributed among the age brackets by the ratio observed during the 1985-1988 period.
- The region of destination was specified only on the so-called 'Länder'-level (which is equal to the Eurostat NUTS-I classification). Within each NUTS-I region the number of immigrants was divided among the related NUTS-II region in proportion to their population shares.
- The distinction between Uebersiedler and Aussiedler is of great significance because of their different location patterns. The

additional information thus obtained proved very useful for the estimates concerned with the regions of destination of the 1989 immigrants.

3.2.3. The migration pattern of Ireland

Ireland, like Germany, shows a distinctive migration pattern. For a number of years Ireland has been characterised by a considerable outflow of people. For that reason, the non-migration option has not been applied to Ireland. For the 1985-1990 period, a correction has been made from figures provided by the Central Statistics Office of Ireland; average net migration in those years amounted to approximately - 30,000 persons.

For the projection regarding the 1990-2015 period the non-migration option was re-introduced. For the same reasons as mentioned with respect to Germany, a justifiable estimate of the size and composition of future migration flows is practically impossible. Table 3.1 shows that, while a negative net migration persisted through all five years between 1985 and 1990, the fluctuations were nonetheless considerable.

Table 3.1. Irish net migration (up to mid-April of each year)

	absolute number	per 1000 population
1985	- 20,000	5.7
1986	- 28,400	8.0
1987	- 27,000	7.6
1988	- 32,000	9.0
1989	- 46,000	13.0

Source: Central Statistics Office of Ireland

3.3. Mortality

Mortality has long been the most stable demographic indicator in Western Europe. A marginal decline in age-specific death rates combined with a steadily aging population makes for a very constant overall death rate in all but a few EC-12 countries. Table 3.2 displays that stability for the period 1960-1985.

Table 3.2. Death rates (per 1000 population), period 1960-1985

	1960	1965	1970	1975	1980	1985
Belgium	12.5	12.2	12.3	12.2	11.5	11.2
Denmark	9.5	10.1	9.8	10.1	10.9	11.4
France	11.4	11.2	10.7	10.6	10.2	10.0
Germany	11.6	11.6	12.2	12.1	11.6	11.5
Greece	7.3	7.9	8.4	8.9	9.1	9.3
Ireland	11.5	11.5	11.4	10.4	9.8	9.4
Italy	9.4	9.8	9.6	9.9	9.7	9.5
Luxemburg	11.8	12.2	12.2	12.2	11.3	11.0
Netherlands	7.6	8.0	8.4	8.3	8.1	8.5
Portugal	10.6	10.4	10.3	10.4	9.9	9.6
Spain	8.6	8.3	8.3	8.4	7.7	8.1
United Kingdom	11.5	11.6	11.8	11.8	11.7	11.8
EC12	10.5	10.6	10.6	10.6	10.3	10.2

Although each country has its own specific development, from table 3.1 the overall death rate of the EC-12 as a whole seems to have regained an equilibrium after a minor disruption of the stable pattern between 1975 and 1980.

We have already pointed out that on the whole age-specific death rates show but a minimum of slackening. Figure 3.4 illustrates that fact. The Danish age-specific death rates between 1960 and 1985 show a slow decline and in some periods even a slight increase. We feel justified, therefore, to assume for both population variants that the mortality pattern prevailing in 1985 will continue in the decades to come.

From a comparison with DEMETER 1986, the present age-specific mortality rates appear to deviate only marginally from the 1986 ones. Only the higher age brackets (60-64, over 65) display a distinctive decline of the mortality rate in the majority of states.

Figure 3.4. Age- and sex-specific death rates in Denmark

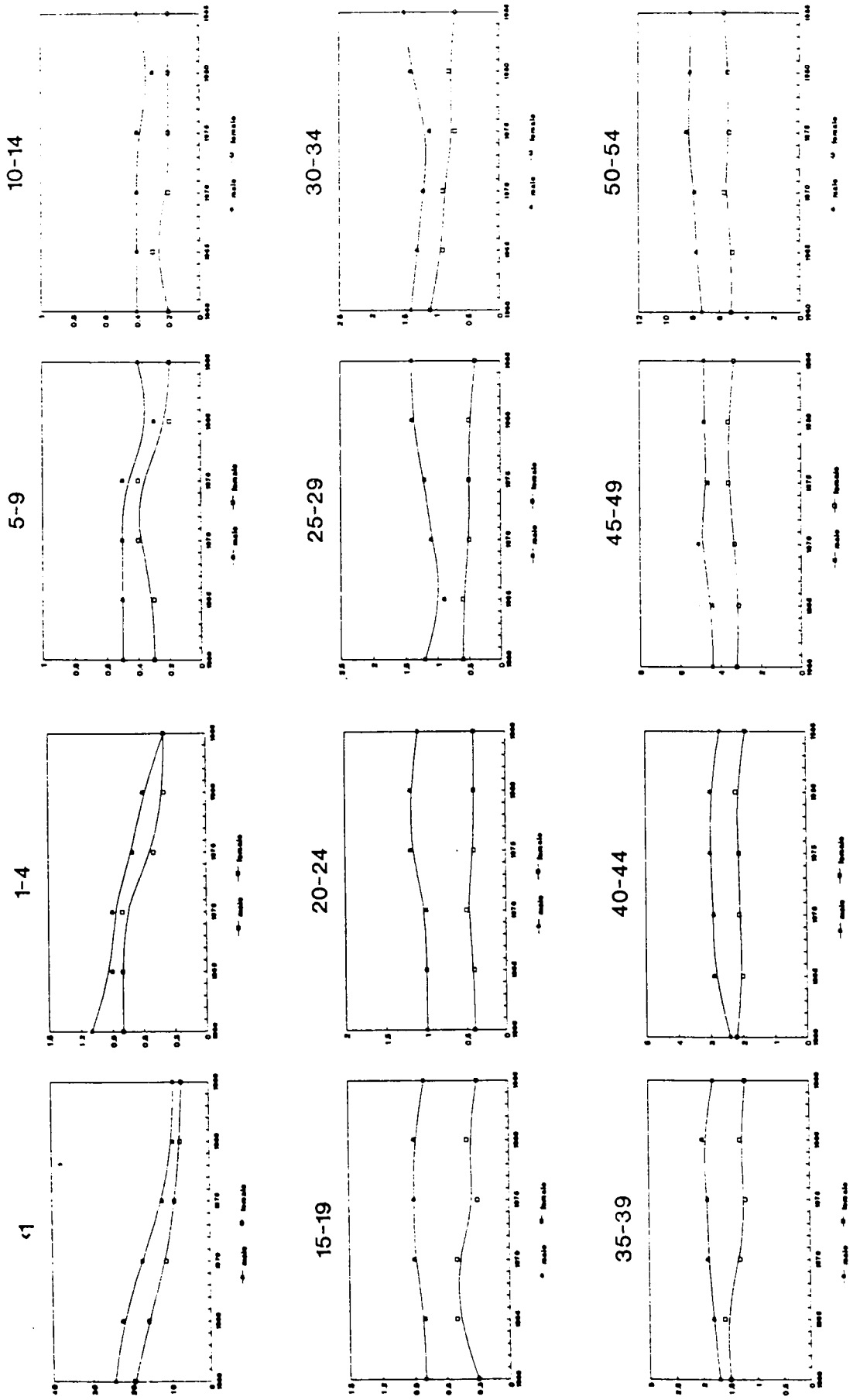
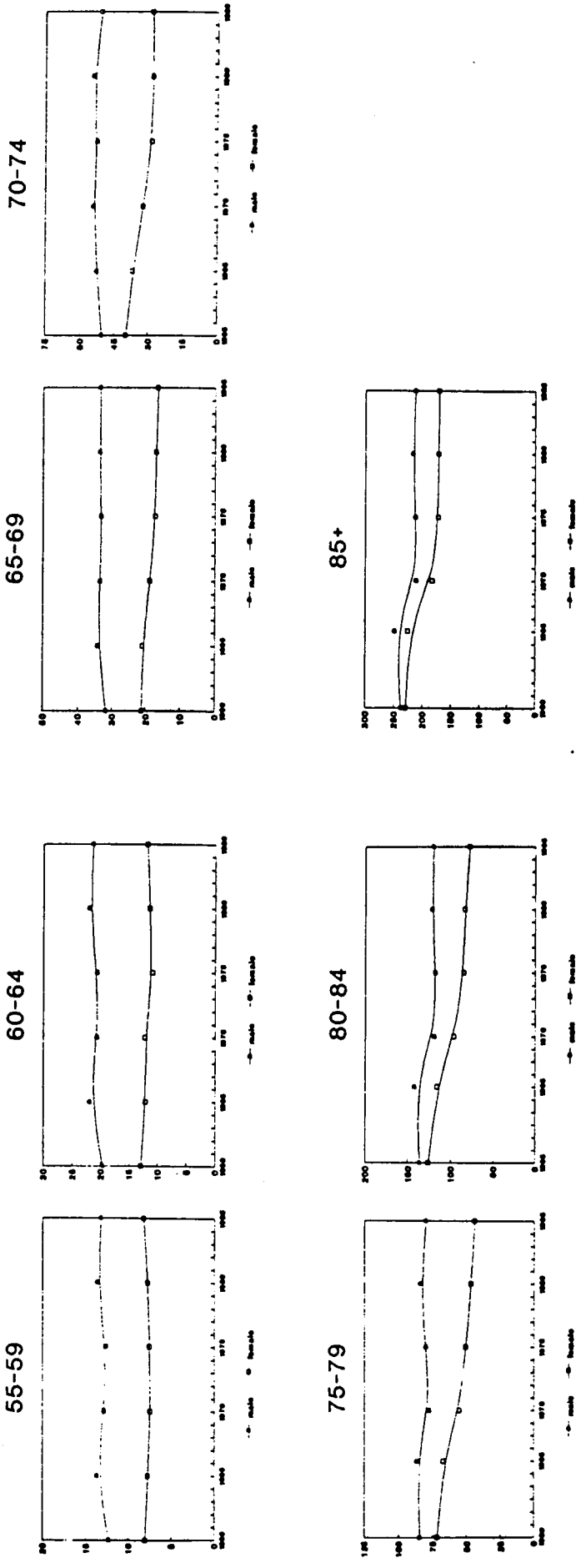


Figure 3.4. continued



3.4. Evolution of fertility

In contrast with mortality, fertility as a demographic factor has changed appreciably in recent decades. Because economic, cultural, institutional and psychological factors tend to influence fertility, the extent of the change varies among countries. For that reason, the fertility aspect deserves some attention.

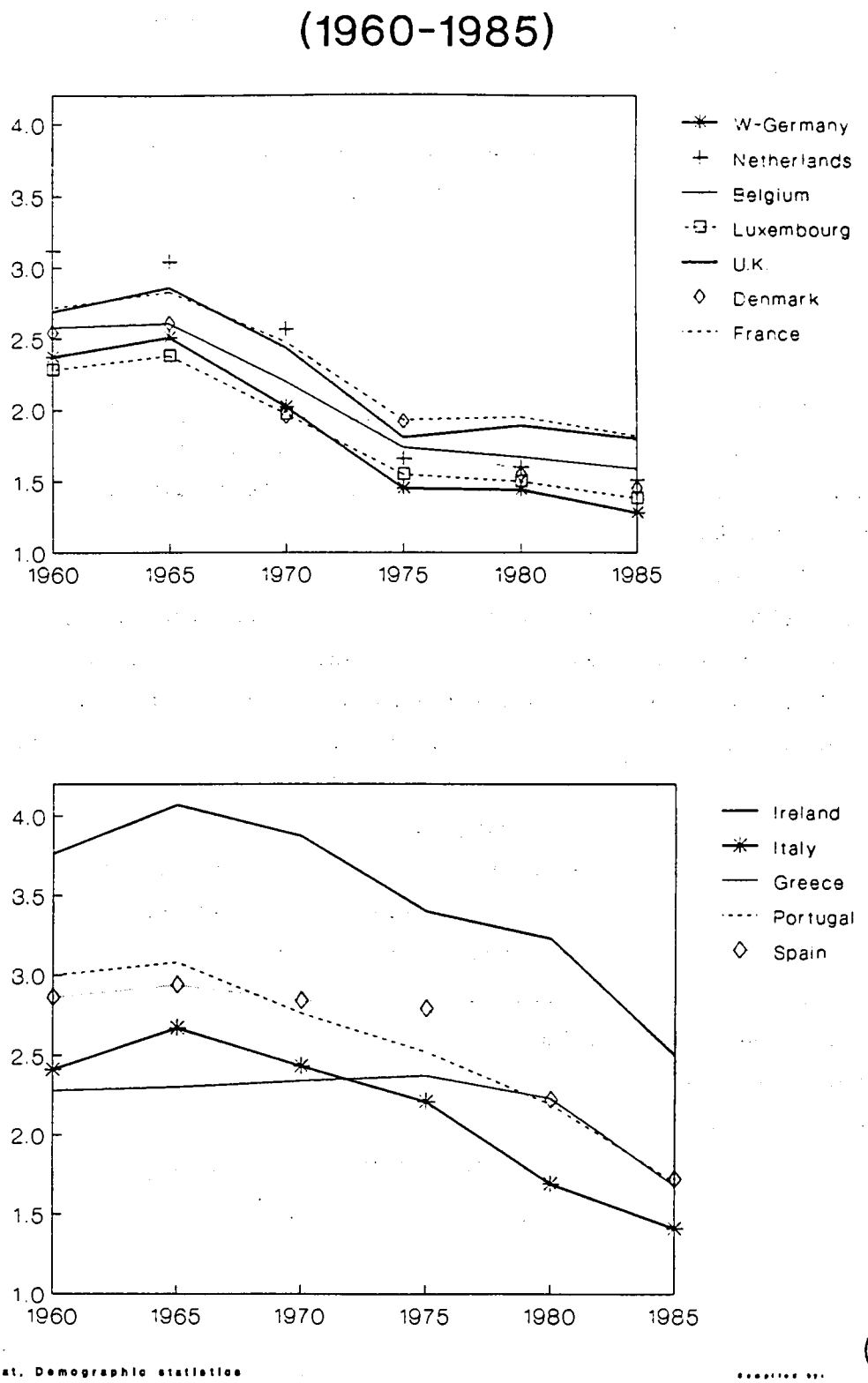
3.4.1. Overall fertility

In general, fertility appears to have declined in Western Europe since 1960. Figure 3.5 gives an impression of the declining trend by illustrating the development of total period fertility in each member state of the EC-12 through the 1960-1985 period. This fertility rate can be defined as the average number of living children a woman would produce if during her complete fertile life cycle the age-specific fertility rates observed in a certain year were maintained.

The figure reveals some striking similarities among nations in the evolution of fertility. In all countries but the Netherlands fertility can be observed to have risen in the first five-year period. 1965 seems to mark the beginning of an opposite tendency. Since then, the fertility rates have dropped in all countries with the exception of Greece. In 1985 fertility was lowest in Germany, but the divergences among the countries are small. Only Ireland stands out.

The countries fell naturally apart into two categories, with to one side the four South-European nations and Ireland, which have all exhibited steadily decreasing fertility rates up till now, and to the other the seven remaining nations, where fertility ceased to decline in 1975, since when it has been relatively constant.

Figure 3.5. Total period fertility (1960-1985)



Source: Eurostat, Demographic statistics

3.4.2. Age-specific fertility

The overall fertility rate shows similar development patterns in the various countries, but the question remains whether the same is true of its constituent elements. Some more information can be gathered from age-specific fertility rates, reflecting the number of live births per 1000 women of a particular age bracket. In the relevant diagrams, all values on the Y-axis relating to fertility refer to that ratio (absolute number of births per 1000 women).

For a better understanding of age-specific fertility, figure 3.6 presents, for all EC-countries, so-called fertility pyramids for a number of years. Some clear conclusions can be drawn.

- Perhaps the most important conclusion is that in all countries, all age brackets seems to have contributed to the declining overall fertility in comparison with 1960.
- In almost all countries, the 25-29 age bracket is comparatively the most fertile. Up to the 1970-1975 period its leading position had been much less pronounced.
- The segmentation used for country groups in sub-section 3.3.1 appears to applicable here as well. The continued decrease of fertility in the South-European countries and Ireland versus the stagnation in the seven remaining nations from 1975 onward is one striking tendency. Another is the dramatic drop in the fertility of the 20-24 age bracket in the North-European countries (except the Netherlands). In Southern Europe and Ireland, fertility dropped dramatically in the age bracket between 25 and 29. In Greece, the fertility of women between the ages of 20 and 25 in 1985 exceeded the level of 1960!

Figure 3.6. Fertilitypyramids by country (1960-1985)

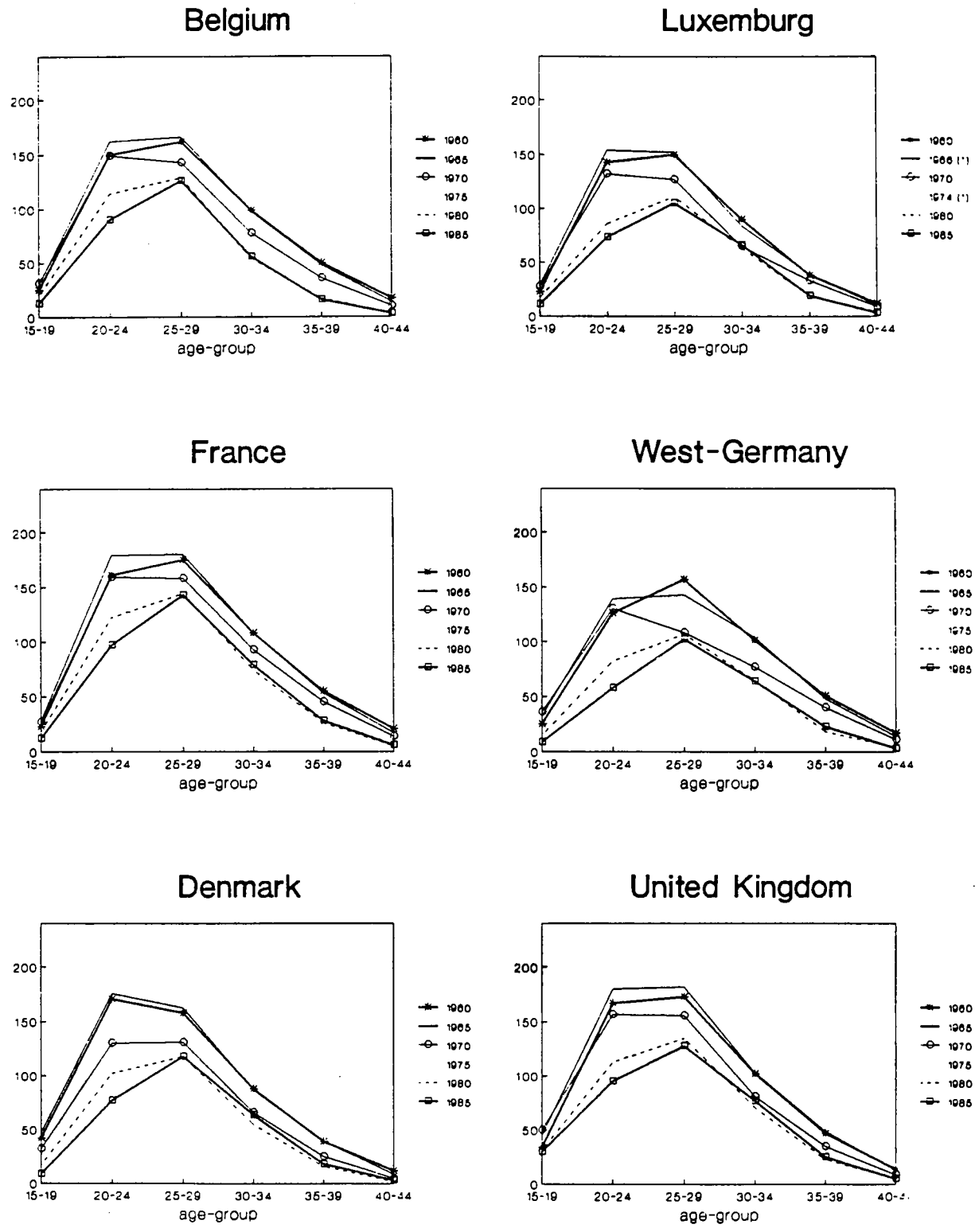
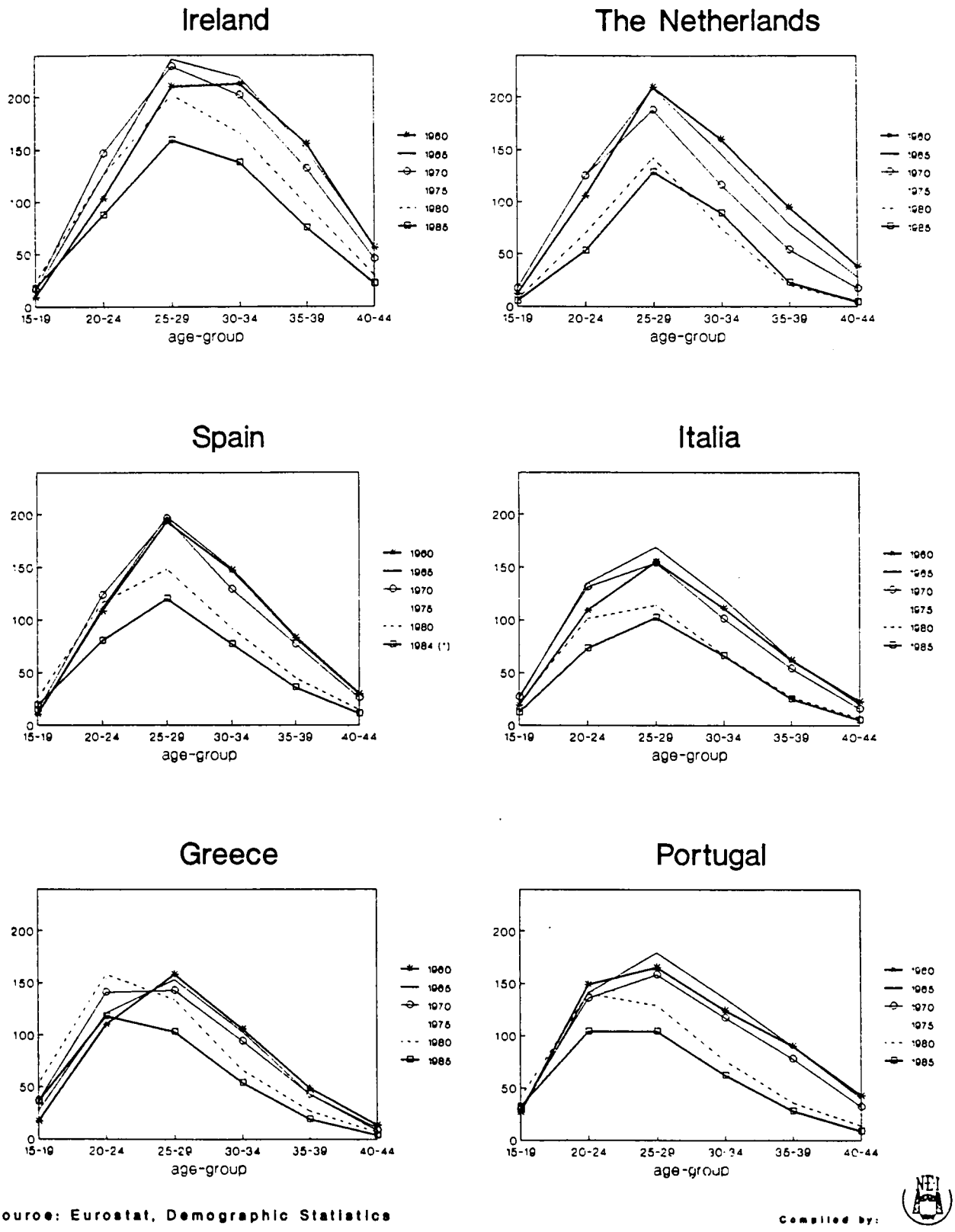


Figure 3.6. continued



Source: Eurostat, Demographic Statistics

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The fertility pyramids have given only a first glimpse of the age-specific aspects of fertility, and a more detailed examination is required. To that end, figure 3.7 illustrates the development of the fertility rates of the five most important age brackets, calculated on a five-year average base to get rid of possible short-term fluctuations. Of course, the fact has to be taken into account that the scale values vary for the different age brackets. Given the somewhat different trends observed above between, on the one hand, northern Member States and, on the other hand, southern Member States plus Ireland, figure 3.7 sets out the trends, separately, for each of these two groups.

Figure 3.7. Fertility-rates by age bracket

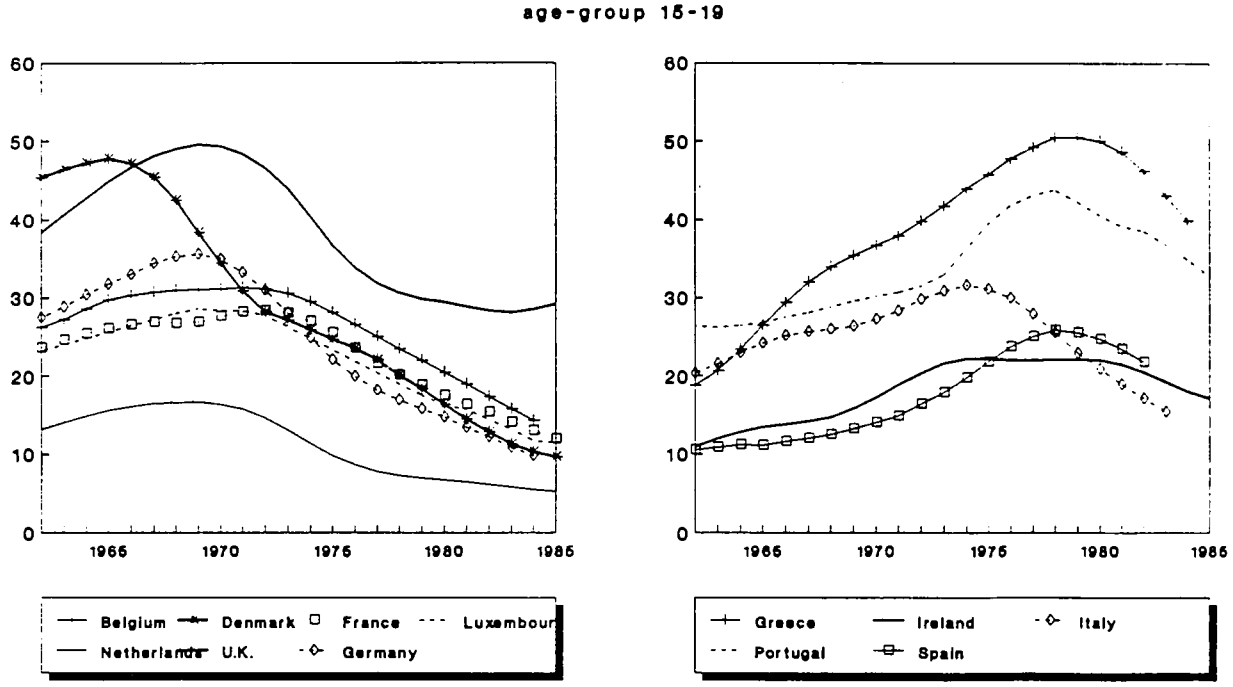
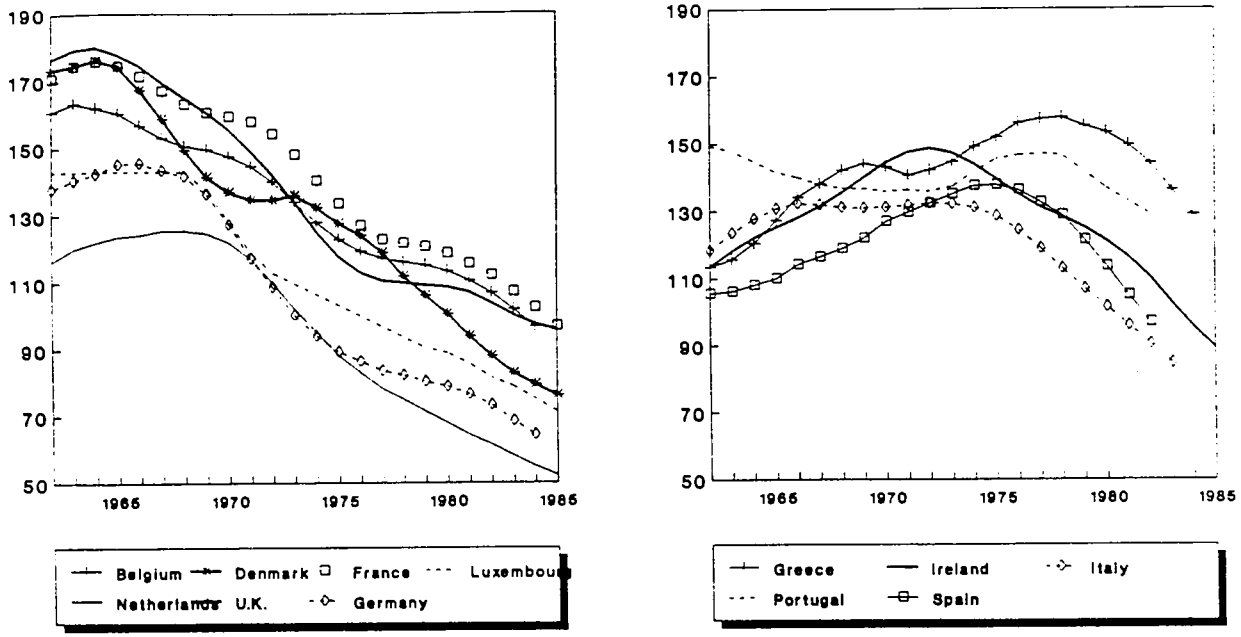


Figure 3.7. continued

age-group 20-24



age-group 25-29

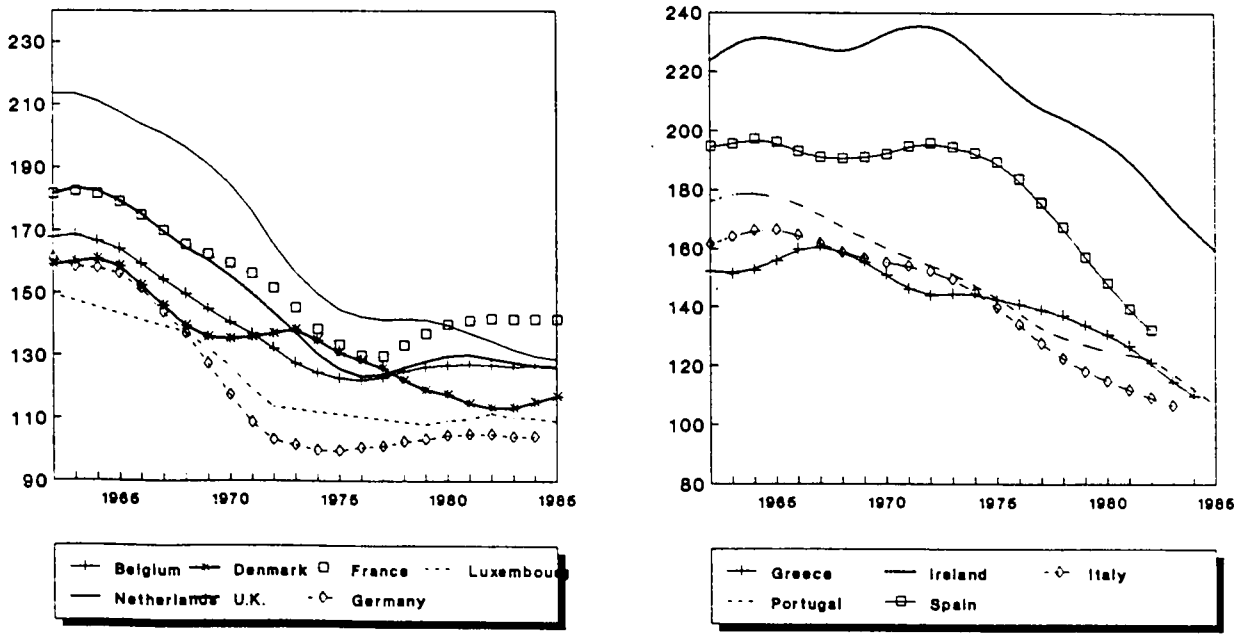
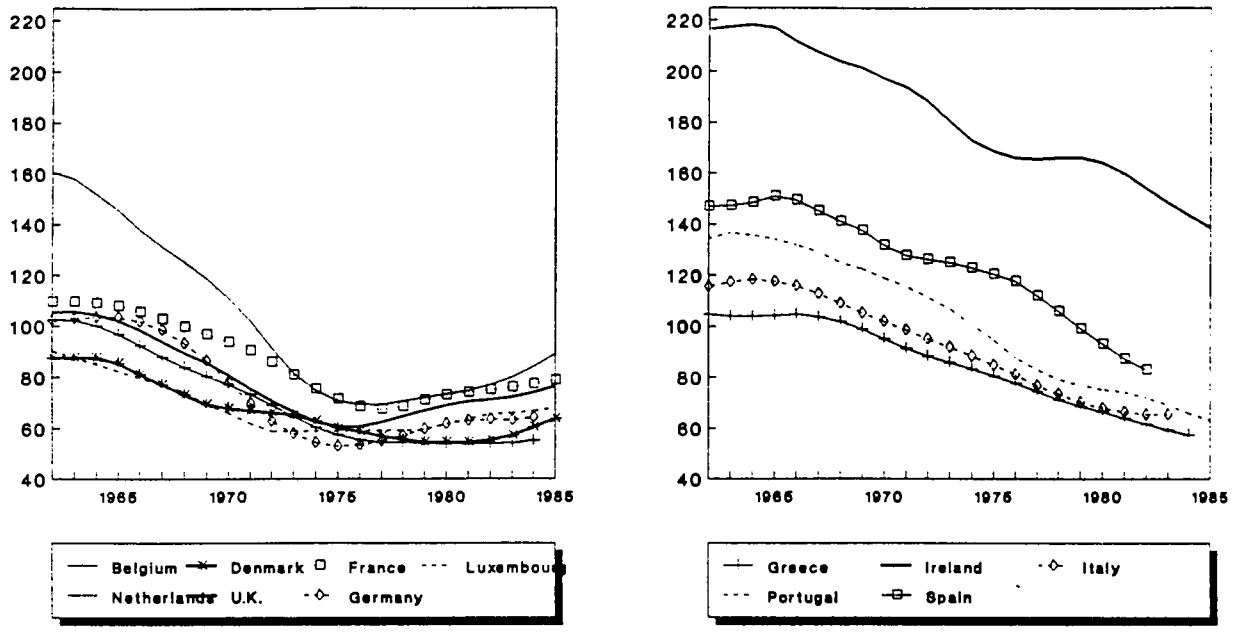
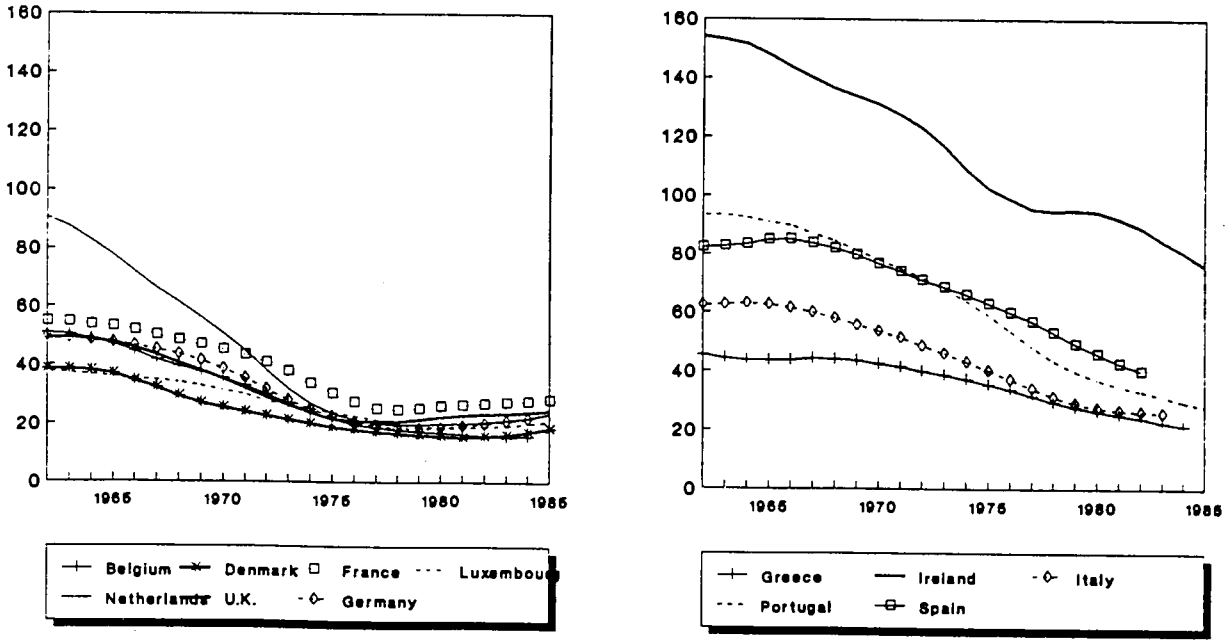


Figure 3.7. continued

age-group 30-34



age-group 35-39



In the North-European countries, the fertility rates in the 15-19 age bracket show a moderate drop from the 1965-70 period onwards, ending in an extremely low value for the Netherlands in 1985. We have assumed that this value touches the bottom as far as the Netherlands are concerned. Even more remarkable is the stagnating fertility rate, albeit on a relatively high level, of this age bracket in the United Kingdom. Unlike Northern Europe, the Southern European nations and Ireland are marked by increasing fertility rates right up the end of the 1970s. Italy is exceptional in that there the decrease already started around 1975. Fertility in this age bracket is still comparatively high in Greece and Portugal.

The age bracket between 20 and 24 displays to some degree the same tendency. Again, in the North-European countries the fertility rates have been dropping since about 1965. Note that because of the diverging scale values, the fall is much steeper than with the younger age bracket. Another difference is that the process does not seem to have come to an end. With the exception of Italy and this time also Ireland, the trend in the remaining nations shows a lag of about 10 years. Once more the fertility rate is relatively high in Greece and Portugal, and low in the Netherlands.

The group between the ages of 25 and 29 differs on several points from the previous one. First of all, in the North-European countries fertility dropped less, stabilisation setting in around 1975. For some countries a slight increase can even be observed. Secondly, in the South-European states the rates began to drop already in the 1960s. Finally, not Portugal and Greece, but Ireland and (to a lesser extent) France are marked by high rates.

The age brackets between 30 and 34 and between 35 and 39 are very much alike, and comparable on some points with the previous age bracket (but keep the different scale values along the Y-axis in mind). Perhaps the most striking feature is the exceptional position of Ireland.

Evidently, then, every age bracket develops along its own specific path. Furthermore, the results seem to justify the division of the EC member states into two groups.

3.4.3. Fertility in the two population variants

As stated at the beginning of this section, fertility is influenced by a range of variables. Some are relatively easy to identify, for example, the increased participation of women in the labour market, which undoubtedly has induced the tendency for women to postpone childbearing, already pointed out in the previous sub-section. But not all influences are of an economic nature. Indeed, the changed attitude to religion also has a bearing on fertility, but this is much harder to define. There are so many factors that affect fertility one way or the other as to make the projection of fertility patterns a hazardous exercise. Nevertheless, for the very reason that fertility varies over time to a much greater extent than mortality, population projections based on non-constant fertility would seem to be necessary.

In view however of the uncertainties involved the option chosen was to draw up two demographic projections, based, respectively, on the assumption of 'stable' and 'non-stable' fertility. The assumption of 'stable fertility' means that age-specific fertility rates of 1985[1)] are held constant into the future. When examing the evidence of the past as in DEMETER 1986, the fertility rates for the 15-19 and 20-24 age brackets are seen to be on a considerably lower level for nearly all EC-12 member states. The same is true of the fertility rates of the other age brackets in the four South-European countries and Ireland, but the other countries display input values partly equal and partly even superior to the level of DEMETER 1986, especially in the 30-34 bracket.

In recognition of such variation over time the second variant, as in DEMETER 1986, features non-stable fertility rates, although unlike DEMETER 1986 the projections were not developed from the overall fertility rate. Indeed, the previous sub-sections have revealed that individual age brackets tend to show very similar development patterns in all countries. For example, in the 1980s the

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1) For Spain 1984.

20-24 age bracket showed a steep drop in fertility, the lowest point of which does not seem to have been reached yet. Another general trend is the inertia some countries exhibit, in particular Portugal, Greece, Spain and Ireland. Their fertility rates seem to lag some ten years behind those of the North-European nations. Italy, too, seems to suffer from inertia, if not to the same extent.

Based on observed trends the age-specific fertility rates have been extrapolated until 2015. In contrast to the procedure followed in "Demeter 1986", where first overall fertility was projected and later on a subdivision was created between the age-brackets, this time starting point have been age-specific fertility rates. Afterwards then overall fertility, the resultant of the sum of the subgroups, can be calculated and a consistency check can be made, in some cases leading to slight alterations in the initial values.

The method applied to the projection of the age-specific fertility rates consists of a "curve-fitting" procedure. The course of the observed values in the period from the beginning of the sixties up to 1985 is caught in a mathematical expression by a trial and error process.

The weight of the observations increases with time, so that most recent developments carry the heaviest influence. In this way account is taken of developments over a long time period, without a simple extrapolation of observations, which would lead in a number of cases to rather exaggerated results.

By introducing the timevariable for the period 1990-1995 into the calculated mathemathical expression, values are found for the first projection periods. For later periods application of this method seems rather hazardous, so a choice was made for a drastic smoothing down of the curves, leading to practical stability after the year 2000.

Although this method is very refined, compared to simple extrapolations one should bear in mind that the factors influencing fertility, as mentioned before, are various and projections will always be surrounded by great uncertainties. Nevertheless observed trends seem lucid enough to offer adequate support for a projection on the short to medium run. Moreover as trends for the individual age

specific projections have a tendency of counteracting, the resulting picture of overall fertility will show a strongly reduced error margin.

For the individual age brackets the projected values are illustrated in Annex 3.1. Up to 1985 the graphs reproduce the observed five-year averages; for subsequent years, the values for the six projection years have been filled in. Because the rates for the 40-44 and 45-49 age brackets showed but marginal changes, these categories have been omitted. Annex 3.2 contains the same projections, but this time grouped by age bracket rather than by country.

Naturally it is interesting to establish the consequences of these projections for the development of total fertility. Table 3.3 gives an impression of the evolution of the total fertility rate among women between the ages of 15 and 49. The last column gives in brackets the total fertility rate which emerges when the 1985 age-specific fertility rates are assumed constant.

Table 3.3. Development of the total fertility (15-49)
(live births per 1000 women aged 15-49)

Country	1990	2000	2015	
Belgium	45.2	40.6	39.7	(40.8)
Denmark	42.5	43.2	37.5	(36.9)
France	52.6	48.5	47.5	(50.8)
Germany	39.6	34.5	31.7	(33.4)
Greece	43.5	41.9	38.2	(44.1)
Ireland	63.4	58.8	54.6	(69.7)
Italy	40.1	41.0	33.4	(35.1)
Luxembourg	42.6	35.0	36.9	(37.9)
Netherlands	47.4	44.2	38.8	(40.1)
Portugal	43.4	40.8	35.8	(44.6)
Spain	44.9	45.4	38.9	(45.0)
United Kingdom	55.0	51.5	50.0	(49.9)
EC 12	46.2	43.8	40.6	(43.4)

From the above table, several conclusions can be drawn. In the entire EC, total fertility is clearly on the wane. Especially the Irish decline is considerable; nevertheless Ireland will still boast

by far the highest fertility within the EC in 2015. Apart from Ireland, the drop of fertility in Portugal is relatively speaking very large.

Whether constant fertility rates are assumed or age-specific rates projected, seems to make little difference to the development of total fertility in the countries of North-West Europe. For the four southern states and Ireland matters are quite different, however. For these countries, projected age-specific fertility rates make for a distinct decrease in total fertility.

The conclusion from the above arguments, surprising at first sight, is that in the year 2015, total fertility will be clearly higher in the United Kingdom and France than in the South-European countries. Two explanatory factors can be offered:

- The age brackets with the greatest relative impact on total fertility (20-24, 25-29, and 30-34) have for some time displayed a stable pattern in France and the United Kingdom, but were distinctly on the wane in the southern states up to 1985. Such tendencies naturally reflect themselves in the projection of the fertility rates for the individual countries.
- Besides the projected age-specific fertility rates, the age composition of the female population in the categories between the ages of 15 and 49 naturally affects total fertility. From table 3.4, the age brackets marked by relatively high fertility rates appear to take up the largest female population shares in the United Kingdom and France in 2015, which also results in a relatively high total fertility.

Table 3.4. Women in the age brackes with relative high fertility (20-34 years of age), as a percentage of the female population between the ages of 15 and 49 in 2015

France	41.9
United Kingdom	41.8
Greece	39.6
Portugal	38.3
Italy	36.1
Spain	34.8

4. RESULTS OF THE DEMOGRAPHIC PROJECTIONS

4.1. Introduction

Two variants of the demographic projection have been developed. One of them is based entirely on the figures recorded in 1985, all variables being assumed to keep the 1985 level right up to 2015. In the second projection, of the three variables theoretically manipulable, only fertility will be subjected to change. That makes for some specific differences between the two projections.

The level of fertility prevailing in a period affects only the youngest age bracket (from 0 to 4, at a five-year interval). That is to say, a change in fertility by 1990 will five years hence affect only the 0-4 age bracket (and through it, of course, total population). In 2000, the 0-4 and 5-9 age brackets will deviate from the former projection, and so on. So, in absolute numbers, the projections for the older population brackets will be the same in both variants, but the relative shares in total population will change for all age brackets in all projection years as a result of the changing age structure of the population.

This chapter presents the final results of both variants, comparing them with the ones obtained in 1986 and with estimates made by national statistical services. The first part of this chapter highlights changes in the size of the population; the second part pays attention to modifications in its structure.

4.2. Long-term developments

4.2.1 Increase or decrease?

For a long time countries in Western Europe were marked by the persistent growth of their populations. But, as pointed out already in DEMETER 1986, in most countries the growth rate steadily decreased in the 1960s and 1970s. Actually, several countries are approaching the

point where, in view of the low fertility and almost constant mortality, the population will begin to decline. In the long run, most EC-countries are bound to reach and pass that point.

Figure 4.1 indicates that when that point is reached by either projection method. It shows very clearly that for some countries the process of decline has already set in (Denmark, Belgium, Luxemburg), while the population in others appears to go on growing significantly until at least the year 2000 (France, Netherlands, Spain). The population of the EC as a whole is expected to increase up to the 1995-2000 period, after which a decrease sets in which is projected to take it back, in the 2005-2010 period, to the level of 1985.

Figure 4.1. Index figures of the development of population in the EC-12 countries (value realised in 1985 = 100)

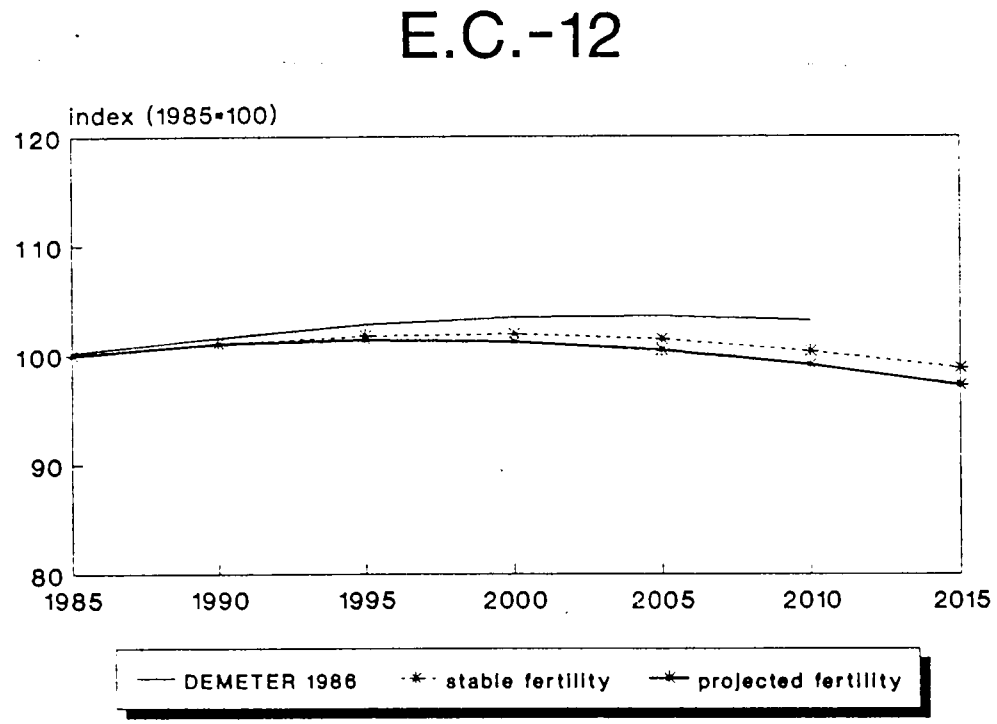
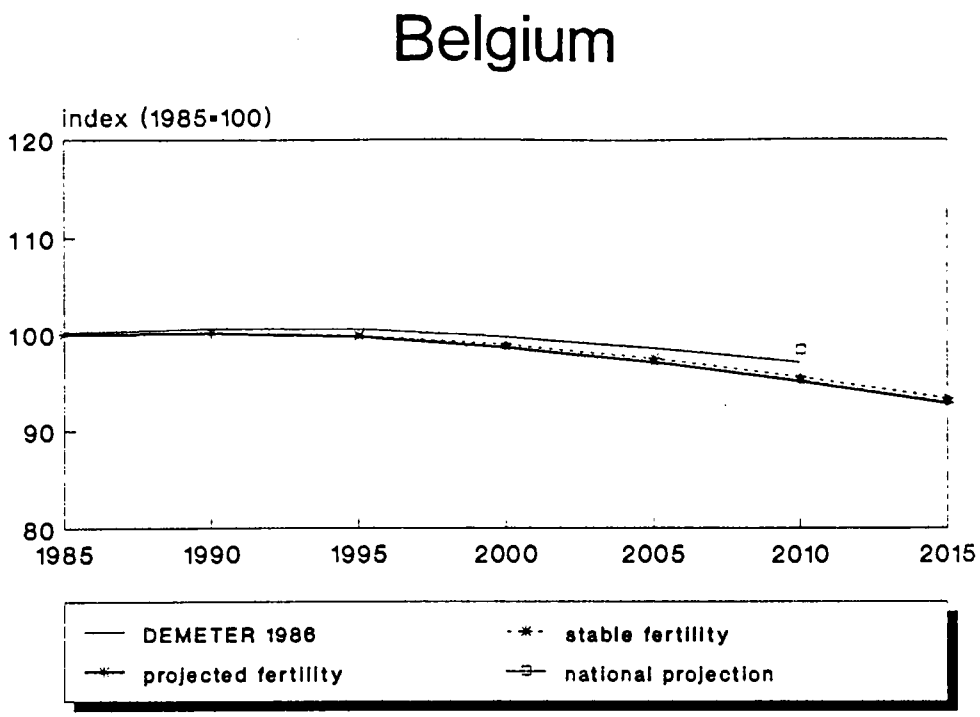


Figure 4.1. continued



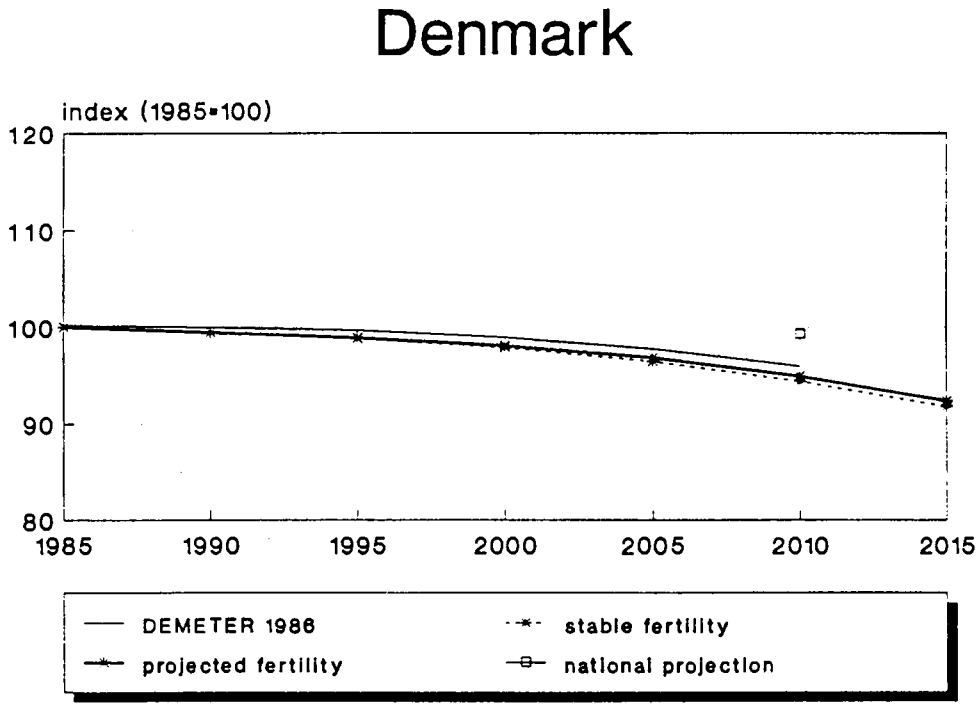
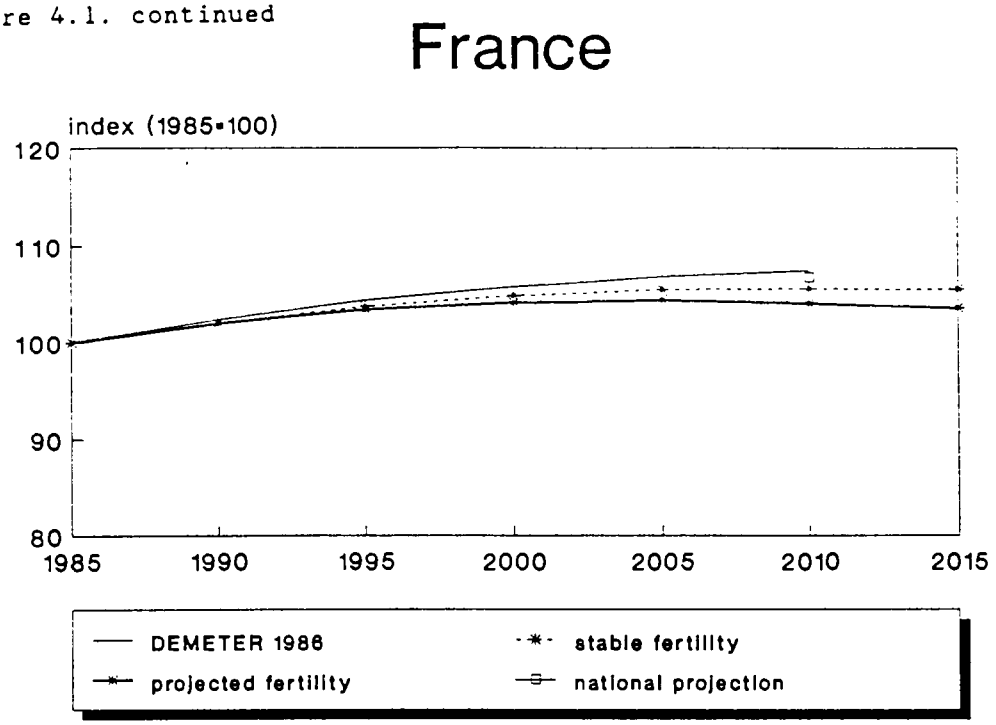


Figure 4.1. continued



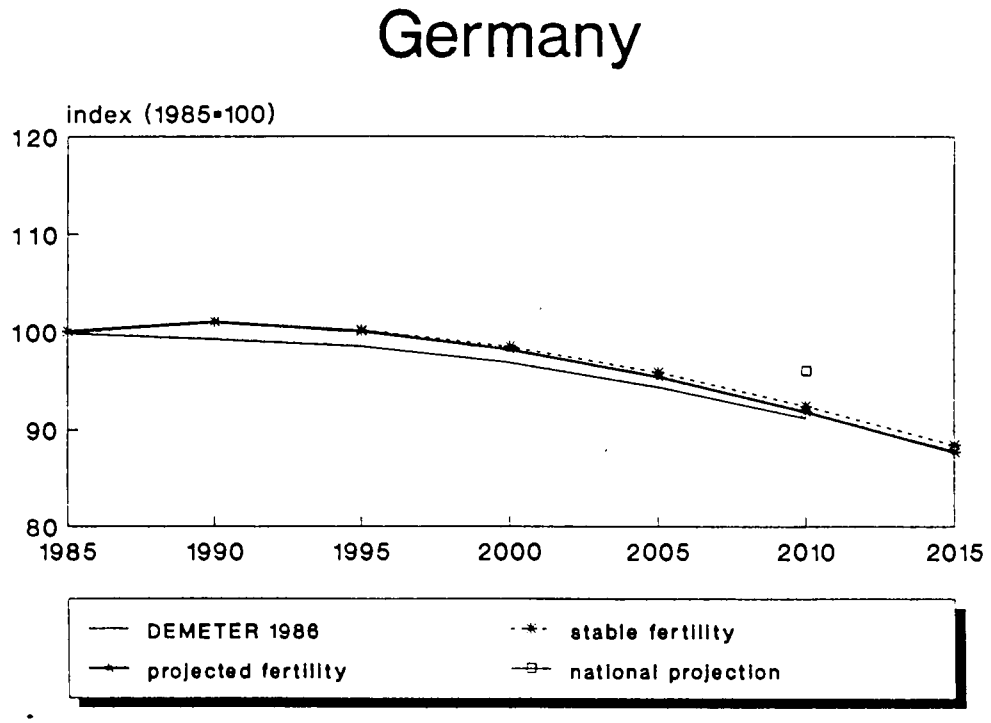
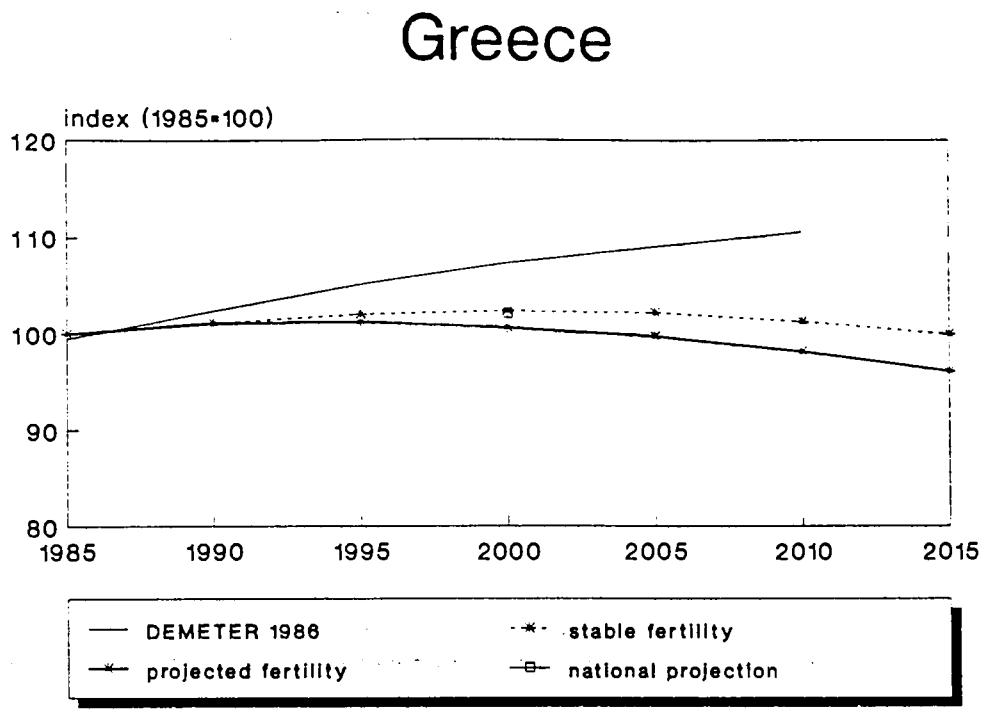
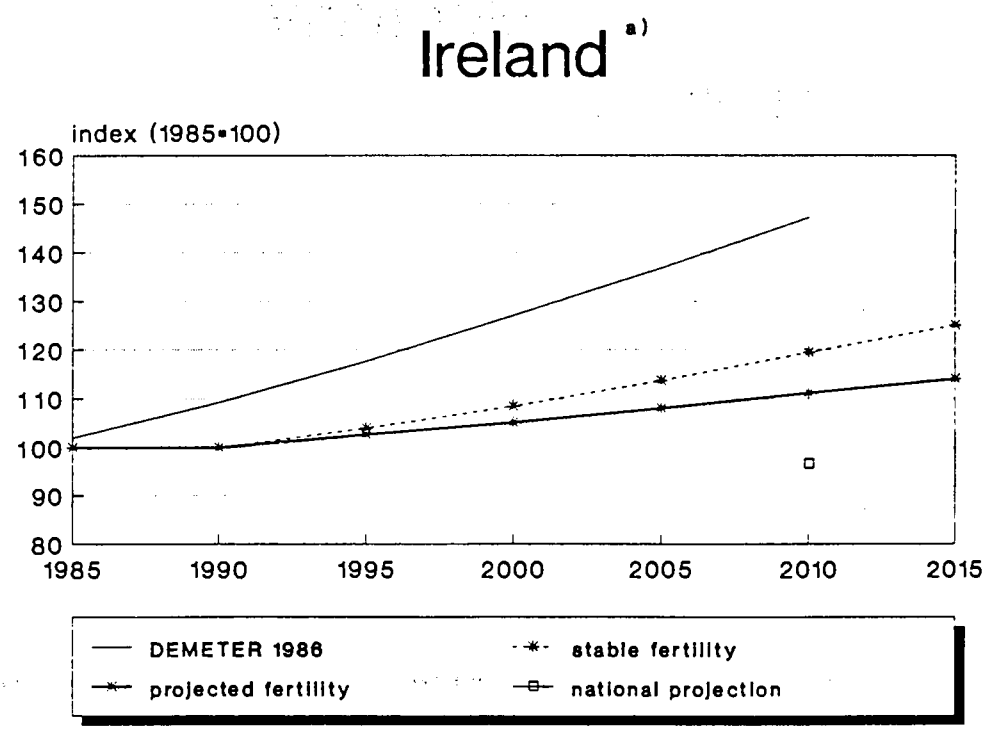


Figure 4.1. continued

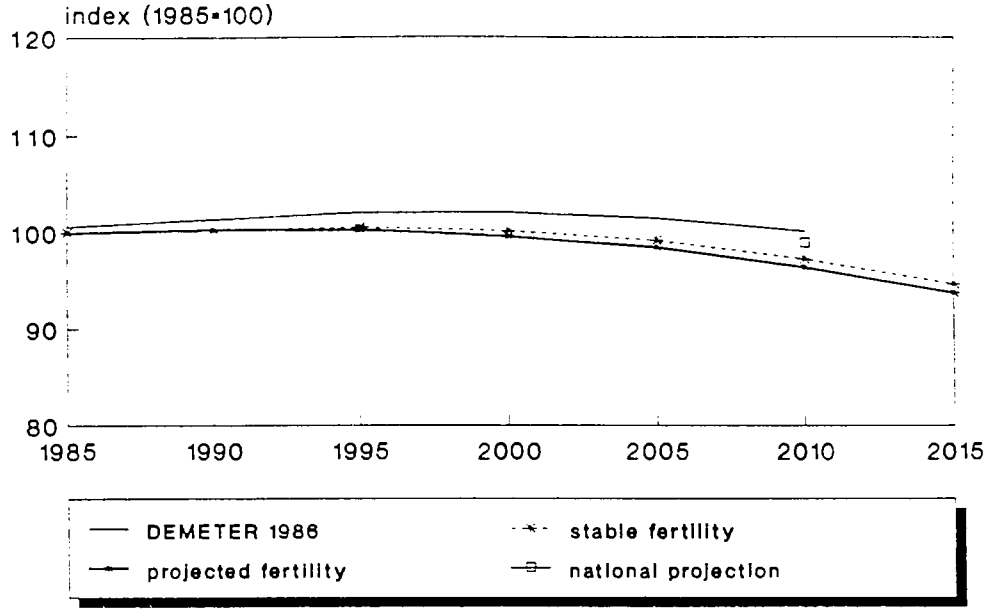




a) Deviating Y-axis scale values

Figure 4.1. continued

Italy



Luxembourg

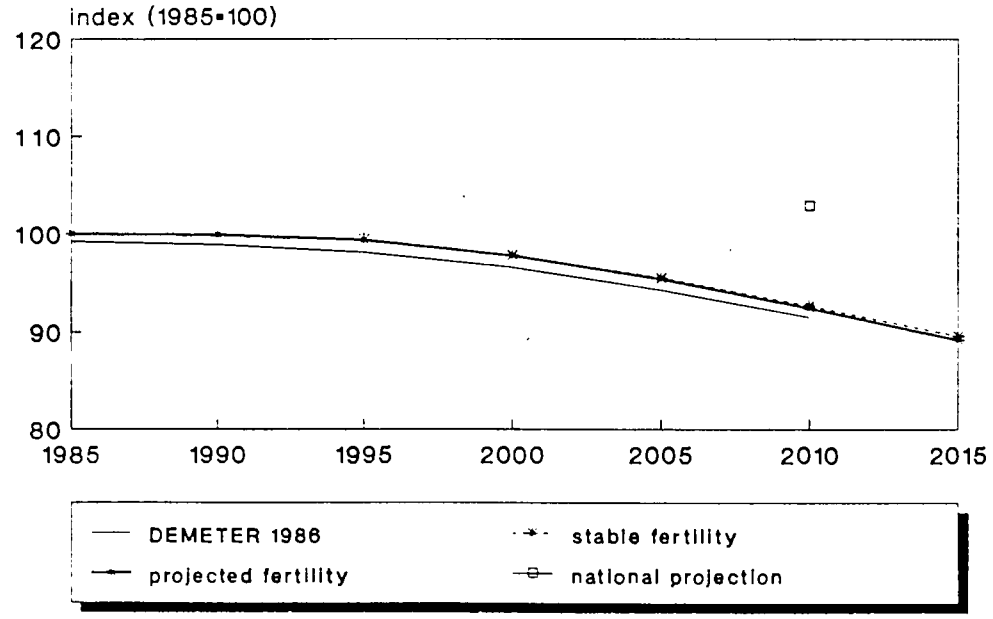
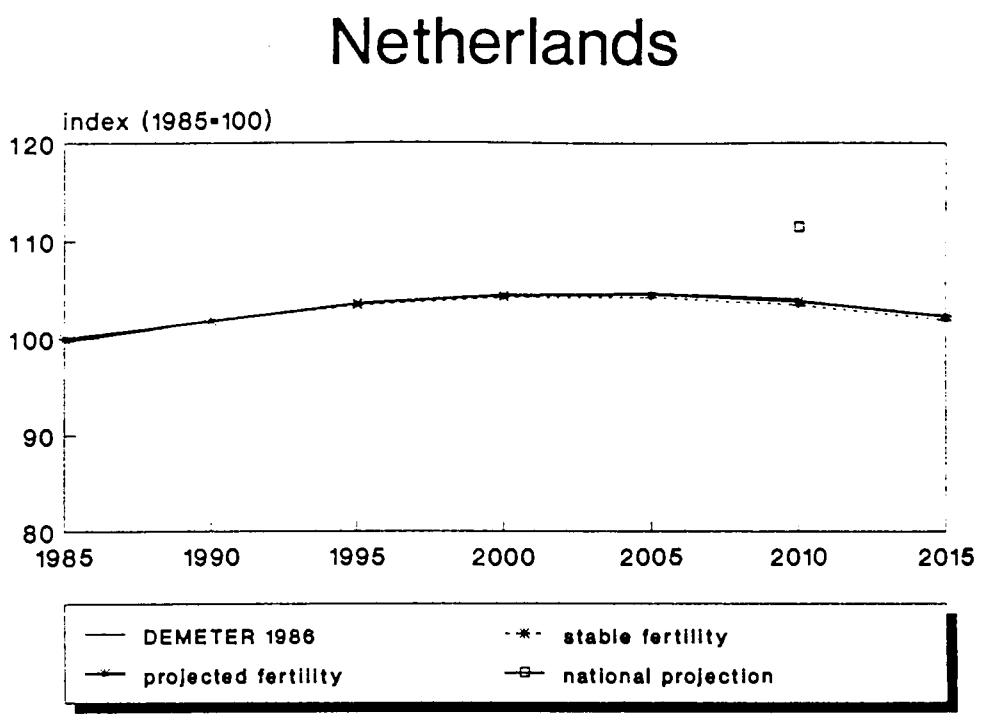


Figure 4.1. continued



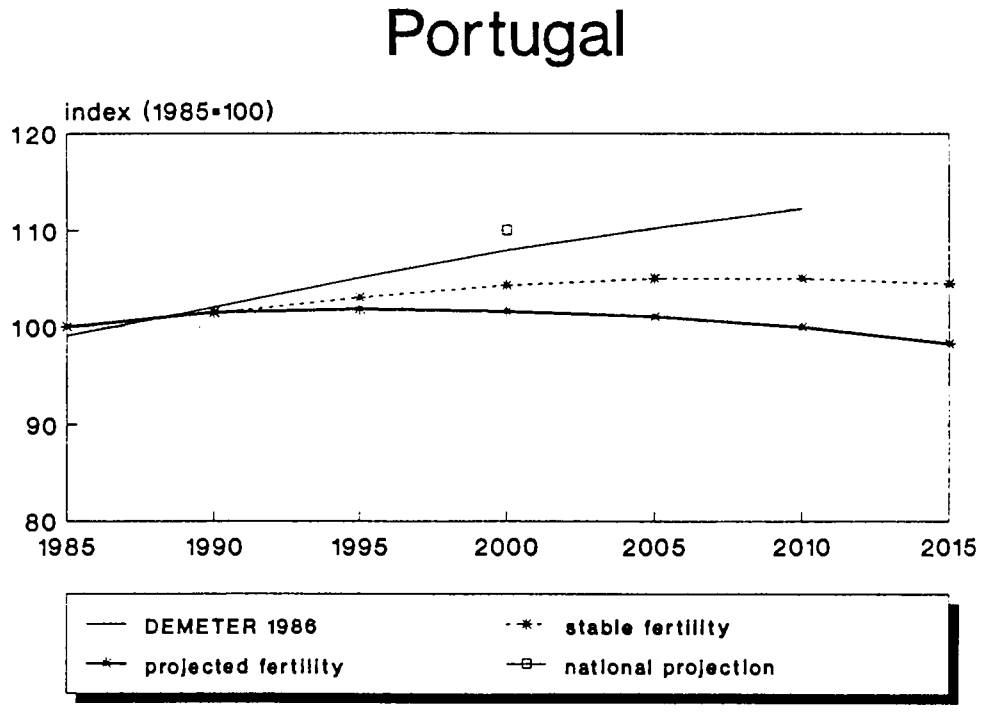
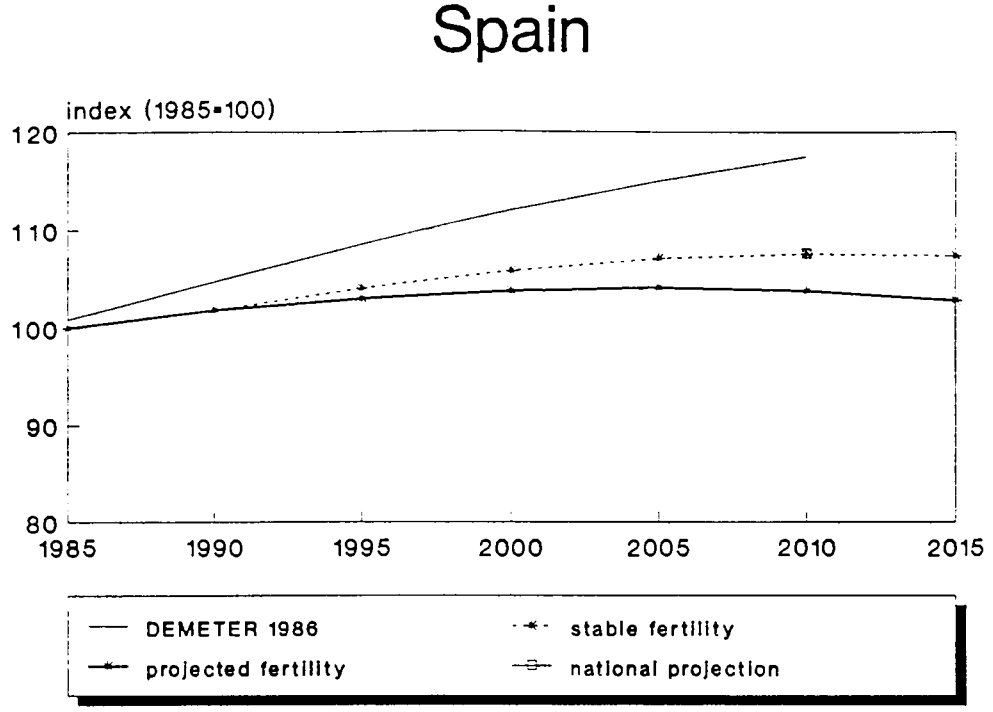
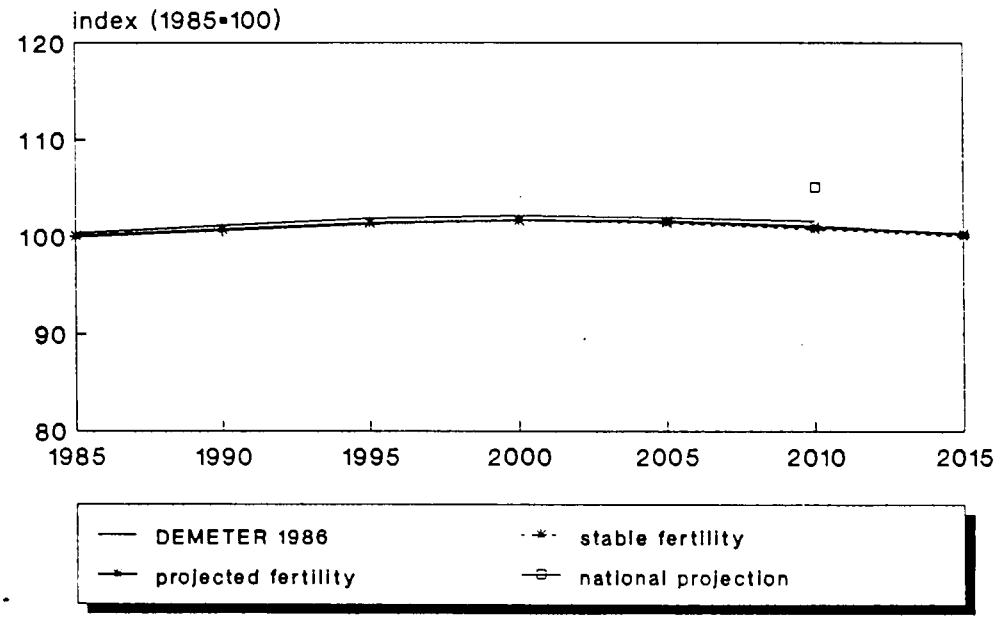


Figure 4.1. continued





Compiled by

Comparison of the three projections reveals a few striking trends.

First, for most EC-12 member states the new population forecasts show a smaller increase or greater decrease than DEMETER 1986. The difference can be explained mainly by the assumption made in 1986 that fertility would remain on the level then prevailing. As was demonstrated in figure 3.5 and table 3.3, overall fertility has not developed according to that assumption, but dropped moderately in most North-European countries and a great deal in the South-European states and Ireland. At the least, the drop was enough to compensate the decline in mortality. The only exceptions are Germany and Luxemburg. The diverging trend in Germany is due simply to the correction for the influx of immigrants from Eastern Europe. The slight deviation observed for Luxemburg is mostly due to the underestimation of the 1985 population in DEMETER 1986.

Secondly, the projections made by national statistical services (source: Eurostat; Demographic Statistics) show in most cases a (slight) upward deviation from the ones obtained with the DEMETER-model. For some countries the difference can be attributed directly to the fact that national projections are based on rather obsolescent data; in other cases, national projections include a positive immigration rate. On the whole, the deviations are not excessive, except for Luxemburg and Ireland. Unlike the projection drawn up by the Irish Statistical Office, both DEMETER variants result in a distinct growth of the Irish population owing mostly to the non-migration option adopted for the 1990-2015 period. However, the latest projections indicate far less growth than assumed in DEMETER 1986, due to the once-only migration correction for the 1985-1990 period and the considerable reduction of fertility.

Lastly, a remark is in order about the difference between the two variants of the present projection. The stable-fertility variant produces for most countries higher population figures than the variant based on projected fertility. The conclusion is obvious: projection of age-specific fertility rates results in a declining overall fertility in most countries, the exceptions being Denmark, the Netherlands and the United Kingdom.

Table 4.1 recapitulates the variant based on projected fertility. It gives a review of the absolute population volume by country and sex for three projection years.

Table 4.1. The population in the European Community 1990-2015 (projected fertility, x1000)

	Total			Male			Female		
	1990	2000	2015	1990	2000	2015	1990	2000	2015
Belgium	9866	9726	9147	4814	4739	4440	5052	4987	4707
Denmark	5085	5014	4722	2500	2461	2305	2584	2553	2417
France	56117	57312	56997	27364	27900	27598	28754	29412	29399
Germany	61672	59951	53556	29598	28954	25773	32074	30997	27783
Greece	10027	9982	9529	4934	4913	4701	5093	5070	4828
Ireland	3537	3716	4037	1767	1853	2009	1770	1863	2028
Italy	57276	56865	53473	27812	27570	25843	29464	29295	27630
Luxembourg	366	358	326	178	174	157	188	184	169
Netherlands	14716	15100	14789	7268	7439	7225	7448	7662	7564
Portugal	10287	10293	9961	4965	4968	4812	5322	5326	5149
Spain	38998	39726	39368	19155	19504	19298	19844	20222	20071
United Kingdom	56938	57499	56689	27793	28179	27833	29145	29321	28856
EC-12	324884	325543	312593	158147	158652	151992	166737	166891	160600

Another method to represent the future development of the population volume is by displaying the yearly growth rates within five-year periods. Figure 4.2 is a graphic representation of these rates for the individual countries. Of course this presentation leads to the same conclusions, but it also provides further information. With the exception of Ireland, in all countries the growth rates continue to drop as time goes on. For each variant and every country the histograms clearly indicate at which point in time the situation of positive growth passes into one of negative 'growth'. For Greece, Spain, Portugal and Ireland the three variants are strikingly different. The drop in age-specific fertility rates during the period 1980-1985 accounts for the difference between DEMETER 1986 and the new projections, and their continued decline in the projected-fertility variant causes this variant to end up lowest.

Table 4.2. Average compound rate of growth of population (projected fertility) (% per annum)

Country	Total			Male			Female		
	1990-2000	2000-2015	1990-2015	1990-2000	2000-2015	1990-2015	1990-2000	2000-2015	1990-2015
Belgium	-0.14	-0.41	-0.30	-0.16	-0.43	-0.32	-0.13	-0.38	-0.28
Denmark	-0.14	-0.40	-0.30	-0.16	-0.44	-0.33	-0.12	-0.36	-0.27
France	0.21	-0.04	0.06	0.19	-0.07	0.03	0.23	-0.00	0.09
Germany	-0.28	-0.75	-0.56	-0.22	-0.77	-0.55	-0.34	-0.73	-0.57
Greece	-0.04	-0.31	-0.20	-0.04	-0.29	-0.19	-0.05	-0.33	-0.21
Ireland	0.49	0.55	0.53	0.48	0.54	0.51	0.51	0.57	0.55
Italy	-0.07	-0.41	-0.27	-0.09	-0.43	-0.29	-0.06	-0.39	-0.26
Luxembourg	-0.22	-0.61	-0.45	-0.22	-0.66	-0.48	-0.21	-0.56	-0.42
Netherlands	0.26	-0.14	0.02	0.23	-0.19	-0.02	0.28	-0.09	0.06
Portugal	0.01	-0.22	-0.13	0.00	-0.21	-0.13	0.01	-0.23	-0.13
Spain	0.19	-0.06	0.04	0.18	-0.07	0.03	0.19	-0.05	0.05
United Kingdom	0.10	-0.09	-0.02	0.14	-0.08	0.01	0.06	-0.11	-0.04
EC-12	0.02	-0.27	-0.15	0.03	-0.29	-0.16	0.01	-0.26	-0.15

The variant based on projected fertility is represented in the table by average yearly growth rates, broken down by period and sex. Apparently, in the 2000-2015 periods all EC-12 countries except Ireland will be confronted with a declining population! From the breakdown by sex, the growth-rate development is more or less similar for men and women.

Figure 4.2. Yearly growth rates for five-year periods of population in the E.C.-12 countries

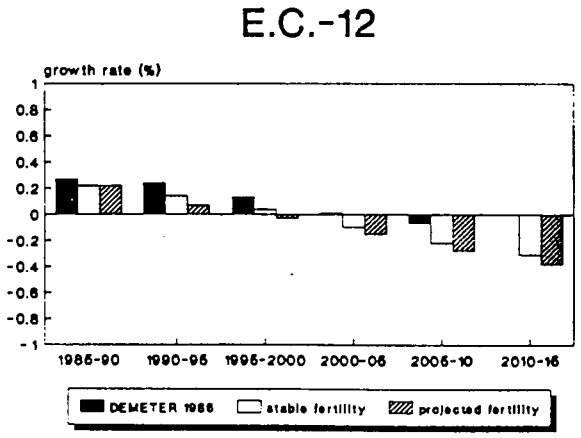
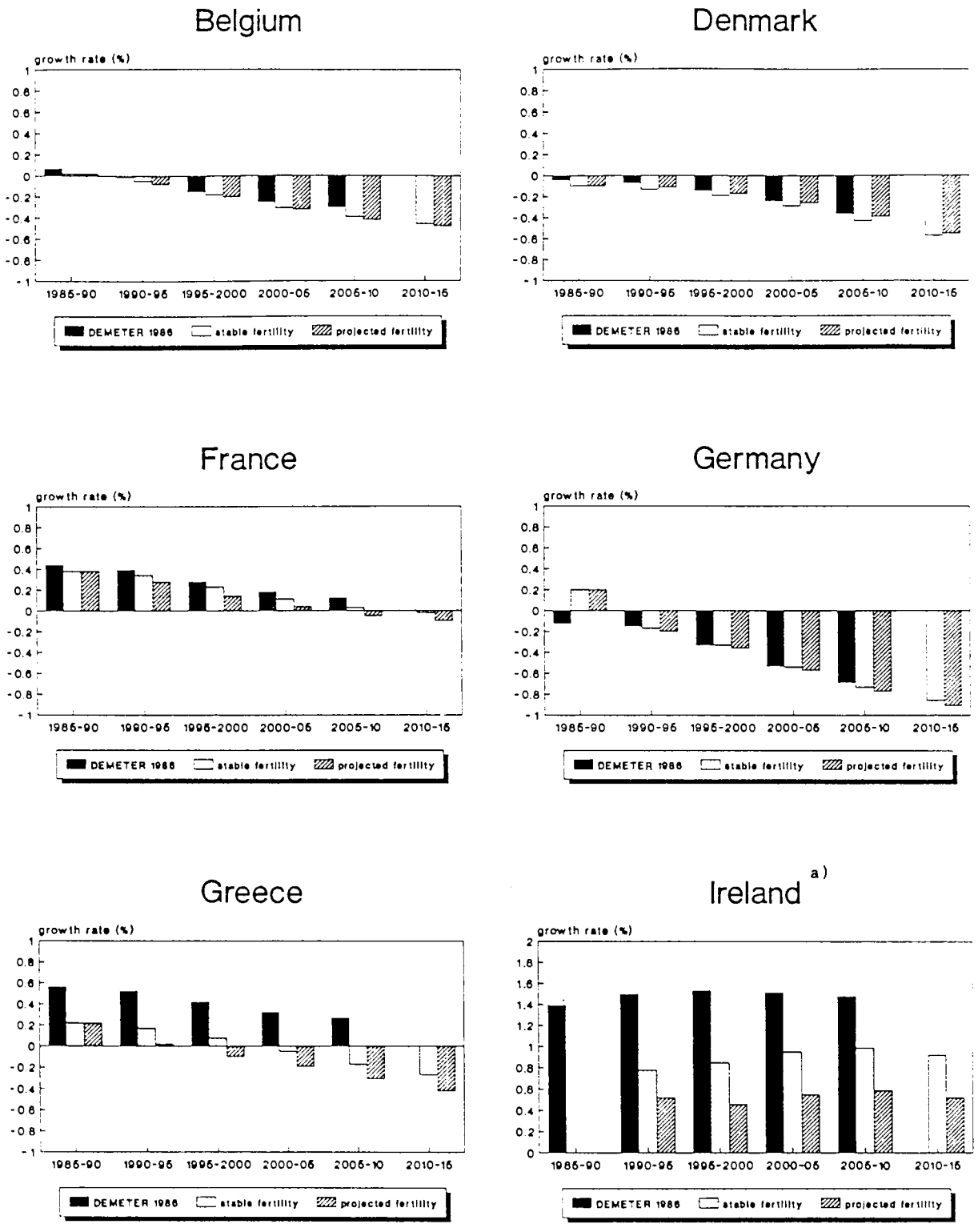


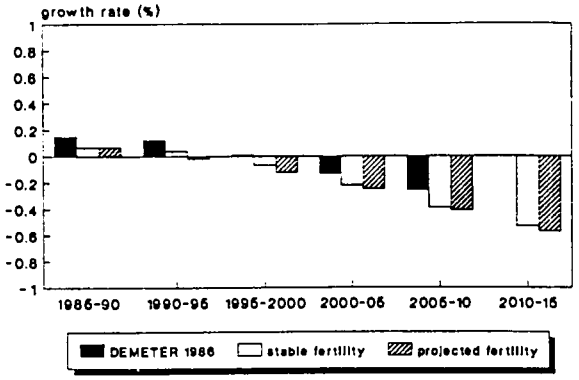
Figure 4.2. continued



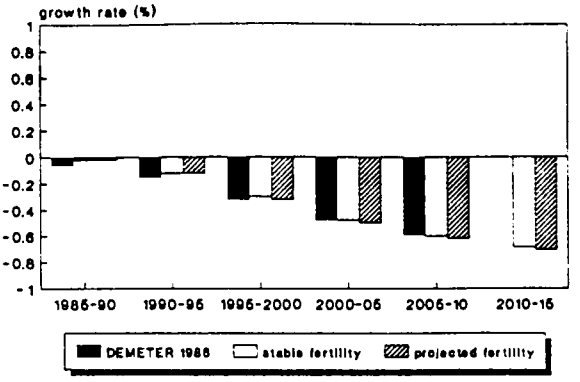
a) Deviating Y-axis scale values

Figure 4.2. continued

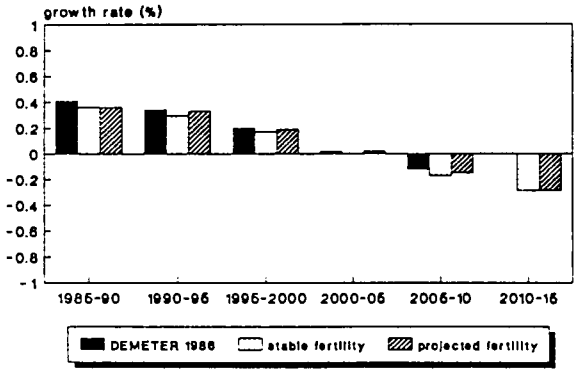
Italy



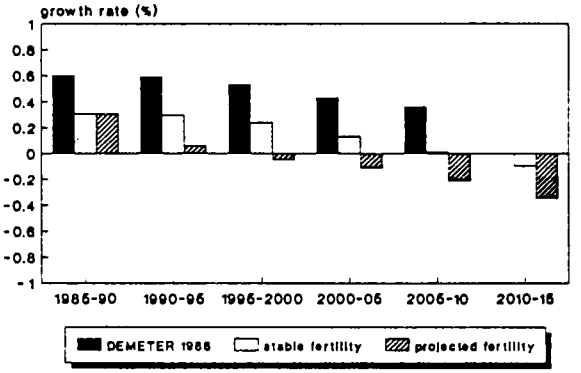
Luxembourg



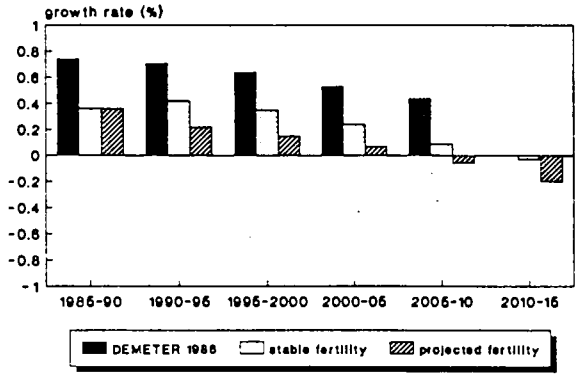
Netherlands



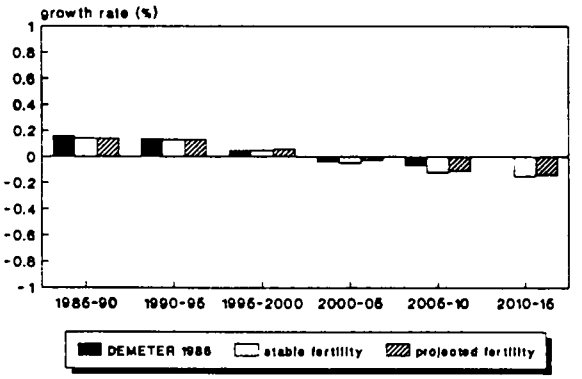
Portugal



Spain



United Kingdom



4.2.2 Relative position of countries

Needless to say that differences in growth rates have consequences not only for the countries themselves, but also for their relative positions within the EC. Excessive modifications are not expected, but some minor changes are bound to occur. DEMETER 1986 already pointed out that West Germany would lose its leading position to France in the future. However, the assumption underlying the German projection must be kept in mind, namely, that the inflow of immigrants from Eastern Europe will be negligible for the period from 1990 to 2010. Table 4.3 provides the relevant percentages.

Table 4.3. Percentage share of the total population of EC-12

	% 1985	% 2015	
		Stable fert.	Proj. fert.
Germany	18.99	17.00	17.13
Italy	17.76	17.01	17.11
United Kingdom	17.59	17.80	18.14
France	17.13	18.29	18.23
Spain	11.92	12.94	12.59
Netherlands	4.50	4.64	4.73
Portugal	3.15	3.33	3.19
Greece	3.09	3.12	3.05
Belgium	3.07	2.90	2.93
Denmark	1.59	1.48	1.51
Ireland	1.10	1.39	1.29
Luxemburg	0.11	0.10	0.10
EC-12	100.0	100.0	100.0

4.3. Changes in the composition of the population

4.3.1. The population shift

- As already stated, the population tends to change not only in size but also in composition. Annex 4.1 illustrates for both sexes the

shares of the three major age brackets in the total population in 1985 and 2015.

The most striking general trend is, as could be expected, the decreasing share of young people (between the ages of 0 and 14) as a result of declining fertility. Equally familiar is the considerable difference between the shares of men and women over the age of 60 in total population. Annex 3.1 confirmed it for Denmark, but in fact in all EC-12 countries female age brackets show a lower mortality rate than their male counterparts.

But apart from such general conclusions some specific effects deserve notice. In contrast to all other EC-members, for Ireland only a minor increase in the share of the over-sixty is projected for the 1985-2015 period. Moreover, the decline of the 0-14 age bracket is fully compensated by a relative growth of the group between the ages of 15 and 59. The same tendency, albeit less pronounced, can be observed for the United Kingdom. In Germany, despite the influx of relatively young immigrants from Eastern Europe, in 2015 females of 60 and older will account for nearly one third of the total female population! The corresponding share of senior males, though amounting to no more than a quarter, is still the highest percentage of the whole EC.

A more detailed illustration is given by the so-called 'population pyramids' (Annex 4.2). In fact the term is long outdated, at least with respect to EC-12 countries. In 1985 the pyramid form was clearly outlined only for Ireland. For the other countries the combined effects of mortality and fertility had led to a shape more like an onion. In view of the course of fertility, that tendency will become stronger in the future.

If the Irish pyramid could be said to have the most 'primitive' shape, in 2015 the most futuristic shape is doubtlessly the one representing the German population. Indeed, it is beginning to resemble an inverse pyramid. The share of the over-seventy is

extremely large - especially the female part - as compared to the other countries (notice the diverging scale values along the X-axis!).

In 2015 France and the United Kingdom will be the countries with the most evenly divided population, all age brackets except that of seniors over the age of 70 being roughly of equal sizes.

4.3.2. Demographic pressure

The previous sub-section broadly discussed and illustrated the structural changes of the population. Of course, such changes have economic implications. Therefore, an alternative approach to the demographic evolution is to explore the so-called demographic pressure, that is, to establish what proportion of the total population is considered economically non-productive and dependent on the active population. As already observed, for nearly all EC-countries the share of youth is expected to drop and that of the senior population over 60 years of age to increase. How that will work out in terms of total demographic pressure is illustrated by figure 4.3 in which the agegroups below 15 and over 60 and the combination of the two are shown as a percentage of the group 15-59 (representing active population).

Figure 4.3. Demographic pressure and the constituting elements (projected fertility, 1985 vs. 2015)

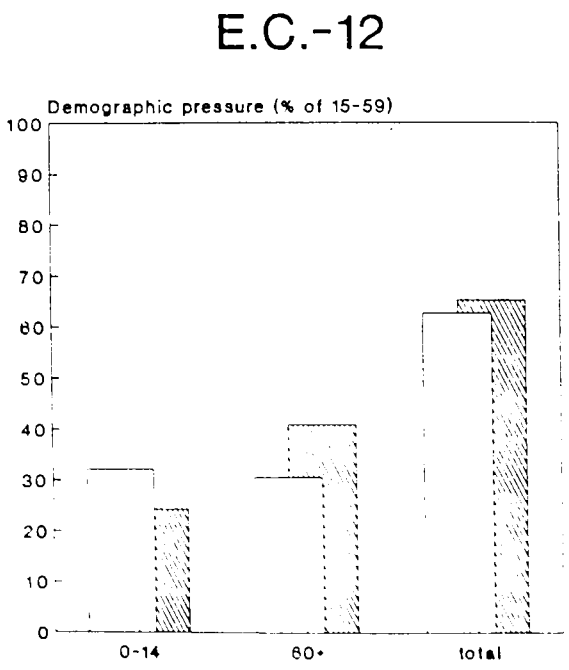
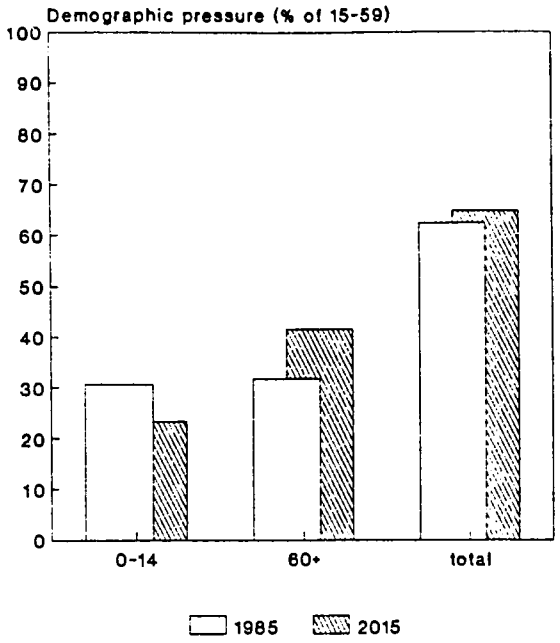
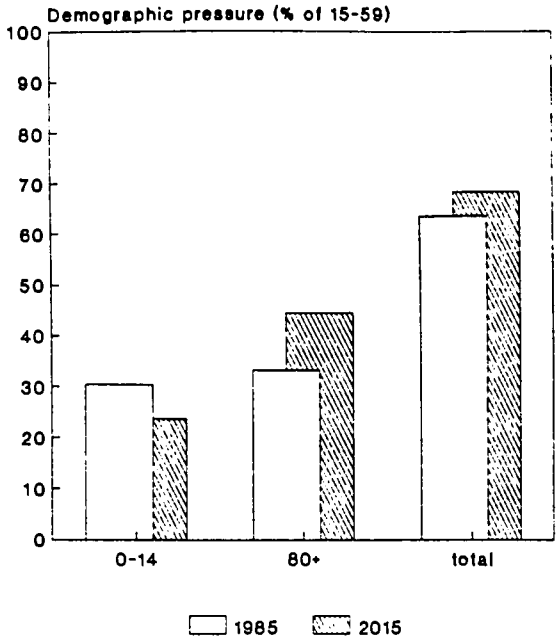


Figure 4.3. continued

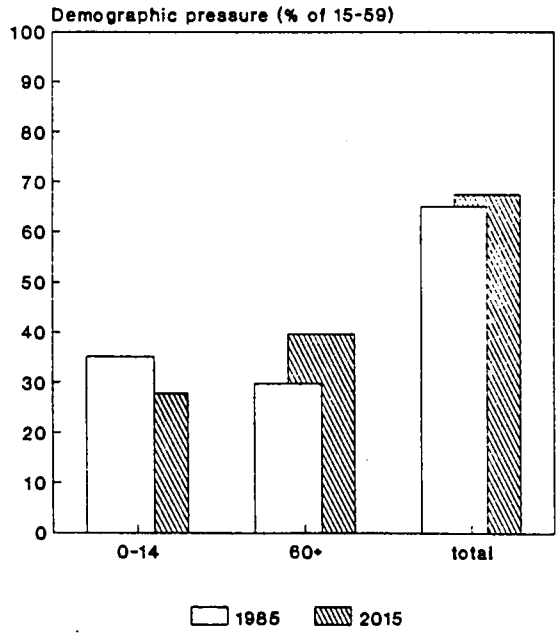
Belgium



Denmark



France



Germany

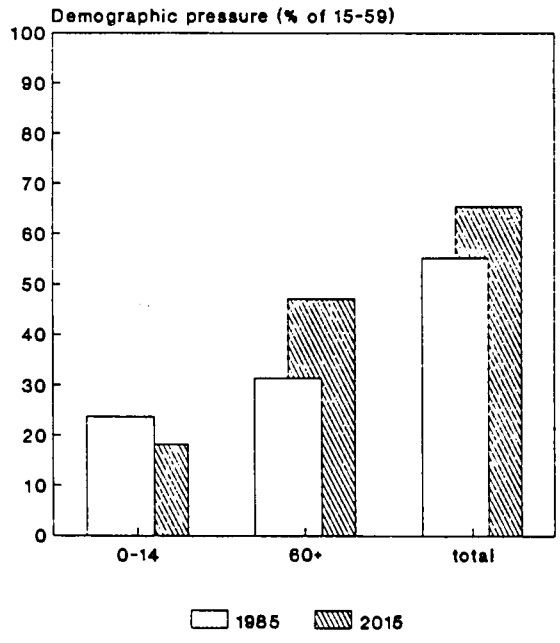


Figure 4.3. continued

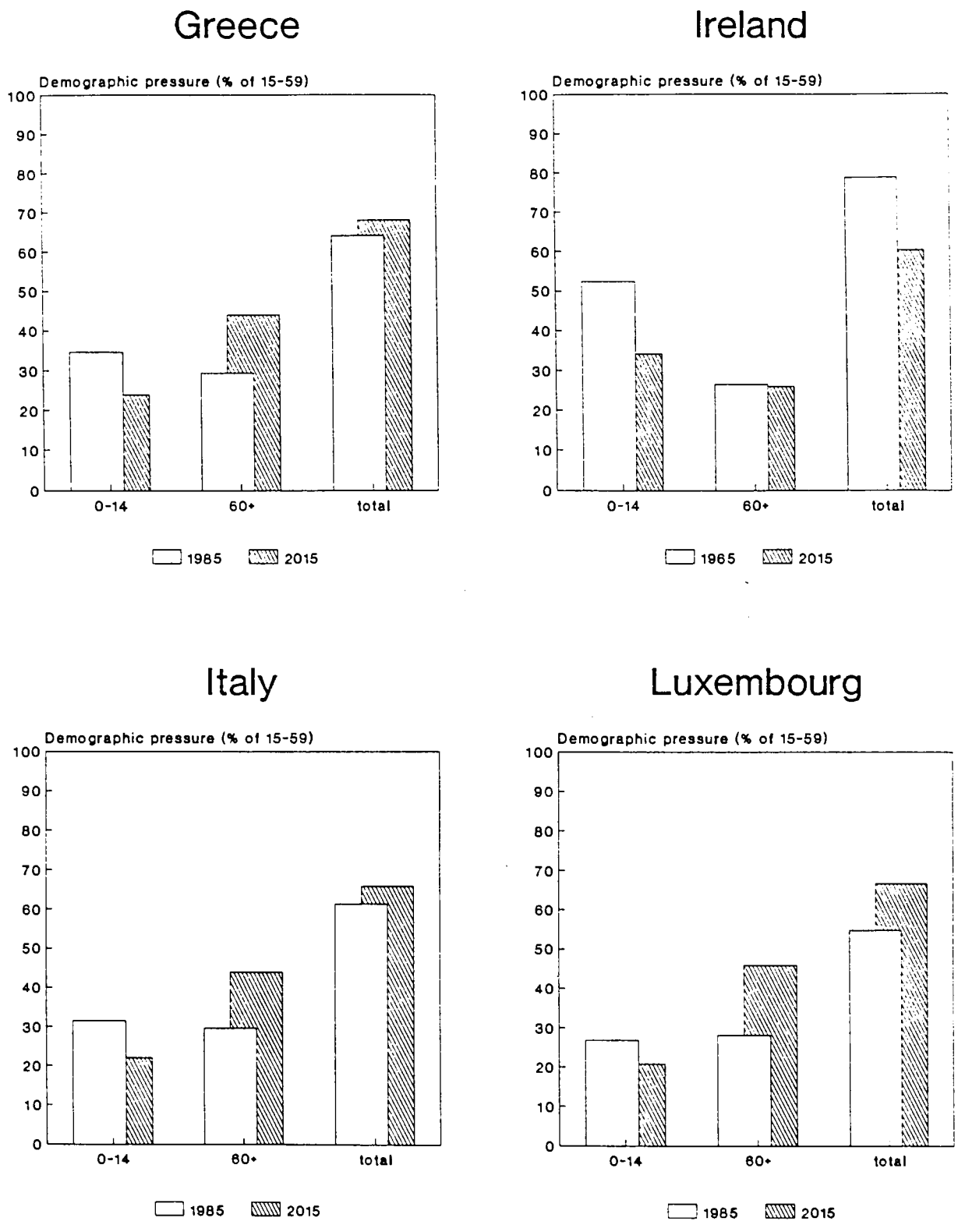
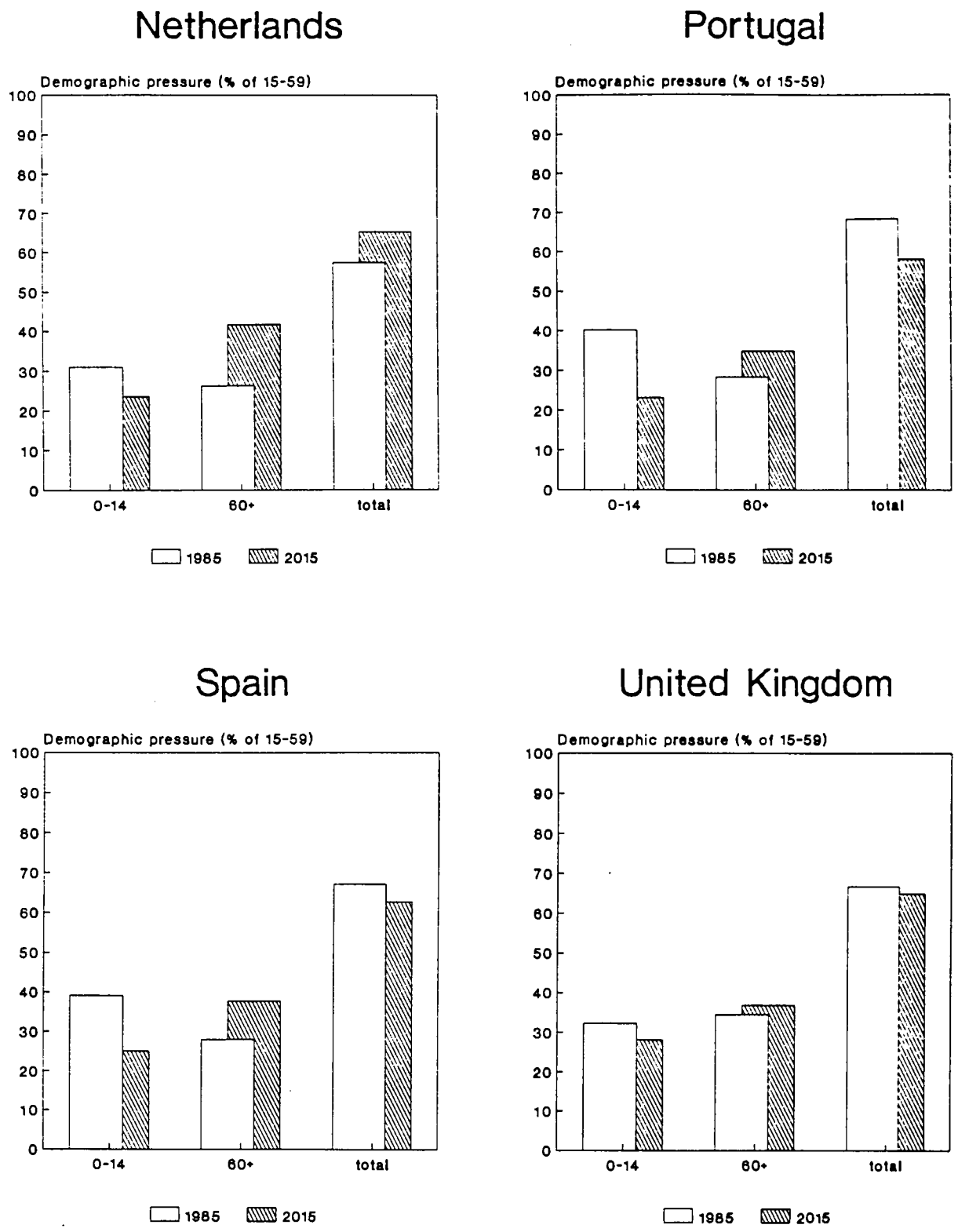


Figure 4.3. continued



Compiled by:

Some obvious conclusions can be drawn from Figure 4.3.

- In all EC-12 countries, the demographic pressure caused by the 0-14 age bracket shows a marked decline. The greatest drop is recorded in Ireland, but that country still maintains a high relative level.
- On the other hand, increased pressure from the group over sixty years old is plainly noticeable everywhere except in Ireland.
- In most EC-12 countries, total demographic pressure seems to be on the wane. Germany and Luxemburg in particular display a sharp increase, largely due to extreme demographic pressure from the group over the age of 60.
- By contrast, Ireland shows a considerable decrease of total demographic pressure. In Spain, Portugal and the United Kingdom a moderate decline is recorded.

One last remark is due about the shifts in the constituting elements of demographic pressure. Although on the whole (except in Germany, Luxemburg and Ireland) demographic pressure does not seem to change a great deal, the same is not true of the two individual age brackets. The often considerable drop in the relative share of young people has been set off by an even greater increase in the share of the older people. Mark, however, that senior citizens tend to cost more to society than young people, mainly because they need more medical care and social support.

Exact percentages of demographic pressure and the difference between 1985 and 2015 are given in a table in annex 4.3.

5. THE INPUT ELEMENTS FOR THE NATIONAL LABOUR-FORCE PROJECTIONS

5.1. Introduction

From an economic point of view the most important aspect of demographic projections is how they work out on the labour force. This chapter introduces the concept of activity rates and discusses their past development and assumed future course.

5.2. Activity rates

5.2.1. Conceptual definition

Activity rates are defined as the proportion of the total population either employed or actively in search of jobs (generally referred to as the economically active population). They can be broken down by age and sex. The definition of activity rates gives rise to many statistical problems. For instance, is an adolescent student who works after school hours or in the weekend economically active or not? Is a person registered as unemployed indeed actively looking for work, or is his registration only a pretext for claiming a social-security grant? How does the effectiveness of labour-exchange offices affect the willingness of unemployed to be registered? The answers to these and many other questions may affect the number of economically active persons counted and thus the activity rates.

The introduction of regular labour-force sample surveys in the EC has solved at least the problems that relate to registration, households being asked to reply to questions like: "Were you working or actively looking for a job in such and such a period ?", regardless of official registration.

Up to 1981, two concepts of activity were used in the LFSSs. The more restricted concept relates to persons with a main occupation and to those who are out of work but looking for a job; the more extended one includes in addition those with an occasional occupation

and those not having worked before but willing to do so. In the labour-force sample surveys conducted since 1983, the ILO-concept has been used, which is very close to the former extended concept. For our purpose this concept seems the most appropriate. In this concept, employment figures are expressed in numbers of people actually working, full-time or part-time, in a main or occasional job, while to the group of unemployed are counted the people willing but unable to work.

5.2.2. The analysis of past trends in activity rates

The most striking differences in activity rates among countries are on the one hand those between male and female rates and on the other those between the rates for the groups between the ages of 15 and 19 and those for the people of 60 and over. Such age-specific activity rates and their development are affected by many different factors. The legal rules about school participation, which vary widely from one country to another, make for different work participation by the younger groups, as table 5.1 shows. In Belgium and the Netherlands educational enrolment is much higher than in the other EC countries.

A group that shows a remarkable decline is that of males of over 55, due mostly to the advancement of the age of compulsory retirement and the creation of opportunities to stop working earlier without serious financial consequences. As an illustration, table 5.2 gives the activity rates for males in the 60-64 age bracket for the years 1979 and 1987.

Table 5.1. Activity rates, males and females, 15-19 age bracket[a)]
(active population as % of total population)

	Male		Female	
	1979	1987	1979	1987
Belgium	20.8	13.0	17.2	12.0
Denmark	47.3	70.8	41.4	65.5
France	27.7	24.8	23.2	19.8
Germany	38.2	45.6	33.0	39.5
Greece	34.9[c)]	25.6	24.4[c)]	19.2
Ireland	51.9	35.6	44.4	29.4
Italy	29.2	32.0	24.0	26.6
Luxemburg	36.6	34.8	40.1	33.6
Netherlands	19.1	20.3[b)]	21.6	25.1[b)]
Portugal	*	63.1	*	48.5
Spain	*	32.5	*	29.4
United Kingdom	46.0	60.1	42.6	58.7

a) 1979: extended LFSS concept; 1987: ILO-concept
b) 1985
c) 1981
*) not available
Source: Labour Force Sample Survey

Table 5.2. Activity rates, males, 60-64 age bracket [a)]
(active population as % of total population)

	1979	1987
Germany	51.8	32.8
France	45.7	20.8
Italy	42.0	36.7
Netherlands	59.2	30.1[b)]
Belgium	40.5	20.1
Luxemburg	35.4	21.3
United Kingdom	75.8	55.2
Denmark	65.8	50.4
Ireland	74.3	62.6
Greece	64.8[c)]	50.2
Portugal	*	54.8
Spain	*	49.1

a) 1979: extended LFSS concept; 1987: ILO-concept
b) 1985
c) 1981
*) not available
Source: Labour Force Sample Survey

The activity rate of males between 25 and 55 is very high in all countries (between 95 and 99 per cent) and shows a stable pattern, though lately there has been a slight tendency to decline.

For females the situation is quite different. Not only is their overall participation in all countries much lower than for males, there are also some more unexpected differences. In the South-European countries (except Portugal), the Benelux countries and Ireland, overall female participation is structurally lower than in the other countries; we shall not go into the causes here. Emancipation and the shift of employment from industrial to service sectors will produce a greater proportion of "female jobs" and thus a higher activity rate of women; growth may well be most rapid in the countries where female participation is now lowest.

5.3. The projection of the activity rates

Regarding the course of age- and sex-specific activity rates in the future, two variants have been developed. The first is based on stable rates, that is to say, all age- and sex-specific activity rates are assumed to maintain the level they had in 1985. The second variant assumes non-stable activity rates. Considerations regarding educational enrolment, earlier retirement, saturation levels in the long term, and trends observed in the period covered by the LFSSs, determine the projected course of these rates up to 2015.

Because the activity rates have been projected on the same assumptions as in DEMETER 1986, the emerging trends are broadly similar too. As in 1986, the activity rates corresponding to the higher age brackets of both sexes (over 60) show a clear decline.

The results of the Labour-Force Sample Survey indicate that female participation has risen less rapidly than was expected in 1986. Accordingly, the projected rate of increase of female participation is levelled off in comparison with DEMETER 1986.

The male activity rates show the reverse tendency. In the projection for DEMETER 1986, the participation of men between the ages of 20 and 50 remained on a virtually unchanging high level. However,

in most countries a decline - albeit slight - appears to have set in within the individual age brackets, a fact that is reflected in the outcomes of the present projection.

The graphs of annex 5.1 illustrate for all countries and age brackets the past course of activity rates (based on the Labour Force Sample Survey, LFSS) and their projections. A few marginal notes must be made:

- Only the projection years till 2000 are embodied in the graphs. The projections for later years show such minor alterations that they have been left out for easier interpretation.
- The Y-axis scale values vary among age brackets. Within each bracket the same scale values have been adhered to as far as possible.
- Because of a modified definition, the 1987 figures for the Netherlands have not been included in the graphs. So, as for the other countries, the projection for the Netherlands is based on the ILO definition.
- Concerning Portugal and Spain, only for 1986 and 1987 are LFSS figures known. We have combined them with the 1980 data used in DEMETER 1986 to work out an estimate for the base year 1985.
- For Greece, no values for 1979 are available, while for Belgium. Luxemburg and Ireland no figures are known for 1981.

6. RESULTS OF THE LABOUR-FORCE PROJECTIONS

6.1. Introduction

The calculation of future labour-force developments is a straightforward exercise, consisting in multiplying the activity rates by the projected population for each age group and either sex. Admittedly, the multiplication of two projected variables which are none too reliable in themselves, makes for considerable uncertainty, especially in the long term. Nevertheless, we believe the emerging trends will hold, albeit with a certain margin.

In the previous chapter, two variants have been developed with respect to activity rates. The combination with the two population projections produces four labour-force projections. A single remark is due before further attention is given to the ultimate results. Section 4.1 pointed out that the two population forecasts deviate from each other in a specific way. Because the level of fertility affects only the youngest age group, the two projections for the older age brackets of the population will not differ. In practice this means that two labour-force projections founded on the same activity rates in the final projection year 2015 will differ only in the first two labour-force age brackets (that is, the 15-19 and 20-24 age brackets). For that reason and to keep the overall picture transparent, only two variants of the labour-force projections will be chosen for further consideration in this chapter, namely, the labour-force projection based on stable activity rates and projected fertility, and the one based on projected activity rates and projected fertility.

6.2. Development of overall activity rates

The development of the overall activity rate (total and split up by sex) is influenced mainly by the course of the age-specific rates. However, in some cases the shift in population structure is also of

great significance. Indeed, even with a smooth time path of age-specific rates, the overall rate may follow a rather fluctuating pattern.

Tables 6.1 to 6.3 give the total activity rate for the 15-59 age group for either sex and for the total. That category has been chosen in view of the trend towards earlier retirement and the allied firm decrease of activity rates for the 60-64 age bracket. The rates refer to the variant based on projected activity rates.

Table 6.1. Activity rates 15-59, males (projected fertility, projected activity-rates)

	1985	1990	1995	2000	2005	2010	2015	1985-2015
Belgium	78.2	76.8	77.3	76.8	75.9	75.6	75.0	-3.2
Denmark	89.0	88.6	88.5	88.4	88.3	88.2	88.0	-1.0
France	82.3	81.2	82.3	82.3	81.4	81.4	81.6	-0.7
Germany	84.4	85.7	86.2	86.4	86.6	86.1	85.7	1.3
Greece	81.8	79.1	78.7	79.1	79.9	80.9	80.9	-0.9
Ireland	83.5	81.0	78.8	79.5	80.3	81.9	82.2	-1.2
Italy	81.5	81.1	82.0	83.2	83.5	83.5	82.8	1.4
Luxembourg	82.9	83.6	83.8	83.1	82.3	82.0	81.9	-1.0
Netherlands	78.2	78.3	79.4	78.8	77.9	77.2	76.8	-1.5
Portugal	86.2	84.7	84.8	85.3	85.5	85.7	85.3	-0.9
Spain	82.3	80.3	80.7	81.9	82.6	82.8	82.2	-0.1
United Kingdom	88.8	88.3	88.3	87.5	86.9	86.8	86.6	-2.1
EC-12	83.6	83.1	83.6	83.8	83.6	83.6	83.3	-0.3

This projection confirms the outcome of DEMETER 1986 to the effect that total male activity for the whole EC will remain stable up to 2015 (table 6.1). Unlike Italy and Germany, most other EC-countries display a (minor) decrease. With the exception of the Netherlands, the same trends could be observed in DEMETER 1986.

In nearly all countries, total female activity shows a rise (table 6.2). Growth is particularly rapid in Spain and Ireland, but even in 2015, the rate is still relatively low in both countries. Female participation is high in the United Kingdom and extremely high in Denmark. All these facts already appeared in DEMETER 1986. A clear

difference between the present projections and those made in 1986 concerns the scope of the changes. Compared to the results of DEMETER 1986, the progress of female participation is clearly less rapid in the present projection.

Table 6.2. Activity rates 15-59, females (projected fertility, projected activity-rates)

	1985	1990	1995	2000	2005	2010	2015	1985-2015
Belgium	49.2	51.3	52.7	52.3	50.8	49.9	49.1	-0.1
Denmark	79.2	81.3	81.3	81.0	80.6	80.5	80.2	1.0
France	60.3	61.9	63.3	63.2	62.2	62.1	62.2	1.9
Germany	56.4	58.6	58.7	58.6	58.8	58.3	57.6	1.2
Greece	42.9	43.7	44.9	46.0	46.2	46.4	46.0	3.0
Ireland	41.0	45.2	45.8	47.6	47.7	47.8	46.9	5.9
Italy	42.6	46.7	48.8	49.7	49.0	48.2	47.0	4.4
Luxembourg	44.4	48.7	50.4	50.5	49.4	48.5	48.3	3.9
Netherlands	43.9	46.2	47.5	46.9	45.5	45.1	44.9	1.1
Portugal	57.1	60.7	62.3	63.3	63.1	62.7	61.9	4.8
Spain	35.8	42.1	44.8	45.6	44.8	43.8	42.7	6.9
United Kingdom	65.1	68.6	69.7	69.9	69.8	70.0	69.7	4.6
EC-12	52.6	55.8	57.1	57.4	57.0	56.6	56.0	3.4

Table 6.3. Activity rates 15-59, total (projected fertility, projected activity-rates)

	1985	1990	1995	2000	2005	2010	2015	1985-2015
Belgium	63.8	64.2	65.1	64.8	63.5	62.9	62.2	-1.6
Denmark	84.2	85.0	84.9	84.8	84.5	84.4	84.1	-0.0
France	71.4	71.6	72.9	72.8	71.8	71.8	71.9	0.6
Germany	70.6	72.4	72.7	72.8	72.9	72.4	71.9	1.2
Greece	62.2	61.3	61.9	62.7	63.3	63.9	63.8	1.5
Ireland	62.5	63.4	62.6	63.8	64.2	65.1	64.8	2.3
Italy	61.9	63.9	65.4	66.6	66.4	66.0	65.1	3.2
Luxembourg	63.8	66.3	67.2	66.9	66.0	65.3	65.2	1.4
Netherlands	61.4	62.6	63.8	63.1	62.0	61.4	61.1	-0.3
Portugal	71.3	72.5	73.4	74.2	74.3	74.2	73.6	2.3
Spain	59.0	61.3	62.9	63.9	63.9	63.6	62.7	3.7
United Kingdom	77.0	78.5	79.1	78.8	78.5	78.5	78.3	1.3
EC-12	68.2	69.5	70.5	70.8	70.4	70.3	69.8	1.6

The conclusion from the trends outlined above is that total activity will increase in the entire EC-12, but not to the extent expected in DEMETER 1986 (table 6.3). Indeed, in Belgium and the Netherlands the activity rate will even drop in 2015 below the value of the base year. Especially the Dutch figures deviate clearly from the ones calculated in DEMETER 1986, probably because the increase of female participation was overestimated in 1986.

6.3. Development of the total labour force

While in the previous section the development of the total activity rate was the object of attention, the present section will focus on alterations in the labour force, which, as we have seen, depend on population growth as well as activity rates. Figure 6.1 illustrates, for both activity-rate variants, the yearly growth rates for the five-year periods of the projection time span.

Figure 6.1. Yearly growth rates of the labour force, for five-year periods (population based on projected fertility)

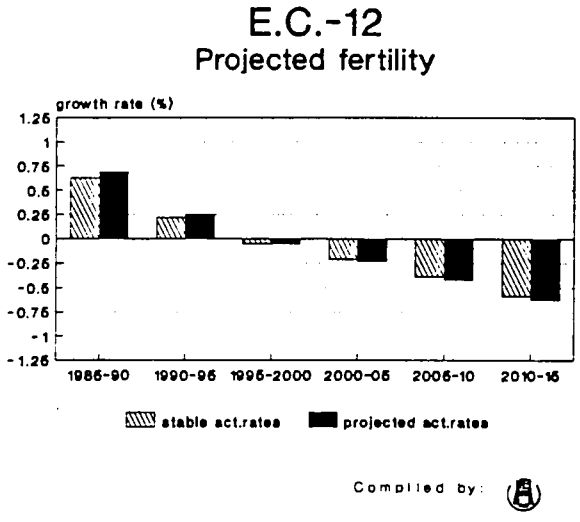
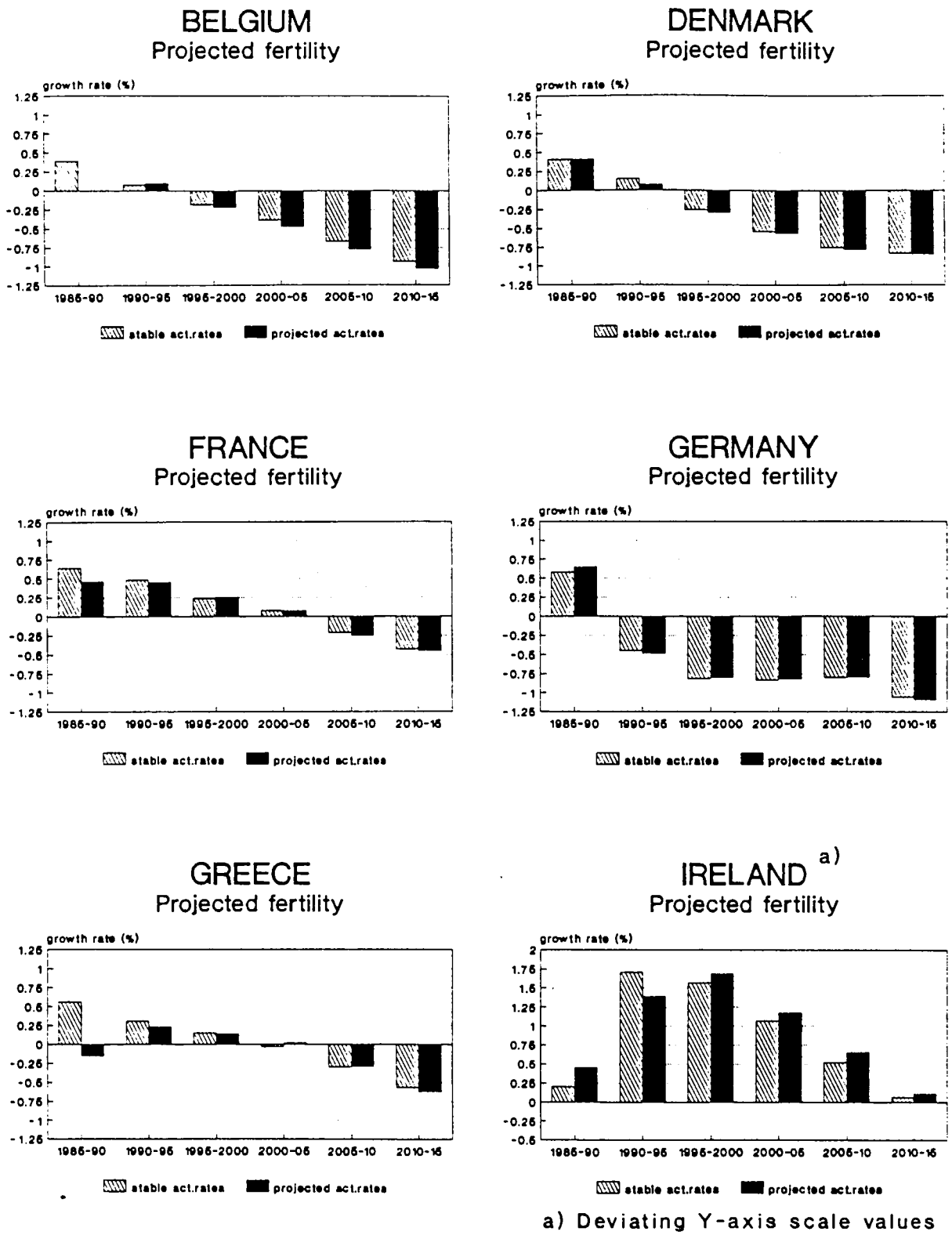


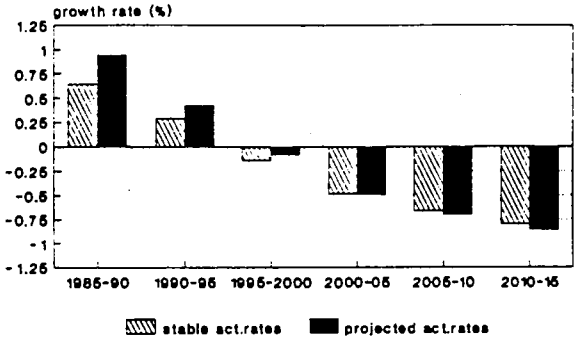
Figure 6.1. continued



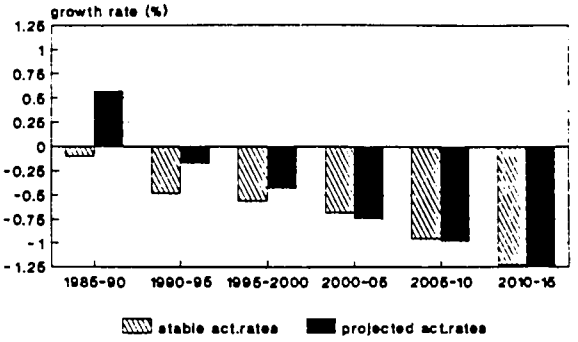
a) Deviating Y-axis scale values

Figure 6.1. continued

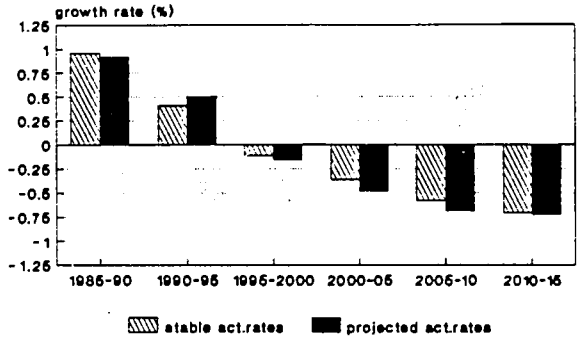
ITALY
Projected fertility



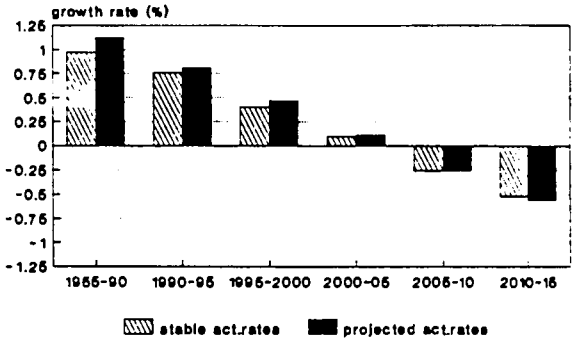
LUXEMBOURG
Projected fertility



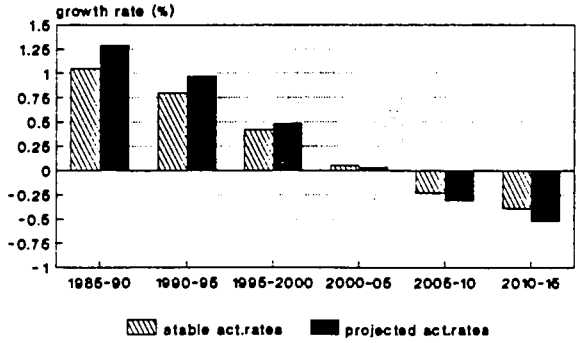
NETHERLANDS
Projected fertility



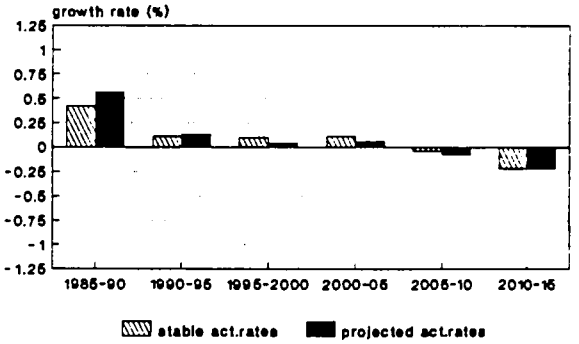
PORTUGAL
Projected fertility



SPAIN [a)]
Projected fertility



UNITED KINGDOM
Projected fertility



a) Deviating Y-axis scale values

Appparently, for most countries the differences in growth rate between the two labour-force projections are very slight, as shown in table 6.4.

Table 6.4. Annual growth rate total labour force, stable and projected activity rates (%)

	1990-1995		1995-2000		1990-2000	
	stable	projected	stable	projected	stable	projected
Belgium	0.08	0.10	-0.18	-0.21	-0.05	-0.06
Denmark	0.15	0.07	-0.26	-0.29	-0.06	-0.11
France	0.48	0.45	0.24	0.25	0.36	0.35
Germany	-0.45	-0.48	-0.81	-0.80	-0.63	-0.64
Greece	0.31	0.23	0.15	0.14	0.23	0.19
Ireland	1.71	1.39	1.57	1.69	1.64	1.54
Italy	0.29	0.42	-0.14	-0.08	0.08	0.17
Luxembourg	-0.49	-0.18	-0.55	-0.44	-0.52	-0.31
Netherlands	0.41	0.50	-0.11	-0.16	0.15	0.17
Portugal	0.76	0.81	0.40	0.47	0.58	0.64
Spain	0.80	0.97	0.42	0.48	0.61	0.72
United Kingdom	0.11	0.13	0.10	0.04	0.11	0.08
EC-12	0.22	0.25	-0.05	-0.05	0.08	0.10

The conclusion suggests itself that there is no real need to make the distinction between stable and projected activity rates. However, this conclusion would be too simple.

For one thing, the two variants do not give exactly the same results. For most EC-12 countries, the variant based on projected activity rates produces a higher growth rate for the first five-year period than the other variant, and a sharper decline towards the end.

But more important is the considerable difference in composition (in terms of age and sex) of the labour force emerging from the two variants.

Another trend appearing from the graphs is the universal lowering of the growth rates. Not only is the growth slowing down, but in the course of time every country (except Ireland) even gets confronted with a contracting labour force. Especially Germany and

Luxemburg show a marked relative decrease, which moreover is projected to start as early as the 1990-1995 period.

The same trend emerges from table 6.5, representing the growth rates during the 1990-2000 period. For the entire EC-12 the expectation is that in the first five years the female labour force will grow relatively faster than the male one. In the 1995-2000 period on the contrary, the two sexes show hardly any difference, both being marked by a slight decrease.

In absolute terms, the labour force of the Community is expected to grow by 1,90 million between 1990 and 1995, and fall by 0,35 million over the period 1995 to 2000. Between 1990 and 2000, and reflecting the activity rate developments noted above, the proportion of females in the labour force will have risen from 39,5% to 39,9%. The absolute figures are taken up in table 6.6.

Table 6.5. Labour Force growth 1990-2000 (total period change, %)

	Total			Male			Female		
	1990-1995	1995-2000	1990-2000	1990-1995	1995-2000	1990-2000	1990-1995	1995-2000	1990-2000
Belgium	0.5	-1.1	-0.6	-0.3	-1.0	-1.3	1.6	-1.2	0.5
Denmark	0.3	-1.5	-1.1	0.3	-1.3	-1.0	0.4	-1.7	-1.3
France	2.3	1.3	3.6	1.8	1.2	3.1	2.9	1.3	4.3
Germany	-2.4	-3.9	-6.2	-2.2	-3.7	-5.8	-2.7	-4.4	-6.9
Greece	1.2	0.7	1.9	0.4	0.4	0.8	2.6	1.2	3.9
Ireland	7.2	8.7	16.5	5.4	7.4	13.2	10.5	11.1	22.9
Italy	2.1	-0.4	1.7	1.2	-0.3	0.8	3.7	-0.6	3.1
Luxembourg	-0.9	-2.2	-3.0	-1.9	-2.5	-4.4	1.0	-1.5	-0.5
Netherlands	2.5	-0.8	1.7	1.9	-0.7	1.2	3.6	-1.0	2.6
Portugal	4.1	2.4	6.6	3.5	2.4	5.9	5.1	2.4	7.6
Spain	5.0	2.4	7.5	3.0	2.4	5.4	8.7	2.5	11.4
United Kingdom	0.6	0.2	0.8	0.1	-0.2	-0.1	1.4	0.7	2.1
EC-12	1.3	-0.2	1.0	0.7	-0.3	0.4	2.2	-0.2	2.0

Table 6.6. Labour Force in the European Community 1990-2015 (x1000, projected fertility, projected activity rates)

	Total			Male			Female		
	1990	2000	2015	1990	2000	2015	1990	2000	2015
Belgium	3986	3963	3536	2423	2392	2167	1563	1571	1369
Denmark	2842	2810	2519	1521	1506	1356	1321	1304	1163
France	25141	26041	25242	14361	14800	14357	10780	11241	10885
Germany	29694	27846	24316	17957	16924	14795	11737	10922	9521
Greece	4029	4105	3926	2597	2618	2543	1432	1487	1383
Ireland	1358	1582	1741	893	1012	1135	464	570	606
Italy	24106	24508	22110	15396	15526	14330	8711	8983	7780
Luxembourg	159	154	133	101	97	84	58	58	49
Netherlands	6072	6175	5612	3889	3935	3588	2183	2240	2024
Portugal	4899	5223	5043	2826	2993	2943	2073	2230	2100
Spain	15303	16448	15801	10084	10632	10485	5219	5816	5316
United Kingdom	28497	28738	28412	16374	16360	16225	12124	12378	12188
EC-12	146085	147593	138390	88421	88795	84008	57664	58797	54382

6.4. The elements of labour-force growth

The growth of the labour-force is the resultant of three elements, namely the size of the population, the shift in the population structure, and the projection of the activity rates. Annex 6.1 illustrates for all EC-12 countries how these elements are expected to govern the development of the total labour-force volume in the projection periods 1990-1995 and 1995-2000.

For both projection periods the most striking trends are the opposite movements of the male and female labour forces in terms of activity rates. In all EC-12 countries the projected development of the activity rates has a negative influence on the size of the male labour force, but a positive one on the female labour force.

Some other trends are revealed by the annex. In the entire EC-12, the evolution of the population over 15, among women as well as men, has a positive effect on the evolution of the labour force. The same tendency holds broadly for the individual countries, with the distinct exception of Germany.

In terms of age shift i.e. the effect of a changing weight of the different age brackets, the two sexes clearly differ, in the sense that in all countries and during both periods (except for Ireland in the years between 1995 and 2000), the age shift among men makes a greater positive contribution to the development of the total labour force than the female age shift.

So, the general trends visible from the annex conceal a considerable difference in the weights of the individual components among the countries. The annex shows clearly how narrow is the similarity among the countries. For example. while the size of the population is the primary factor in France, the age shift has that role in Germany.

In the whole EC-12, the size of the population over 15 seems to be the most prominent element. Activity rates appear to make but little impact on the growth of the total labour force, except when the sexes are considered separately. For males the development of activity rates has a strong negative effect, while for females the effect is larger than that of the growth of population over 15.

6.5. The age shifts in the labour force

An important aspect brought to the surface by the labour-force projection broken down by age brackets is the shift expected in the structure of the active population. Evidently, this shift will have serious implications for the labour market and dictate a change in employers' recruiting behaviour. Moreover, an ageing labour force gives rise to adjustment problems related to the productivity and mobility of labour. Table 6.7 illustrates how the composition of the active population will presumably change in the period from 1985 to 2015.

Table 6.7. Ageing of the Labour Force 1990-2015 (% in age group)
(projected fertility and projected activity rates)

Country	age 15-24			age 50+		
	1990	2000	2015	1990	2000	2015
Belgium	14.6	12.2	11.8	14.1	14.3	19.2
Denmark	20.4	15.9	16.0	19.1	24.1	27.5
France	16.1	13.2	13.1	17.4	18.7	22.3
Germany	18.3	12.5	13.8	21.8	22.3	30.0
Greece	14.2	12.4	9.2	25.5	23.1	26.4
Ireland	21.7	22.4	15.3	18.3	18.0	20.3
Italy	18.7	13.9	12.5	19.6	19.4	24.2
Luxembourg	16.5	13.9	14.1	17.1	18.8	24.3
Netherlands	18.0	13.0	14.5	14.2	17.7	22.6
Portugal	22.3	18.8	13.5	21.0	19.5	25.2
Spain	21.4	18.0	13.8	18.7	16.5	21.7
United Kingdom	21.5	17.0	18.4	20.2	22.2	25.9
EC-12	18.9	14.7	14.3	19.5	20.0	24.9

In the whole EC-12, over one fifth of the active population was still under 25 years old in 1985. According to the projections, the proportion will have decreased to below 15 per cent by 2015! That decrease will be almost completely compensated by a corresponding growth of the share of the over-50 age bracket. The upward shift in the population pyramid is the most important cause of these changes.

On the national level, the shifts are even more drastic for Luxemburg, Denmark, and especially Germany. Ireland also deserves attention: there, the considerable decline of the relative share held by the young active population groups is entirely neutralised by the growth, not of the over-50, but of the category between 25 and 49 years old.

7. THE INPUT ELEMENTS FOR THE REGIONAL PROJECTIONS

7.1. Structure of the regional projection model

The structure of the regional model (figure 7.1) differs from that of the national model only in that migration flows are taken into account. That is to say, migration flows among the regions of a country, since migration among countries (with the exception of Ireland and Germany) is ignored in this study. The following inputs are needed for the regional model:

- population by sex and five-year age bracket on the first of January, 1985;
- regional death rates by sex and age bracket;
- regional fertility rates by relevant age bracket;
- out-migrants by region of destination, sex, and age bracket.

These elements will be discussed in section 7.2. The final section will deal briefly with the input elements required for regional projections of the labour force. Annex 7.1 shows the handled region-classification[1)].

7.2. The input elements for demographic projections

7.2.1. Population volume

Nearly all the statistics relating to the male and female population by five-year age brackets on the first of January, 1985 were available from Eurostat; for the United Kingdom (broken down by 32 regions) they could be obtained from the national statistical service.

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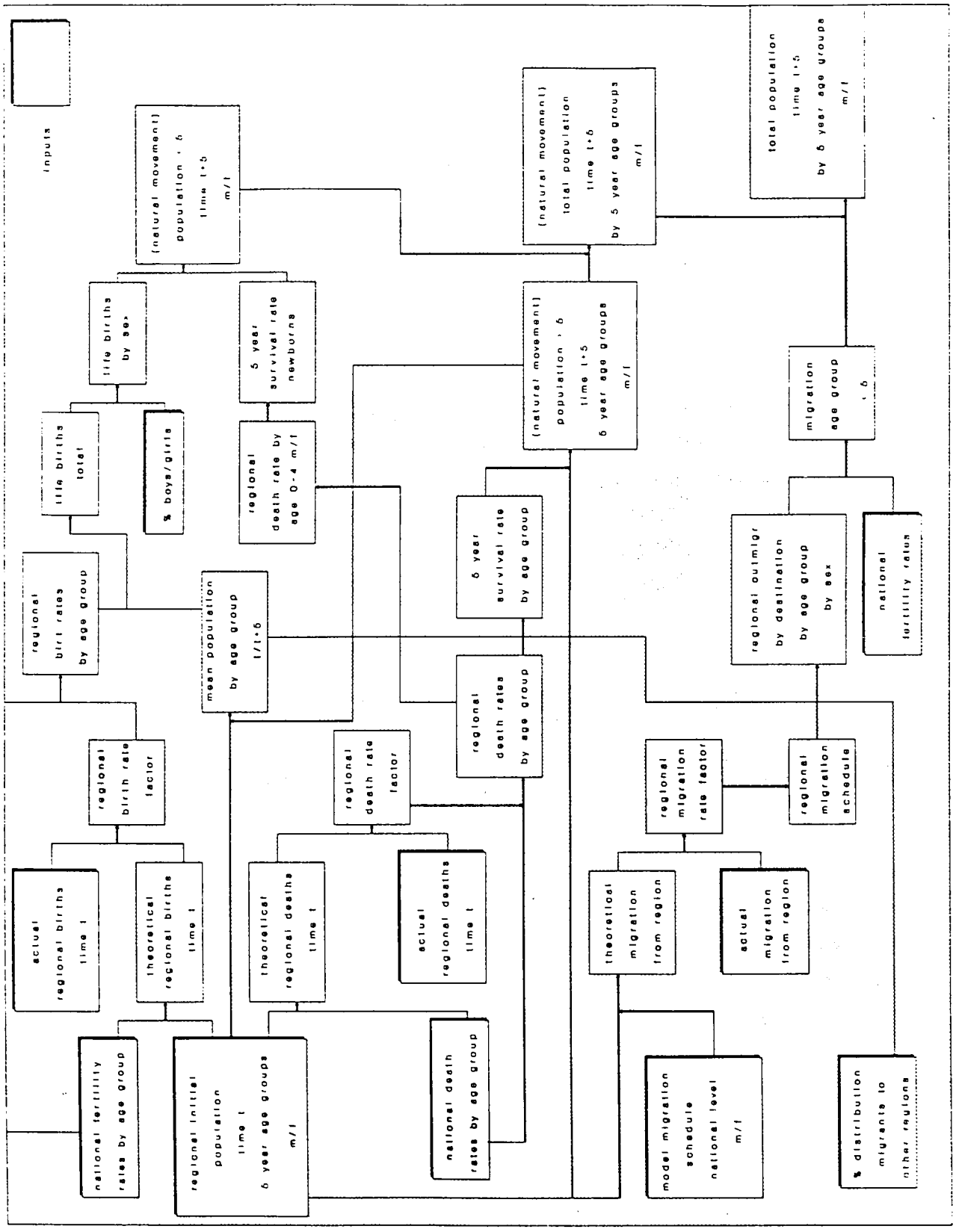
1) After the revision of NUTS (november 1989) some changes have occured, Greece for instance is now subdivided in 13 regions.

Figure 7.1. Projection method - regional level



For Greece, detailed figures (by sex and age bracket) on a regional level were available only for 1984, so that we had to make our own estimate of the Greek regional population in 1985. From the detailed regional statistics of 1984, and the overall regional totals and detailed national figures of 1985, fairly reliable regional figures could be derived for the year 1985.

The figures for the Netherlands had to be adjusted to accommodate its 'twelfth' province ('Flevoland'), constituted in 1986. Thanks to detailed data provided by the Netherlands Central Bureau of Statistics, the exercise could be carried out accurately.

A remark is in order regarding the geographical distribution of migrants settling in Germany. Although this study has in general ignored international migration, an exception has been made for Germany and Ireland, for reasons explained in chapter 3. Because the destination of the migrants was specified only on the level of so-called "Länder" (which is equal to the Eurostat NUTS-I-classification), within each NUTS-I region the total number of immigrants was broken down to the regional level of NUTS-II in proportion to the population shares.

7.2.2. Regional death and fertility rates

Because death and fertility rates tend to come in insufficient detail, a method had to be designed to break them down to the desired level.

The application of national rates to the regional population produces a theoretical total number of births and deaths in a region based on the assumption of equal rates in all regions of a country. The actual numbers observed in the same year may be higher or lower than the calculated ones. The ratio between observed and calculated numbers provides a regional factor representing the deviation from the national pattern. On the assumption that region-specific differences are reflected proportionally in all regional age-specific rates, sets of regional death and fertility rates can be obtained by applying the regional factor to the national age-specific death and fertility

rates. The above assumption implies that the outcomes of the exercise do not account, for instance, for unexpected high mortality in a region due to structurally higher death rates among the oldest citizens.

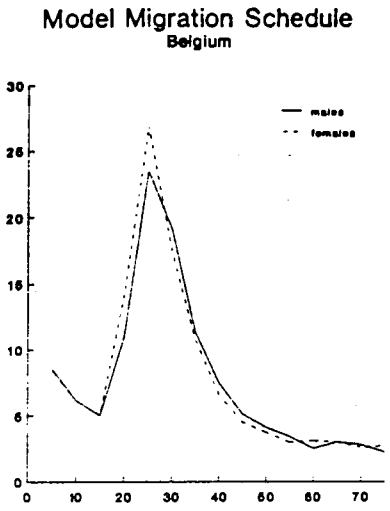
The regional factors have been calculated for 1985 and checked against those of 1980 (used in DEMETER 1986) to rule out accidental deviations. Only slight differences were found, which points to the structural nature of the influences.

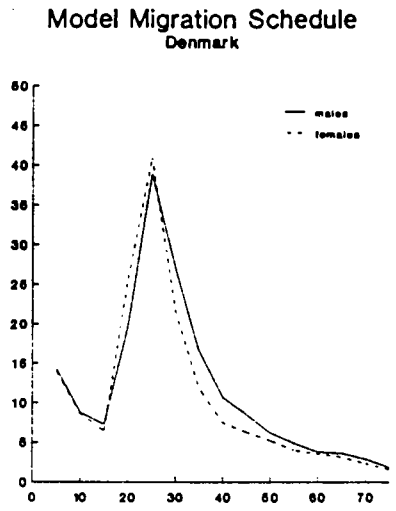
7.2.3. Outmigrants by destination, sex, and age bracket

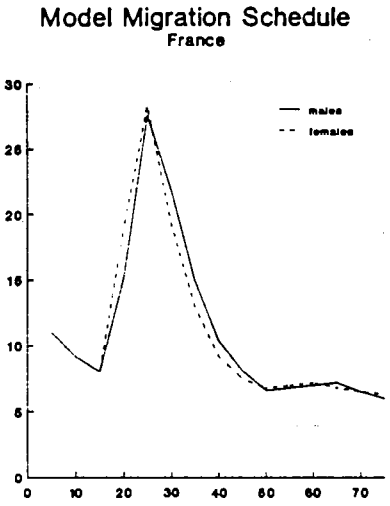
Interregional migration statistics in the detail required (that is, by sex and age bracket and in the correct regional division) are available for a few countries only. To circumvent that problem, an analysis was first made for some countries for which complete time series were available.

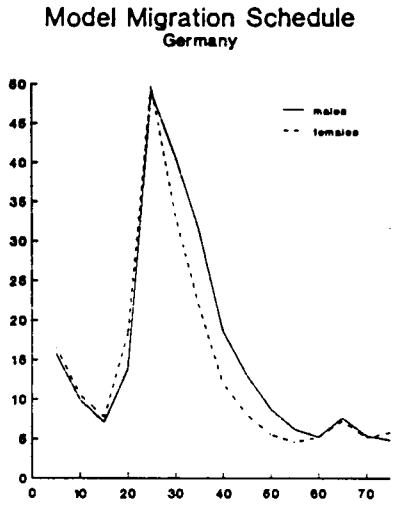
By the method developed by Rogers et al., so-called model migration schedules were drawn up: graphs showing what proportion of each age bracket makes an interregional move in a certain year. These schedules proved very stable through time and on different levels of regional division, which gave us confidence to construct similar schedules for countries for which the statistical material was poor or referred to another year than 1985. From the total outflows and the structure of the regional population, for which figures are generally available, national schedules that are close enough to reality could be drawn up. Figure 7.2 gives a graphic representation of the model migration schedules for the individual countries. The X-axis refers to the five-year age brackets, the Y-axis to the number per thousand of each age bracket who move between the regions of a country - on the chosen regional level - in a one-year period.

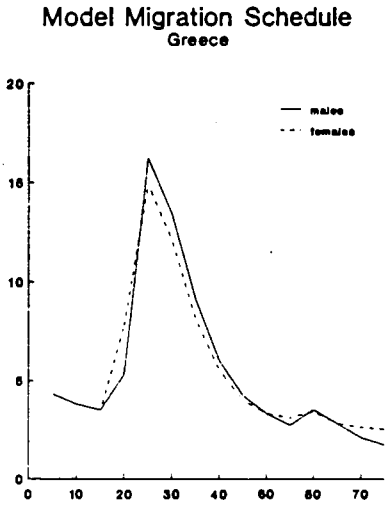
Figure 7.2. Model Migration Schedules











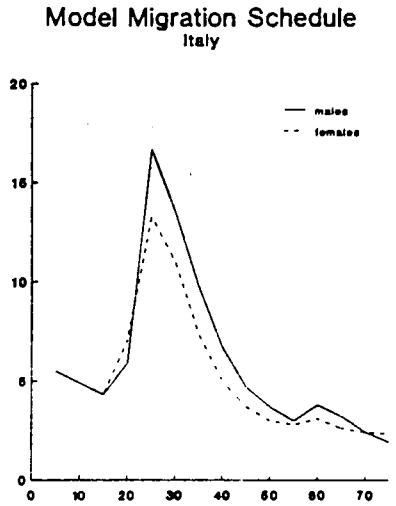
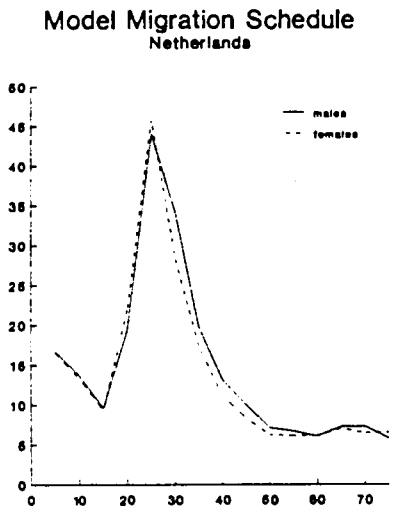
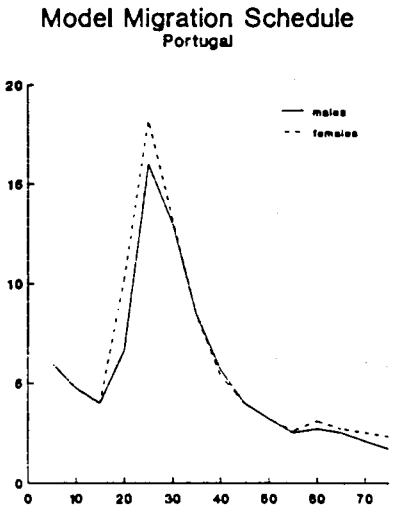
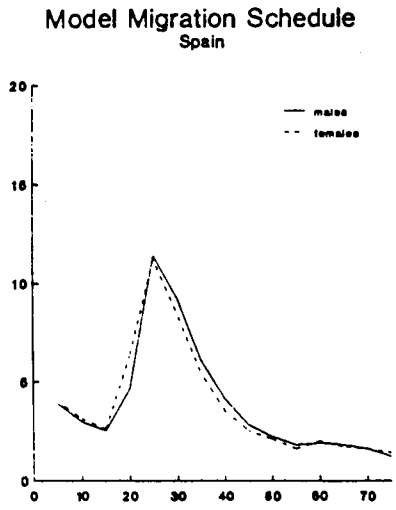
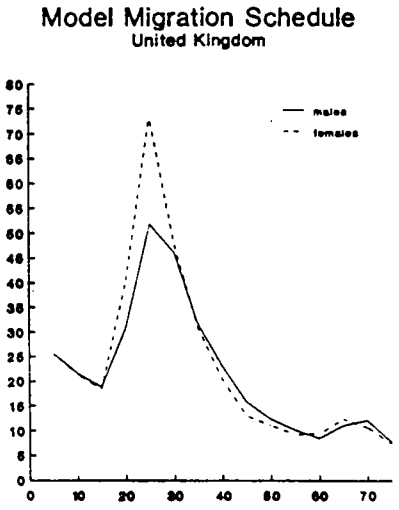


Figure 7.2. Continued









The next step is comparable to the procedure followed for regional death and fertility factors. Application of age-specific migration rates according to the national average to the regional population structure produces a theoretical total outflow, which may be much larger or smaller than the observed one, because the real outflow depends not only on the region-specific inclination to move, but also on the size of the region and its position among other regions. Division of the observed by the theoretical flow produces the regional factor, which can be applied to the national age-specific migration rates to give a set of regional rates. The factors have been calculated for 1985.

Once the volume of regional outflows is known, only their direction remains to be established. A matrix of interregional migration flows was drawn up for each country, giving the percentage distribution of outflows from that region among all others. From a comparison of these matrices through a number of years, a remarkably stable pattern emerges for almost all countries. The migration matrix for 1985 was used as a code for the division of projected outflows.

The migration matrices of France and Portugal do not refer to 1985 but are based on the latest Population Censuses in either country (1982 and 1980, respectively). The Greek migration matrix refers to 1984 and corresponds to data made available by Eurostat; the reliability of these figures is questionable, however.

7.3. The input elements for labour-force projections

7.3.1. Regional activity rates

A procedure similar to the one described in 7.2.2 for regional death and birth rates has been followed - again for lack of data - for the calculation of regional age-specific activity rates. National

activity rates by age bracket and sex for 1985[2)], derived from the labour-force sample survey, were applied to the regional population to generate a theoretical regional labour force. This figure divided by the observed labour force yielded a regional factor, which was subsequently applied to the national age-specific rates to produce regional ones.

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2) 1986 for Spain and Portugal.

8. RESULTS OF THE REGIONAL DEMOGRAPHIC PROJECTIONS

In Chapter 4, the results of two variants of national demographic projections were discussed (based, respectively, on stable fertility and projected fertility). The latter variant proved to yield more acceptable results, which is why projected fertility rates have been chosen as basis for the demographic projections on the regional level.

The results will mostly be reproduced graphically, a distinction being made between short-term (1990-1995) and long-term (1985-2015) population development. No need to explain that in particular the long-term projections are relatively uncertain, and had better be looked upon as merely indicative of the possible future evolution. The short-term projections, on the contrary, produce more reliable data and are a better basis for conclusions. Not only the development of overall population growth will be examined, but also the influence of interregional migration on the progress of population in the regions.

Wherever it is meaningful a comparison will be made with the results established by DEMETER 1986. For a proper comparison, the maps have been designed with the same number and size of classes as in 1986. However, because the European average has changed, the class limits have shifted as well. For that reason, in the comparison with DEMETER 1986 not so much the changes in the absolute values of variables will be considered as the shifts in respect of the European average.

8.1. Short-term growth 1990-1995

8.1.1. Overall growth

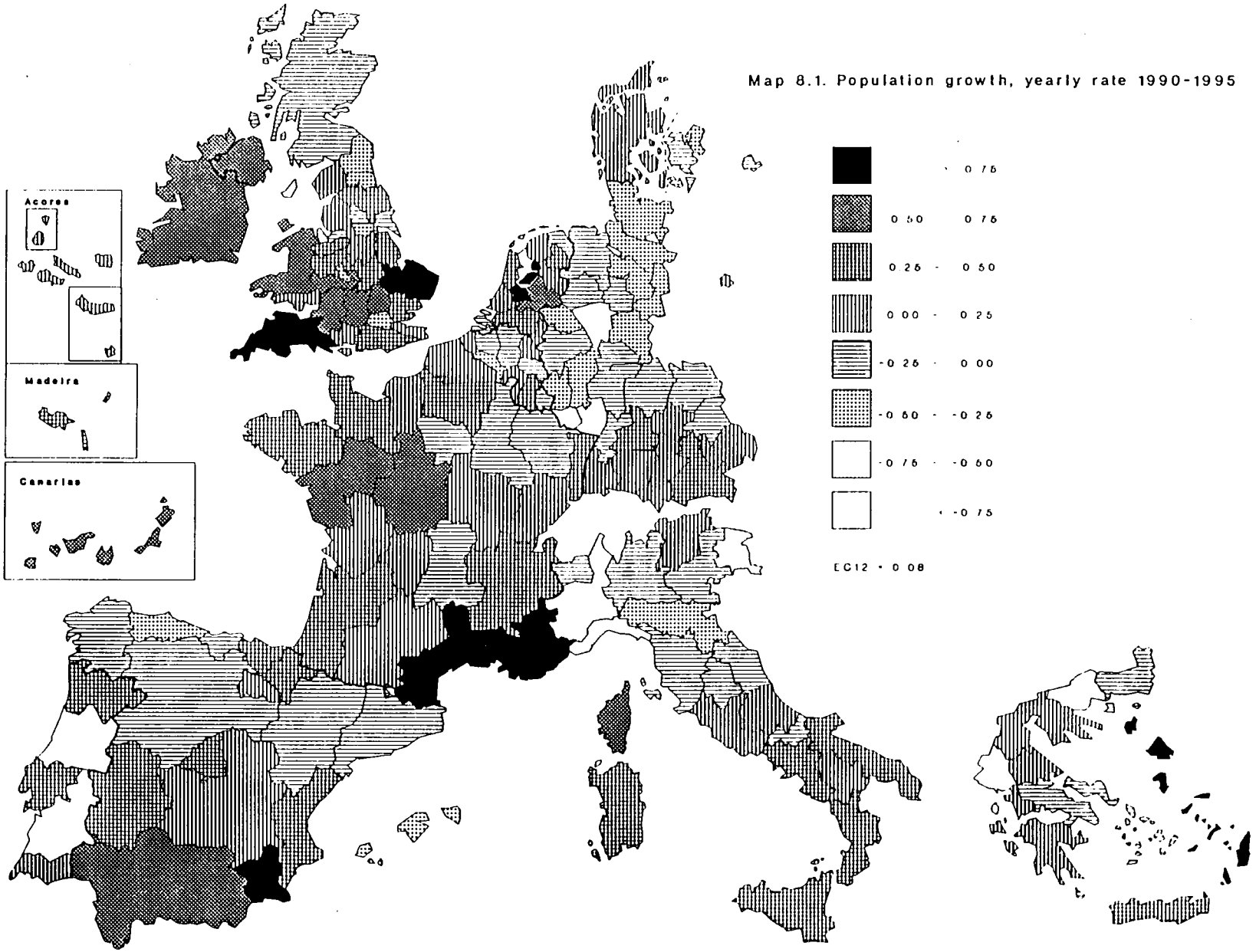
The projection indicates that the population of the entire EC-12 will increase by an average 0.08 per cent a year during the 1990-1995 period, which is considerably less than the 0.24 per cent estimated for the same period in DEMETER 1986. The extreme regional values are far apart, while the population of the Dutch province of Flevoland is projected to rise by an annual average of 2.5 per cent, that of the

Greek region of Ipeiros is expected to decline annually by over 1.5 per cent.

From Map 8.1, only a few regions will surpass a yearly growth of 0.75 per cent. Among them, only Flevoland in the Netherlands, Devon and Cornwall in the United Kingdom, and Nisia Anatolikou Aigaiou in Greece boast a yearly increase of more than one per cent. Strikingly, in most countries the greatest increase can be found in southern and coastal regions. Compared to DEMETER 1986, in particular Ireland, the Dutch province of Gelderland, and Spanish Andalucia record lower growth figures. That lower population growth rates are now projected for Ireland is due to the methodological switch to projected fertility. The projection for Gelderland cannot be compared with previous ones because in the meantime this province has lost part of its territory to the new province of Flevoland.

There are also regions which in the next five years stand to experience a clear decline in population. That applies in particular to some metropolitan areas (Greater London, Merseyside, West Midlands, Hamburg, Bremen, Ile de France, Liguria, etc.). Besides, some regions are losing population because in the national context their economic prospects are poor. As examples may serve Arnsberg in Germany, Ipeiros in Greece, and Alentejo in Portugal. In comparison with DEMETER 1986 the changed position of West Berlin is especially striking. In 1986 still expected to decline steeply, this region now belongs to the few German regions which in the next five years may expect a rise in population. That is partly due to the inflow of migrants, in particular East Germans. Map 8.2 will show, however, that the turnabout can also be ascribed to changed interregional migration behaviour.

Map 8.1. Population growth, yearly rate 1990-1995



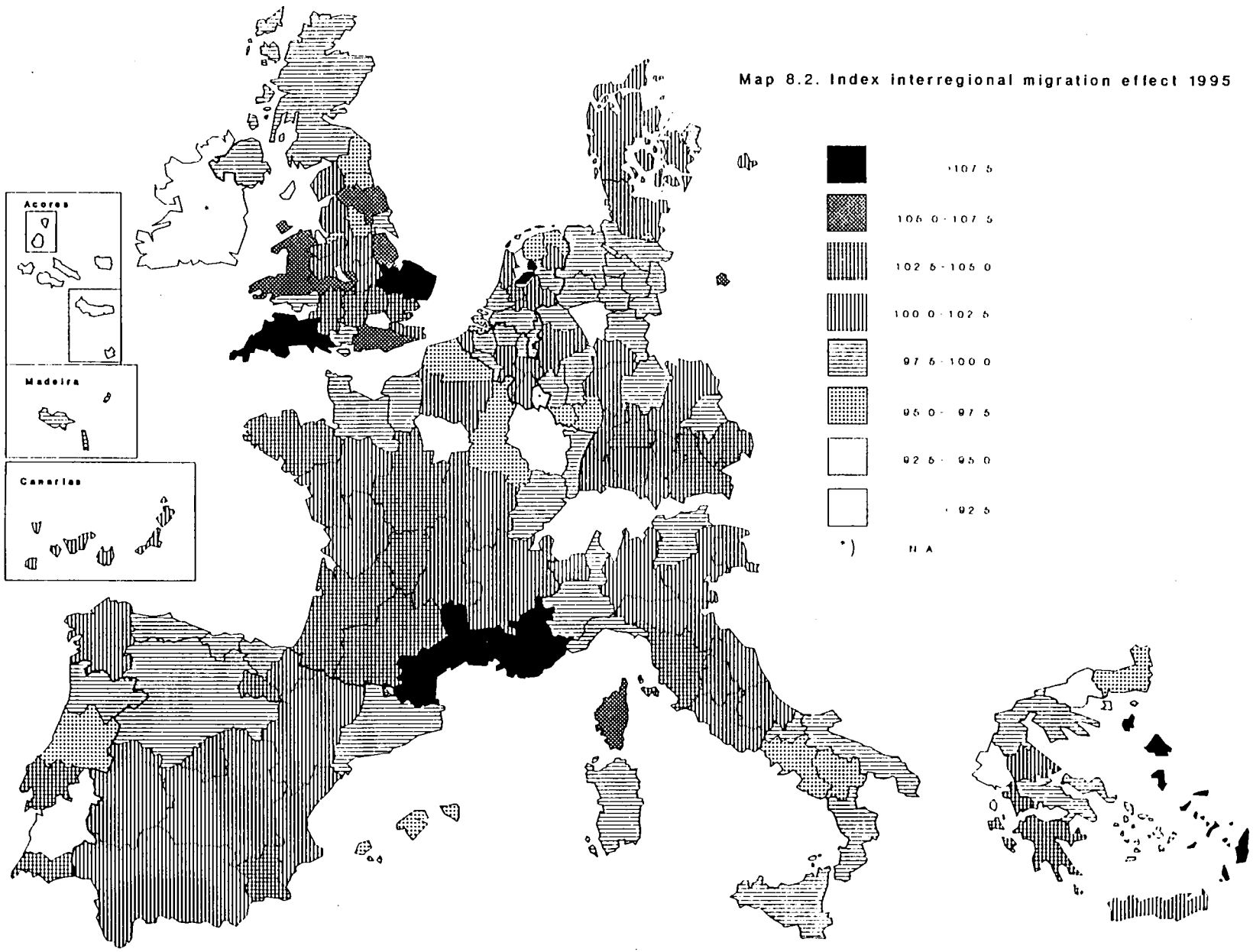
8.1.2. Interregional migration

Naturally, short-term regional population growth is largely determined by the prevailing national tendency. Indeed, it depends in part on mortality and fertility rates, which, though varying from one region to another, mostly show but slight deviations from the national average. Nevertheless, regions within one country do show contrasting trends, which are largely due to interregional migration. Germany and the United Kingdom provide illustrative examples.

To establish the influence of interregional migration, regional projections based on the assumption of no interregional migration have been carried out in addition to the regular ones. The results of the two projection methods have been compared, the effect of migration being expressed in an index figure (100 = no migration). Map 8.2 reproduces the outcomes. It illustrates that a large proportion of EC-countries possess distinct attraction and expulsion areas. Only in Belgium, Denmark and to a lesser degree Spain does interregional migration play a minor role. As already observed before, especially in the metropolitan areas within Western Europe the outflow of population considerably outpaces the inflow, whereas in particular coastal areas and regions with a tight labour market appear to exert great attraction on potential migrants. Strikingly, in some countries the migration effect can be interpreted as a north-south contrast, with the southern parts carrying away the positive effects (United Kingdom, France, Spain, Germany). Probably climatological conditions are not without influence there. The only clear exception to that tendency is Italy, where economic motives seem to favour the north.

As could be expected, the pattern of map 8.2 is much the same as that of DEMETER 1986; nevertheless, some differences are worth recording. The changed position of West Berlin has already been pointed out; the province of Noord-Holland in the Netherlands and the Greek region of Nisia Anatolikou Aigaiou show a similar reversion of the migration effect, whereas Baleares in Spain seems to have lost her attractiveness.

Map 8.2. Index interregional migration effect 1995



On the other hand, the map shows that interregional migration is not invariably responsible for regional growth differences. Although the regions in southern Italy, unlike those in the north, all have growing populations, yet they are the very ones with a clear negative net migration. This confirms the familiar impression of great interregional contrasts with respect to birth and death rates in Italy.

8.2. Long-term growth, 1985-2015

The long-term evolution of the population is illustrated by map 8.3. Unlike map 8.1, it focuses not on the yearly growth rate but on the percentage change which the population volume has undergone in the period concerned. By 2015, the population will have declined by almost 3 per cent in comparison with 1985. DEMETER 1986 still foresaw a growth of over 4 per cent for the 1980-2010 period, comparable in length to the present study period. The greatest relative increase is foreseen for Flevoland (63.6 per cent); at the other end of the scale figures Ipeiros with - 40 per cent. A comparison between short-term and long-term growth reveals that the regional proportions remain much the same. Regions showing considerable growth are to be found in the southern parts of England (Cambridge, Devon, Dorset), Spain (Murcia, Andalucia) and France (Languedoc, Provence) next to the Greek Aegean islands. Interregional migration is the main source of these developments. Decline is strongest in the city-states of Germany (Hamburg, Bremen), the economically lagging regions of Germany (Arnsberg, Rheinhessen, Saarland), Greece (Ipeiros, Macedonia) and Portugal (Alentejo, Centro) and parts of northern Italy (Piemonte, Liguria, Friuli). Next to outmigration the outstanding position of these regions is caused by relatively low fertility.

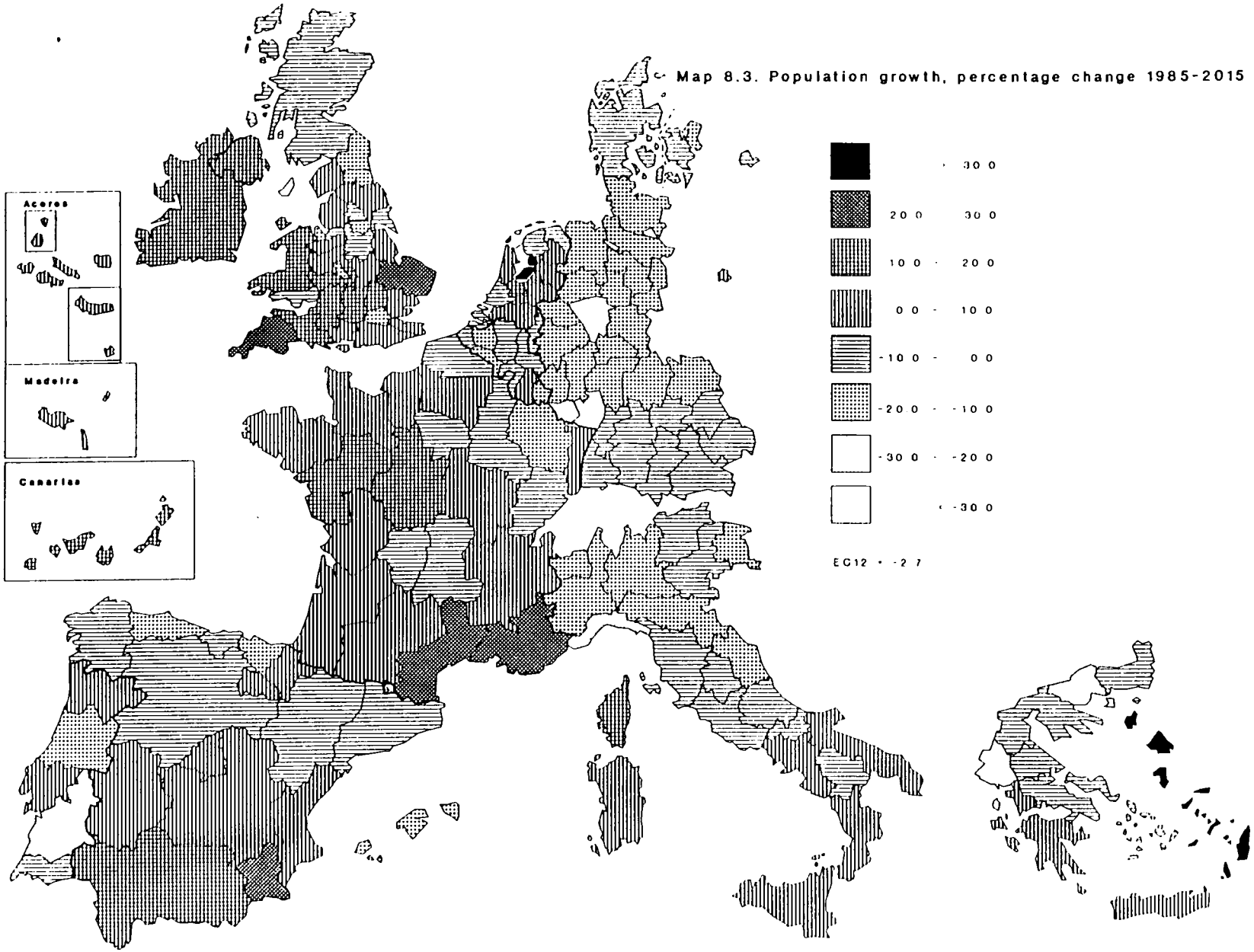
Map 8.4 gives an impression of the interregional migration effect in the long run (again expressed as an index figure).

8.3. Ageing within the EC

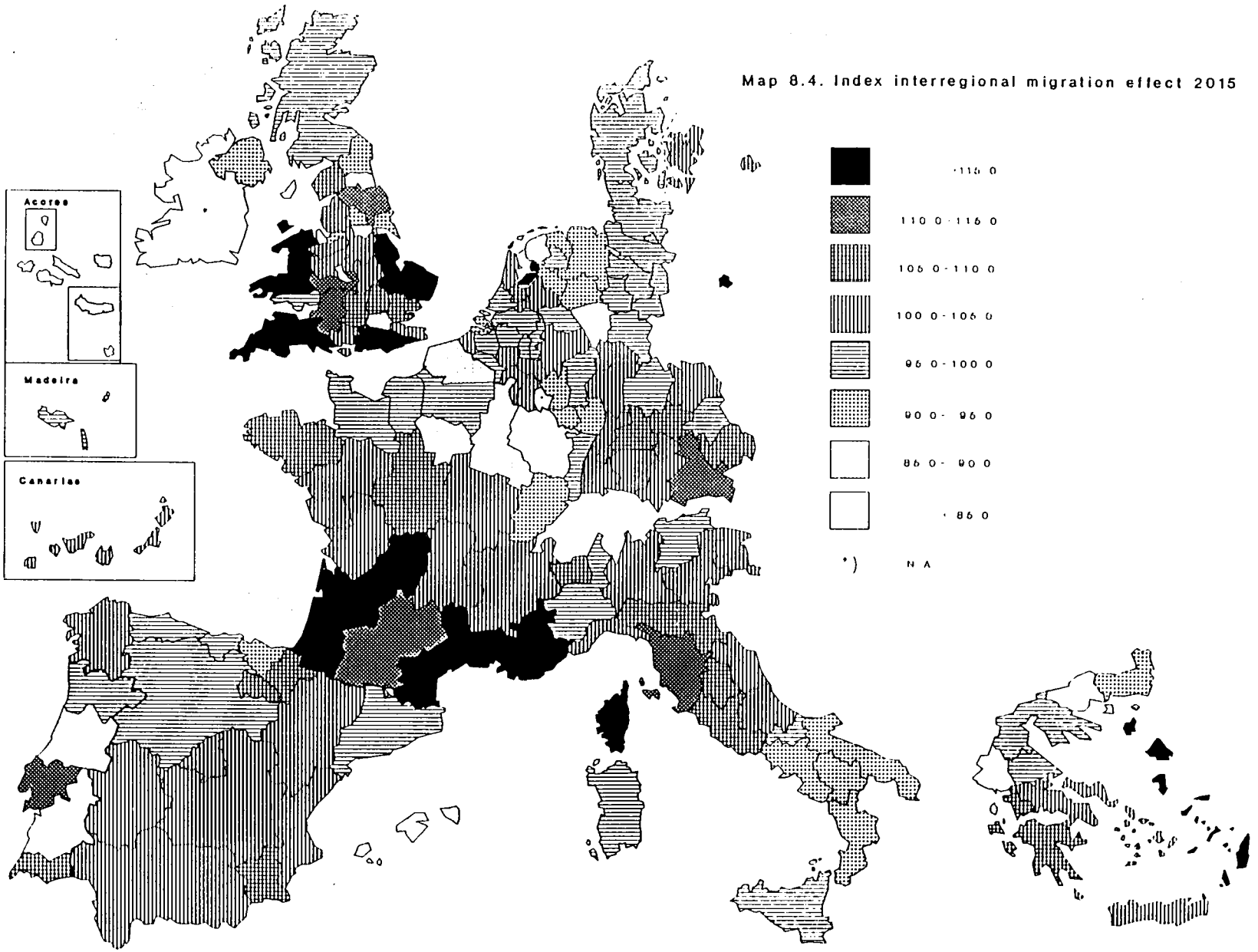
The results of the national projections had already revealed that all countries within the EC are characterised by increasing shares of senior citizens (over 65) in total population. In 1985, 13.4 per cent of the people were older than 65, against an expected 17.3 per cent in 2010 and 18.9 per cent in 2015. From a comparison of the present projection for 2010 with that of DEMETER 1986, the rise is faster than previously foreseen (16.2%).

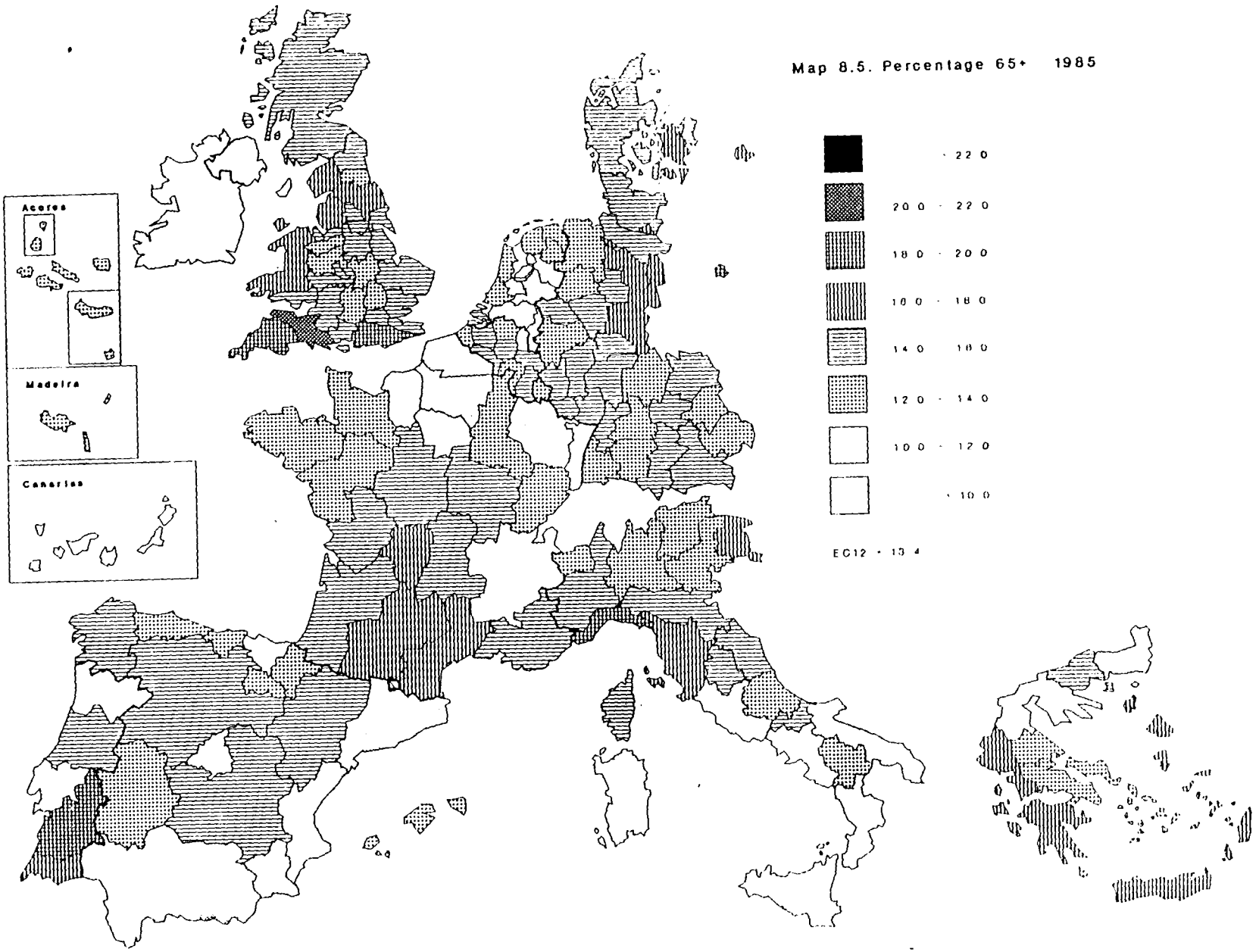
Map 8.5 reproduces the situation observed in 1985, while map 8.6 visualises the future (2015). Understandably, map 8.6 exhibits darker shades on the whole than map 8.5. The fact stands out that many regions in Germany and Northern Italy will be confronted with particularly strong ageing tendencies. The regions in the South East of France and the North of the United Kingdom on the contrary seem to tend to some form of stabilisation. The same two trends were already visible in DEMETER 1986.

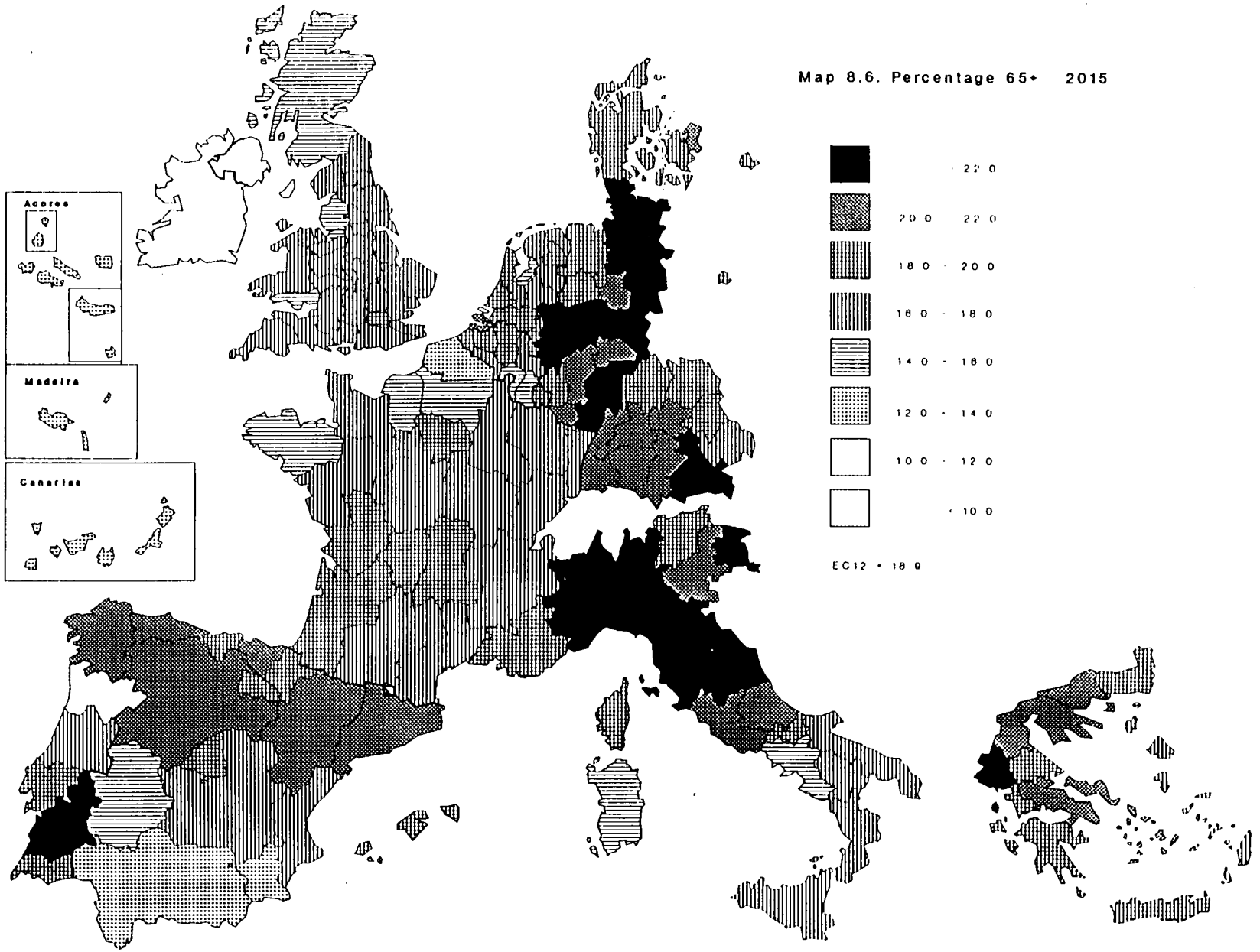
Map 8.3. Population growth, percentage change 1985-2015



Map 8.4. Index interregional migration effect 2015




Map 8.5. Percentage 65+ 1985
Acores
Madeira
Canarias
22 0
20 0 - 22 0
18 0 - 20 0
16 0 - 18 0
14 0 - 16 0
12 0 - 14 0
10 0 - 12 0
10 0
EC12 = 13 4


Map 8.6. Percentage 65+ 2015
22 0
20 0 22 0
18 0 20 0
16 0 18 0
14 0 16 0
12 0 14 0
10 0 12 0
10 0
EC12 18 9
Acores
Madeira
Canarias

9. RESULTS OF THE REGIONAL LABOUR FORCE PROJECTIONS

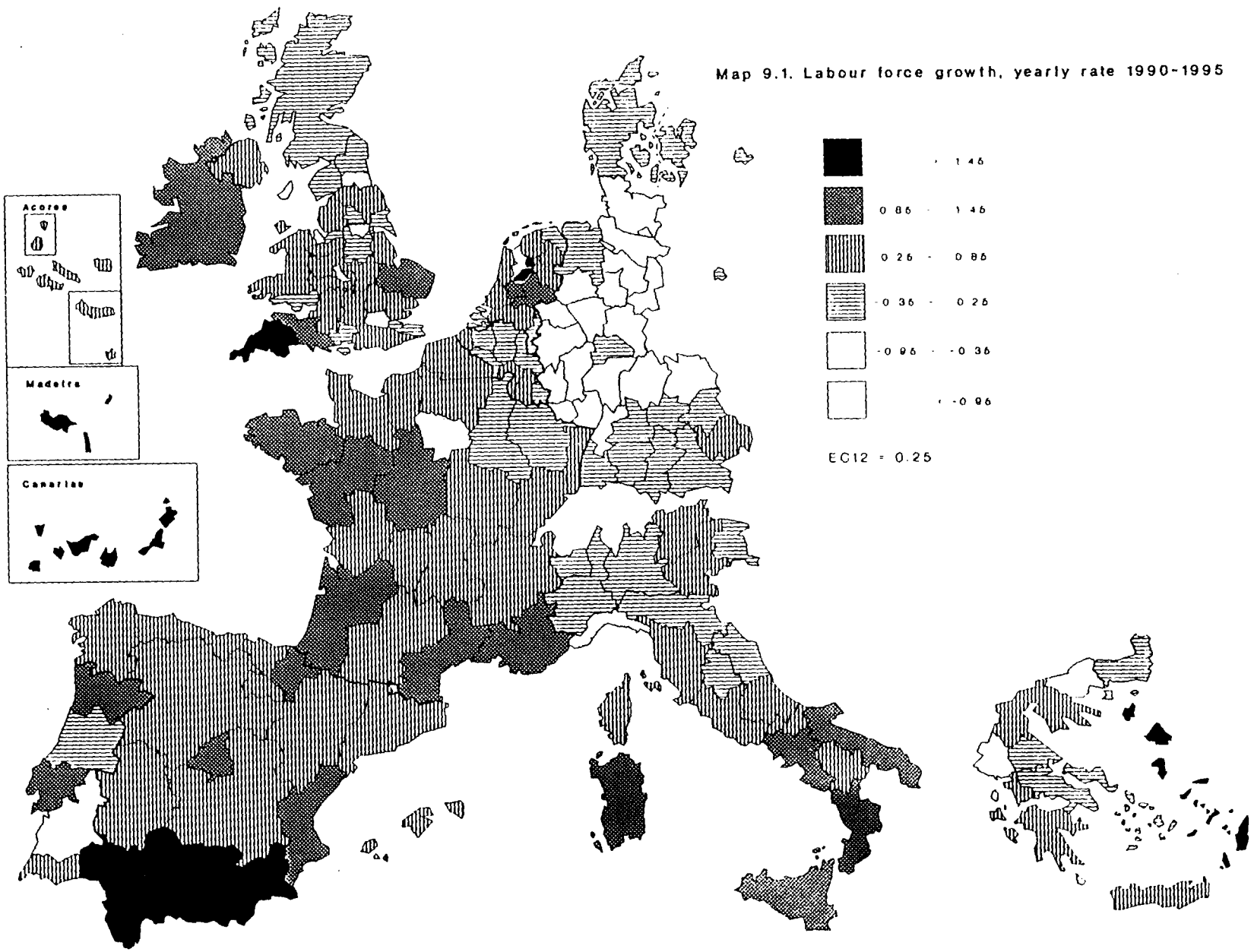
The short-term and long term development of regional labour force seems to harmonize for the greater part with the already observed trends in the previous chapter. For this rason, only short notice will be paid to these developments in the first paragraph. The second paragraph deals with an confrontation between the estimated labour force growth rates and the realised unemployment rates. Finally, in paragraph 9.3 a table will be given containing the most vital results of the regional population and labour force projections.

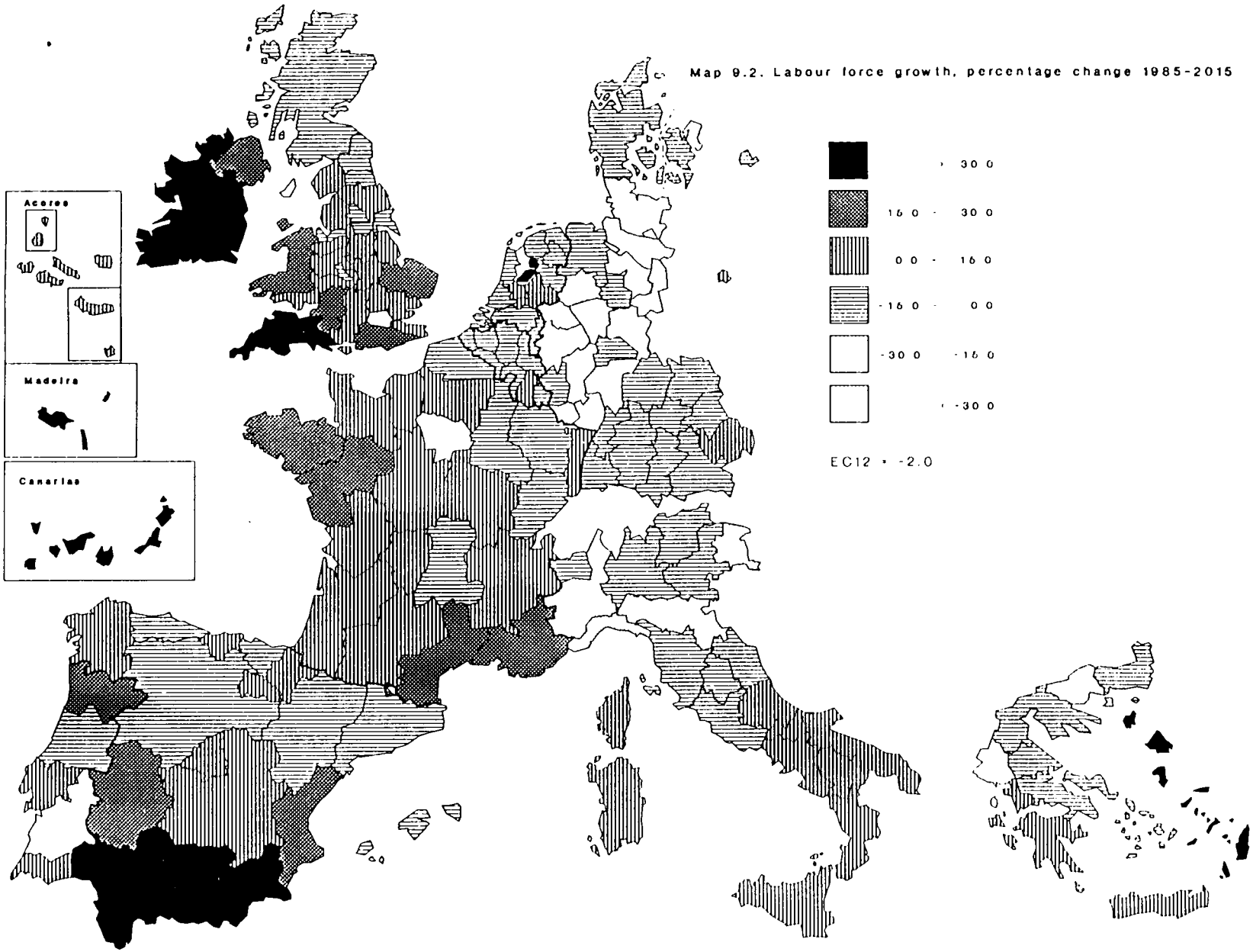
9.1. Short term and long term growth of the regional labour force

The total labour force of the EC-12 will increase by roundabout .25 per cent a year during the period 1990-1995 (map 9.1). In DEMETER 1986 for the same period a slightly higher annual increase of .32 per cent was estimated. During this period, there are only a few regions that experience an annual growth of over 1.5 per cent. Again Flevoland is the region with the highest annual increase (2.8 %), whereas the estimated annual decline of the Ipeiros labour force amounts to 1.8 per cent.

For the long term (1985-2015) the volume of the labour force within the entire EC-12 is expected to decrease by 2% (map 9.2). A deminishing growth is foreseen up to around the end of the century, after which decline sets in. Compared to the short term development growth, map 9.2 shows an overall equal picture with only minor shifts.

Map 9.1. Labour force growth, yearly rate 1990-1995





Map 9.2. Labour force growth, percentage change 1985-2015

9.2. Job requirements

A main issue for regional policy is the reduction of socio-economic disparities between regions. One of the key variables in this context is the regional unemployment level. A growing labour force is in need of an equally growing job capacity to maintain at least the present unemployment and is in need of a faster growing one to reduce it.

The present position of the regions in this respect can be assessed by combining the unemployment levels of 1989 with projected labour force growth for the period 1990-1995. Regional unemployment levels for april 1989 were calculated by Eurostat following the ILO concepts used for the labour force sample surveys[1)].

For the EC12 as a whole unemployment at the beginning of 1989 amounted to 9.3% of the active population.

In table 9.1 the regions are grouped according to their positioning above or below this average and according to the projected labour force growth. Table 9.1A contains the regions with a projected labour force growth below the EC12 average, while table 9.1B refers to region with a growth above the average.

Thus in table 9.1A regions can be found where the pressure for job creation is lowest, while the second page displays regions in a rather unfavourable position (especially those on the right).

The table is displayed graphically in map 9.3, which clearly shows that the problem regions in this respect are scattered all over Europe, but that apart from Ireland and the Netherlands the Mediterranean countries are in the most vulnerable position. Of course the size of the unemployment at the starting point (1989) is of main importance. The real pressure in the projection period is not all that certain as apart from the projected growth of the labour force a large role is played by developments of employment opportunities. In general one can note that these tend to go in the same direction as labour force developments, a certain amount of interdependency being present,

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1) Greece 1987.

but that the size of employment growth is smaller, thus leading to increasing pressure in those regions where labour force growth will be high.

Comparing the regional classification in the table to the situation in 1986 it becomes clear that most regions remain in the same category, especially where it concerns the extreme cases.

Nonetheless a number of changes can be noticed. As the classification is based on two variables, labour force growth in the period 1990-1995 and the unemployment level at the start of this period, both can influence the position within the schedule. Moreover even when both factors remain unchanged, a change of position is possible as the classification is relative to the (changed) EC average.

As a result a number of German regions have switched to a class with lower than average labour force growth. The same applies to some Greek regions. In about half of the Spanish regions projected labour force growth (in 1986 below average) now is higher than the EC average. For many of the UK regions the same phenomenon occurs, while in between unemployment in large parts of the UK has dropped below average. In most of the French regions the unemployment situation is worse than in 1986 and now above average, while in the Netherlands unemployment dropped considerably. Finally a few Italian regions show higher unemployment especially in the lagging parts like Abruzzi an Molise. In general though the overall picture has not changed much.

Table 9.1A. Regional position regarding job requirements 1990-1995

Labour force growth rate,	Unemployment < EC12			Unemployment > EC12		
		Unemployment rate, 1989			Unemployment rate, 1989	
1990-1995	UNTERFRANKEN	-0.39	3.8	WEST MIDLANDS	-0.62	9.5
	OBERFRANKEN	-0.44	3.9	LIGURIA	-0.57	9.7
	DARMSTADT	-0.52	3.9	BREMEN	-1.22	10.9
	KARLSRUHE	-0.43	4.0	DURHAM, CLEVELAND	-0.37	11.3
	KOBLENZ	-0.62	4.6	SOUTH YORKSHIRE	-0.53	11.4
	RHEINHESSEN-PFALZ	-0.99	4.8	MERSEYSIDE	-0.69	14.0
	IPEIROS	-1.85	5.5	ALENTEJO	-0.84	14.5
	KASSEL	-0.61	5.7			
	TRIER	-0.58	5.8			
	LUENEBURG	-0.46	5.9			
< -.35	DETMOLD	-0.42	6.0			
	SCHLESWIG-HOLSTEIN	-0.51	6.7			
	ILE-DE-FRANCE	-0.42	6.7			
	ANATOLIKI MAKEDONIA	-0.76	6.8			
	GREATER LONDON	-0.69	7.2			
	KOELN	-0.54	7.3			
	HANNOVER	-0.64	7.5			
	BRAUNSCHWEIG	-0.67	7.6			
	MUENSTER	-0.56	7.8			
	ARNSBERG	-1.24	8.0			
	DUESSELDORF	-0.96	8.2			
	SAARLAND	-1.12	8.6			
	HAMBURG	-1.15	8.9			
	% of EC population	17,7			2,9	

Table 9.1A. Continue

Labour force growth rate,	Unemployment < EC12		Unemployment rate, 1989	Unemployment > EC12	
	LUXEMBOURG	-0.18	1.8	ANATOLIKI STEREA KAI	0.16	9.3
	STUTTGART	-0.13	2.9	UMBRIA	0.13	9.5
	TUEBINGEN	-0.01	2.9	LIMBURG	0.04	10.3
	SCHWABEN	-0.10	3.1	SCOTLAND	-0.05	10.4
	FREIBURG	-0.14	3.2	LORRAINE	-0.15	10.6
	OBERBAYERN	-0.07	3.5	LIMBURG	0.14	10.8
	CENTRO	0.13	3.5	CHAMPAGNE-ARDENNE	0.23	11.2
	THRAKI	-0.11	3.8	NORTH., TYNE & WEAR	-0.34	11.5
	HAMPSHIRE, ISLE OF WIGHT	0.03	3.8	LIEGE	0.09	12.7
	VALLE D'AOSTA	0.12	3.9	HAINAUT	0.19	14.9
	LOMBARDIA	0.12	4.1	GRONINGEN	0.24	15.0
	MITTELFRANKEN	-0.23	4.1			
	KENT	0.24	4.2			
	GIESSEN	-0.29	4.9			
	OBERPFALZ	-0.31	4.9			
	EMILIA-ROMAGNA	0.00	5.2			
	CUMBRIA	0.22	5.5			
-.35 - +.25	HOVEDSTADSREGIONEN	-0.21	5.8			
	THESSALIA	0.16	6.5			
	FRIULI-V. GIULIA	0.03	6.5			
	OOST-VLAANDEREN	-0.01	6.6			
	ZEELAND	0.24	6.7			
	PIEMONTE	-0.27	6.8			
	WEST YORKSHIRE	-0.18	7.1			
	MARCHE	0.15	7.2			
	BERLIN(WEST)	0.20	7.3			
	WESER-EMS	-0.25	7.5			
	VEST FOR STOREBAELT	0.24	7.6			
	DERBY-, NOTTINGHAMSHIRE	0.10	7.8			
	ANTWERPEN	-0.12	8.2			
	OEST FOR STOREBAELT	0.13	8.2			
	BRABANT	0.03	8.3			
	GREATER MANCHESTER	-0.24	8.7			
	GWENT, S, M, W-GLAMORGAN	0.05	8.8			
	HUMBERSIDE	-0.07	9.1			
	% of EC population		20,4			6,1

Table 9.18. Regional position regarding job requirements 1990-1995

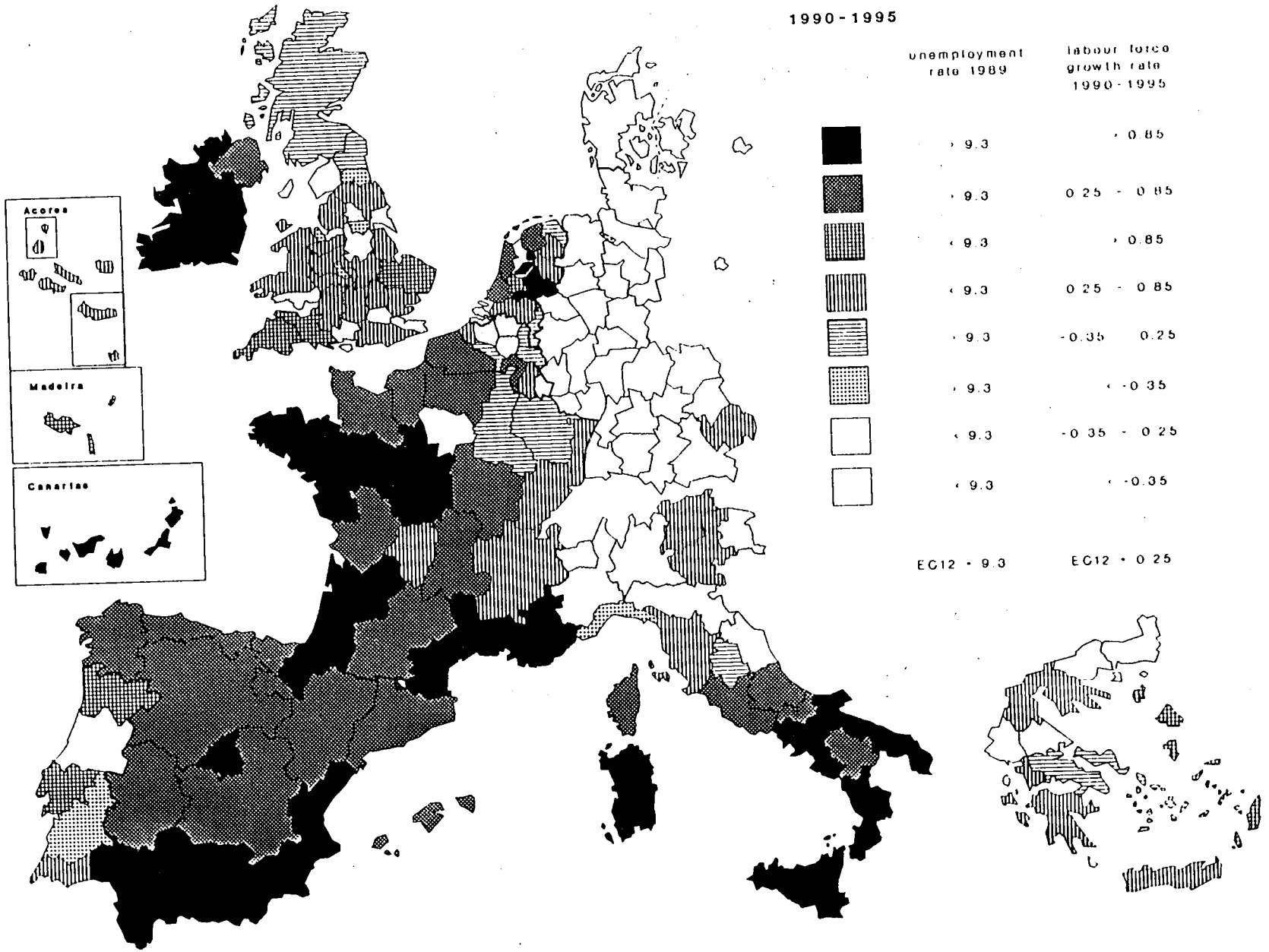
Labour force growth rate,	Unemployment < EC12			Unemployment > EC12		
		Unemployment rate, 1989			Unemployment rate, 1989	
1990-1995	OXFORD-,BERK-,BUCK.SHIRE	0.42	1.5	MIDI-PYRENEES	0.57	9.4
	SURREY,W-SUSSEX,E-SUSSEX	0.68	1.8	CORSE	0.74	9.5
	ACORES	0.77	2.2	ZUID-HOLLAND	0.34	9.5
	BEDFORD-, HERTFORDSHIRE	0.63	2.4	BOURGOGNE	0.61	9.6
	KRITI	0.63	2.7	RIOJA	0.82	9.9
	TRENTINO-ALTO ADIGE	0.46	3.6	BASSE-NORMANDIE	0.55	10.1
	ESSEX	0.38	3.6	NOORD-HOLLAND	0.38	10.5
	NIEDERBAYERN	0.25	3.7	ABRUZZI	0.54	10.6
	HEREF. & WORC., WARW.SH.	0.67	3.9	BALEARES	0.43	10.6
	NORTH YORKSHIRE	0.45	3.9	AUVERGNE	0.36	10.6
	LEIC.-, NORTH.SHIRE	0.43	4.1	LAZIO	0.54	11.0
	AVON, GLOUC.-, WILTSHIRE	0.66	4.2	POITOU-CHARENTES	0.63	11.7
	WEST-VLAANDEREN	0.26	4.9	NAMUR	0.58	11.9
	VENETO	0.45	5.0	ARAGON	0.38	12.4
	SHROP-, STAFFORDSHIRE	0.29	5.1	PICARDIE	0.78	12.4
.25 - .85	ALGARVE	0.59	5.4	FRIESLAND	0.42	12.5
	ALSACE	0.36	5.7	HAUTE-NORMANDIE	0.63	12.5
	PELOPONNISOS KAI DYTIKI	0.74	6.2	GALICIA	0.78	12.8
	CHESHIRE	0.32	6.4	MOLISE	0.46	13.2
	LINCOLNSHIRE	0.64	6.6	NORD-PAS-DE-CALAIS	0.29	14.7
	KENTRIKI KAI DYTIKI MAK.	0.28	8.9	CATALUNA	0.68	14.8
	LANCASHIRE	0.25	7.0	CASTILLA-LA MANCHA	0.73	15.3
	DYFED,POWYS,CLWYD,GWYNED	0.75	8.1	NORTHERN IRELAND	0.83	16.7
	RHONE-ALPES	0.64	8.2	CASTILLA-LEON	0.41	18.0
	LUXEMBOURG	0.64	8.2	ASTURIAS	0.40	18.0
	TOSCANA	0.29	8.3	CANTABRIA	0.81	18.3
	DRENTHE	0.62	8.8	BASILICATA	0.55	20.0
	NOORD-BRABANT	0.44	8.8	PAIS VASCO	0.47	20.7
	FRANCHE-COMTE	0.43	8.9	EXTREMADURA	0.81	27.6
	OVERIJSSEL	0.48	8.9			
	LIMOUSIN	0.62	9.0			
	% of EC population	14,2			16,0	

Table 9.1B. continued

Labour force growth rate,	Unemployment < EC12			Unemployment > EC12		
		Unemployment rate, 1989			Unemployment rate, 1989	
	NORTE	1.14	3.4	GELDERLAND	0.85	9.4
	DORSET, SOMERSET	1.14	3.7	BRETAGNE	0.95	9.7
	CAMBR., NORFOLK, SUFFOLK	1.19	4.0	CENTRE	0.96	9.7
	MADEIRA	1.49	4.3	FLEVOLAND	2.81	10.8
	DEVON, CORNWALL	1.51	7.1	PAYS DE LA LOIRE	1.05	11.1
	NISIA ANATOLIKOU AIGAIOU	2.20	7.6	PROV.-ALPES-COTE D'AZ	1.05	11.6
> .85	LISBOA E VALE DO TEJO	0.91	8.3	NAVARRA	1.04	11.9
	UTRECHT	0.98	9.1	AQUITAINE	0.88	12.1
				MADRID	1.21	13.7
				PUGLIA	1.08	14.9
				LANGUEDOC-ROUSILLON	1.35	15.1
				COMUNIDAD VALENCIANA	1.22	15.8
				MURCIA	1.77	16.7
				IRELAND	1.39	17.2
				SARDEGNA	1.10	18.3
				SICILIA	0.89	21.1
				CAMPANIA	0.95	21.8
				CANARIAS	1.84	23.2
				CALABRIA	0.90	24.2
				ANDALUCIA	1.45	27.9
	% of EC population	4,1			18.6	

Map 9.3. Regional position regarding job requirements

1990-1995



9.3. Detailed regional results

Table 9.2 summarizes the most vital results of the regional projections as it gives the growth rates by region for population and labour force.

Table 9.2. Short- and longterm population and labour force growth

column 1 : Population growth 1990-1995, annual rate
column 2 : Population growth 1985-2015, % change
column 3 : Labour force growth 1990-1995, annual rate
column 4 : Labour force growth 1985-2015, % change

	1	2	3	4
SCHLESWIG-HOLSTEIN	-0.31	-15.71	-0.51	-19.23
HAMBURG	-0.84	-26.03	-1.15	-31.32
BRAUNSCHWEIG	-0.45	-18.32	-0.67	-20.67
HANNOVER	-0.42	-18.02	-0.64	-20.75
LUENEBURG	-0.26	-14.45	-0.46	-17.63
WESER-EMS	-0.09	-10.29	-0.25	-10.53
BREMEN	-1.00	-28.37	-1.22	-32.33
DUESSELDORF	-0.47	-19.11	-0.96	-24.08
KOELN	-0.13	-11.17	-0.54	-17.27
MUENSTER	-0.22	-13.41	-0.56	-15.98
DETMOLD	-0.16	-11.11	-0.42	-11.72
ARNSBERG	-0.76	-24.94	-1.24	-28.81
DARMSTADT	-0.22	-13.33	-0.52	-20.03
GIESSEN	-0.16	-11.11	-0.29	-13.28
KASSEL	-0.47	-17.57	-0.61	-18.36
KOBLENZ	-0.34	-15.96	-0.62	-17.58
TRIER	-0.34	-15.99	-0.58	-14.45
RHEINHESSEN-PFALZ	-0.59	-21.69	-0.99	-26.05
STUTTGART	0.25	-0.91	-0.13	-6.24
KARLSRUHE	-0.09	-9.54	-0.43	-14.18
FREIBURG	0.17	-2.87	-0.14	-5.66
TUEBINGEN	0.24	-0.63	-0.01	-3.19
OBERBAYERN	0.29	-0.55	-0.07	-8.70
NIEDERBAYERN	0.22	-0.53	0.25	3.41
OBERPFALZ	-0.13	-9.88	-0.31	-9.46
OBERFRANKEN	-0.22	-12.07	-0.44	-11.54
MITTELFRANKEN	0.02	-6.82	-0.23	-9.59
UNTERFRANKEN	-0.13	-10.78	-0.39	-12.00
SCHWABEN	0.06	-5.24	-0.10	-6.07
SAARLAND	-0.68	-24.85	-1.12	-28.56
BERLIN(WEST)	0.14	0.83	0.20	2.68

Table 9.2. Continue

column 1 : Population growth 1990-1995, annual rate
column 2 : Population growth 1985-2015, % change
column 3 : Labour force growth 1990-1995, annual rate
column 4 : Labour force growth 1985-2015, % change

	1	2	3	4
ILE-DE-FRANCE	-0.09	-8.19	-0.42	-17.14
CHAMPAGNE-ARDENNE	-0.03	-5.02	0.23	-4.43
PICARDIE	0.39	6.54	0.78	8.58
HAUTE-NORMANDIE	0.43	7.82	0.63	7.61
CENTRE	0.51	10.60	0.96	14.27
BASSE-NORMANDIE	0.20	1.97	0.55	4.58
BOURGOGNE	0.14	0.71	0.61	4.97
NORD-PAS-DE-CALAIS	0.07	-1.99	0.29	-0.39
LORRAINE	-0.18	-10.08	-0.15	-12.08
ALSACE	0.29	2.21	0.36	0.57
FRANCHE-COMTE	0.14	-0.45	0.43	-0.14
PAYS DE LA LOIRE	0.53	11.65	1.05	16.58
BRETAGNE	0.42	8.98	0.95	15.32
POITOU-CHARENTES	0.13	0.55	0.63	4.99
AQUITAINE	0.42	8.23	0.86	12.60
MIDI-PYRENEES	0.23	2.86	0.57	5.54
LIMOUSIN	0.01	-2.84	0.62	4.21
RHONE-ALPES	0.49	9.35	0.64	7.53
AUVERGNE	-0.07	-5.17	0.36	-1.96
LANGUEDOC-ROUSILLON	0.87	22.26	1.35	29.33
PROVENCE-ALPES-COTE D'AZUR	0.83	20.46	1.05	21.88
CORSE	0.62	15.49	0.74	11.40
PIEMONTE	-0.54	-19.58	-0.27	-20.89
VALLE D'AOSTA	-0.21	-12.16	0.12	-13.03
LIGURIA	-0.86	-26.17	-0.57	-26.15
LOMBARDIA	-0.20	-12.08	0.12	-12.98
TRENTINO-ALTO ADIGE	0.00	-6.24	0.46	-3.52
VENETO	-0.08	-8.91	0.45	-6.83
FRIULI-V. GIULIA	-0.52	-18.74	0.03	-17.05
EMILIA-ROMAGNA	-0.37	-15.86	0.00	-16.44
TOSCANA	-0.17	-9.89	0.29	-7.83
UMBRIA	-0.16	-9.98	0.13	-9.56
MARCHE	-0.18	-10.64	0.15	-10.02
LAZIO	0.12	-3.08	0.54	-0.80
CAMPANIA	0.37	5.59	0.95	13.92
ABRUZZI	0.08	-3.20	0.54	1.64
MOLISE	-0.01	-5.05	0.46	0.86
PUGLIA	0.37	4.99	1.08	14.12
BASILICATA	0.09	-2.64	0.55	3.57
CALABRIA	0.34	4.58	0.90	12.52
SICILIA	0.36	5.63	0.89	13.54
SARDEGNA	0.28	1.92	1.10	10.17

Table 9.2. Continue

column 1 : Population growth 1990-1995, annual rate
column 2 : Population growth 1985-2015, % change
column 3 : Labour force growth 1990-1995, annual rate
column 4 : Labour force growth 1985-2015, % change

	1	2	3	4
GRONINGEN	-0.08	-7.06	0.24	-10.43
FRIESLAND	0.01	-4.38	0.42	-5.84
DRENTHE	0.30	2.63	0.62	-0.26
OVERIJSSEL	0.22	0.85	0.48	-1.90
GELDERLAND	0.54	8.35	0.85	5.17
FLEVOLAND	2.51	63.59	2.81	53.44
UTRECHT	0.76	12.75	0.98	7.64
NOORD-HOLLAND	0.26	0.80	0.38	-6.03
ZUID-HOLLAND	0.23	-0.13	0.34	-6.18
ZEELAND	-0.08	-6.55	0.24	-9.94
NOORD-BRABANT	0.39	3.26	0.44	-4.67
LIMBURG	0.11	-4.77	0.04	-13.25
ANTWERPEN	-0.09	-7.98	-0.12	-14.43
BRABANT	-0.07	-6.89	0.03	-12.16
HAINAUT	-0.28	-10.94	0.19	-12.08
LIEGE	-0.21	-9.61	0.09	-11.88
LIMBURG	0.17	-2.47	0.14	-10.52
LUXEMBOURG	0.25	2.54	0.64	2.82
NAMUR	0.10	-1.36	0.58	-1.38
OOST-VLAANDEREN	-0.22	-10.79	-0.01	-14.42
WEST-VLAANDEREN	0.09	-3.13	0.26	-6.30
LUXEMBOURG	-0.12	-10.82	-0.18	-14.04
NORTHUMBERLAND, TYNE AND WEAR	-0.29	-10.39	-0.34	-8.33
CUMBRIA	0.13	0.70	0.22	4.87
DURHAM, CLEVELAND	.27	-10.59	-0.37	-9.82
NORTH YORKSHIRE	0.37	6.08	0.45	10.77
HUMBERSIDE	-0.03	-3.91	-0.07	-1.89
WEST YORKSHIRE	-0.17	-7.52	-0.18	-5.35
SOUTH YORKSHIRE	-0.47	-14.55	-0.53	-13.57
LANCASHIRE	0.12	0.17	0.25	5.42
MERSEYSIDE	-0.56	-16.41	-0.69	-14.70
GREATER MANCHESTER	-0.19	-7.57	-0.24	-5.59
CHESHIRE	0.35	4.59	0.32	6.10
SHROP-, STAFFORDSHIRE	0.30	3.92	0.29	4.83
WEST MIDLANDS	-0.38	-12.18	-0.62	-12.70
HEREFORD & WORCESTER, WARWICKSHIRE	0.61	11.64	0.67	14.43
DERBY-, NOTTINGHAMSHIRE	0.10	-0.77	0.10	1.13
LINCOLNSHIRE	0.43	8.92	0.64	14.25
LEICESTER-, NORTHAMPTONSHIRE	0.39	6.97	0.43	8.85
CAMBRIDGE, NORFOLK, SUFFOLK	0.96	23.12	1.19	29.64

Table 9.2. Continue

column 1 : Population growth 1990-1995, annual rate
column 2 : Population growth 1985-2015, % change
column 3 : Labour force growth 1990-1995, annual rate
column 4 : Labour force growth 1985-2015, % change

	1	2	3	4
ESSEX	0.35	5.18	0.38	6.86
BEDFORD-, HERTFORDSHIRE	0.73	11.55	0.63	10.95
GREATER LONDON	-0.48	-14.20	-0.69	-16.24
KENT	0.20	1.90	0.24	4.87
SURREY, WEST SUSSEX, EAST SUSSEX	0.46	7.81	0.68	15.40
HAMPSHIRE, ISLE OF WIGHT	0.07	0.60	0.03	1.90
OXFORD-, BERK-, BUCKINGHAMSHIRE	0.57	12.36	0.42	11.34
AVON, GLOUCESTER-, WILTSHIRE	0.59	12.88	0.66	17.00
DORSET, SOMERSET	0.77	18.46	1.14	30.25
DEVON, CORNWALL	1.15	28.54	1.51	40.63
GWENT, SOUTH-, MID-, WEST GLAMORGAN	0.08	-0.62	0.05	2.25
DYFED, POWYS, CLWYD, GWYNEDD	0.50	11.01	0.75	19.35
SCOTLAND	-0.08	-5.77	-0.05	-1.99
NORTHERN IRELAND	0.67	18.20	0.83	25.30
IRELAND	0.52	14.12	1.39	31.17
HOVEDSTADSREGIONEN	-0.30	-13.04	-0.21	-16.58
OEST FOR STOREBAELT	-0.13	-7.32	0.13	-7.13
VEST FOR STOREBAELT	0.01	-4.36	0.24	-5.29
KENTRIKI KAI DYTIKI MAKEDONIA	0.08	-4.09	0.28	-4.65
THESSALIA	0.08	-1.71	0.16	-3.72
ANATOLIKI MAKEDONIA	-0.81	-25.23	-0.76	-26.67
THRAKI	-0.17	-8.99	-0.11	-10.73
ANATOLIKI STEREA KAI NISIA	-0.02	-5.73	0.16	-5.99
PELOPONNISOS KAI DYTIKI STEREA	0.24	5.30	0.74	12.40
IPEIROS	-1.61	-40.12	-1.85	-44.68
KRITI	0.25	5.29	0.63	9.63
NISIA ANATOLIKOU AIGAIOU	1.50	41.26	2.20	54.05
NORTE	0.26	3.79	1.14	17.47
CENTRO	-0.57	-16.34	0.13	-7.04
LISBOA E VALE DO TEJO	0.33	3.49	0.91	9.67
ALENTEJO	-1.10	-27.78	-0.84	-24.99
ALGARVE	0.05	-0.33	0.59	7.02
ACORES	0.02	1.91	0.77	14.00
MADEIRA	0.36	7.74	1.49	30.24

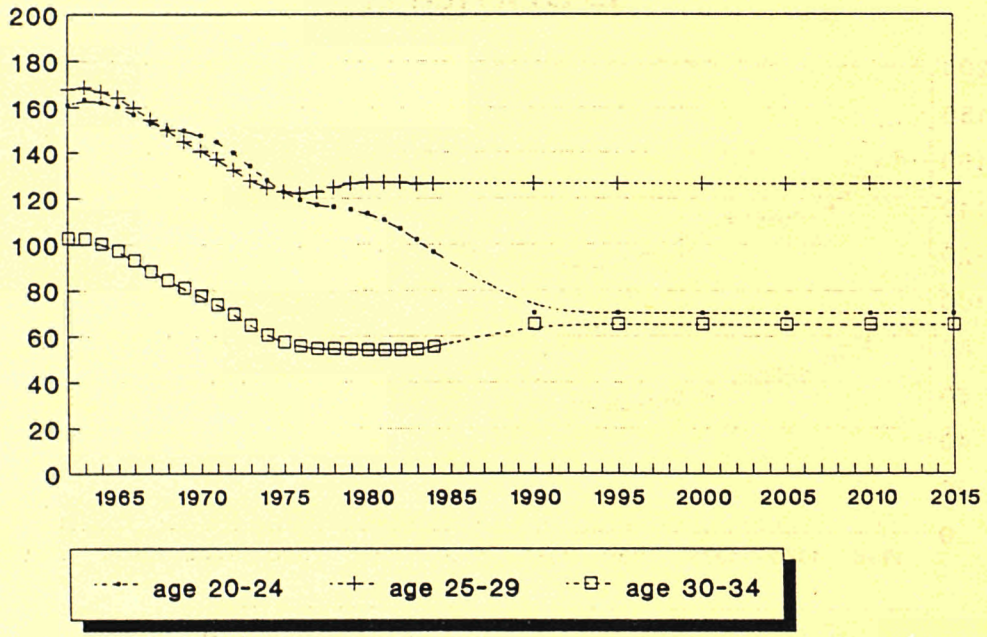
Table 9.2. Continue

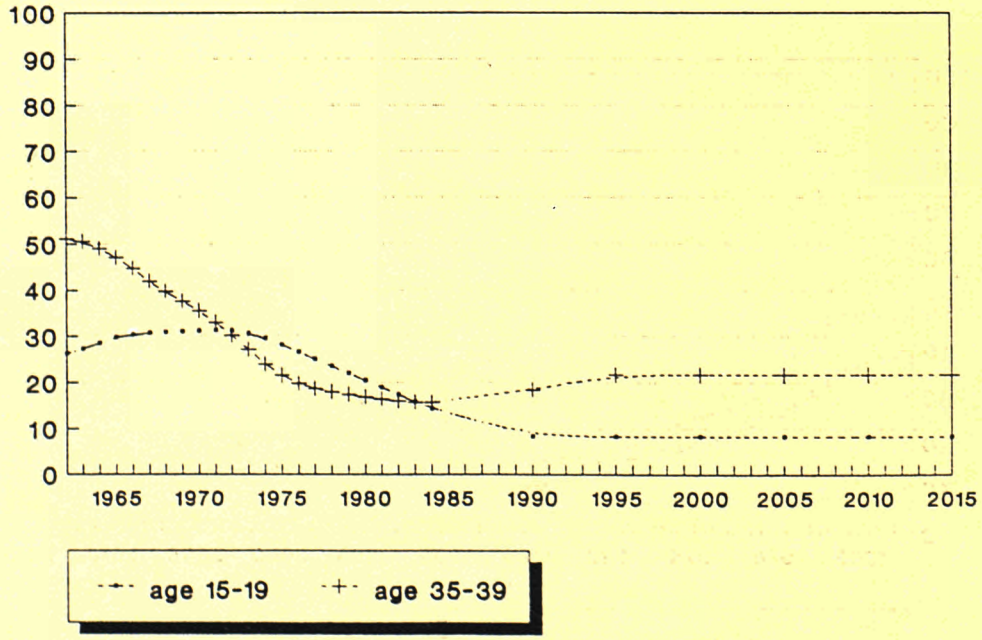
column 1 : Population growth 1990-1995, annual rate
column 2 : Population growth 1985-2015, % change
column 3 : Labour force growth 1990-1995, annual rate
column 4 : Labour force growth 1985-2015, % change

	1	2	3	4
GALICIA	-0.08	-5.81	0.78	1.59
ASTURIAS	-0.29	-12.05	0.40	-7.48
CANTABRIA	0.07	-1.90	0.81	4.86
PAIS VASCO	-0.18	-10.49	0.47	-9.05
NAVARRA	0.25	2.79	1.04	8.71
RIOJA	0.21	2.53	0.82	6.86
ARAGON	-0.11	-6.80	0.38	-3.46
MADRID	0.39	6.85	1.21	13.61
CASTILLA-LEON	-0.07	-5.91	0.41	-1.57
CASTILLA-LA MANCHA	0.16	2.07	0.73	11.56
EXTREMADURA	0.33	6.33	0.81	15.88
CATALUNA	-0.09	-6.78	0.68	-3.15
COMUNIDAD VALENCIANA	0.28	5.36	1.22	16.48
BALEARES	-0.28	-10.27	0.43	-6.31
ANDALUCIA	0.65	17.38	1.45	30.99
MURCIA	0.86	25.04	1.77	42.36
CANARIAS	0.73	18.73	1.84	33.83
BELGIUM	-0.08	-7.20	0.10	-11.27
DENMARK	-0.11	-7.62	0.07	-9.52
FRANCE	0.28	3.51	0.45	2.72
GERMANY	-0.20	-12.27	-0.48	-15.43
GREECE	0.02	-3.93	0.23	-3.26
IRELAND	0.52	14.12	1.39	31.17
ITALY	-0.02	-6.32	0.42	-3.88
LUXEMBOURG	-0.12	-10.82	-0.18	-14.04
NETHERLANDS	0.33	2.32	0.50	-3.22
PORTUGAL	0.06	-1.66	0.81	8.83
SPAIN	0.22	2.79	0.97	10.07
UNITED KINGDOM	0.13	0.27	0.13	2.51
EC12	0.08	-2.74	0.25	-1.95

Annex 3.1. Projection of age-specific fertility rates by country

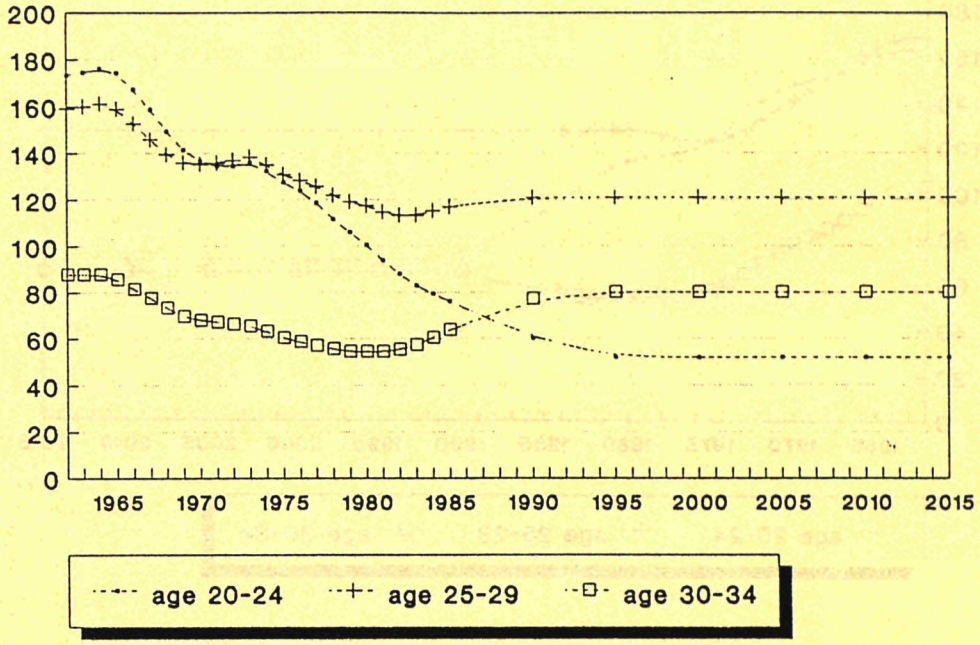
Belgium

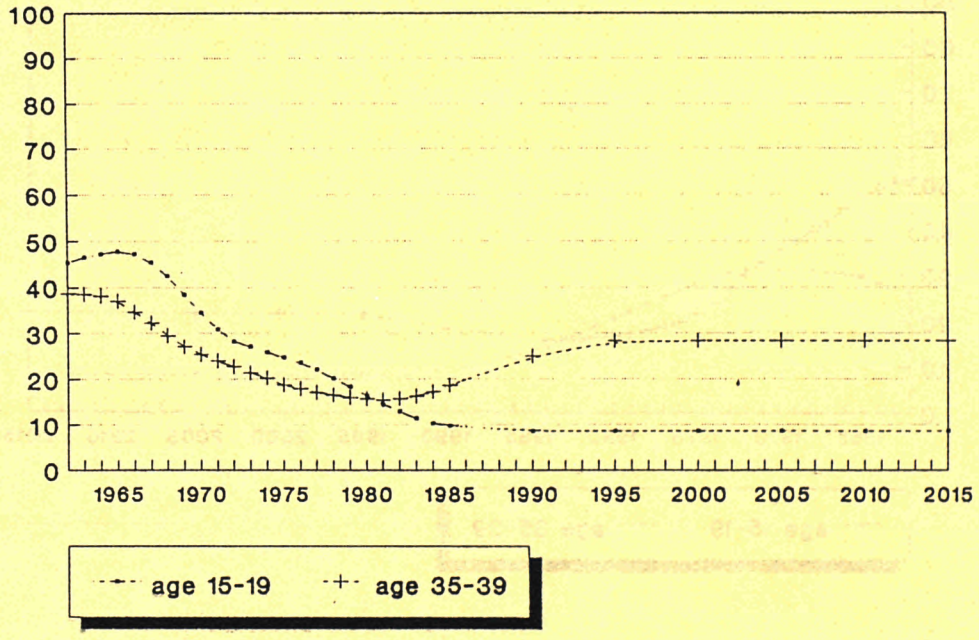




Annex 3.1. Continued

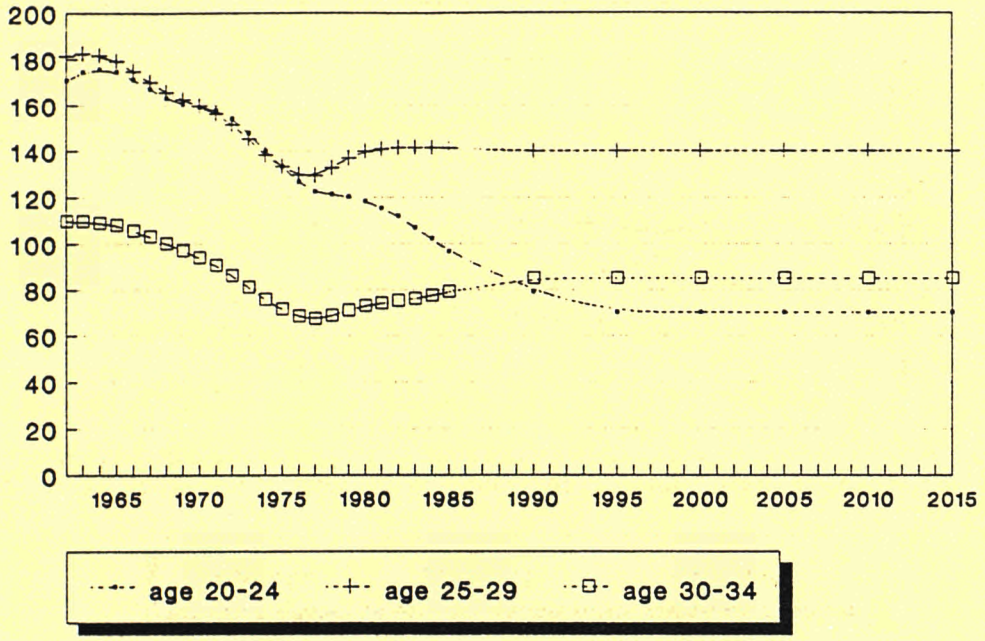
Denmark

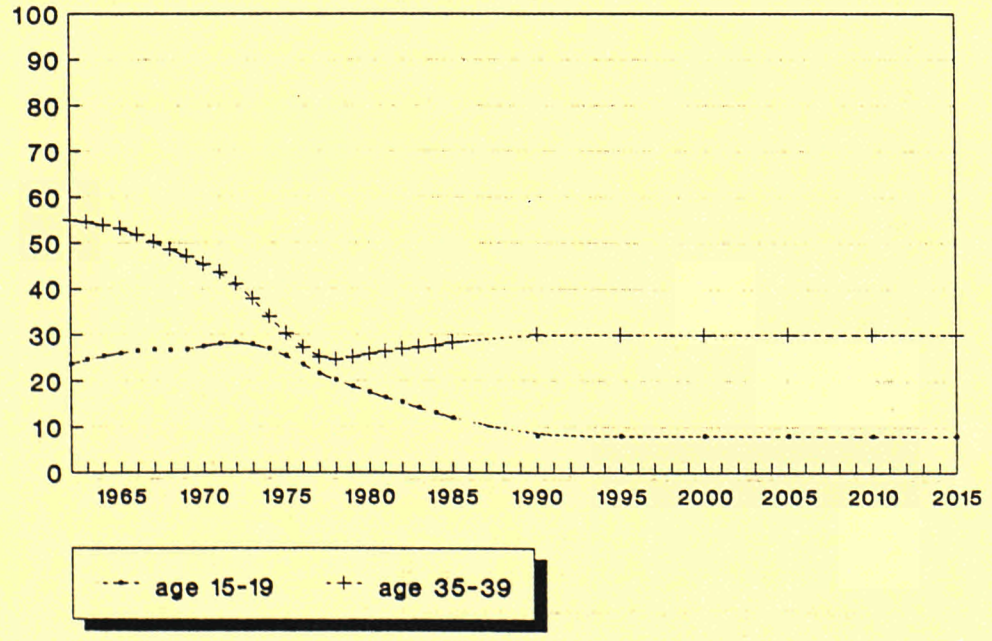




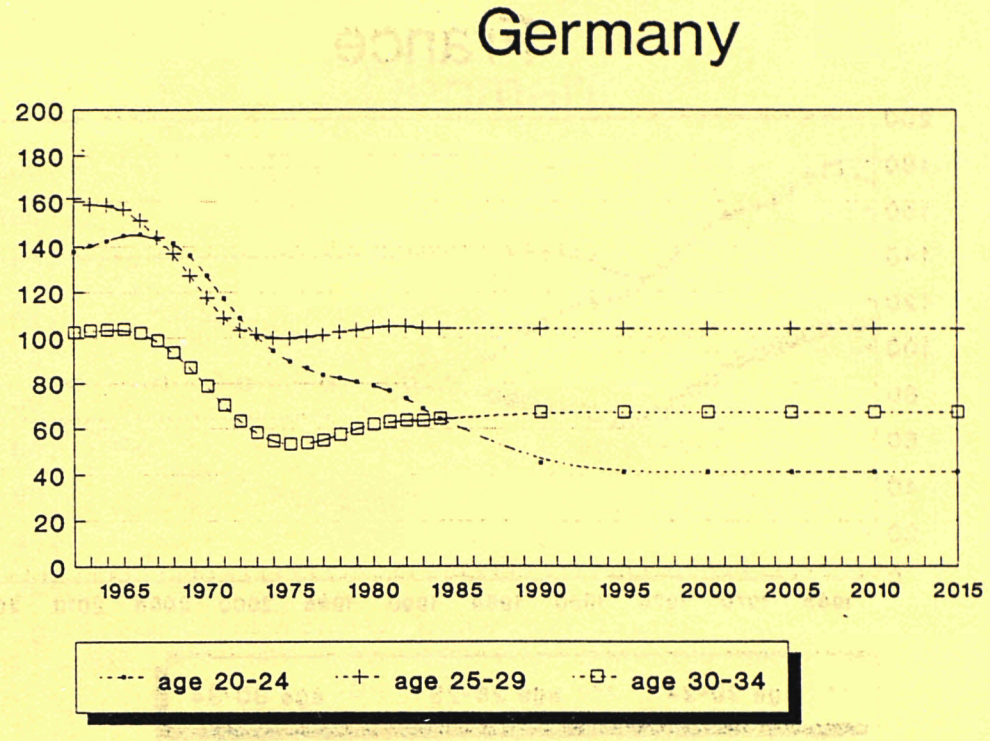
Annex 3.1. Continued

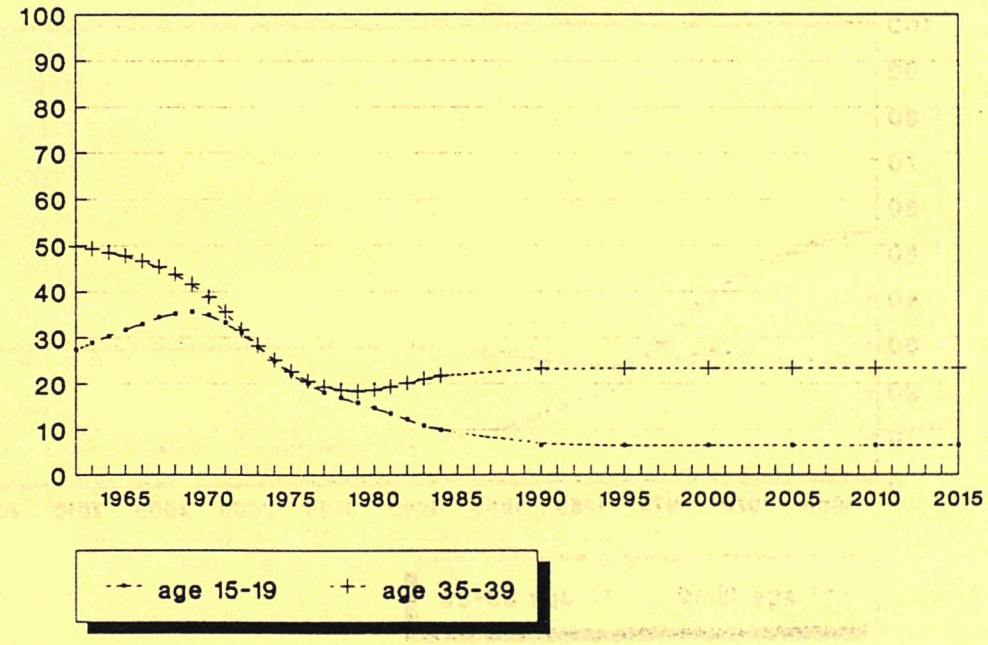
France





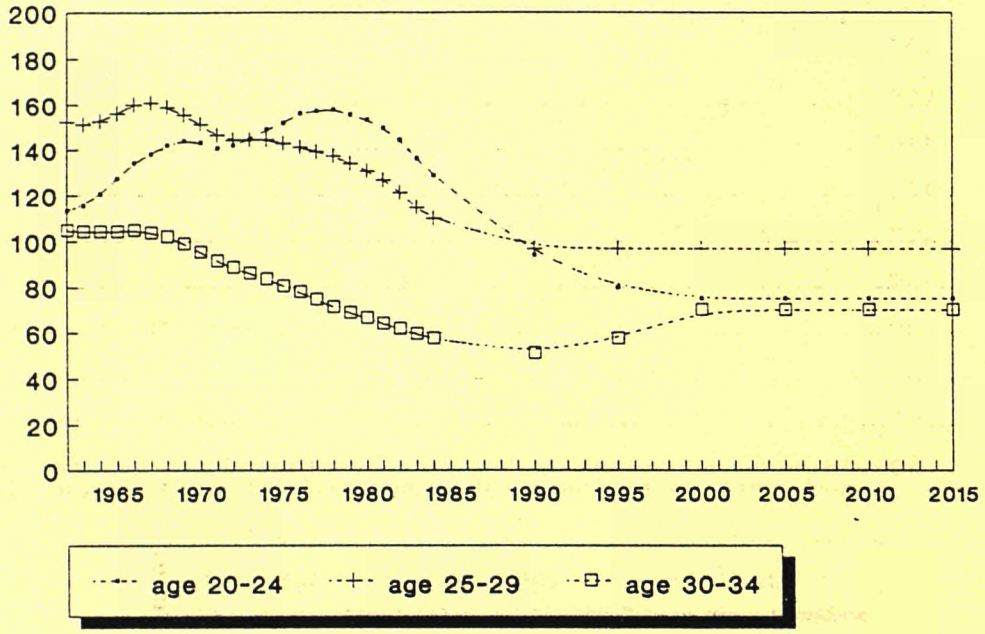
Annex 3.1. Continued

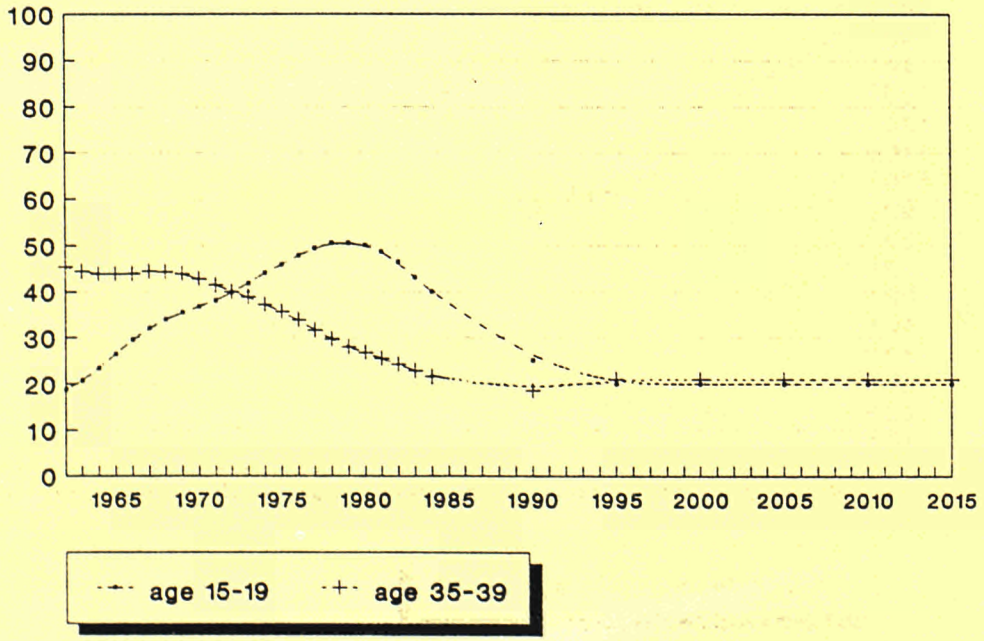




Annex 3.1. Continued

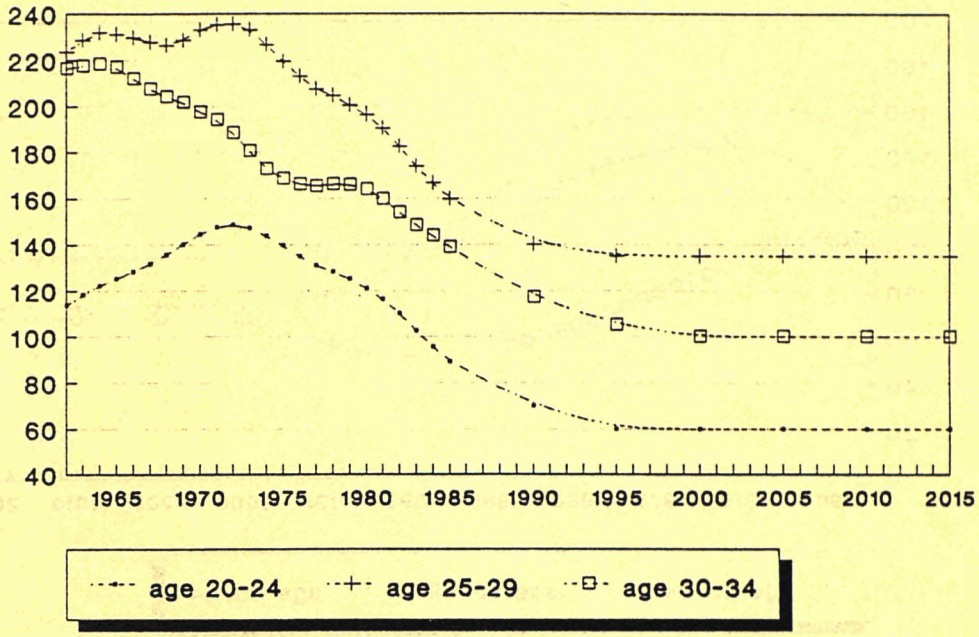
Greece



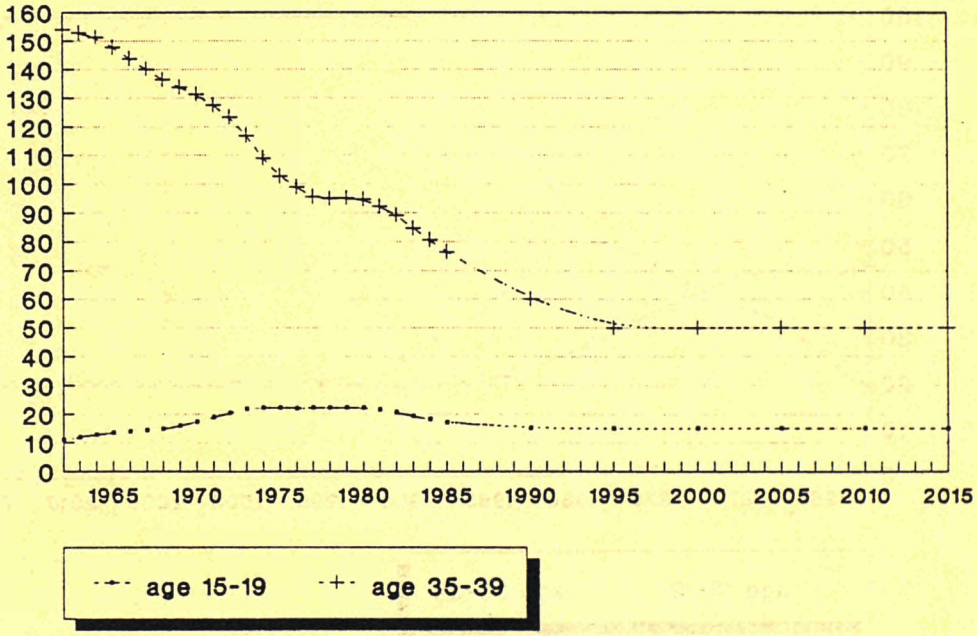


Annex 3.1. Continued

Ireland [a]



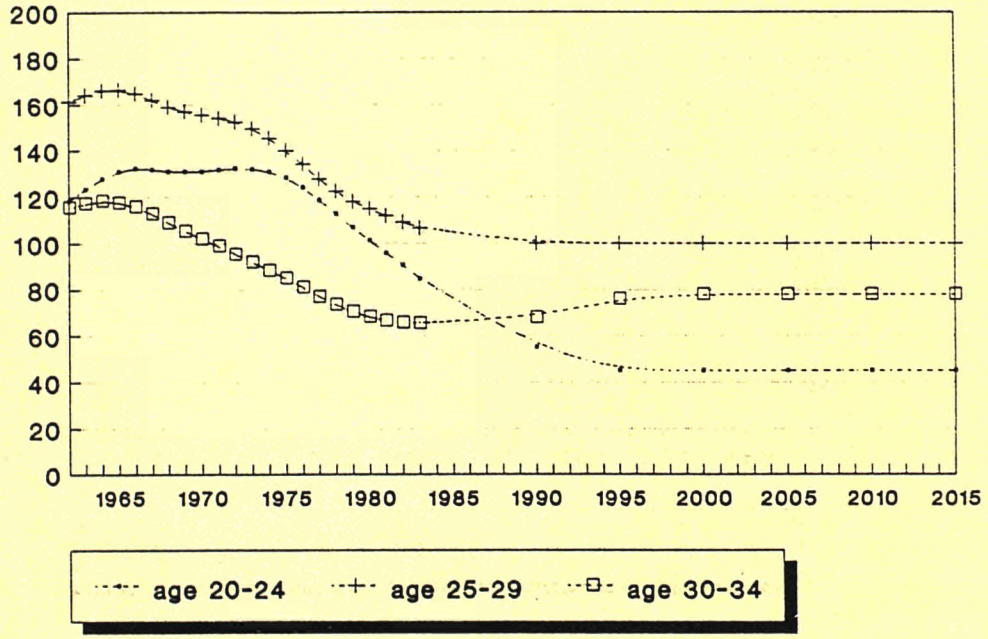
a) Deviating Y-axis scale values

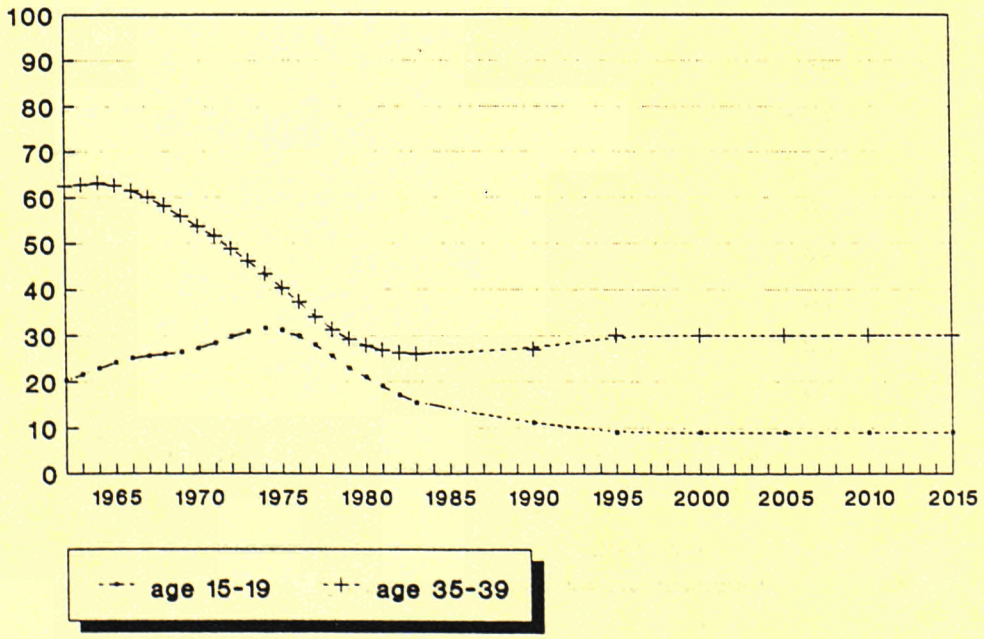


a) Deviating Y-axis scale values

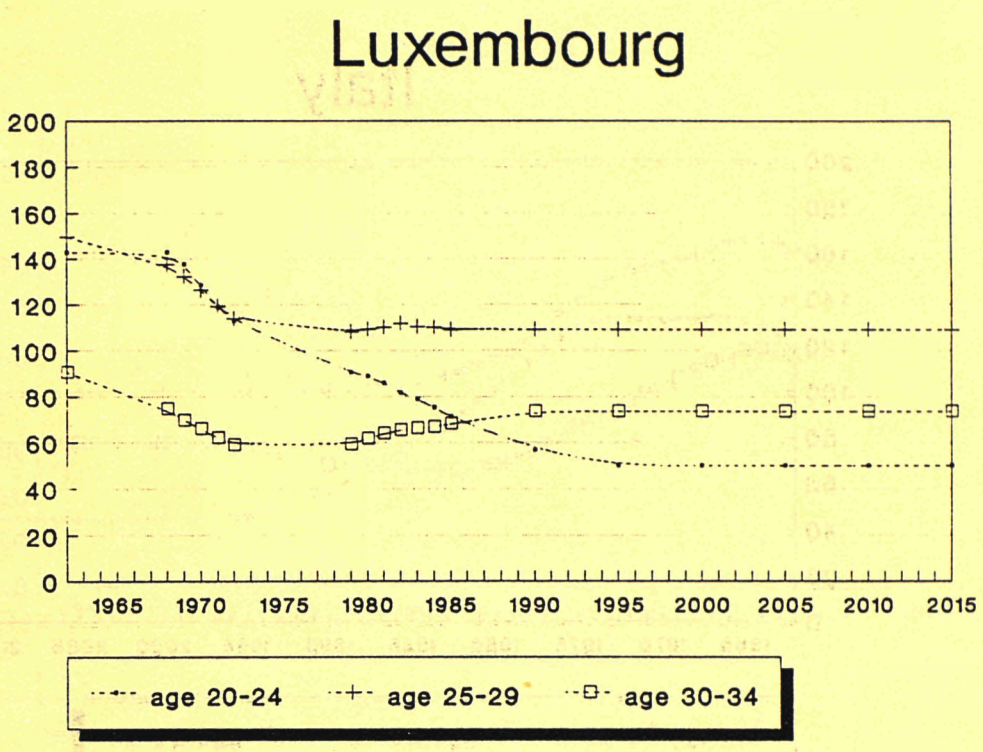
Annex 3.1. Continued

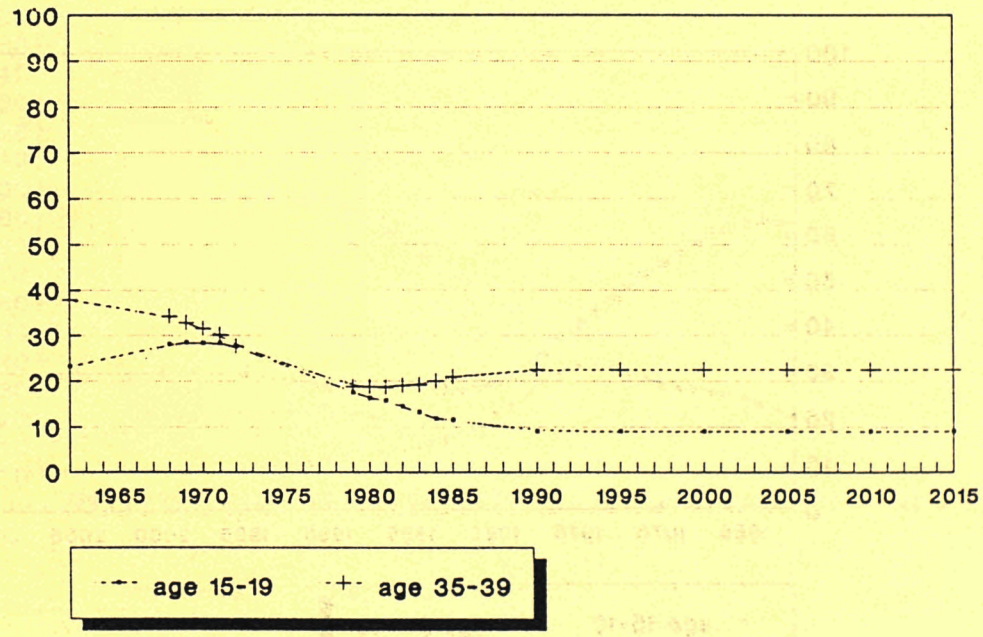
Italy





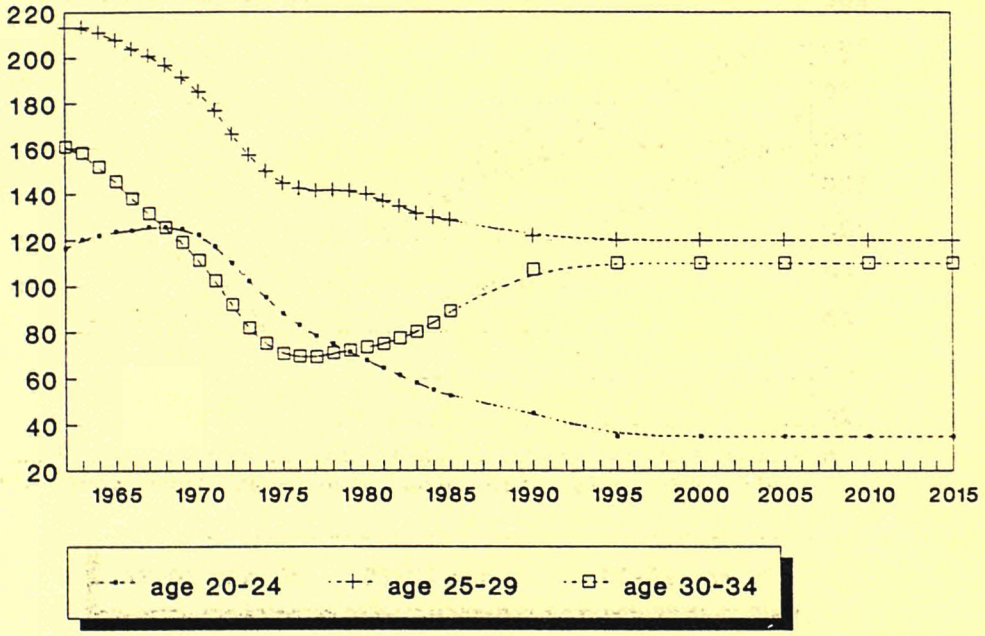
Annex 3.1. Continued



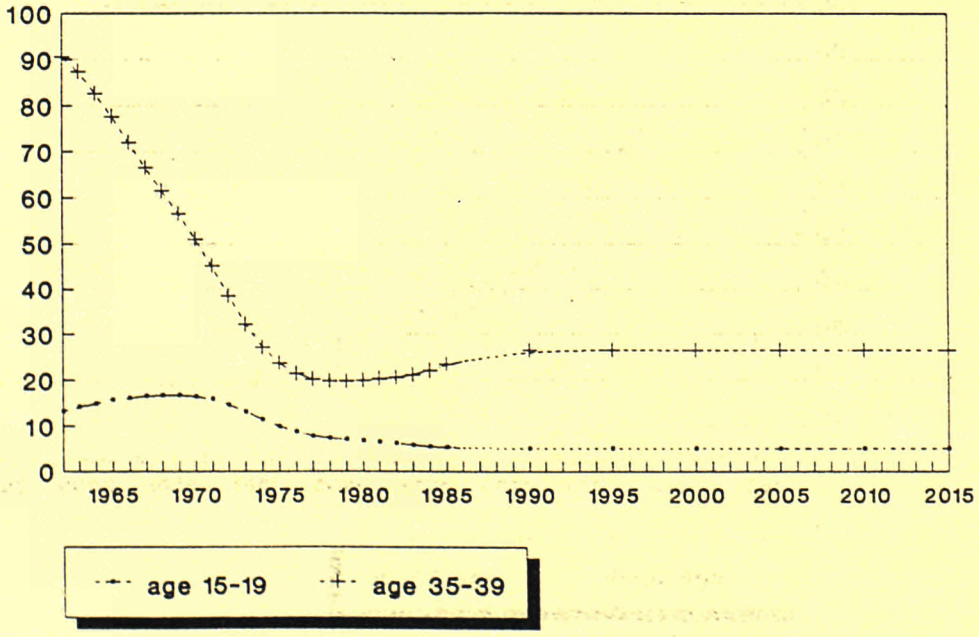


Annex 3.1. Continued

Netherlands [a)]

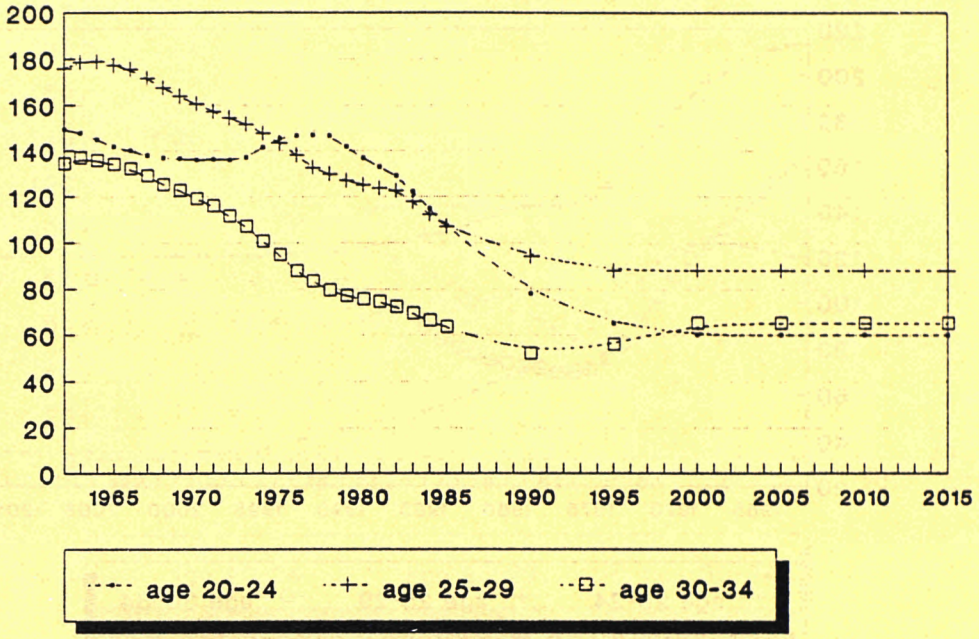


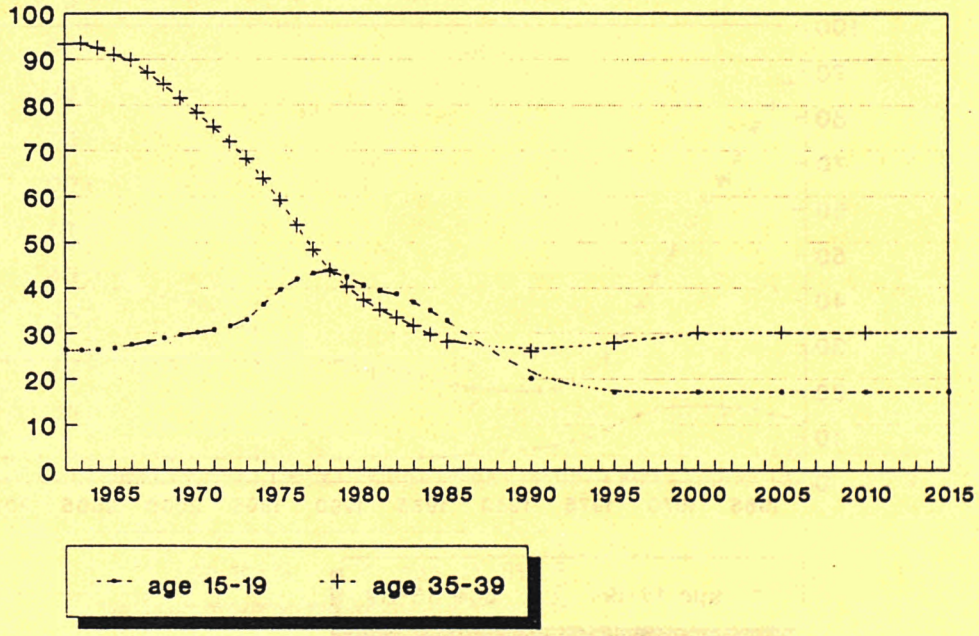
a) Deviating Y-axis scale values



Annex 3.1. Continued

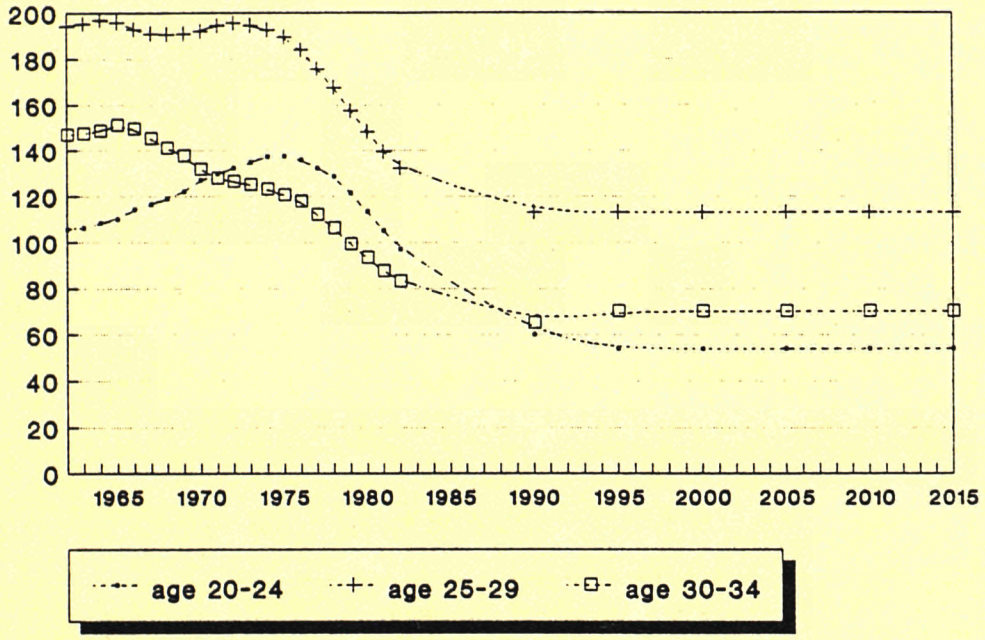
Portugal

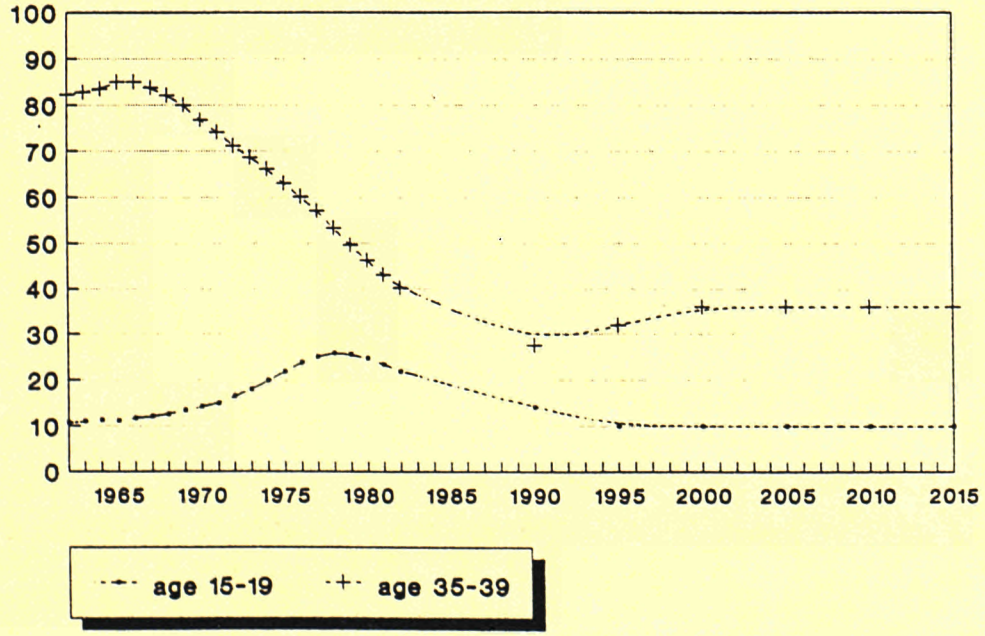




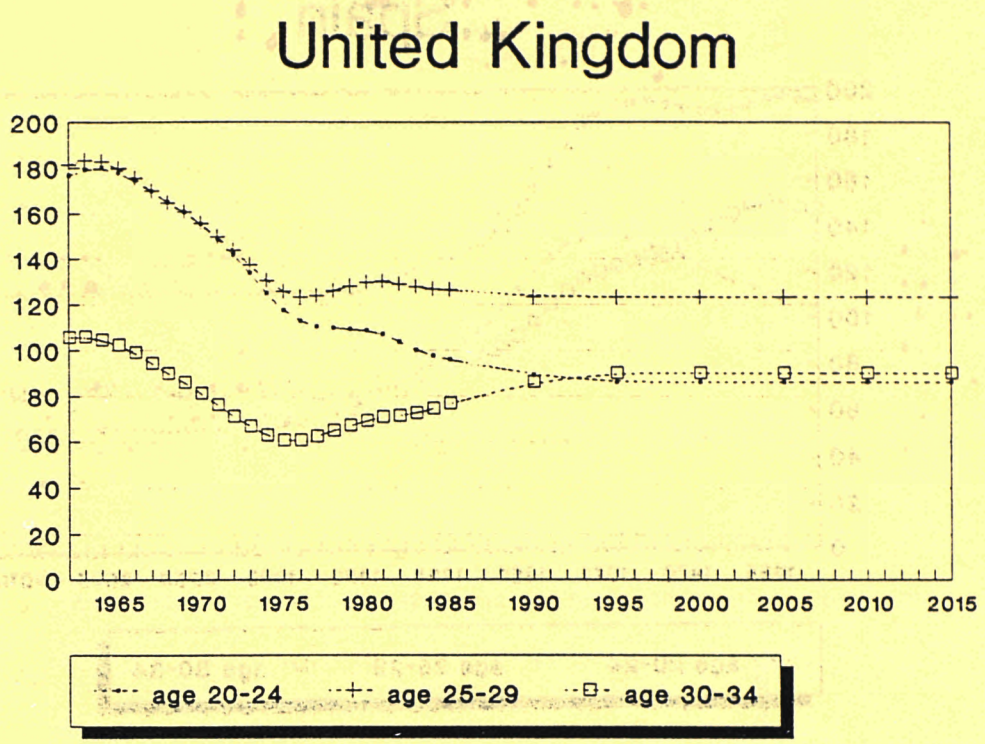
Annex 3.1. Continued

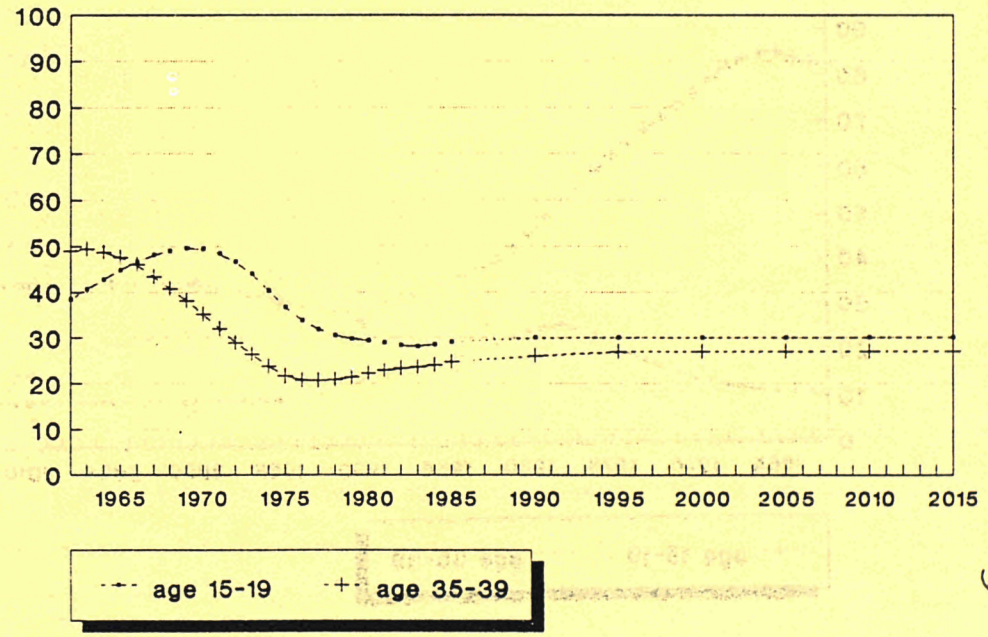
Spain





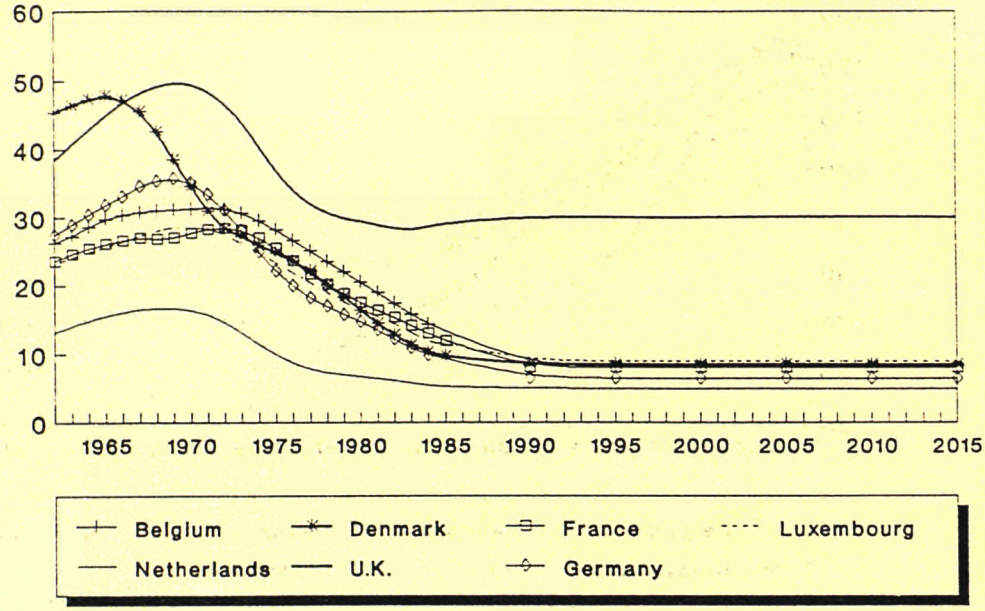
Annex 3.1. Continued

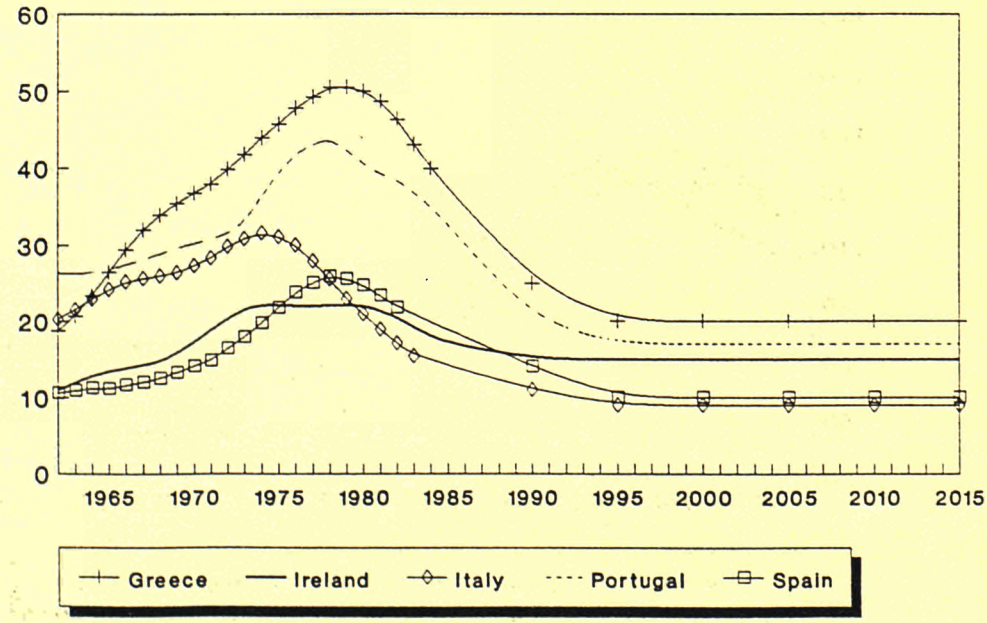




Annex 3.2. Projection of age-specific fertility rules by age bracket

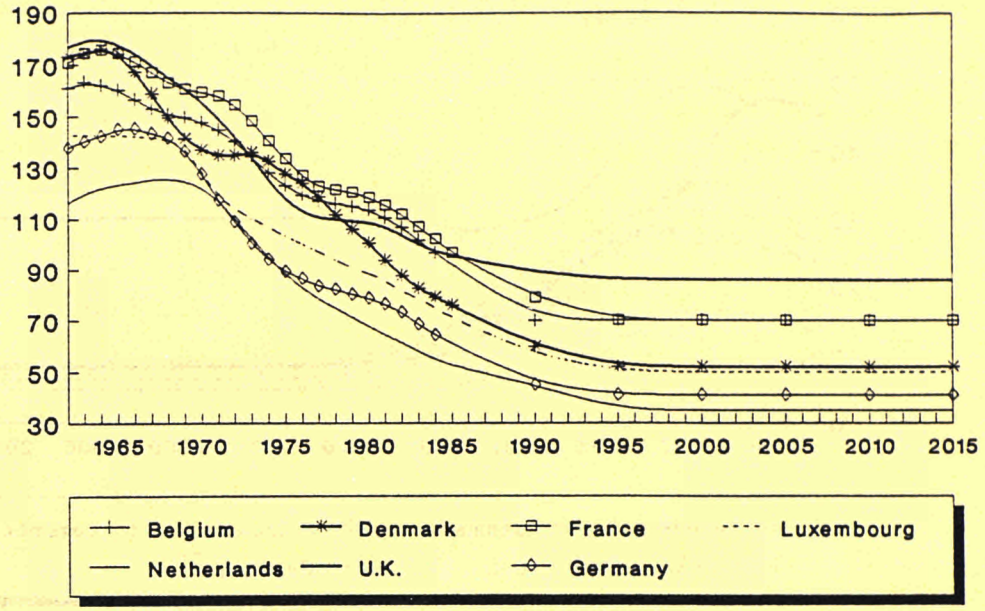
Observed and projected fertility: age-group 15-19

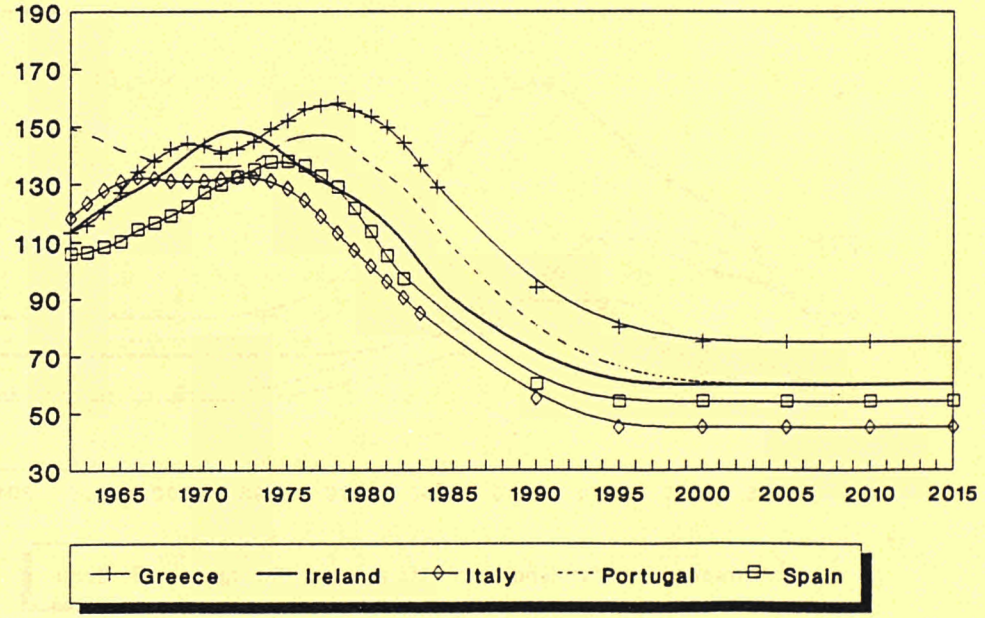




Annex 3.2. Continued

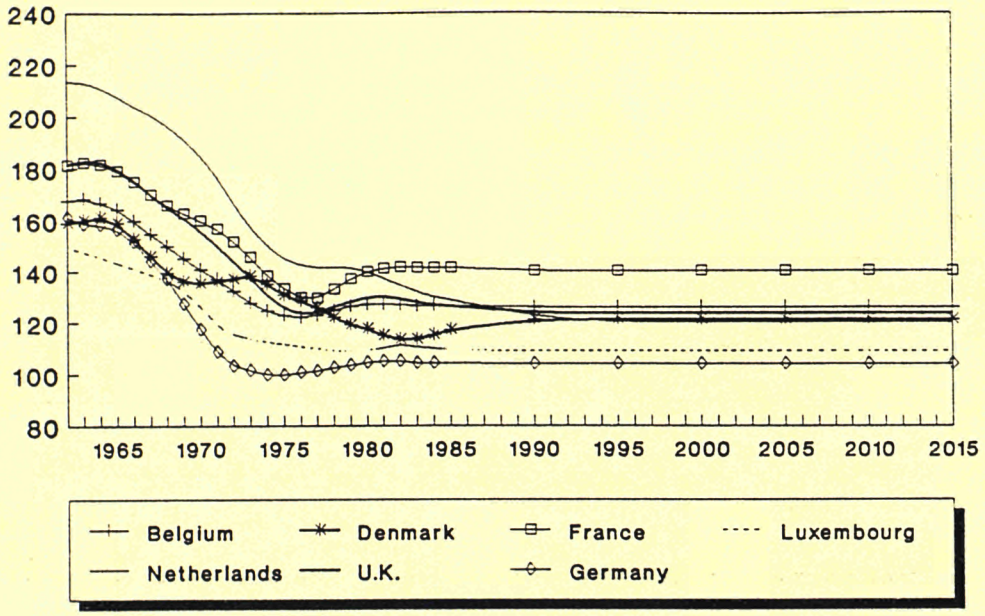
Observed and projected fertility: age-group 20-24

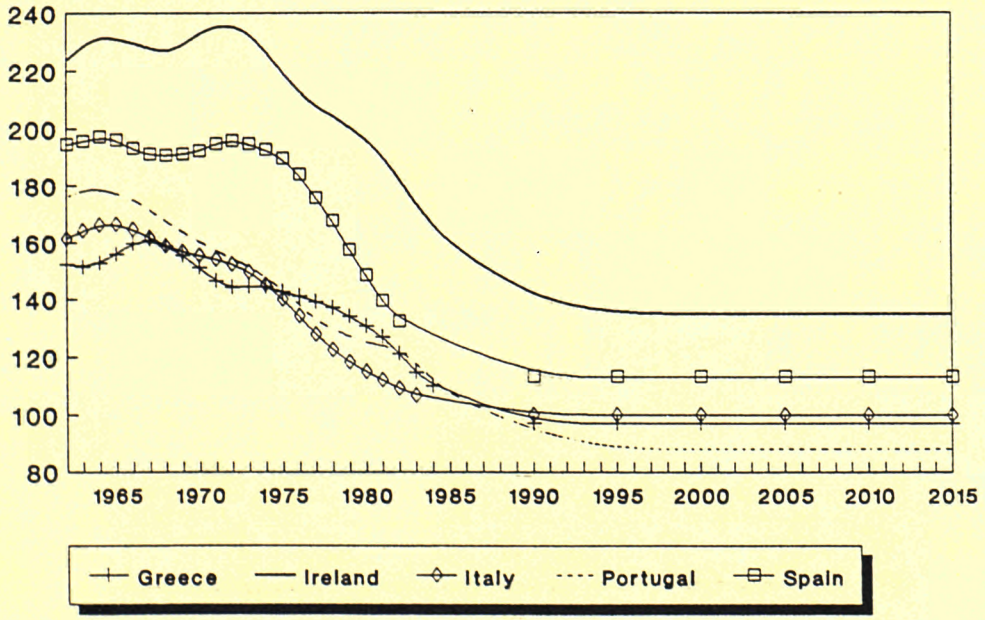




Annex 3.2. Continued

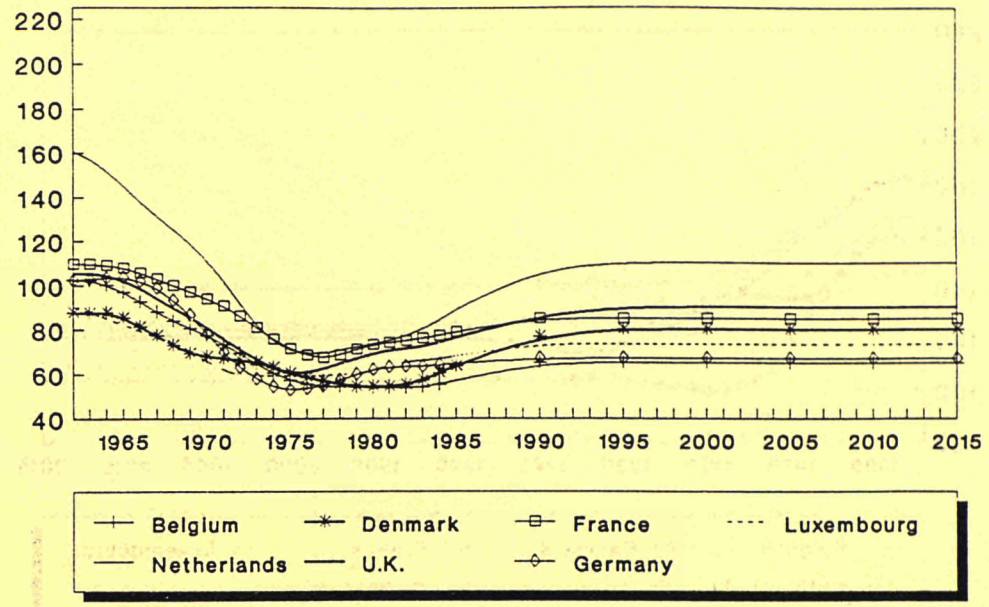
Observed and projected fertility: age-group 25-29

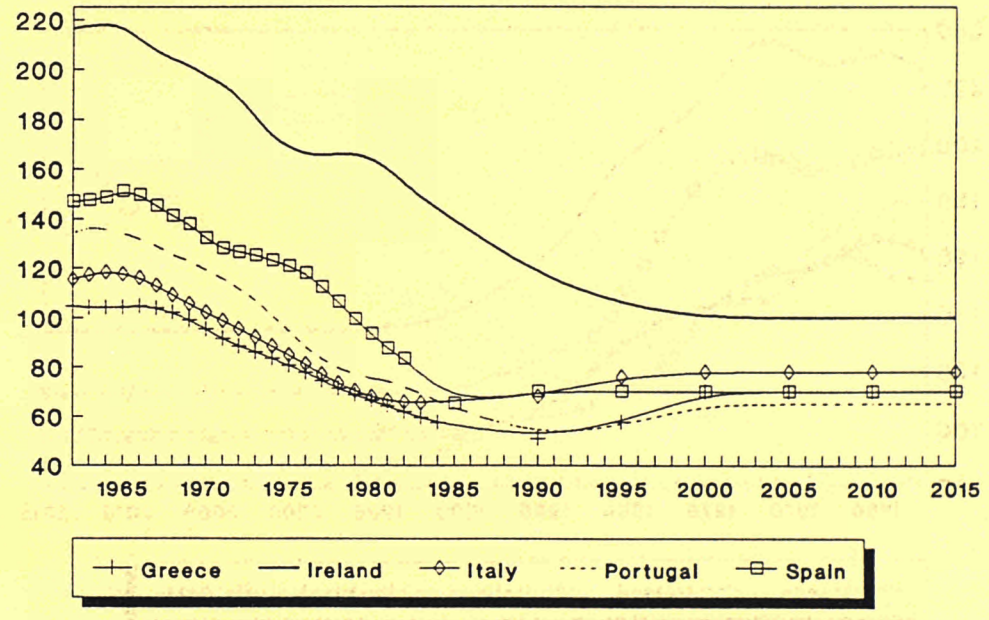




Annex 3.2. Continued

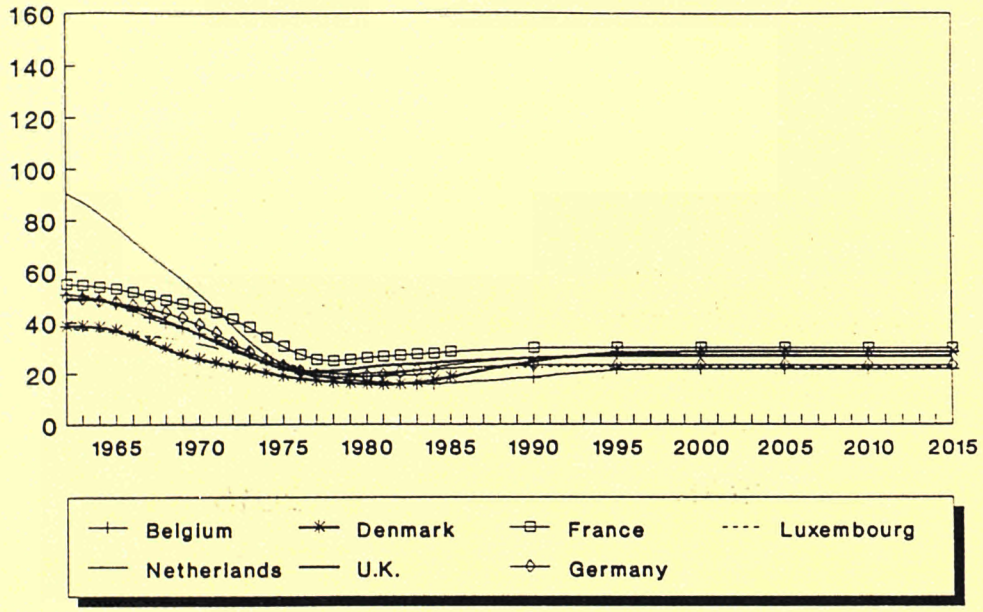
Observed and projected fertility: age-group 30-34

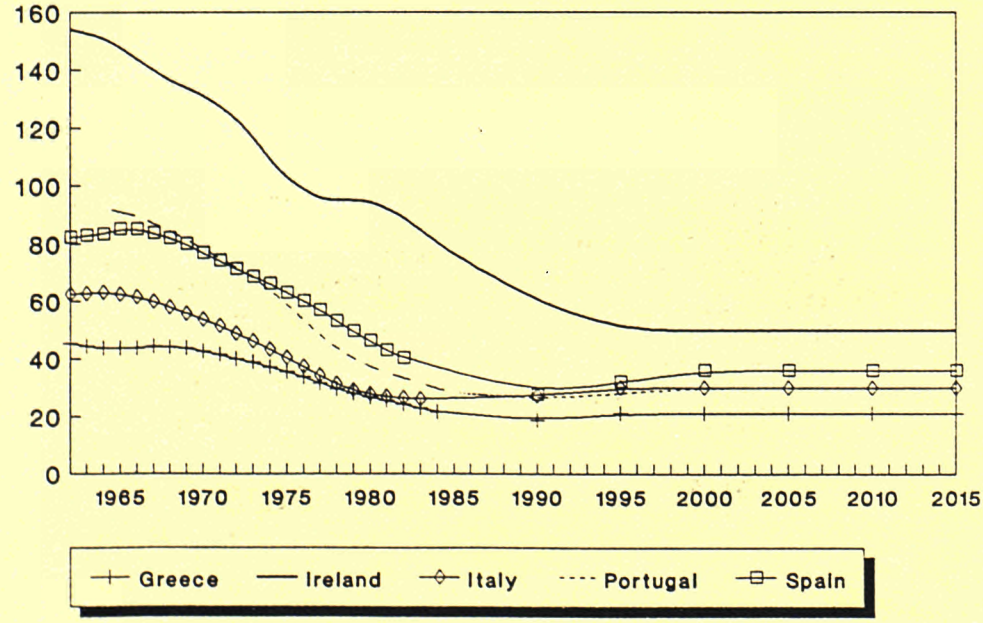




Annex 3.2. Continued

Observed and projected fertility: age-group 35-39

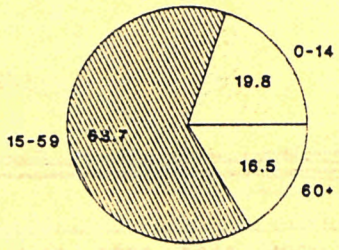




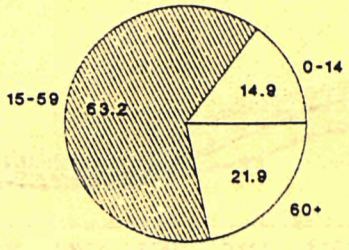
Annex 4.1. Shares of major age groups in the total population (projected fertility, both sexes, %)

BELGIUM

males

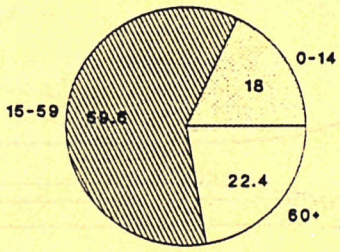


1985



2015

females



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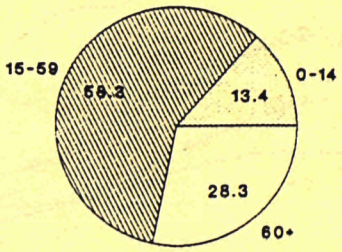
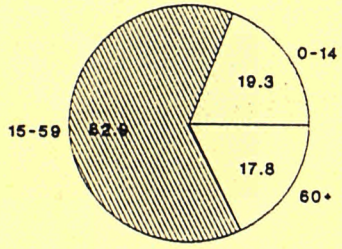


2015

Annex 4.1. continued

DENMARK males



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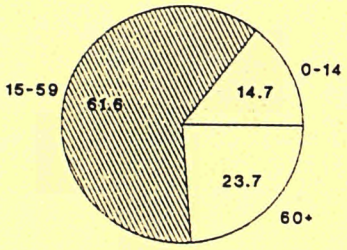
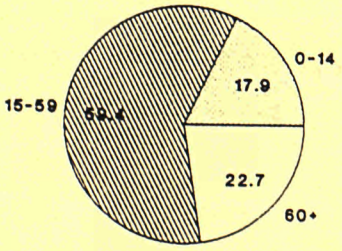


2015

females



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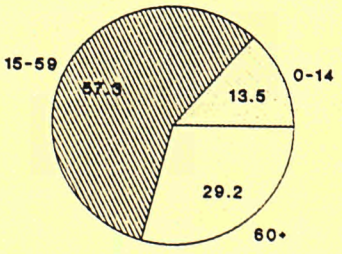
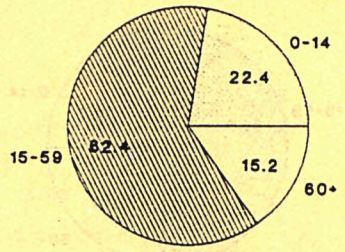


2015

Annex 4.1. continued

FRANCE

males



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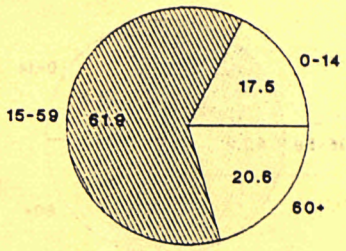
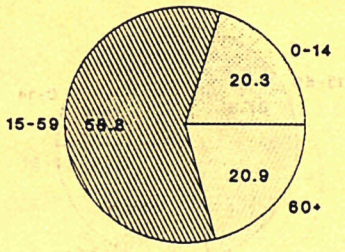


2015

females



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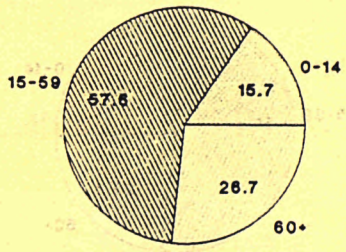
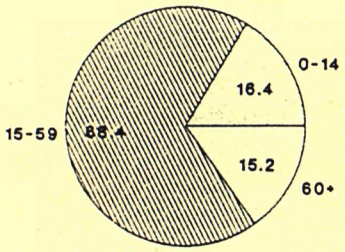


2015

Annex 4.1. continued

GERMANY males



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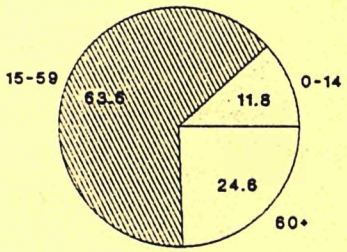
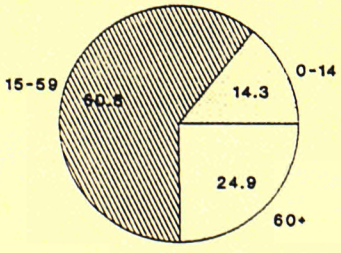


2015

females



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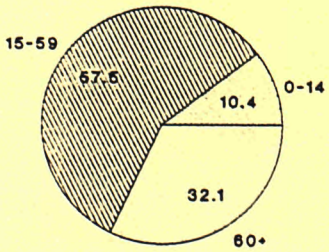
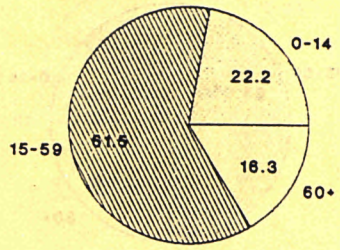


2015

Annex 4.1. continued

GREECE

males



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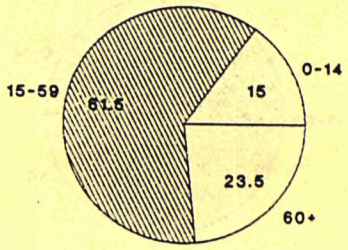
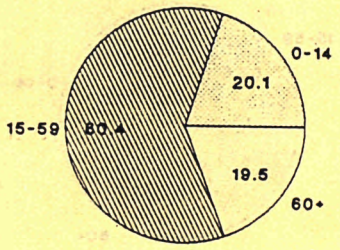


2015

females



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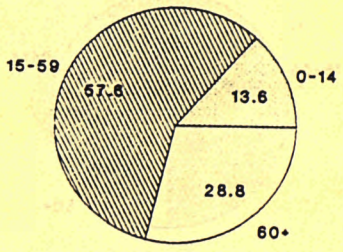
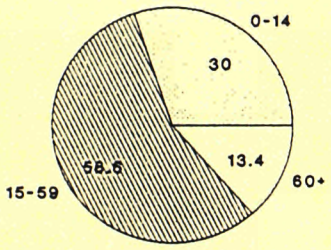


2015

Annex 4.1. continued

IRELAND

males



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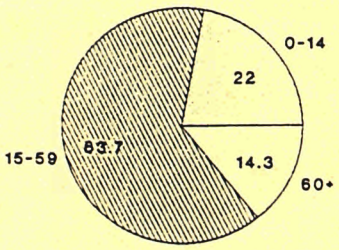
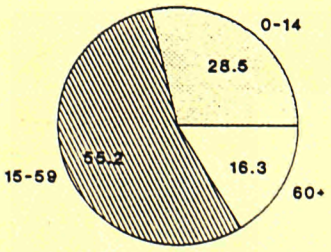


2015

females



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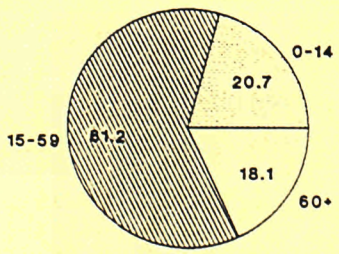
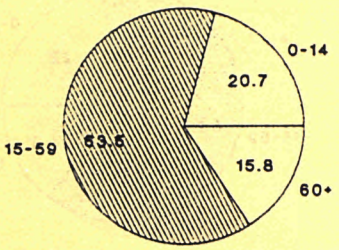


2015

Annex 4.1. continued

ITALY

males



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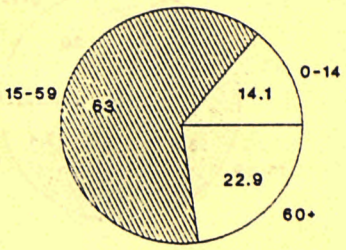
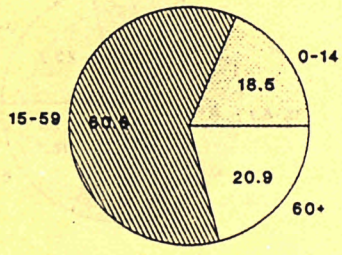


2015

females



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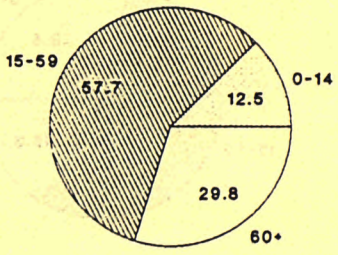
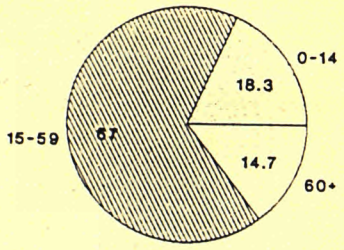


2015

Annex 4.1. continued

LUXEMBOURG males



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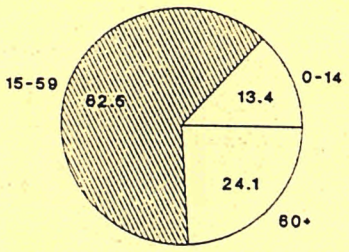
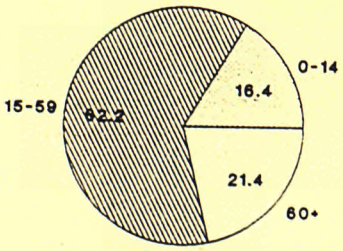


2015

females



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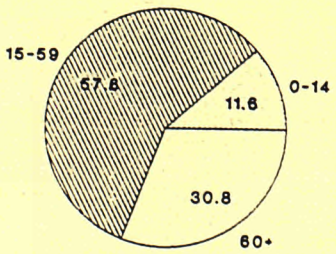
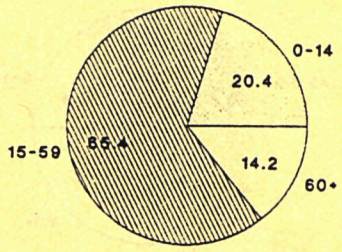


2015

Annex 4.1. continued

males

NETHERLANDS



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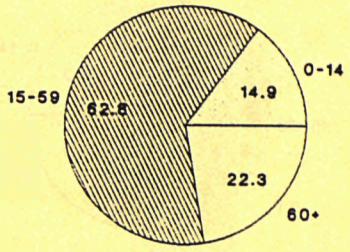
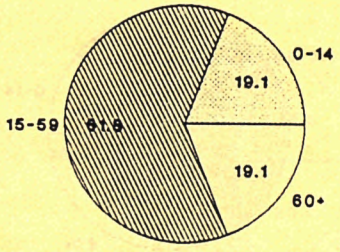


2015

females



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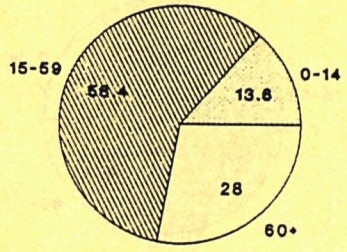
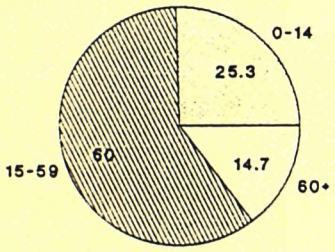


2015

Annex 4.1. continued

PORTUGAL males



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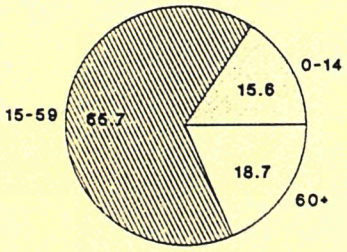
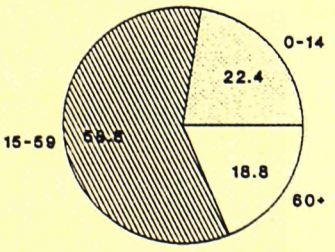


2015

females



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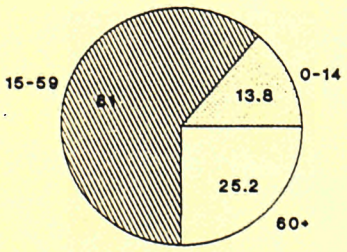
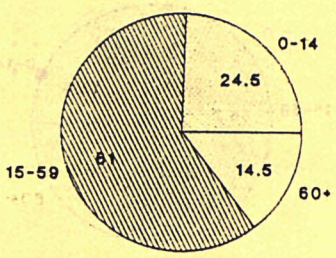


2015

Annex 4.1. continued

SPAIN males



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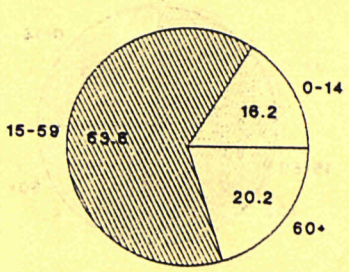
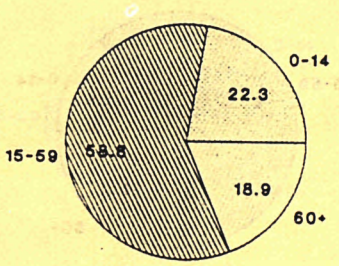


2015

females



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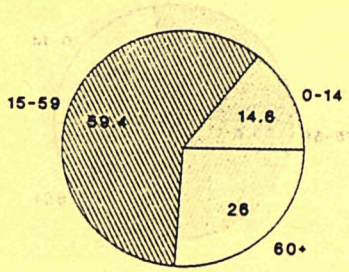
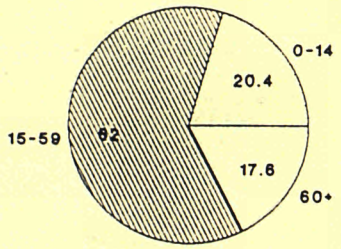


2015

Annex 4.1. continued

males

UNITED KINGDOM



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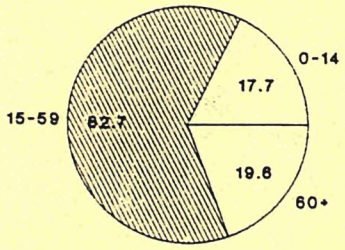
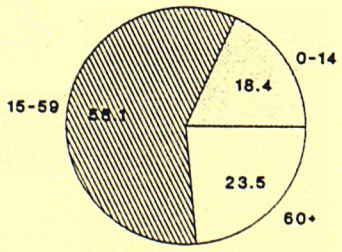


2015

females



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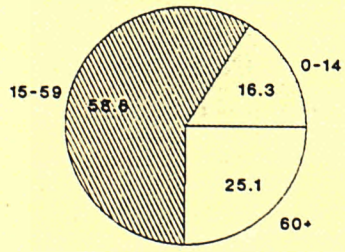
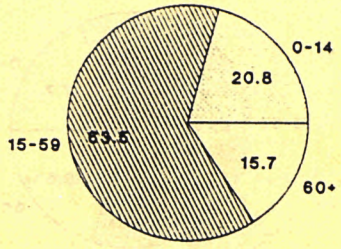


2015

Annex 4.1. continued

E.C.-12 males



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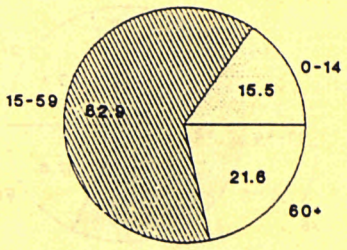
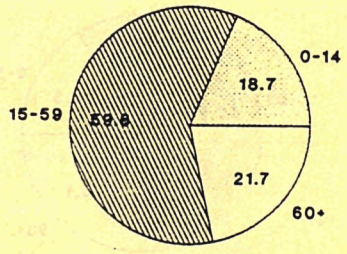


2015

females



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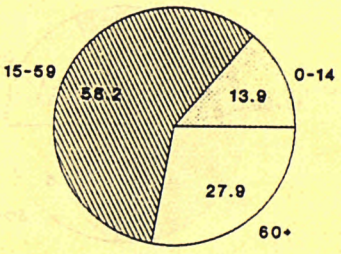
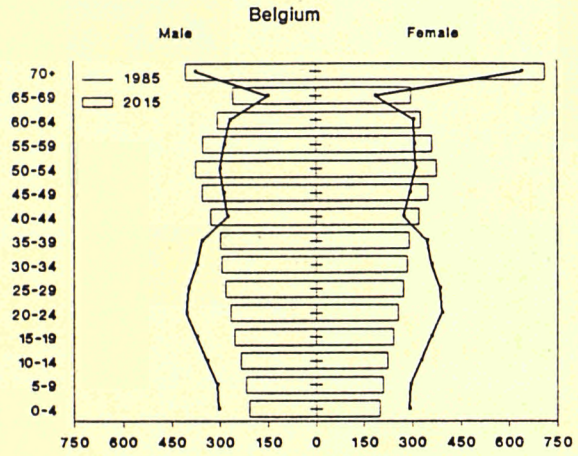


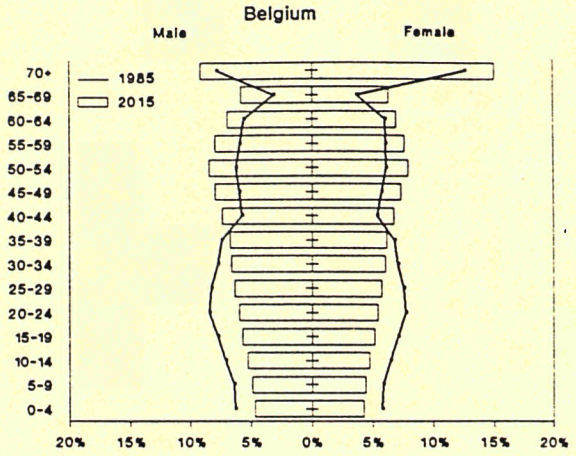
2015

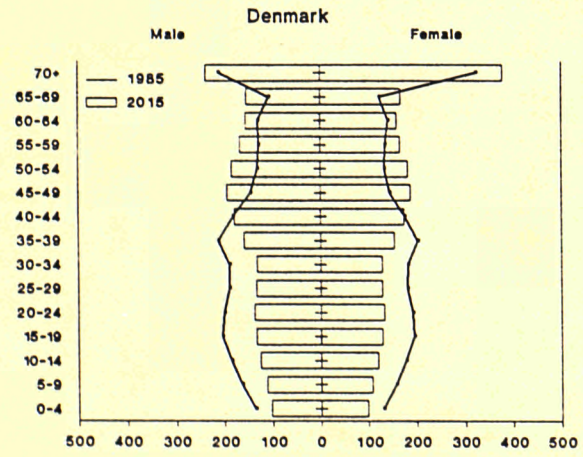
Annex 4.2. Population pyramids, absolute (x1000) and shares (%)
(projected fertility)

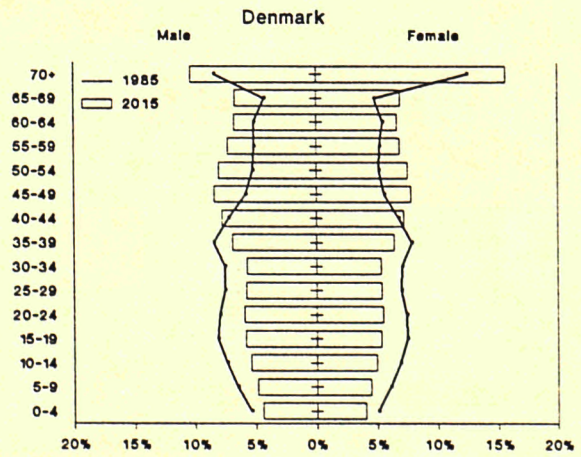
absolute numbers



share (%)

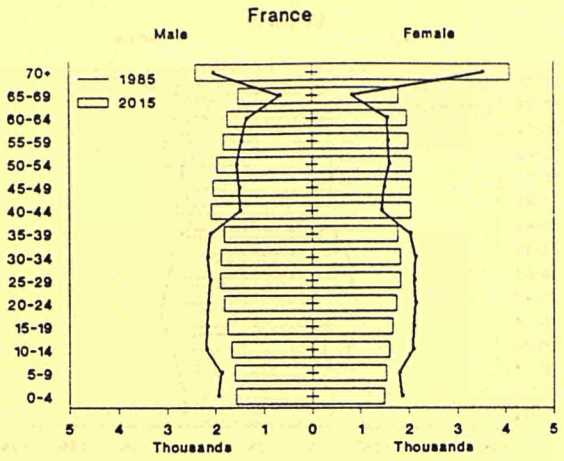




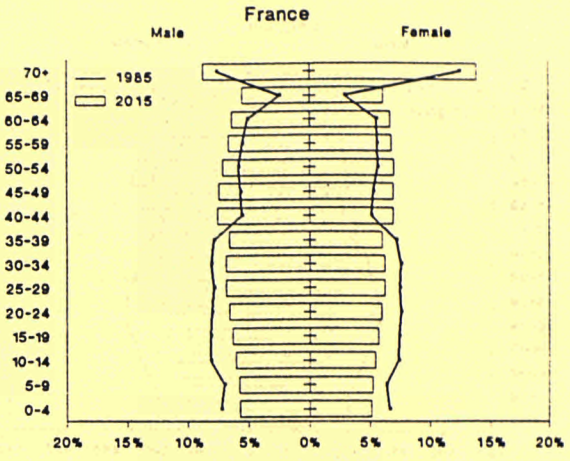


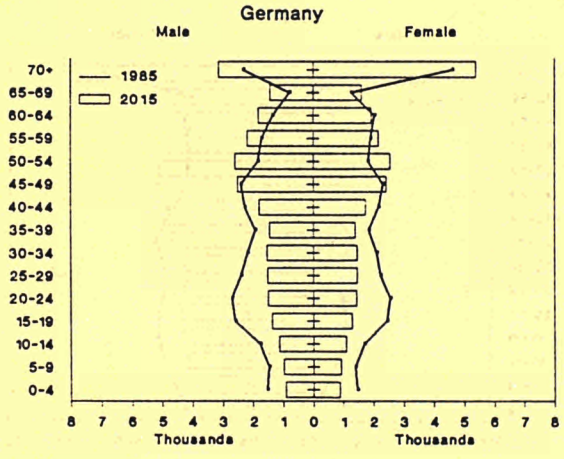
Annex 4.2. continued

absolute numbers

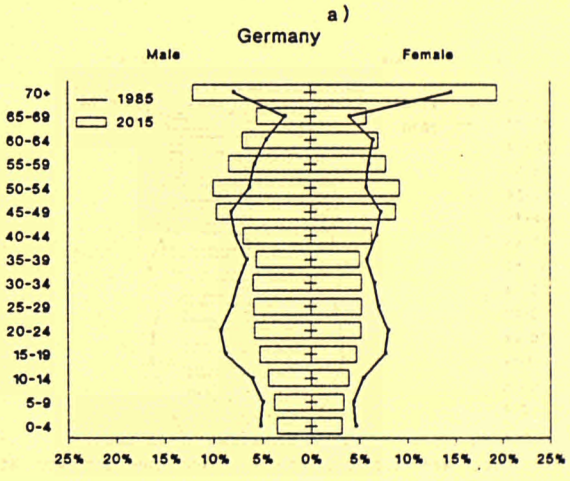


share (%)





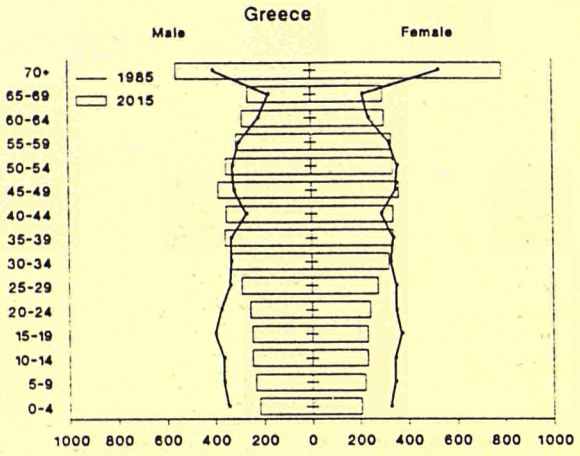
a)



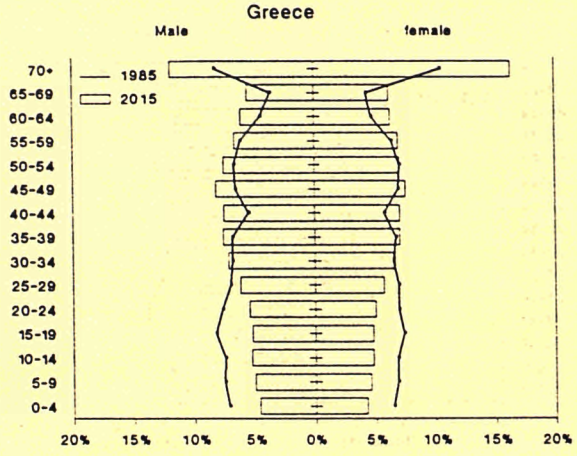
a) Deviating X-axis scale-values

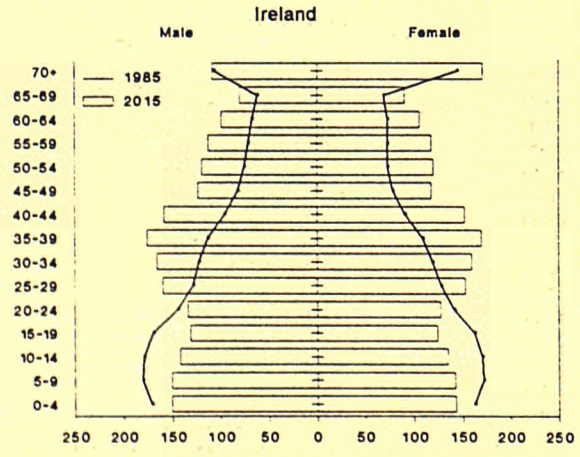
Annex 4.2. continued

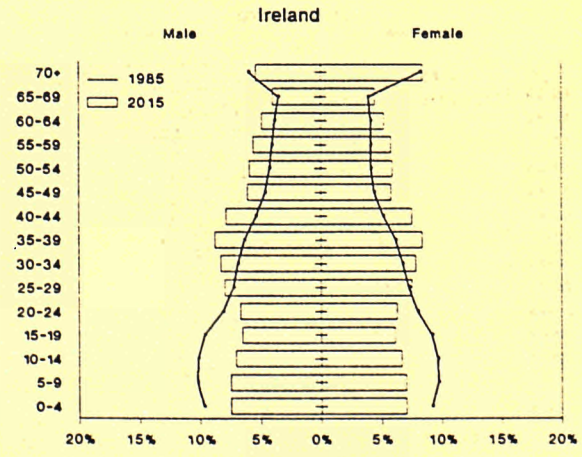
absolute numbers



share (%)

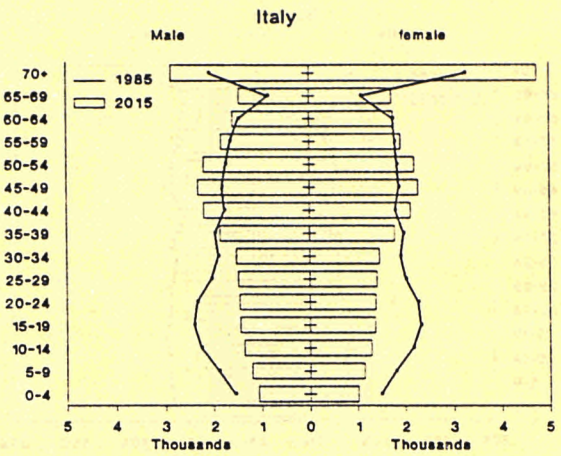




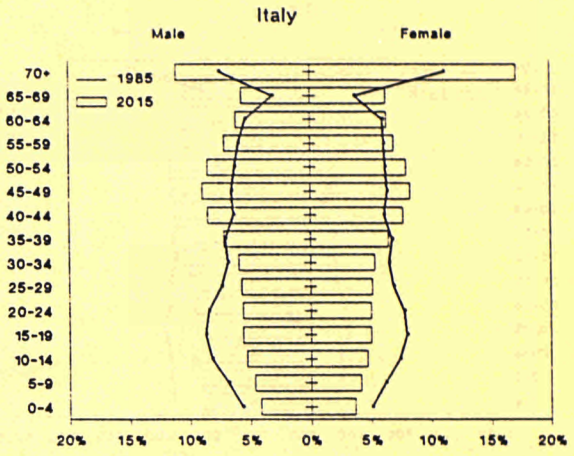


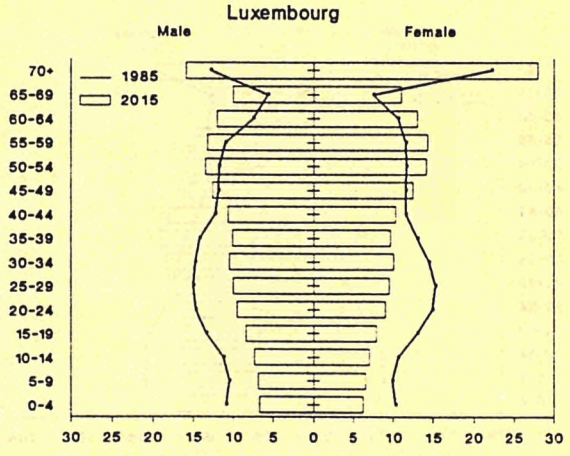
Annex 4.2. continued

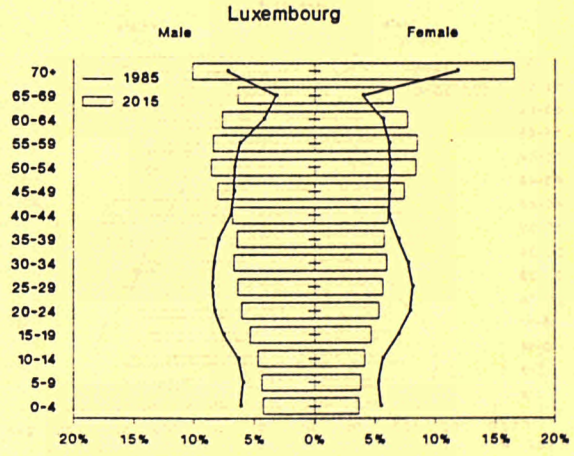
absolute numbers



share (%)

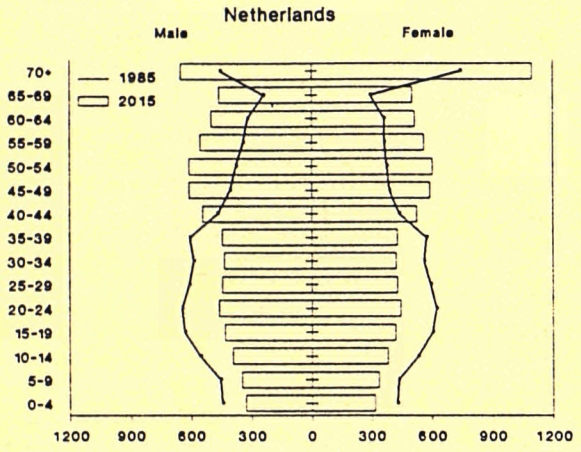




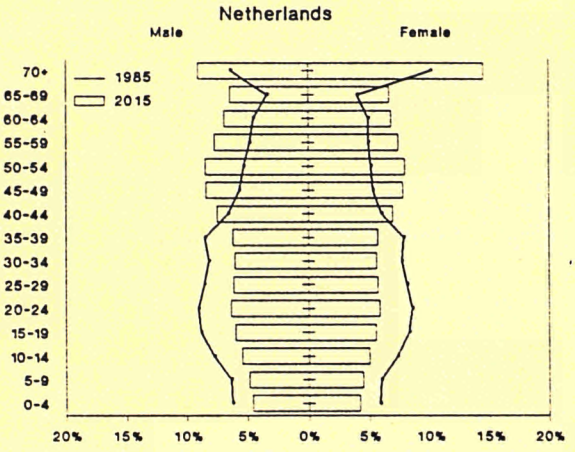


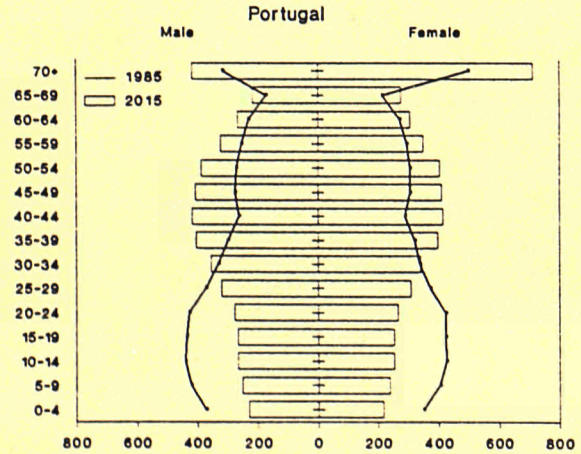
Annex 4.2. continued

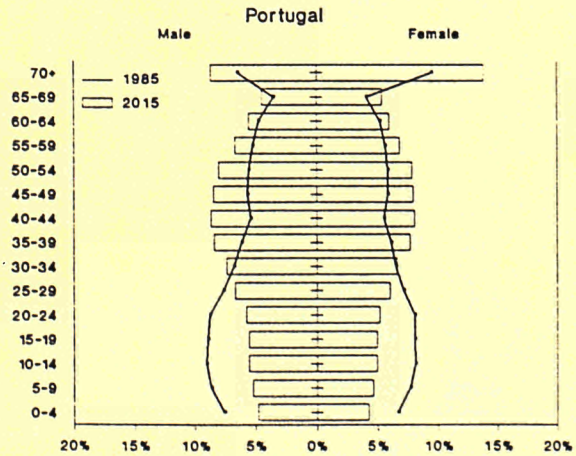
absolute numbers



share (%)

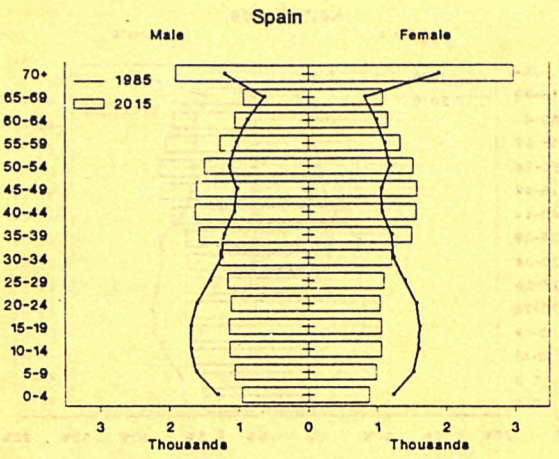




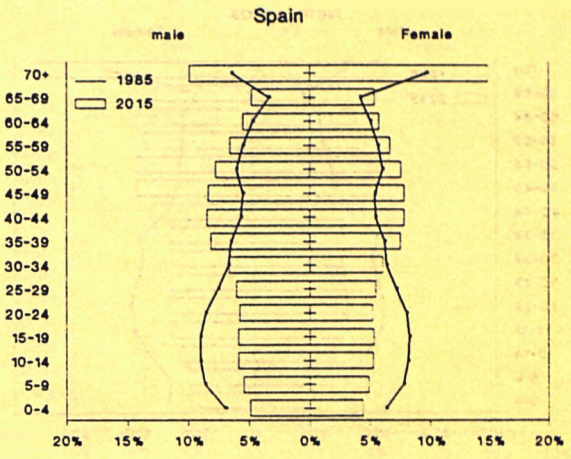


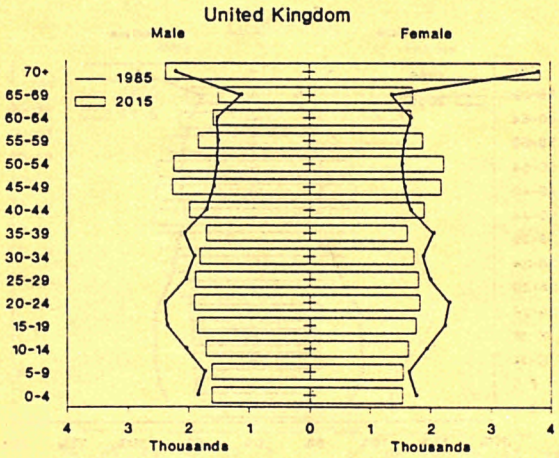
Annex 4.2. continued

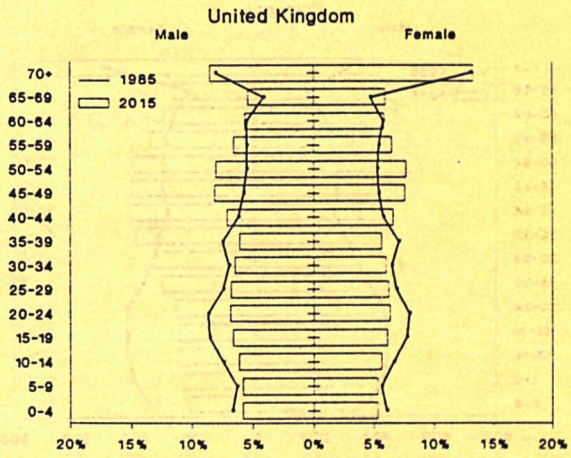
absolute numbers



share (%)

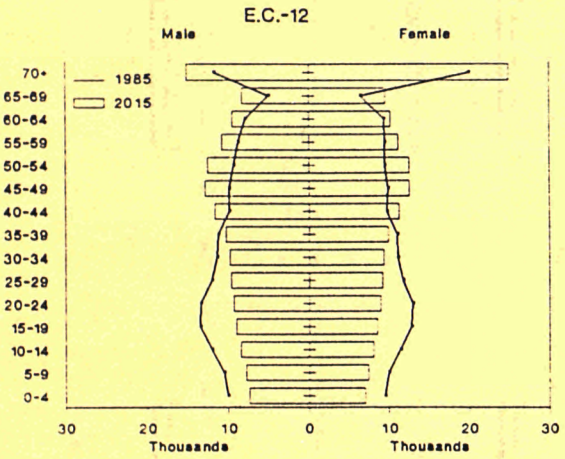




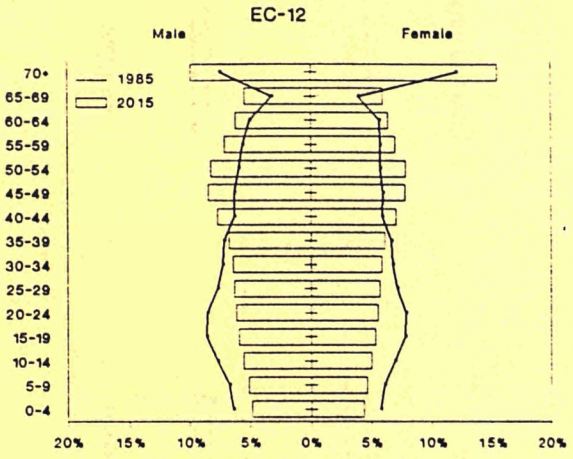


Annex 4.2. continued

absolute numbers



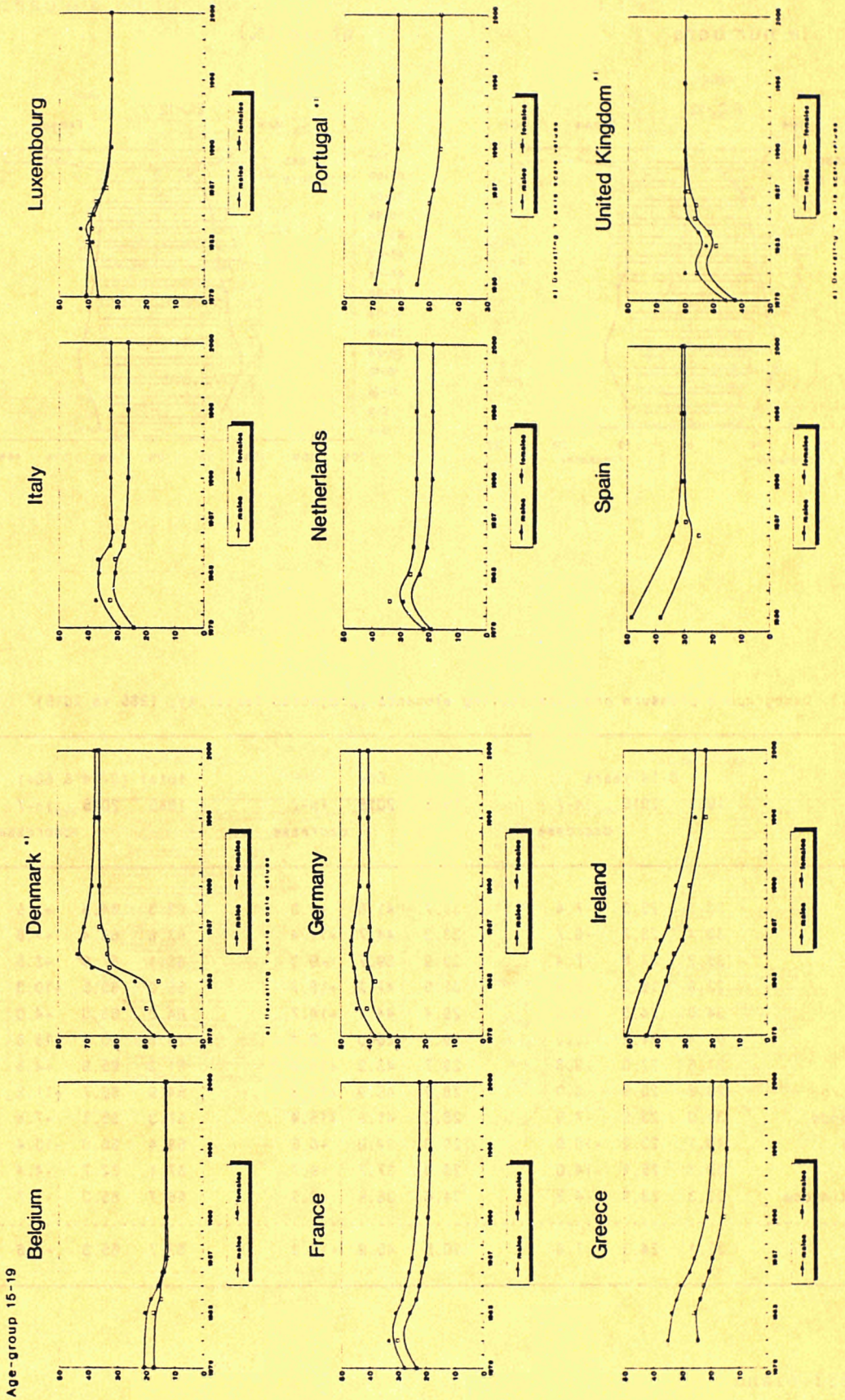
share (%)



Annex 4.3. Demographic pressure and constituting elements (projected fertility, 1985 vs 2015)

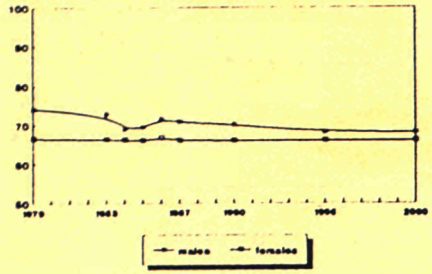
	0-14 years			60+			total (0-14 & 60+)		
	1985	2015	in-/ decrease	1985	2015	in-/ decrease	1985	2015	in-/ decrease
Belgium	30.7	23.3	-7.4	31.7	41.5	+9.8	62.3	64.8	+2.5
Denmark	30.4	23.7	-6.7	33.3	44.7	+11.4	63.6	68.4	+4.8
France	35.2	27.8	-7.4	29.9	39.7	+9.8	65.1	67.6	+2.5
Germany	23.8	18.3	-5.5	31.5	47.2	+15.7	55.2	65.5	+10.3
Greece	34.6	24.0	-10.6	29.4	44.1	+14.7	64.0	68.0	+4.0
Ireland	52.4	34.2	-18.2	26.4	26.0	-0.4	78.8	60.2	-18.6
Italy	31.6	22.0	-9.6	29.7	43.9	+14.2	61.3	65.9	+4.6
Luxembourg	26.8	20.8	-6.0	28.1	45.9	+17.8	54.9	66.7	+11.8
Netherlands	31.0	23.5	-7.5	26.2	41.6	+15.4	57.3	65.1	+7.8
Portugal	40.1	23.2	-16.9	28.3	34.9	+6.6	68.4	58.0	-10.4
Spain	39.1	25.1	-14.0	28.0	37.7	+9.7	67.1	62.7	-4.4
United Kingdom	32.3	28.1	-4.2	34.4	36.9	+2.5	66.7	65.0	-1.7
EC-12	32.1	24.3	-7.8	30.6	40.9	+10.3	62.7	65.3	+2.6

Annex 5.1. Realised and projected activity rates by age bracket (both sexes, %)

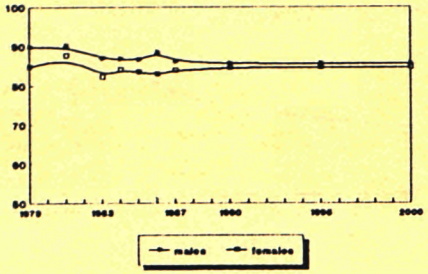


Age-group 20-24

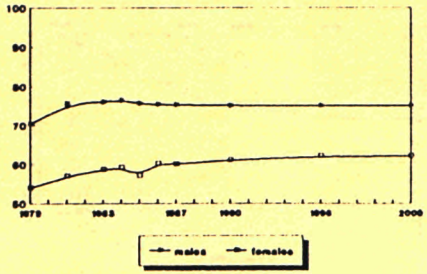
Belgium



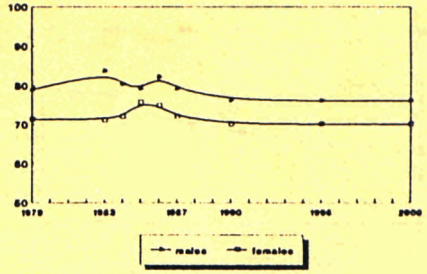
Denmark



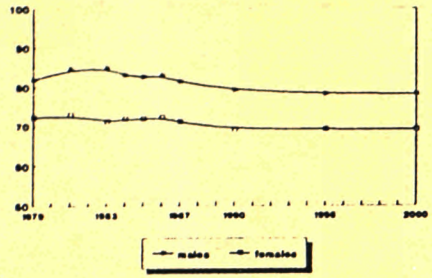
Italy



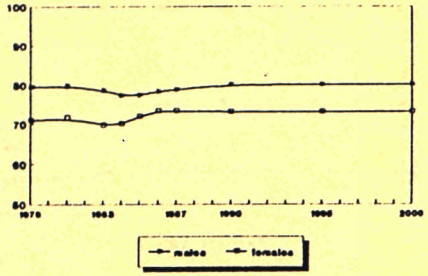
Luxembourg



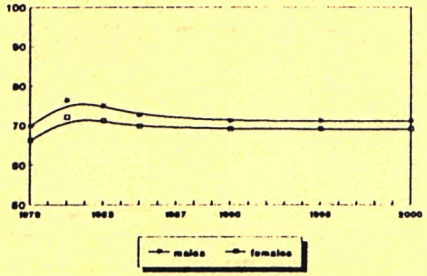
France



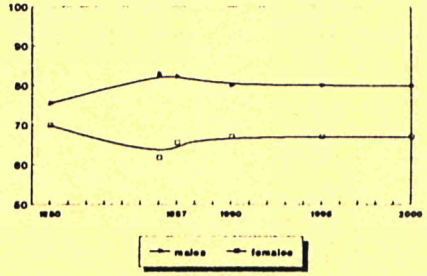
Germany



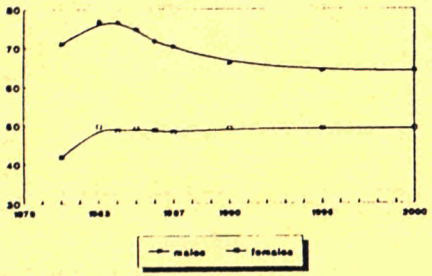
Netherlands



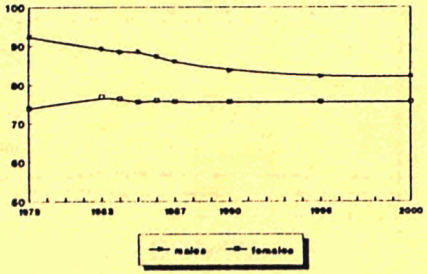
Portugal



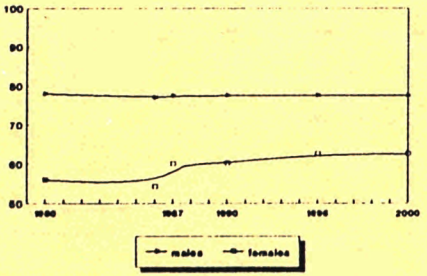
Greece [1]



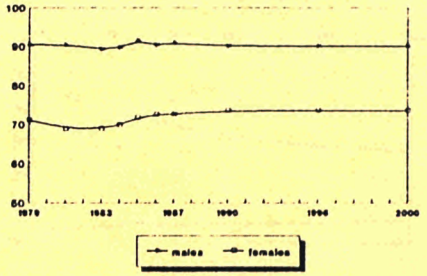
Ireland



Spain



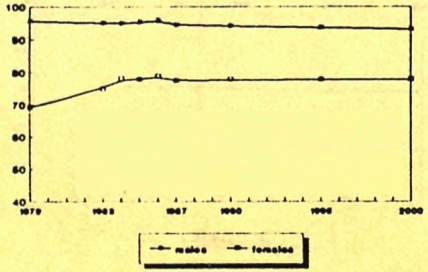
United Kingdom



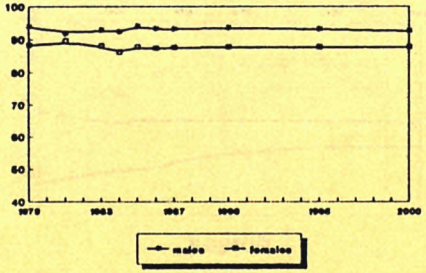
[1] fluctuating + axis scale values

Age-group 25-29

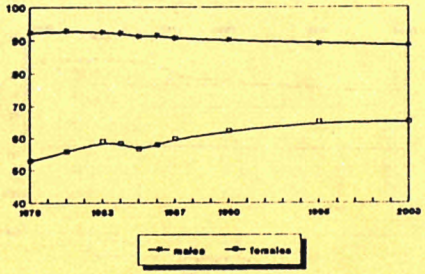
Belgium



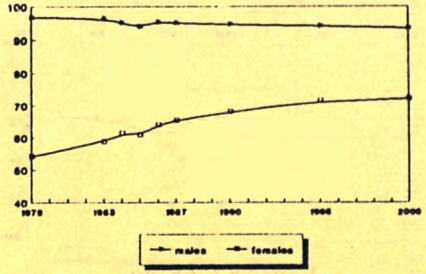
Denmark



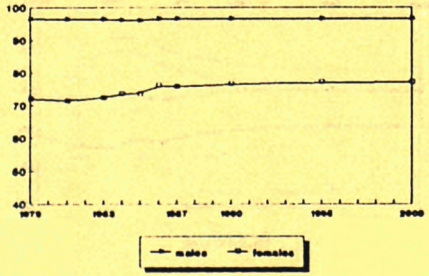
Italy



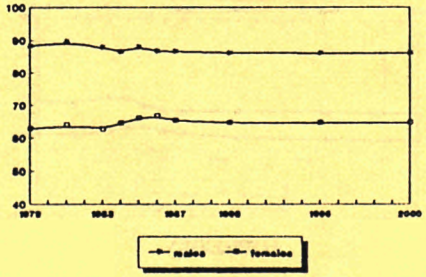
Luxembourg



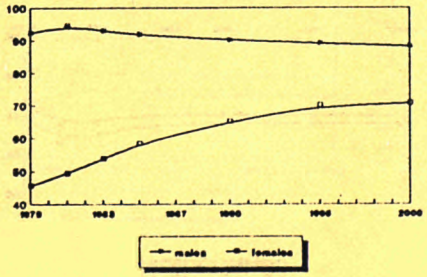
France



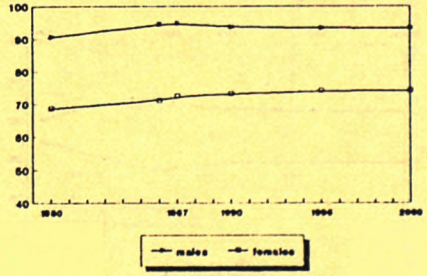
Germany



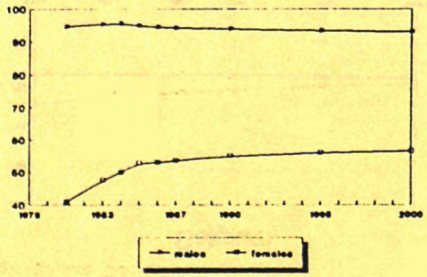
Netherlands



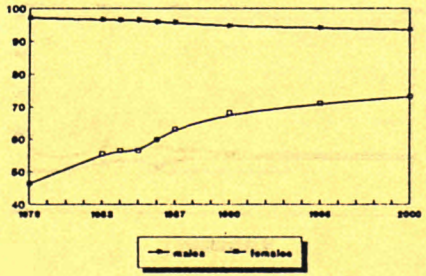
Portugal



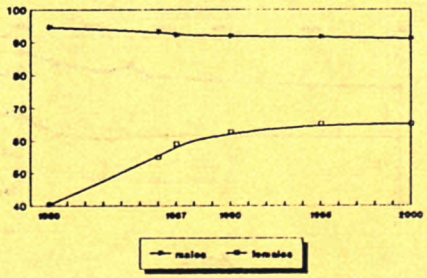
Greece



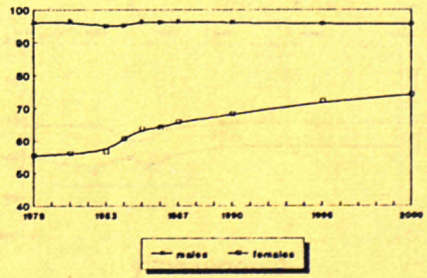
Ireland



Spain

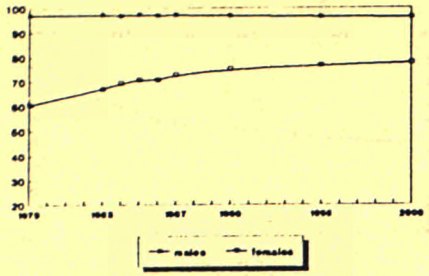


United Kingdom

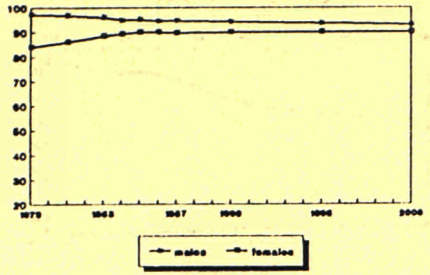


Age-group 30-34

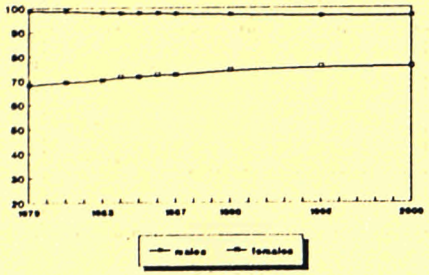
Belgium



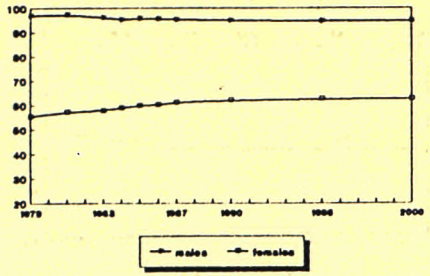
Denmark



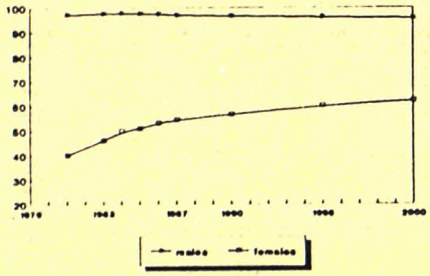
France



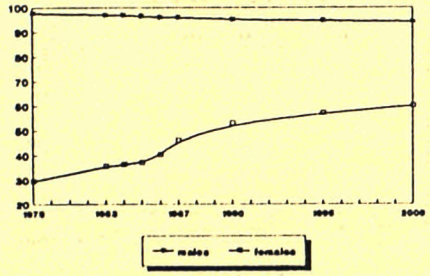
Germany



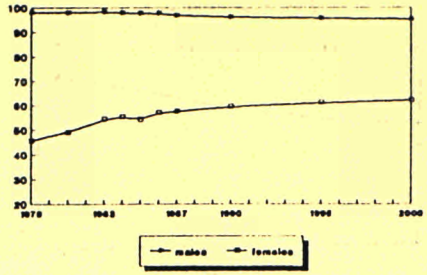
Greece



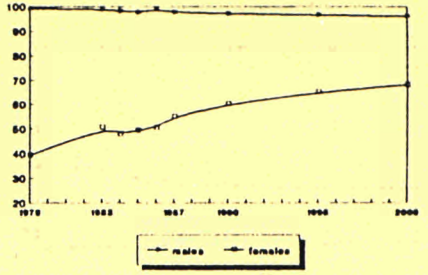
Ireland



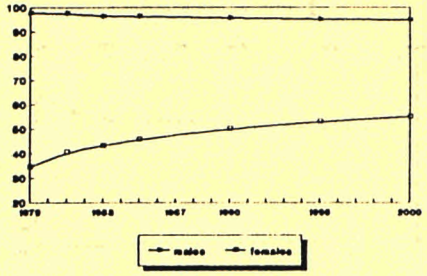
Italy



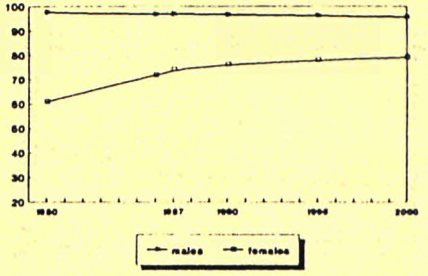
Luxembourg



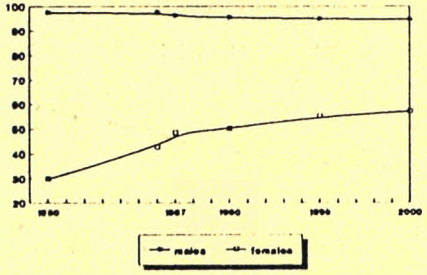
Netherlands



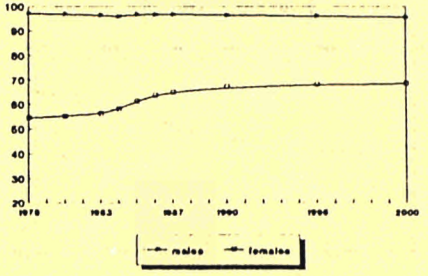
Portugal



Spain

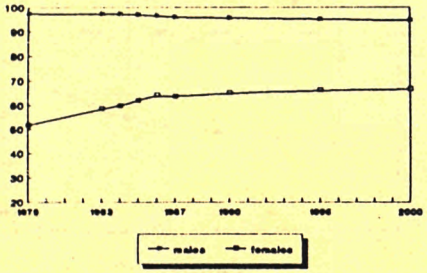


United Kingdom

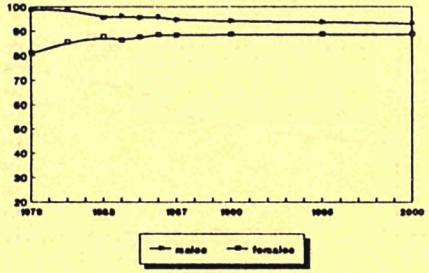


Age-group 35-39

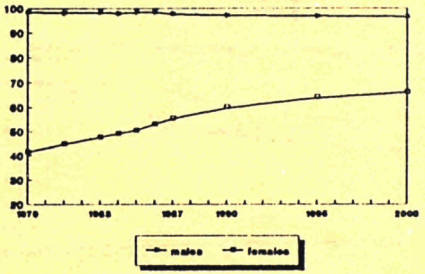
Belgium



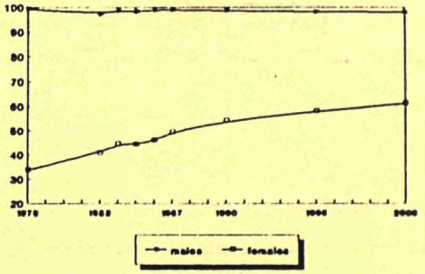
Denmark



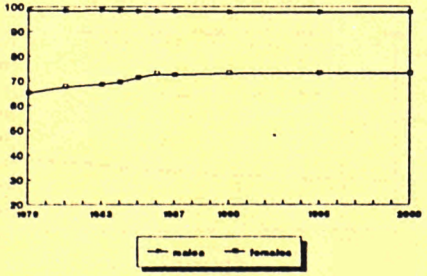
Italy



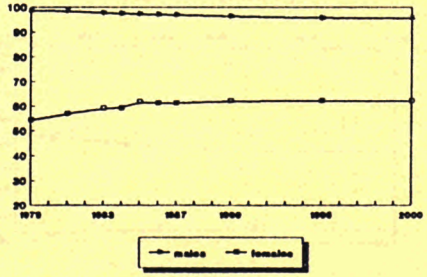
Luxembourg



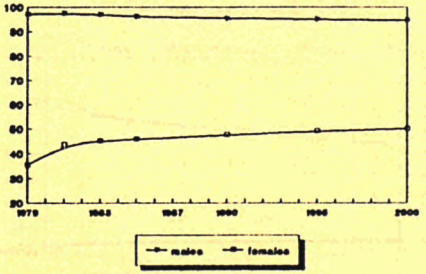
France



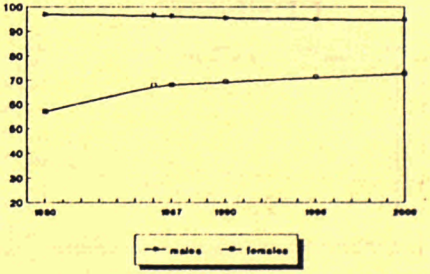
Germany



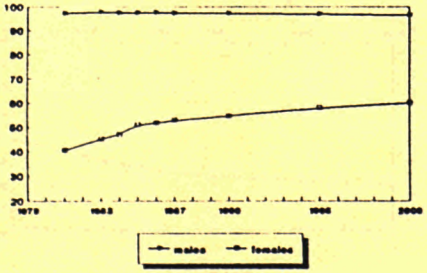
Netherlands



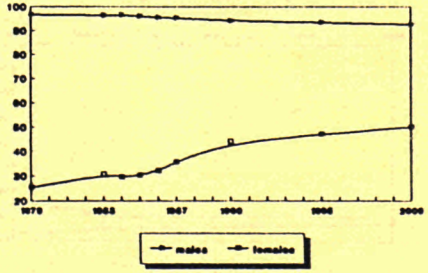
Portugal



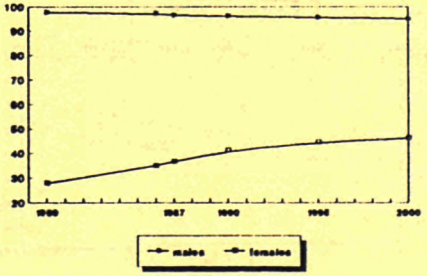
Greece



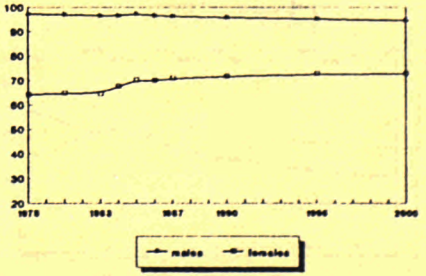
Ireland



Spain

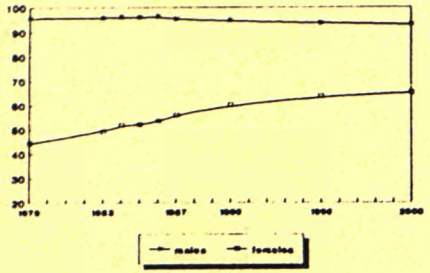


United Kingdom

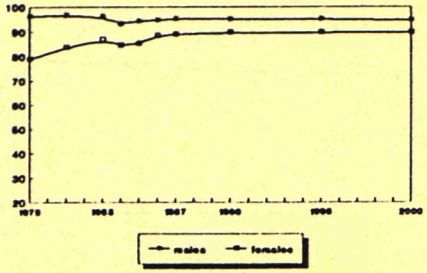


Age-group 40-44

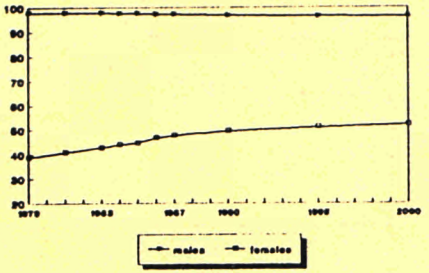
Belgium



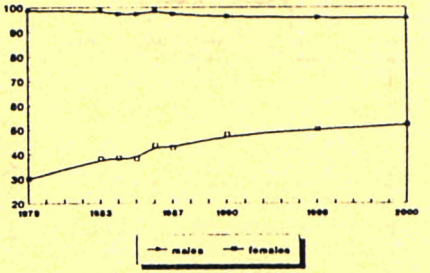
Denmark



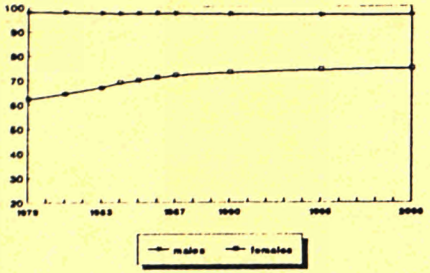
Italy



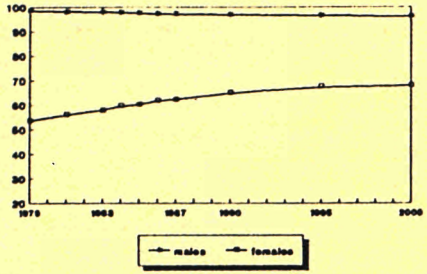
Luxembourg



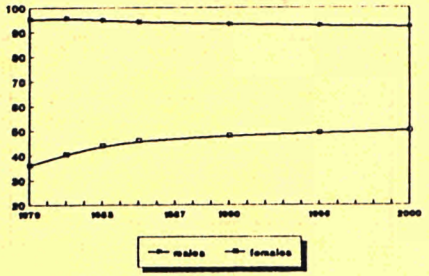
France



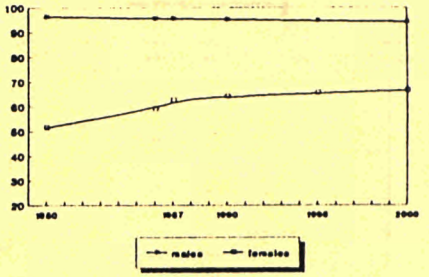
Germany



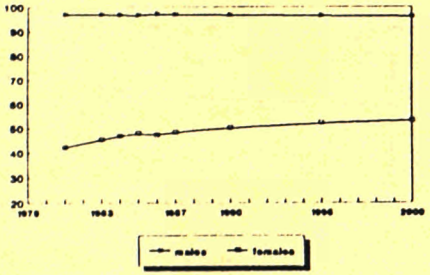
Netherlands



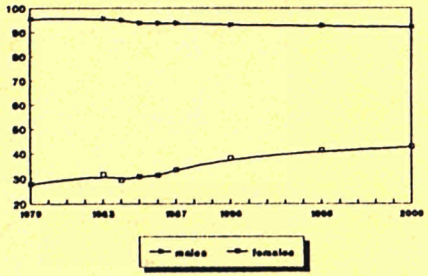
Portugal



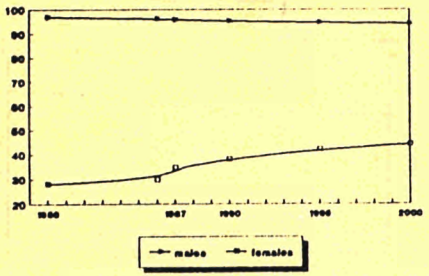
Greece



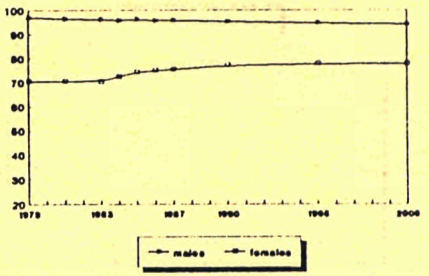
Ireland



Spain

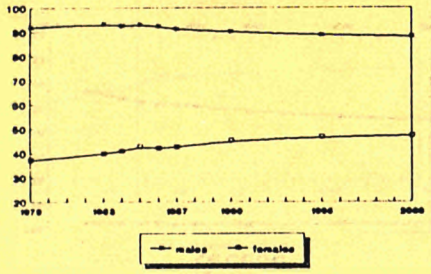


United Kingdom

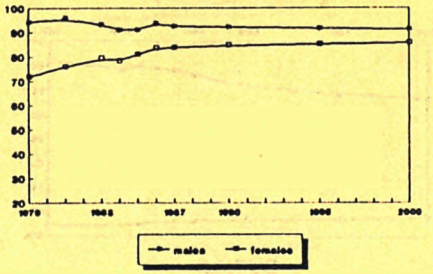


Age-group 45-49

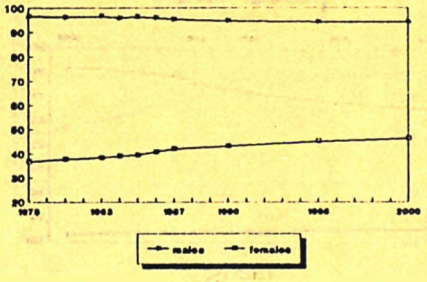
Belgium



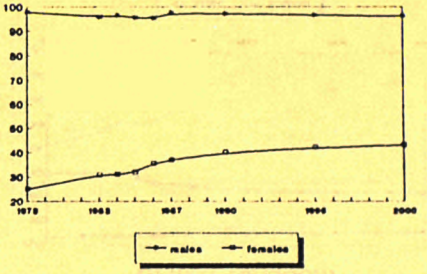
Denmark



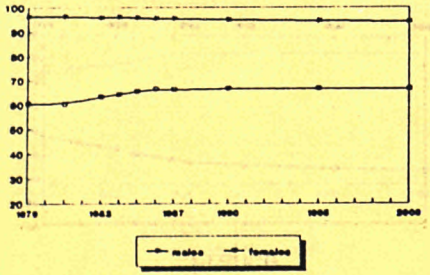
Italy



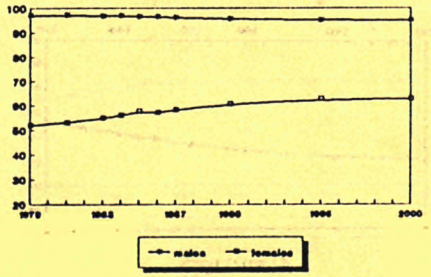
Luxembourg



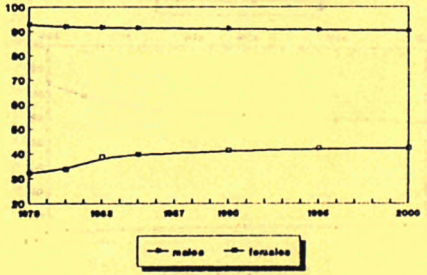
France



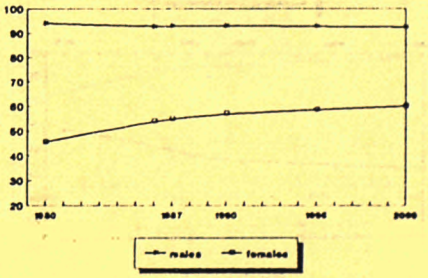
Germany



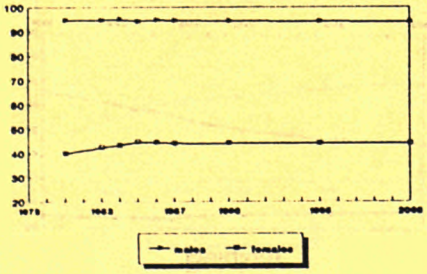
Netherlands



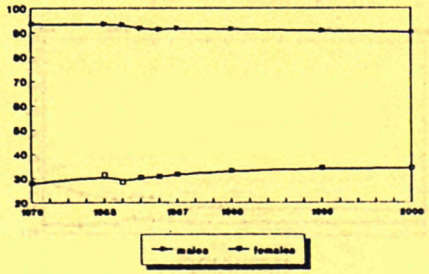
Portugal



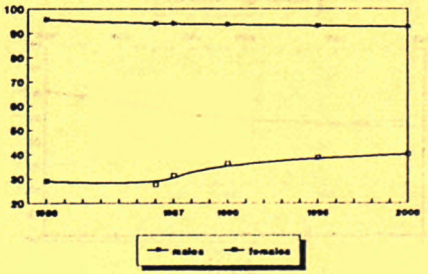
Greece



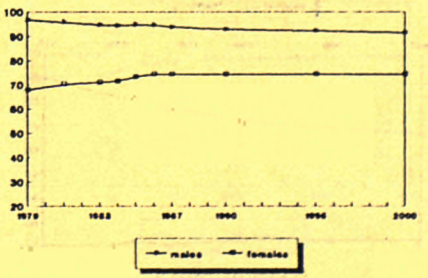
Ireland



Spain

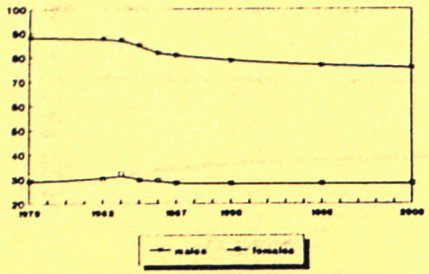


United KIngdom

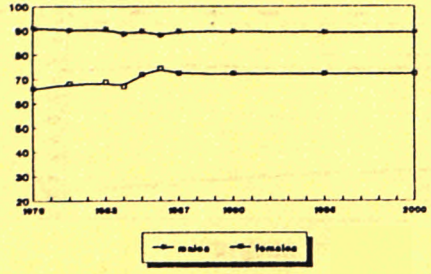


Age-group 50-54

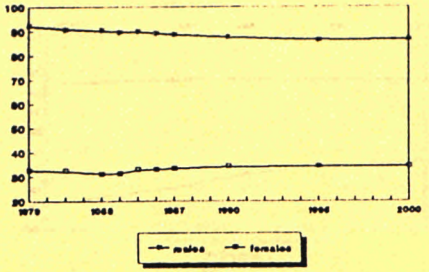
Belgium



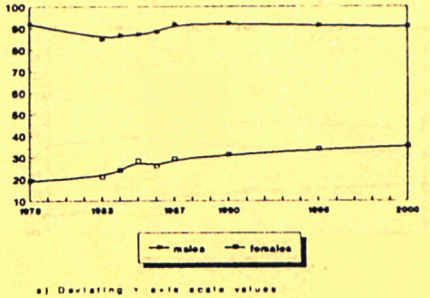
Denmark



Italy

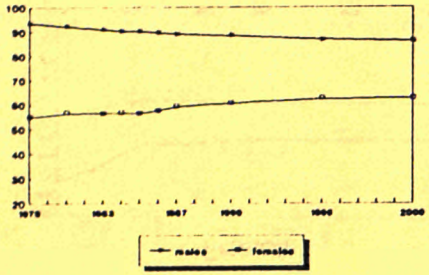


Luxembourg [a]

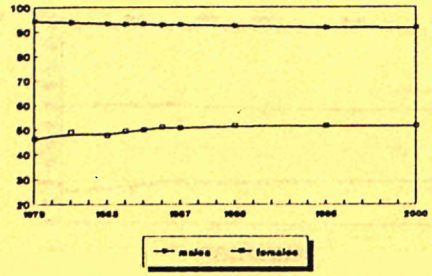


a) Deviating y-axis scale values

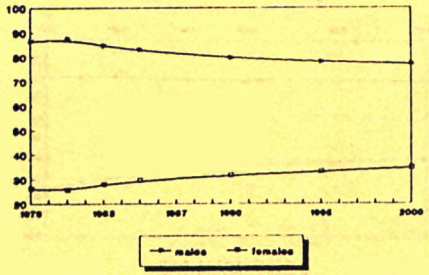
France



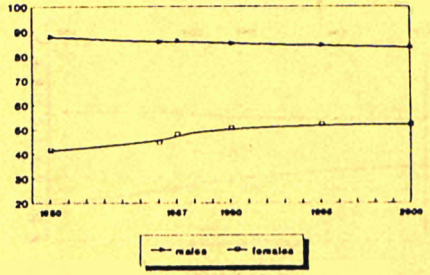
Germany



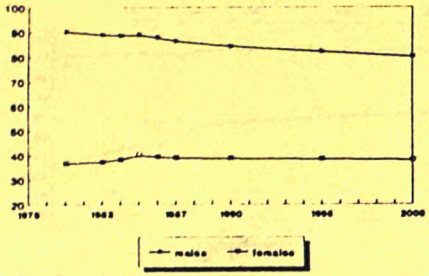
Netherlands



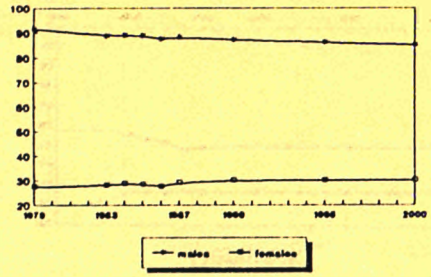
Portugal



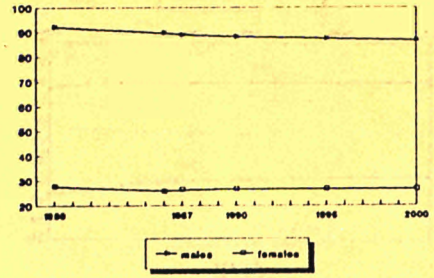
Greece



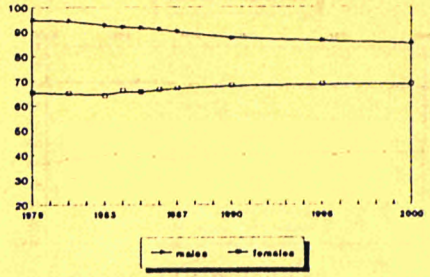
Ireland



Spain

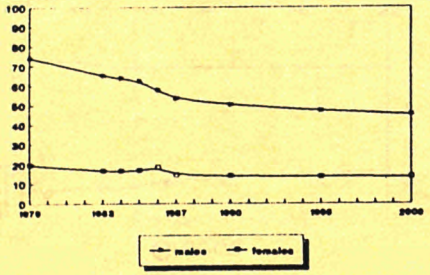


United Kingdom

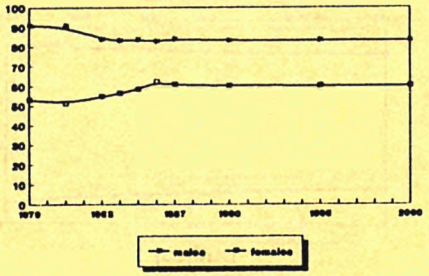


Age-group 55-59

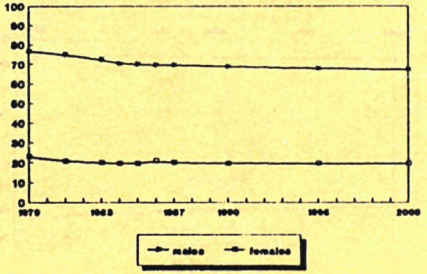
Belgium



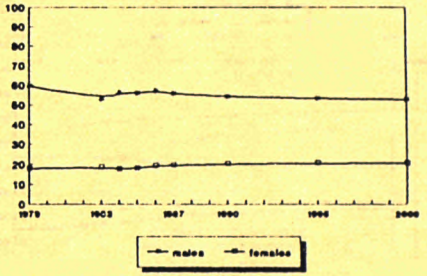
Denmark



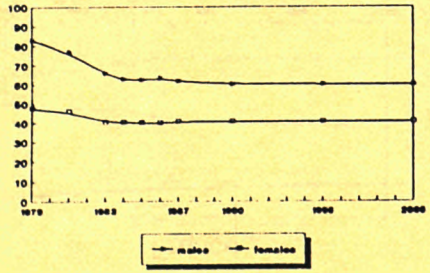
Italy



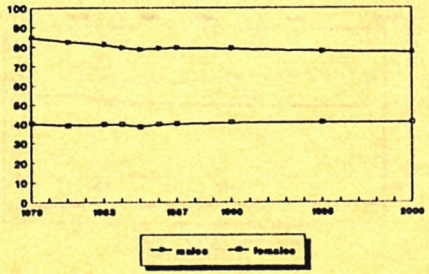
Luxembourg



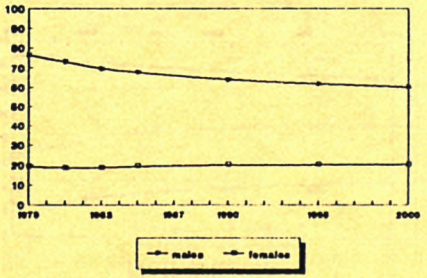
France



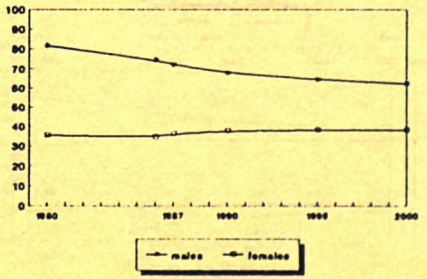
Germany



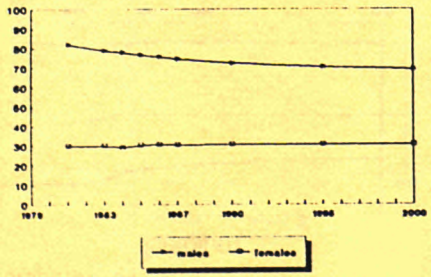
Netherlands



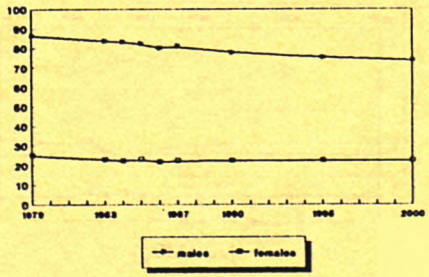
Portugal



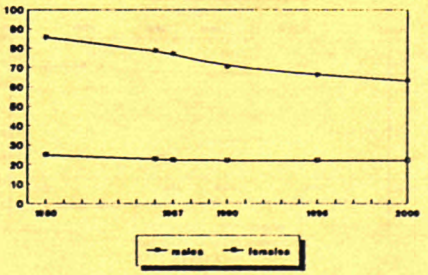
Greece



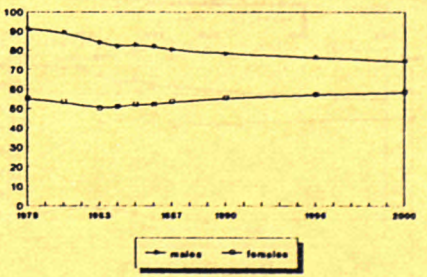
Ireland



Spain

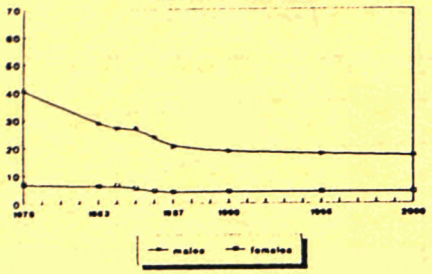


United Kingdom

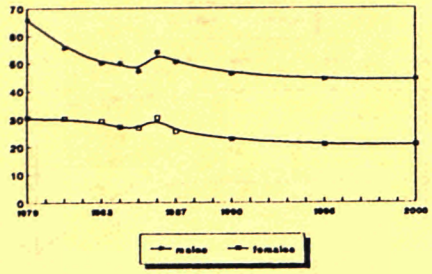


Age-group 60-64

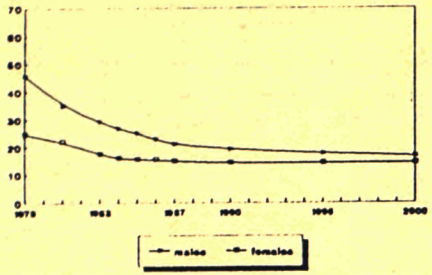
Belgium



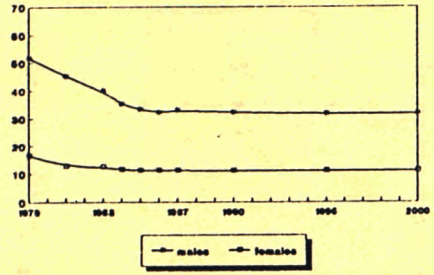
Denmark



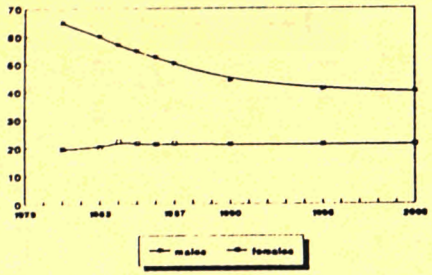
France



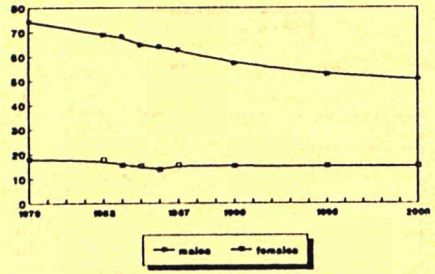
Germany



Greece

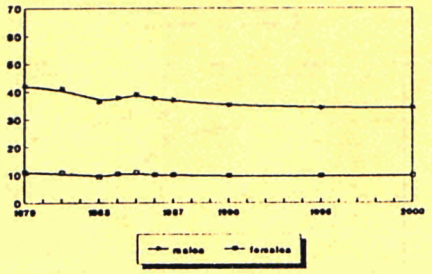


Ireland *)

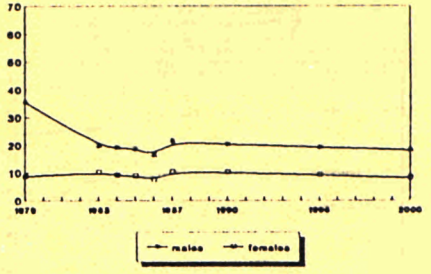


a) Deviating Y-axis scale values

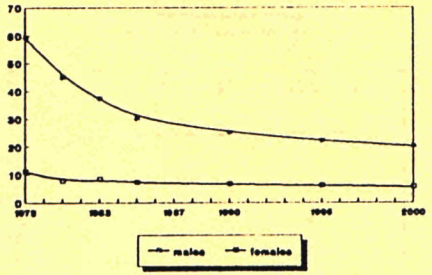
Italy



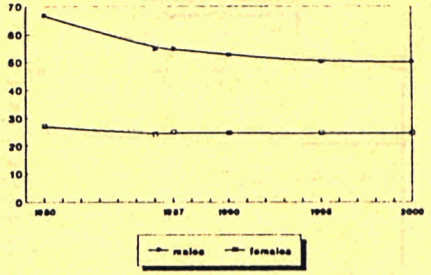
Luxembourg



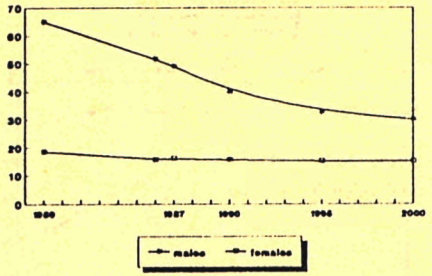
Netherlands



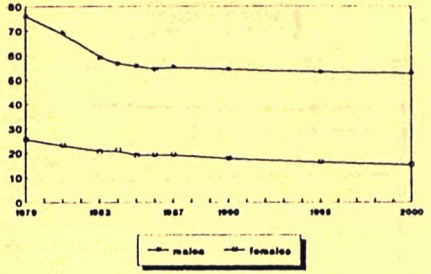
Portugal



Spain



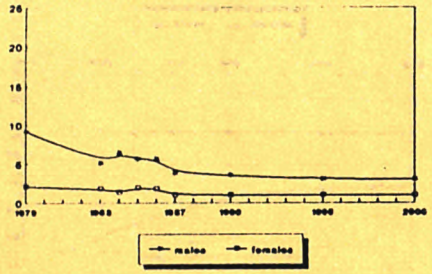
United Kingdom *)



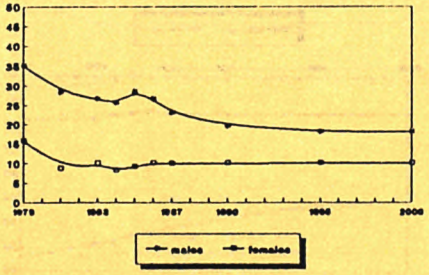
a) Deviating Y-axis scale values

Age-group 65-69

Belgium

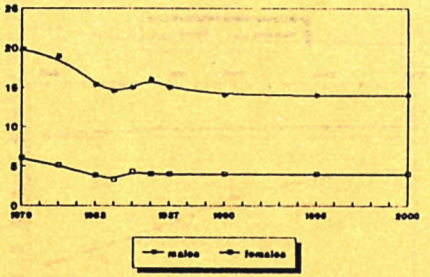


Denmark *)

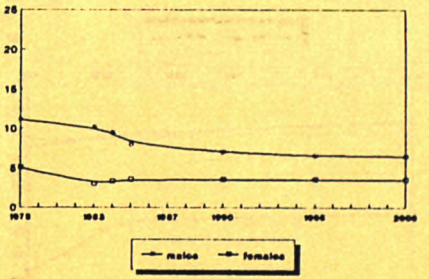


a) Deviating Y-axis scale values

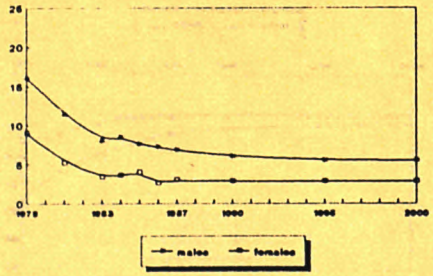
Italy



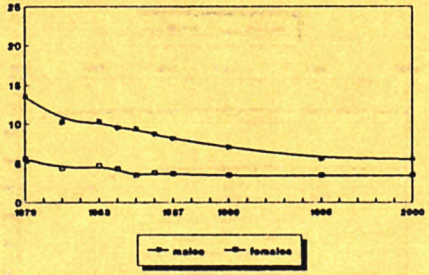
Luxembourg



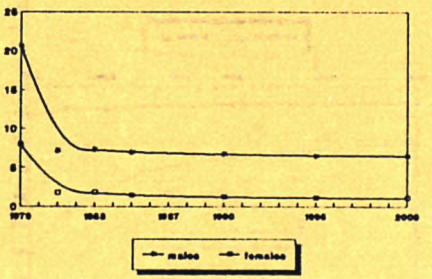
France



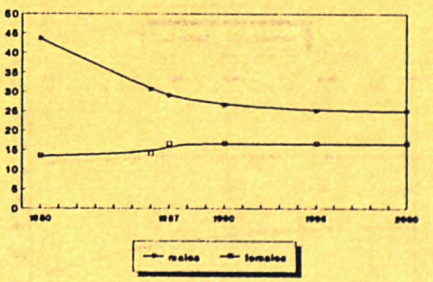
Germany



Netherlands

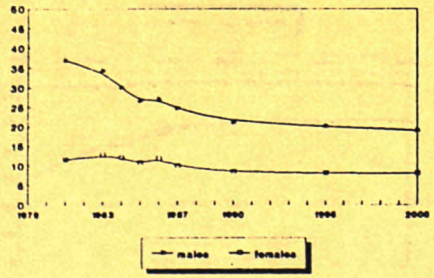


Portugal *)



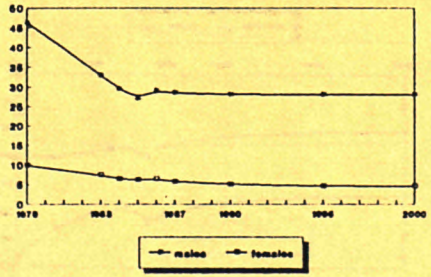
a) Deviating Y axis scale values

Greece *)



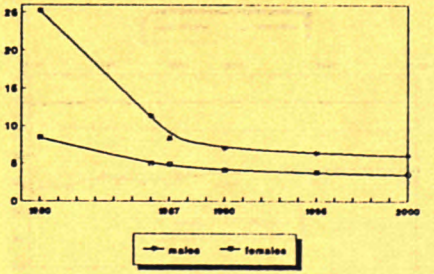
a) Deviating Y axis scale values

Ireland *)

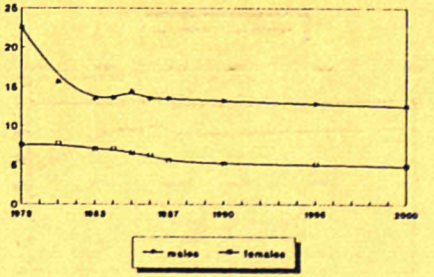


a) Deviating Y-axis scale values

Spain

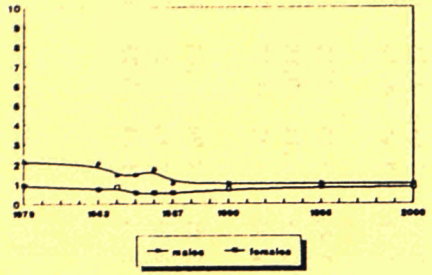


United Kingdom

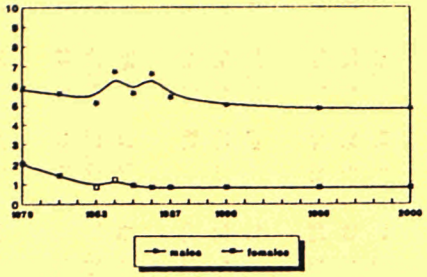


Age-group 70+

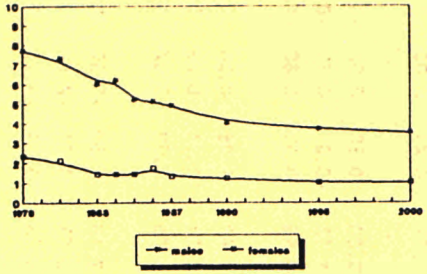
Belgium



Denmark

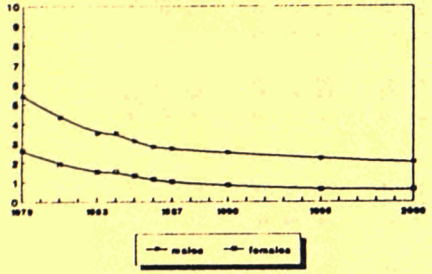


Italy

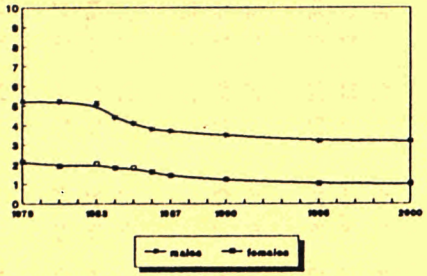


The data for this age group in Luxembourg were not available, therefore the estimated values of 1985 have been used as projectionvalues

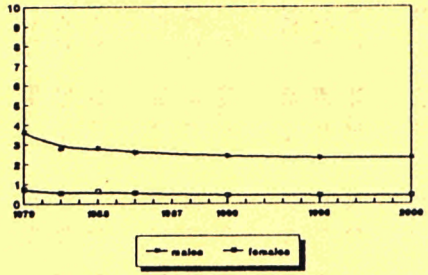
France



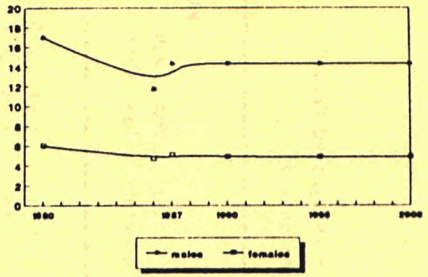
Germany



Netherlands

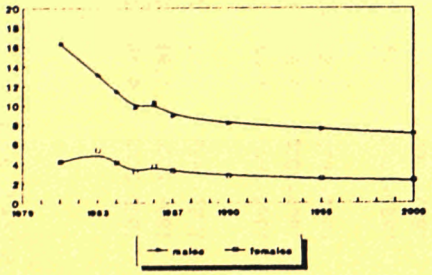


Portugal [a]



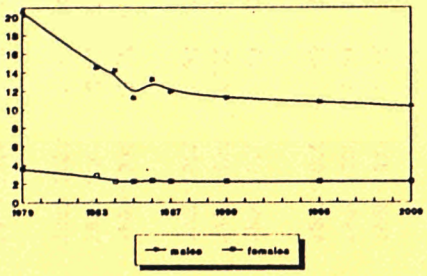
a) Deviating Y axis scale values

Greece [a]



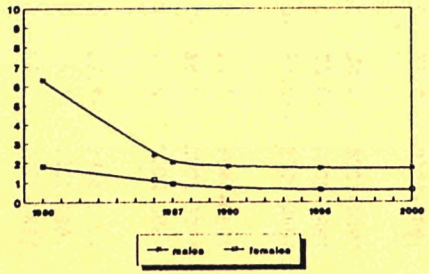
a) Deviating Y axis scale values

Ireland [a]

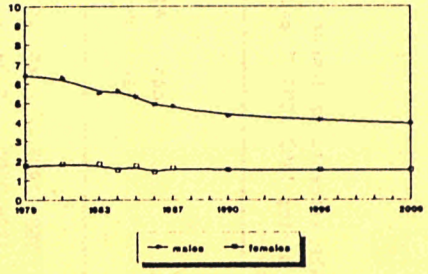


a) Deviating Y-axis scale values

Spain



United Kingdom



ANNEX 6.1. The elements of labour force growth (projected fertility, projected activity rates) during 1990-2000 (% change over the period)

		TOTAL				MALES				FEMALES			
		pop 15+	age shift	act. rate	total growth	pop 15+	age shift	act. rate	total growth	pop 15+	age shift	act. rate	total growth
Belgium	1990-1995	0.45	-0.06	0.09	0.48	0.41	0.53	-1.21	-0.27	0.49	-0.93	2.09	1.64
	1995-2000	-0.09	-0.82	-0.16	-1.06	-0.12	-0.01	-0.87	-1.00	-0.05	-2.03	0.93	-1.16
	1990-2000	0.37	-0.88	-0.07	-0.59	0.29	0.52	-2.08	-1.27	0.44	-3.00	3.03	0.47
Denmark	1990-1995	0.50	0.24	-0.40	0.35	0.44	0.46	-0.60	0.30	0.56	0.02	-0.17	0.41
	1995-2000	-0.97	-0.32	-0.16	-1.46	-1.08	0.03	-0.24	-1.28	-0.87	-0.71	-0.09	-1.67
	1990-2000	-0.48	-0.08	-0.56	-1.12	-0.65	0.50	-0.84	-0.99	-0.31	-0.69	-0.26	-1.26
France	1990-1995	1.94	0.51	-0.15	2.29	1.89	0.72	-0.82	1.80	1.98	0.24	0.73	2.95
	1995-2000	1.68	-0.45	0.03	1.26	1.61	-0.10	-0.27	1.24	1.74	-0.89	0.43	1.28
	1990-2000	3.65	0.05	-0.12	3.58	3.53	0.62	-1.09	3.06	3.76	-0.67	1.18	4.27
Germany	1990-1995	-1.23	-1.01	-0.14	-2.37	-0.81	-0.56	-0.79	-2.16	-1.60	-1.95	0.86	-2.70
	1995-2000	-1.41	-2.57	0.03	-3.95	-1.05	-2.51	-0.11	-3.68	-1.73	-2.87	0.24	-4.36
	1990-2000	-2.62	-3.50	-0.11	-6.22	-1.86	-3.00	-0.89	-5.75	-3.31	-4.73	1.10	-6.94
Greece	1990-1995	2.70	-1.07	-0.44	1.18	2.88	-0.75	-1.74	0.39	2.52	-1.84	1.91	2.60
	1995-2000	1.65	-0.85	-0.10	0.71	1.78	-0.50	-0.86	0.42	1.53	-1.55	1.25	1.23
	1990-2000	4.39	-1.96	-0.54	1.90	4.71	-1.29	-2.60	0.82	4.09	-3.43	3.19	3.86
Ireland	1990-1995	7.22	1.50	-1.57	7.15	7.22	1.35	-3.17	5.40	7.23	1.80	1.51	10.53
	1995-2000	5.84	2.30	0.60	8.74	5.88	2.61	-1.06	7.42	5.80	1.70	3.64	11.15
	1990-2000	13.48	3.96	-0.93	16.51	13.52	3.99	-4.29	13.22	13.45	3.87	5.54	22.85
Italy	1990-1995	1.65	-0.20	0.64	2.10	1.68	0.37	-0.88	1.17	1.63	-1.22	3.33	3.74
	1995-2000	-0.30	-0.37	0.26	-0.42	-0.36	0.40	-0.36	-0.32	-0.25	-1.67	1.32	-0.59
	1990-2000	1.35	-0.58	0.90	1.67	1.31	0.78	-1.24	0.85	1.38	-2.95	4.70	3.12
Luxembourg	1990-1995	-0.10	-2.23	1.45	-0.88	-0.07	-1.32	-0.49	-1.88	-0.13	-3.85	5.01	1.04
	1995-2000	-0.30	-2.31	0.44	-2.16	-0.27	-1.84	-0.40	-2.52	-0.32	-3.10	1.88	-1.54
	1990-2000	-0.39	-4.51	1.89	-3.02	-0.34	-3.12	-0.89	-4.35	-0.44	-6.98	6.91	-0.52
Netherlands	1990-1995	1.86	0.21	0.44	2.52	1.74	1.46	-1.30	1.90	1.98	-1.91	3.55	3.62
	1995-2000	1.28	-1.82	-0.25	-0.80	1.14	-0.67	-1.17	-0.70	1.41	-3.74	1.35	-0.98
	1990-2000	3.16	-1.64	0.18	1.70	2.90	0.78	-2.49	1.19	3.41	-5.75	4.95	2.61
Portugal	1990-1995	3.83	-0.01	0.32	4.14	4.06	0.33	-0.93	3.46	3.63	-0.58	2.02	5.07
	1995-2000	1.91	0.08	0.38	2.38	2.10	0.60	-0.31	2.38	1.74	-0.68	1.31	2.37
	1990-2000	5.82	0.08	0.71	6.62	6.25	0.93	-1.25	5.93	5.43	-1.27	3.39	7.55
Spain	1990-1995	4.50	-0.48	0.94	4.96	4.67	0.04	-1.69	3.01	4.34	-1.64	6.03	8.73
	1995-2000	1.91	0.17	0.33	2.40	1.93	1.15	-0.72	2.36	1.89	-1.65	2.25	2.49
	1990-2000	6.49	-0.29	1.28	7.48	6.69	1.19	-2.44	5.44	6.31	-3.35	8.47	11.43

ANNEX 6.1. Continue

		TOTAL				MALES				FEMALES			
		pop 15+	age shift	act. rate	total growth	pop 15+	age shift	act. rate	total growth	pop 15+	age shift	act. rate	total growth
United Kingdom	1990-1995	-0.00	0.57	0.08	0.65	0.26	0.70	-0.83	0.12	-0.25	0.29	1.32	1.36
	1995-2000	0.31	0.19	-0.31	0.20	0.54	0.06	-0.79	-0.20	0.10	0.29	0.34	0.72
	1990-2000	0.31	0.77	-0.23	0.84	0.80	0.75	-1.63	-0.08	-0.15	0.58	1.66	2.10
EC12	1990-1995	1.28	-0.18	0.16	1.27	1.43	0.25	-1.01	0.68	1.13	-0.93	1.96	2.17
	1995-2000	0.45	-0.71	0.03	-0.23	0.55	-0.31	-0.49	-0.25	0.36	-1.37	0.81	-0.20
	1990-2000	1.74	-0.90	0.19	1.03	1.99	-0.07	-1.50	0.42	1.50	-2.32	2.79	1.97

ANNEX 7.1. Regional division NUTS level II

SCHLESWIG-HOLSTEIN
HAMBURG
BRAUNSCHWEIG
HANNOVER
LUENEBURG
WESER-EMS
BREMEN
DUESSELDORF
KOELN
MUENSTER
DETMOLD
ARNSBERG
DARMSTADT
GIESSEN
KASSEL
KOBLENZ
TRIER
RHEINHESSEN-PFALZ
STUTTGART
KARLSRUHE
FREIBURG
TUEBINGEN
OBERBAYERN
NIEDERBAYERN
OBERPFALZ
OBERFRANKEN
MITTELFRANKEN
UNTERFRANKEN
SCHWABEN
SAARLAND
BERLIN(WEST)

ILE-DE-FRANCE
CHAMPAGNE-ARDENNE
PICARDIE
HAUTE-NORMANDIE
CENTRE
BASSE-NORMANDIE
BOURGOGNE
NORD-PAS-DE-CALAIS
LORRAINE
ALSACE
FRANCHE-COMTE
PAYS DE LA LOIRE
BRETAGNE
POITOU-CHARENTES
AQUITAINE
MIDI-PYRENEES
LIMOUSIN
RHONE-ALPES
AUVERGNE
LANGUEDOC-ROUSILLON
PROVENCE-ALPES-COTE D'AZUR
CORSE

PIEMONTE
VALLE D'AOSTA
LIGURIA
LOMBARDIA
TRENTINO-ALTO ADIGE
VENETO
FRIULI-V. GIULIA
EMILIA-ROMAGNA
TOSCANA
UMBRIA
MARCHE
LAZIO
CAMPANIA
ABRUZZI
MOLISE
PUGLIA
BASILICATA
CALABRIA
SICILIA
SARDEGNA

GRONINGEN
FRIESLAND
DRENTHE
OVERIJSSEL
GELDERLAND
FLEVOLAND
UTRECHT
NOORD-HOLLAND
ZUID-HOLLAND
ZEELAND
NOORD-BRABANT
LIMBURG

ANTWERPEN
BRABANT
HAINAUT
LIEGE
LIMBURG
LUXEMBOURG
NAMUR
OOST-VLAANDEREN
WEST-VLAANDEREN

LUXEMBOURG

NORTHUMBERLAND, TYNE AND WEAR
CUMBRIA
DURHAM, CLEVELAND
NORTH YORKSHIRE
HUMBERSIDE
WEST YORKSHIRE
SOUTH YORKSHIRE
LANCASHIRE
MERSEYSIDE
GREATER MANCHESTER
CHESHIRE
SHROP-, STAFFORDSHIRE
WEST MIDLANDS
HEREFORD & WORCESTER,
WARWICKSHIRE
DERBY-, NOTTINGHAMSHIRE
LINCOLNSHIRE
LEICESTER-, NORTHAMPTONSHIRE
CAMBRIDGE, NORFOLK, SUFFOLK
ESSEX
BEDFORD-, HERTFORDSHIRE
GREATER LONDON
KENT
SURREY, WEST SUSSEX, EAST
SUSSEX
HAMPSHIRE, ISLE OF WIGHT
OXFORD-, BERK-,
BUCKINGHAMSHIRE
AVON, GLOUCESTER-, WILTSHIRE
DORSET, SOMERSET
DEVON, CORNWALL
GWENT, SOUTH-, MID-, WEST
GLAMORGAN
DYFED, POWYS, CLWYD, GWYNEDD
SCOTLAND
NORTHERN IRELAND

IRELAND

HOVEDSTADSREGIONEN

OEST FOR STOREBAELT
VEST FOR STOREBAELT

KENTRIKI KAI DYTIKI MAKEDONIA
THESSALIA
ANATOLIKI MAKEDONIA
THRAKI
ANATOLIKI STEREA KAI NISIA
PELOPONNISOS KAI DYTIKI STEREA
IPEIROS
KRITI
NISIA ANATOLIKOU AIGAIOU

NORTE
CENTRO
LISBOA E VALE DO TEJO
ALENTEJO
ALGARVE
ACORES
MADEIRA

GALICIA
ASTURIAS
CANTABRIA
PAIS VASCO
NAVARRA
RIOJA
ARAGON
MADRID
CASTILLA-LEON
CASTILLA-LA MANCHA
EXTREMADURA
CATALUNA
COMUNIDAD VALENCIANA
BALEARES
ANDALUCIA
MURCIA
CANARIAS

DEMOGRAPHIC EVOLUTION THROUGH TIME IN EUROPEAN REGIONS (DEMETER 2015) ADDENDUM: A UNIFIED GERMANY

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SUMMARY

1. CONTEXT

In the course of the end of 1989 and the first half of 1990 the Netherlands Economic Institute, on behalf of the Commission of the European Communities, carried out population and labour force projections up to 2015 for the regions (NUTS-level II) of the EC. Use was made of the DEMETER projection model, developed in 1985. The base year for the projections was 1985, the most recent year for which sufficiently detailed and reliable data for all countries are available.

During the course of this project the political map of Europe changed as a result of developments in Eastern Europe, finally leading to the unification of the Bundesrepublik Deutschland and the Deutsche Demokratische Republik. As a result the former GDR became part of the EC. In consequence a population projection for the extended Community became necessary. At the same time migration flows from east to west made new calculations necessary for the regions in the former FRG.

2. METHODOLOGY

The methodology followed is essentially the same as in the main project. However, one important adaptation to the model had to be made. The DEMETER model does not take account of international migration, because of the fact that the relative importance of international migration flows is minor for most of the countries. For convenience in the present project both parts of Germany are treated as separate countries with a module being added for the calculation and distribution of future migration flows between the two.

3. ASSUMPTIONS

It can be stated with certainty that the former GDR will be faced with many changes. The movement form a centrally-planned to a market economy is without precedent. The far-reaching changes which this implies are complicated by the simultaneous effects of German unification. The effects in social, economic and demographic terms are therefore extremely difficult to predict. In view of the uncertainties, the present projection begins with the single simplifying assumption that demographic patterns in the East will converge on those in the West over time (the "convergence assumption"). An additional assumption regarding future migration flows was necessary for which the work of DIW, itself based on recent experience in this regard, was used. In view of the uncertainty surrounding such assumptions the projections after the year 2000 need to be treated with particular caution.

The input elements for the population projection are fertility rates, death rates and migration flows.

The fertility pattern in the base year is quite different in the former FRG and the former GDR, respectively. East German fertility rates in the lower age brackets are substantially higher than in West Germany. The reverse is true for the age brackets above 30. An explanation can be found in the differing life styles (leisure time, consumption patterns etc.) and in the relative security offered by a centrally guided economic system especially in relation to the extensive facilities for child care in the GDR which made it easier for young women to combine motherhood with work. Following the convergence assumption, this situation is expected to change although it is likely to take some time. Total convergence therefore is assumed for 2040.

Though mortality in the GDR is generally higher than in the FRG, differences are relatively small. Convergence by the year 2015 has been assumed.

The largest uncertainty lies in the projection of migration flows. In this regard, much depends on the way the unification process

evolves. The Deutsches Institut für Wirtschaftsforschung have developed two scenario's for migration flows up to 2040. The first assumes a fast adaptation process in which both economies converge relatively rapidly in productivity, level of wages, consumption patterns etc., while the second is less optimistic and presupposes a slower adaptation process. As a result migration flows in the coming years are larger in the second scenario.

Data available since the DIW scenarios were constructed suggest that the second is closer to reality. In addition, in the course of 1990 assessments of the infrastructural and other needs of the GDR economy in order to converge on that in FRG have tended to increase, again suggesting a slow adaptation process. It is therefore this second scenario which has been used in the present projection for illustrative purposes, together with a variant which shows the comparative position where no migration takes place.

The main input for the labour force projection is the level of activity rates. In the base year situation these are clearly different for the GDR. Most striking is the fact that female overall activity is practically at the same very high level as male activity. About half of the GDR labour force is constituted by women (1989). The statistics should, however, be treated with some caution since regime differences between centrally-planned and market economics result in differences in definitions.

Following the convergence assumption GDR activity rates are projected to convergence towards those in the FRG level in the long run. At the same time, given past experience, it seems reasonable to expect activity rates in East Germany to remain somewhat above the new German average. For this reason the East German activity rate has been assumed to converge on that of Oberbayern, where the activity rate is the highest in FRG. To show the importance of the assumed changes in future activity rates in the GDR for the development of the labour force a variant is provided where activity rates are held constant.

4. RESULTS OF THE POPULATION PROJECTIONS

a) GDR

On the basis of the convergence assumption outlined above, the GDR population is expected to decline in the period 1990-2000 by 11% and in the period 2000-2015 by another 10%. In terms of absolute figures this means that during the period 1990-2015 the total population of the GDR decreases from 16,2 million inhabitants to 13,1 million. Of particular note is that the main part of this decline is attributable to the effects of outmigration.
As the outmigrating people in general belong to the age groups in the active years the effect is one of a "greying" process, i.e. ageing of population, which is stronger than in the rest of the EC countries.

GDR labour force is expected to decline in the period 1990-1995 by 9% and in the period 1995-2000 by another 5%. This means a reduction of the labour force of over one million persons (8,9 million in 1990 v.s. 7,7 million in 2000). For the male labour force where outmigration is the main constituting factor the figures for the two periods are respectively 6% and 3%. Decline for the female labour force is much larger and amounts to figures of respectively 12% and 7%. Again an important role is played by outmigration, although the effect of falling activity rates, especially for women, is important.

b) FRG

The population projection for the FRG regions assuming no migration inflows from the GDR was characterised in almost every case (exceptions: parts of Baden-Wurttemberg, Bayern and West-Berlin) by declining populations and labour force. This picture is changed significantly by GDR migrants. In the coming period 1990-1995 the historical trend towards population decline is brought to a halt or changes to growth in most regions. The highest growth is foreseen for West-Berlin (0.8% annually). The same general trends apply to labour force although the age composition of the migrating

population (in terms of the numbers of working age) means that the growth effects are even stronger. Again West-Berlin shows the highest growth (about 1% annually).

RESUME

1. CONTEXTE

A la fin de l'année 1989 et au premier semestre 1990, l'Institut économique néerlandais a établi pour le compte de la Commission des Communautés européennes des projections en matière de population générale et de population active jusqu'à l'horizon 2015 pour les régions communautaires du niveau NUTS II. Il a utilisé à cet effet le modèle de projections DEMETER, élaboré en 1985. Les projections ont été réalisées sur la base de l'année 1985, la plus récente pour laquelle on disposât de données assez détaillées et assez fiables pour tous les pays concernés.

Au cours de la réalisation de cette étude, la carte politique de l'Europe a été modifiée par les événements survenus en Europe de l'est, événements qui ont finalement débouché sur l'unification de la république fédérale d'Allemagne et de la république démocratique allemande. C'est ainsi que l'ex-RDA est devenue une partie de la CE, d'où la nécessité d'une projection embrassant la population de la Communauté élargie. Dans le même temps, compte tenu des flux migratoires orientés d'est en ouest, il a fallu effectuer de nouveaux calculs pour les régions de l'ex-république fédérale d'Allemagne.

2. METHODOLOGIE

La méthodologie suivie est de même essence que celle utilisée dans le projet principal. Le modèle a dû toutefois faire l'objet d'une adaptation importante. Le modèle DEMETER ne tient pas compte des migrations internationales, car les flux migratoires internationaux ont une importance mineure pour la plupart des pays. Pour des raisons de commodité, les deux parties de l'Allemagne sont traitées dans le présent projet comme des pays distincts et un module spécifique sert à calculer la densité et la distribution des flux migratoires futurs entre les deux territoires.

3. HYPOTHESES

Il est permis d'affirmer que l'ex-RDA sera confrontée à de nombreux changements. Le passage de la planification étatique de l'économie à une économie de marché n'a aucun précédent. Les profonds changements inhérents à ce processus sont encore compliqués par les effets concomitants de la réunification allemande. Les conséquences d'ordre social, économique ou démographique sont donc extrêmement difficiles à prévoir. Etant donné ces incertitudes, l'hypothèse simplificatrice retenue est que les lignes de forces des démographies respectives de l'Est et de l'Ouest convergeront progressivement ("hypothèse de convergence"). En ce qui concerne les flux migratoires futurs, il est apparu nécessaire de retenir une hypothèse supplémentaire pour laquelle on a utilisé les travaux du DIW, eux-mêmes fondés sur l'expérience acquise dans un passé récent. Compte tenu des incertitudes inhérentes à des hypothèses de ce genre, une grande prudence s'impose quant aux projections qui vont au-delà de l'horizon 2000.

Les éléments saisis pour établir la projection en matière de population sont les taux de fécondité, les taux de mortalité et les flux migratoires.

Pendant l'année de base, la fécondité enregistrée dans l'ex-RFA différait beaucoup de celle observée dans l'ex-RDA. Les taux de fécondité est-allemands dans les jeunes classes d'âge sont nettement plus élevés que ceux de l'Allemagne de l'ouest. C'est l'inverse qui est vrai chez les plus de 30 ans. Cette situation peut être expliquée par les différences existant en matière de style de vie (loisirs, modèles de consommation, etc.) et par la relative sécurité qu'offre un système économique centralisé, notamment les larges facilités dont bénéficiaient les jeunes femmes en RDA pour s'occuper de leurs enfants et pour concilier maternité et vie active. Dans le cadre de l'hypothèse de convergence, cette situation est appelée à se modifier, mais il est probable que le processus s'étalera sur une assez longue période, car on prévoit la convergence totale seulement pour l'an 2040.

Bien que la mortalité soit généralement plus élevée dans la RDA que dans la RFA, les différences sont relativement faibles. La convergence en la matière est prévue pour 2015.

La plus grande incertitude réside dans la projection des flux migratoires. A cet égard, cela dépendra de la manière dont évoluera le processus d'unification.

Le "Deutsches Institut für Wirtschaftsforschung" a élaboré deux scénarios concernant les flux migratoires jusqu'en 2040. Le premier suppose un processus d'adaptation accéléré, à la faveur duquel les deux économies convergent assez rapidement en matière de productivité, niveau de salaire, structure de consommation, etc.; le second, moins optimiste, suppose au contraire un processus d'adaptation plus lent. Il en résulte que les flux migratoires pour les années à venir sont plus importants dans ce second scénario.

Les données postérieures à l'élaboration des scénarios du DIW donnent à penser que la seconde hypothèse est la plus proche de la réalité. A noter en outre que les évaluations faites en 1990 ont eu tendance à sous-estimer l'effort de rattrapage nécessaire, notamment en matière d'infrastructure pour que l'économie de la RDA converge avec celle de la RFA, observation qui laisse présager encore une fois un processus d'adaptation lent. C'est pourquoi on a utilisé le second scénario afin de bien faire apparaître l'évolution, tout en présentant une variante qui montre ce que serait la situation en l'absence de mouvements migratoires.

La principale donnée mise en compte pour la projection de la population active est le niveau des taux d'activité, lesquels se différenciaient nettement des taux ouest-allemands pendant l'année de base pour la RDA. Le fait le plus frappant est que le taux d'activité féminin se situe presque au même niveau que le taux d'activité masculin, lui-même très élevé. Les femmes représentent environ la moitié de la population active de la RDA (1989). Il convient toutefois de considérer ces données avec une certaine circonspection, car les différences entre des régimes respectivement fondés sur une planification centrale et sur l'économie de marché débouchent sur des définitions différentes elles aussi.

Dans l'hypothèse de convergence, les taux d'activité de la RDA sont projetés dans la perspective d'une convergence à long terme au niveau spécifique de la RFA. Compte tenu de l'expérience acquise dans le passé, il semble néanmoins raisonnable de s'attendre à ce que les taux d'activité en Allemagne de l'Est restent légèrement supérieurs à la nouvelle moyenne allemande. Aussi a-t-on retenu l'hypothèse que le taux d'activité est-allemand convergerait pour s'aligner sur celui de la Haute-Bavière, dont le taux d'activité est le plus élevé enregistré dans la RFA. Pour mieux montrer l'importance que revêtent les modifications présumées en matière de taux d'activité future dans la RDA pour l'évolution de la population active, on a présenté une variante dans laquelle les taux

d'activité demeurent constants.

4. RESULTATS DES PROJECTIONS EN MATIERE DE POPULATION

a) RDA

Sur la base de l'hypothèse de convergence précédemment exposée, la population de la RDA devrait baisser de 11 % entre 1990 et 2000 et de 10% encore entre 2000 et 2015. Autrement dit, la population totale de la RDA tomberait en valeur absolue de 16,2 à 13,1 millions d'habitants pendant la période 1990-2015. Il est à noter que cette régression serait essentiellement due aux effets de l'émigration. L'émigration étant le plus souvent le fait de personnes en âge de travailler, il en résulte un vieillissement de la population plus prononcé que dans les autres pays de la Communauté européenne.

La population active de la RDA devrait régresser de 9 % entre 1990 et 1995 et encore de 5 % entre 1995 et l'an 2000. Le nombre des actifs baisserait ainsi de plus de 1 million (tombant de 8,9 millions en 1990 à 7,7 millions en l'an 2000). En ce qui concerne la seule population active masculine, qui est aussi la plus touchée par l'émigration, les chiffres correspondants pour les deux périodes précitées s'établissent respectivement à 6 % et 3 %. La régression de la population active féminine est beaucoup plus importante (respectivement de 12 % et 7 %). Là encore, l'émigration joue un rôle important, mais la baisse des taux d'activité, surtout chez les femmes, est elle aussi lourde de conséquences.

b) RFA

Dans l'hypothèse excluant tout flux migratoire en provenance de l'ex-RDA, la projection en matière de population fait apparaître pour la quasi-totalité des régions de la RFA (certains secteurs du Bade-Wurtemberg, la Bavière et Berlin-Ouest étant les seules exceptions) une régression de la population et une diminution du nombre des actifs. Le tableau est sensiblement modifié si l'on tient compte de l'émigration en provenance de l'ex-RDA. Au cours de la période 1990-1995, la tendance historique à la baisse de la population est enrayée ou même fait place à une progression dans la plupart des régions. La croissance la plus élevée est prévue pour Berlin-Ouest (0,8 % par an). Les mêmes tendances générales caractérisent

l'évolution de la population active, encore que quant à l'âge, la composition de la population migrante (sous le rapport du nombre des personnes en âge de travailler) soit telle qu'il en résulte une croissance plus élevée encore. En l'occurrence, c'est toujours pour Berlin-ouest que l'on prévoit la croissance la plus forte (de l'ordre de 1 % par an).

1. INTRODUCTION

In 1985 the Netherlands Economic Institute was approached by the Commission of the European Communities with the request to carry out projections of national and regional population for the member countries of the EC and for the regions at the NUTS level II. At that time the projection horizon was 2010. In addition to population projections a translation had to be made to labour force at the regional level and to job requirements in the period to come. Recently, the Commission charged NEI with an update of the results of this project and an extension of the projection period to 2015.

During the course of this updating dramatic changes took place in the countries of Eastern Europe, finally leading to a merging of the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) into one unified Germany. A consequence of this political development was the entry of the former GDR regions into the EC. A population and labour force projection for this area thus became necessary. Due to the expected internal migration flows within Germany, strongly dependent on economic developments, it was also necessary to reconsider the future picture for the former West-German regions.

In the present report a description is given of the assumptions underlying the projections. It should be stressed that the unprecedented nature of the changes mean that considerable uncertainty exists as to the way the merging process will develop.

Use was made of scenario's set up by the Deutsches Institut für Wirtschaftsforschung (DIW) in june 1990, especially for migration flows. It should also be borne in mind that doubts exist about the comparability of GDR statistics. This is especially the case for participation in the labour force, the measurement of which has had policical undertones.

It can be stated with certainty, that the former GDR will be faced with many changes. At the present time the exact extent of these changes is hard to foresee. For the projection over the long term, the underlying assumption was therefore made that the behavioural patterns represented by the input-elements in the projection model for a

unified Germany will reflect a tendency towards convergence between East and West over the period up to 2015 (the convergence assumption).

The present document reports on the projections for the former GDR, the effects for the West-German regions and the changes expected for the total of Germany. In the text the terms FRG, GDR and NEWGER are used for the former Bundesrepublik, the former Demokratische Republik and the unified Germany.

Chapter 2 discusses the input elements needed for the projections for a unified Germany. In the case of the FRG the only difference in the inputs compared to the main study lies in the addition of internal migration flows during the period 1990-2015. Chapters 3 and 4 present the results of the population and the labour force projections respectively.

2. THE INPUT ELEMENTS

2.1. Base-year population: data source

The data for the GDR population by sex and age groups for the base year 1985 were derived from the "Statistisches Jahrbuch der Deutschen Demokratischen Republik". The same source provided data on past developments in fertility and death rates.

2.2. Migration between FRG and GDR

The methodology assumes continuing migration flows from East to West, using the projections of the DIW. The DIW has developed two scenarios for possible migration flows up to 2040. The first supposes a relatively fast adaptation process with relatively rapid convergence in productivity, level of wages, consumption patterns etc. The second scenario is less optimistic and presupposes a slower adaptation process. As a result, migration flows under the second scenario in coming years are somewhat larger, especially in the early 1990's.

On the basis of the recent evidence the choice was made to use the second migration scenario which is set out in Table 2.1. Recent estimates suggest that in the first half of 1990 about 250.000 people migrated from the former GDR to the West.

Table 2.1. Net migration GDR - FRG by period (x 1000)

1990 - 1994	1100
1995 - 1999	320
2000 - 2004	180
2005 - 2009	150
2010 - 2014	130

Source: DIW

The disaggregation of the migration flow by sex and age groups has been based on the observed division in the period 1985-1989, as provided by the Bundesausgleichsamt. The geographical distribution of

these migrants settling in the FRG regions is based on the same source with the exception of West Berlin[1)].

By assuming a persistence of the settlement pattern of recent years, West Berlin would be confronted with an inflow of more than 400.000 people in the period 1985-2015. Relative to a population of about 2 million this seems unreasonably high and would lead to pressure on the housing and labourmarkets beyond that which would be permitted. For this reason it was decided to limit the projected total inflow into West Berlin, over the period 1985-2015, to 200.000 people. This assumption is related to the most recently available figures, where in the first half of 1990 about 6500 people moved from the GDR to West Berlin. Hence a projection of about 70.000 in the period 1990-1994 seems to be in line with this figure (see annex table A1). The statistical surplus of people, which would have been allocated to West Berlin (i.e. 200.000 people) was allocated to the other FRG regions in relation to the previous pattern of geographical flows. The regional distribution is given in the annex.

2.3. Fertility

Present fertility in the GDR is substantially higher than in the FRG. An important reason for this phenomenon can be found in policy measures. It is to be expected that unification will lead to a decrease of fertility especially in the lower age brackets. DIW mentions a number of reasons, principally:

- no new measures will be taken for the stimulation of family growth;
- the introduction of a market economy with less security (risks of unemployment etc.) will lower the disposition to have children;
- new opportunities (travel, consumption patterns) will lead to a tendency to have children at a higher age;

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1) No information was available regarding the region of origin of the migrants from the GDR.

- present facilities for child care (kindergarten etc.) will be less abundant and more expensive for the parents.

Regarding fertility the underlying assumption for the projections is one of convergence to levels projected for the FRG. This means a relatively sharp decline in the lower age brackets and a slight upward trend in the higher age brackets. Current differences in some age groups are, however, rather large and complete convergence is therefore likely to occur over a long period of time. The assumption was made that total convergence is reached in 2040. For the projection period (to 2015) this means that a difference will persist between both Germany's, where the lower age brackets show higher but diminishing fertility in the GDR. The reverse is true for the ages over 30. The projected figures are presented in the annex (Figure A.1).

2.4. Death-rates

In the GDR mortality is generally higher than in the FRG, although the difference is not large. Assuming that medical care will improve and environmental conditions will become more favourable, convergence to FRG levels seems appropriate (annex, table A.2).

2.5. Activity rates

The Institut für Soziologie und Sozialpolitik der Akademie der Wissenschaften der DDR (Sozialreport 1990) has estimated activity rates for the year 1989 by sex and age group. In the present projection, these activity rates have been assumed constant for the years 1985 to 1990.

Activity rate statistics should, however, be treated with some caution. It is not at all certain that definitions of active population are in line with the definitions used by Eurostat (ILO) for

the EC member states, given the fundamental differences between market and centrally guided economies.

A most striking feature is the fact that female overall (15-60) activity rates in the GDR are at the same (high) level as male activity and much higher than in western economies. This undoubtedly reflects regime differences where the provision of employment in centrally-guided economies has been unconstrained by the need for enterprises to be profitable as in the West. In particular, extensive facilities for child care were provided by enterprises in the GDR to enable women to go to work.

Given convergence in the economic and institutional structures in both parts of Germany, convergence of activity rates towards those in the FRG can be expected at least in the long run. It seems likely however, that as a result of past experience, female activity rates in the East will remain above the average in a unified Germany. Consequently the assumption has been made that projected activity rates will converge on those for the FRG region with highest rates i.e. Oberbayern.

The precise rates used for the labour force projections are shown in the annex (Table A.3).

3. RESULTS OF THE POPULATION PROJECTIONS

3.1. National results

3.1.1. *GDR and FRG*

For the GDR and FRG projections were made on the assumption of projected fertility- and death-rates. Besides, an additional projection was made for the GDR assuming stable (1985-level) rates. Absolute figures for both variants are given in table 3.1.

Table 3.1. Population projection GDR (x 1000)

		total			males			females		
		1990	2000	2015	1990	2000	2015	1990	2000	2015
Stable	GDR	16223	14576	13429	7737	7061	6554	8486	7515	6875
Projected	GDR	16223	14497	13100	7737	7009	6348	8486	7488	6753
Projected	FRG	61672	61417	55549	29598	29665	26748	32074	31753	28801

Regarding the figures of the GDR, in comparison to total decline of the population the difference between the variants is only of minor importance, reflecting the fact that it is the assumption regarding outmigration which is the more important factor determining future population in the GDR.

The ageing of population typical of Western countries is also found in the GDR reflecting the effects of lower fertility and higher life expectancy. For the GDR the ageing of population will also be increased by the fact that the outflow of migrants from the GDR consists largely of people in the active (younger) age groups. As a result there will be a strong tendency toward a greying population as shown in table 3.2.

Table 3.2. Demographic pressure in GDR (all figures expressed as % of 15-59)

Age group	1985	2015
0 - 14	30.9	23.9
60+	29.6	42.1
total	60.5	65.4

3.1.2. *Unified Germany (NEWGER)*

The effect of migration flows will have a proportionately smaller influence on FRG population than that recorded for the GDR as a result of absolute differences in size.

Table 3.3 provides growth figures for the FRG with inflow only for the period 1985 - 1990 (as projected in the main study) and for the situation with migration occurring during 1985 - 2015 for the FRG, GDR and the unified Germany. For the Western part of Germany it shows that negative growth figures (compared to those assuming no international migration after 1990) will become smaller. For the male population in the period 1990 - 2000 growth even becomes positive.

Table 3.3. Annual growth rates population (%) and the absolute population unified Germany

	total			males			females		
	1990/ 2000	2000/ 2015	1990/ 2015	1990/ 2000	2000/ 2015	1990/ 2015	1990/ 2000	2000/ 2015	1990/ 2015
Without migration									
FRG	-0.28	-0.75	-0.56	-0.22	-0.77	-0.55	-0.34	-0.73	-0.57
With migration									
FRG	-0.04	-0.67	-0.42	+0.02	-0.69	-0.40	-0.10	-0.65	-0.43
GDR	-1.12	-0.67	-0.85	-0.98	-0.66	-0.79	-1.24	-0.69	-0.91
NEWGER	-0.26	-0.67	-0.50	-0.18	-0.68	-0.48	-0.33	-0.66	-0.53
Total population (x1000)	1990	2000	2015	1990	2000	2015	1990	2000	2015
NEWGER	77895	75914	68649	37335	36674	33095	40560	39241	35554

3.2. Regional assumptions and results

3.2.1. *GDR*

As in most countries interregional migration flows within the GDR show a fairly stable pattern. In the past decade there has been a constant net outflow from the rural areas and from the old industrial concentrations. Net migration for the GDR-Bezirke is given in table 3.4 for the years 1985 to 1988 in absolute figures and per thousand of the resident population.

Table 3.4. Migration balance GDR-Bezirke

Region	1988		1987		1986		1985	
	abs	o/oo	abs	o/oo	abs	o/oo	abs	o/oo
Berlin	21172	16.5	20298	16.1	21091	17.1	15964	13.1
Cottbus	-1956	-2.2	-1781	-2.0	-1999	-2.3	-1425	-1.6
Dresden	-2272	-1.3	-1721	-1.0	- 412	-0.2	- 781	-0.4
Erfurt	- 621	-0.5	- 328	-0.3	- 547	-0.4	- 591	-0.5
Frankfurt	-1170	-1.6	-1044	-1.5	-1144	-1.6	- 924	-1.3
Gera	168	0.2	231	0.3	64	0.1	728	1.0
Halle	-5891	-3.3	-5751	-3.2	-6299	-3.5	-4805	-2.7
Karl-Marx Stadt	- 139	-0.1	36	0.0	360	0.2	241	0.1
Leipzig	-2808	-2.1	-2547	-1.9	-2623	-1.9	-2443	-1.8
Magdeburg	-1405	-1.1	-1874	-1.5	-2292	-1.8	-1570	-1.3
Neubrandenburg	-2356	-3.8	-2474	-4.0	-2894	-4.7	-2915	-4.7
Potsdam	- 467	-0.4	- 716	-0.6	- 867	-0.8	- 402	-0.4
Rostock	-1145	-1.2	- 611	-0.7	- 965	-1.1	- 74	-0.1
Schwerin	- 848	-1.4	-1189	-2.0	-1213	-2.0	- 768	-1.3
Suhl	- 259	-0.5	- 529	-1.0	- 240	-0.4	- 235	-0.4

Source: Statistisches Jahrbuch der DDR.

Positive net migration is relatively (very) high in East-Berlin[2)]. The only other region with a positive balance (although limited) is the more modern industrial area of Gera.

3.2.2. *FRG*

Table 3.5 summarizes the most vital results of the regional projections for the former FRG as it gives growth rates for the short term 1990 -1995 (annual rate) in column 1a for the situation with migration and in column 1b for the situation without migration from the GDR. Population growth as a % change over the period 1985 - 2015 is given in columns 2a and 2 b.

In table 3.6 the indexes for the effects of migration are given as described in paragraph 8.1.2 and 8.1.4 of the main report. The former projection (with interregional migration) and the present one (with interregional + inflow from GDR) are compared with the base projection assuming no migration (interregional and international) at all to show the importance of the migration projections for the FRG and its regions.

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2) In the present projection the GDR has been treated as one region. If projections had been made at the level of Bezirke, under the DEMETER methodology a stable migration pattern would have been assumed. This would mean a continuing net flow into East-Berlin of about 20.000 people yearly. In combination with the flows from the GDR into West-Berlin and the flows from FRG regions into West-Berlin, and taking account of the natural population decline, population in the total Berlin area would grow in the period 1990 to 2010 with some 5%, which is similar to the figure arrived at by a DIW projection for the combined Berlin area as well. (DIW Wochenbericht 27/90, july 1990).

Table 3.5. Short- and longterm population growth

	Annual growth rates (1990-1995)		Population growth (volume change %) (1985-2015)	
	Incl.migr	Excl.migr	Incl.migr	Excl.migr.
SCHLESWIG-HOLSTEIN	-0.10	-0.31	-13.49	-15.71
HAMBURG	-0.41	-0.84	-22.99	-26.03
BRAUNSCHWEIG	-0.21	-0.45	-16.02	-18.32
HANNOVER	-0.18	-0.42	-15.72	-18.02
LUENEBURG	-0.02	-0.26	-11.99	-14.45
WESER-EMS	0.14	-0.09	- 7.95	-10.29
BREMEN	-0.56	-1.00	-25.50	-28.37
DUESSELDORF	-0.19	-0.47	-16.61	-19.11
KOELN	0.15	-0.13	-8.56	-11.17
MUENSTER	0.05	-0.22	-10.88	-13.41
DETMOLD	0.11	-0.16	- 8.46	-11.11
ARNSBERG	-0.47	-0.76	-22.56	-24.94
DARMSTADT	0.26	-0.22	-9.19	-13.33
GIESSEN	0.32	-0.16	-6.89	-11.11
KASSEL	0.03	-0.47	-13.44	-17.57
KOBLENZ	-0.07	-0.34	-13.41	-15.96
TRIER	-0.08	-0.34	-13.84	-15.99
RHEINHESSEN-PFALZ	-0.31	-0.59	-19.18	-21.69
STUTTGART	0.71	0.25	3.54	-0.91
KARLSRUHE	0.38	-0.09	-5.35	-9.54
FREIBURG	0.63	0.17	1.53	-2.87
TUEBINGEN	0.70	0.24	3.81	-0.63
OBERBAYERN	0.67	0.29	3.32	-0.55
NIEDERBAYERN	0.60	0.22	3.36	-0.53
OBERPFALZ	0.27	-0.13	-6.24	-9.88
OBERFRANKEN	0.19	-0.22	-8.31	-12.07
MITTELFRANKEN	0.42	0.02	-2.96	-6.82
UNTERFRANKEN	0.26	-0.13	-7.05	-10.78
SCHWABEN	0.46	0.06	-1.40	-5.24
SAARLAND	-0.50	-0.68	-23.35	-24.85
BERLIN(WEST)	0.83	0.14	7.21	0.83
FRG 0.16	-0.20	-9.01	-12.27	
GDR -1.49		-21.37		
NEWGER	-0.18		-11.66	

Table 3.6. Migration effect

	index 1995		index 2015	
	Interreg.[a]	Interreg.[b] + GDR	Interreg.[c]	Interreg.[d] + GDR
SCHLESWIG-HOLSTEIN	100.0	101.1	99.0	101.6
HAMBURG	96.7	98.8	95.1	99.0
BRAUNSCHWEIG	98.7	99.9	97.5	100.3
HANNOVER	99.5	100.7	99.8	102.6
LUENEBURG	99.7	100.9	96.7	99.4
WESER-EMS	98.3	99.4	93.6	96.1
BREMEN	93.9	96.1	88.6	92.2
DUESSELDORF	98.6	100.0	96.4	99.4
KOELN	100.9	102.3	102.1	105.1
MUENSTER	98.0	99.3	93.3	96.1
DETMOLD	100.0	101.4	98.7	101.7
ARNSBERG	95.0	96.4	86.7	89.4
DARMSTADT	100.8	103.3	102.7	107.6
GIESSEN	100.8	103.3	101.8	106.7
KASSEL	98.5	101.0	95.9	100.7
KOBLENZ	99.0	100.3	96.5	99.4
TRIER	97.7	99.0	92.8	95.2
RHEINHESSEN-PFALZ	96.1	97.4	90.7	93.6
STUTTGART	102.8	105.1	106.4	111.2
KARLSRUHE	101.1	103.5	103.6	108.4
FREIBURG	101.8	104.2	104.3	109.0
TUEBINGEN	101.3	103.7	102.2	106.7
OBERBAYERN	104.8	106.8	113.8	118.2
NIEDERBAYERN	102.6	104.6	106.4	110.5
OBERPFALZ	99.1	101.1	97.2	101.1
OBERFRANKEN	100.2	102.2	100.5	104.7
MITTELFRANKEN	102.5	104.5	107.6	112.0
UNTERFRANKEN	98.7	100.7	96.0	100.1
SCHWABEN	101.0	103.1	102.2	106.4
SAARLAND	96.1	97.0	90.6	92.4
BERLIN(WEST)	107.1	110.9	119.6	127.2
FRG 100.0	101.8	100.0	103.7	

a) (Population 1995 <u>including</u> interregional and <u>excluding</u> international migration)/(population 1995 <u>excluding</u> interregional and international migration) x 100.

b) (Population 1995 <u>including</u> interregional and international migration)/(population 1995 <u>excluding</u> interregional and international migration) x 100.

c) (Population 2015 <u>including</u> interregional and <u>excluding</u> international migration)/(population 2015 <u>excluding</u> interregional and international migration) x 100.

d) (Population 2015 <u>including</u> interregional and international migration)/(population 2015 <u>excluding</u> interregional and international migration) x 100.

4. RESULTS OF THE LABOUR FORCE PROJECTIONS

4.1. GDR "national" level

Starting from the population projection based on projected fertility- and death-rates two variants were considered for labour force: the first with stable activity rates (level 1989), the second with activity rates converging on the level of Oberbayern, the region with the highest activity in the FRG.

Absolute figures are given in table 4.1.

Table 4.1. Labour force projection GDR (x 1000)

	total			males			females		
	1990	2000	2015	1990	2000	2015	1990	2000	2015
Stable	8899	8004	7323	4543	4167	3841	4355	3837	3481
Projected	8899	7674	6531	4543	4114	3713	4355	3560	2818

From this table it becomes clear that change in the labour force is most outstanding for females which is due to the anticipated decline in activity rates following the convergence assumption. For the male labour force the major component of decline is the outmigration. This component also plays an important role in the decline of the female labour force as well, although the lowering of activity rates is relatively stronger, as shown in table 4.2. As discussed above, the future of female activity rates in the GDR is surrounded by some uncertainty. The projections after the year 2000 need to be treated with particular care in this regard. Up to the year 2000, the overall labour force projection is less sensitive to the effects of the assumption on projected activity rates.

Table 4.2. Total change volume labour force in the GDR and its components (1990-2000, %)

	male	female	total
change due to:			
death rates projection	+ 0.4	+ 0.7	+ 0.6
activity rates projection	- 1.1	- 6.4	- 3.7
migration	-10.7	-10.0	-10.4
total change[a)]	- 9.4	-18.3	-13.8

a) Because of interaction between the three components, the total change is not equal to the summons of these components.

4.2. Unified Germany (NEWGER)

Table 4.3 provides growth figures of the labour force for the FRG, GDR and the unified Germany (with and without migration flows). The absolute size of the labour force in the unified Germany is presented in table 4.4. All figures are based on the central variant which contains projected fertility-, death- and activity-rates.

As a consequence of the "international" migration, the GDR labour force shows a much sharper decline. In particular, the decrease of the female labour force is rather large. Of course the FRG labour force shows opposite (although less profound) trends. The relative size of the decrease of the labour force of the unified Germany is almost equal to those previously observed for the FRG assuming no international migration.

Table 4.3. Total period change (%) labour force

	total			males			females		
	1990/95	1995/2000	1990/2000	1990/95	1995/2000	1990/2000	1990/95	1995/2000	1990/2000
Without migration									
FRG	-2.4	-3.9	-6.2	-2.2	-3.7	-5.8	-2.7	-4.4	-6.9
GDR	-1.1	-2.4	-3.4	+1.6	-0.3	+1.3	-3.8	-4.7	-8.3
With migration									
FRG	-0.3	-3.2	-3.5	-0.2	-2.9	-3.1	-0.6	-3.6	-4.2
GDR	-8.9	-5.3	-13.8	-6.3	-3.4	-9.4	-11.7	-7.4	-18.3
NEWGER	-2.3	-3.6	-5.9	-1.4	-3.0	-4.4	-3.6	-4.6	-8.0

Table 4.4. Labour force projection unified Germany (x 1000)

	total			males			females		
	1990	2000	2015	1990	2000	2015	1990	2000	2015
Projected	38593	36322	31882	22501	21516	19134	16092	14805	12748

4.3. FRG regional effects

Table 4.5 summarizes the most vital results of the regional projections. The short term (1990 -1995) annual growth rates are given in the first column for the situation with migration and in the second column for the situation without migration from the GDR. Labour force growth as a % change over the period 1985 -2015 is given in columns 3 (incl. migration) and 4 (excl. migration).

All figures are based on projections assuming interregional migration.

Table 4.5. Short- and longterm labour force growth

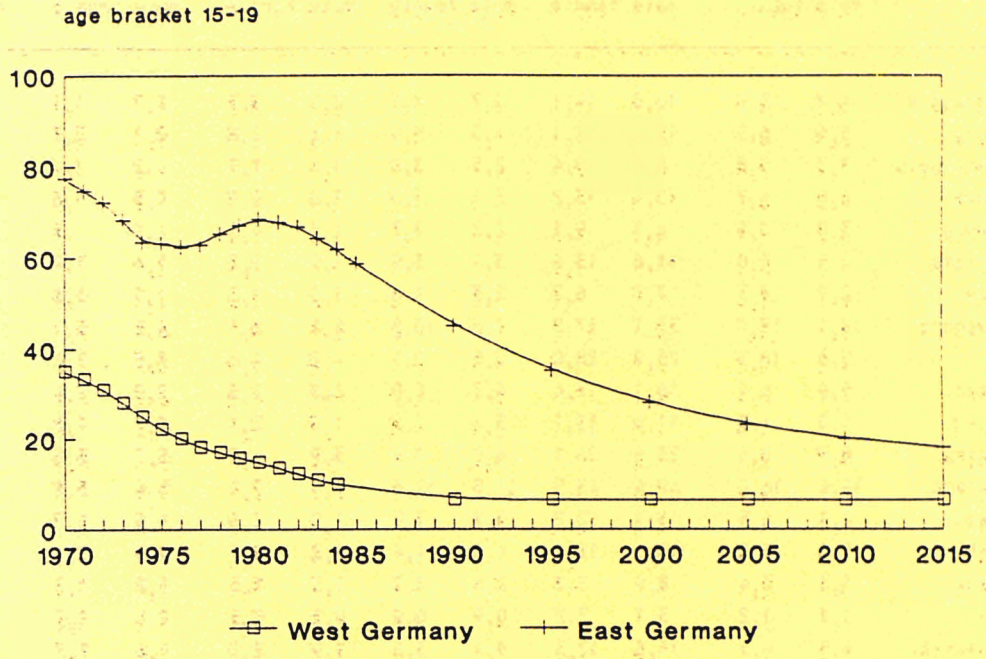
	Annual growth rates (1990-1995)		Labour force growth (volume change %) (1985-2015)	
	Incl.migr.	Excl.migr.	Incl.migr.	Excl.migr.
SCHLESWIG-HOLSTEIN	-0.28	-0.51	-16.78	-19.23
HAMBURG	-0.66	-1.15	-28.07	-31.32
BRAUNSCHWEIG	-0.40	-0.67	-18.11	-20.67
HANNOVER	-0.37	-0.64	-18.21	-20.75
LUENEBURG	-0.19	-0.46	-14.90	-17.63
WESER-EMS	.01	-0.25	-8.00	-10.53
BREMEN	-0.69	-1.22	-28.95	-32.33
DUESSELDORF	-0.64	-0.96	-21.38	-24.08
KOELN	-0.23	-0.54	-14.49	-17.27
MUENSTER	-0.25	-0.56	-13.27	-15.98
DETMOLD	-0.11	-0.42	-8.78	-11.72
ARNSBERG	-0.90	-1.24	-26.25	-28.81
DARMSTADT	.02	-0.52	-15.61	-20.03
GIESSEN	.26	-0.29	-8.67	-13.28
KASSEL	-0.03	-0.61	-13.77	-18.36
KOBLENZ	-0.31	-0.62	-14.71	-17.58
TRIER	-0.26	-0.58	-11.96	-14.45
RHEINHESSEN-PFALZ	-0.67	-0.99	-23.30	-26.05
STUTTGART	.39	-0.13	-1.48	-6.24
KARLSRUHE	.11	-0.43	-9.66	-14.18
FREIBURG	.39	-0.14	-0.87	-5.66
TUEBINGEN	.51	-0.01	1.64	-3.19
OBERBAYERN	.36	-0.07	-4.60	-8.70
NIEDERBAYERN	.70	0.25	7.86	3.41
OBERPFALZ	.15	-0.31	-5.42	-9.46
OBERFRANKEN	.05	-0.44	-7.31	-11.54
MITTELFRANKEN	.21	-0.23	-5.37	-9.59
UNTERFRANKEN	.08	-0.39	-7.92	-12.00
SCHWABEN	.36	-0.10	-1.81	-6.07
SAARLAND	-0.92	-1.12	-26.83	-28.56
BERLIN(WEST)	.98	0.20	9.80	2.68
FRG -0.07	-0.48	-11.83	-15.43	
GDR -2.18		-33.97		
NEWGER	-0.54		-17.11	

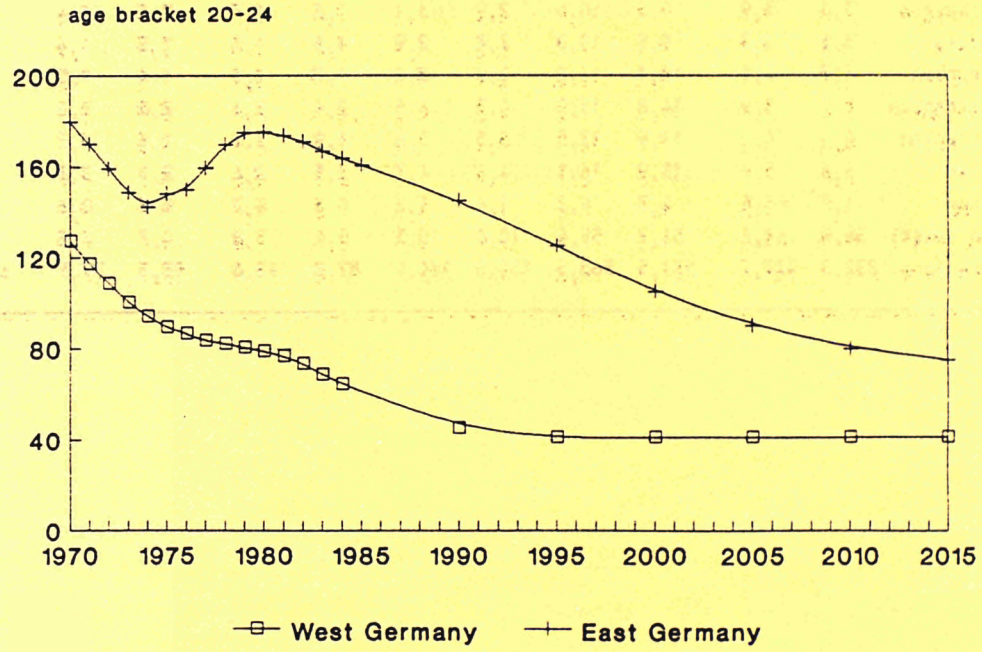
ANNEX

Table A.1. Number of people moving from Eastern Germany to the regions in Western Germany (x1000)

	1985-1989		1990-1994		1995-1999		2000-2004		2005-2009		2010-2014	
	male	female	male	female	male	female	male	female	male	female	male	female
Schleswig-H.	4,7	5,2	12,8	14,1	3,7	4,1	2,1	2,3	1,7	1,9	1,5	1,7
Hamburg	5,6	6,3	15,4	17,1	4,5	5,0	2,5	2,8	2,1	2,3	1,8	2,0
Braunschweig	3,2	3,8	8,6	10,4	2,5	3,0	1,4	1,7	1,2	1,4	1,0	1,2
Hannover	4,0	4,9	10,8	13,2	3,1	3,8	1,8	2,2	1,5	1,8	1,3	1,6
Luneburg	3,0	3,4	8,1	9,3	2,3	2,7	1,3	1,5	1,1	1,3	1,0	1,1
Weser-Ems	4,2	5,0	11,6	13,6	3,4	3,9	1,9	2,2	1,6	1,9	1,4	1,6
Bremen	2,9	2,3	7,8	6,2	2,3	1,8	1,3	1,0	1,1	0,8	0,9	0,7
Dusseldorf	12,1	13,7	33,1	37,2	9,6	10,8	5,4	6,1	4,5	5,1	3,9	4,4
Koln	9,5	10,3	25,9	28,0	7,5	8,1	4,2	4,6	3,5	3,8	3,1	3,3
Munster	5,9	6,4	16,1	17,4	4,7	5,0	2,6	2,8	2,2	2,4	1,9	2,1
Detmold	4,3	4,8	11,8	13,1	3,4	3,8	1,9	2,1	1,6	1,8	1,4	1,5
Arnsberg	8,7	9,6	23,6	26,1	6,9	7,6	3,9	4,3	3,2	3,6	2,8	3,1
Darmstadt	14,4	16,0	39,4	43,5	11,5	12,6	6,4	7,1	5,4	5,9	4,7	5,1
Giessen	4,1	4,5	11,3	12,2	3,3	3,5	1,9	2,0	1,5	1,7	1,3	1,4
Kassel	5,0	5,5	13,6	15,1	4,0	4,4	2,2	2,5	1,9	2,1	1,6	1,8
Koblenz	3,3	3,4	8,9	9,2	2,6	2,7	1,5	1,5	1,2	1,3	1,1	1,1
Trier	1,1	1,2	3,1	3,2	0,9	0,9	0,5	0,5	0,4	0,4	0,4	0,4
Rheinh.-Pf.	4,3	4,5	11,8	12,3	3,4	3,6	1,9	2,0	1,6	1,7	1,4	1,4
Stuttgart	15,3	15,6	41,6	42,3	12,1	12,3	6,8	6,9	5,7	5,8	4,9	5,0
Karlsruhe	10,5	10,9	28,6	29,6	8,3	8,6	4,7	4,8	3,9	4,0	3,4	3,5
Freiburg	8,2	8,5	22,3	23,2	6,5	6,7	3,7	3,8	3,0	3,2	2,6	2,7
Tubingen	6,7	6,9	18,3	18,6	5,3	5,4	3,0	3,0	2,5	2,5	2,2	2,2
Oberbayern	13,4	14,1	36,7	38,2	10,7	11,1	6,0	6,2	5,0	5,2	4,3	4,5
Niederbayern	3,6	3,9	9,9	10,6	2,9	3,1	1,6	1,7	1,3	1,4	1,2	1,3
Oberpfalz	3,5	3,7	9,5	10,0	2,8	2,9	1,6	1,6	1,3	1,4	1,1	1,2
Oberfranken	3,7	4,1	10,1	11,0	2,9	3,2	1,7	1,8	1,4	1,5	1,2	1,3
Mittelfranken	5,4	5,9	14,8	15,9	4,3	4,6	2,4	2,6	2,0	2,2	1,8	1,9
Unterfranken	4,4	4,6	11,9	12,5	3,5	3,6	1,9	2,0	1,6	1,7	1,4	1,5
Schwaben	5,6	5,9	15,2	16,1	4,4	4,7	2,5	2,6	2,1	2,2	1,8	1,9
Saarland	1,7	1,5	4,7	4,2	1,4	1,2	0,8	0,7	0,6	0,6	0,6	0,5
Berlin (West)	39,9	41,2	34,2	35,4	10,0	10,3	5,6	5,8	4,7	4,8	4,1	4,2
Western Germ.	222,2	237,7	531,5	568,5	154,6	165,4	87,0	93,0	72,5	77,5	62,8	67,2

Figure A.1. Projected age-specific fertility rates up to 2015 in the GDR





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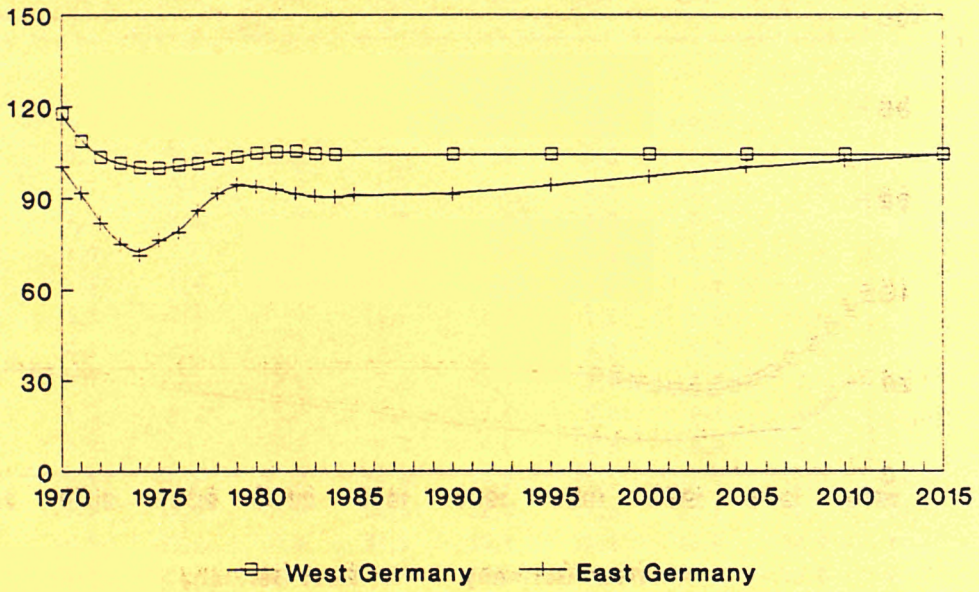
age bracket 25-29



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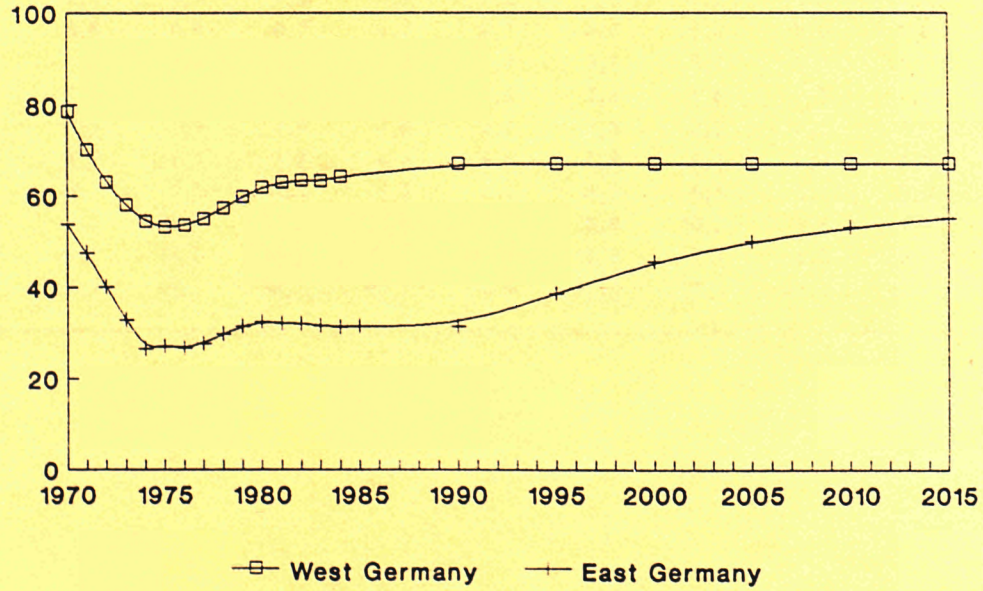

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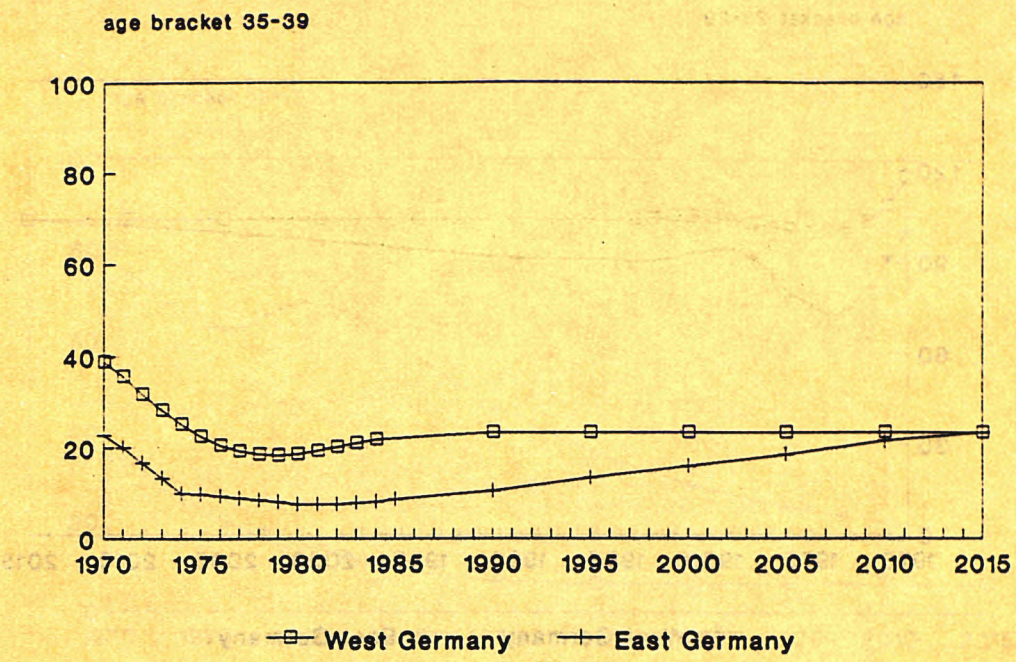

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Table A.2. Prevailing death-rates up to 1985 and projected death-rates up to 2015 in the GDR

	1975	1980	1985	1990	1995	2000	2005	2010	2015
MALE									
0- 4	3,9	3,9	2,7	2,6	2,5	2,5	2,4	2,4	2,3
5- 9	0,5	0,4	0,3	0,3	0,3	0,3	0,2	0,2	0,2
10-14	0,4	0,4	0,3	0,3	0,3	0,3	0,2	0,2	0,2
15-19	1,2	1,2	0,9	0,9	0,9	0,8	0,8	0,8	0,8
20-24	1,5	1,4	1,3	1,3	1,3	1,2	1,2	1,1	1,1
25-29	1,3	1,4	1,4	1,3	1,3	1,2	1,1	1,1	1,0
30-34	1,5	1,7	1,7	1,6	1,6	1,5	1,4	1,4	1,3
35-39	2,2	2,1	2,2	2,2	2,1	2,0	1,9	1,8	1,7
40-44	3,7	3,8	3,2	3,2	3,1	3,1	3,0	3,0	2,9
45-49	5,7	6,2	5,7	5,5	5,4	5,2	5,1	4,9	4,8
50-54	8,7	10,0	9,5	9,3	9,0	8,8	8,6	8,3	8,1
55-59	14,8	14,9	15,0	14,6	14,3	13,9	13,5	13,2	12,8
60-64	23,0	24,9	22,9	22,5	22,0	21,6	21,2	20,7	20,3
65-69	40,0	38,6	38,6	37,5	36,3	35,2	34,0	32,9	31,7
70+	108,1	108,5	109,3	106,2	103,1	100,0	96,9	93,8	90,7
FEMALE									
0- 4	3,0	2,8	2,0	2,0	2,0	2,0	1,9	1,9	1,9
5- 9	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2
10-14	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
15-19	0,4	0,5	0,4	0,4	0,4	0,4	0,3	0,3	0,3
20-24	0,5	0,6	0,5	0,5	0,5	0,5	0,4	0,4	0,4
25-29	0,6	0,6	0,5	0,5	0,5	0,5	0,5	0,5	0,5
30-34	0,8	0,8	0,7	0,7	0,7	0,7	0,6	0,6	0,6
35-39	1,3	1,2	1,2	1,2	1,1	1,1	1,1	1,0	1,0
40-44	2,0	2,0	1,7	1,6	1,6	1,6	1,6	1,5	1,5
45-49	3,1	3,1	2,8	2,8	2,7	2,6	2,5	2,5	2,4
50-54	4,9	5,1	4,7	4,6	4,4	4,3	4,1	4,0	3,8
55-59	8,1	7,7	7,2	7,0	6,7	6,5	6,3	6,1	5,9
60-64	12,5	13,7	12,3	11,8	11,3	10,8	10,3	9,8	9,3
65-69	22,5	21,4	21,2	20,2	19,1	18,1	17,1	16,0	15,0
70+	85,9	83,7	83,4	80,1	76,9	73,6	70,4	67,1	63,9

Table A.3. Projection of activity-rates in the GDR (convergence to Oberbayern-level in 2015)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	all ages (15-60)
MALE													
1985	50.7	70.0	79.7	89.0	91.7	91.7	86.9	94.9	90.4	82.4	23.4	4.2	81.4
1990	50.7	70.0	79.7	89.0	91.7	91.7	86.9	94.9	90.4	82.4	23.4	4.2	82.9
1995	49.4	72.5	81.5	90.6	93.0	93.3	89.1	94.7	88.2	72.4	19.9	4.0	84.5
2000	48.1	74.9	83.2	92.3	94.3	94.8	91.3	94.6	85.9	62.4	16.3	3.8	84.2
2005	46.8	77.4	85.0	93.9	95.7	96.3	93.4	94.4	83.7	52.4	12.8	3.7	85.2
2010	45.5	79.9	86.7	95.6	97.0	97.8	95.6	94.3	81.5	42.4	9.2	3.5	86.4
2015	44.2	82.3	88.5	97.2	98.3	99.3	97.8	94.2	79.2	32.4	5.7	3.3	87.9
FEMALE													
1985	58.2	75.1	84.9	90.4	93.9	93.2	85.4	89.0	77.3	29.4	10.4	2.1	82.5
1990	58.2	75.1	84.9	90.4	93.9	93.2	85.4	89.0	77.3	29.4	10.4	2.1	83.5
1995	56.2	77.6	83.4	87.3	90.0	90.9	83.3	83.6	71.5	26.2	9.1	2.0	81.1
2000	54.2	80.2	81.9	84.3	86.2	88.6	81.3	78.2	65.8	22.9	7.9	1.8	77.8
2005	52.1	82.7	80.5	81.2	82.3	86.3	79.2	72.8	60.1	19.7	6.6	1.6	75.8
2010	50.1	85.2	79.0	78.2	78.4	84.0	77.2	67.3	54.4	16.5	5.3	1.4	72.6
2015	48.1	87.7	77.5	75.1	74.5	81.7	75.1	61.9	48.7	13.2	4.1	1.2	69.6

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