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# Population and Labour Force Scenarios for the European Union: Acceleration, Continuity or Reversal

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Paper for the European Population Conference EPC99, 30 August – 3 September 1999,  
The Hague, The Netherlands

*This paper presents three Population and Labour Force Scenarios for the countries of the European Union. The scenarios project the population and the labour force by age and sex, both at the national and regional level (NUTS II classification). The national scenarios cover the period 1995-2050, the regional scenarios the period 1995-2025. The scenarios are based on an analysis of the determinants of population growth and labour force participation. The Baseline scenario aims to project the most likely development while the Low and High scenarios describe alternative developments in different economic and cultural contexts.*

## **1. Introduction**

The aim of this paper is to explore the future development of the population and labour force of the European Union. In a demographic and economic perspective the European Union is characterised by a wide diversity. Significant demographic disparities exist across countries in the fertility rate (high in the northern part, low in the southern part), life expectancy (high in the Mediterranean countries and low in Denmark and Finland) and net migration (Germany attracts most immigrants). Notable economic disparities are also apparent, with high labour participation rates in the Scandinavian countries and low rates in most southern countries. This heterogeneity is a reflection of

all kinds of developments in determinants, working at multiple geographic levels. Especially in times of low economic growth regional differences became wider (Dunford, 1993). However, there have been unifying tendencies in the demographic and economic fields too. According to Armstrong (1995) convergence at the broad EU level has been taking place, albeit at a very slow pace. Moreover, economic cohesion and social solidarity may be regarded as leading principles of the European Union (European Commission, 1994). Nevertheless, forces leading to diversity have been quite strong up to today and current disparities both at the national and regional level are a plain expression of this.

Because it is uncertain whether future demographic and economic trends will diverge or converge, three internationally and regionally consistent population and labour force scenarios have been compiled by Statistics Netherlands in commission of the European Commission (the Netherlands Interdisciplinary Demographic Institute has also participated in the compilation of population scenarios). The Baseline Scenario aims to project the most likely development in the coming decades. To a large degree, this scenario describes a future in which observed developments are continued. The Low and High Scenarios describe alternative developments in different economic and cultural contexts. The Low Scenario shows how the population and labour force will develop in a future characterised by a rather gloomy economic situation, resentment of cultural changes and low levels of institutional provisions. In contrast, in the High Scenario a flourishing economy, a positive attitude toward cultural changes and high levels of institutional provisions will present a boost for both population growth and labour force participation.

The scenarios at the national level cover the period 1995-2050 while the projection horizon of the regional scenarios is restricted to the period 1995-2025. For each of the 15 countries of the European Union and each region (NUTS II classification) the population and labour force by age and sex has been projected.

Overviews of the main findings of the national and regional population scenarios are reported by De Beer and De Jong (1996), De Jong (1998), Van der Gaag and De Jong (1997) and Van der Gaag et al. (1999). The main findings on the labour force scenarios have been reported by De Jong (1998).

## **2. Construction of scenarios**

The scenarios are a revision of an earlier round of population scenarios and labour force scenarios, compiled by Eurostat in the early 1990s. With the aid of the latest available observations, the previous scenarios have been monitored in order to give early warnings of errors, which may lead to a revision of basic assumptions of the scenarios. The results of the monitoring have been taken into account in the preparation of new scenarios.

Scenarios and forecasts made by the official institutes of the countries of the European Union have been given a thorough inspection. It is assumed that the makers of these scenarios and forecasts have a profound insight in the situation of their country.

Moreover, the Baseline scenario intends to correspond closely to the (medium variant of) official national forecasts provided by the Member States. A basic principle in the making of the Baseline scenario was that major deviations from the official forecasts should be well founded.

Scenarios can be defined as 'a coherent set of realistic statements about the future' (Crujisen, 1991). So, in adhering the scenario approach justice must be done to a large variety of background variables in relation to the target variables population and labour force. The background variables can be regarded as manifestations of underlying broad groups of determinants. Three groups of determinants have been distinguished: economic, socio-cultural and institutional. There are important linkages between these determinants and as a result the joint effect might be substantially larger than the simple summation of the parts.

The point of view that determinants constitute the kernel of the scenario approach, requires that the relationship between the determinants on the one hand and demographic behaviour and labour force participation on the other hand has to be established. Each scenario intends to give a rather comprehensive and systematic grouping of effects of determinants pointing in more or less the same direction.

The assumptions of the scenarios focus on expected effects of determinants working in a specific future. This explanatory approach entails that extrapolations of current trends are of minor importance, although in the short run the scenarios generally give a smooth continuation of the latest trends. In the long run, however, the scenarios may follow substantial different courses: sometimes an acceleration is envisaged while in other cases a reversal of current trends is expected.

On the basis of qualitative assumptions quantitative assumptions were specified. For the population scenarios assumptions on the target values of the total fertility rate, life expectancy and net migration were determined. For the labour force scenarios, target age patterns of labour force participation rates have been specified. Figures for the intermediate years between the latest observation and the last year of the projection horizon were established by the use of a hermite interpolation.

The computations for the population scenarios were based on the cohort-component model, in which the future population depends on assumed developments in fertility, mortality and migration. The computations with respect to labour force scenarios involve the combination of future patterns of labour force participation with the population scenarios. This has been done in a straightforward way: the Low, Baseline and High population scenarios are combined with the Low, Baseline and High scenarios on labour force participation respectively (also other combinations have been made, but it goes too far to elaborate on them in this paper).

In the presentation of the results, this paper will focus on two geographic levels, namely the European Union as a whole (illustrating general trends) and the regional level (illustrating geographic variations). The national dimensions will be omitted, notwithstanding that a hierarchical approach has been used. In the first step the assumptions were formulated for the 15 countries of the European Union. In the second step these national scenarios have been refined to the regional level. This 'top-down'

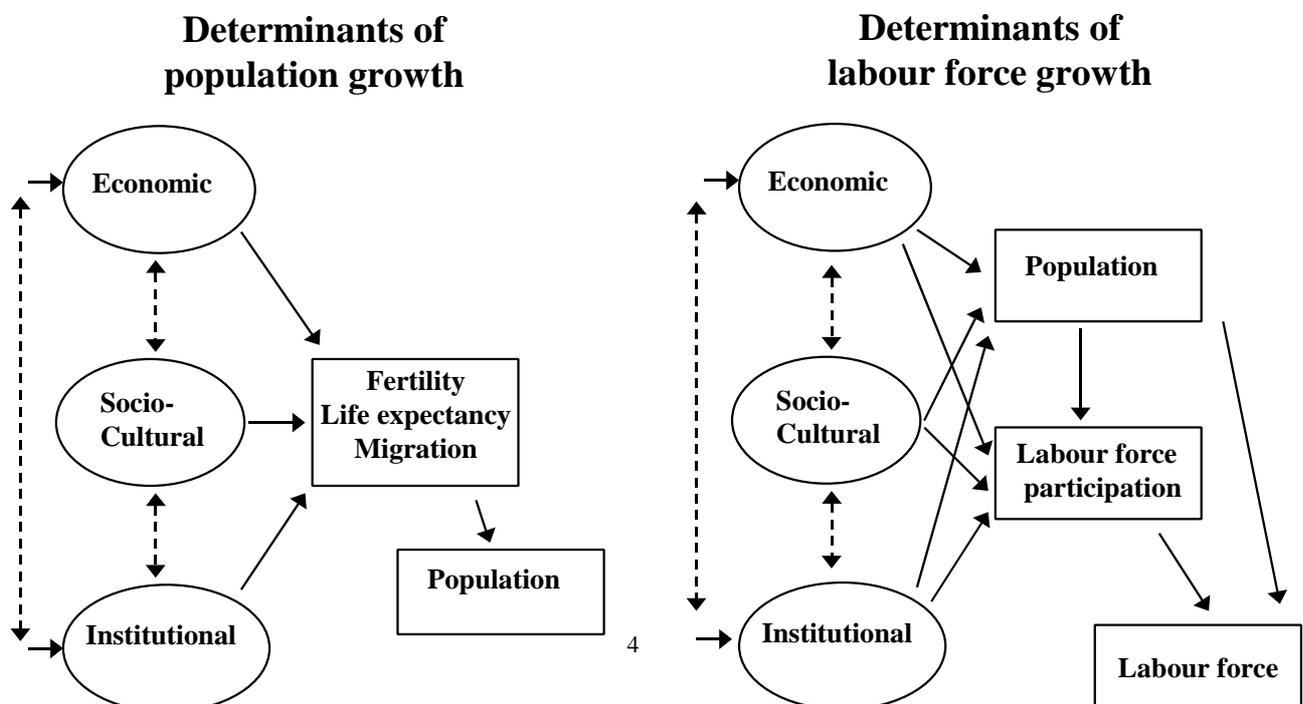
method was chosen because it was assumed that the national differentiation within the EU dominates the regional differentiation (at the NUTS II level) This being the case, maps showing the regional variability are to a large extent 'coloured' by the national differences.

### 3. Theoretical framework

The determinants which influence dynamics in both population growth and labour force participation can be clustered in three groups. The first group contains economic determinants and mainly refers to economic growth and economic structure. The second group contains socio-cultural determinants which are an expression of the ideological structure of the society: norms and values which bind individuals to a territory or a social group. The last group of determinants are constituted by effects of the political system of the society: institutional provisions and arrangements / regulations which influence the behaviour of individuals and households

The three groups of determinants can be regarded as *dimensions* of population and labour force dynamics. These dimensions not only exert a direct influence but also interact with each other. It may even be the case that a certain development in one dimension lays the foundation for a development in the other dimension. For example, policy makers may wish to stimulate labour participation among women with children. For this purpose, an extension of childcare provisions and more flexibility in working conditions might be a prerequisite. Especially in an economy with high economic growth, financial constraints on public budgets tend to be limited and all kinds of childcare facilities will be provided. On top of that, in an overheated economy the demand for labour may easily surpass the supply and in this situation employers will be encouraged to provide flexible working arrangements, especially aimed at attracting mothers with young children.

**Figure 1 Conceptual model underlying the population and labour force scenarios.**



The left part of *figure 1* shows the conceptual model, underlying the relationship between three groups of determinants and population growth. It is assumed that the economic, socio-cultural and institutional determinants influence fertility, mortality and migration, which in turn determines developments in the population. The right part of *figure 1* shows the model used to construct the labour force scenarios. To a large extent this model is a reflection of the previous one, however, in this case population is incorporated as being a determinant influencing labour force participation. Population is also in another way an important element in the model, as the combination of population with labour force participation rates lead to the actual number of persons in the labour force.

In these models, being a simplification of the complex reality, no feedback mechanisms have been assumed. One could imagine that serious shortages in the labour market might lead to political incentives to loosen restrictions with respect to immigration of foreign workers. A massive arrival of immigrants could exert a negative influence on participation rates. However, before such kinds of feedback mechanisms can be included in the conceptual model, still a great deal of research leading to univocal conclusions, has to be done.

#### **4. Effects of determinants on population growth and labour force participation**

##### *Economic determinants*

Economic growth and changes in the economic structure can be regarded as the most important elements of this group of determinants.

Many researchers assume a negative relationship between trends in the economy and fertility developments. The rapid fall in fertility that could be witnessed in most Western countries after the mid sixties can, according to the theory of the New Home Economics (Becker, 1991 and 1993) be explained by the rise in 'opportunity costs' of children. These costs can be considered as foregone income when a woman chooses to become a full time mother after the birth of her child in stead of participation on the labour market. The rise in opportunity costs since the sixties came about when the high rate of economic growth led to a steep rising demand for labour, offering women ample possibilities to participate in the labour market.

In constructing the current set of scenarios, however, a positive relationship between economic growth and fertility has been assumed. Macunovich (1990) has stated that the negative effects of opportunity costs can be less severe, as the earned income can be used for acquiring substitutes for childcare on the market. De Beer (1996) has shown that a strong relationship exists between fluctuations in economic growth and the fertility level. In a flourishing economy people have confidence of the future and get the number of children they wish to have. In contrast, during an economic recession

couples will postpone having children until the economy prospers again. The negative effect of low economic growth on fertility could especially be witnessed in the former communist countries of Europe where the fertility plummeted to historically low levels, as the transition from a centrally planned economy to a market economy since the late 1980s was accompanied by a deep economic recession.

Empirical evidence of the effect of economic growth on life expectancy is rather circumstantial. According to Kunst and Mackenbach (1995), a better economic position may have a positive effect on mortality. Conversely, it is possible that an economic recession may have a deteriorating effect on mortality. The downfall of the communist system in the Soviet Union has been accompanied by a fall in life expectancy. The economic situation is also relatively poor in most regions of Scotland and the north of France, which are also regions with high death rates. In the scenarios it has been assumed that in times of high economic growth the financial situation of the population is such that they can afford all kinds of (expensive) medical facilities which will have a positive influence of the life expectancy.

Empirical evidence points at a clear relationship between fluctuations in the economy and international migration (De Jong and Visser, 1997). A rise in economic growth may lead to an increase in immigration as it is accompanied by a creation of employment, a general improvement of incomes and easier entry regulations. Especially for labour migrants coming from outside Europe, economic prosperity acts as a strong pull-factor in this way. In the scenarios it has been assumed that economic growth will invoke an increase in the demand for labour which will result in a rise in immigration.

The importance of economic growth for the supply of labour stems from the effects on demand for labour. In the Community fluctuations in employment have coincided with variation in the Gross Domestic Product (European Commission, 1994b). Economic upturns have a positive effect on supply of labour while an economic recession has a negative effect due to the 'discouraged worker' effect.

There have been structural changes in the sectoral pattern of employment in the European Union. In common with most other industrial parts of the world, there has been a shift from agriculture and industry towards services (European Commission, 1991). Especially in times of high economic growth the rate of expansion of services was notable. With the sectoral shift also the content of the jobs changed: the manual aspect diminished and other skills became important. Flexibility in the labour market became essential as an inflexible labour market might damage the competitiveness of the European economy. Especially the job opportunities for women with children grew, due to a greater flexibility of working arrangements. In the labour force scenarios also a positive relationship is expected between economic growth and labour force participation.

### *Socio-cultural determinants*

In the theory of the 'second demographic transition' (Van der Kaa, 1988 and Les-thaeghe and Veleye, 1992) a connection is postulated between the evolution of the so-

cial system and trends in fertility. The rapid social and economic changes in the European societies since the year 1965 can be characterised as a process of modernisation. The resulting welfare state offers opportunities for high living standards to families and individuals. The second demographic transition consisted of a sequence of socio-cultural developments: it started with an increase of divorces, followed by postponement of marriage and having children. Next, cohabitation became more and more accepted, not only as a union ('paperless marriage') between men and women, but also as a frame for childbearing. Women remained longer in full-time education and participated more in the labour market. Women had to face the difficult choice between career and family and in most cases the choice for having children was only made if it was likely to contribute to the self-fulfilment of the woman and her partner.

The Human Capital theory (Mincer and Polachek, 1974 and Becker, 1975) can be considered as a mixture of an economic theory and a socio-cultural theory. Human capital consists of knowledge and experience a person has. In the wake of emancipation more and more women followed education during many years and postponed having children. For women with a high level of educational attainment it is attractive to increase the human capital even further by getting work experience and realise a high income in this way. This will lead to either a further postponement of motherhood or even completely giving up having children after all.

In the scenarios it has been assumed that a socio-cultural climate permeated by 'individualism' and 'modern lifestyles' will have a negative effect on fertility.

By the use of the variable life-style the effects of socio-cultural determinants on life expectancy can be visualised. It is well known that married people live longer than those who are not (Stack, 1998) because living in a family offers social protection. On the other hand, living alone is associated with unhealthy life-styles (Van Hoorn and De Beer, 1995). Processes such as emancipation and individualism posit a stimulus to proportions of singles in a society (Kuijsten, 1996). In the scenarios it has been assumed that living in a traditional society, having a high marriage rate and a low proportion of singles, will have a positive influence on the life expectancy.

It might be expected that in modern societies cultural barriers against persons coming from another part of the world are less severe than in traditional societies. Also the fact that modern societies are characterised by individualistic lifestyles, entails a stimulus to migration as persons become less attached to the region where they grew up. In the scenarios it has been hypothesised that in traditional societies people are entrenched in their own system of values and norms, depressing the emigration rate and holding away foreigners.

There has been a continuous increase in the level of educational attainment of the population in all countries of the European Union (European Commission, 1996). On top of that, a widespread convergence of the average educational level of women towards that of men has taken place. In most countries the increasing participation in education has been accompanied by a significant decline in labour force participation rates of young people. However, in countries such as Denmark, the Netherlands and the United Kingdom, a new trend has emerged: more and more students combine work and employment (mostly part-time jobs).

The rise in educational attainment may not only lead to a higher qualified work force but also to a larger availability of labour supply as higher levels of education tend to go hand in hand with higher labour force participation. This is especially the case for women as activity rates of women are higher among those who have completed university or the equivalent (European Commission, 1993). The increasing involvement of women in the labour market has been underpinned by drastic changes in the socio-cultural environment. Although in the Southern Member States and Ireland traditional marriage and childbearing patterns are still dominant in the Western part and especially the Northern part of the Union traditional lifestyles have given way to more modern and complex patterns. The taboo for woman to combine paid work with having children has largely vanished. To a large extent Scandinavian women continue to work after and between the birth of children (Ellingsæter and Rønson, 1996). Cohabitation has become popular while marriages have become less stable, indicated by high divorce rates. Financial pressures of being divorced might draw women back into the labour market (Rubery, Smith and Fagan, 1996). In the labour force scenarios it is assumed that a modern socio-cultural climate will go together with a high labour force participation rate.

#### *Institutional determinants*

Institutional provisions can have a large impact on fertility. This is clearly illustrated in the case of Sweden: according to Hoem (1993) and Sundström and Stafford (1992) the tax and family policies stimulating both fertility and women's paid work has induced a considerable increase in the fertility level in the 1980s. Policy elements that have been used to encourage the combination of work and fertility are subsidised day care, flexible working hours, financial support to families with children and a progressive structure of taxes in combination with separate taxation of spouses. The absence of provisions for families with children may have a depressing effect on the fertility level, in contrast. Chesnais (1996) states that there are no significant fiscal rebates in Italy for families with children and that the standard of living is markedly reduced with the arrival of each additional child. As a result, couples react by having only one child. From this discussion it can be concluded that the existence of financial rebates for families with children and the provision of facilities for child care are expected to have a positive effect on the fertility level in the scenarios.

According to Van Hoorn and De Beer (1995) the health care system, such as the availability of medicines and treatments, has an important effect on the expectancy. Future advances in medical technology have the potential of greatly extending the life span (Manton, 1991). In the population scenarios it has been assumed that the availability of ample institutional arrangements will have a positive effect on the life expectancy.

With respect to migration the institutional context mainly refers to migration policies and regulations. Nowadays, migration policies of most countries of the European Union are designed to regulate migration by tight immigration rules and encouraging return migration. Especially the increasing number of asylum seekers since the middle of the eighties led to political reactions. The role of international conventions are also of

great importance. To be mentioned more specifically are the Geneva Convention (which protects refugees from being returned to a country in which they face persecution) and the Schengen Agreement (prevention of asylum shopping between countries having signed the Agreement). In the scenarios it is assumed that restrictions placed on immigration are less severe in case of countries with liberal policies.

State family policy can be regarded as having a fundamental influence on the labour supply of women. In the Scandinavian countries the family and labour market policies are largely organised to facilitate the reconciliation of women's employment with parental responsibilities. The pension system is of paramount importance for the participation of elderly people. The statutory retirement age for men is 65 in most Member States. For women the variation in retirement age is larger. Most countries have witnessed a trend towards early retirement. It is possible to curtail this falling trend of participation among elderly people by extending the flexibility of working arrangements, such as offering the possibility to work part-time in stead of the choice between either working full-time or retirement. Furthermore, an active labour market policy might be pursued aiming at special groups, such as long-term unemployed and young first time job seekers. Such a policy consist of measures like wage subsidies, training programmes and business start-up schemes. In the scenarios it has been assumed that an active labour market policy may stimulate labour force participation.

#### *Demographic determinants*

The age structure of the population influences labour force participation rates. The population of the European countries is going to age at an increasing pace in the future. This might pose a threat to the sustainability of the current public pension systems. Nowadays European governments are taking measures to contain the costs of future pension commitments. In order to raise participation rates among elderly people, their policy might be aimed at stricter eligibility rules and raising statutory retirement age. In the Baseline scenario it is assumed that the ageing of the population will have a positive effect on labour force participation rates (of persons of 50 years and over).

Also external migration may have an impact on participation rates. In case of shortages on the labour market immigrants may fill the gap. However, given persistent high unemployment rates in a lot of European countries, immigrants can be seen as competitors for jobs, making the entrance of certain population categories (such as mothers with children) on the labour market more difficult. In case the larger part of the immigrants does not participate in the labour force, immigrants even exert an extra downward effect on the participation rate. In the Low scenario (and to a lesser extent in the Baseline scenario) it is assumed that the arrival of immigrants (such as asylum seekers) will have a depressing effect on labour force participation..

## **5. Three population and labour force scenarios**

### *Low scenario*

Economic stagnation is supposed to be predominant in all EEA countries, but worse in poorer countries than in richer countries. Unemployment is high and constitutes one of the fundamental problems of societies. As times are harsh people tend to cling to their own traditions and habits. Children will stay longer at the parental home, because it is hard to find cheap houses. This will lead to a postponement of marriage and family formation. Due to economic problems (an unemployed husband) existing marriages may come under pressure, which will have a stimulating effect on divorce. Other socio-cultural changes, such as cohabitation and having children outside a marriage, will slow down. Policies will in general be quite restrictive and due to deficits public budgets are cut, which will lead to limited institutional provisions. In general this scenario can be characterised as being a scenario in which current disparities will largely remain constant or even increase, so in essence it is an divergence scenario.

In the Low population scenario mothers have small families, the increase in life expectancy is reduced and the migration surplus is relatively modest (in one country, Ireland, there is even negative net migration). As a results, population growth will be low.

With respect to the labour participation the following characteristics can be mentioned. The opportunities for young people to combine work and school attendance will decrease due to fierce competition on the labour market. Youngsters tend to stay longer in (full-time) education in order to enhance career opportunities. The possibilities to combine this with a (part-time) job are very limited. The general conditions for men and women to be active on the labour market will not improve, i.e. the possibilities of combining the care for children with professional labour will not improve. The introduction of more flexible forms of employment contracts stagnates. For older persons activity rates will be low because of the priority of employers given to younger persons. The observed trend towards early retirement will continue in the near future.

#### *High scenario*

In the High scenario economic growth is relatively high. The economic boom in combination with mild labour taxation will increase the demand for highly qualified labour. Educational levels of European citizens will increase in a high pace. So, young people will stay longer in the educational system. Also other socio-cultural changes will spread rapidly over the European Union. Children will leave the parental home at an early age. They might live alone for some time or start a consensual union right away. Many couples consider to marry if they arrive at an age that children are wanted or they might have children within the consensual union, which bears all characteristics of a genuine marriage. Policies tend to be liberal and there the array of institutional provisions will be generous. The future according to this scenario is less based on a continuation of current trends but more a possible future if the trends in European countries are determined by a similar evolution. So, this scenario can be characterised as being a convergence scenario.

The High population scenario assumes a high average number of children, a high life expectancy and a high surplus of immigrants. As a result, population growth will be high in this scenario.

In the High scenario of labour force participation it is assumed that in the long run quite similar patterns in labour force participation rates will emerge and more or less correspond-

ing levels in the countries of the European Union. In this scenario Denmark and Sweden are considered as forerunners. Flexible forms of employment conditions spread over all sectors. Especially a growing service sector offers opportunities for women to find employment. All this stimulates for women the combination of childrearing and economic activity. Due to the high economic growth entry into the labour market will increasingly become easier for all kinds of population categories: youngsters, elderly people, mothers and unemployed males.

#### *Baseline scenario*

In this scenario it is assumed that developments observed during the last decade will continue, at least in the short run. This means in terms of economic development that the economy continues to grow. This economic growth causes a moderate creation of new jobs and unemployment rates will slightly decrease. In the socio-cultural context, changes which are already taking place will hold on. There will be a moderate extension of the package of institutional provisions. In most countries the Baseline scenario closely corresponds to the target value according to the Medium variant of the official national forecasts, drawn up by the member countries of the EEA. To the extent that the Medium variant of the national forecasts is assumed to describe the most plausible future, the Baseline scenario can be interpreted as a description of a plausible future development.

With respect to the population scenarios the target levels of fertility, life expectancy and migration are in between the Low and High scenarios. As a result, population growth will be moderate.

The main characteristics with respect to the labour force scenario are as follows. The labour participation rates of youngsters will show moderate developments: although young people are less inclined to postpone entry into the labour market (compared with the low scenario) the job opportunities for part-time jobs are still relatively limited. Also the labour participation of mothers will show a modest increase. Norms and values toward the combination of paid labour with raising young children will be more permissive than they used to be. Nevertheless, this will only lead to a modest increase in participation due to the fact that the growth of part-time jobs (in the service sector) will still be limited. A reorganisation of the labour markets in the sense of more flexibility in working-time arrangements stagnates. The trend towards early retirement will slow down in the short run. However, the priority given by governments to the absorption of young people in the labour market will prevent a rise in participation rates in the short term. However, in the long run ageing of the (working) population may lead to shortages of labourers. This may lead to a rise in salaries and may induce older employees to stay longer in the labour market.

#### *Regional scenarios*

The regional scenarios consist of a specification of the Low, Baseline and High scenarios to the regional level. The used regional level is the NUTS II and the scenarios cover the projection period 1995-2025.

In compiling the regional scenarios it has been assumed that national differences within the European Union dominate the regional differences (at the NUTS II level). This was one of the main conclusions of the previous regional scenarios, stated in the report 'Regional population and labour force scenarios for the European Union' (NEI, 1994). For this rea-

son, in this project a 'top-down' method has been used, in stead of a 'bottom-up' approach. The main assumptions of the scenarios concern the theme of divergence/ convergence of regions within a country.

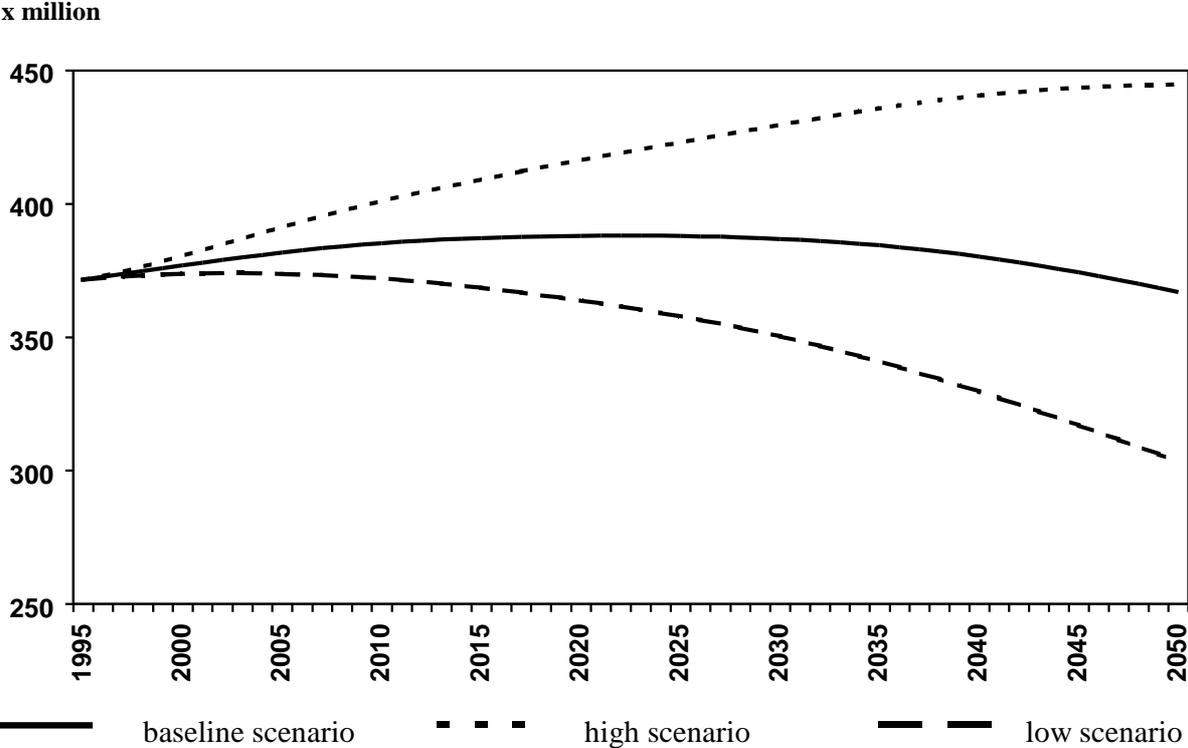
In the Low scenario it is assumed that the current regional deviations from the national level will persist in the future. However, the combination of demographic development at the regional level and participation trends on the national levels lead to changing participation rates in the future. In the High scenario significant convergence between the regions is foreseen. Also in the Baseline convergence is assumed, although the degree of convergence is smaller.

**6. Main results**

*Population*

Population growth in the European Union has slowed down considerably over the last 25 years and future growth will probably stagnate around the year 2020. In the period 1950-1995 EU population grew from 296 to 372 million people. If current demographic trends persist the population will continue to increase to 388 million in 2025, according to the Baseline scenario (graph 1). The population will start to decline around 2020 and by 2050 a total

**1. Population, 1995-2050**

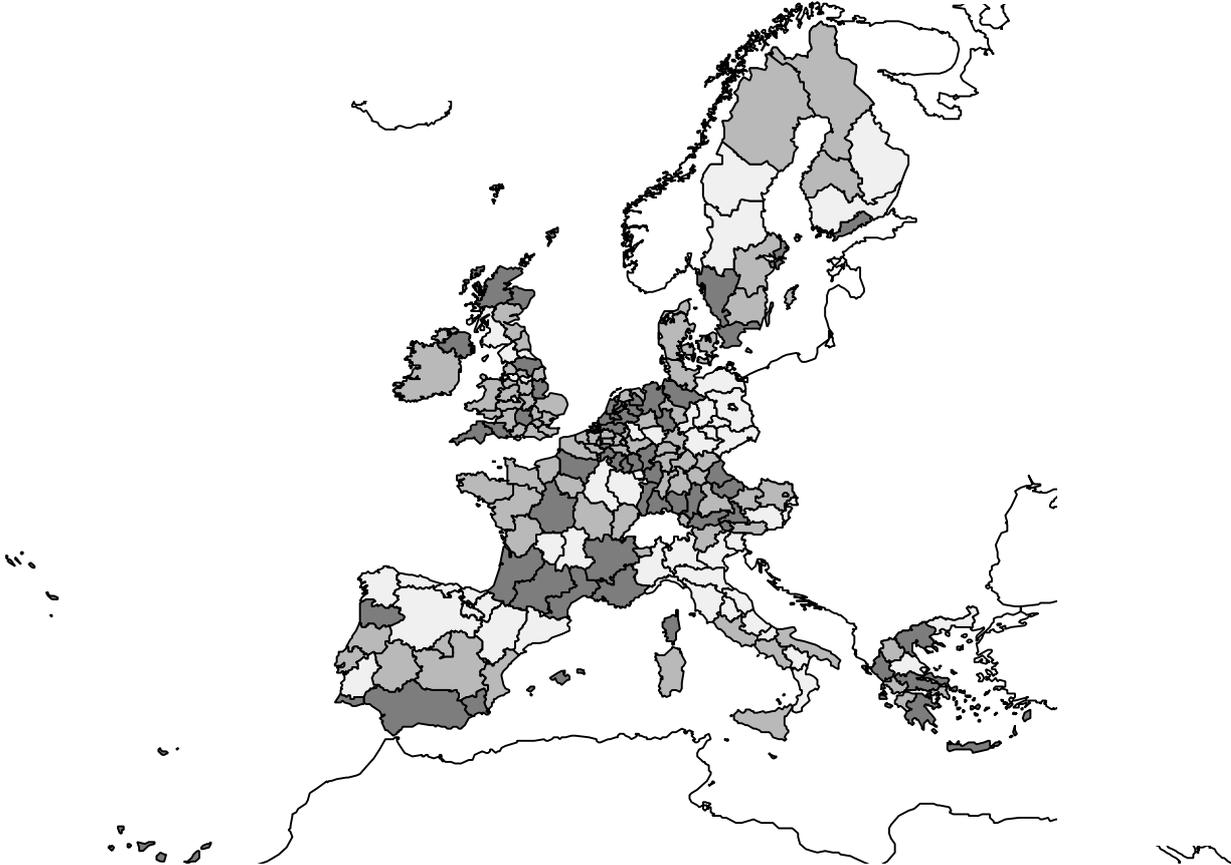


population close to the current figure is expected.

If fertility recovers, life expectancy increases strongly, and migration will remain high, as is assumed in the High scenario, a faster growth is expected and the population of the EU will rise to 445 million people by 2050. In the low scenario, on the other hand, population growth will become negative in the beginning of the next century. This scenario expect a population of 303 million in 2050.

Since the early 1990s a lot of regions in the European already had to face a declining population. These regions are mainly found in southern Europe and in eastern Germany (Eurostat, 1999). According to the Baseline scenario, in the period 1995-2025 the number of regions facing a negative population growth will grow even further (graph 2). Several regions in France, Sweden, Finland and the United Kingdom will also be confronted with a population decline. Regions, which currently have to deal with a declining population, are characterised by less favourable socio-economic characteristics such as low income levels and high unemployment rates (Eurostat, 1999)..

**2. Population size, Baseline scenario 2025 (1995=100)**



In the period 1995-2025 also a lot of regions will continue to grow in population. This applies in particular to the Netherlands, but also in Greece, Germany, the United Kingdom a great deal of regions will have a growing population. Especially in the more densely population regions of the European Union this might lead to problems on the housing market. This is certainly the case in the Netherlands where the government has already taken measures, in the sense that a huge building program has been initiated which will result in several new towns in the already densely populated heart of this country ('Randstad' area).

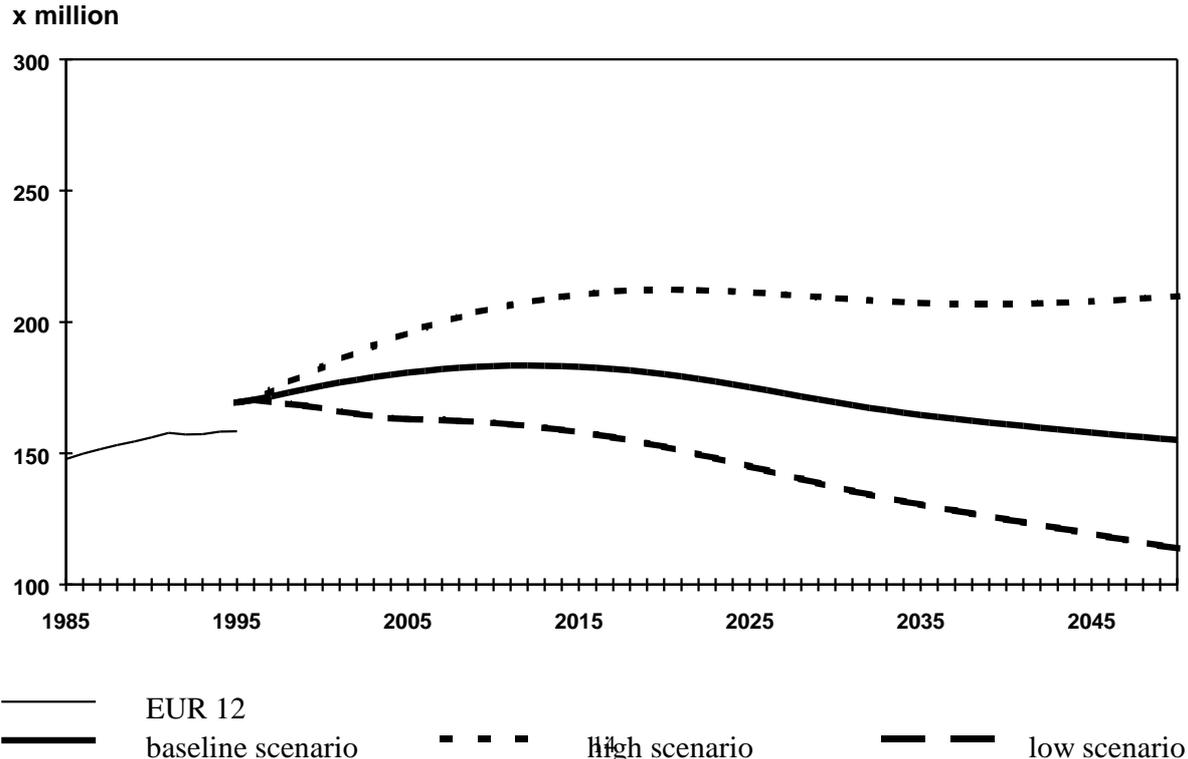
Labour force

extent the future development of the labour force resembles that of the population growth of the population, the growth of the labour force will stagnate around 20 (graph 3). According to the Baseline scenario about 180 million people will be 20, against nearly 170 in 1995. Up to about the year 2005 the labour force will both a growing population at working ages and a considerable rise in female



participation. Hereafter, the contribution of the population will be negative as at young ages as well as prime working ages the population start to decline. The fact that the labour force continues to increase is almost entirely caused by an ongoing rise in female participation. The labour force is set to decline after 2020 and by 2050 it will count around 155 million

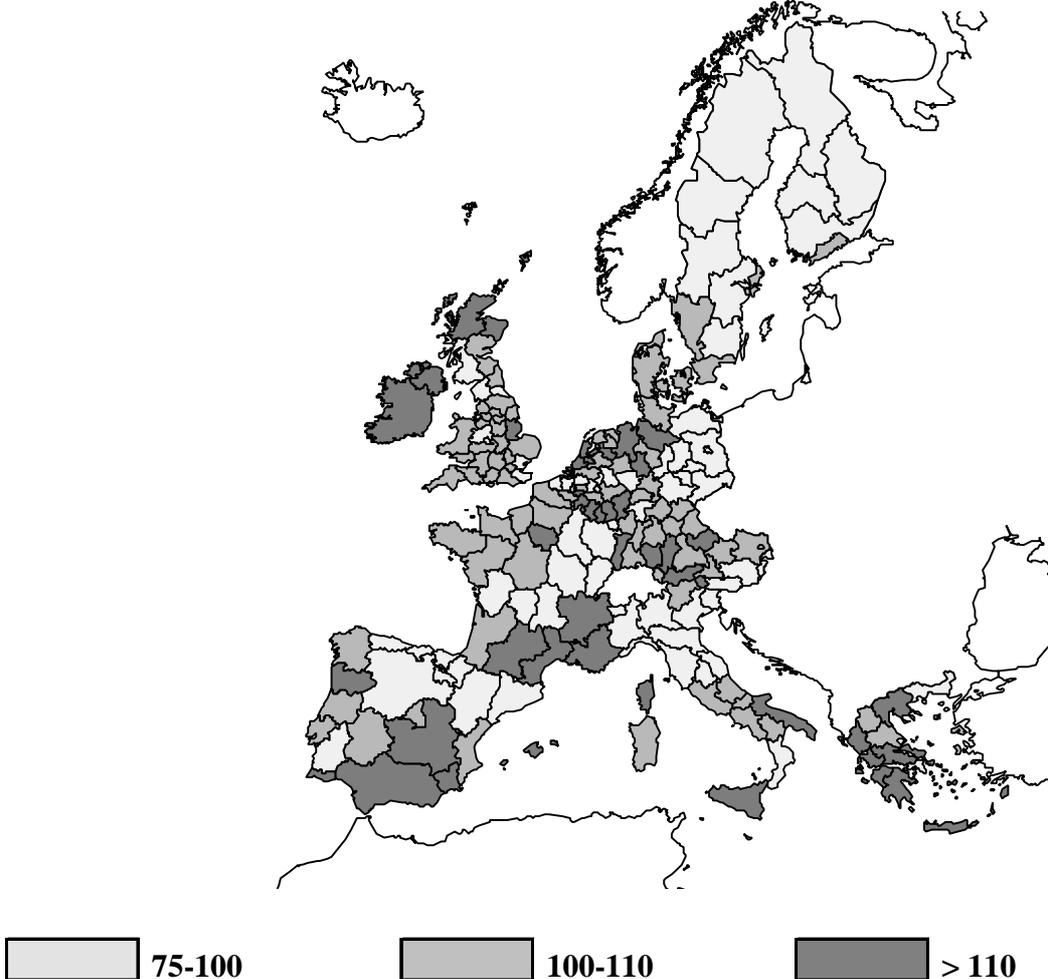
3. Labour force, 1985-2050



people. As it has been assumed that labour force participation rates will remain constant since 2020, the decline in the labour force is due to the decline in the population at (prime) working ages.

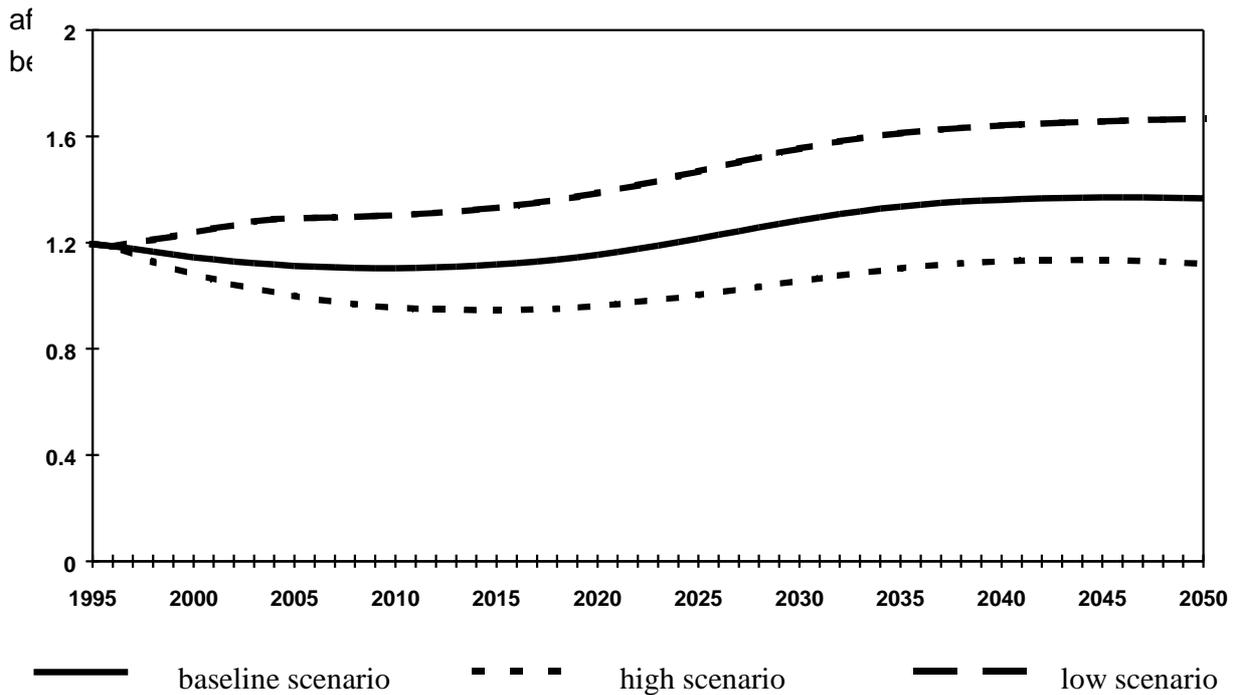
At first sight, the map showing regional differences in the growth of the labour force in the period 1995-2025 bears a close resemblance with the regional map of growth of the population (*graph 4*). However, a closer inspection reveals that the number of regions with a growth of more than 10% in the considered period is much smaller in the regional map showing labour force growth. Regions with a shrinking labour force are to be expected in most regions of Sweden and Finland, a lot of regions in France, the former Eastern Germany and the northern part of both Spain and Italy.

**4. Labour force, Baseline scenario 2025 (1995=100)**

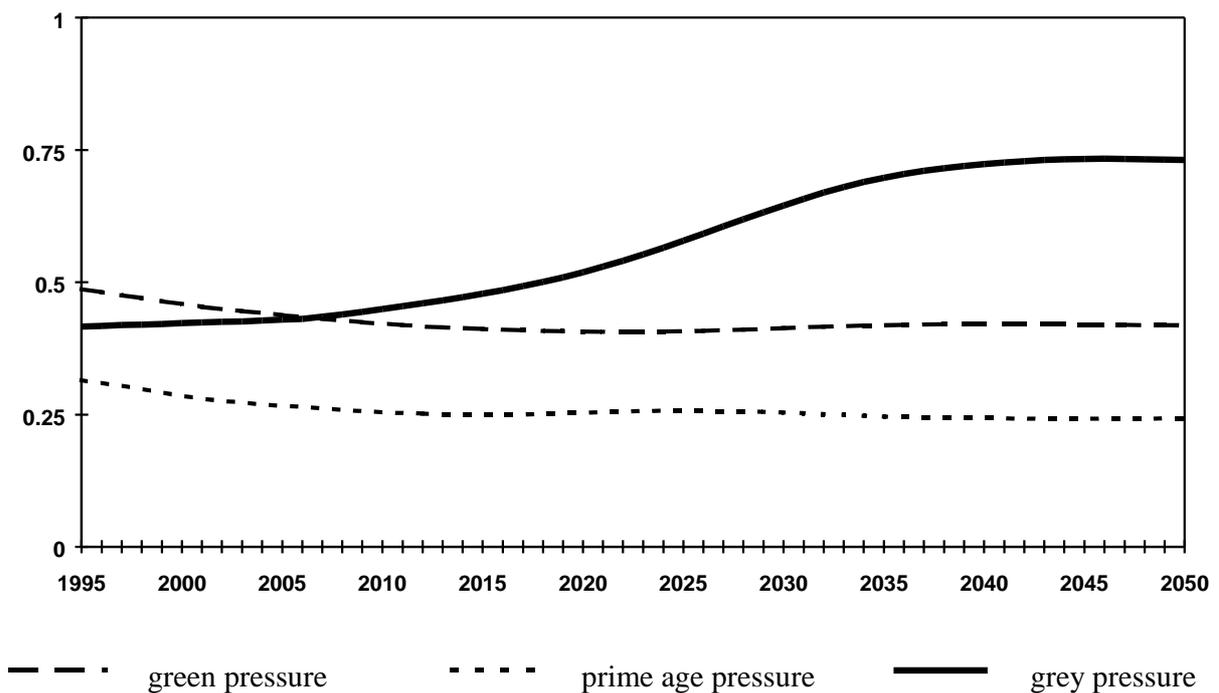


## Dependency ratio

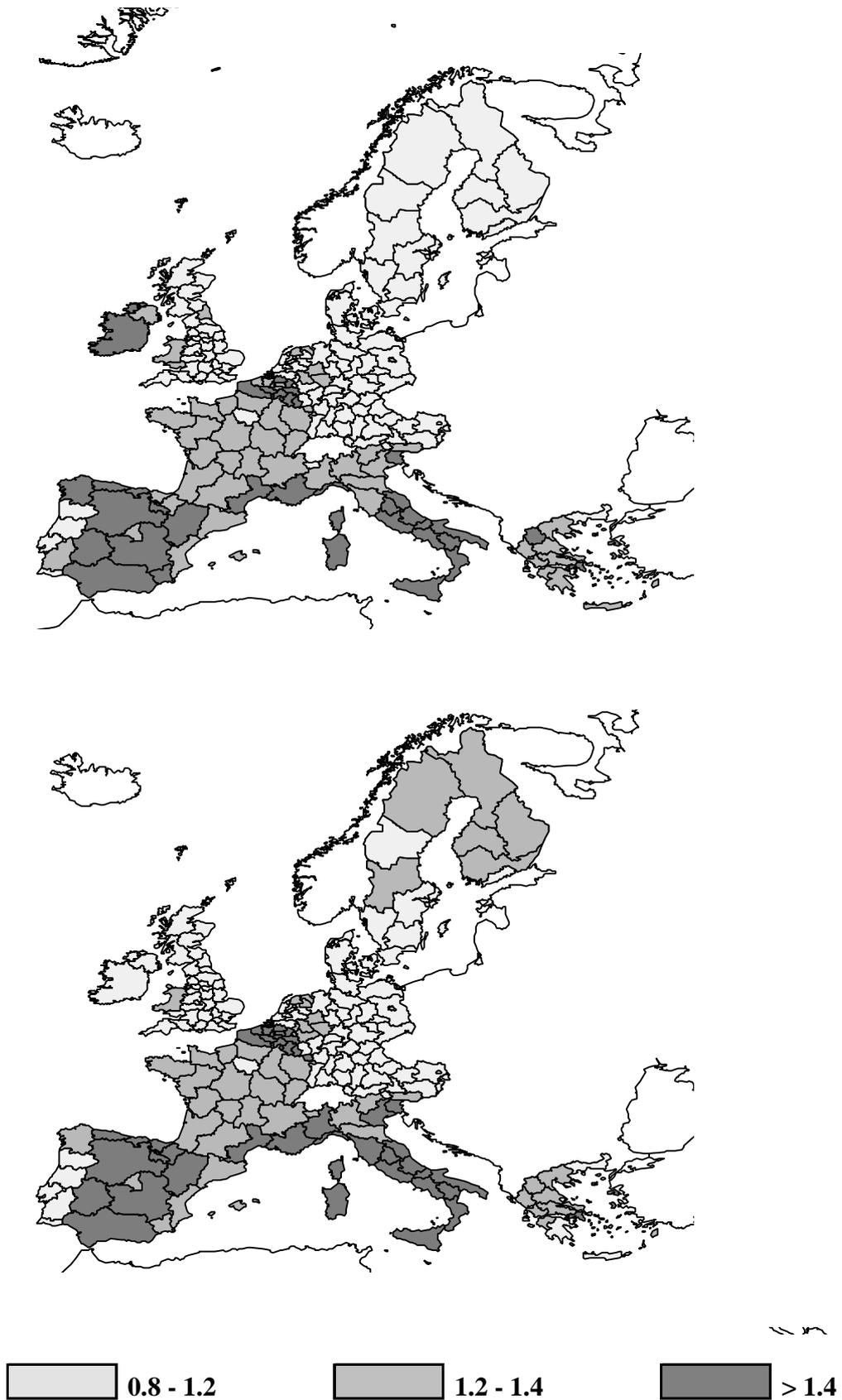
The dependency ratio is defined as the population outside the labour force divided by the labour force. This ratio gives an indication of the pressure laid upon the labour force to take care of that part of the population that does not belong to the working population. According to the Baseline scenario this ratio is expected to decline up to 2010. However, hereafter the decline will be reversed into a rising course, due to a speeding up of the ageing the population of the EU. Also in the High scenario the dependency ratio is expected to fall in the first decades of the next century. In this case the fall is more rapid, due to a combination of high participation rates with substantially more people at prime ages. Also in this scenario the fall of the dependency ratio will come to an end and it will be reversed in a rising trend



## 6. Green pressure and grey pressure, Baseline scenario



7. Dependency ratio, 1995 (above) and 2025 Baseline scenario (below)



According to the Baseline scenario the 'green pressure' (non-working population aged 19 and below related to the working population) exceeds the grey pressure (non-working population aged 60 and over related to the working population) up to around 2025. However, the grey pressure will gain strength and in particular after 2010 when the ageing of the post-baby boom causes a sharply increased flow of people leaving the labour market. At the midst of the 21st century the grey pressure will be nearly twice as high as the green pressure. The prime-age pressure (non-working population aged 20-59 related to the working population) will be the smallest of the three components of age dependency. After a short period of fall, it remain nearly stable after 2010. The level of the prime age pressure will be about half of that of the green pressure.

The differences between the dependency ratios according to the three scenarios reflect the impact of different assumptions with respect to the participation rate and demographic trends. In particular the following factors are in play: attitudes towards further education (positive in the High scenario), availability of childcare facilities (ample in the High scenario), age of retirement (high in the High scenario) and difficulty of finding a job (low in the High scenario).

In particular the development of the dependency ratio in the Low scenario will have profound consequences for systems of social protection. It may raise societal or political reactions in order to deal with the problems at hand. On the one hand it might be necessary to cut in all kinds of provisions and especially the pension allowances might be at stake as they are for the most part funded by contributions of the working population. Another solution to the problems might entail that the working part of the population has to donate a larger part of their income to the non-working part. So, the question might be to what extent the future population will be altruistic. These kinds of problems will be prevented in the High scenario (and to a lesser extent in the Baseline scenario), not only because the working part of the population is much larger but also because, due to the high economic growth, incomes will be higher and it is always easier to donate only a minor part of your salary (which as a matter of fact might be more money than in the Low scenario).

The geographical context is of great importance in this context. Some regions are already in the less desirable situation of having high dependency ratios and the question may be raised whether this will change for the better in the future. Looking at the regional map, displayed in *graph 7*, low dependency ratios are generally found in capital cities. Factors at play may be a flourishing economy and a low percentages of children. Most regions of Germany, the Scandinavian countries, the United Kingdom and Portugal are also characterised by low figures. High dependency ratios generally occur in regions where there is an above average proportion of both children and elderly persons outside the labour force. These regions are mainly found in Ireland, Belgium, the Southern part of Italy and central Spain. Projections indicate that the situation will get even worse in the future, for a large part due to an ageing of the population of many regions (Eurostat 1999). By 2025 the number of regions with high dependency ratios will have grown. Especially a lot of regions in Sweden and Finland will have significant higher dependency ratios in the future. On the other hand a major decrease is expected in the case of Ireland.

## 7. Conclusions and implications

This paper has examined future demographic and economic trends within the framework of unity and diversity. In examining the nature of these trends, it has been stated that these are rooted in developments in determinants. Three broad groups of determinants, i.e. economic, socio-cultural and institutional, constituted the building-stones for alternate scenarios. The Low scenario might be considered as some kind of worst case scenario, depicting a rather gloomy future leading to a shrinking population and labour force in the short run. The Baseline scenario is in essence a continuation of current trends and both population and labour force will continue to grow, although this trend will be reversed in the long run. In the high scenario a rather attractive future is visualised: high economic growth, permissive attitudes towards modern roles for women and a society endowed with all kinds of institutional facilities cause both the population and labour force to grow at a rapid pace. The High scenario can also be characterised as a uniformity scenario. For instance, labour participation levels for women will converge across countries. Especially in southern Europe a notable rise is foreseen which will largely fill up the current gap with the Scandinavian countries. Also within countries regional disparities are scheduled to even out to a large extent. The argument put forward in the Low scenario is that regional disparities will continue to exist, so this scenario addresses the diversity theme. It is envisaged that only under a rather bad demographic and economic constellation the current heterogeneity will persist. The Baseline scenario represents the already existing trend of slow convergence: regional disparities in demography and labour participation will narrow slightly.

The foreseen trends in population and labour force have important social and economic implications. For instance, in case of a growing population, as is foreseen in both the Baseline and High scenario, more dwellings are needed. However, probably the most important implication refers to the relationship between the non-active and active part of the population. In the Low scenario in the short run and in both the Baseline and High scenario in the long run, this ratio is going to rise. While in the latter two scenarios this is a consequence of the inevitable ageing of the population of the EU, in the former scenario also a falling participation among men is at play (among women the steady rise in participation of the latest decades will come to a standstill). In the Low scenario the society may be heading huge social tension. A difficult choice has to be made between curtailing expenditures on all kinds of provisions (e.g. unemployment and pension allowances) or put the burden on the working part of the population (which entails e.g. a higher income taxation in order to sustain the non-working part). In the Baseline scenario and especially in the High scenario these kinds of problems can be averted for the coming two decades. So, economic growth is a prerequisite for preventing the rising costs connected with all kinds of provision offered by the welfare state. The regional dimension is in this context of paramount importance. Not only as yet, but also in the future most regions belonging to Spain and Belgium and furthermore a lot of regions in the Southern part of Italy and France have high dependency ratios. The financial pain of this unfavourable ratio might be alleviated by characteristics of the pension systems. Countries such as the Netherlands and the United Kingdom have pension-funds with a huge amount of capital, stemming from the tradition to save in order to supplement the basic security provided by the state. In contrast, France does not have pension funds while in Belgium they are rare. This means that an extra dimension is added to the problem if the factor

of pension funds is taken into consideration. Especially the countries currently facing an unfavourable dependency ratio are not endowed with rich pension funds. This might create political conflicts within the EU as the richer regions may bear the brunt of the undesirable level of the dependency ratio in the poorer regions. So the EU is facing a major challenge of how to attain high economic growth and how to spread it evenly over all regions of the community.

### *References*

Armstrong, H.W., 1995, Convergence among regions of the European Union, 1950-90, *Pap. Reg. Sci.* 74, pp. 142-152.

European Commission, 1991, *Employment in EUROPE 1991*, Directorate-General for Employment, Industrial Relations and Social Affairs. Brussels, Luxembourg.

European Commission, 1993, *Employment in EUROPE 1993*, Directorate-General for Employment, Industrial Relations and Social Affairs. Brussels, Luxembourg.

European Commission, 1994, *Competitiveness and cohesion: trends in the regions. Fifth periodic report on the social and economic situation and development of the regions in the community.* Brussels, Luxembourg.

European Commission, 1994b, *Employment in EUROPE 1994*, Directorate-General for Employment, Industrial Relations and Social Affairs. Brussels, Luxembourg.

European Commission, 1996, *Employment in EUROPE 1996*, Directorate-General for Employment, Industrial Relations and Social Affairs. Brussels, Luxembourg.

Eurostat, 1999, *Regional population decline in the EU: Recent trends and future perspectives.* *Statistics in focus*, 1999.

Eurostat, 1999, *Regional population ageing of the EU at different speeds up to 2025.* *Statistics in focus*, theme 1, 4/1999.

Becker, G.S., 1975, *Human capital, a theoretical and empirical analysis, with special reference to education.* National Bureau of Economic Research. New York.

Becker, G.S., 1991, *A Treatise on the Family.* Revised and Enlarged Edition. Cambridge, Mass., Harvard University Press.

Becker, G.S., 1993, *The economy of looking at behaviour.* *Journal of Political Economy* 101, pp. 385-409.

Beer, J. and A. de Jong, 1996, *National population scenarios for countries of the European Economic Area.* *Maandstatistiek van de bevolking*, July 1996, pp. 7-19.

Beer, J. de, 1996, *Geboorteontwikkeling wordt beïnvloed door vertrouwen in de economie.* *Maandstatistiek van de bevolking*, November 1996, pp. 25-30.

Chesnais, J.C. 1996, *Fertility, Family and Social Policy in Contemporary Western Europe.* *Population and Development Review* 22 (4), pp. 729-739.

Crujisen, H., 1991, *Fertility in the European Community. Main trends, Recent Projections and Two Future Paths.* International Conference in Luxembourg 1991. Back-

ground papers on Fertility, Mortality and International Migration under Two Long Term Population Scenarios for the European Community. Eurostat.

Dunford, M., 1993, Regional disparities in the European Community: evidence from the REGIO databank, *Regional Studies* 27, pp. 727-743.

Ellingsæter and Rønson, 1996, The dual Strategy: Motherhood and the Work Contract in Scandinavia. *European Journal of Population* 12, pp, 239-206.

Gaag, N. van der and A.H. de Jong, 1997, Population scenarios for the European Union: regional scenarios. *Maandstatistiek van de bevolking*, December 1997, pp. 17-31.

Gaag, N. van der, L. van Wissen, E. van Imhoff and C. Huisman, 1999, National and Regional Population Trends in the European Union. Eurostat Working Papers, 3/1999/E/n8.

Hoem, J. M., 1993, Public Policy as the Fuel of Fertility: Effects of a Policy Reform on the Pace of Childbearing in Sweden in the 1980s. *Scandinavian Sociological Association*, pp. 19-31.

Hoorn, W. van and J. de Beer (forthcoming), Analysis and projection of regional mortality for the countries of the European Economic Area. Eurostat Working Papers.

Jong, A. de and H. Visser, 1997, Long-term international migration scenarios for the European Economic Area. Eurostat Working Papers E4/1997-6.

Jong, A.H. de, 1997, Population scenarios of the European Economic Area: components of population growth. *Maandstatistiek van de bevolking*, December 1997, pp. 9-16.

Jong, A. de, 1998, Analysis and projection of labour force by gender and age for the countries of the European Economic Area. Draft final report for the European Commission.

Kaa, D.J. van de, 1988, The second demographic transition revisited: theories and expectations. Werkstukken no. 109. Planologisch Demografisch Instituut, Universiteit van Amsterdam.

Kunst, E.A. and J.P. Mackenbach (1995), International comparison of socio-economic inequalities in mortality. Paper prepared for the European population Conference, Milan, September 4-8, 1995. Erasmus University, Rotterdam.

Kuijsten, A.C., 1996, Changing family patterns in Europe: a case of divergence? *European Journal of Population*, vol. 12, no. 2, pp. 225-143.

Lesthaeghe, R. and G. Verleye, 1992, De tweede demografische transitie; Conceptuele basis en recente evolutie. De demografische uitdaging: Nederland in Europa op weg naar de 21<sup>ste</sup> eeuw, pp. 15-47.

Macunovich, D.J., 1996, Relative income and the price of time: exploring their effects on U.S fertility and female labor force participation, 1963-1991. In: J.B. Casterline, R.D. Lee and K.A. Foote (eds), *Fertility in the United States: new patterns, new theories*. Supplement to *Population and development review* 22.

Manton, K.G., 1991, New biotechnologies and the limits to life expectancy. W. Lutz (ed.), Future demographic trends in Europe and North America: What can we assume today? London: Academic Press.

Mincer, J. and S. Polacheck, 1974, Family Investments in Human Capital: Earnings of Women. T.W. Schultz (ed), Economics of the Family. Marriage, Children and Human Capital. The University of Chicago Press.

Netherlands Economic Institute, 1994, Regional population and labour force scenarios for the European Union. Part II: two long term labour force scenarios. Rotterdam.

Rubery, J., M. Smith and C.Fagan, 1996, Trends and Prospects for Women's Employment in the 1990s. Manchester school of management, UMIST.

Stack, S., 1988, Marriage, family and loneliness: A cross-national study. Sociological Perspectives 41 (2), pp. 415-432.

Sundström, M. and F.P. Stafford, 1992, Female labour force participation, fertility and public policy in Sweden. Population 3, pp. 199-215.