DEMOGRAPHY MONITOR 2008

Demographic Trends, Socio-Economic Impacts and Policy Implications in the European Union

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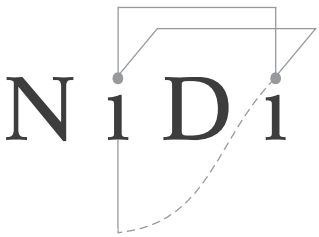
Nico van Nimwegen and Rob van der Erf (eds.)



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Preface

The Demography Monitor 2008 gives a concise overview of current demographic trends and related developments in education, the labour market and retirement for the European Union and some other countries. Changes in fertility, family formation, migration and mortality are documented as well as trends in population growth and population ageing. Also the links of demographic developments with education, labour and retirement are described.

Drawing on a variety of statistical and survey sources as well as research outcomes, both quantitative and more qualitative analyses are presented. Attention is also paid to the backgrounds of trends and their possible implications for European society and European citizens. Bringing together and integrating a wide variety of information, the Demography Monitor aims to support the social policy debate and shed light on the social situation of Europe.

The Demography Monitor highlights key demographic trends and their social contexts, illustrates the complexity of population issues, and explores the links of population dynamics, social development and social policy. The Demography Monitor provides up to date information and reference materials for policy makers and other stake holders who take an interest in or are involved in tackling the manifold challenges of demographic change such as those described by the European Commission in its communication of 2006 on "The demographic future of Europe- from challenge to opportunity".

The Demography Monitor 2008 opens with an Executive Summary highlighting its major findings, and further consists of chapters on the demographic situation, the educational transition, the impact of changes in the working age population, and trends in older workers, retirement and pensions.

The Demography Monitor 2008 was produced by the Demography Network of the Social Situation Observatory of the European Commission which is led by the Netherlands Interdisciplinary Demographic Institute (NIDI) and further consists of the Centre for European Policy Studies (CEPS, Belgium), the German Institute for Economic Research (DIW, Germany), the Institute for Advanced Studies (IHS, Austria) and the Centre for Social and Economic Research (CASE, Poland).

1 Executive Summary[1]

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1. As part of the Social Situation Observatory of the European Commission, the Demography Monitor reviews current demographic trends and related socio-economic developments in the 27 Member States of the European Union.[2] To the extent possible the Candidate Countries Croatia and the Former Yugoslav Republic of Macedonia as well as Turkey are also included in the analyses.

Modest EU population growth mainly caused by international migration

2. On 1 January 2008 the population of the European Union was estimated at 496 million inhabitants, 2.4 million more than at the beginning of 2007. This annual rate of population growth of 0.48% is modest in comparison to other world regions. In 2007 5.2 million live births were recorded in the European Union, while the number of deaths amounted to 4.8 million. Thus the overall natural population growth, which is the balance of births and deaths, was 0.5 million in absolute numbers (or an almost negligible natural population growth rate of 0.09%). Net migration, which is the balance of immigration and emigration, accounted for a population growth of 1.9 million in 2007, a growth rate of 0.39%. As has already been the case since the 1990s, European population growth is mainly caused by international migration and currently some 80% of overall population growth results from migration. The slow pace of European population growth gives rise to two major demographic challenges: population ageing and population decline. International migration brings the further challenge of increasing population diversity.

Population ageing remains the dominant demographic challenge for the EU

3. The most important challenge which confronts the European Union is population ageing. Although population ageing affects all regions of the world, it is most advanced in Europe. Also with the challenge of population decline the European Union will be the first among world regions to break new ground. According to the latest projections the population of the European Union will continue to grow to a maximum of around 520 million by the year 2035 and then start to decline at a very moderate pace. By mid century the population of the European Union will be somewhat bigger than its current size with an estimated number of inhabitants of 515 million. And although the share of the European Union in the total population of the world will further decline, the European Union will keep its current ranking as the third most populous region in the world after China and India. Population diversity is triggered by the increasing role that international migration plays in the population dynamics of the European Union.

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1 The views expressed in this document are those of the authors and do not necessarily represent those of the European Commission.

2 Contributions to this Monitor were provided by the Demography Network of the Social Situation Observatory which is led by the Netherlands Interdisciplinary Demographic Institute (NIDI) and further consists of the Centre for European Policy Studies (CEPS), the German Institute for Economic Research (DIW), the Institute for Advanced Studies (IHS) and the Center for Social and Economic Research (CASE).

4. Although these demographic challenges do not always fully coincide in timing and intensity, most Member States will simultaneously experience the impacts of both population ageing and population decline for some period of time while they will also experience increasing population diversity. The demographic challenge has a large impact on the social situation of European citizens and receives growing attention in policymaking. The 2006 Commission Communication 'The demographic future of Europe from challenge to opportunity' is a good example (European Commission, 2006a). In this paper the Commission argues that an overall strategy to address the challenges of population ageing is needed and outlines five policy directions: promoting demographic renewal, promoting employment, a more productive and dynamic Europe, receiving and integrating migrants, and sustainability of public finances. With respect to international migration the European Council requested in 2007 a renewed political commitment to building a comprehensive immigration policy and in June 2008 a Commission Communication proposed a platform for future action based on three policy pillars: prosperity, solidarity and security (European Commission, 2008a).

Population growth is unevenly distributed across Member States; the large majority of European regions experience slow or negative population growth

5. The driving forces of both population ageing and population decline are sustained low fertility and increasing longevity. International migration is the third and most important engine of European population growth and spurs population diversity.

6. Within the developed regions the current level of European Union population growth of 0.5% is about average. EU population growth is less than half of the growth rate in the United States, but significantly higher than for instance the population growth rate of Japan (0.1%) or the negative rate for the Russian Federation (-0.5%). After a period where population growth slowed down, the growth rate started to pick up again around the mid-1990s to reach its highest level in more than 30 years in 2007. Where the balance of births and deaths (natural growth) predominantly determined the fluctuations in the growth rate before the 1990s, net migration became the main driver since then.

7. Population growth is unevenly distributed across the European Union with overall positive growth in the old Member States (EU-15) and negative growth in the newly acceded Member States (EU-12). Ireland (24.6 per thousand), Cyprus (20.2) and Spain (18.0) recorded the highest growth rates in 2007. Eight Member States reported population decrease in 2007. In Lithuania, Bulgaria and Latvia this decrease was caused by both negative natural growth and negative net migration. In Hungary, Romania, Estonia and Germany population decrease was the result of negative natural growth which was not fully compensated by the migration surplus, while in Poland the relatively strong out-migration was not compensated by positive natural growth.

8. Also at the sub-national level large differences in population growth are witnessed. Over the period 2000-2005 a few European regions (notably in Ireland and the South of Spain and France) experienced strong population growth but these are exceptions. Some 30% of the regions lost population during this period, while another 40% saw zero or very slow growth. Reflecting the East-West divide in population growth, the largest population losses were recorded in Bulgarian regions, while the largest gains were observed in the south of Spain.

9. Natural population growth and the balance of international migration are the two components of population growth. The excess of births over deaths (positive natural growth) is highest in

Ireland at 9.8 per thousand, followed by France at 4.3 per thousand. Negative natural population growth (the excess of deaths over births) is currently highest in Bulgaria (-4.9 per thousand) but is also witnessed in for instance Hungary, Romania, Germany and the three Baltic States. The overall European Union level of natural population growth is +0.9 per thousand, which is an all time low and reflects its ageing population. A further slowing down of natural population growth is to be expected and from around 2015 onwards natural population decline will set in for the European Union as a whole.

10. As for net migration (the balance of immigration and emigration) Cyprus currently records the highest positive migration rate of 16 per thousand, followed by Spain and Ireland. A negative migration balance is observed in Central and Eastern European Member States like Bulgaria, and Poland. The migration balance is generally positive in the EU-15 but slightly negative in the EU-12. The future course of international migration is difficult to forecast.

Fertility levels are converging in the European Union; a slight but seemingly persistent recovery of fertility can be observed

11. The European Union witnessed pronounced declines in fertility from the mid 1960s onwards. Currently, women in the European Union on average have 1.5 children. This total fertility rate (TFR) is higher in the EU-15 (around 1.6) than in the EU-12 (around 1.3). European Union fertility has been below the so-called replacement level of 2.1 (which would lead to zero natural growth) since the mid 1970s. In the process of fertility decline the fertility differences between countries gradually became smaller. In the 1960s for instance the difference between the country with the highest (Ireland) and the lowest TFR (Hungary) was 2.0 children. Currently, the difference between the most extreme values of the TFR in the European Union (France and Slovakia) is 0.7. Especially the fertility levels in the Central and Eastern European Member States changed dramatically. The socio-political changes in the mid 1990s clearly mark this fertility decline. Economic insecurities and hardship in the transition period, as well as the demise of family policies are believed to have had an impact on this fertility decline.

12. The period indicator of fertility is sensitive to changes in the timing of childbirth and this so-called 'tempo effect' will have an impact on the recent trends: when fewer couples are postponing childbirth, the period indicator will rise. Also more favourable economic conditions will have had an impact on fertility trends. The slight but seemingly persistent increase in the European fertility level which can be observed from around the turn of the century may very well be related to this tempo effect; the upturn suggests that the postponement of fertility may come to an end. The impact of postponement on period fertility rates is estimated by some authors to be quite substantive. Fertility levels could, on average, increase by some 10% *if* all foregone births would be recuperated. Although the so-called 'tempo adjusted' TFR may be disputed, the outcomes suggest at least that there is some window of opportunities for so-called 'tempo policies', aiming to influence the timing of fertility.

13. The highest fertility levels are currently observed in France (1.98) and Ireland (1.90), while Slovakia (1.24) and Poland (1.27) have the lowest rates. On average, European Union fertility can be labelled as 'low', while fertility levels in the EU-12 are around the so-called 'lowest low' benchmark. Especially in the latter countries, the sustained level of low fertility gives rise to concern. It is interesting to note however that several of these Member States are recently experiencing an (albeit modest) rise in fertility.

14. Increasing population diversity through international migration may have an impact on fertility levels. Although migrant groups very often have higher fertility than the indigenous population, the impact of migrant fertility on the national fertility level is minor as migrants form a small fraction of the population. Also migrant fertility is as diverse as fertility patterns of the host population. For the level of migrant fertility, the region of origin of the migrant, socio-economic characteristics and the duration of stay in the receiving country play an important part. Migrant women from industrialized countries (usually also higher educated) tend to have lower fertility than those arriving from non-industrialized countries. The fertility of migrant women who have resided in the receiving country for a longer period such as second generation migrants, tends to be lower than of first generation migrants. The convergence of the fertility of migrant groups to the national average can be regarded as a dimension of integration.

Europeans live longer; the gender gap in mortality is narrowing slowly but the East-West divide remains large

15. Longevity continues to increase in the European Union. Since 1960 the average life expectancy for men has risen by more than ten years in the EU-15 as compared to an increase of less than five years for men in the EU-12. Women in the EU-15 gained ten years of life expectancy too, while the increase in female life expectancy in the EU-12 was eight years. With only a few exceptions (Lithuania and Latvia for men) all Member States observed increases in life expectancy. Currently, European women on average may expect to live 82.0 years and men 76.0 years. The gender gap in longevity is slowly narrowing. Currently this gap is 6.1 years for the European Union as a whole. The gender gap is smaller in the EU-15 (5.5 years) than in the EU-12 (8.1 years). European women not only spend more years in good health than men; they also experience more years in ill health.

16. The smallest gender gaps in life expectancy (less than five years) are observed for Cyprus, Denmark, Greece, Ireland, the Netherlands, Sweden and the United Kingdom, the largest (eight years or more) for Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia. The East-West divide in longevity is also evident when the levels of mortality are taken into account. In 2006, Spain and France reported the highest life expectancy for women (84.4 years), while Sweden reported the highest longevity for men (78.8 years). On the other hand, the lowest life expectancy for women was observed in Romania (76.2 years) and the lowest longevity for men in Lithuania (65.3 years).

International migration is the main driver of EU population growth and stimulates population diversity

17. International migration remains the most volatile demographic process. It also remains the process which is most difficult to monitor as reliable data are lacking and definitions of the various types of migration may differ between countries which hampers international comparisons. As the main driver of European population growth, in 2007 international migration amounted to 3.9 per thousand for the European Union as a whole. The migration balance remained positive for the EU-15 (4.6 per thousand) and negative for the EU-12 (-1.0 per thousand). Looking at the major migration flows, estimates indicate that in 2005 some 3.6 million immigrants entered the European Union, while the number of emigrants leaving the European Union was estimated to be 2.6 million, resulting in a positive migration balance of 1 million people. The majority (almost two out of three) of international migrants in the European Union arrive from outside the European Union, while one out of three arrives from another Member State.

18. The migration estimates for 2005 also indicate that immigration per thousand of the total population is highest in Luxembourg and Cyprus (at 34 and 22 per thousand respectively), followed by Ireland (14) and Spain (13). The lowest inflow of immigrants was recorded for Romania (3 per thousand) and Finland, Poland and Bulgaria (4 per thousand). Emigration was high in Cyprus (40), Luxembourg (34) and Lithuania (15), and was very low in Italy and Finland (2 per thousand).

19. In 2007 the European Union recorded some 223 thousand new asylum applications (an increase of 11% from 2006). The overwhelming majority of asylum claims are filed in the EU-15 (78% of all claims).

20. As a consequence of international migration the population of the European Union becomes more diverse. It is estimated that currently citizens from at least 175 nationalities are living in the European Union. Migration flows add to the already existing patchwork of national minorities and cultural groups in the Member States. As is the case with international migration, it is difficult to draw an accurate picture of this population diversity. Most Member States have statistics on the migrant population (defined as those born abroad) and/or the population with foreign citizenship. These statistics, however, are not sufficient to describe the 'the population of foreign descent' (also referred to as ethnic minorities). Statistics on foreign country of birth do not include the native-born descendants of immigrants, the so-called second generation, while statistics on foreign citizenship do not capture immigrants who have acquired citizenship (either by birth or by naturalization).

21. On average 5% of the population of the European Union has foreign citizenship, while some 7% is foreign born. The EU-12 Member States have relatively few inhabitants with foreign citizenship (less than 3%), while most of the EU-15 Member States have above average shares of foreign citizens, up to some 9% in Germany and Austria (leaving apart Luxembourg with 40%). In most Member States citizens from neighbouring countries rank high among the immigrant groups. In addition to proximity, also (former) colonial and political ties, former labour agreements and asylum policies play a role in determining the flows of international migration.

22. Demographic diversity is often related to socio-cultural diversity. In most Member States at least part of the recently arrived migrants are characterized by social arrears such as higher levels of unemployment, lower levels of education and less favourable housing conditions. Also some degree of spatial segregation of migrant communities exists in most large European cities. Such arrears may be unavoidable in the beginning of the migration process and can be seen as adjustment to the host society. But when these arrears persist and extend over generations, there is cause for concern as integration seems to falter.

23. Marriages of spouses of different nationalities, mixed marriages, can be seen as an indicator of integration. Mixed marriages between EU citizens are related to increasing mobility within an enlarging European Union, while marriages with nationals from third countries are related to migration flows from outside the European Union. Data on mixed marriages are scarce but suggest that these marriages are not uncommon. Data on marriages concluded in the year 2006 show that the share of mixed marriages as a percentage of all marriages varies largely across the European Union. Relatively high levels are observed in countries like the Netherlands, Austria, Belgium, Cyprus and Luxembourg (15% and over) and medium levels in larger countries like France, Germany, Italy and Spain (from 8 to 14%). Not surprisingly the data reflect that mixed marriages are more frequent in relatively "open" countries with considerable

immigration. Low shares of mixed marriages are common in the Member States of Central and Eastern Europe, which used to be more closed to international migration. Unfortunately the data do not allow describing changes over time but it seems feasible that continuing international migration will bring more mixed marriages.

European households reflect changing life courses and population ageing

24. The living arrangements of Europeans have become more diverse in the past decades. Leaving the parental home is being postponed and young Europeans, especially men, stay longer in the parental home (more so in Southern and Eastern Europe, and less so in Western Europe). Also, more people are living with a partner but without children while the shares of young Europeans who are living both with a partner and with children are declining. The number of single parent households, mostly female headed, is growing all over Europe as is the number of one person households. These overall trends are reflected in the declining size of the European household which currently amounts to an overall average of 2.5 persons. Due to life course events, smaller households are more common among the young (2.2 persons on average) and the elderly (1.8 persons). Households during the 'family phase' of the life course are somewhat larger (3.1 persons). The share of single person households is increasing and currently almost one out of every three European households (28%) consists of one person. Both in the early and in the later stages of the life course single person households are very common. Due to population ageing also one out of three European households is headed by a person who is aged 60 or over. European elderly prefer to live independently as long as possible, health permitting, and at the age of 80 a large majority (90%) still lives in a private household (half of them living alone).

Not all Member States are confronted in the same way by population ageing

25. Population ageing remains the most important demographic challenge confronting the European Union. The United Nations Ageing Index (giving the share of persons 60 years or older relative to 100 persons 0-14 years of age) ranks Europe first among all world regions, with an index value of 136. In Southern Europe (156) and Western Europe (147) population ageing is more advanced than in Eastern (123) and Northern Europe (124). Japan ranks highest on the UN index with a value of 201 followed by the oldest Member States Italy and Germany. Of the 10 most aged countries in the world, currently 8 are EU Member States.

26. The ageing index is closely correlated with other ageing indicators like the dependency ratio. The so-called old-age dependency (the population aged 65 and over relative to the working age population 15-64) is increasing and currently amounts to 25 for the European Union as a whole as compared to a world average of 11. Only Japan ranks higher with an old age dependency ratio of 30. In 2007 this ageing indicator ranged within the European Union from a low of 16 for Ireland to a high of 30 for Italy.

27. Taking also other ageing indicators into account (like the median age, the proportion of older workers and the proportion of the oldest old) and thus presenting a more balanced view, population ageing is most advanced in Italy, Sweden and Germany. By the same index population ageing is least advanced in Slovakia, Romania and Poland. The grey pressure thus is highest in the EU-15 Member States. Within the older population the spectacular growth of the population aged 80 or over must be noted. By mid-century the share of the oldest old (currently some 4.4% of the total population) will have more than doubled. This double ageing adds on to the grey pressure, as the need for (long term) care steeply rises at higher ages.

28. Looking at the bottom of the population pyramid the so-called young age dependency ratio (the share of 0-14 year old children relative to the working age population of 15-64) is an indicator of the green pressure. The green pressure in the European Union has been decreasing for decades and is, on a world scale, relatively low at 24. This age structure indicator varies among Member States from a low of 19 in Bulgaria to a high of 30 in Ireland.

29. The overall dependency ratio, adding the old-age and the young-age dependencies, may be seen as an indicator of the overall demographic burden. While the weight of the demographic burden decreased in the past, it is now set to increase. Currently the overall dependency is higher in the EU-15 than in the EU-12. The highest demographic pressure is currently observed in France (53) and the lowest in Slovakia (39).

Demographic outlook for the future: a new population scenario indicates that …

30. Since 1980 the European Commission, through its statistical office Eurostat, produces internationally consistent population projections for the Member States of the European Union. These projections are regularly updated to take account of the latest developments. The latest set of projections (EUROPOP2008) follow up on the previous EUROPOP2004 and covers all Member States as well as Norway and Switzerland for the period 2008-2060. EUROPOP2008 is based on the overriding assumption that demographic trends in fertility, mortality and international migration will fully converge in all Member States by the year 2150 as a consequence of the assumption that socio-economic and cultural differences between the Member States will fade out in the very long run. Across countries, fertility and mortality will converge to the forerunners (best performers), while international migration will converge to zero (unless a shortage of the working age population occurs).

… more Member States will experience continuing population growth; population decline will be slower and later in Member States that will see their population shrink

31. Comparing the old 2004 projection (baseline variant) and the new 2008 scenario, the most striking difference concerns population growth. Opposed to the 2004 projections which showed an overall population decline for the EU-27 of some 4% by the year 2050, the 2008 scenario expects a 4% population increase. More countries will continue to experience population growth (including Belgium, Denmark, France, Ireland, the United Kingdom and Sweden) while population decline will be less intense in those Member States that will see their population shrink. In most countries of the EU-15 population decline will come considerably later (for countries like Italy, Spain, and Portugal population decline will be postponed by over 20 years). Other countries like Germany and Malta will however see much more pronounced population decline.

Dejuvenation of the age structure has run its course, but the secondary and tertiary school age population will strongly decline

32. Looking at the midterm outcomes for the year 2020 the overall population growth of some 4% for the European Union as a whole is unevenly distributed across the Member States and across the age groups. The estimated number of young children (age 0-14) will remain more or less stable across the European Union. This indicates that dejuvenation (the declining share of the younger age groups in the population) as a component of population ageing has run most of its course in Europe. A strong decline of the (secondary and tertiary) school age population (15-24) of some 13% is however forecasted. This decline is most drastic (-34%) in the EU-12.

Decline in the working age population; larger cohorts of older workers and spectacular increase of oldest old

33. With respect to the working age population the new projections estimate somewhat smaller cohorts for the younger age groups (25-39) and a sizeable increase of some 20% of the older age groups (55-64), especially in the Member States of the EU-15. The new projections however do not change the outlook that the long period of almost continuous growth of the working age population will come to an end. Before long in most Member States the working age cohorts will become less numerous, although the new projections push the onset of the decline of the working age population forward by a few years for some countries.

34. Both in the old and in the newer Member States the oldest-old population aged 80 years and over is rapidly growing with an increase of 34%. In this age group the number of men is growing faster than the number of women. As compared to the previous projections of 2004, the 2008 estimates on average project more children (0-14) and younger workers (25-39), especially for the EU-15 Member States and more oldest-old, especially women.

Population base for education becomes smaller but educational enrolment increases

35. In 2007 the European Union counted some 144 million persons in the age range 6 to 29 which is the main population base for the system of education. This age group has been declining as an echo of decreasing fertility in the past. Despite this decline in the population base, the number of persons in these age groups attending education rose from 108 million in 1998 to 112 million in 2005 (the last year for which complete and reliable data on enrolment are available). The rate of enrolment rose from 44.3% in 1998 to 47.8% in 2005, with a particularly strong rise for women.

36. As was noted above the new EUROPOP2008 scenario projects a continuing decline of the population base for education. This decline will be particularly strong for the age group of 15-24, the main source for secondary and tertiary education. This trend will especially but not only impact the EU-12. A smaller population base may relief the pressure on the educational system and could be an incentive to further increase enrolment rates. The enrolment rates for the different age groups show a weak but distinct 'rectangularisation' of the curve representing the rate of 'survival' in the system of education: whereas some increase in enrolment in education or kindergartens took place in the early age groups, little change took place in the age classes 6-14 and in the age classes 25-29, the curve shifted upwards for the age classes 15-24 albeit more importantly in the age group 15-19. Educational enrolment patterns show large disparities within the European Union as does the level of educational attainment.

Lower population pressure and more investments to further raise enrolment rates

37. The transition to higher education is a good indicator of the performance of the educational system. Compared to the United States, the average duration of education in the European Union is not very different, but even some of the old and highly developed Member States do not manage to ensure the transition of a sufficiently high number of the young generation into high-performing tertiary education. An additional concern in the European Union is that in a number of Member States a relatively large proportion of the adult population has left or is leaving the system of education with no diploma or only with a lower-secondary education diploma.

38. The educational enrolment shows some improvement between 1999 and 2004 but this progress still is considerably slower than implied by the Lisbon target for education and training. Most of the EU-15 Member States and several of the EU-12 Member States seem to encounter problems in receiving and maintaining a high proportion of the age groups 15-24 in the educational system as well as in allocating appropriate means to ensure the future provision of high-quality educational services. Data from the international comparative survey of educational performance (PISA) suggest that the quality of the educational system plays an important role in the transition to higher education and to the labour market. This suggests that investments in human capital formation are a key determinant of both the individual life cycle and broader social development. With a view not to waste educational potential also the migrant population requires attention.

39. Although it is difficult to compare migrant groups due to a large variety of origins and (socio-economic) background, the PISA data also show that overall migrant children have a lower level of educational performance than their native peers. The second generation of migrants (those born in the country of migration) generally performs at a higher level than the first generation, but still significantly lags behind their native counterparts. The PISA data suggest that higher levels of immigration and thus larger shares of migrant students do not seem to have a negative impact on the educational performance of migrant children. Migrant children in the classical immigration countries (like the USA, Canada and New Zealand) perform much better than in Europe, which is most likely associated with more selective admission policies benefiting higher socio-economic status migrants in these countries.

Despite smaller working age cohorts, the labour force may continue to grow

40. In 2007 the total labour force of the European Union amounted to some 238 million people aged 15 and over who were active on the labour market either in a job or without employment but actively seeking work.[3] This labour force consisted of 131 million men and 106 million women. The European labour force is still growing, despite the fact that the working age population (aged 15-64) is declining. But the decline in the working age population (of 1.6 million persons during 2007), is more than compensated by the increasing labour force participation. Smaller working age cohorts are more active on the labour market and thus generate a bigger labour force. The total activity rate increased from 56.7 to 57.3 for the European Union as a whole, while the increase in labour force participation was higher for women than for men.

Potential decline in the European labour force due to demographic change …

41. Will the labour force continue to grow? The midterm outlook for the year 2020 indicates that according to the new population projections of EUROPOP2008 the working age population will be some 11 million persons bigger in the year 2020 than in the previous EUROPOP2004 baseline scenario. This difference in the projections is mainly caused by migration. When this predicted additional population growth of the new scenario is combined with constant labour force participation rates the European work force would nevertheless decline by 1.2 million until 2020. This purely demographic effect is caused by population ageing (rising shares of elderly persons in the labour force and labour force participation rates which decrease with age). The labour force of the EU-12 would significantly decline by 1.5 million in 2020, as

[3] It should be noted that the lower age range of 15 for the working age population is arbitrary and loosing its relevance, as is the upper age range of 65.

opposed to a small increase in the EU-15 of 0.3 million. With constant participation rates, the gender gap in the labour force would increase by 0.6%-points.

… but changes in labour market behaviour may lead to a continuing increase of the work force; actual employment and part-time work could grow further

42. The assumption that participation rates will not change is clearly unrealistic. In the recent past participation rates have particularly increased for women and for older workers and further changes in labour market behaviour may be expected. Applying labour force participation assumptions from the EU long term labour force projections to the new EUROPOP2008 scenario, presents a more realistic picture of the future European labour force. In stead of a declining work force, a further increase may then be expected. By the year 2020 the total labour force (15+) would then amount to 249 million, which is around 12 million active people more compared to the purely demographic scenario whereby the downsizing of the labour force by 1.2 million changes into a growth of 10.6 million. In this scenario and due to ongoing changes in female labour force participation the gender gap would become smaller. The higher activity rates of older persons would reinforce the ageing of the labour force and the number and the share of the elderly workforce would be higher compared to the purely demographic effect. This illustrates that effective labour market policies aimed at increasing activity rates of the elderly, will not only boost the labour force, but will also speed up the ageing of the labour force. The expected changes in employment rates would lead to an increase in the number of employed persons by around 14 million between 2008 and 2020. This growth of actual employment would be stronger than the rise in (potential) labour force participation.

43. Although employment growth is projected for all European countries, 13 countries would not reach the Lisbon target of a growth of the employment rate of the total labour force to 70% by the year 2010. Performance is better with respect to the target of 60% or over for female employment. Only seven countries will not reach this target in 2020. Despite the expected increase in employment rates of the elderly, by the year 2020 13 out of 27 European countries will not manage to reach the 50% employment target for older workers. It is also expected that an increase in employment rates will lead to a growth in part-time employment which will be twice as strong as the growth in full-time employment.

The age of retirement from the labour market continues to rise

44. With respect to the Lisbon target of achieving an overall employment rate for older workers (aged 55-64) of 50%, the Barcelona European Council concluded in 2002 that a progressive increase of about 5 years in the effective average age at which people stop working in the European Union should be sought by 2010. Between 2001 and 2006 the average exit age from the labour force in the European Union increased by 1.3 years, both for women and for men. For men the exit age reached 61.7 years as compared to 60.7 years for women indicating that in the European Union the gender gap in the age of leaving the labour market has further narrowed. For men also the differences in exit ages between the older and the newer Member States recently became smaller. Especially due to the steep increase in male exit ages in the EU-10 the gender gap has almost closed; currently this exit age is 61.1 years in the EU-15 and 60.8 years in the EU-10. [4]

[4] EU-10: the Member States that joined the EU on 1 May 2004.

45. The gap in the exit age for women in the older and newer Member States is still considerable. Due to policies aimed at the gradual equalisation of male and female exit ages, the latter accelerated by 1.2 years between 2001 and 2006 in the EU-15 (rising faster than for men) but also rising faster than in the EU-10. On average women retire at the age of 57.4 in the EU-10 and at the age of 61.1 in the EU-15.

More older persons are active on the labour market; higher participation means more people in jobs and not more unemployment for older workers; however, the Lisbon target has not yet been reached

46. A major policy concern is to increase the labour force participation of older persons, more specifically to achieve an employment rate of at least 50% for persons aged 55-64 years. In the period 2001-2007 the activity rate for this age group increased from 40.3% to 47.3%; the activity rate for women (38.1%) still is considerably lower than for men (57.1%), but shows a stronger growth. The activity rates of older persons generally are higher in the Member States of the EU-15 than in the Member States of the EU-12. The employment rate (the share of people actually working) shows a similar increase of 7%-points as the activity rates. This trend indicates that the expansion of the labour force translates into more older people having jobs. The overall employment rate for this age group in the European Union is 44.7%. Employment rates are higher for older men (53.9%) than for women (36.0%) and higher in the EU-15 than in the EU-12. Despite the growth in employment of older workers, the Lisbon target of achieving an employment rate of at least 50% has not yet been reached. Due to favourable economic conditions unemployment rates for older workers have declined in the past years; currently 5.5% of older workers are unemployed and this unemployment level is similar for women and men.

47. The Demography Monitor 2008 illustrates that the combined demographic challenges of population ageing and population decline in conjunction with growing population diversity which confront the European Union are robust trends and are 'here to stay'. Also the latest population projections do not fundamentally change this demographic outlook for the future; its underlying demographic processes are fairly stable. When assessing the impacts of a changing population base (the quantitative development of for instance the population of working age or the school age population) it is evident that despite smaller working age or school age cohorts, the actual labour force or actual school population may indeed continue to grow due to increasing participation rates. When a larger share of people actively participates, this qualitative dimension of changing individual behaviour may partly or fully offset the impacts of purely quantitative developments. From a policy perspective this supports the view that 'activating policies' aiming to improve the share of persons that participate in for instance the labour market or education are essential tools to address the demographic challenge. Thus, the scope for policy interventions which address demographic challenges is much wider than population policies in the "strict sense" which address quantitative demographic trends.

2 The demographic situation in the European Union

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2.1 Highlights

- International migration remains the most important driver of European population growth; about 80% of the overall population growth in the European Union is caused by migration.
- Annual EU population growth of 0.5% is similar to that in other developed regions; within the EU there is slow growth in the EU-15 Member States and halting or negative growth in most of the new EU-12 Member States.
- European fertility patterns overall are converging and are fairly stable. Recently, fertility is gradually increasing. With an average number of children per woman (TFR) of 1.5 the European Union fertility can be labelled as very low. The fertility level in the EU-12 (with an average of 1.3 children per woman) can be labelled as 'lowest low' as compared to a TFR of around 1.6 in the EU-15.
- As a result of international migration, the demographic diversity of the population of the European Union is increasing and is linked to growing socio-cultural diversity. Also the diversity in living arrangements is increasing due to changes in demographic behaviour.
- New projections indicate stronger population growth for the EU as a whole while population decline will set in later (2035).
- Also in the new scenarios, population ageing remains the most important demographic challenge for the European Union.

This chapter focuses on the recent demographic situation and related population trends in the 27 Member States of the European Union. Some attention will also be paid to its two Candidate Countries, Croatia and the Former Yugoslav Republic of Macedonia, as well as to the EFTA countries (Iceland, Liechtenstein, Norway, Switzerland) and, as far as data are available, Turkey. The chapter is based on the latest available information from Eurostat, including its estimates which are known as 'Nowcasts', but also on information from the United Nations and the OECD.

2.2 Population size and population change

2.2.1 National level

On 1 January 2008 the population of the European Union was estimated at 496 million inhabitants (Eurostat, 2008). This is 2.4 million inhabitants more than at the beginning of 2007, indicating an annual population growth rate of 0.48%. In 2007 the number of live births in the Member States amounted to 5.2 million, while the number of deaths was 4.8 million implying a natural population growth of 0.5 million (or a natural population growth rate of 0.09%). Net migration, which is the balance of immigration and emigration, amounted to 1.9 million in 2007, a growth rate of 0.39%. As has already been the case since the 1990s, European population growth is mainly caused by international migration and currently some 80% of overall population growth results from migration.

For each of the Member States and for Croatia, Macedonia, the EFTA countries and Turkey the size of the population over the past decades is given in *Table 2.1*.

Table 2.1 Total population on 1 January, 1960-2008 (x 1 000)

	1960	1970	1980	1990	2000	2007	2008
EU-27	402 607	435 474	457 053	470 388	481 072	493 234	495 604
EU-15	314 862	339 975	354 568	363 493	375 550	389 911	392 283
EU-12	87 745	95 499	102 484	106 896	105 523	103 322	103 321
EFTA	9 053	10 257	10 635	11 189	11 954	12 533	12 678
Austria	7 030	7 455	7 546	7 645	8 002	8 299	8 332
Belgium	9 129	9 660	9 855	9 948	10 239	10 585	10 667
Bulgaria	7 829	8 464	8 846	8 767	8 191	7 679	7 640
Cyprus	572	612	510	573	690	779	795
Czech Republic	9 638	9 906	10 316	10 362	10 278	10 287	10 381
Denmark	4 565	4 907	5 122	5 135	5 330	5 444	5 476
Estonia	1 209	1 356	1 472	1 571	1 372	1 342	1 341
Finland	4 413	4 614	4 771	4 974	5 171	5 277	5 300
France (excl. DOM)	45 465	50 528	53 731	56 577	58 850	61 538	61 876
Germany	72 543	78 269	78 180	79 113	82 163	82 315	82 222
Greece	8 300	8 781	9 584	10 121	10 904	11 172	11 215
Hungary	9 961	10 322	10 709	10 375	10 222	10 066	10 045
Ireland	2 836	2 943	3 393	3 507	3 778	4 313	4 420
Italy	50 026	53 685	56 388	56 694	56 924	59 131	59 618
Latvia	2 104	2 352	2 509	2 668	2 382	2 281	2 271
Lithuania	2 756	3 119	3 404	3 694	3 512	3 385	3 366
Luxembourg	313	339	363	379	434	476	484
Malta	327	303	315	352	380	408	411
Netherlands	11 417	12 958	14 091	14 893	15 864	16 358	16 404
Poland	29 480	32 671	35 413	38 038	38 654	38 125	38 116
Portugal	8 826	8 698	9 714	9 996	10 195	10 599	10 618
Romania	18 319	20 140	22 133	23 211	22 455	21 565	21 529
Slovakia	3 970	4 537	4 963	5 288	5 399	5 394	5 401
Slovenia	1 581	1 718	1 893	1 996	1 988	2 010	2 026
Spain	30 327	33 588	37 242	38 826	40 050	44 475	45 283
Sweden	7 471	8 004	8 303	8 527	8 861	9 113	9 183
United Kingdom	52 200	55 546	56 285	57 157	58 785	60 817	61 186
Croatia	4 127	4 403	4 598	4 773	4 498	4 441	4 435
FYR Macedonia	1 384	1 617	1 878	1 873	2 022	2 042	2 045
Turkey	27 120	34 881	44 021	55 495	66 889	69 689	70 586
Iceland	174	204	227	254	279	308	314
Liechtenstein	16	21	26	28	32	35	35
Norway	3 568	3 863	4 079	4 233	4 478	4 681	4 737
Switzerland	5 296	6 169	6 304	6 674	7 164	7 509	7 591

Source: Eurostat.
Data for Germany refer to the Federal Republic within its borders after 3 October 1990.
Data for France are for metropolitan France, including Corsica; they exclude the DOMs (Départements d'outre mer).
Starting from 1975, data for Cyprus concern the government controlled area.
EFTA includes Iceland, Liechtenstein, Norway and Switzerland.

In *Table 2.2* the population size of the EU-27 is compared with other major regions in the world. According to estimates of the United Nations (United Nations, 2008) the size of the world population is currently more than 6.5 billion. After China and India, the European Union ranks as the third most populous region of the world while the United States ranks fourth. Since the beginning of the 1960s the EU-27 share in the world population has declined from 13% to 8%. Recently also the Chinese share slightly decreased (from 22% in 1990 to 20% in 2005), while the Indian share increased (from 15% in 1980 to 17% in 2005).

As is shown in *Table 2.3*, the recent rate of population growth in the European Union is more or less comparable to that of other developed regions, less than half of the growth rate of the United States but currently significantly higher than the growth rate of Japan and the (negative) growth rate of the Russian Federation.

Table 2.2 Mid-year population, 1960-2005 (x 1 000 000)

	1960	1970	1980	1990	2000	2005
World	3 032	3 699	4 451	5 295	6 124	6 515
More developed regions	916	1 008	1 083	1 149	1 194	1 216
of which						
EU-27	404	436	458	471	482	494
USA	186	210	231	256	285	300
Japan	94	104	117	124	127	128
Russian Federation	120	130	139	149	147	144
Less developed regions	2 116	2 690	3 368	4 146	4 930	5 299
of which						
China	657	831	999	1 149	1 270	1 313
India	446	549	689	860	1 046	1 134
Brazil	73	96	122	150	174	187

Source: EU-27 Eurostat; other regions United Nations, World Population Prospects, 2006 revision.

Table 2.3 Average annual population growth, 1960-2005 (%)

	1960/69	1970/79	1980/89	1990/99	2000/04
World	2.2	2.0	1.9	1.6	1.3
More developed regions	1.0	0.7	0.6	0.4	0.4
of which					
EU-27	0.8	0.5	0.3	0.2	0.5
USA	1.3	1.0	1.1	1.1	1.1
Japan	1.1	1.2	0.6	0.3	0.1
Russian Federation	0.9	0.6	0.7	-0.1	-0.5
Less developed regions	2.7	2.5	2.3	1.9	1.5
of which					
China	2.6	2.0	1.5	1.1	0.7
India	2.3	2.5	2.5	2.2	1.7
Brazil	3.2	2.7	2.3	1.6	1.5

Source: EU-27 Eurostat; other regions United Nations, World Population Prospects, 2006 revision.

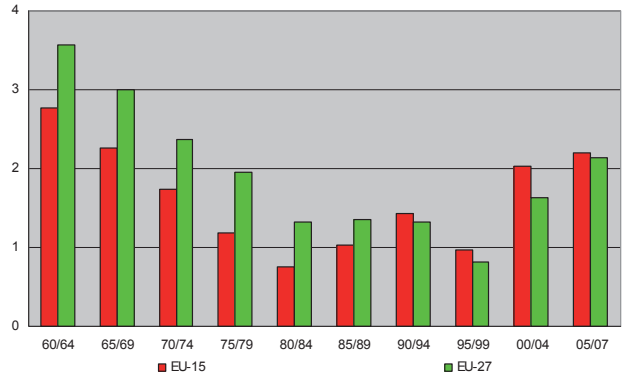
Since the 1960s the population growth rate for the world as a whole almost halved (from 2.2 to 1.3). In the more developed regions the growth rate fell back relatively stronger than in less developed regions. In the last mentioned regions the decrease in China is the most remarkable.

The annual population growth in the EU countries declined strongly between the 1960s and the second half of the 1980s (*Figure 2.1*). In the first half of the 1960s the population of what is now known as the EU-27 increased annually on average by 3.6 million: 2.8 million in the EU-15 countries and 0.8 million in the EU-12. In relative terms this is an average population growth of 0.89% for the EU-27, 0.88% for the EU-15, and 0.92% for the EU-12, indicating similar levels of population growth.

In the first half of the 1980s, the average annual population growth had declined to 1.3 million in the EU-27; 0.8 million in the EU-15 and 0.6 million in the EU-12 or 0.29% for the EU-27; 0.21% for the EU-15 and 0.55% for the EU-12. Hence, it may be concluded that the decline of population growth until the second half of the 1980s was much stronger in the EU-15 than in the EU-12.

Since the second half of the 1990s the annual population growth in the EU-27 is rising again. In 2007 it reached its highest levels in more than 30 years. It is remarkable that annual population growth has become slightly negative in the EU-12 since the beginning of the 1990s, especially due to natural decrease. The EU-15 countries largely compensated their natural losses of population by immigration.

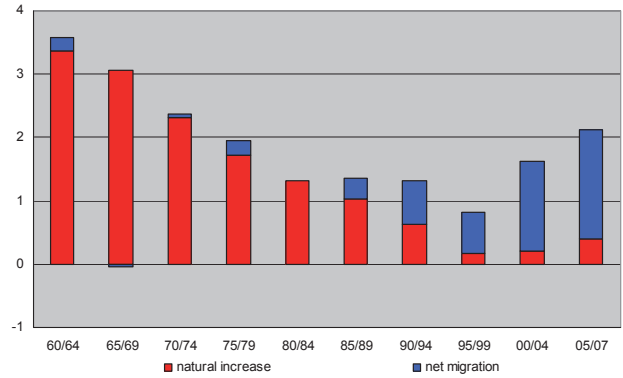
Figure 2.1 Annual population growth in the EU, 1960-2007 (x 1 000 000)



Source: Eurostat.

Until the start of the 1990s, natural increase, the difference between births and deaths, was by far the most important component of population growth in the EU-27 (*Figure 2.2*). During that period the decline in population growth is almost entirely caused by the decrease of natural growth. The annual number of births fell from 7.8 million in 1964 to less than five million in the early years of this century. In this period the annual number of deaths rose from 4.2 million to around 4.8 million. As a result, the 2003 annual natural increase in the EU-27 was less than 100 thousand compared with 3.6 million in 1964. Currently, natural increase is rising again due to more births and less deaths.

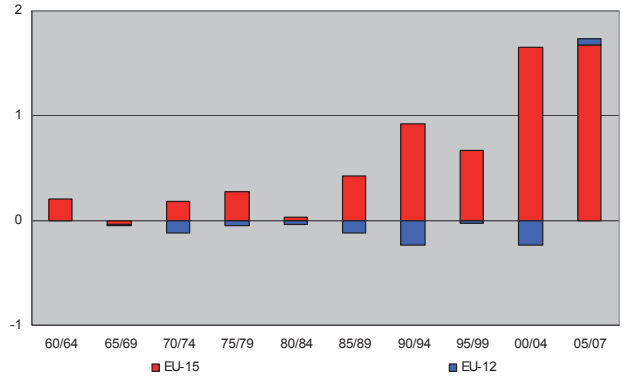
Figure 2.2 Components of population growth in the EU-27, 1960-2007 (x 1 000 000)



Source: Eurostat.

After 1990, net migration has become the major component of population growth in the EU-27: since 2000 more than three-quarters of the total population growth in the EU-27 is due to net migration. While the EU-15 countries fully account for the population growth by international migration, net migration for the EU-12 is negligible (*Figure 2.3*).

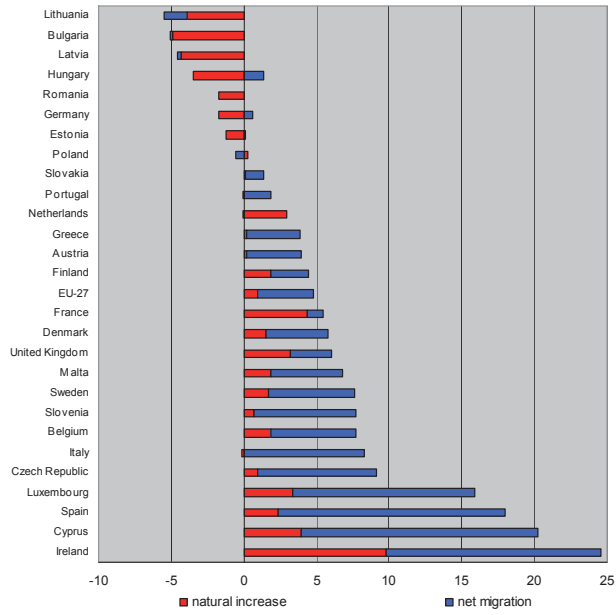
Figure 2.3 Population growth by net migration in the EU, 1960-2007 (x 1 000 000)



Source: Eurostat.

Population growth is unevenly distributed across the European Union. Expressed per thousand of the population, the highest population growth in 2007 took place in Ireland (24.6), followed by Cyprus (20.2) and Spain (18.0) (*Figure 2.4*).

Figure 2.4 Population growth per 1 000 population per EU country, 2007



Source: Eurostat.

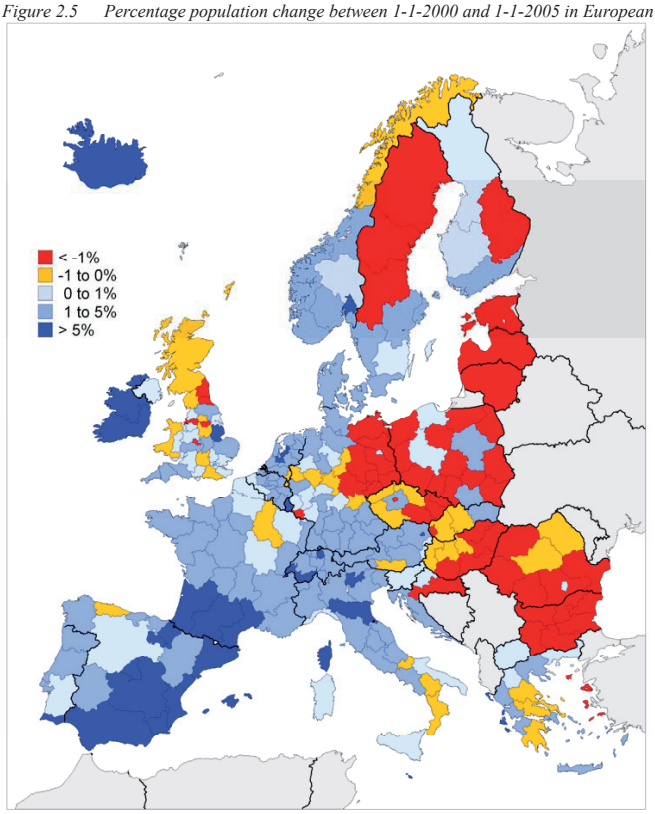
Eight countries report a population decrease in 2007, in three countries (Lithuania, Bulgaria and Latvia) caused by both negative natural growth and negative net migration, in four countries (Hungary, Romania, Estonia and Germany) by a negative natural growth that is not compensated by a positive migration surplus, and in one country (Poland) by a negative net migration that is not compensated by a positive natural growth.

In two countries (Portugal and Italy) positive net migration is higher than negative natural decrease. In one country (the Netherlands) negative net migration is compensated by positive natural growth. The population growth in the remaining 16 countries is due to both positive natural increase and positive net migration. In most of these countries (14), net migration contributes more to population growth than natural increase. Only in the United Kingdom and France natural population growth was more important than growth through migration in 2007.

2.2.2 Sub-national level

At the sub-national level the unevenness in growth of population is found as well (*Figure 2.5)*.

Figure 2.5 Percentage population change between 1-1-2000 and 1-1-2005 in European regions



Source: Eurostat.

In a number of countries there were regions that experienced a growth in population of more than 5% between 2000 and 2005, while other regions in these countries lost population. About 30% of the regions displayed in Figure 2.5 lost population in the first five years of the 21st century, while 40% experienced 0 to 1% growth. In line with the data in Figure 2.4, the highest population losses were found in four Bulgarian regions with as much as 6 to 10% population decrease in five years. The losses in regions of Germany, Latvia, Lithuania, Poland, and Slovakia varied from 2.5 to 5%. The largest extremes in terms of gains were found in Spain: in nine regions the population grew with between 6 and 16%.

2.3 Drivers of population change

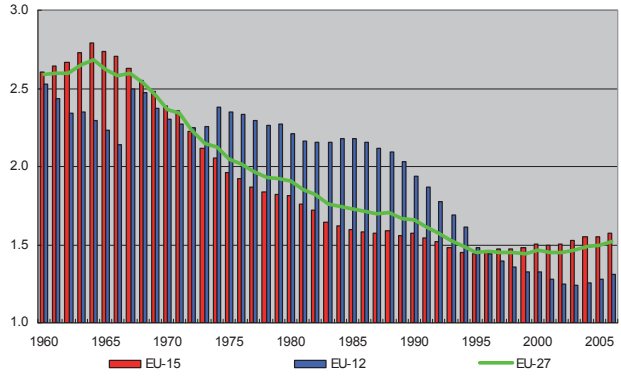
2.3.1 Fertility

The level of fertility is a major determinant of demographic change and renewal. The most commonly used indicator is the total period fertility rate (TFR), an indicator of the average number of children per woman. As is shown in *Figure 2.6*, EU Member States witnessed pronounced declines in fertility from the early 1970s onwards.

The overall TFR for the European Union declined from 2.7 children in 1964 to less than 1.5 children per woman in the late 1990s and the early years of this century. However, recently, a slight but seemingly persistent increase in the TFR can be observed.

The time trend of the total fertility rate in the EU-12 differs from that in the EU-15: the Central and Eastern European Member States witnessed relatively small fertility declines in the 1980s but very substantial declines in the 1990s. Large differences in fertility between the EU-15 and the EU-12 persist: while the current average number of children per woman for the EU-15 approaches 1.6, the level in the EU-12 is around 1.3. Both are below the so-called replacement level of 2.1 children per woman.

Figure 2.6 Total (period) fertility rate in the EU, 1960-2006



Source: Eurostat.

Since the 1960s, the total fertility rates in the EU countries clearly converged (*Table 2.4*). In the 1960s, the difference between the highest TFR (Ireland) and lowest TFR (Hungary) amounted to 2.0. In 2006, this difference, now between France and Slovakia, declined to 0.7. It is remarkable that in eight countries (Belgium, Denmark, Finland, France, Luxembourg, the Netherlands, Sweden and the United Kingdom) the 2006 total fertility rate is higher than the average fertility rate in the 1980s. On the other hand, compared to the 1980s, the total fertility rate decreased by more than 40% in Poland, Romania and Slovakia.

The dramatically changed position of the ten new Central European Member States can also be illustrated by the fact that, in the 1980s, all had a total fertility rate above the EU-27 average, while in 2006, they were all (far) below this average. The large socio-political changes in the mid 1990s illustrated by the lifting of the Iron Curtain mark the decline of fertility in the transition countries of Central and Eastern Europe. Taking the large variation within this region into account, multiple factors, varying per country, contributed to the drop in fertility. Ongoing modernization as described in the Second Demographic Transition Theory (cf. Lesthaeghe and Van de Kaa, 1986; Van de Kaa, 1987), but also economic insecurity and hardship in the transition phase as well as changes in the policy context may have had an impact on the decline of the number of births.

Table 2.4 Total period fertility rate, 1960-2006

	1960/69	1970/79	1980/89	1990/99	2000/04	2005	2006
EU-27	2.59	2.11	1.76	1.51	1.46	*1.50*	*1.52*
EU-15	2.65	2.05	1.65	1.49	1.52	*1.55*	*1.58*
EU-12	2.37	2.30	2.14	1.59	1.27	1.28	1.31
EFTA	2.66	1.88	1.63	1.66	1.57	1.59	1.62
Austria	2.70	1.89	1.53	1.44	1.38	1.41	1.40
Belgium	2.53	1.89	1.58	1.61	1.64	*1.64*	*1.64*
Bulgaria	2.19	2.17	1.99	1.37	1.24	1.31	1.37
Cyprus	3.25	2.31	2.42	2.09	1.54	1.42	1.47
Czech Republic	2.09	2.24	1.97	1.45	1.17	1.28	1.33
Denmark	2.46	1.84	1.48	1.75	1.76	1.80	1.83
Estonia	2.24	2.08	2.15	1.51	1.39	1.50	1.55
Finland	2.47	1.65	1.66	1.78	1.75	1.80	1.84
France	2.75	2.11	1.84	1.73	1.88	1.92	1.98
Germany	2.43	1.63	1.45	1.33	1.35	1.34	1.32
Greece	2.27	2.32	1.78	1.32	1.27	1.33	1.39
Hungary	1.92	2.08	1.82	1.58	1.30	1.31	1.34
Ireland	3.91	3.56	2.61	1.94	1.93	1.86	1.90
Italy	2.54	2.18	1.45	1.24	1.28	1.32	*1.33*
Latvia	1.85	1.95	2.08	1.45	1.24	1.31	1.35
Lithuania	2.49	2.22	2.04	1.68	1.29	1.27	1.31
Luxembourg	2.29	1.63	1.46	1.69	1.66	1.66	1.65
Malta	2.70	2.20	2.00	1.95	1.55	1.38	1.41
Netherlands	3.01	1.88	1.53	1.59	1.73	1.71	1.70
Poland	2.54	2.25	2.26	1.72	1.27	1.24	1.27
Portugal	3.15	2.74	1.85	1.49	1.46	1.40	1.35
Romania	2.48	2.60	2.29	1.50	1.30	1.32	1.31
Slovakia	2.74	2.49	2.22	1.67	1.22	1.25	1.24
Slovenia	2.23	2.16	1.77	1.31	1.23	1.26	1.31
Spain	2.92	2.75	1.73	1.23	1.27	1.35	1.38
Sweden	2.26	1.79	1.76	1.81	1.64	1.77	1.85
United Kingdom	2.78	1.98	1.80	1.75	1.68	1.78	1.84
Croatia						1.41	1.38
FYR Macedonia						1.46	1.46
Iceland	3.66	2.67	2.18	2.13	2.00	2.05	2.08
Liechtenstein	2.48	1.73	1.54	1.52	1.47	1.49	1.42
Norway	2.88	2.08	1.73	1.87	1.80	1.84	1.90
Switzerland	2.48	1.73	1.54	1.52	1.42	1.42	1.43

Source: Eurostat and NIDI estimates (in italics).

Growing concerns about persistent low fertility among policymakers are also reflected in the scientific literature that seeks to explain fertility trends. European Union fertility has been below the so-called replacement level of 2.1 children per woman since the mid 1970s. In the literature a growing consensus seems to develop to define fertility as 'very low' when total fertility is below 1.5 births per woman and as 'lowest low' if total fertility is below 1.3 children (see for instance Kohler *et al*., 2002; Caldwell and Schindlmayer, 2004). Viewed from this perspective the European Union on average is experiencing 'low fertility'. However, the EU-12 is confronted with 'lowest-low fertility'.

Quantum and tempo

For the study of fertility, both the timing of childbirth (tempo) and the number of children that are born (quantum) are important. Debates about the interpretation of fertility trends and the 'actual' level of fertility are usually dominated by a discussion of tempo and quantum, the issue being that changes in tempo (like the postponement of births) distorts the value of the period indicator in a given year.

Quantum and tempo of fertility are indeed associated and this may create oscillations in the period TFR as the period fertility quantum is sensitive to changes in the timing of fertility in a woman's life course: when more woman postpone the birth of a child, the annual number of births drops (see for instance De Beer, 2006a). These behavioural changes in the timing of fertility may be linked with social and economic changes (in education, labour market, housing, social security, conflicts and violence) in a given period. Period TFRs are thus negatively affected by the postponement of childbearing and should be interpreted with care in a situation of widespread postponement. As the pace of postponement varies across Europe, the effect on the period TFRs varies accordingly (Frejka and Sardon, 2004; Sobotka, 2004). Nevertheless, period indicators are essential when we want to study what is currently happening and when we wish to capture changes in trends. They are also crucial to study the consequences of fertility change (see for example Billari, 2004).

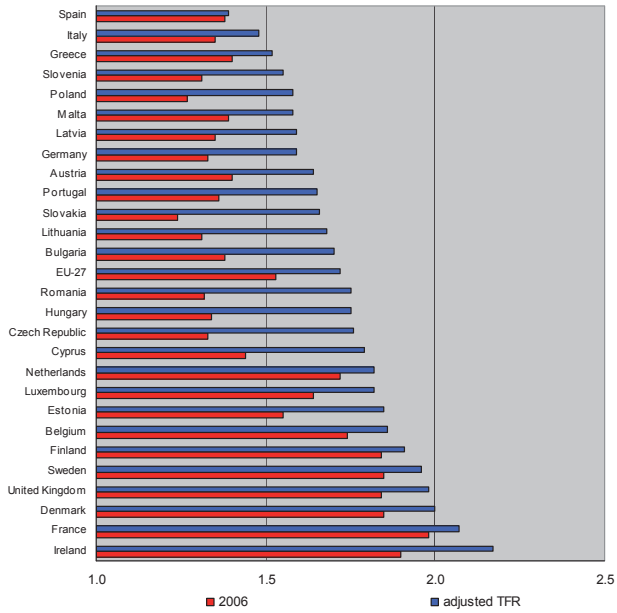
While the period TFR could be seen as the fertility 'weather report', the alternative method of the cohort TFR (measuring completed fertility per birth cohort) could be labelled as the fertility 'climate report'. Thus, at the end of the reproductive age span (usually around the age of 45-50) the cohort TFR gives the number of children that women born in the same year (birth cohort) have ever had and this actually reflects individual behaviour. To some degree cohort TFRs are like moving averages of the period TFRs, but when focussing on cohort fertility alone one of the main problems we are confronted with is social change: comparisons of current with earlier levels of cohort fertility may be misleading (see for example Billari, 2004).

Over the years, various proposals were made to compute a distortion-free measure of period fertility (see for an overview Ortega and Kohler, 2002), but none are undisputed and no such measure has yet been commonly accepted (Billari, 2004). For illustrative reasons, *Figure 2.7* gives an overview of the (unadjusted) period TFR in 2006 and the tempo adjusted period TFR for 2003-2005 using the so-called Bongaarts-Feeney model (VID *et al*., 2008).

The graph shows that postponement indeed has a significant impact on period fertility rates in all Member States which implies that as soon as postponement would stop, period TFRs would increase towards the cohort TFR level.[5] On average this could be an increase of 12%.

[5] Vice versa period TFRs would be higher than cohort TFRs if women from specific birth cohorts would have their children earlier than women from previous cohorts.

Figure 2.7 The 2006 period TFR and the 2003-05 adjusted TFR



NB. Adjusted according to the Bongaarts-Feeney model (VID, 2008).

For the European Union as a whole this could imply an increase from 1.5 to 1.7 children per woman. Most likely the increase would be much lower in Spain, Finland, France and the Netherlands. Also in Sweden, Belgium, the United Kingdom, Denmark, Greece, Italy and Luxembourg a less than 12% increase in the period TFR is to be expected if postponement would stop. This is partly caused by the fact that in some countries the postponement of fertility is already slowing down (such as in Spain and the Netherlands) and foregone births are already being recuperated. The largest increases in fertility (30% or over) would be expected in Slovakia, Romania, the Czech Republic and Hungary, all countries where postponement started more recently and still is increasing.

Although the model, as others, is disputed, the outcomes seem to suggest a window of opportunities for so-called 'tempo' policies aiming to influence the timing of fertility and thus to have an impact on, mainly, period fertility levels. The recent increase in European fertility levels seems to suggest that postponement has run most of its course in some Member States.

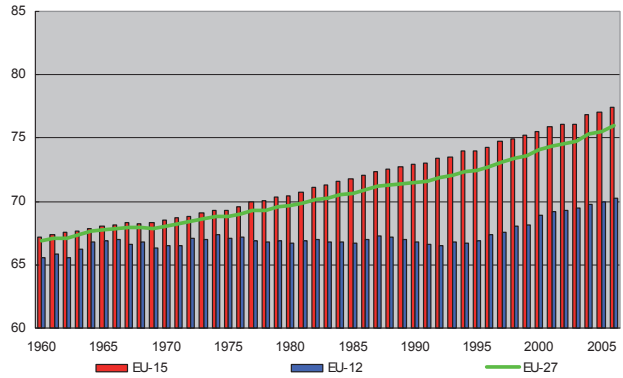
2.3.2 Mortality

Since the mid 1970s, the annual number of deaths in the EU-27 has been fairly stable at around 4.8 million. Despite a larger population size the number of deaths in 2007 was lower (4.8 million) than, for example, in 1985 (5.0 million) which illustrates that the impact of the growing population was compensated by decreasing mortality rates.

A commonly used indicator of the development of mortality is to consider life expectancy at birth. Since 1960, life expectancy for males has risen by more than ten years for the EU-15, and by less than five years for the EU-12 (*Figure 2.8*). Women in the EU-15 on average also gained ten years, while women in the EU-12 saw their life expectancy increase with eight years (*Figure 2.9*). As a consequence, the gap in life expectation at birth between women and men remained stable for the EU-15 (around 5.5 years) and became bigger for the EU-12 (from 4.9 to 8.1 years).

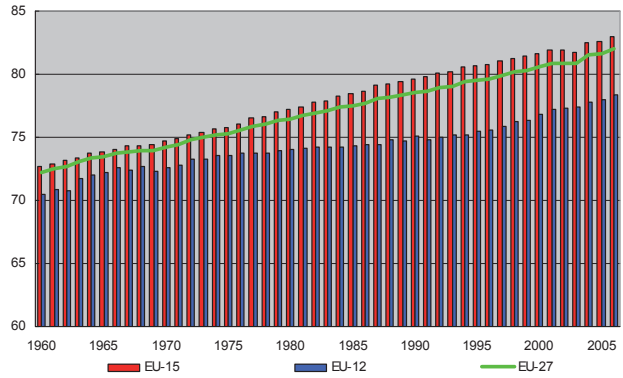
On average, male inhabitants of the EU-15 may expect to live 7 years longer than their counterparts in the EU-12. The differences in female life expectancy are somewhat smaller to the advantage of women in the EU-15 who live 4.5 years longer.

Figure 2.8 Life expectancy at birth for men, 1960-2006



Source: Eurostat.

Figure 2.9 Life expectancy at birth for women, 1960-2006



Source: Eurostat.

Country-specific information is shown in *Table 2.5* (men) and *Table 2.6* (women). Compared to the average level in the 1960s a gain of more than ten years is observed for men in Portugal, Cyprus, Austria, Italy and Luxembourg. For two countries, Latvia and Lithuania, the life expectancy at birth for men is lower in 2006 than in the 1960s. For women a gain in life expectancy at birth of more than ten years since the 1960s was achieved in Portugal, Cyprus, Italy, Malta and Spain; this gain is very modest in Latvia and Lithuania. Looking at the figures for 2006, the Baltic States report gender gaps of more than ten years. On the other hand, this gap in life expectancy at birth between women and men is less than four years in the United Kingdom and Cyprus.

There is consensus among demographers that life expectancy is likely to continue to increase for some time. There is, however, no agreement on the pace of increase and on the level of life expectancy that will be reached around 2050 and later (see for instance De Beer, 2006b).

Table 2.5 Life expectancy at birth for men, 1960-2006

	1960/69	1970/79	1980/89	1990/99	2000/04	2005	2006
EU-27	67.6	68.8	70.6	72.5	74.6	*75.5*	*76.0*
EU-15	67.9	69.4	71.7	74.0	76.1	*77.0*	*77.5*
EU-12	66.4	66.9	66.9	67.1	69.3	70.0	70.3
EFTA	70.0	71.5	73.1	75.2	77.4	78.4	78.8
Austria	66.3	67.7	70.4	73.4	75.8	76.7	77.2
Belgium	67.7	68.8	71.1	73.5	75.2	76.2	76.6
Bulgaria	68.6	68.7	68.4	67.6	68.7	69.0	69.2
Cyprus	67.9	70.9	73.4	74.9	76.5	76.8	78.8
Czech Republic	67.1	66.9	67.5	69.7	72.1	72.9	73.5
Denmark	70.5	70.9	71.6	73.0	74.9	76.0	76.1
Estonia	64.9	65.2	65.2	63.5	65.6	67.3	67.4
Finland	66.0	67.7	70.1	72.6	74.8	75.6	75.9
France	67.6	69.2	71.3	73.9	75.9	76.8	77.4
Germany	67.4	68.4	70.9	73.3	75.7	76.7	77.2
Greece	69.2	72.3	73.8	75.1	76.1	76.8	77.2
Hungary	66.6	66.4	65.5	65.6	68.2	68.7	69.2
Ireland	68.4	69.2	70.9	72.9	75.2	77.3	*77.3*
Italy	68.0	69.7	72.1	75.1	77.3	*78.2*	*78.4*
Latvia	66.2	64.7	65.0	62.7	65.2	65.4	65.4
Lithuania	67.1	66.6	66.3	64.8	66.3	65.3	65.3
Luxembourg	66.8	68.0	70.3	73.0	75.0	76.7	76.8
Malta	67.5	68.6	71.0	74.5	76.6	77.3	77.0
Netherlands	71.1	71.5	73.1	74.6	76.1	77.2	77.6
Poland	65.9	66.9	67.1	67.6	70.2	70.8	70.9
Portugal	61.9	65.2	69.4	71.6	73.9	74.9	75.5
Romania	65.3	67.0	66.7	66.0	67.7	68.7	69.2
Slovakia	68.0	66.9	67.0	68.1	69.7	70.2	70.4
Slovenia	65.5	66.4	67.8	70.5	72.6	73.9	74.5
Spain	68.2	70.4	73.1	74.4	76.3	77.0	77.7
Sweden	71.6	72.3	73.8	76.0	77.8	78.5	78.8
United Kingdom	68.3	69.4	71.5	74.0	76.1	77.1	*77.4*
Croatia					71.2	71.9	72.5
FYR Macedonia					70.9	71.6	71.7
Iceland	70.7	72.0	74.4	76.5	78.6	79.6	79.5
Liechtenstein	69.2	71.2	73.3	74.1	76.8	77.5	78.9
Norway	71.4	71.9	72.8	74.8	76.7	77.8	78.2
Switzerland	69.2	71.2	73.3	75.4	77.8	78.7	79.2

Source: Eurostat and NIDI estimates (in italics).

Table 2.6 Life expectancy at birth for women, 1960-2006

	1960/69	1970/79	1980/89	1990/99	2000/04	2005	2006
EU-27	73.3	75.3	77.4	79.4	81.0	*81.6*	*82.0*
EU-15	73.7	75.8	78.3	80.5	81.9	*82.6*	*83.0*
EU-12	71.8	73.4	74.4	75.5	77.3	77.9	78.4
EFTA	75.6	77.9	80.0	81.5	82.7	83.5	83.7
Austria	73.1	74.8	77.4	80.0	81.6	82.3	82.8
Belgium	73.8	75.3	78.0	80.3	81.3	81.9	82.3
Bulgaria	72.5	73.5	74.4	74.7	75.5	76.2	76.3
Cyprus	71.3	74.0	77.8	79.6	81.3	81.1	82.4
Czech Republic	73.5	73.9	74.8	76.9	78.7	79.2	79.9
Denmark	75.1	76.5	77.6	78.2	79.6	80.5	80.7
Estonia	72.8	74.5	74.7	74.9	76.9	78.2	78.6
Finland	73.6	76.2	78.4	80.2	81.8	82.5	83.1
France	74.6	77.0	79.5	82.0	83.1	83.8	84.4
Germany	73.0	74.7	77.4	79.8	81.4	82.0	82.4
Greece	73.7	76.7	78.5	80.0	81.0	81.6	81.9
Hungary	71.4	72.6	73.4	74.7	76.7	77.2	77.8
Ireland	72.6	74.3	76.3	78.4	80.4	81.7	82.1
Italy	73.5	76.0	78.7	81.5	83.2	*84.0*	*84.2*
Latvia	73.9	74.4	74.7	74.3	76.0	76.5	76.3
Lithuania	73.9	75.5	75.8	75.9	77.6	77.3	77.0
Luxembourg	72.7	74.5	77.5	79.9	81.3	82.3	81.9
Malta	71.1	72.8	75.4	79.1	81.0	81.4	81.9
Netherlands	76.0	77.6	79.7	80.3	80.9	81.6	81.9
Poland	72.0	74.3	75.3	76.4	78.6	79.3	79.7
Portugal	67.9	72.0	76.4	78.7	80.7	81.3	82.3
Romania	69.6	71.6	72.5	73.4	74.9	75.7	76.2
Slovakia	73.3	73.9	75.1	76.5	77.7	78.1	78.4
Slovenia	72.3	74.1	75.9	78.4	80.4	80.9	82.0
Spain	73.4	76.2	79.6	81.7	83.2	83.7	84.4
Sweden	75.9	78.1	79.9	81.4	82.3	82.9	83.1
United Kingdom	74.3	75.5	77.3	79.3	80.6	81.1	*81.3*
Croatia					78.2	78.9	79.3
FYR Macedonia					75.7	75.9	76.2
Iceland	76.0	77.8	80.0	81.1	82.6	83.5	82.9
Liechtenstein	75.0	77.7	80.2	81.4	82.3	84.1	83.1
Norway	76.5	78.2	79.7	80.8	81.9	82.7	82.9
Switzerland	75.0	77.7	80.2	81.9	83.2	84.0	84.2

Source: Eurostat and NIDI estimates (in italics).

Some experts expect a continuous linear increase in life expectancy at birth (e.g. Oeppen and Vaupel, 2002). One main argument supporting this assumption is that the maximum life expectancy has been increasing linearly for more than one century and a half. However, in recent years the increase in maximum life expectancy (*viz*. that of Japanese women) has been slowing down. Moreover, in almost all EU Member States the annual average increase in recent years has been lower than in the preceding two decades. This does not necessarily imply that we are approaching a limit to the growth in life expectancy. The slowing down of the pace of increase may be temporary. But at least one should be cautious in taking a linear increase in life expectancy for granted.

Other experts argue that these extrapolations do not take into account underlying changes in causes of death (e.g. Bongaarts, 2006). The increase in life expectancy at birth in the first half of the 20th century had other causes than the increase in the second half. Thus although there has been a continuation of the increasing trend in life expectancy, there have been different types of underlying changes.

Whereas the increase in life expectancy in the first half of the 20th century was mainly caused by a decline in mortality from infectious diseases at young ages, the decline in the second half of the 20th century was mainly caused by a decline in mortality from cardiovascular diseases in late middle age. A further substantial increase in life expectancy can be realised only by a strong reduction in mortality rates at advanced ages. It is not self-evident that this would result in the same pace of change in life expectancy at birth as in the last decades. Nevertheless, as declines in mortality rates at advanced ages have been substantial, there are no signs that we are approaching a limit in life expectancy. Hence a further increase in life expectancy may be expected in future decades, albeit possibly at a lower pace than in the past.

Two main determinants of changes in life expectancy are changes in lifestyle and medical progress. If the proportion of people with healthy lifestyles (moderate physical activity, not smoking, healthy diet, moderate use of alcohol) would rise substantially, this would have a considerable effect on the level of life expectancy. However, the question is how likely this is. The rising prevalence of obese people, particularly among the youth, does not suggest that a significant rise in the proportion of people with healthy lifestyles will easily be achieved. Moreover, lifestyles are to an important extent associated with socio-economic status and differences in socio-economic status do not show any tendency of declining.

If medical progress would result in a strong reduction in mortality due to cancer and cardiovascular disease, the two main causes of death, this would result in a rise in life expectancy of several years. However, a substantial further rise could only be achieved by a strong reduction in mortality due to diseases at advanced ages. This may be much more difficult to realise than reductions of mortality at middle age, as mortality at advanced ages often cannot simply be attributed to one single disease, but is related to frailty which manifests itself in co-morbidity. Thus medical advance in the treatment of one disease may lead to only a limited gain in the duration of life as the patient may die from another disease.

Differences in life expectancy between the EU-12 and the EU-15 countries may be expected to decline. Economic growth and improvement of health care may lead to a relatively strong increase in life expectancy in the EU-12 although strong patterns of excess male mortality persist. The effect of differences in lifestyle is much more uncertain. The substantial differences in life expectancy across the EU-15 countries have not disappeared during the last decades. Thus one may question whether it is likely that they will disappear in the future. The same holds for the important socio-economic differences in mortality. Where overall mortality levels have declined in all socio-economic groups across the European Union, there are indications that relative mortality differences between those in lower and higher socio-economic groups pertain (Groenewold, Van Ginneken and Masseria, 2008).

2.3.3 Migration and asylum

International migration continues to be the most volatile demographic process. As is the case with the other processes of demographic change, its determinants are very diverse and its impacts are wide ranging. International migration processes are difficult to document as reliable data are scarce and definitions of the various types of migration differ. As was reported earlier, international migration currently is the main driver of European population growth. The 2007 contribution of international migration to population growth amounts to an average of 3.9 per thousand for the entire Union where the migration balance is positive (4.6 per thousand) for the EU-15, but negative (-1.0 per thousand) for the EU-12.

Economic factors are among the major push and pull factors of international migration but other factors play a role as well. Focussing on recent migration flows, immigration from (former) colonies, and labour migration from Mediterranean countries, later followed by family reunion migration and family formation migration were the main sources. The inflow of asylum seekers and refugees from Third World countries is of a more recent date and also added to the growing ethnic diversity of the European population in particular in the EU-15. As for the EU-12, the turmoil of the socio-economic and political transition since the mid-1990s and the disintegration of the former Soviet Union added to the migration dynamics.

The most recent OECD data (OECD, 2006a) on long-term entries (i.e. excluding categories of migrants, in particular students, with residence permits that are not at all or only renewable on a limited basis) indicate that among countries for which data are available, the level of long-term entries as a percentage of the total population is highest in Switzerland, New Zealand, Australia and Canada, and low in Finland and Japan. In Portugal and Italy large numbers of irregular migrants explain the low levels of regular entries, while in the United States, with high levels of unauthorised immigration, the number of legal entries as a percentage of the total population is modest compared to other OECD countries.

Almost all OECD countries have temporary worker programmes. Migration to neighbouring countries and to countries with which there are historical links tends to predominate. Recent flows from Russia, Ukraine, China and Latin America (especially to Spain) gained importance. Family migration (family formation and family reunification) currently is more important than work related migration, also in Portugal, Denmark, Switzerland and the United Kingdom.

OECD (2006a) reports further that due to labour shortages, partly linked with population ageing, migration has gained importance on the policy agendas. Immigration flows have grown rapidly and at times migrants are using irregular or unconventional channels (asylum seeking, tourism overstaying). Managing migration has become a difficult balancing act between openness and control and searching for a proper mix of selected and non-selected migrants (c.f. Van Nimwegen, 2006). The OECD suggests that temporary migration may serve a function in addressing labour shortages; it is unclear to what extent circular migration may fulfil a need in this respect.

The study of international migration flows in the EU is hampered by data availability, data quality and data consistency. In response to the "…long history of inadequate, incomparable and missing migration data…" several policy and research efforts were launched in Europe (see Raymer and Willekens, 2008, also for an extensive discussion of data, models and estimates on international migration in Europe).

As a follow up to these studies methods are being developed to harmonise and correct for inadequacies in the available data and to estimate missing data (see for instance Raymer and Abel, 2008, and the ongoing MIMOSA project[6]). The provisional outcomes indicate that the overall migration balance for the EU-27 in 2005 amounted to 1.0 million, resulting from about 3.6 million immigrants and some 2.6 million emigrants (*Table 2.7*).

[6] MIMOSA (MIgration MOdelling for Statistical Analyses) is a three-year project funded by Eurostat intended to support the development and application of statistical modelling techniques for the estimation of missing data on migration flows and foreign population stocks. The project is being coordinated by the *Netherlands Interdisciplinary Demographic Institute* (NIDI) and involves experts on migration statistics from the *Central European Forum for Migration and Population Research* (CEFMR), the *Southampton Statistical Sciences Research Institute* (SSRI) and the *Université Catholique de Louvain* (UCL).

Table 2.7 Estimated EU migration flows, 2005 (millions)

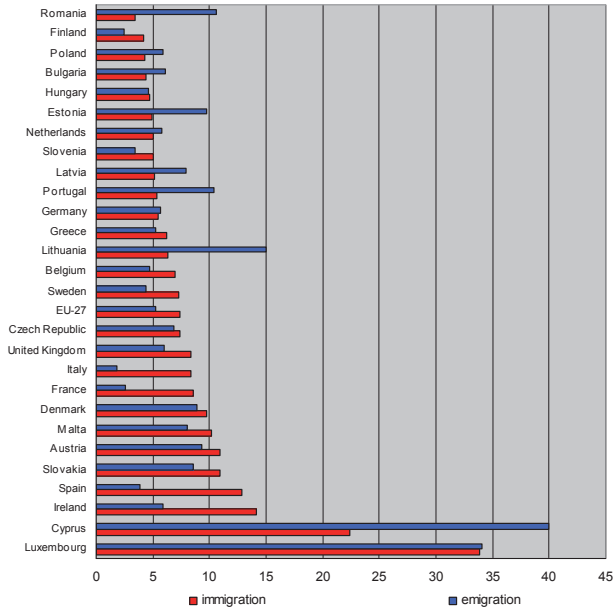
To	EU-27	EU-15	EU-12	Rest	Total
From					
EU-27	1.4	1.1	0.3	1.1	2.6
EU-15	0.8	0.6	0.2	1	1.8
EU-12	0.6	0.5	0.1	0.2	0.8
Rest	2.2	2	0.2		
Total	3.6	3.1	0.5		

Source: Raymer and Able, 2008.

Almost two out of every three immigrants in the EU-27 arrived from outside the Union and consequently 1 out of 3 immigrants came from other Member States. The large majority of immigrants, 3.1 million, settled in the EU-15 Member States while the EU-12 Member States attracted 0.5 million immigrants. Somewhat less than half of the emigrants from the European Union left for destinations outside the Union, and about the same proportion went to one of the EU-15 Member States.

According to the provisional MIMOSA estimates, in 2005 from all EU Member States immigration as a share of the total population was highest in Luxembourg and Cyprus (at 34 and 22 per thousand respectively), followed by Ireland (14) and Spain (13) (*Figure 2.10*).

Figure 2.10 Estimated immigration and emigration per 1 000 population, 2005



Source: Raymer and Able, 2008.

The lowest inflow of immigrants was recorded for Romania (3 per thousand of the population), Finland (4), Poland (4) and Bulgaria (4). As for emigration, Cyprus, Luxembourg and Lithuania recorded the highest relative numbers (40, 34 and 15 per thousand respectively). Luxembourg stands out, both with respect to in- and outflow, as a centre of international institutions. The relatively lowest numbers of persons leaving the country occurred in Italy and Finland (both 2 per thousand).

Asylum

The number of individuals requesting refugee or asylum status in Europe and the non-European industrialized countries increased by 10% in 2007 as compared to the year 2006 (UNHCR, 2008). An estimated 338 thousand new asylum applications were recorded in the course of the year 2007, 32 thousand more than the year before. This is the first increase in the number of requests in five years and follows the 20-year low which was observed in 2006 (306 thousand asylum claims). Despite this increase, the 2007 level is half the level witnessed in 2001. The rise in 2007 can by and large be attributed to the sharp increase in Iraqi asylum seekers, as will be explained below. If the Iraqi asylum claims were to be excluded from the analysis, the increase in 2007 would have been only 2%.

The European Union recorded 223 thousand new asylum applications in 2007, 11% more than in 2006. The average for the EU-27, however, hides significant differences between the EU-12 and the EU-15. While the former recorded a 27% increase in 2007 (from 20.0 to 25.5 thousand), the latter registered a 9% rise (from 181.0 to 197.5 thousand); the EU-15 Member States thus account for 78% of all asylum claims in Europe (UNHCR, 2008; see also *Table 2.8*). Major asylum-seeker receiving countries which reported a significant decline in the number of requests in 2007 included Austria (-11%), Germany (-9%) and France (-5%). Conversely, major increases were recorded by Sweden (+49%), Greece (+105%), Italy (+35%), Spain (+41%), and Poland (+61%).

Within Europe, Sweden became the main asylum destination in 2007 with 36.2 thousand new asylum requests. This increase was primarily caused by the continuing arrival of large numbers of Iraqi asylum seekers. France, which had been the top receiving country in the years 2004, 2005 and 2006 ranked second in 2007 (29.2 thousand claims). With 27.9 thousand asylum applications submitted in 2007, only marginally less than in 2006 (28.3 thousand), the United Kingdom fell from second to third most important destination for asylum seekers in Europe. In the United Kingdom the number of asylum requests has been declining for the fifth consecutive year, albeit the recent decline is at a much slower pace than a few years ago.

Asylum requests in Germany also continued to decline reaching a 30-year low in 2007 with 19.2 thousand individuals applying for asylum (-9%). Germany had been the leading European destination country for much of the 1980s and 1990s, in the early 1990s registering half of all asylum claims in the industrialized world. In 2007 Germany ranked as the fifth most important European destination country for asylum seekers.

Greece has emerged as a major new recipient of asylum seekers in the industrialized world; in the course of 2007, 25.1 thousand asylum applications were filed in this country, almost 13 thousand more than in 2006, constituting not only the fourth consecutive annual increase, but also five times more applications than in 2004 (4.5 thousand asylum claims). Greece thus moved from being the seventh largest recipient of asylum seekers in 2006 to the fourth ranked most important destination in 2007. This large increase in Greece can on the one hand be attributed to actual new arrivals, particularly from Iraq, but is on the other hand also the result of improved registration allowing a faster recording of asylum claims (UNHCR, 2008).

Table 2.8 Asylum applications submitted in European countries, 2003-2007 (x 1 000)

	2003	2004	2005	2006	2007
EU-27	349.3	281.6	241.0	201.0	222.9
EU-15	309.3	241.0	212.7	181.0	197.5
EU-12	40.0	40.6	28.3	20.0	25.5
EFTA	37.0	22.4	15.6	16.0	17.0
Austria	32.4	24.6	22.5	13.4	11.9
Belgium	16.9	15.4	16.0	11.6	11.1
Bulgaria	1.6	1.1	0.8	0.6	1.0
Cyprus	4.4	9.9	7.8	4.6	6.8
Czech Republic	11.4	5.5	4.2	3.0	1.9
Denmark	4.6	3.2	2.3	1.9	2.2
Estonia	0.0	0.0	0.0	0.0	0.0
Finland	3.2	3.9	3.6	2.3	1.4
France (excl. DOM)	59.8	58.6	49.7	30.8	29.2
Germany	50.6	35.6	28.9	21.0	19.2
Greece	8.2	4.5	9.1	12.3	25.1
Hungary	2.4	1.6	1.6	2.1	3.4
Ireland	7.9	4.8	4.3	4.3	4.0
Italy	13.5	9.7	9.6	10.4	14.1
Latvia	0.0	0.0	0.0	0.0	0.0
Lithuania	0.2	0.2	0.1	0.1	0.1
Luxembourg	1.6	1.6	0.8	0.5	0.4
Malta	0.6	1.0	1.2	1.3	1.4
Netherlands	13.4	9.8	12.4	14.5	7.1
Poland	6.9	8.1	6.9	4.4	7.1
Portugal	0.1	0.1	0.1	0.1	0.2
Romania	1.1	0.7	0.6	0.5	0.7
Slovakia	10.4	11.4	3.6	2.9	2.6
Slovenia	1.1	1.2	1.6	0.5	0.4
Spain	5.9	5.5	5.3	5.3	7.5
Sweden	31.4	23.2	17.5	24.3	36.2
United Kingdom	60.1	40.6	30.8	28.3	27.9
Croatia	0.1	0.2	0.2	0.1	0.2
FYR Macedonia	2.3	0.1	0.1	0.1	0.0
Turkey	4.0	3.9	3.9	4.6	7.6
Iceland	0.1	0.1	0.1	0.0	0.0
Liechtenstein	0.1	0.1	0.1	0.1	0.0
Norway	16.0	8.0	5.4	5.3	6.5
Switzerland	20.8	14.3	10.1	10.5	10.4

Source: UNHCR.
Country notes
Croatia: in addition, UNHCR registered applications for refugee status in 2003 (73), 2004 (47) and 2005 (7).
Cyprus: in addition, UNHCR registered asylum applications in 2003 (626), 2004 (74), 2005 (25) and 2006 (12).
France: includes asylum applications of minors.
Germany: the delay of registering people as well as changes in the registration procedures result in discrepancies between the cumulative total of monthly asylum claims and the total number of asylum claims in Germany. As such, the table reflects the total number of asylum claims.
Netherlands: data prior to 2007 include a significant number of repeat applications. The 2007 figure is thus not comparable to previous years.
Spain: includes applications lodged at Spanish embassies.
FYR Macedonia: 2003: includes 2,278 persons, mainly from Kosovo, with Temporary Humanitarian Assistance Status who applied for asylum.
Turkey: source UNHCR.

After having been the main source country of asylum-seekers in industrialized countries in 2000 and 2002, Iraq again became the main country of origin in 2006. This trend continued in 2007, with 45.2 thousand Iraqis submitting an asylum claim or roughly 1 out of 6 claims in the European Union. The Russian Federation was the second most important source country of asylum-seekers with 18.8 thousand claims, followed by China (17.1 thousand), Serbia (15.4 thousand), Pakistan (14.3 thousand), and Somalia (11.5 thousand).

2.4 Population diversity

2.4.1 Introduction

Due to international migration, the composition of the European population has become more diverse. It is estimated that currently citizens from at least 175 nationalities are living within the boundaries of the European Union. Migration flows added to the already existing patchwork of national minorities and cultural groups, making up the current population diversity. It is however difficult to draw an accurate picture of this diversity, as was illustrated in a recent study (Schoorl and Van Praag, 2007). Most Member States have statistics on the migrant population (defined as those born abroad) and/or the population with foreign citizenship. These statistics however are not sufficient to describe the populations of foreign descent or 'ethnic minorities'. On the one hand, statistics that focus on foreign country of birth do not include the native-born descendants of the immigrants, the so-called 'second generation'. On the other hand, statistics that focus on foreign citizenship do not capture the immigrants who have acquired citizenship of their country of residence, either by birth or by naturalisation. The practice of 'double citizenship' which prevails in some countries and for some groups of migrants, further complicates the statistics on citizenship.

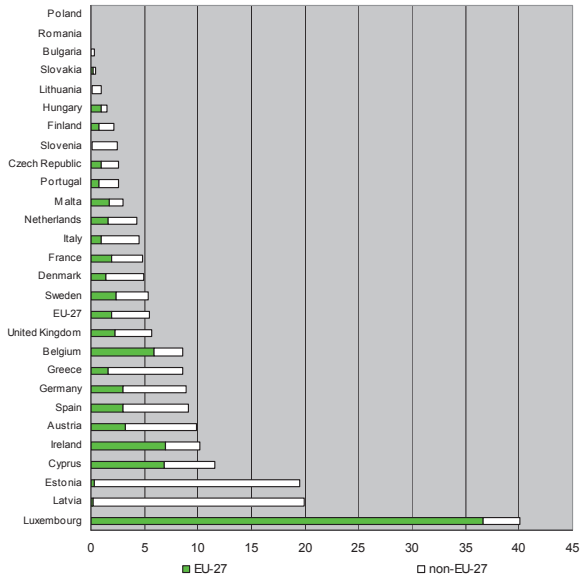
To demonstrate the impact of the various definitions of diversity, the example of Denmark and the Netherlands (the only Member States with statistics that allow capturing a wide ethnic diversity) is illustrative. Denmark hosts 5% foreign citizens, while its current population of foreign descent (residents born abroad and their native born children) is 8.8%. The case of the Netherlands is even more striking with 4.2% of foreign citizens and 19.4% population of foreign descent. Danish and Dutch 'second generations' comprise 2.1% and 9.6% of the respective total populations (Schoorl and Van Praag, 2007). Second-generation integration (by children of immigrant parentage born in the country of migration) is an important dimension of the process of increasing population diversity. This is particularly relevant in the larger cities where substantive shares of the migrant populations are living and migrant children constitute a growing share of metropolitan youth (see Crul and Heering, 2008[7]).

2.4.2 Foreign citizenship

Taking the limitations of this indicator into account and noting that the reliability of these data leaves room for improvement it is estimated that on average 5% of the population of the European Union has foreign citizenship (*Figure 2.11*). The Member States of Central and Eastern Europe have relatively few inhabitants with foreign citizenship (less than 3%) with the exception of Estonia and Latvia with their large minorities of people of Russian origin. Other Member States with high shares of foreign citizens are Cyprus (12%), Ireland (10%) and Austria (10%). Luxembourg as a centre of European institutions stands out with 40%.

[7] In 2005 an international research project on The Integration of the European Second Generation (TIES) was launched in eight European countries (http://www.tiesproject.eu/). TIES is coordinated by the Institute for Migration and Ethnic Studies (IMES) of the University of Amsterdam. The Netherlands Interdisciplinary Demographic Institute (NIDI) coordinates the international survey of the project. TIES aims to provide a first systematic cross-national comparison of the second generation in Europe.

Figure 2.11 Population with foreign country of citizenship (% of total population), 1-1-2006



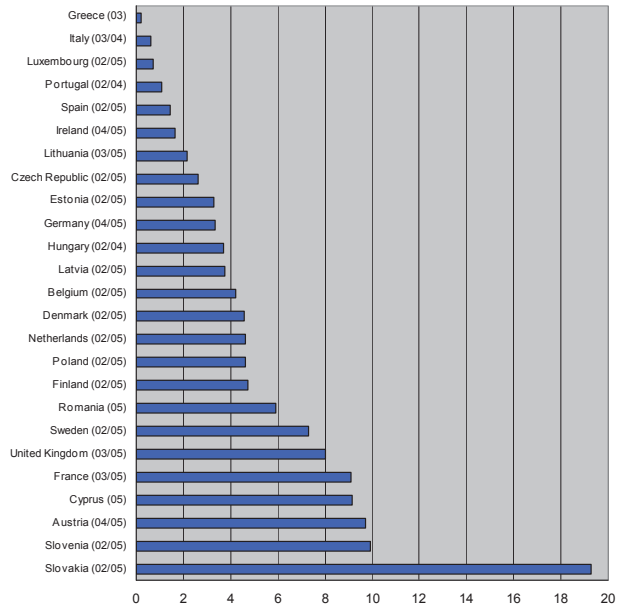
Source: Eurostat and NIDI estimates.

In all Member States, the composition of the foreign population is strongly influenced by proximity. In general, citizens from neighbouring countries rank high in the list of largest immigrant groups. But also (post-) colonial and/or political ties, (former) labour migration agreements and asylum policies play an important part. Southern Europe traditionally had small shares of foreign nationals and in the 1950s and 1960s saw many nationals migrating to Western Europe, but nowadays serves as a refuge for migrants from the African continent.

It must be noted that differences in naturalisation policies also play an important part in shaping the foreign population. As regards the statistics on acquisition of citizenship, the comparability of these statistics remains limited over time for the same country and internationally, because of differences and frequent changes in national provisions, different acquisition requirements and procedures, and limited or incomplete registration for some types of acquisition (Cantisani and Greco, 2006).[8] Taking these limitations into account, *Figure 2.12* provides data on the acquisition of citizenship in the EU countries, showing large differences between Member States. Despite data limitations it may be concluded that in, for example, France and the United Kingdom many more people are naturalised than in Germany and Italy. Other countries with recent high rates of acquisition of citizenship are Slovakia, Slovenia, Austria and Cyprus. Rates well below the average are found in Luxembourg, Italy and Greece.

[8] A EU-funded project aiming at comparing the provisions for the acquisition of citizenship is NATAC (The acquisition of nationality in the EU Member States: Rules, practices and quantitative developments). This project is coordinated by the Institute for European Integration Research of the Austrian Academy of Science, and carried out by the European Centre for Social Welfare Policy Research (Austria), the Centre for Migration Law of the Catholic University of Nijmegen (the Netherlands) and the Danish Institute for Human Rights (Denmark) (http://www.eif.oeaw.ac.at).

Figure 2.12 Average annual rate of acquisition of citizenship (%)



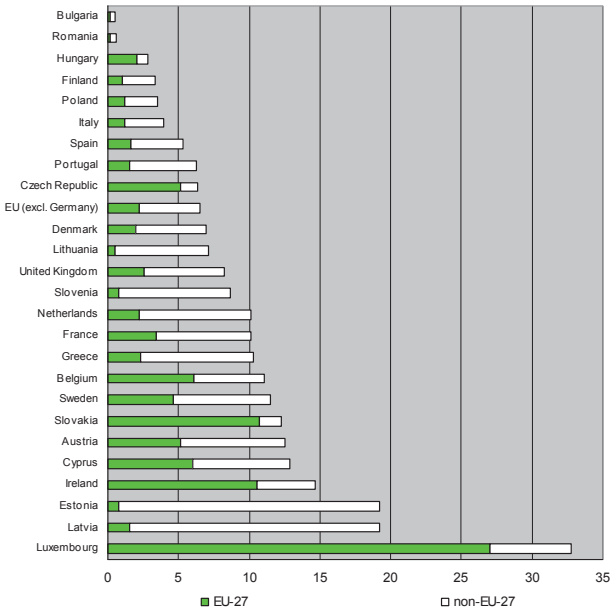
Source: Eurostat, NSIs and NIDI estimates.
Because of differences in rules, procedures and definitions the comparability of figures is hampered.
Acquisition of citizenship by newly-born children is generally excluded.
No data available for Bulgaria and Malta.

2.4.3 Born abroad

Currently some 7% of the population of the European Union (excluding Germany which country does not collect data on country of birth) was born outside the country of residence and can thus be considered as a first generation migrant. *Figure 2.13* illustrates that Luxembourg stands out again, followed by two Baltic countries with large shares of inhabitants born abroad, mostly in what is now the Russian Federation. Most of the other Central and Eastern European countries have below EU average shares of first generation migrants.

Demographic diversity is linked with socio-cultural diversity and in most European countries at least part of the recently arrived migrants can be characterized by social arrears in relation to the majority population. Higher levels of unemployment, lower levels of education and less favourable housing conditions exemplify this. A degree of spatial segregation is present in most large European cities with migrants occupying comparatively unattractive houses and neighbourhoods. Such arrears may be unavoidable and even acceptable at the onset of migration when migrants have to overcome language problems and when their education in the country of origin may not be tuned to the demands of the receiving society. When such arrears persist and extend over generations however, there is cause for alarm as integration is faltering and lasting social disparities pertain (Schoorl and Van Praag, 2007).

Figure 2.13 Population with foreign country of birth (% of total population), date last census



Source: Eurostat.
Data are derived from last census, generally held in 2000, 2001 or 2002, or otherwise from population register on 1 January 2001.
Exceptions: France (census 1999) and Ireland (census 2006).
No data available for Germany and Malta.

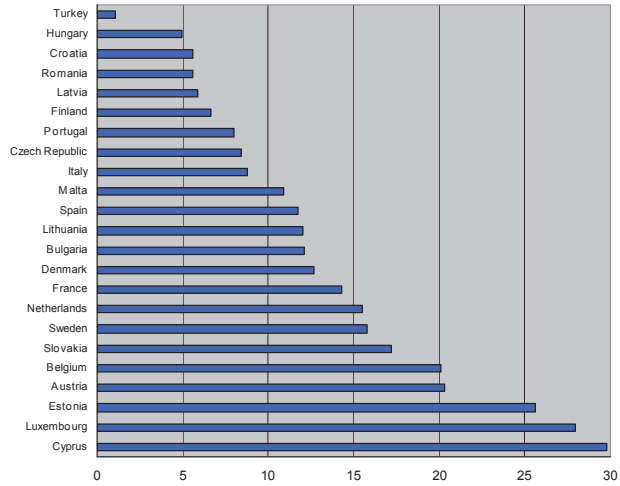
Whether one looks at nationality, country of birth or migration history, Europe is a patchwork of population groups. This demographic diversity remains difficult to document due to differing definitions, methodologies and statistical procedures.

2.4.4 Mixed marriages

Adding to the diversity is the phenomenon of mixed marriages, i.e. marriages between spouses of different EU nationalities, and between EU nationals and other Europeans or immigrants from third countries. Data on mixed marriages are scarce; an inventory of data concerning marriages concluded around the year 2006 (Schuh, 2008) indicates that mixed marriages as a share of total marriages varied from 1% in Turkey to almost 30% in Cyprus (*Figure 2.14*).

Generally, in countries with low shares of mixed marriages the proportion of foreign citizens is not yet considerable. A high share of mixed marriages dominates in countries with a considerable share of foreign citizens (the Netherlands, Austria and Belgium) but also in Slovakia (large number of mixed marriages with Hungarian and Czech spouses); Estonia (due to citizens with undetermined citizenship and a large number of immigrants from Russia) and the small countries Cyprus and Luxembourg, where many foreigners live and work. Malta is similar but has a moderate share of mixed marriages (Schuh, 2008).

Figure 2.14 Mixed marriages in European countries (% of total marriages contracted in 2006 or last year available)



Source: Schuh, 2008.

Mixed marriages between EU citizens are related to the increased international mobility (for labour and educational reasons) within the growing Union and is expected to grow with the ongoing EU integration. Marriages between EU nationals represent a considerable part of total marriages in most of the Member States. A noticeable number of marriages between citizens from the EU-15 and the EU-12 Member States are already found in the statistics of 2006.

2.5 Population ageing

2.5.1 Old age dependency ratio

As a result of sustained low fertility and increasing longevity, population ageing remains the most dominant demographic challenge confronting the European Union. A recent study from the United Nations, *World population ageing 2007*, documents this challenge from a development perspective (United Nations, 2007). In the study, population ageing is seen as irreversible where it is noted that by the middle of this century the developing world is likely to reach the same stage in this process that the developed world is currently experiencing. The pace of population ageing is faster in developing than in developed countries and consequently, developing countries will have less time to adjust to population ageing. In addition, population ageing in developing countries will take place at lower levels of socio-economic development than has been the case for the developed world.

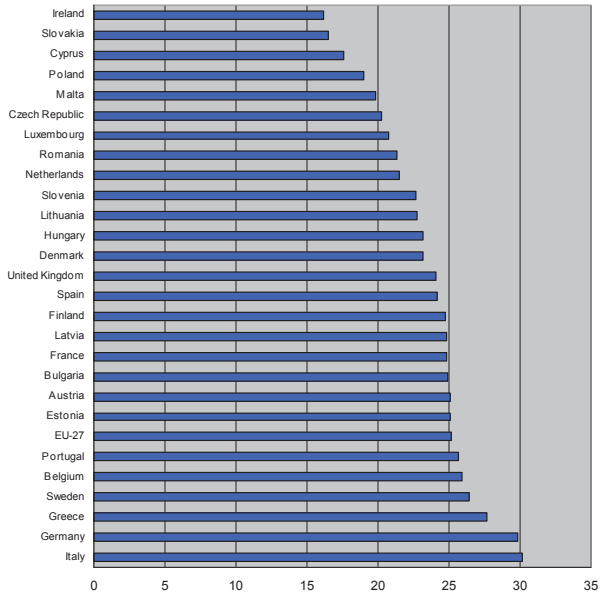
The old age dependency ratio, defined here as the number of people of 65 or older per 100 people aged 0-14 (see also footnote 2 on the limitations of this age range), illustrates the pace of the ageing process. *Table 2.9* shows that for the world as a whole the current old age dependency ratio equals 11. Population ageing is most advanced in Japan (30) and Europe (25). The ratio for the more developed world (23) by far exceeds the level in the less developed regions (9). According to *Figure 2.15*, on 1 January 2007, the old age dependency ratio varies in the EU between 16 (Ireland) and 30 (Italy).

Table 2.9 Old age dependency ratio, 1960-2005

	1960	1970	1980	1990	2000	2005
World	9	9	10	10	11	11
More developed regions	14	15	18	19	21	23
of which						
EU-27	16	19	21	21	23	25
USA	15	16	17	19	19	18
Japan	9	10	13	17	25	30
Russian Federation	10	12	15	15	18	19
Less developed regions	7	7	7	7	8	9
of which						
China	9	8	8	8	10	11
India	5	6	6	7	8	8
Brazil	6	7	7	7	8	9

Mid-year population aged 65 and over as a percentage of population aged 15-64.
Source: EU-27 Eurostat; other regions United Nations, World Population Prospects, 2006 revision.

Figure 2.15 Old age dependency ratio per EU country, 1 January 2007



Population aged 65 and over as a percentage of population aged 15-64.
Source: Eurostat and NIDI estimates.

On the basis of this indicator Italy may be labelled as the most aged and Ireland as the least aged population in the EU. However, there are other indicators as well that measure the degree of ageing of a population which may have different outcomes.

To grasp other dimensions of population ageing in addition to the old age dependency ratio, the following indicators can be taken into account:

- the median age, which is the age at which half the population is older and half is younger;
- the proportion of elderly in the potential labour force, i.e. people aged 40-64 as a percentage of those aged 15-64 which indicates the ageing of the work force;
- the proportion of oldest old, here the population aged 80+ as a percentage of people aged 65 and over; this indicator of double ageing is particularly relevant from a care perspective.

In *Table 2.10* Member States are ranked from least to most aged, based on the (not weighted) average of the various ageing indicators. According to these indicators, Slovakia is the EU Member State where population ageing is least advanced. Other 'young' countries include Romania and Poland. The relatively high proportion of 'oldest old' in Ireland prevents its higher ranking. It is worth noting that eight of the ten least aged countries are part of the EU-12. On the other hand, all of the ten most aged countries belong to the EU-15; within the European Union, population ageing is most advanced in Italy, Sweden and Germany.

Table 2.10 Ranking of EU Member States and ageing indicators per EU country, 1 January 2007

	median age		65+ per 100 15-64		% 40-64 in 15-64		% 80+ in 65+	
	M	F	M	F	M	F	M	F
1 Slovakia	33.7	37.2	12.3	20.6	44.1	46.6	17.4	23.5
2 Romania	35.3	38.1	17.5	25.1	41.5	44.2	15.6	19.4
3 Ireland	*32.3*	*33.6*	*14.2*	*18.2*	*41.8*	*42.6*	*19.5*	*28.6*
4 Poland	34.5	38.6	14.4	23.4	45.2	47.6	16.4	24.2
5 Cyprus	34.1	35.9	16.1	19.1	44.6	45.5	20.4	24.3
6 Lithuania	35.0	40.6	16.1	29.0	44.4	48.8	14.7	22.6
7 Czech Republic	36.8	40.4	15.8	24.7	47.4	49.3	17.6	25.9
8 Latvia	35.6	42.4	16.8	32.3	44.4	49.1	12.8	23.1
9 Estonia	35.1	42.1	17.3	32.3	44.2	49.0	13.9	23.5
10 Luxembourg	37.3	38.7	17.0	24.6	49.5	49.1	16.9	28.5
11 Malta	36.8	39.7	16.6	23.2	49.2	50.6	19.1	24.1
12 Hungary	36.3	41.5	17.2	28.9	46.0	49.6	18.6	25.0
13 Spain	37.3	39.9	20.3	28.2	45.3	47.2	22.7	30.4
14 Slovenia	38.6	41.6	17.1	28.4	49.5	50.6	14.4	25.6
15 Bulgaria	38.4	42.5	20.6	29.1	47.6	50.4	17.9	21.7
16 Portugal	37.7	40.9	21.7	29.5	47.1	49.3	20.2	26.2
17 Netherlands	38.3	39.9	18.2	24.8	51.8	51.8	19.3	29.9
18 United Kingdom	37.4	39.6	20.9	27.3	48.4	49.5	22.8	32.0
19 Greece	38.8	41.5	24.2	31.1	47.1	49.5	20.2	21.5
20 France	37.2	40.2	20.9	29.5	49.1	50.4	23.9	33.6
21 Denmark	38.6	40.3	19.9	26.6	52.3	52.6	21.3	31.1
22 Austria	38.8	41.2	20.3	29.8	49.9	50.7	19.1	31.7
25 Finland	39.3	42.3	19.8	29.8	52.7	53.8	18.6	30.1
24 Belgium	*38.8*	*41.2*	*21.5*	*30.4*	*50.9*	*51.3*	*21.2*	*30.6*
25 Germany	41.1	43.5	24.6	35.2	52.6	53.2	16.3	28.4
26 Sweden	39.0	41.0	22.7	30.3	50.6	51.1	25.8	35.0
27 Italy	40.3	43.1	25.1	35.2	50.3	51.7	21.4	30.5

Source: Eurostat and NIDI estimates (italics).
Ranking is unweighted average, from least to most aged.

2.5.2 Young age dependency ratio

The young dependency ratio, the number of 0-14 year old children per 100 persons aged 15-64 years, has clearly decreased since the 1960s. However, this ratio is still twice as high in the less developed regions as in the more developed regions (*Table 2.11*).

Table 2.11 Young age dependency ratio, 1960-2005

	1960	1970	1980	1990	2000	2005
World	64	66	60	53	48	44
More developed regions	44	41	34	31	27	25
of which						
EU-27	39	40	34	29	26	24
USA	51	46	34	33	33	31
Japan	47	35	35	26	21	21
Russian Federation	47	40	32	34	26	21
Less developed regions	74	77	70	60	54	49
of which						
China	69	71	59	41	37	31
India	71	73	69	65	58	53
Brazil	81	78	66	59	46	42

Mid-year population aged 65 and over as a percentage of population aged 15-64.
Source: EU-27 Eurostat; other regions United Nations, World Population Prospects, 2006 revision.

For the EU-27 the young dependency ratio is currently 24, somewhat higher than in Japan and the Russian Federation, and somewhat lower than in the USA. Most spectacular is the decrease in China, due to the one-child policy that was introduced in 1979. On 1 January 2007, the young age dependency ratio varies in the European Union between 19 (Bulgaria) and 30 (Ireland).

2.5.3 Total dependency ratio

The total dependency ratio includes both the young and old age dependency and is viewed as an indicator of the overall demographic pressure. As is shown in *Table 2.12* the total dependency ratio decreased in the recent past but, as a result of two opposed trends, less dramatic than the young age dependency ratio. Currently the total dependency ratio is higher in the EU-15 countries than in the EU-12 countries (*Figure 2.16*). It is highest in France (53) and lowest in Slovakia (39).

Table 2.12 Total age dependency ratio, 1960-2005

	1960	1970	1980	1990	2000	2005
World	73	75	70	63	59	55
More developed regions	58	56	52	49	48	48
of which						
EU-27	55	59	55	50	49	49
USA	67	62	51	51	51	49
Japan	56	45	48	44	47	51
Russian Federation	57	52	47	49	44	41
Less developed regions	81	83	77	67	62	57
of which						
China	78	79	67	50	47	41
India	77	79	75	72	65	61
Brazil	87	85	73	66	54	51

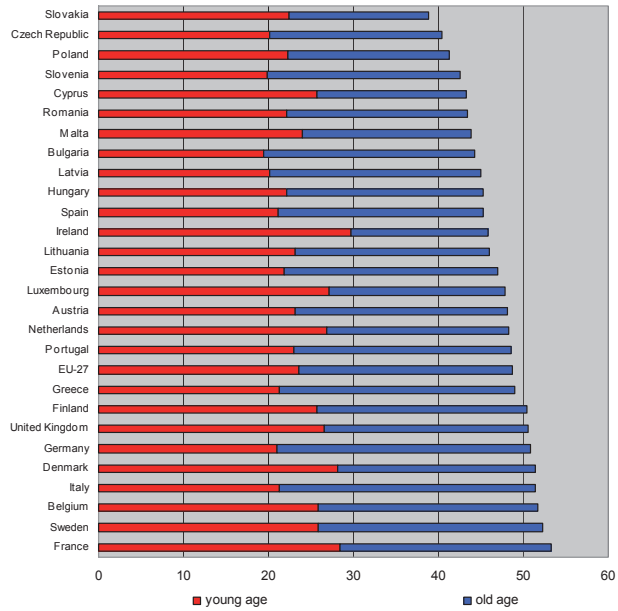
Mid-year population aged 0-14 and 65 and over as a percentage of population aged 15-64.
Source: EU-27 Eurostat; other regions United Nations, World Population Prospects, 2006 revision.

2.6 Households and living arrangements

2.6.1 Introduction

The living arrangements of Europeans have become more diverse over the past decades. Major changes in the demographic behaviour of its inhabitants, usually captured as the 'second demographic transition' (e.g. Van de Kaa, 2008) include the postponement of marriage and childbirth, the decline of large families, increased childlessness, more people living alone, more cohabitation and divorce.

Figure 2.16 Total dependency ratio per EU country, 1 January 2007



Population aged 0-14 and 65+ as a percentage of population aged 15-64.
Source: Eurostat and NIDI estimates.

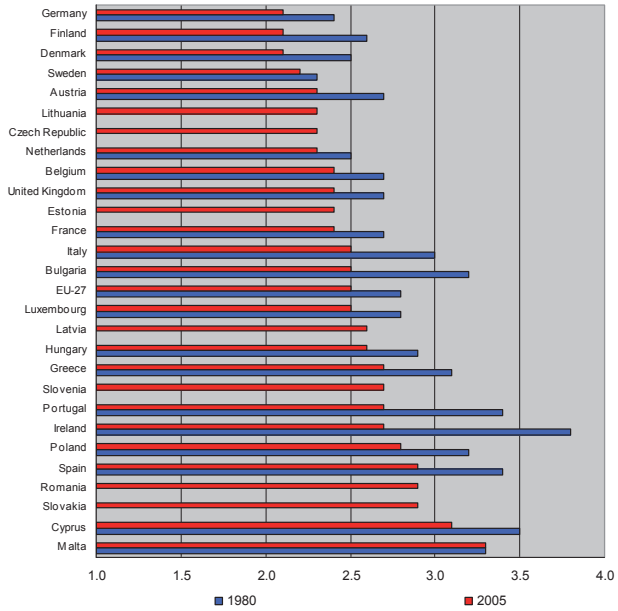
A recent study (Fokkema and Liefbroer, 2007) reported on the impact of these changes on households and living arrangements. Based on data from the EU Labour force surveys, developments since the late 1980s were studied revealing five major trends.

- Leaving the parental home is being postponed: young Europeans and especially young men stay longer in the parental home. This trend is mainly evident in Southern and Eastern Europe, less so in Western Europe.
- More people are living with a partner and without children. This all-European trend is most pronounced in Western Europe. Women are more likely to live with only a partner during their twenties and between the ages 40-54, while men do so in their thirties and after age 60.
- Family formation is postponed as well; the shares of young Europeans who are living with a partner and one or more children, are declining all over Europe. Interestingly, after age 45 the number of people living with a partner and children is increasing in Southern Europe, reflecting postponement of leaving home ('hotel mama').
- Single parenthood is predominantly a female living arrangement; the number of single mother households is growing all across Europe.
- Living alone remains a popular living arrangement and is strongly concentrated at higher ages. People living alone are more common in Western Europe and less so in Southern and Eastern Europe.

2.6.2 Household size

The overall trends as mentioned above are reflected in the mean size of a European household, which is declining, as is illustrated in *Figure 2.17*.

Figure 2.17 Average household size around 1980 and 2005



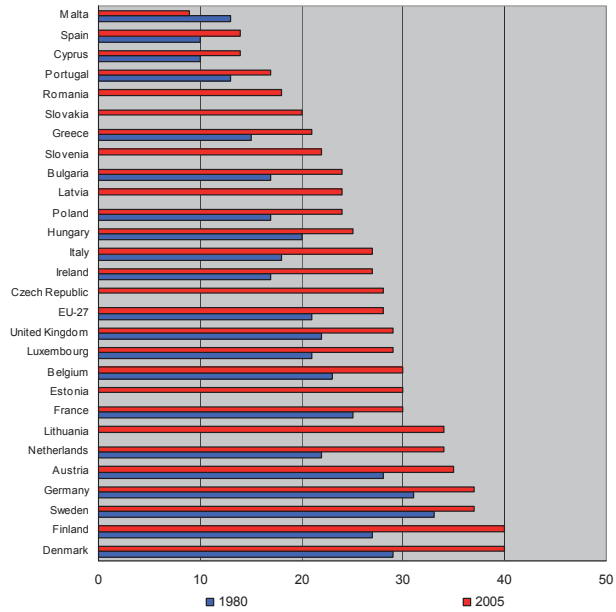
Source: Council of Europe (1990); Household Budgetary Survey 2005.

In 2005, the average number of persons per household was 2.5 in the European Union, ranging from 2.1 in Germany, Finland and Denmark to 3.3 in Malta. Compared to 1980 the average household size declined in almost all European countries, especially in Ireland, Bulgaria and Portugal.

According to the life cycle, households of young people and households of the elderly live on average in smaller households than people aged 30 to 59. In the EU-27 the current average household size of households headed by people aged 30 to 44 years is 3.1 and of households headed by people aged 45 to 59 years 2.7 compared to households of young people with 2.2 and of the elderly with 1.8 (Schulz, 2008).

In total, the share of single person households in total households in the European Union increased from 21% in 1980 to 28% in 2005 (*Figure 2.18*). A significant increase occurred in almost all European countries, especially in Finland, the Netherlands and Denmark. In 2005, the share of single households varies from 9% in Malta to 40% in Finland and Denmark. On the other hand, the share of family households, defined as two or more adults living with dependent children, is lowest in Sweden with around 19% and highest in Malta with more than 50%.

Figure 2.18 Percentage of single person households around 1980 and 2005



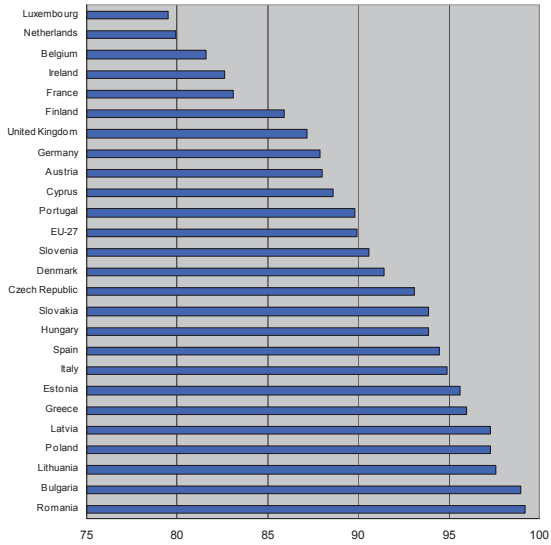
Source: Council of Europe (1990); Household Budgetary Survey 2005.
NB Because of missing 2005 data, for Luxembourg and the Netherlands 2001 data have been used.

2.6.3 Households of the elderly

Ageing of the population has led to an increasing share of households headed by people aged 60 and older. In the EU-27 on average one out of three households was headed by an elderly person in 2005. The share was highest in Italy and Bulgaria (42%) and lowest in Slovenia, Malta and the Netherlands (around 27%). The household size of households headed by the elderly is the result of changes in living arrangements during the life (marriage, cohabitation, divorce, separation, re-partnering, children and the time the children leave the parental home) and the life expectancy of the partners with in general higher life expectancies of women than men. According to the census 2001 around 26% of people aged 60 years and older lived in a single person household in the enlarged EU. The share of elderly living in a single household ranged from 16% in Greece to 38% in Denmark. Half of the elderly lived in a two-person-household in the EU-27 in 2001 (Schulz, 2008).

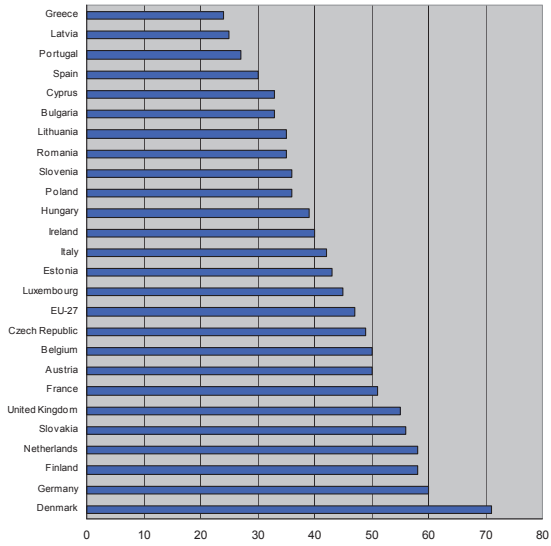
The high share of elderly living alone or with a partner can be used as an indicator for the required investments in dwellings to meet the special housing needs of elderly. The growing share and number in particular of the oldest old, defined here as people aged 80 and over, has an important effect on the housing standard which is required to meet the needs of people which have more or less impairments in their activities of daily living. Most people want to live as long as possible independently of their own dwelling. This requires often investments in special equipments which help people to live independently. For example, barriers free dwellings, investments in bathrooms or bedrooms. Today a large share of the oldest old (80 and older) is still living in private households (*Figure 2.19*) and on average half of them is living alone (*Figure 2.20*) (Schulz, 2008).

Figure 2.19 Percentage of people aged 80+ living in private households around 2001



Source: Eurostat. No data available for Malta and Sweden.

Figure 2.20 Percentage of people aged 80+ living in private households as single around 2001



Source: Eurostat. No data available for Malta and Sweden.

Per country, however, there are considerable differences. The share of the oldest old living in private households (and not in institutions) ranges from less than 80% in Luxembourg and the Netherlands to almost 100% in Romania and Bulgaria. Indeed, the average for the EU-27 is in the middle with 90%. As regards the share of people aged 80 or older that live in private households as single the differences are even more profound: from only 24% in Greece to more than 70% in Denmark.

The expected further ageing of the population will lead to a strong increase in the number of elderly living in a one or two-person-household. The increase in life expectancy in particular for men may lead to more couples growing old together and therefore to a higher share of two-person-households in the older ages.

2.7 Population projections[9]

2.7.1 EUROPOP2008 and EUROPOP2004

In the last decades of the 20th century demographic developments in Europe have changed significantly. Declining fertility levels and extended life expectancies have altered the age distribution of the population towards a general trend of ageing. At the same time international migration gained importance as a component of population growth. Although at a world scale Europe may be considered a rather homogeneous region in terms of demographic trends, intra-European demographic differences certainly persist at the national level.

To support European policymaking, European population projections that are based as far as possible on harmonized data, a common model and common assumptions are needed. Nationally compiled projections produce results which are often incomparable across countries as each country has its own definitions and methods. For this reason, from 1980 onwards the European Commission (Eurostat) regularly compiles a set of internationally consistent population projections for the countries of the European Union.[10]

The latest set of national population scenarios, EUROPOP2008, covers the 27 Member States of the European Union as well as Norway and Switzerland over the period 2008-2060. They are a follow-up to EUROPOP2004 which was compiled in 2004-2005 and concerned projections for all Member States of the then EU-25, as well as Bulgaria and Romania covering the period 2004-2050. Contrary to EUROPOP2004, the latest scenarios EUROPOP2008 were developed in a consistent framework of convergence. In this framework the year 2150 was chosen as the year in which (theoretically) life expectancy, total fertility rate and net migration across countries would converge to similar values. For each country and each demographic component, the target values for the year 2060 were set by interpolating from the starting value in 2008 to the convergence values in 2150, and take out the resulting (partial convergence) values for 2060.

The model of convergence is based on the overall assumption that socio-economic and cultural differences between the Member States of the European Union, Norway and Switzerland will fade out in the very long run and that this will result in a convergence of demographic drivers and thus of demographic values. The resulting population projections thus describe the possible future demographic development assuming that across countries fertility and mortality will converge to the

[9] This paragraph is based on Van der Gaag and Van der Erf, 2008.

[10] Population projections describe likely developments in the size and structure of the population. Population forecasts are projections that describe the *most probable* future development of the population. If the projections relate to one or several *possible* population developments they are called scenarios.

'forerunners' (or best performers) within the EU. For mortality the age and sex specific convergence figures are based on a EU-region population made up of 12 countries (the EU-15 except Ireland, Luxembourg and Greece). For fertility in 2150 a common total fertility rate of 1.85 and mean age at childbearing of 30.3 are assumed. Concerning international migration it is assumed that migration flows will converge to zero net migration. However, migration has been adjusted upwards if the working age population, after taking into account the converging migration, presents a deficit for the respective projection years (Eurostat, 2008a).

Until now, one convergence variant has been compiled, the so-called 2150 variant. This scenario projects the population at 1 January by sex and single years of age up to the age group of 80+. Currently Eurostat is investigating the options for additional variants based on different convergence years (e.g. 2100 and 2200). As assumptions play an important part in compiling projections these will be compared first.

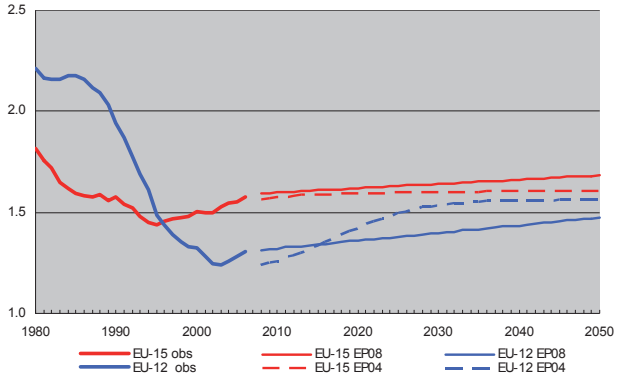
2.7.2 Assumptions

Fertility

Fertility rates for most of the countries of the EU-15 were rather stable in the 1990s, but started to rise from the turn of the century onwards. Fertility levels in the EU-12 dropped significantly in the 1990s, but also started rising since 2000. Fertility increases continued until 2007. For most countries, much stronger increases were observed than expected under the baseline scenario of EUROPOP2004 and as a result higher starting values for total fertility rates were introduced in EUROPOP2008 than in EUROPOP2004.

It is interesting to note that although the new scenarios of EUROPOP2008 are based on a strong convergence assumption, the old scenarios of EUROPOP2004 in fact show smaller fertility differences across countries as well as a stronger convergence. This is illustrated in *Figure 2.21* where the (dotted) trends of EUROPOP2004 start at greater distance and converge more strongly than the trends in EUROPOP2008.

Figure 2.21 Total fertility rate, 1980-2006 observed, 2008-2050 projected

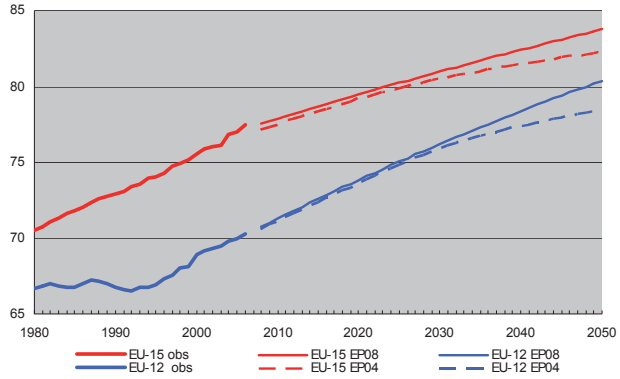


Source: NIDI estimates based on Eurostat data.

Mortality

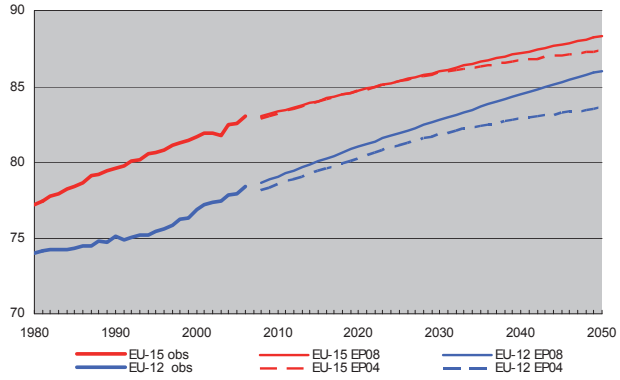
Looking at life expectancies in the past, two different patterns were observed for the countries of the EU-15 and those of the EU-12. Although life expectancies at birth in the EU-15 have been increasing since the 1960s, life expectancies in the EU-12 Member States initially lagged behind slowly, while the mortality differences accelerated in the early 1990s. Especially in the Baltic States male life expectancy dropped sharply and nowadays these differences are still considerable. For most of the EU-12 Member States life expectancy at birth for males is still below 70, while for most of the former EU-15 countries it is well above 75. For females the differences are less profound. With very few exceptions a stronger increase of life expectancy is assumed under the latest projections compared to the previous ones and, contrary to fertility, some more convergence is assumed and a slightly smaller gap between males and females. Nevertheless the new scenarios indicate that the mortality differences between the new EU-12 and the former EU-15 countries will not have disappeared by the year 2050 (*Figures 2.22 and 2.23*).

Figure 2.22 Life expectancy at birth, males, 1980-2006 observed, 2008-2050 projected



Source: NIDI estimates based on Eurostat data.

Figure 2.23 Life expectancy at birth, females, 1980-2006 observed, 2008-2050 projected



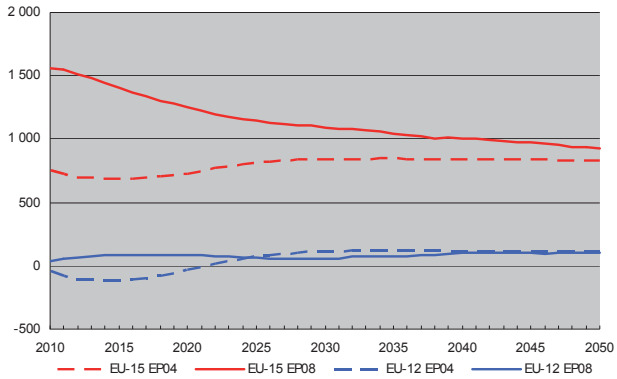
Source: NIDI estimates based on Eurostat data.

Migration

Migration is the most volatile demographic process and migration flows are often linked to specific historical events, economic developments and to policy decisions. This makes it very difficult to predict international migration flows and set migration assumptions. In the old projections of EUROPOP2004 international migration assumptions for the countries of the former EU-15 were based on an extrapolation of trends, on analyses of the determinants of migration and on assumptions used in national population forecasts. Migration assumptions for the EU-12 Member States were based on the expected socio-economic situation of the countries concerned and on the gradual opening of the labour markets of the EU-15 countries to workers from the EU-12 Member States. This resulted in relatively high emigration rates and a decrease of net migration in the short run, with a minimum in 2011, an increasing importance of immigration in the mid term, and positive values of net migration for all countries in the long run. In EUROPOP2008 international migration is assumed to converge to zero net migration by the year 2150; however, in a rather mechanical way migration has been adjusted upwards if the working age population (after taking into account the converging migration), presents a deficit for the respective projection years. These mechanical adjustments sometimes were very sizeable.

Figure 2.24 illustrates that, similar to fertility trends, net migration tends to converge less in EUROPOP2008 than in EUROPOP2004.

Figure 2.24 Assumptions of net migration, 2010-2050 (x 1000)



Source: Eurostat.

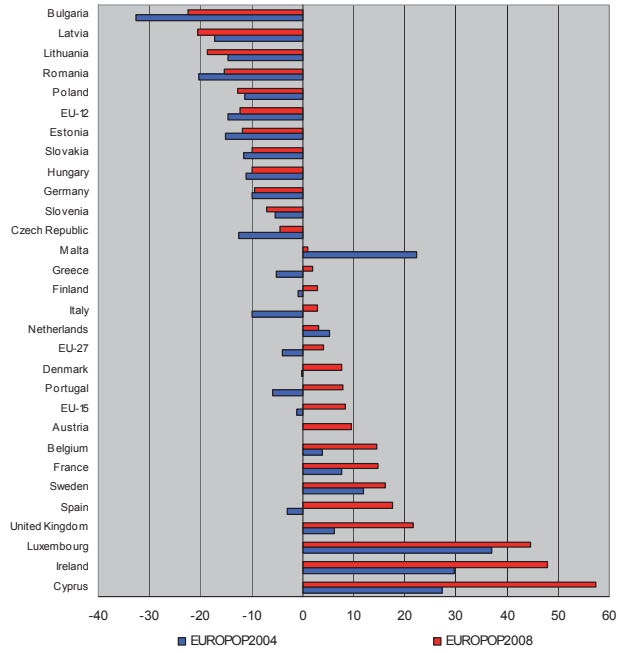
2.7.3 Outcomes of the projections

To what extent do differences in the assumptions affect the outcomes of the projections? In the current section the outcomes of the baseline variant of EUROPOP2004 will be compared with the 2150 variant of the convergence scenario of EUROPOP2008. Differences in the base population of 2008, the mid term population of 2025 and the long term population of 2050 will be analysed. In addition to the total population, developments in the age groups of children (0-14), young people (15-24), young adults (25-39), adults (40-54), older workers (55-64), elderly people (65-79) and the oldest old (80+) will be studied. Also attention will be paid to trends in the overall working-age population (15-64) and to the age dependency ratios.

Population growth

European population growth in the last decades has been moderate to slow for the countries of the EU-15, while most of the EU-12 Member States already experienced population decline. Under EUROPOP2004 a continuing population growth was foreseen for five countries (Ireland, Cyprus, Luxembourg, Malta and Sweden).[11] With the exception of Malta, these countries still may expect their populations to grow until the end of the projection period in the new projections. But in EUROPOP 2008 this also applies for Belgium, Denmark, France and the United Kingdom. Under EUROPOP2004 for the period 2008-2050 a population decline for the EU-27 was expected of about 4%. EUROPOP2008, however, expects an overall population increase of about 4%. For most countries a higher population growth or a slower population decline is expected in the new projections. Only for Latvia, Lithuania, Poland and Slovenia a somewhat higher population decline is foreseen and for the Netherlands a somewhat lower population growth (*Figure 2.25*).

Figure 2.25 Population growth between 2008 and 2050 (%)



Source: Eurostat.

For most of the EU-15 Member States the onset of population decline is postponed considerably in the new projections (*Table 2.13*). For Italy, Spain and Portugal population decline is delayed by more than 20 years. Also for the Czech Republic, Slovenia, and Slovakia a significant postponement is expected. For the Netherlands the perspective of population decline is more or less similar under both projections, while the pace of population decline has been increased considerably in Germany and Malta.

[11] The high growth figure in EUROPOP2004 for Malta was caused by an overestimation of the start value of the TFR.

Table 2.13 First year of population decline

EUROPOP2004		EUROPOP2008
Cyprus, Ireland, Luxembourg, Malta, Sweden	>2050	Belgium, Cyprus, Denmark, France, Ireland, Luxembourg, Sweden, United Kingdom
	2046	Austria
	2045	Portugal, Spain
France	2042	
United Kingdom	2040	
	2038	Italy
Belgium	2037	
Netherlands	2036	Netherlands
Denmark	2032	
	2031	Finland
Austria	2029	
Finland	2028	Malta
	2026	Greece
Spain	2022	
	2021	Czech Republic
Greece	2020	
	2019	Slovakia, Slovenia
Portugal	2018	
Germany, Slovenia	2014	
Italy	2013	
Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia	<2008	Bulgaria, Estonia, Germany, Hungary, Latvia, Lithuania, Poland, Romania

Source: Eurostat.

Total population

Table 2.14 presents the total population for 2008 as predicted under the baseline variant of EUROPOP2004, the base population for EUROPOP2008, as well as the percentage difference between both numbers. The data show that differences between the two projections in the total population of the EU-27 in 2008 are negligible. This is not the case, however, for some of the countries. For Cyprus, Ireland, Luxembourg and Spain, the population in 2008 outnumbered the expected population according to the baseline variant of EUROPOP2004 by more than 2%. For Germany, Lithuania, Malta, the Netherlands, Portugal and Romania, on the other hand, the population of 2008 was slightly less than expected (except for Malta, in all cases less than 1%).

Looking at the midterm developments, the expected population in the latest scenario for the EU-27 outnumbers the population in the previous projections by more than 4%. The largest positive differences can be found for Cyprus, Ireland and Spain, with differences of 13 to 15%. However, for Malta, the Netherlands and Germany, the population estimates have been adjusted downwards. By 2050, the difference in total population for the EU-27 between the two projections is almost 10%.

Especially in the longer run the differences between the old and new set of projections become larger. While in 2025 the difference in the projections for the EU-15 and EU-12 countries was almost the same, by 2050 the additional population growth for the EU-15 is almost three times higher than the additional growth for the EU-12. In terms of percentages the largest differences between projections are still found for Cyprus, Spain and Ireland, but also remarkable is the high positive difference for Bulgaria (16%). In EUROPOP2004 Germany was the member state with by far the largest projected population; according to EUROPOP2008 Germany and the United Kingdom would share this lead position, closely followed by France.

Table 2.14 Total population, 1 January 2008, 2025 and 2050 (x 1 000)

	1 January 2008			1 January 2025			1 January 2050		
	Europop 2004	Europop 2008	Diff. %	Europop 2004	Europop 2008	Diff. %	Europop 2004	Europop 2008	Diff. %
EU-27	491 309	495 394	0.8	496 268	517 811	4.3	472 050	515 303	9.2
EU-15	388 614	392 222	0.9	398 780	416 994	4.6	384 356	424 878	10.5
EU-12	102 695	103 172	0.5	97 489	100 817	3.4	87 694	90 425	3.1
Austria	8 212	8 334	1.5	8 501	8 866	4.3	8 216	9 127	11.1
Belgium	10 504	10 656	1.4	10 898	11 547	6.0	10 906	12 194	11.8
Bulgaria	7 557	7 642	1.1	6 465	6 974	7.9	5 094	5 923	16.3
Cyprus	766	795	3.8	897	1 017	13.3	975	1 251	28.3
Czech Republic	10 154	10 346	1.9	9 812	10 516	7.2	8 894	9 892	11.2
Denmark	5 447	5 476	0.5	5 557	5 736	3.2	5 430	5 895	8.6
Estonia	1 328	1 339	0.8	1 224	1 292	5.5	1 126	1 181	4.9
Finland	5 270	5 300	0.6	5 439	5 549	2.0	5 217	5 448	4.4
France	60 986	61 876	1.5	64 392	66 846	3.8	65 704	71 044	8.1
Germany	82 753	82 179	-0.7	82 108	80 907	-1.5	74 642	74 491	-0.2
Greece	11 200	11 217	0.1	11 394	11 575	1.6	10 632	11 445	7.7
Hungary	10 029	10 045	0.2	9 588	9 790	2.1	8 915	9 061	1.6
Ireland	4 225	4 415	4.5	4 922	5 673	15.3	5 478	6 531	19.2
Italy	58 533	59 529	1.7	57 751	61 683	6.8	52 709	61 240	16.2
Latvia	2 265	2 269	0.2	2 068	2 095	1.3	1 873	1 804	-3.7
Lithuania	3 379	3 365	-0.4	3 134	3 158	0.8	2 881	2 737	-5.0
Luxembourg	469	482	2.8	544	579	6.4	643	697	8.5
Malta	415	410	-1.2	468	431	-7.9	508	415	-18.4
Netherlands	16 542	16 404	-0.8	17 429	17 069	-2.1	17 406	16 909	-2.9
Poland	37 957	38 116	0.4	36 836	37 612	2.1	33 665	33 275	-1.2
Portugal	10 638	10 617	-0.2	10 730	11 224	4.6	10 009	11 449	14.4
Romania	21 477	21 423	-0.2	19 746	20 484	3.7	17 125	18 149	6.0
Slovakia	5 359	5 399	0.7	5 237	5 402	3.2	4 738	4 859	2.6
Slovenia	2 009	2 023	0.7	2 014	2 047	1.6	1 901	1 878	-1.2
Spain	44 203	45 283	2.4	45 556	52 101	14.4	42 834	53 229	24.3
Sweden	9 117	9 183	0.7	9 769	10 094	3.3	10 202	10 672	4.6
United Kingdom	60 517	61 270	1.2	63 792	67 543	5.9	64 330	74 506	15.8

Source: Eurostat.
NB Diff. %=Difference between 2008 value minus 2004 value in percentage of the 2004 value.

In *Table 2.15* the components of population growth are presented per country for the period 2008-2050. According to EUROPOP2008 more children are born (+10.4%), less people die (-1.8%) and on balance more migrants settle in the EU-27 (+46.8%).

As regards the projected numbers of births, the highest relative increases relate to Spain (+29.3%), Cyprus (+28.1%), Ireland (+26.7%) and the United Kingdom (+22.8%). On the other hand, in countries such as Malta, Poland, Slovakia, Hungary, the Netherlands, Slovenia and Germany EUROPOP2008 projects fewer births than EUROPOP2004.

For all countries, except Belgium, France, Italy, Luxembourg and Spain, the number of deaths during the period 2008-2050 is assumed to be lower according to EUROPOP2008 as compared to EUROPOP2004. The decrease is highest for the Netherlands (-10.3%) and Greece (-9.0%).

With respect to migration the differences between EUROPOP2008 and EUROPOP2004 often appear to be huge. For example, the projected net migration in Spain is 5.7 million higher (from 4.7 to 10.4 million) and in Italy 5.2 million (from 5.0 to 10.2 million). There are also countries with a lower projected number of net migration: Germany, the Netherlands, Slovenia, Malta, the Baltic States and Poland.

Table 2.15 Births, deaths and net migration, 2008-2050 (x 1 000)

	Births			Deaths			Net migration		
	Europop 2004	Europop 2008	Diff. %	Europop 2004	Europop 2008	Diff. %	Europop 2004	Europop 2008	Diff. abs
EU-27	189 921	209 621	10.4	245 326	240 826	-1.8	34 297	50 343	16 046
EU-15	154 228	174 453	13.1	192 134	189 107	-1.6	32 304	47 017	14 713
EU-12	35 693	35 168	-1.5	53 192	51 719	-2.8	1 993	3 326	1 334
Austria	2 996	3 391	13.2	3 907	3 868	-1.0	886	1 265	379
Belgium	4 587	5 328	16.2	5 011	5 214	4.0	809	1 435	626
Bulgaria	1 969	2 363	20.0	4 290	4 161	-3.0	-199	37	236
Cyprus	368	472	28.1	370	347	-6.3	214	340	127
Czech Republic	3 406	3 704	8.8	5 342	5 246	-1.8	631	1 056	426
Denmark	2 486	2 745	10.4	2 807	2 655	-5.4	293	330	37
Estonia	507	531	4.9	734	691	-5.9	21	-2	-23
Finland	2 347	2 499	6.5	2 675	2 643	-1.2	263	287	24
France	30 000	33 822	12.7	27 915	28 282	1.3	2 571	3 715	1 144
Germany	27 084	27 040	-0.2	43 785	41 981	-4.1	8 149	6 881	-1 268
Greece	3 925	4 185	6.6	6 124	5 573	-9.0	1 577	1 592	15
Hungary	3 676	3 530	-4.0	5 558	5 393	-3.0	737	847	109
Ireland	2 465	3 122	26.7	1 784	1 768	-0.9	581	789	208
Italy	18 221	21 314	17.0	29 344	29 905	1.9	4 977	10 158	5 181
Latvia	846	753	-11.0	1 285	1 223	-4.8	39	-7	-46
Lithuania	1 225	1 148	-6.3	1 787	1 783	-0.3	51	-12	-63
Luxembourg	274	285	3.8	217	225	3.7	120	159	39
Malta	201	158	-21.3	210	196	-6.3	103	42	-61
Netherlands	7 856	7 573	-3.6	8 394	7 529	-10.3	1 375	426	-950
Poland	13 810	12 894	-6.6	18 713	18 316	-2.1	432	382	-50
Portugal	4 046	4 121	1.8	5 400	5 285	-2.1	673	1 984	1 311
Romania	7 076	7 096	0.3	11 146	10 747	-3.6	-418	267	685
Slovakia	1 907	1 828	-4.1	2 676	2 604	-2.7	119	208	90
Slovenia	703	691	-1.7	1 081	1 012	-6.4	263	167	-96
Spain	15 027	19 423	29.3	21 315	21 895	2.7	4 659	10 339	5 680
Sweden	4 612	4 847	5.1	4 475	4 377	-2.2	961	1 040	79
United Kingdom	28 301	34 759	22.8	28 980	27 905	-3.7	4 410	6 618	2 208

Source: Eurostat.
NB Diff. %=Difference between 2008 value minus 2004 value in percentage of the 2004 value.

Population by sex and age

Table 2.16 as well as *Figure 2.26* and *Figure 2.27* show the differences between EUROPOP2008 and EUROPOP2004 as regards the sex and age distribution.

Looking at midterm developments it may be noted that all differences between EUROPOP2008 and EUROPOP2004 are positive for both the EU-15 and the EU-12. For the EU-15 especially the estimated number of children (0-14) and younger workers (25-39) outnumber the estimates under EUROPOP2004. For the EU-12 the projected differences are on average smaller and more evenly spread across age groups, although the increase in the number of women of age 80+ is remarkable (8.8%).

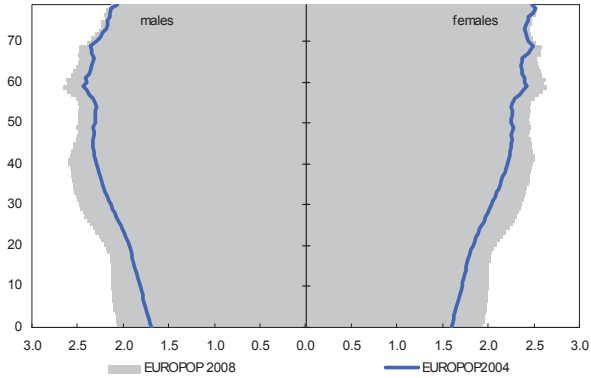
For the long term developments up to 2050 increasing differences for all age groups for the EU-15 may be noted. Especially for the youngest age groups (0-14, 15-24 and 25-39) the differences are considerable (varying from 15 to 19%) but also for the elderly the differences are substantial. Among the oldest age groups, projection differences are stronger for males than for females. The picture for the EU-12 is quite different. Whilst for the EU-15 strong positive differences are expected for the younger age groups, these younger age groups in the EU-12 are less numerous in the new projections as compared to the older ones. The older age groups are projected to be more numerous in the new scenarios, but contrary to the EU-15, the strongest differences are expected for women.

Table 2.16 Population by sex and age, 1 January 2025 and 2050 (x 1000)

	Men				Women			
	1 January 2025		1 January 2050		1 January 2025		1 January 2050	
	Europop 2004	Europop 2008	Europop 2004	Europop 2008	Europop 2004	Europop 2008	Europop 2004	Europop 2008
EU-27								
0-14	36 729	39 916	32 487	37 257	34 696	37 683	30 653	35 157
15-24	26 712	28 008	23 507	26 109	25 411	26 834	22 253	24 791
25-39	45 322	48 973	39 989	45 090	43 689	47 367	38 248	43 137
40-54	51 194	53 233	42 272	45 759	50 904	52 598	41 222	44 728
55-64	34 604	34 785	29 975	32 323	35 806	36 146	30 130	32 505
65-79	36 911	37 038	41 850	43 849	43 412	43 603	46 379	47 958
80+	11 540	11 924	21 394	22 976	19 339	19 704	31 690	33 664
total	243 012	253 877	231 474	253 364	253 257	263 934	240 576	261 940
EU-15								
0-14	29 620	32 603	26 642	31 661	27 981	30 746	25 150	29 848
15-24	21 777	22 833	19 330	22 127	20 723	21 887	18 296	20 984
25-39	35 804	38 983	32 530	37 502	34 499	37 675	31 055	35 835
40-54	39 813	41 508	34 729	37 922	39 540	40 936	33 778	37 038
55-64	28 758	28 826	23 737	25 736	29 407	29 655	23 620	25 715
65-79	30 096	30 103	33 498	34 942	34 282	34 317	36 559	37 691
80+	10 046	10 380	18 360	19 678	16 435	16 542	27 072	28 198
total	195 914	205 235	188 826	209 569	202 866	211 758	195 530	215 309
EU-12								
0-14	7 109	7 313	5 845	5 596	6 715	6 936	5 503	5 308
15-24	4 935	5 175	4 177	3 982	4 689	4 947	3 958	3 807
25-39	9 518	9 990	7 459	7 588	9 190	9 692	7 193	7 302
40-54	11 381	11 725	7 543	7 837	11 364	11 663	7 444	7 690
55-64	5 846	5 960	6 238	6 587	6 399	6 491	6 511	6 790
65-79	6 814	6 935	8 352	8 907	9 130	9 286	9 820	10 267
80+	1 494	1 544	3 035	3 298	2 905	3 161	4 618	5 466
total	47 097	48 641	42 648	43 795	50 391	52 176	45 046	46 630

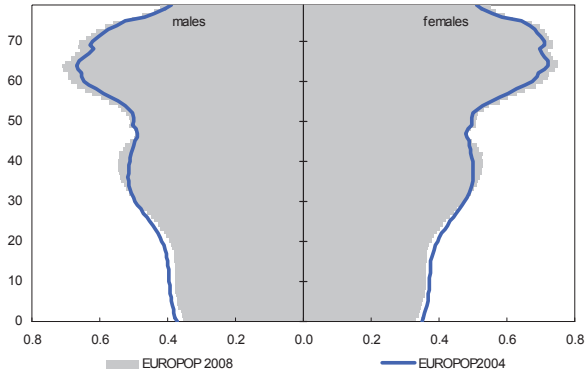
Source: Eurostat.

Figure 2.26 Population of the EU-15 by sex and age, 1 January 2050 (millions)



NB No detailed information available for ages starting with 80; category 80+ men: Europop2008 19.7 million, Europop2004 18.4 million; category 80+ women: Europop2008 28.2 million, Europop2004 27.1 million.
Source: Eurostat.

Figure 2.27 Population of the EU-12 by sex and age, 1 January 2050 (millions)



NB No detailed information available for ages starting with 80; category 80+ men: Europop2008 3.3 million, Europop2004 3.0 million; category 80+ women: Europop2008 5.5 million, Europop2004 4.6 million.
Source: Eurostat.

Developments in the working age population

In the second half of the past century the number of people of working age (approximated by the population aged 15-64) in the European Union has been growing. The new projections indicate that for the EU-27 as a whole some further growth may be expected in the short term, but for most Member States a long period of a declining working age population is expected to start in the coming decade. In some Member States this decline will start later than in others, but with the exception of Luxembourg all Member States will be confronted with a declining potential labour force. Some countries will experience an alternating pattern of growth and decline of their potential workforce, such as for instance Belgium, France, Ireland, Cyprus, Sweden and the United Kingdom.

Comparing EUROPOP2004 and EUROPOP2008 for the European Union as a whole the differences in the onset of the decline of the working age population are limited. But for individual Member States the differences between the projections may be significant. For Belgium, Spain and Portugal this decline would be postponed by more than 10 years in the new projections, while for the United Kingdom the delay is almost 40 years. Only for Malta an earlier onset of a declining workforce is expected (*Table 2.17*).

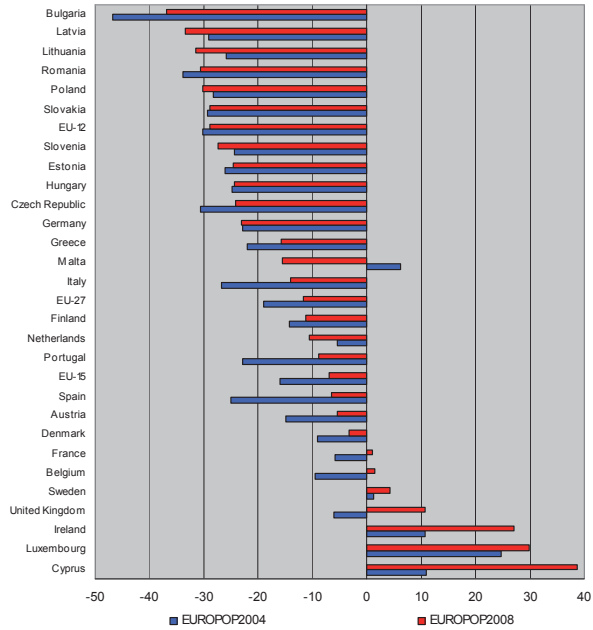
Regarding the size of the decline it may be noted that the reductions in the working age population between 2008 and 2050 were much stronger in EUROPOP2004 than in EUROPOP2008. The strongest decline under EUROPOP2004 was expected for Bulgaria (a reduction of 47%), while the working age population in Cyprus in 2050 was projected to be 11% larger than in 2008. Under EUROPOP2008 the decline in the Bulgarian working age population amounts to 37%, while for Cyprus an increase of 39% is foreseen. For some countries the new projections of EUROPOP2008 however expect smaller working age populations than the old projections of EUROPOP2004 (Germany, Latvia, Lithuania, Malta, the Netherlands, Poland, and Slovenia, see *Figure 2.28*).

Table 2.17 First year of decline of working age population

EUROPOP2004		EUROPOP2008
Luxembourg	>2050	Luxembourg, United Kingdom**
	2048	Cyprus**
Cyprus	2043	
	2040	Ireland**
Ireland	2035	
	2025	Spain
	2022	Belgium**, Portugal
	2020	Austria
Austria, Malta**	2012	Germany
Belgium, France, Netherlands*, Poland, Slovenia, United	2011	France**, Italy, Netherlands, Poland, Sweden**, Slovakia,
Finland*, Greece, Spain, Slovakia	2010	Finland*, Greece
Sweden**	2009	Denmark*, Malta
Denmark*, Portugal	2008	
Bulgaria, Czech Republic, Estonia, Germany*, Hungary, Italy, Latvia, Lithuania, Romania	<2008	Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania

* A general declining trend with for some years growth or an alternating pattern of growth and decline.
** No general declining trend but for some years decline or an alternating pattern of growth and decline.
Source: Eurostat.

Figure 2.28 Growth of working age population between 2008 and 2050 (%)

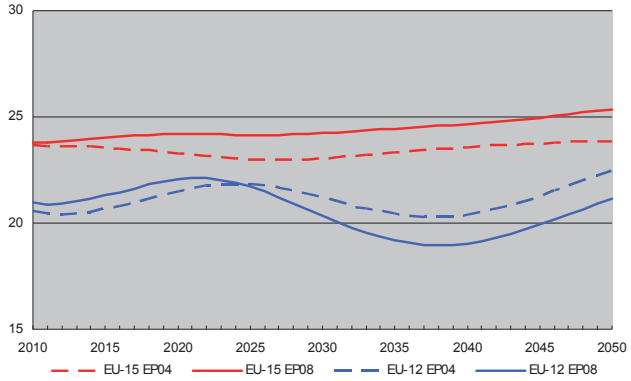


Working age population is defined as population aged 15-64.
Source: Eurostat.

Age dependency ratios

Both sets of projections expect more or less stable young age dependency ratios but in the new projections of EUROPOP2008 the gap between the EU-15 and the EU-12 countries will be wider (*Figure 2.29* and *Table 2.18*).

Figure 2.29 Young age dependency ratio, 2010-2050 (%)



Defined as population aged 0-14 as a percentage of population aged 15-64.
Source: Eurostat.

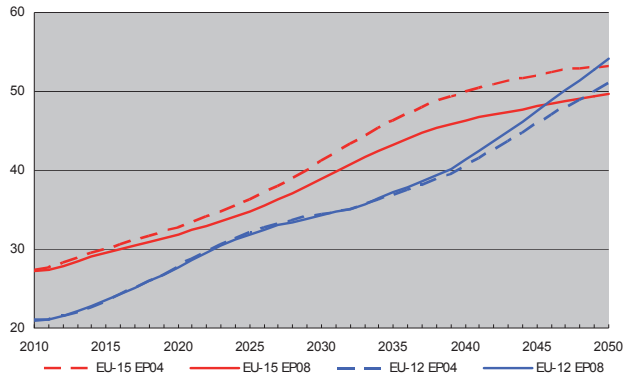
Table 2.18 Young and old age dependency ratios, 1 January 2008 and 2050 (%)

	Young age dependency ratio				Old age dependency ratio			
	1 January 2008		1 January 2050		1 January 2008		1 January 2050	
	Europop 2004	Europop 2008	Europop 2004	Europop 2008	Europop 2004	Europop 2008	Europop 2004	Europop 2008
EU-27	23.2	23.3	23.6	24.6	25.5	25.4	52.8	50.4
EU-15	23.8	23.8	23.9	25.3	26.8	26.7	53.2	49.6
EU-12	21.2	21.4	22.5	21.1	20.7	20.8	51.1	54.2
Austria	22.8	22.7	21.5	23.2	25.6	25.4	53.2	48.3
Belgium	25.1	25.6	25.4	26.8	26.0	25.8	48.1	43.9
Bulgaria	18.7	19.3	21.0	21.9	25.2	25.0	60.9	55.4
Cyprus	25.4	25.0	22.0	24.4	18.5	17.7	43.2	37.7
Czech Republic	19.6	20.1	22.2	22.3	20.7	20.6	54.8	54.8
Denmark	28.0	28.0	26.0	27.5	23.5	23.6	40.0	41.3
Estonia	21.3	21.8	24.8	24.9	24.9	25.2	43.1	47.2
Finland	25.2	25.3	26.4	27.3	24.6	24.8	46.7	46.6
France	28.0	28.1	27.7	29.7	25.4	25.3	47.9	44.7
Germany	20.9	20.7	21.1	21.5	30.1	30.3	55.8	56.4
Greece	21.1	21.3	22.3	23.7	27.6	27.8	58.8	57.0
Hungary	21.7	21.8	23.7	22.4	23.6	23.5	48.3	50.8
Ireland	30.7	29.8	27.7	29.8	16.9	16.3	45.3	40.4
Italy	21.3	21.3	21.0	22.3	30.7	30.5	66.0	59.2
Latvia	19.8	19.8	25.0	21.8	25.1	25.0	44.1	51.2
Lithuania	22.5	22.3	23.0	21.1	23.3	23.0	44.9	51.1
Luxembourg	27.1	26.9	27.1	26.6	21.4	20.9	36.1	37.8
Malta	23.8	23.3	23.9	21.5	19.0	19.8	40.6	49.8
Netherlands	26.8	26.5	26.1	25.6	21.4	21.8	38.6	45.6
Poland	21.5	21.8	22.6	20.4	18.8	18.9	51.0	55.7
Portugal	23.3	22.8	23.8	22.9	25.8	25.9	58.1	53.0
Romania	21.8	21.8	21.6	20.6	21.3	21.3	51.1	54.0
Slovakia	21.6	21.8	22.2	19.9	16.6	16.6	50.6	55.5
Slovenia	19.5	19.8	22.9	23.3	22.9	23.0	55.6	59.4
Spain	21.5	21.3	21.7	24.1	24.7	24.1	67.5	58.7
Sweden	25.5	25.6	27.5	27.6	26.7	26.7	40.9	41.9
United Kingdom	26.1	26.4	25.0	27.4	24.5	24.3	45.3	38.0

Source: Eurostat.

Old age dependency ratios in the European Union currently vary from 16% in Ireland to 30% in Italy with an overall ratio of 25% for the EU-27 (27% for the EU-15 and 21% for the EU-12). Both sets of projections expect that in the coming decades the old age dependency ratios will rise sharply as a result of an increase in the number of retired people combined with a decline in the working age population (*Figure 2.30* and Table 2.18).

Figure 2.30 Old age dependency ratio, 2010-2050 (%)



Defined as population aged 65+ as a percentage of the population aged 15-64.
Source: Eurostat.

The overall old age dependency ratio for the EU-27 is expected to be 50% by the year 2050, which is slightly lower than was expected under EUROPOP2004 (53%). Although there is a common trend throughout the EU, the rate of change and levels of dependency differ. By 2050 the old age dependency ratio is expected to range from 38% in Cyprus to 59% in Slovenia. Compared to the previous set of projections smaller differences in old age dependency may be noted in the new one. In the old projections the EU-15 and the EU-12 were more or less comparable in terms of old age dependency ratios, with a slightly higher value for the EU-15, while under the new scenarios by 2050 population ageing will be stronger in the EU-12 (54 versus 50%). This diverging trend will be reinforced in the last ten years of the projection period, with values of old age dependency ratios in 2060 of 65% for the EU-12 and 51% for the EU-15.

The role of migration

In addition to the scenario with converging migration, Eurostat also produced a scenario with zero migration starting from 2008. *Table 2.19* shows the results of both scenarios.

The comparisons for the EU-27 indicate that without migration the total population would start to decline by the year 2012 (in stead of the year 2035) which means that migration pushes the onset of population decline forward by more than 20 years. For the EU-15 this is even 30 years. As expected, the largest differences are found in the age groups 0-14 and 15-64. The absolute numbers of the elderly are less affected by migration. As a result the prospects in terms of dejuvenation will not be much different in the two scenarios, but ageing will be more profound in the "no migration" scenario. This is especially the case for the EU-15 countries.

Table 2.19 EUROPOP2008 scenarios with and without migration

	1-1-2008	1-1-2060		
		with migration	without migration	difference %
EU-27				
Total population (x 1 000)	495 394	505 719	416 544	21.4
Age group 0-14 (x 1 000)	77 544	70 952	54 152	31.0
Age group 15-64 (x 1 000)	333 248	283 293	223 378	26.8
Age group 65+ (x 1 000)	84 602	151 474	139 014	9.0
Onset of population decline		2035	2012	
Young age dependency ratio (%)	23.3	25.0	24.2	3.3
Old age dependency ratio (%)	25.4	53.5	62.2	-14.1
EU-15				
Total population (x 1 000)	392 222	420 530	336 785	24.9
Age group 0-14 (x 1 000)	62 011	60 881	45 151	34.8
Age group 15-64 (x 1 000)	260 680	237 717	181 514	31.0
Age group 65+ (x 1 000)	69 531	121 932	110 120	10.7
Onset of population decline		2044	2014	
Young age dependency ratio (%)	23.8	25.6	24.9	3.0
Old age dependency ratio (%)	26.7	51.3	60.7	-15.5
EU-12				
Total population (x 1 000)	103 172	85 189	79 759	6.8
Age group 0-14 (x 1 000)	15 533	10 072	9 001	11.9
Age group 15-64 (x 1 000)	72 569	45 576	41 864	8.9
Age group 65+ (x 1 000)	15 071	29 541	28 895	2.2
Onset of population decline		<2008	<2008	
Young age dependency ratio (%)	21.4	22.1	21.5	2.8
Old age dependency ratio (%)	20.8	64.8	69.0	-6.1

NB Difference between 2060 value with migration minus 2060 value without migration in per cent of the 2060 value without migration.
Source: Eurostat.

2.7.4 Discussion and conclusions

Over the period 2008-2050 the old projections of EUROPOP2004 predicted for the EU-27 a 4% smaller population by the year 2050 as compared to 2008, while according to the new scenario of EUROPOP2008 a 4% larger population is expected. Due to this stronger population growth almost all Member States may expect to have a larger population by the year 2050 than was projected in the previous baseline variant. For all countries that currently experience population growth, a significant postponement of the onset of population decline is foreseen.

As regards the working age population almost all of the EU-15 countries will experience a smaller decline or even an increase as compared to EUROPOP2004. For the EU-12 differences are less profound; in general a slight postponement of the onset of the decline of the working age population is expected in these countries.

Especially due to the differences in fertility assumptions between the two rounds of projections on the one hand and between the EU-15 and EU-12 on the other hand, a levelling off of the old age dependency ratios to a lower level as compared to EUROPOP2004 is expected for the EU-15, while almost similar values are expected for the EU-12 until 2035. After this date an acceleration of population ageing is foreseen that surpasses the values of the EU-15 from 2046 onwards.

The most important difference between EUROPOP2008 and EUROPOP2004 is the framework of the assumptions. Similar to earlier rounds of EUROPOP projections, the baseline variant of EUROPOP2004 followed most closely a continuation of past trends, with convergence implicitly embedded. EUROPOP2008, on the other hand, explicitly introduces convergence in the

assumptions. Assuming that socio-economic and cultural differences between the Member States of the European Union will fade out in the very long run, similar values for demographic indicators are imposed for the convergence year 2150. Why this framework of convergence was chosen, remains unclear.

Although in the very long run convergence was assumed in EUROPOP2008 this hardly became manifest in the assumptions and results of the projections over the period 2008-2060. Only the consistently higher levels of life expectancies for all countries systematically indicate more convergence as compared to EUROPOP2004. For fertility the long term time horizon for convergence resulted for the EU-12 Member States for the period 2008-2060 in much lower estimations of fertility rates as compared to EUROPOP2004. Paradoxically the so-called convergence scenario of EUROPOP2008 projects a very slight converging trend that is much weaker than the converging pattern of EUROPOP2004. Also in view of the stronger increase in observed fertility in the EU-12 Member States in the recent past than was estimated in EUROPOP2004, this is a striking difference.

For international migration EUROPOP2008 assumes a convergence to zero net migration by the year 2150 but migration was adjusted upwards whenever the projections resulted in a deficit of the working age population. Without additional information it is very difficult to gain insight in the consequences of these adjustments for the scenario outcomes.

3 Educational transition in Europe

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3.1 Highlights

- Reflecting the fertility decline since the 1970s, the number of persons aged 6 to 29 years in the European Union fell from 154.0 million in 1998 to 145.5 million in 2005 and further to 143.9 million in 2007. Nevertheless, the number of persons in these age classes attending education rose from 107.9 million in 1998 to 112.1 million in 2005 (the last year for which complete and reliable data on enrolment are available). In fact, the rate of enrolment rose from 44.3% in 1998 to 47.8% in 2005, with a particularly strong rise for women.
- In 2005 the share of women attending higher education at the age of 20 was some 10%-points higher than that of men.
- There are large discrepancies between Member States, both as regards the educational attainment in general and the rates of enrolment of the different age classes. Also in a number of Member States a large proportion of a generation still leaves education with only lower-tertiary education.
- A tentative scenario for educational enrolment based on the 2008 Eurostat demographic projections (EUROPOP2008) points to a decline in overall educational enrolment in the coming decades of some 12% if the 2005 enrolment levels were to be maintained and a somewhat smaller decline if the enrolment rates in tertiary education saw some convergence towards the best-performing EU Member States.
- Survey data on the performance of students indicate that only a small proportion of the disparities between students can be explained by socio-economic factors; consequently the intelligence and motivation of the student as well as the quality of the system of education seem to play a very important role for the transition of the student into higher education and into the labour market.
- This suggests that investment in human capital endowment is a key determinant of the life-cycle of the individual and of broader social developments, social cohesion and social mobility.
- A large share of the educational potential that migrant children have available seems to be wasted in Europe. Immigrant youth overall achieve lower levels of education and are more likely to drop out of school; second generation migrants tend to perform better in education than first generation migrants.

3.2 Educational demographics in the EU: main features

3.2.1 Demographic developments in the age classes attending education

Developments and disparities within the EU with respect to educational demographics are essentially echo effects of the evolution of fertility since the 1970s. As an important factor in the determination of the profile of entry into and exit from the educational system, the number of births in the preceding decades, has however been very different in the EU-15 and the EU-12.

In the year 2005 the EU-27 counted some 145.5 million persons in the age classes from 6 to 29, the classes that constitute the main population base for the system of education. The total population in those age groups in 2005 was down by 8.5 million from 1998 to 2005 and fell a further 1.6 million from 2005 to 2007 reflecting earlier fertility declines in most of the present Member States (*Table 3.1*).

Table 3.1 Population in the main age classes attending education, EU-27 (millions)

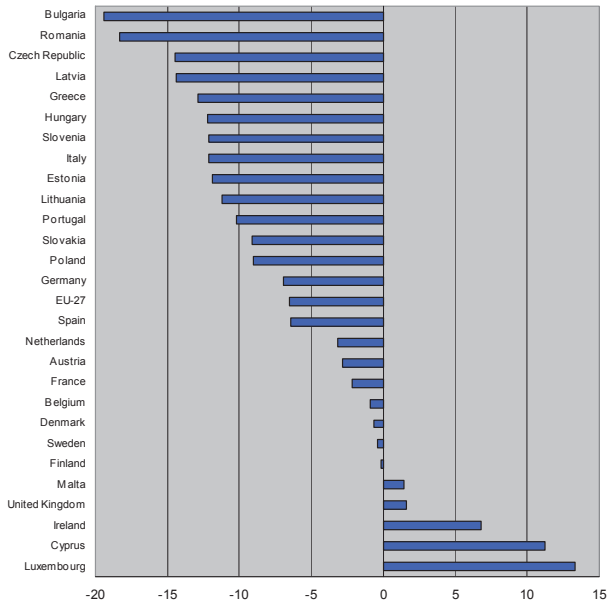
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	change
Males	78.5	77.7	77.0	76.4	75.5	75.1	74.7	74.3	73.9	73.5	-5.1
6-15	30.6	30.3	30.0	29.7	29.3	28.9	28.6	28.2	27.8	27.4	-3.2
16-29	48.0	47.5	47.0	46.7	46.3	46.1	46.1	46.1	46.1	46.1	-1.9
Females	75.5	74.8	74.1	73.5	72.6	72.1	71.7	71.2	70.8	70.5	-5.0
6-15	29.1	28.8	28.6	28.2	27.9	27.5	27.2	26.8	26.4	26.0	-3.1
16-29	46.4	45.9	45.5	45.2	44.8	44.6	44.5	44.5	44.4	44.4	-2.0
Total	154.0	152.5	151.1	149.8	148.2	147.1	146.4	145.5	144.7	143.9	-10.1
6-15	59.7	59.1	58.6	57.9	57.1	56.4	55.7	54.9	54.2	53.4	-6.2
16-29	94.4	93.4	92.5	91.9	91.0	90.7	90.7	90.6	90.5	90.5	-3.9

Change between 1998 and 2007.
Source: Eurostat.

The decline in this category of population was particularly pronounced in the age group 6-15, which from 1998 to 2007 fell by 6.2 million, or more than 10%. In the (larger) age group 16-29, the decline was only 3.9 million or some 4%. The decline was very similar for males and females.

With respect to the demographic changes in these age classes, developments differed sharply among Member States, with a huge decline in most of the EU-12 Member States and Greece and smaller declines or even some increase in other Member States. As shown in *Figure 3.1*, the percentage changes in this category of population range from a decline of almost 20% in Bulgaria and Romania to an increase of 12% in Cyprus and 13% in Luxembourg, the average decline in the EU-27 amounting to some 6%.

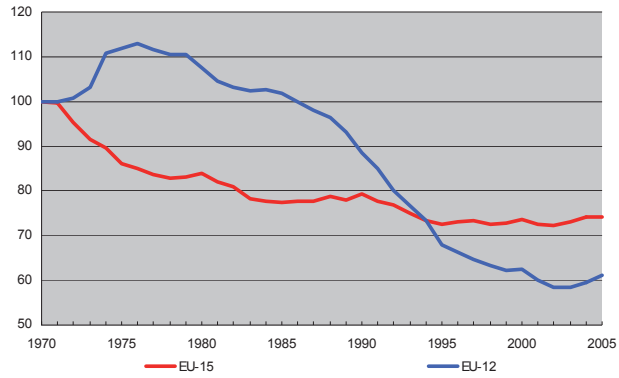
Figure 3.1 Changes between 1998 and 2007 in the population in age classes attending education (%)



Source: Eurostat.

In fact, as illustrated in *Figure 3.2*, in the EU-12 the number of births was high and indeed somewhat rising in the early 1970s. It started to decline from the mid-1970s but at the time of the dismantling of the Soviet 'empire' was still around the level of 1970.

Figure 3.2 Number of live births in the EU, 1970=100



Source: Eurostat.

The following decline was steep, with the number of births in 2002 down to some 60% of the 1970-level. The echo effect of this decline in the number of births has been a parallel decline, six years later, in the number of children entering into the system of education.

In the EU-12 the fertility decline started already in the 1970s. It was followed by a certain stabilisation from around 1980 to 1990, a small decline in the early 1990s, and a new stabilisation from then onwards. Consequently, in these Member States the echo effect of the decline in fertility on the number of persons entering into the system of education had been exhausted already in 2005. Given the relative stabilisation of the number of births from 1980 onwards, and abstracting from the further small decline after 1990, the number of persons in the age groups attending the system of education has, consequently, in the EU-15 stabilised, while in the EU-12 echo effects from fertility developments on the number of entries into education will be felt further over the next ten years.

3.2.2 Enrolment in education

Despite the decline in the number of persons in the principal age classes attending education, the number of persons enrolled in education in fact rose somewhat from 1998 to 2005. As seen in *Table 3.2*, total education enrolment in the EU-27 increased from 107.9 million persons in 1998 to 112.1 in 2005, or by 4.2 million. By far the largest part of this rise in enrolment took place among women, with female enrolment up by 2.9 million, against an increase of 1.4 million among men.

The overall result of the decline in the underlying population and the rise in the rate of educational enrolment was a substantial rise in enrolment, from 44.3% of the population aged 6 to 29 in 1998 to 47.8% in 2005, or by 3.5%-points. A spectacular increase in enrolment took place among women, from 44.7% in 1998 to 49% in 2005, or by 4.3%-points, while the increase among men was only 2.8%-points.

Table 3.2 Educational enrolment, EU-27

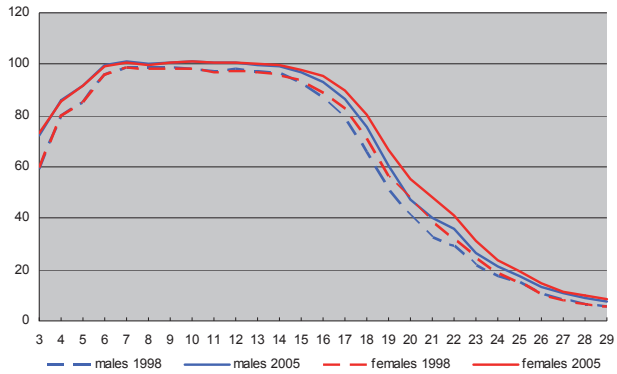
	1998	1999	2000	2001	2002	2003	2004	2005
	millions							
Total	107.9	109.5	109.4	109.7	110.9	110.6	111.3	112.1
Males	54.3	55.0	55.0	54.9	55.3	55.1	55.3	55.7
Females	53.5	54.4	54.5	54.7	55.6	55.5	55.9	56.4
	%							
Total	44.3	45.2	45.5	45.8	46.7	46.8	47.2	47.8
Males	43.9	44.7	45.0	45.2	45.8	45.8	46.2	46.7
Females	44.7	45.8	46.1	46.5	47.6	47.7	48.4	49.0

Note: Educational enrolment is defined as the number of persons enrolled in education as per cent of the population in the age group on 1 January of the year.
Source: Eurostat.

In the age classes 6 to 14 years practically all children in 2005 attended educational institutions. In fact, the overall enrolment in 2005 was around 100% for those aged 6 years as for those aged 14 years. Whereas the rate of enrolment for those aged 6 years declined from 1998 to 2008, mainly due to changes in statistical definitions, the rate of enrolment for those aged 14 years showed some increase.[12]

The main increase in enrolment, thus took place in the age classes above 14 and, indeed, mainly in the age groups following tertiary education. In fact, this development of the rates of educational enrolment for the different age groups results in a weak but distinct 'rectangularisation' of the curve representing the rate of 'survival' in the system of education. Little change took place in the age classes 6-14 and in the age classes 25-29. In contrast, the curve shifted upwards for the age classes 15-25 albeit most importantly in the age groups from 15-20 (*Figure 3.3*). Furthermore, the rise in female enrolment was particularly pronounced for women in the age classes 18 to 25, where in 2005, the proportion of women still enrolled in education was distinctly above that of men.

Figure 3.3 Education enrolment by age, EU-27, 1998 and 2005 (%)



Source: Eurostat.

[12] As illustrated in Figure 3.4, the spread between EU countries with respect to enrolment in the age classes 3 to 5 is very large, due essentially to the fact that in some countries public kindergartens are classified as educational establishments while in others children below the age of normal school attendance are taken care of in families or by private care providers. The rates of enrolment in those age classes consequently are hardly comparable.

The rectangularisation of the enrolment curve is also found in the United States where data on educational enrolment can be found back to 1970. In fact, in the US, the enrolment of young children in pre-school education rose considerably between 1970 and 2004 and the same was the case for the enrolment in the age classes 15 to 29. In addition, however, whereas in 2004 educational enrolment in the age classes 15 to 25 in the EU and the US were broadly similar, the decline during the following five years is more marked in the EU. Consequently, by age 29 the enrolment rate in the US, at 11.5% was significantly higher than the 7.6% recorded in the EU.

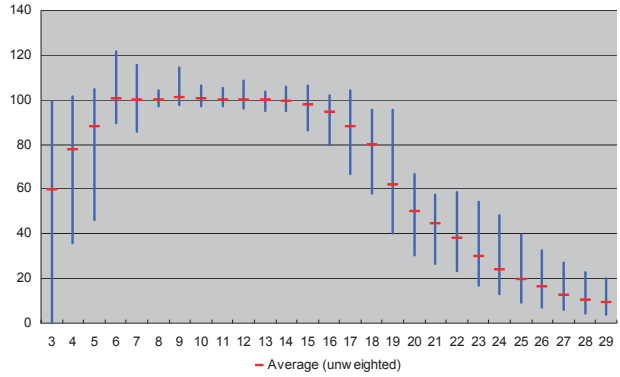
As could be expected, the rates of educational enrolment show significant disparities within the EU. As illustrated in *Figure 3.4* the rate of enrolment for three-year old children ranges from zero to a 100% but then narrows down to a range from 40 to a 100% for four-year old and then further to practically zero for eight-year old children, with the disparities mainly due to the fact that in some countries the two data sets (population and educational enrolment) are not fully compatible.

After the age of 14, disparities widen again to reach almost 60%-points at the age of 19 followed by a new narrowing to less than 20%-points at the age of 29. Cyprus, Luxembourg and Malta are here excluded as most students follow tertiary education abroad boosting thus somewhat the enrolment rates for the countries where they are enrolled.

The differences in enrolment in education, are, as indicated, mainly determined by the differences with respect to the age of entry into the system and the rate of enrolment after the age of fifteen. This is further illustrated for selected countries (Denmark, the Netherlands, France and Poland) in *Figure 3.5*.

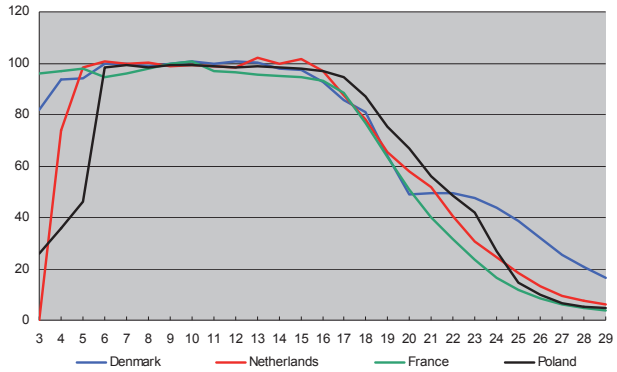
The rates of enrolment for the age groups 3, 4 and 5 show huge disparities, followed by a high degree of homogeneity up to the age of 15. In Denmark, the Netherlands and France the decline is rather similar up to the age of 19 and faster than in Poland. The four countries then follow different paths of enrolment during the following ten years. In this respect the data for Denmark (like, in fact, also the other Nordic countries) show a much higher rate of enrolment for the age classes 23 to 29 than data for France, Poland and the Netherlands.

Figure 3.4 Range of enrolment rates for age classes within the EU-27, 2004



Source: Eurostat.

Figure 3.5 Enrolment rates in four EU Member States, 2004



Source: Eurostat.

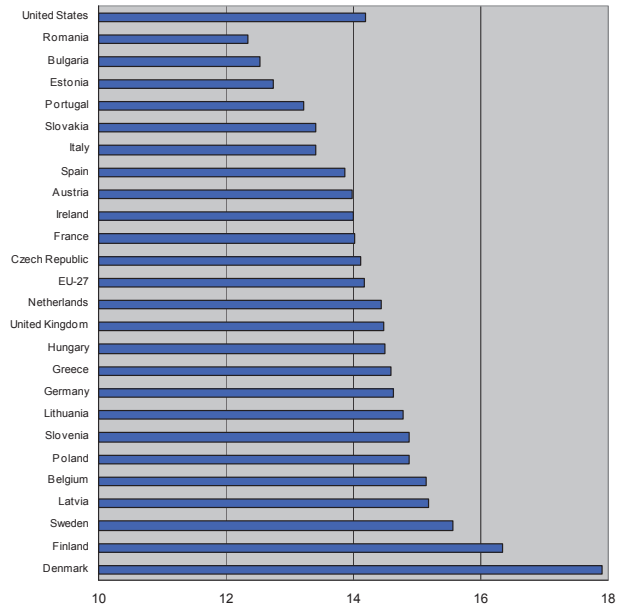
Excluding the enrolment of children under the age of five, the average expected duration of education in 2004 for the OECD as a whole amounted to 17.4 years (males and females combined) (OECD, 2006b). For the 19 EU countries which were also members of the OECD, the average expected duration of education amounted to 17.6 and for the United States to 16.9 years.

The relatively short duration of education in the United States is also illustrated by the relatively low overall rate of enrolment for the whole age class 20-29: 23.4% in the United States as against an average of 25.1% for the EU-15 with the detailed country data ranging from a low of 9.6% in Turkey and 10% in Mexico to a high of 41.1% in Finland.

As already shown in Figure 3.3, the 'life curve' for educational enrolment for the EU-27 on average from 1998 to 2005 shifted upwards notably for the age groups 15 to 25. In the countries with a relatively low level in 1998, such as notably the Czech Republic and Romania, the increase in the rate of enrolment for those aged 20 years, was larger than for the countries, which, already in 1998, had a high level of education enrolment in those age classes, notably the Nordic countries and the United Kingdom. As measured by the standard deviation or the coefficient of variation (the standard deviation as a per cent of the mean), the disparities in this regard thus narrowed somewhat.

The average age of entry into the school system shows rather large variations among the EU Member States, from a low of some four years in, notably, France to around six in other countries. When estimated with the age of six as the starting point, the level of educational attainment in fact is the highest in the Nordic countries and approximately the same for the United States and the EU-27 on average. Data for educational attainment are not yet available for a number of the EU-12 Member States but a tentative calculation based on the rates of enrolment for each of the age groups from 6 to 30 around 2004 shows the average duration of education *after the age of 6* - for the current young cohorts - ranging from a low of 12 years in Romania to some 18 years in Denmark (*Figure 3.6*). The latter, comparatively high, figure reflects the fact that in Denmark many students undertake a year or two of practical experience in their perceived field of interest before returning to higher education in this or another discipline. In addition, a relatively large number of Danish students work part-time and/or receive a 'salary' from the state allowing them to extent studies in closer connection with the later definitive insertion into the labour market.

Figure 3.6 Estimate of years of schooling under current conditions



Source: Own calculation based on Eurostat and US Bureau of Census data.
Note: The average years of schooling after the age of six are calculated using the methodology of the calculation of life expectancy in demographic analysis. In practice this involves calculating for each age group the probability of survival till next year in the system of education and then compiling the total expected duration of education as the sum of the probabilities of surviving at every age in education. It must also be stressed that this calculation firstly does not allow for the 'quality' of education and, secondly, that the rates of enrolment in a number of countries include the net presence of students from abroad and exclude students spending time studying abroad.

Consequently, the average age of students in this country is significantly higher than in countries where students move directly into higher education.

Where the level of educational attainment in the EU-12 for the current young cohorts remains several years below the 'best practice' in the Nordic countries, the level around 2004 nevertheless represents an increase of some five years as compared to the level of educational attainment of the elderly population in those countries.

3.3 Scenario for educational enrolment in coming decades

According to the 2008 Eurostat demographic projections, the number of persons in the cohorts attending education will decline significantly over the coming decades. The number of persons aged 3 to 29 years is, in Eurostat's baseline scenario, projected to decline by some 23 million, from 157.5 million in 2008 to 134.9 million in 2060, or by 14.4%. The demographic decline will be particularly steep for the age groups attending secondary and higher education. Thus, the number of persons in the age group 15-19 is projected to decline by close to 17% and those in the age group 20-24 by 18.5%. In contrast the number of youth in the age classes 3-5 and 6-14 is projected to decline by

respectively 8.1 and 7.6%, reflecting, essentially Eurostat's assumptions of a stabilisation of fertility levels. In fact, the number of youth in these younger cohorts is actually projected to increase slightly between 2010 and 2020 reflecting some recovery of fertility since the year 2000 and after 2010. Afterwards, even with a somewhat higher fertility, the number of births will decline due to a fall in the number of women in the fertile age groups.

Given the projected decline in the age groups attending education, the number of persons enrolled in education should thus be expected to show a parallel decline, unless this decline in the underlying population would be compensated by a rise in the rate of enrolment. A simple scenario shows that if the rates of enrolment would be maintained at approximately the level observed in 2005, the number of persons attending education in each of these age classes could thus be assumed to follow the same trajectory. However, since the number of persons in the age classes 3 to 14 is expected to decline less than the population in the age classes 15 and above, the overall enrolment in those age classes would, in fact, decline less than for the total population in these age classes, or by 11.8% or some 12 million persons as against a decline of 14.4% in the underlying population (see *Table 3.3*).

While, as illustrated in Figure 3.4, the rates of enrolment in the age groups 6-16 vary relatively little among the EU Member States the discrepancies are significantly higher at higher ages. Thus in the age group 20-24 on average, the rate of enrolment in 2005 ranged from some 25% in the Slovak Republic to some 55% in Finland and around 50% in Poland, Denmark, Slovenia and Sweden and with a EU-27 average of 36%. (Cyprus, Malta and Luxembourg are not included in this comparison as in these countries many students go abroad for completing tertiary education). If, as could be hoped, EU countries with currently a low level of enrolment in the age group 20-24 managed to convert towards the high-performing countries this could entail a rise in enrolment in these age classes by at most 10%-points to, say, 45%. As a result the enrolment in this age group in 2060 could then reach 11.5 million in this alternative scenario as against 9.5 million persons in the baseline scenario. Some additional rise in the enrolment rate in the age group 25-29 might also take place but this would hardly have a significant effect on the overall number of persons enrolled.

Table 3.3 Scenario for educational enrolment, EU-27, 2008-2060

		2008	2010	2020	2030	2040	2050	2060	change
Population		millions							
3-5		15.2	15.5	15.6	14.7	14.4	14.4	13.9	-8.1
6-14		46.9	46.4	48.0	46.5	44.0	43.9	43.3	-7.6
15-19		29.8	28.6	26.3	27.1	25.8	24.7	24.8	-16.6
20-24		31.8	31.9	27.9	28.5	27.8	26.2	25.9	-18.5
25-29		33.9	33.8	31.7	29.0	29.6	28.2	26.9	-20.7
total		157.5	156.2	149.5	145.8	141.6	137.3	134.9	-14.4
Enrolment scenario	Rates 2005								
3-5	79.2	12.0	12.3	12.4	11.6	11.4	11.4	11.0	-8.1
6-14	98.5	46.2	45.7	47.3	45.8	43.3	43.2	42.7	-7.6
15-19	84.1	25.0	24.1	22.1	22.8	21.7	20.8	20.9	-16.6
20-24	36.7	11.6	11.7	10.2	10.4	10.2	9.6	9.5	-18.5
25-29	12.1	4.1	4.1	3.8	3.5	3.6	3.4	3.3	-20.7
total		99.0	97.9	95.9	94.2	90.2	88.4	87.3	-11.8

Change between 2008 and 2060.
Source: Eurostat 2008 projections and author's scenario calculations.

3.4 Transition into higher education

As already suggested by the analysis of general demographic developments in the preceding section, transition into higher education constitutes in many ways the main indicator of the performance of the system of education of the different countries. It is also the area where the disparities are the largest among the EU Member States and more widely within the OECD area.

In 2004, students in OECD countries spent on average 9.5 years in primary and lower secondary education, 3.8 years in upper secondary education, 0.3 years in post secondary education and 3.0 years in tertiary education (OECD, 2006b). For the 19 EU countries which were OECD members, the distribution between the four levels of education was not very different, the duration being respectively 9.3, 4.0, 0.3 and 2.9 years.

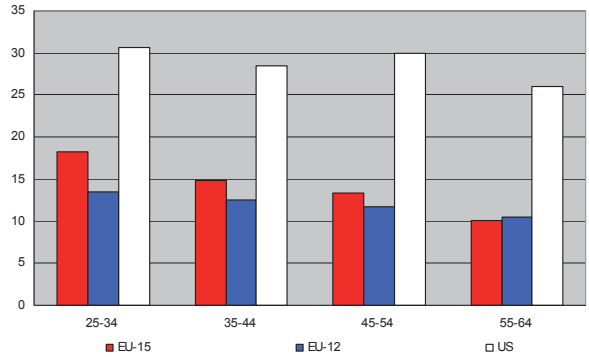
The distribution of expected years of education in the EU countries showed a remarkable difference from those of the United States, where the duration of education in the primary and lower level amounted to 9.1 years, in upper secondary to 2.7 years, post-secondary to 0.1 year and in tertiary education to 4.1 years. Whereas in the United States the total expected duration of education, at 16.9 years was somewhat lower than that of the 19 EU countries on average, the duration of tertiary education in the United States, thus, was more than a year longer than in the EU. When interpreting these comparisons the significant differences in educational systems need to be taken into account.

In addition to system differences, the important role of tertiary education in the United States is in part the result of the unique position of the US as a provider of education services to a large segment of students seeking higher education in addition to or as replacement for the education provided in their home country. This phenomenon may also explain the higher length of tertiary education in the United States, in the sense that many foreign students complete a part of tertiary education, for example with a masters degree, in their home country and then go abroad to the US or the UK to achieve a PhD. Consequently, statistically speaking, this results in a shorter duration of tertiary education in their home country. Nevertheless, the emphasis of tertiary education in the United States is an old-time phenomenon, which is reflected in the share of persons with tertiary education in this country being significantly above that of most EU Member States and other OECD countries.

In fact, as shown in *Figure 3.7*, in the year 2002, in the age group 55-64, more than 25% of the US population had attained tertiary education as against only some 10% in the EU. Whereas the level of educational attainment in the United States tends to stabilise around 30% of a cohort, the level is rising in the EU countries but, with a level of some 21% of the age group 25-34 having reached the level of tertiary, catching up with the United States in this respect will evidently be a long drawn-out process with important consequences for the overall level of intellectual capital on this side of the Atlantic. Nevertheless, within the EU differences are substantial, with Denmark, Ireland, the Netherlands, Spain and Sweden already at or close to the US level in the age group 25-34, but with the level in some large countries, such as notably, France (22%), Germany (15%), Italy (12%) and the United Kingdom (23%) remaining in the range of 15-25%. Differences in the quality of tertiary education need of course to be taken into account when interpreting the enrolment data.

This brief overview of educational demographics and the transition from primary to secondary and tertiary education suggests that the gap between the US and the EU lies less in the overall duration of education than in the failure of even some of the old and highly developed EU Member States to ensure the transition of a sufficiently high number of the young generation into high performing tertiary education.

Figure 3.7 Attainment of tertiary education by main age groups, EU and US, 2002 (%)



Source: OECD and Eurostat.

Recent developments in EU Member States suggest that an improvement in the rate of enrolment is under way, albeit slowly. As shown in *Figure 3.8*, the share of age group 20 enrolled in tertiary education (ISCED 5-6) for the EU-27 as a whole rose from some 29% in 1999 to close to 35% in 2005. Furthermore, the rate of enrolment of women in tertiary education, already above that of men in 1999, rose faster during the years 1999 to 2005, to reach 40% in the latter year, or more than 10%-points above that of males.

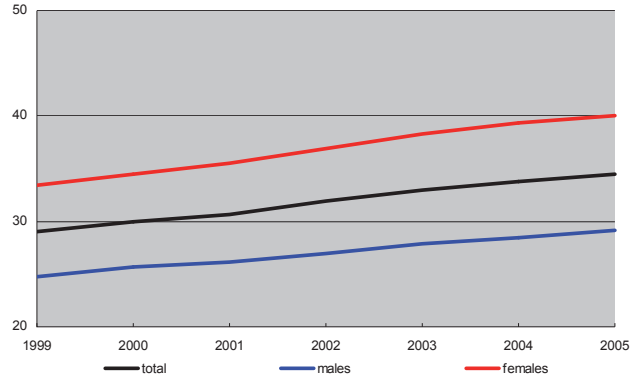
However, despite this improvement in enrolment in tertiary education, in a number of Member States a relatively large proportion of the adult population is still leaving the system of education with no diploma or only lower-secondary education. In fact, as shown in *Figure 3.9*, in 2005, on average for the EU-25 close to 15% of the age group 15-24 had already left education with only lower-secondary level of education with the data for individual countries ranging from a low of 4% in Slovenia to 39% in Portugal and even more in Malta, more than 30% in Spain and more than 20% in Italy (no data are available for Germany). In this respect the best performers are some of the EU-12 Member States (Slovenia, Poland, Slovakia and the Czech Republic) and the Nordic countries. The latter countries, thus, emerge as high achievers in the sense that not only do they manage to channel a high proportion of the population into accomplished tertiary education but also to avoid a segmentation between an elite at one end of the scale of levels of education and the 'drop-outs' at the other end.

The challenge of ensuring a smooth transition through education into active life is thus a double one:

- to provide a higher-secondary level of education to as large a share of the population as possible and, in this process, to limit to the minimum of drop-outs (early-school leavers);
- to provide high-quality tertiary education to the highest number of persons in a cohort.

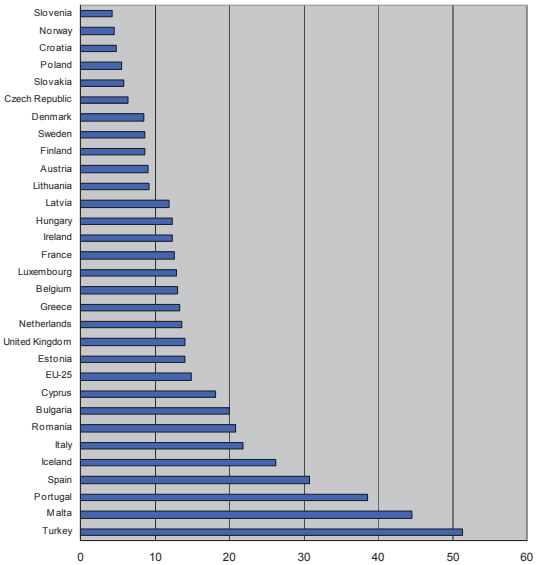
Also with respect to the first of these objectives, Canada and the United States emerge as a 'benchmark reference'. In fact, as shown in *Figure 3.10*, in these countries the proportion of the adult population with tertiary education is the highest and the proportion of the population with only primary education belongs to the lowest among the OECD countries. In sharp contrast, in the EU-15 close to 40% of the adult population had achieved only primary education, with even substantially higher levels in notably the Mediterranean countries (Spain, Greece, Italy and Portugal).

Figure 3.8 Tertiary enrolment in the EU-27 by sex, age 20 (%)



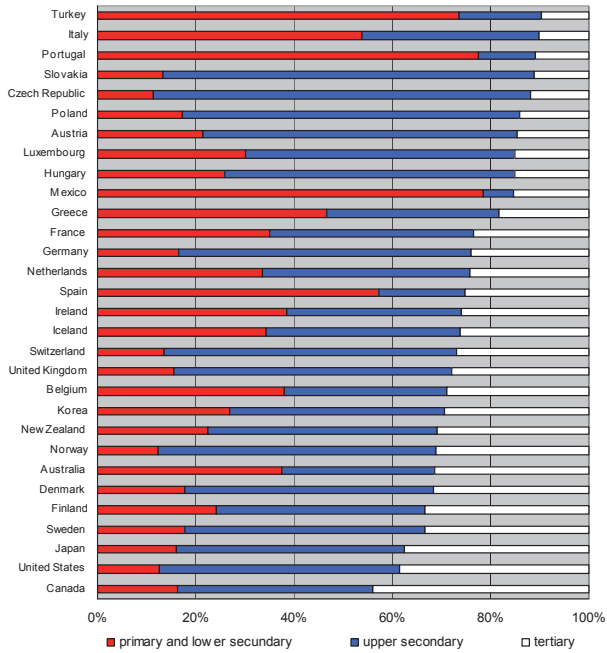
Source: Eurostat.

Figure 3.9 Percentage of the population aged 18-24 with only lower-secondary education and not in education, 2005



Source: Eurostat Labour force survey.

Figure 3.10 Level of education, adult population, 2003 (%)



Source: Eurostat.

3.5 Determinants of educational performance

Since the year 2000, the performance of the educational systems is examined in an international comparative sample survey of competences in reading, mathematics and science of 15-year old students in OECD and a number of associated, countries, the PISA survey (Programme for International Student Assessment).[13] The survey was conducted for the first time in the year 2000, then in 2003 and most recently in 2006 (OECD, 2007a). The PISA surveys yields pertinent data on the relative performance in the different countries with a breakdown by gender and different socio-economic backgrounds.

However, a deeper analysis of the determinants of the passage through the different stages of education and, beyond education, into the subsequent stages of the life course will remain incomplete unless it is possible to follow the course of an individual child through these phases. Only few examples of such longitudinal surveys of early life-course-transition are available and only rare examples exist of longitudinal surveys directly connected to the international comparative PISA survey of the performance of the students. In fact, at least up to recently, only three of the participant countries (Australia, Canada and Denmark) have not only measured the performance of

[13] More information and background on PISA can retrieved at http://www.pisa.oecd.org.

the sample of the 15-year old students but also managed to follow those students through a subsequent phase of their life-course.

The Canadian Youth in Transition Survey (YITS)[14] in 2004 investigated patterns of and influence on major educational, training and work transitions among the 29,330 students having participated in the year 2000 PISA Survey. The analysis showed that youths' performance in the reading test was highly predictive of high school completion and students' successful transition into post-secondary education by the age of 19. What is more intriguing was that youths' reading proficiency had a very strong effect on the transition into post-secondary education, *even* after accounting for other factors known to be related to post-secondary participation such as gender, parental education, mother tongue, family income or place of residence. An Australian survey of the PISA 2003 cohort showed that also proficiency in mathematics (which was the focus of the 2003 PISA survey) was predicative of the attendance of post-secondary education.

Among the EU countries having participated in the PISA surveys, only Denmark has undertaken a longitudinal survey of the post-PISA transition and the results of this study are therefore reviewed in some detail in this section (Andersen, 2005). From those in the 2000 cohort who, by 2004, had prematurely left the system of education, 23% belonged to single-parent families and 13% to recomposed families, adding up a total of 36%, 11%-points higher than the share of such families in the total sample (25%). Students from 'core families', which accounted for 70% of the total sample, in contrast, accounted for only 55% of these early-school-leavers (Andersen, 2005).

To what extent can the results of the Danish survey be considered generally valid for other EU Member States? In particular, is there a close link between family structure, educational transition and performance of the fifteen-year old persons according to the PISA survey?

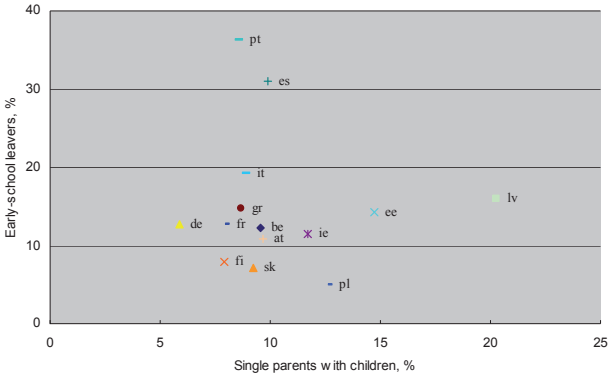
A confrontation of Eurostat data on the share of single-parent families with children in the total number of households (horizontal axis) and the share of 18-24 year old persons with only lower-secondary level of education (vertical axis) shows only weak correlation (*Figure 3.11*). In general the Mediterranean countries tend to have rather high rates of school leavers with a relatively low level of single-parent families. In contrast several of the EU-12 Member States have a rather high level of single-parent families combined with a low level of early-school leavers.

Further evidence can be obtained from the PISA survey for 2003, which provided information on the score of students with a break-down by single-parent families and other family types. The findings show a clear difference between the two family types as far as score is concerned, with, for the OECD as a whole, a statistically significant gap of 34 points between other family types and single-parent families.

A further examination of the data shows a tendency for this gap to be relatively smaller for countries with a relatively low overall score in the PISA survey and higher for countries with a comparatively high overall score. However, the coefficient of correlation is extremely low, as several countries combine a high overall score with a low gap between the family types while other countries combine a high overall score with a high gap between the two family types. In the country with the highest overall PISA score for other family types, the Netherlands, the gap between the two family types (31 points) is considerably above the OECD average, while for two other countries in the same 'class' Finland and Korea, the difference between the two family types, at only 9 points, is among the lowest.

[14] http://www.pisa.gc.ca/yits.shtml summarised in OECD, 2007a.

Figure 3.11 Percentage of early school leavers (2007) and type of households (2001)



NB To keep the graph readable some points (countries) have been left out.
Source: Eurostat.

The pronounced diversity between the countries with a high overall PISA score as far as the results of youth from different family types are concerned would seem likely to result from the operation of 'hidden variables' of socio-economic and cultural nature. That this is the case is confirmed by the statistical analysis undertaken within the PISA survey and presented in the 2003 Report on the findings (PISA 2003). The results also show that socio-economic and cultural factors like the level of education of parents, possessions related to classical culture, family type, immigrant background and language spoken at home are, for the OECD as a whole, estimated to explain about one fifth of the within-country variance of PISA scores. Also on this score there is a certain degree of disparity among the OECD countries, with these socio-economic and cultural factors explaining only 6.7% of the variance in Iceland and 9.3% in Canada as against 21.7% in Belgium and 25.7% in Hungary.

These PISA results suggest that the intelligence of individuals and the quality of education constitute major sources of variation of the PISA scores within countries (between schools and individuals). Whereas the intelligence of individuals can be assumed to be genetically determined, the methods of education and transmission of knowledge, difficult to measure objectively, may thus play a larger role in generation of human capital in the different countries than often argued in public debates on education.

3.6 School achievement of children of immigrants[15]

International comparable data on school achievement of children of immigrants are still scarce. The most comprehensive analyses comparing school achievement of pupils in different developed countries are from PISA. PISA is providing findings for OECD countries as a whole but the number of children of immigrants sampled in the PISA studies is limited. According to the PISA 2006 study Finland ranked highest on school achievement, but this does not automatically imply that the Finnish system is also best for the children of immigrants.

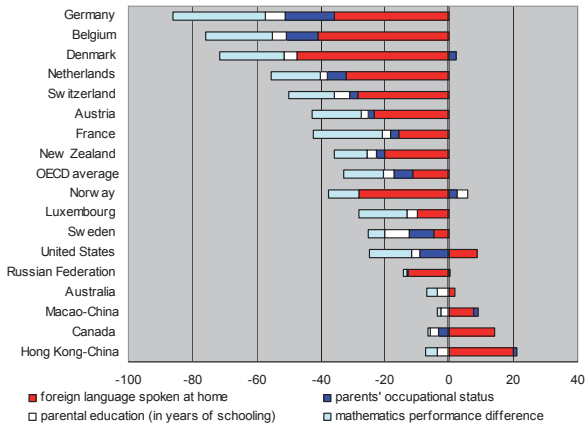
[15] This paragraph is based on De Valk, 2008.

For PISA 2003 additional analyses were made on the performance and engagement of immigrant students. Not all countries that are included in the PISA assessment however have sufficient numbers of immigrant youth to make separate analyses. Findings for children of immigrants thus refer to 17 countries only.[16] Although PISA 2003 focused on mathematics it also included reading, science and problem solving. The PISA 2003 study assesses the success of 15 year old students of immigrant origin in school. Their achievements are compared to those of the native population in the same country as well as to immigrant youth in other countries.

The PISA 2003 data indicate that the educational performances of children of immigrants differ substantially between countries. Nevertheless, foreign born students do overall lag behind their native peers in mathematics and reading. A baseline proficiency of mathematics and reading is attained by a (large) majority of native students in all countries. For immigrant students the picture is rather different: in 12 of the 17 countries a substantial proportion of *first* generation immigrant students do not perform at this level.

Figure 3.12 shows the difference in scores on the mathematics test between native and *second* generation students. Positive scores indicate that the second generation achieves better results than the native students; negative scores refer to the opposite situation. The figure clearly shows that in the majority of countries the native pupils outperform the second generation migrants. Also after controlling for the socio-economic characteristics of the parents (which partially explain these differences), the differences in scores between native and foreign born pertain. This is most clear for countries like Austria, Belgium, Denmark, France and the Netherlands (see also Tolsma *et al*., 2007). The performance of children of immigrants may thus not fully be attributable to the socio-economic composition of immigrant populations (OECD, 2006c). One can however question the usefulness of these indicators given the limited variation in socio-economic backgrounds and the level of parental education among children of immigrants.

Figure 3.12 Performance score difference in mathematics for native students compared to second generation students controlling for background characteristics in selected countries



Source: OECD, 2005 and OECD, 2006c.

[16] The included OECD countries are Australia, Austria, Belgium, Canada, Denmark, France, Germany, Luxembourg, the Netherlands, New Zealand, Norway, Sweden, Switzerland and the US. In addition, Hong Kong-China, Macao China and the Russian Federation were partner countries.

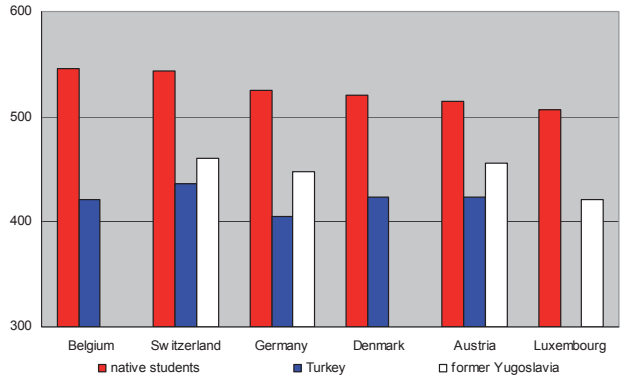
In addition, the socio-economic position of immigrants itself may very well be related to past policies and the institutional setting of the country. This is supported by the observation that children of immigrants do relatively well in the traditional immigration countries (Canada, Australia and New Zealand). Entorf and Minoiu (2005) hold that this outcome is related to the selective migrant admission policies in these countries which favour those with a higher socio economic position. Analyses of the PISA data furthermore show that educational performance is significantly better for migrant students who speak the language of the host country at home. This does not necessarily imply that migrant families should abandon their mother tongue. Migrant students in some countries are shown to perform at similar levels as native students even when they do not speak the national language at home (OECD, 2006c). The strong association between disadvantaged mathematics scores and language spoken at home does however suggest that these migrant students have limited opportunities to acquire a sufficient level of the language of instruction.

As was mentioned before, educational performance in the classical immigration countries is much better than in countries without this tradition, like for example Belgium and Germany. In the latter countries the first generation of migrants lags behind the native students most. But also the educational achievement of the second generation is still substantially behind that found for native youth. Overall the PISA findings show that the second generation of migrants performs better than the first generation. Especially in Switzerland and Sweden the performance gap between native and immigrant students is substantially reduced between the first and second generation. For Germany, however, the first generation is found to do better in education than the second generation. When making this kind of comparisons it is of course important to take into account that first and second generation migrant students not necessarily have the same origins (see also Levels and Dronkers, 2007). Despite the fact that second generation students are overall doing better than first generation students, still a quarter of the second generation in half of the studied countries does not perform at the lowest necessary level to use mathematics. This is for example the case in Germany, Austria, Belgium, Denmark, France and Norway (OECD, 2006c).

The PISA 2003 study also shows that within each country there is variation in the results of different migrant origins. The extent of the difference however varies between groups. In the case of Belgium for example Dutch immigrants score slightly lower than their Belgian peers while Turkish students do have much lower scores than their native peers. This type of differences between the achievements of students from different immigrant origins was also found in Austria, Denmark, Germany, Luxembourg and Switzerland (OECD, 2006c). When comparing migrant students with the same origin in different national contexts one gets an idea of how migrant students fare in different educational settings. *Figure 3.13* shows the scores on the PISA mathematics scale in six European countries and for three different origin groups: native inhabitants, Turks and former Yugoslavians. Comparing Turkish students in the five included countries shows that their performance in mathematics is best in Switzerland and worst in Germany. Also for students from former Yugoslavia clear differences in math performances are found between the countries. Again best results are found for these students in Switzerland. Students from Former Yugoslavia perform worst in Luxembourg where they score significantly lower than their peers in Switzerland. These data suggest that the institutional setting in which the education of migrants takes place has an impact on school performance.

It is sometimes assumed that high levels of immigration would hamper integration in schools and would have a negative impact on educational performance. The PISA 2003 data, comparing the relation between the proportion of migrant students and their performance to native peers, do not support this view.

Figure 3.13 Performance on the PISA mathematics scale for native and immigrant students from Turkey and former Yugoslavia in six selected European countries



Source: OECD, 2005 and OECD, 2006c.

In several countries with rather large proportions of migrant students the difference between the achievements of native and migrant students is rather small (OECD, 2006c), but one should be aware that the composition of the immigrant populations may vary between countries.

Despite the fact that their educational achievements lag behind those of their native peers, first generation migrant students do have a higher motivation and a more positive attitude towards schools than their native and second generation peers. This was the case across all countries included in the PISA 2003. Both first and second generation students more often expect to complete education at university level than native students. At the same time second generation students report the lowest levels of self efficacy and the highest levels of anxiety. This applies in particular to those who live in countries with the largest performance gap between native children and children of immigrants. Efforts to improve the educational performance among migrant youth may need to take these perceptions of students into account which may help to overcome uncertainties and benefit the learning potential of migrant children.

When studying educational performance and outcomes of children of immigrants in different contexts it is relevant to consider their educational careers. The PISA study provides insight into the test scores at age 15 but does not provide information on educational routes of immigrant youth. The level of educational attainment as well as the drop out are two complementary indicators that provide information on the educational careers of migrant children. Crul (2007) studied second generation Turks in five European countries and noted that their educational position varies in at least two ways between the countries studied. First of all the percentage of Turkish second generation migrants in vocational tracks is lowest in France (25%) and highest in Germany and Austria (66 and 75%). The Netherlands and Belgium have an intermediate position with around a third of Turkish second generation at this lowest educational level. With respect to school drop out the drop out rates are highest in France, Belgium and the Netherlands and much lower in Germany and Austria (Crul, 2007). In France, for example, many migrant children start in the academic track but drop out rates are very high (Felzouzis, 2003); as a consequence these young adults leave the educational system without a good qualification to enter the labour market.

3.7 Summary and conclusions

The total number of educational enrolments changed only marginally from 1998 to 2005, the period for which comparative data are made available by Eurostat. This apparent stability is in fact the combined effect of a decline in the number of persons in those age groups and a rise in the share of this population enrolled in education. This increase in the average educational enrolment took place essentially through an increase in educational enrolment in the age group 15-25.

The development of the rates of educational enrolment for the different age groups shows a weak but distinct 'rectangularisation' of the curve representing the rate of 'survival' in the system of education: whereas some increase in enrolment in education or kindergartens took place in the youngest age groups, little change took place in the age groups 6-14 and 25-29. The enrolment curve shifted upwards for the age group 15-25 albeit more importantly in the age groups from 15-20. The enrolment rate of women on average rose more than for men and in the age groups 18-25 the female rate of enrolment in education by 2005 was distinctly above that for males.

In the OECD countries persons in education in the year 2004 spent on average 9.5 years in primary and lower secondary education, 3.8 years in upper secondary education, 0.3 years in post secondary education and 3.0 years in tertiary education. On average for the 19 EU countries which were OECD members, the distribution between the four levels of education was not very different, the share being respectively 9.3, 4.0, 0.3 and 2.9.

The distribution of expected years of education in the EU countries showed a remarkable difference from that of the United States, where the duration of education in the primary and lower level amounted to 9.1 years, in upper secondary to 2.7 years, post-secondary to 0.1 year and in tertiary education to 4.1 years. Whereas in the United States the total expected duration of education, at 16.9 years was somewhat lower than that of the 19 EU countries on average, the duration of tertiary education in the United States was more than a year longer than in the EU.

The overview of educational demographics and the transition from primary to secondary and tertiary education suggests that the gap between the USA and the EU lies less in the overall duration of education but in the failure of even some of the old and highly developed EU Member States to ensure the transition of a sufficiently high number of the young generation into high-performing tertiary education. Differences in educational systems between the USA and European countries should of course be taken into account when evaluating these outcomes.

An additional problem is that in a number of Member States a relatively large proportion of the adult population has left or is leaving the system of education without a diploma or only lower-secondary education. In this respect the Nordic countries emerge as high achievers in the sense that they not only manage to channel a high proportion of the population into accomplished tertiary education but also manage to avoid a segmentation between an elite at one end of the scale of levels of education and the 'drop-outs' at the other end.

While the evolution of educational enrolment shows some improvement between 1998 and 2005, the improvement has been and still is considerably slower than implied by the Lisbon target for education and training. As it seems, most of the old EU Member States and several of the EU-12 Member States encounter severe problems in designing policies to receive and maintain a high proportion of the age groups 15-24 in the system of education but also in allocating appropriate means to ensure the future provision of high-quality education services.

A tentative scenario for educational enrolment based on the 2008 Eurostat demographic projections suggests an overall absolute decline in educational enrolment in the coming decades of some 12% if the 2005 enrolment rates were to be maintained and a somewhat smaller decline if the enrolment levels in tertiary education saw some convergence towards the best-performing EU Member States.

The Programme for International Student Assessment (PISA) surveys the performance in terms of reading abilities (2000), math (2003) and science (2006) of 15-year old students. As could be expected, the outcomes show striking disparities between the participating countries. The 2003 analysis of the role of culture and socio-economic factors suggests that these factors can explain only a relatively limited part of the variance between scores. In fact, such determinants as the level of education of the parents, family structure and immigrant background explain only about one fifth of the variance of the score between students. Consequently, the remaining four fifth is attributable to the quality of the school, the educational system and the intelligence of the individual student.

The findings of the PISA surveys are also confirmed by in-depth studies of the later development of the PISA panel participants within and out of the educational system. According to these panel surveys the scores of the fifteen year old students are highly predictive of their later transition into higher education, even adjusted for socio-economic and cultural factors. One important conclusion of the PISA survey and the longitudinal studies is, therefore, that the system of education and the associated investment in human capital development is a key determinant of broader social development, social cohesion and social mobility. The outcomes also suggest that without substantive investments in education, there is little chance for lasting achievements in the broader social spheres.

Currently a large share of the potential that migrant youth have available seems to be wasted in Europe. Migrant students overall achieve lower levels of education and are more likely to drop out of school. Studies indicate that at least part of the educational disadvantage of immigrant youth is related to the socio-economic position of their families. In that sense it is important to aim for general improvements in providing equal opportunities to students from different socio-economic backgrounds rather than just targeting at children of immigrants. Nevertheless, immigrant youth is in a specific position given the fact that they themselves or at least their parents have experienced migration. It is therefore important to differentiate between immigrant groups as well as between first and second generation adolescents and to note that second generation migrants in general perform better than first generation migrants. Knowledge on how different groups and migrant generations are performing in education is still rather limited. Better and more detailed international comparable data are needed to get a hold on the factors that affect the performance of groups of students differently.

4 Impact of changes in the working age population on labour supply and employment

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4.1 Highlights

- The current labour force of the European Union is about 238 million. New demographic projections indicate that this labour force would decline by 1.2 million until 2020 when labour force participation rates would remain unchanged. Due to the ageing of the labour force the gender gap on the labour market would increase by 0.6%-points while the share of the elderly workforce would increase by 1.8%-points. Until 2020 the number of active elderly is expected to rise by 4.3 million.
- In a more realistic scenario assuming increasing labour force participation rates the decline in the labour force would however turn into an increase where by the year 2020 some 11 million people more would be active on the labour market. Expected changes in female labour market behaviour would reduce the gender gap and higher activity rates of the elderly would enforce the ageing of the work force.
- Whereas a growth in employment is expected in all European countries, 12 countries will not fulfil the Lisbon target for overall employment. In view of the female employment target the performance is better. Only seven countries will not fulfil this target in 2020. Although a strong increase in employment rates of the elderly is expected, in 2020 13 out of 27 European countries will not fulfil the employment target for the elderly.
- The increase in employment rates will lead to a growth in part-time employment which will be twice as big as the growth in full-time employment.

4.2 Introduction

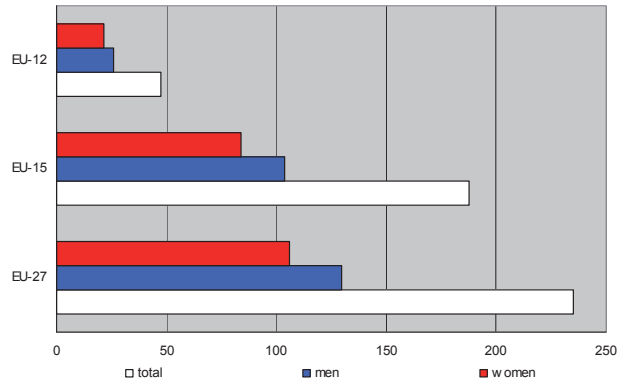
This chapter describes the development of the active population in the next decade using the new Eurostat population projection and two scenarios for the development of labour force participation. The chapter analyses the impact of population change on the overall labour force and on the gender gap and the age-structure. As the number of active people is also influenced by changes in employment which are mainly caused by economic development, the chapter also focuses on the expected changes in employment and discusses possible developments in working time.

4.3 Impact of demographic change on the labour force

In the EU-27 around 238 million people aged 15 and over were active on the labour market in 2007 which means that they were either employed or currently without a job but seeking work (*Figure 4.1*).[17]

[17] The actual labour force, in this chapter referred to as labour force, is the number of active people. According to the Eurostat definition the economically active comprise both employed and unemployed persons. Employed persons are persons aged 15 and over, who are normally working (even for just one hour a week). Unemployed persons are persons without work during the reference week, who were currently available for work and were either actively seeking work in the past four weeks or had already found a job to start within the next three month (see Eurostat, Labour force survey – Basic concepts and definitions).

Figure 4.1 Total labour force aged 15 and over in the EU, by sex, 2007 (millions)



Source: Labour force survey; calculation by DIW Berlin.

The number of active men (131 million) was higher than the number of active women (106 million). Compared to 2006 an increase in the labour force of 5 million could be observed for the European Union. This change can be traced back to changes in population as well as changes in labour force participation. Contrary to the long-term trend in the past, the population aged 15 and over decreased by 1.6 million during 2007.[18] This decline was compensated by the continuing increase in labour force participation. The total activity rate increased from 56.7 to 57.3 in the EU-27. For both men and women a growth in activity was realized, but the dynamic was higher for women.

To describe the future development of the labour force, assumptions regarding future demographic trends as well as regarding labour force participation behaviour are required. In May 2008 Eurostat published a new population projection entitled 'convergence scenario' (EUROPOP2008). This scenario differs from the EUROPOP2004 baseline variant, in particular with respect to higher immigration flows into the European Union while life expectancy is also assumed to increase. As a result, the total population in 2020 in EUROPOP2008 is higher than in the 2004 baseline variant. More immigration leads in particular in the prime working age to a higher population size of about 11 million people more than in the baseline variant in 2020. It follows that the new assumptions will have an important effect on the expected labour force too.

4.3.1 Decline in labour force due to demographic change until 2020

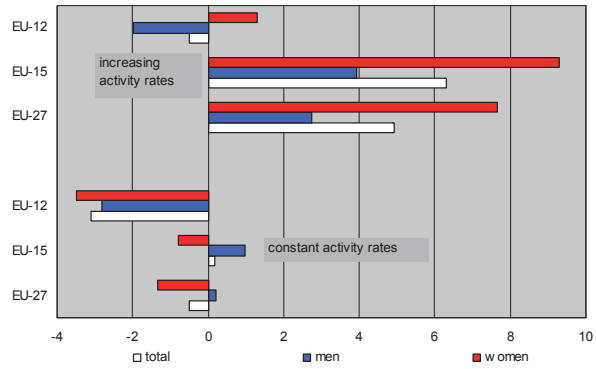
According to the new convergence scenario the population aged 15+ will increase by 17 million between 2008 and 2020 in the EU-27.[19] Combining this population projection with constant age, sex and country specific activity rates shows the influence of demographic change on the number and age-structure of active people in Europe (scenario constant activity rates).

[18] Population and active people have been derived from the Eurostat Labour force survey.

[19] The population estimation is based on the population statistics from Eurostat, which show higher population sizes than the results from the labour force survey. The difference between the annual average in population aged 15+ from the labour force survey and the population aged 15+ at 1.1.2008 from the population statistics accounted for 7.5 millions in the EU-27, a difference of 2%. Therefore, the small decline in population in 2007 according to the labour force survey has to be interpreted with caution. Interpretation of the further development of labour force and employment rely on the Eurostat population statistics and the convergence scenario.

The demographic effect will lead to a decline in the labour force by 1.2 million until 2020 in the EU-27 which is a decrease by 0.5% relating to the value in 2008 (*Figure 4.2*).

Figure 4.2 Changes between 2008 and 2020 in the number of active people aged 15 and over in the EU (%)



Sources: Eurostat population statistics and EUROPOP2008, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

This decline in labour force is the result of a significant decline in the new EU-12 (1.5 million or 3.1%) and a small increase in the old EU-15 (0.3 million or 0.2%). The development is different between genders. While the female labour force will decline in the EU-15 as well as in the EU-12, the male labour force will increase in the EU-15, but decrease in the EU-12.

The change in labour force between 2008 and 2020 is not a linear process. At first, for the EU-27 an increase until 2013 is expected (from 238.6 to 240.3 million) followed by a decline to 237.4 million (*Figure 4.3*, constant activity rates). In the EU-15 the trend is nearly the same: an increase until 2014 (from 190.5 to 192.4 million) followed by a decline down to 190.8 million in 2020 (*Figure 4.4*, constant activity rates). But the trend is different in the EU-12: after a short growth, a steady decline from 48.2 in 2009-2011 down to 46.6 million in 2020 is projected (*Figure 4.5*, constant activity rates).

The changes in the labour force due to the purely demographic effect will differ widely between countries: from a rise in absolute numbers of 1.4 million in Spain to a fall of more than 2 million in Germany between 2008 and 2020 (*Figure 4.6*). And also if we look at the relative changes, large differences between the Member States are estimated. In Cyprus a growth of the total labour force of around 20% and in Ireland of 17% is expected, driven by relatively high immigration flows (*Figure 4.7*).

On the other hand a significant decline in the labour force is expected for Bulgaria (-8%), Latvia and Slovenia (-6% each). In Latvia a continuing trend of emigration is assumed while in the other countries the natural population development will lead to the observed decline. Until 2020 an increase in the labour force is expected for nine countries, while the labour force will decline in 18 countries. A continuous decline in the labour force is foreseen for Germany, Denmark, Finland, France, Netherlands, Bulgaria, Hungary, Latvia and Slovenia. A steady increase in the labour force is expected for Ireland, Luxembourg, Portugal, Sweden, United Kingdom and Cyprus.

Figure 4.3 Total labour force (15+) in the EU-27, 2008-2020 (millions)

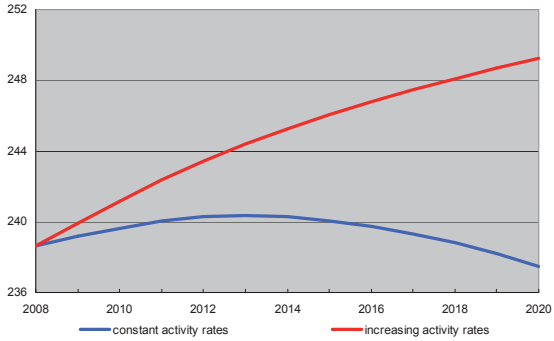


Figure 4.4 Total labour force (15+) in the EU-15, 2008-2020 (millions)

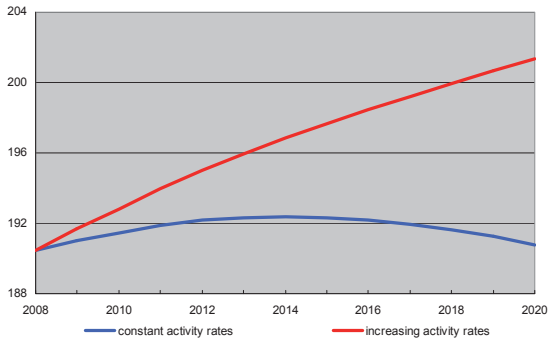
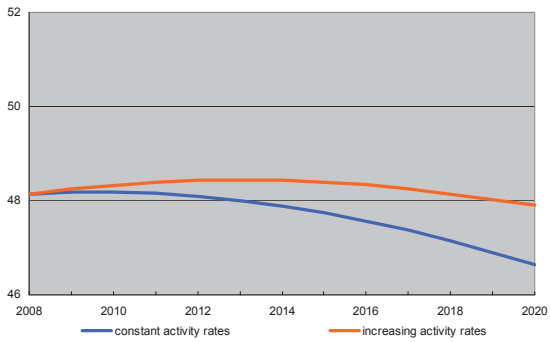


Figure 4.5 Total labour force (15+) in the EU-12, 2008-2020 (millions)



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.6 Absolute changes between 2008 and 2020 in total labour force in EU countries, constant participation rates (millions)

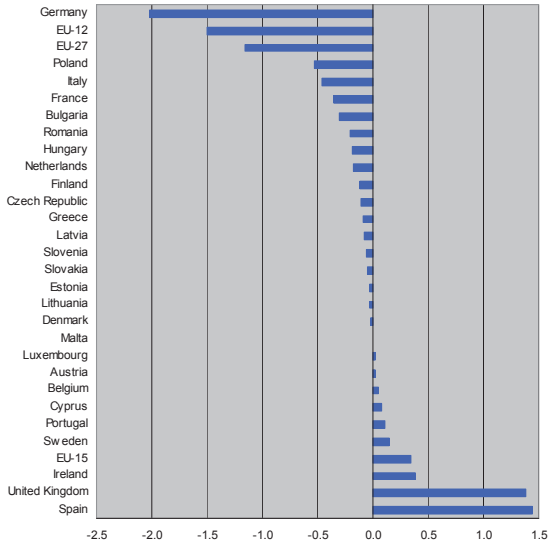
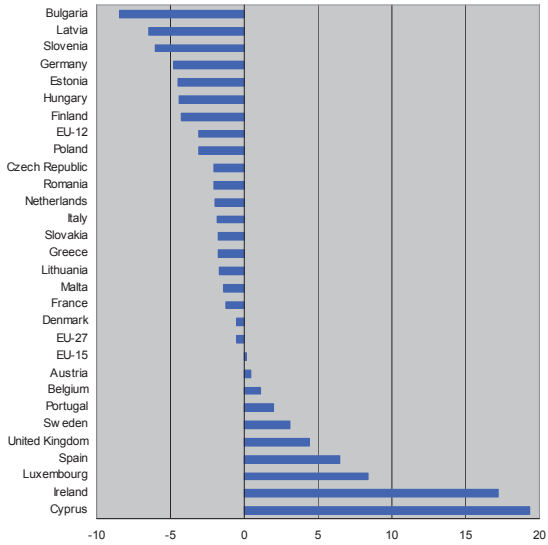


Figure 4.7 Relative changes between 2008 and 2020 in total labour force in EU countries, constant participation rates (%)



Sources: Eurostat EUROPOP2008, Labour force survey; calculation by DIW Berlin.

In Spain the labour force is the largest in 2019 and in Belgium in 2017, and therefore a nearly steady increase is expected. In other European countries (Austria, Greece, Italy, Czech Republic, Estonia, Lithuania, Malta, Poland Romania and Slovakia) an increase followed by a decline is expected (*Table 4.1)*.

Table 4.1 Peaks and troughs in total labour force in EU countries, 2008-2020, constant activity rates

	Peaks		Troughs		Difference	
	Year	x 1000	Year	x 1000	x 1000	%
Bulgaria	2008	3 580	2020	3 277	303	8.5
Denmark	2008	2 937	2020	2 921	16	0.5
Finland	2008	2 688	2020	2 574	114	4.2
France	2008	27 120	2020	26 772	348	1.3
Germany	2008	42 119	2020	40 097	2 022	4.8
Hungary	2008	4 293	2020	4 105	188	4.4
Latvia	2008	1 189	2020	1 112	77	6.5
Netherlands	2008	8 781	2020	8 607	174	2.0
Slovenia	2008	1 042	2020	979	63	6.0
Cyprus	2020	494	2008	414	80	16.2
Ireland	2020	2 619	2008	2 234	385	14.7
Luxembourg	2020	234	2008	216	18	7.8
Portugal	2020	5 731	2008	5 621	111	1.9
Sweden	2020	5 011	2008	4 862	150	3.0
United Kingdom	2020	32 700	2008	31 316	1 384	4.2
Austria	2014	4 332	2008	4 267	65	1.5
Belgium	2017	4 811	2008	4 742	68	1.4
Czech Republic	2011	5 198	2020	5 092	107	2.1
Estonia	2010	691	2020	659	32	4.7
Greece	2010	5 160	2020	5 047	113	2.2
Italy	2011	24 907	2020	24 413	494	2.0
Lithuania	2013	1 620	2020	1 577	43	2.6
Malta	2014	171	2020	168	3	2.0
Poland	2011	17 377	2020	16 806	571	3.3
Romania	2010	9 977	2020	9 756	221	2.2
Slovakia	2012	2 693	2020	2 624	69	2.5
Spain	2019	23 894	2008	22 447	1 447	6.1

Sources: Eurostat population statistics and EUROPOP2008; calculation by DIW Berlin.

4.3.2 Gender gap will increase

Demographic trends alone (the purely demographic effect) will lead to a lower share of women in the total labour force in 2020 than in 2008 both for the EU-27 on average as well as for all EU countries. In the EU-27, the share of women in the total labour force was 44.7% in 2008 which will decline to 44.3% by the year 2020 (*Table 4.2*).

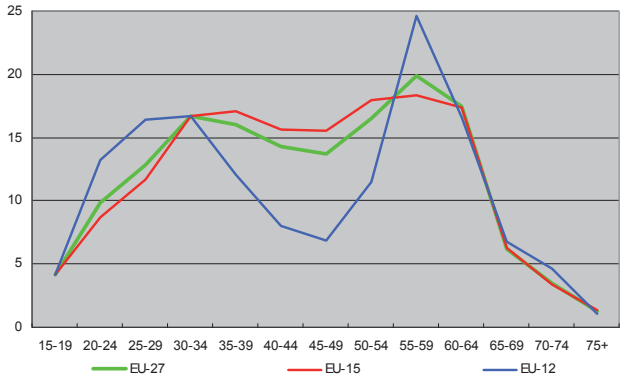
The share of women in the labour force is influenced by the labour force participation of women and the difference in participation as compared to men. According to the Labour Force Survey the difference in participation rates increases with age and shows its first peak in the age-group 30-44, the birth giving ages (*Figure 4.8*). Thereafter the gender gap will become smaller, but will increase once more after the age of 45-49 with a second peak in the age-group 55-59. Whereas the difference in activity rates between men and women in the single age-groups does not change during the projection period, the changes in age-composition will still lead to a rise in the gender gap in total activity rates. In the EU-27 the gender gap was highest for the age-groups 55-59 and 60-64 in 2007 and thus the higher share of the elderly workforce will result in a higher total gender gap. In the EU-27 on average the activity rate of women aged 15-64 was 14.3%-points lower than the activity rate of men in 2007. This gender gap will increase by 0.6%-points until 2020.

Table 4.2 Percentage of females in labour force in EU countries, 2008 and 2020

	Share in			Change	
	2008	2020		in %-points	
		constant activity rates	increasing activity rates	constant activity rates	increasing activity rates
EU-27	44.7	44.3	45.5	-0.4	0.8
EU-15	44.6	44.1	45.3	-0.4	0.8
EU-12	45.1	44.9	46.2	-0.2	1.1
Austria	45.2	44.7	46.4	-0.6	1.1
Belgium	44.7	44.5	46.0	-0.2	1.3
Bulgaria	46.6	46.4	46.5	-0.2	-0.1
Cyprus	44.5	43.7	46.3	-0.8	1.8
Czech Republic	43.6	43.9	45.9	0.3	2.3
Denmark	46.9	46.8	46.8	0.0	0.0
Estonia	49.1	48.5	49.0	-0.5	-0.1
Finland	48.2	47.9	47.7	-0.3	-0.5
France	46.9	46.5	46.6	-0.4	-0.3
Germany	45.4	45.1	45.4	-0.3	0.0
Greece	40.4	39.5	42.1	-0.9	1.7
Hungary	45.2	44.9	45.7	-0.3	0.4
Ireland	42.8	42.2	44.3	-0.6	1.5
Italy	40.2	39.5	42.0	-0.7	1.8
Latvia	48.5	48.2	48.3	-0.3	-0.3
Lithuania	49.3	48.8	49.4	-0.5	0.1
Luxembourg	43.1	43.4	44.4	0.4	1.3
Malta	32.9	32.4	37.0	-0.5	4.1
Netherlands	45.4	45.1	46.8	-0.3	1.4
Poland	44.8	44.6	46.6	-0.2	1.7
Portugal	46.8	46.1	47.1	-0.7	0.3
Romania	44.8	44.7	44.9	-0.1	0.1
Slovakia	44.5	44.4	47.1	-0.1	2.5
Slovenia	45.4	45.1	45.4	-0.3	0.0
Spain	42.3	41.5	44.4	-0.8	2.1
Sweden	47.5	47.3	47.4	-0.2	0.0
United Kingdom	45.6	45.5	46.5	-0.1	0.9

Sources: Eurostat population statistics and EUROPOP2008, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.8 Gender gap in activity rates in the EU, 2007 (%-points)



Sources: Labour force survey; calculation by DIW Berlin.

4.3.3 Ageing of the labour force driven by demographic change

Because of population ageing the labour force will age too. The baby-boom generation will reach retirement age in the next two decades and will be replaced by a less numerous generation. While the labour force will decline only by 1.2 million in the EU-27 until 2020, the changes in the age-structure will be remarkable as is shown for the EU-27 in *Figure 4.9*.

Compared to 2008 fewer active people are expected in the ages up to the age of 45-49 years, and thereafter the number of active people is higher than in 2008. The change in the age-structure is different for the EU-15 and the EU-12. In the EU-15 the size of the labour force is nearly constant until the age of 30-34 years, thereafter until the age of 45-49 the size of the labour force is lower than in 2008 and from the age of 50 onwards higher again (*Figure 4.10*).

Figure 4.9 Age-profile of the labour force in the EU-27, 2001, 2008 and 2020 (millions)

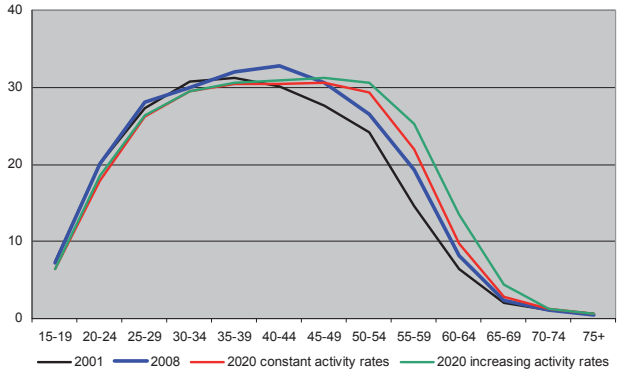
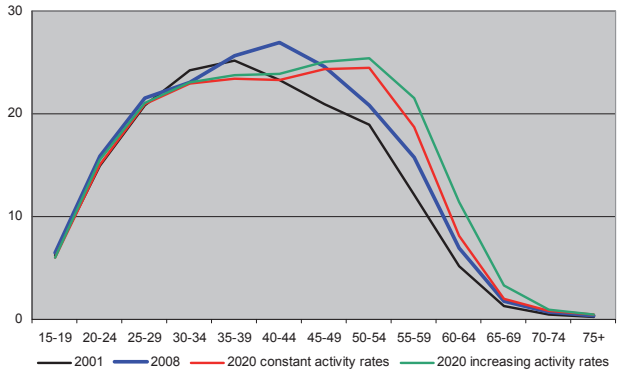


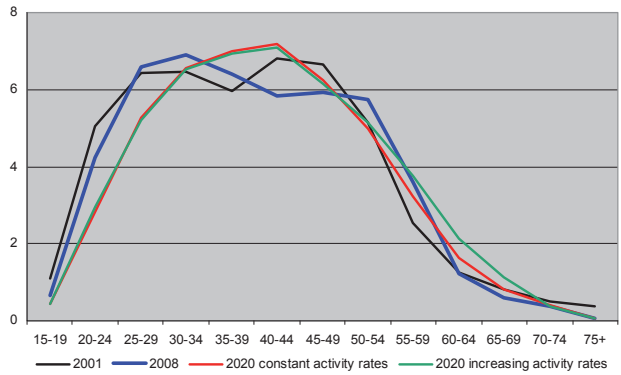
Figure 4.10 Age-profile of the labour force in the EU-15, 2001, 2008 and 2020 (millions)



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008), calculation by DIW Berlin.

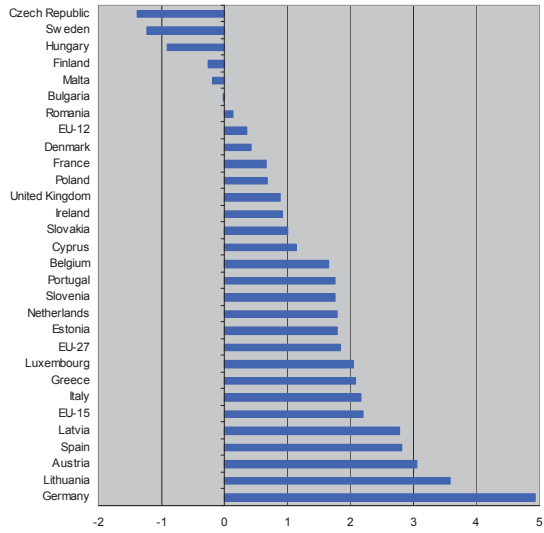
In the EU-12 a marked decline is expected in particular for the younger ages (until the age of 30-34 years), followed by an increase in the following age groups, but from the age 46/47 onwards a downward trend applies (*Figure 4.11*). Besides these differences between the EU-15 and the EU-12 Member States, the ageing of the labour force will continue in all EU countries with the exception of Malta, Finland, Hungary, Sweden and the Czech Republic (*Figure 4.12*).

Figure 4.11 Age-profile of the labour force in the EU-12, 2001, 2008 and 2020 (millions)



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008), calculation by DIW Berlin.

Figure 4.12 Changes between 2008 and 2020 in the percentage of active elderly (55-64) in the total labour force (15+) in EU countries, constant activity rates (%-points)



Sources: Eurostat EUROPOP2008, Labour force survey; calculation by DIW Berlin.

The share of active elderly aged 55-64 years will rise in particular in Germany (around 5%-points), followed by Lithuania (3.6%-points) and Austria (3.1%-points). In the EU-27 on average the share of active elderly will increase by 1.8%-points while the number of active elderly is expected to rise from 27.5 million in 2008 to 31.8 million in 2020.

4.3.4 The next labour force generation will be smaller

Whilst the share and the number of active elderly are expected to increase, the number of young active people will decline.

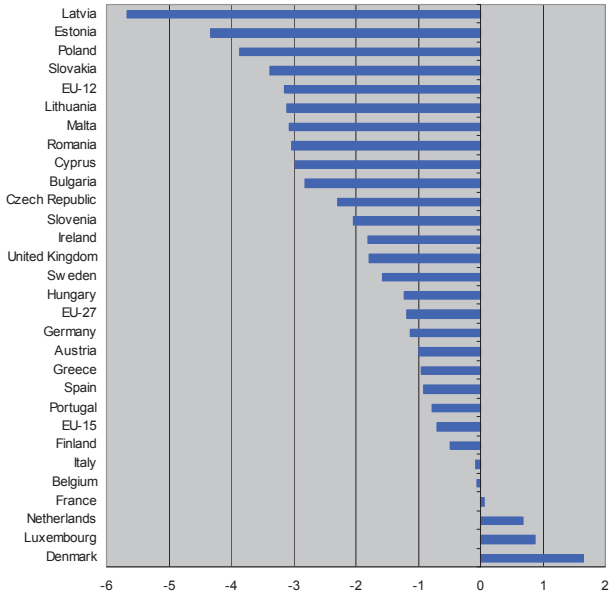
In the EU-27 around 26.2 million people aged 15 to 24 were active at the labour market in 2008 and their share in the total labour force accounted for 11% (*Table 4.3*). In 2020 the number of young active people will amount to 23.2 million while their share in the total labour force will be reduced to 9.8%. Due to the low fertility rates in European countries the generations entering the labour market will be smaller than the previous generation. The share of young active people will decline in all European countries with the exception of Denmark, Luxembourg and the Netherlands and to a marginal degree in France (*Figure 4.13*). A significant decline in young active people is expected in Latvia (-5.7%-points), Estonia (-4.3%-points), Poland (-3.9%-points) and Slovakia (-3.4%-points). The downsizing in these countries will be stronger than the average decline in the EU-12.

Table 4.3 Changes between 2008 and 2020 in the labour force of the EU by age-groups

	Changes between 2008 and 2020							
	in labour force						in share of	
	total (15+)	15-64	15-24	25-54	55-64	65+	young	old
	in millions						in %-points	
EU-27								
Constant activity rates								
Males	0.27	-0.27	-1.65	-1.22	2.59	0.54	-1.27	1.93
Females	-1.45	-1.69	-1.29	-2.04	1.64	0.24	-1.07	1.70
Total	-1.18	-1.96	-2.94	-3.25	4.23	0.79	-1.18	1.84
Increasing activity rates								
Males	3.05	1.79	-1.27	-1.99	5.05	1.26	-1.20	3.46
Females	7.56	6.36	-1.09	1.25	6.20	1.20	-1.72	4.72
Total	10.61	8.15	-2.36	-0.74	11.25	2.46	-1.43	4.02
EU-15								
Constant activity rates								
Males	1.01	0.63	-0.71	-1.20	2.54	0.38	-0.78	2.26
Females	-0.69	-0.85	-0.60	-1.92	1.68	0.16	-0.62	2.08
Total	0.32	-0.22	-1.32	-3.12	4.21	0.54	-0.71	2.19
Increasing activity rates								
Males	3.57	2.61	-0.40	-1.66	4.66	0.97	-0.74	3.86
Females	7.28	6.33	-0.46	1.23	5.55	0.95	-1.45	5.14
Total	10.85	8.93	-0.86	-0.42	10.21	1.92	-1.06	4.43
EU-12								
Constant activity rates								
Males	-0.74	-0.90	-0.94	-0.02	0.05	0.16	-3.34	0.52
Females	-0.76	-0.85	-0.69	-0.12	-0.04	0.09	-2.93	0.14
Total	-1.50	-1.75	-1.62	-0.14	0.01	0.25	-3.15	0.35
Increasing activity rates								
Males	-0.52	-0.82	-0.87	-0.33	0.39	0.30	-3.15	1.71
Females	0.28	0.03	-0.63	0.02	0.65	0.25	-2.99	2.83
Total	-0.24	-0.78	-1.50	-0.31	1.03	0.54	-3.09	2.21

Sources: Eurostat population statistics and EUROPOP2008, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.13 Changes between 2008 and 2020 in the percentage of young active people (15-24) in the total labour force (15+) in EU countries, constant activity rates (%-points)



Sources: Eurostat EUROPOP2008, Labour force survey; calculation by DIW Berlin.

4.4 Impact of changes in participation behaviour on the labour force

4.4.1 Activity rates: current differences, developments in the past and expectations for the future

The projection with constant labour participation rates gives an overview of the demographic impact on the development of the labour force. However, the assumption of constant labour participation behaviour is not realistic. In the past the participation rates have risen in particular for women in the middle age-classes and for the elderly. The rise in labour force participation (15-64) was four times higher for women than for men in the EU-27 on average as well as in the EU-15 (*Table 4.4*). In contrast, the EU-12 experienced a decline in participation rates for both men and women with a stronger decrease in female participation.

Whilst the male breadwinner model was common in countries with a traditional family orientation, the attitudes towards family responsibilities and female labour force participation have changed in the past. Increasingly, women want to combine family responsibilities and employment. But the gender gap in activity rates is still high in some southern countries, in particular in Malta, Greece, Italy and Spain (*Figure 4.14*).

Table 4.4 Labour force participation rates in EU countries, 2001 and 2007

	Labour force participation rates 2007						Changes between 2001 and 2007					
	total 15+ years			15-64 years			total 15+ years			15-64 years		
	males	females	total	males	females	total	males	females	total	males	females	total
	in %						in %-points					
EU27	65.3	49.8	57.3	77.6	63.3	70.5	- 0.3	1.9	0.9	0.8	3.2	2.0
EU15	65.9	50.5	58.0	79.3	64.8	72.0	0.2	3.3	1.9	1.2	4.7	3.0
EU-12	62.9	47.5	54.8	71.7	58.3	64.9	- 2.1	- 3.4	- 2.7	- 1.0	- 2.4	- 1.7
Austria	69.1	53.5	61.0	81.7	67.8	74.7	1.2	4.1	2.8	2.6	5.5	4.1
Belgium	61.1	46.5	53.6	73.6	60.4	67.1	0.6	4.7	2.7	1.0	6.0	3.4
Bulgaria	58.2	47.5	52.6	70.6	62.1	66.3	1.4	1.0	1.2	13.6	3.0	2.9
Cyprus	73.6	55.8	64.4	82.9	65.4	73.9	1.0	4.0	2.7	1.4	4.7	3.2
Czech Republic	68.3	49.8	58.8	78.1	61.5	69.9	- 0.5	- 1.4	- 0.9	- 0.3	- 1.5	- 0.8
Denmark	71.1	60.6	65.7	83.9	76.4	80.2	0.2	0.9	0.6	0.6	1.5	1.0
Estonia	68.2	54.1	60.4	77.5	68.6	72.9	2.2	2.2	2.2	3.6	- 1.1	3.3
Finland	65.4	57.4	61.2	77.3	73.8	75.6	- 3.0	- 1.1	- 2.0	- 2.3	- 0.8	- 1.6
France	57.6	48.0	52.7	68.1	60.0	64.0	- 5.1	- 0.8	- 2.8	- 7.0	- 2.3	- 4.6
Germany	66.2	53.0	59.4	81.8	70.1	76.0	0.0	3.7	2.0	3.0	4.1	4.7
Greece	64.8	42.5	53.4	79.1	54.9	67.0	0.7	3.0	1.9	2.1	5.2	3.8
Hungary	58.9	43.1	50.5	69.0	55.1	61.9	1.2	2.0	1.6	1.8	3.0	2.4
Ireland	73.3	54.2	63.7	81.4	63.3	72.4	2.2	6.6	4.5	2.2	7.2	4.7
Italy	60.7	38.0	48.9	74.4	50.7	62.5	- 0.7	1.8	0.6	0.7	3.6	2.2
Latvia	68.9	53.7	60.6	77.6	68.3	72.8	4.4	3.4	3.9	4.9	4.7	4.9
Lithuania	62.4	51.2	56.3	71.0	65.0	67.9	- 3.2	- 2.4	- 2.7	- 3.2	- 1.4	- 2.2
Luxembourg	62.4	46.8	54.5	74.7	57.9	66.3	- 3.3	4.4	0.7	- 1.4	5.9	2.2
Malta	68.9	33.1	50.7	78.9	40.0	59.6	- 3.0	3.5	0.3	- 3.2	4.2	0.5
Netherlands	73.2	59.3	66.1	84.6	72.2	78.5	- 0.3	4.2	1.9	0.4	5.3	2.8
Poland	61.9	46.3	53.7	70.0	56.5	63.2	- 2.1	- 4.0	- 3.1	- 1.5	- 4.1	- 2.8
Portugal	69.5	56.3	62.6	79.4	68.8	73.8	- 0.7	2.8	1.2	0.1	4.2	2.9
Romania	62.6	47.5	54.8	70.1	56.0	63.0	- 7.2	- 9.7	- 8.4	- 4.2	- 6.4	- 5.3
Slovakia	67.8	50.6	58.8	75.9	60.8	68.3	- 1.0	- 2.3	- 1.7	- 1.5	- 2.8	- 2.1
Slovenia	66.4	53.3	59.7	75.8	66.6	71.3	1.7	2.2	2.0	3.4	4.1	3.8
Spain	68.4	48.4	58.2	81.4	61.4	71.6	3.1	8.8	6.1	3.2	11.0	7.2
Sweden	67.8	59.7	63.7	81.4	76.8	79.1	0.8	1.1	0.9	1.2	0.8	1.0
United Kingdom	69.3	55.6	62.2	81.9	68.9	75.3	- 0.1	1.5	0.7	- 0.2	1.2	0.5

Source: Labour force survey, annual averages; calculation by DIW Berlin.

In general three models can be distinguished:

- the male breadwinner model, common in particular in southern European countries;
- the one-and-a-half earner model, more common in the northern European countries;
- the two-earner model with both partners fully employed, common in the eastern European countries.

In 2007 the activity rates of women aged 15-64 ranged from 40% in Malta to 77% in Sweden (*Figure 4.15*). As mentioned above the northern countries in general showed higher labour force participation of women than the southern ones. Besides Sweden the female activity rates were above 70% in Denmark, Finland, the Netherlands and Germany. Low female labour force participation rates are observed – besides Malta – in Italy (51%), Greece (55%), Hungary (55%), Romania (56%) and Poland (57%). But also the overall activity rates of men differ widely between the EU countries: from 69% in Hungary to 84% in the Netherlands (2007).

Figure 4.14 Gender gap in activity rates in EU countries, 2007 (%-points)

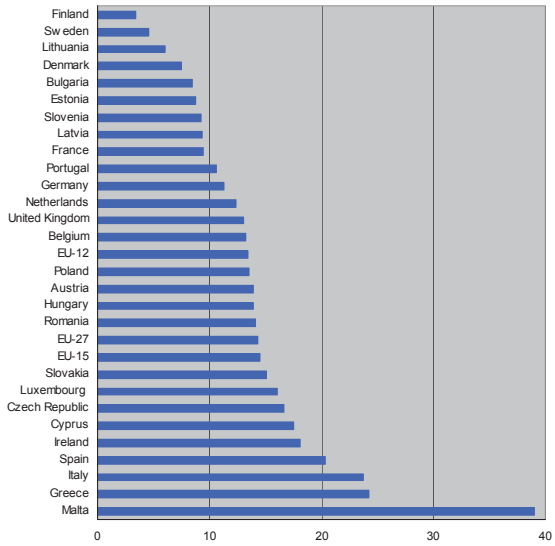
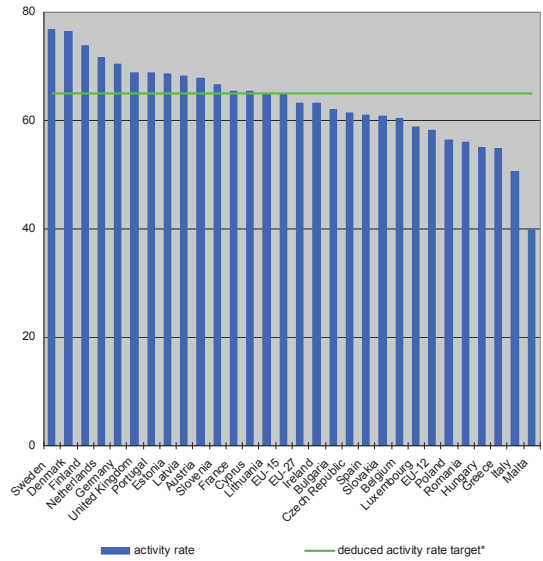


Figure 4.15 Activity rates of women aged 15 to 64 years in EU countries, 2007 (%)



* Deduced activity target = Lisbon employment target and assumed equilibrium unemployment rate
Source: Labour force survey; calculation by DIW Berlin.

In view of the trends in labour force participation in the past, in particular of women, assumptions about the further development of activity rates and employment rates are required. The European Commission and the Economic Policy Committee carried out a study on the future of public expenditure in the EU-27 (European Commission and Economic Policy Committee, 2008). For this study the development of the labour force and employment were estimated. The study provided information about the development of labour force participation rates as well as employment rates of men and women in the EU countries. The labour force participation rates "were projected for males and females by single year of age, taking into account the replacement of older cohorts by more recent ones. The labour force projection shows the outcome for the labour force of extrapolating recent trends in rates of entry and exit from the labour market. This base case projection reflects the working assumption of "no policy change" and is neither a forecast nor a prediction in that it is not based on any assessment of more or less likely future changes in working patterns or economic conditions". Our scenario 'increasing activity rates' is based on these labour force participation rates differentiated by sex, age-groups and countries for the year 2020 (see *Table 4.5*).

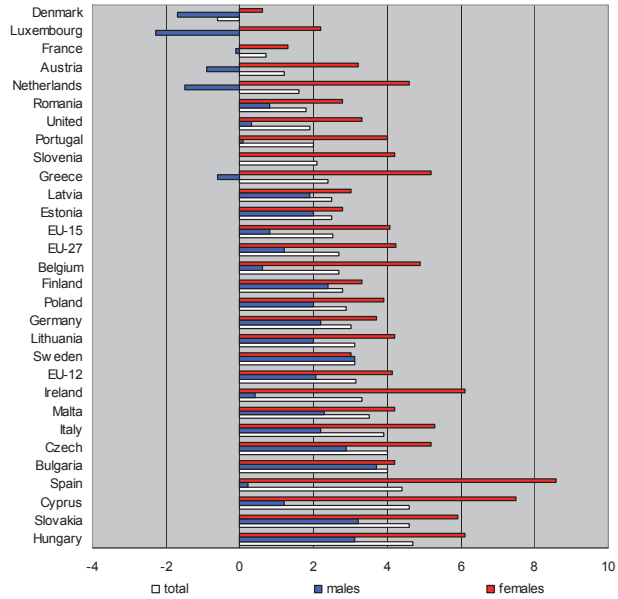
Table 4.5 Labour force participation rates in EU countries, 2007 and 2020

	2007			2020			Changes 2007 and 2020		
	15-64 years			15-64 years			15-64 years		
	males	females	total	males	females	total	males	females	total
	in %						in %-points		
Hungary	69.0	55.1	61.9	72.1	61.2	66.6	3.1	6.1	4.7
Slovakia	75.9	60.8	68.3	79.1	66.7	72.9	3.2	5.9	4.6
Cyprus	82.9	65.4	73.9	84.1	72.9	78.5	1.2	7.5	4.6
Spain	81.3	61.0	71.3	81.5	69.6	75.7	0.2	8.6	4.4
Bulgaria	70.6	62.1	66.3	74.3	66.3	70.3	3.7	4.2	4.0
Czech Republic	78.1	61.5	69.9	81.0	66.7	73.9	2.9	5.2	4.0
Italy	74.4	50.7	62.5	76.6	56.0	66.4	2.2	5.3	3.9
Malta	78.9	39.9	59.5	81.2	44.1	63.0	2.3	4.2	3.5
Ireland	81.4	63.3	72.4	81.8	69.4	75.7	0.4	6.1	3.3
EU-12	71.7	58.3	64.9	73.7	62.4	68.1	2.1	4.1	3.1
Sweden	81.4	76.8	79.1	84.5	79.8	82.2	3.1	3.0	3.1
Lithuania	71.0	65.0	67.9	73.0	69.2	71.0	2.0	4.2	3.1
Germany	81.7	70.4	76.1	83.9	74.1	79.1	2.2	3.7	3.0
Poland	70.0	56.5	63.2	72.0	60.4	66.1	2.0	3.9	2.9
Finland	77.2	73.8	75.6	79.6	77.1	78.4	2.4	3.3	2.8
Belgium	73.6	60.4	67.1	74.2	65.3	69.8	0.6	4.9	2.7
EU-27	77.6	63.3	70.5	78.8	67.5	73.2	1.2	4.2	2.7
EU-15	79.3	64.8	72.0	80.1	68.9	74.5	0.8	4.1	2.5
Estonia	77.5	68.7	72.9	79.5	71.5	75.4	2.0	2.8	2.5
Latvia	77.6	68.3	72.8	79.5	71.3	75.3	1.9	3.0	2.5
Greece	79.1	54.9	67.0	78.5	60.1	69.4	- 0.6	5.2	2.4
Slovenia	75.8	66.6	71.3	75.8	70.8	73.4	0.0	4.2	2.1
Portugal	79.4	68.8	74.1	79.5	72.8	76.1	0.1	4.0	2.0
United Kingdom	81.9	68.9	75.3	82.2	72.2	77.2	0.3	3.3	1.9
Romania	70.1	56.0	63.0	70.9	58.8	64.8	0.8	2.8	1.8
Netherlands	84.1	71.7	77.9	82.6	76.3	79.5	- 1.5	4.6	1.6
Austria	81.7	67.8	74.7	80.8	71.0	75.9	- 0.9	3.2	1.2
France	74.9	65.5	70.1	74.8	66.8	70.8	- 0.1	1.3	0.7
Luxembourg	75.0	58.9	66.9	72.7	61.1	66.9	- 2.3	2.2	0.0
Denmark	83.9	76.4	80.2	82.2	77.0	79.6	- 1.7	0.6	- 0.6

Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

These activity rates were combined with the Eurostat population convergence scenario (EUROPOP2008) to show the changes in the number of active people between 2008 and 2020 for the single EU countries as well as for the average for the EU-27, the EU-15 and the EU-12. On the basis of both sets of assumptions i.e. the demographic assumptions in EUROPOP2008 and the labour participation assumptions, the overall activity rate for the population aged 15-64 would increase by 2.7%-points in the EU-27 (*Figure 4.16*).

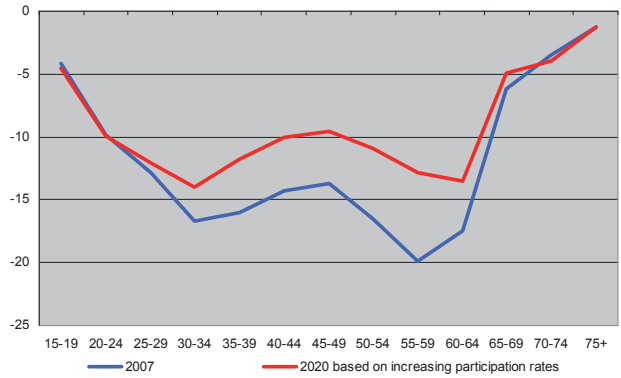
Figure 4.16 Changes between 2007 and 2020 in activity rates of people aged 15 to 64 in EU countries (%-points)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Applying both sets of assumptions, the increase in activity rates would be lower for men than for women. The overall activity rate of men would increase by 1.2%-points and of women by 4.2%-points (EU-27). Again following the assumed trends, the gender gap in the EU-27 would then on average decline until 2020 (*Figure 4.17*).

Figure 4.17 Gender gap in activity rates in the EU-27, 2007 and 2020



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

It is expected that female activity will show a significant growth, in particular in the age-groups 35-39 and 40-44 years due to fewer women giving up their job after giving birth and/or more women returning to their job after a short family break. Higher activity rates in the age-group 55-59 years will be due to changes in regular retirement age and reduction in early retirement.

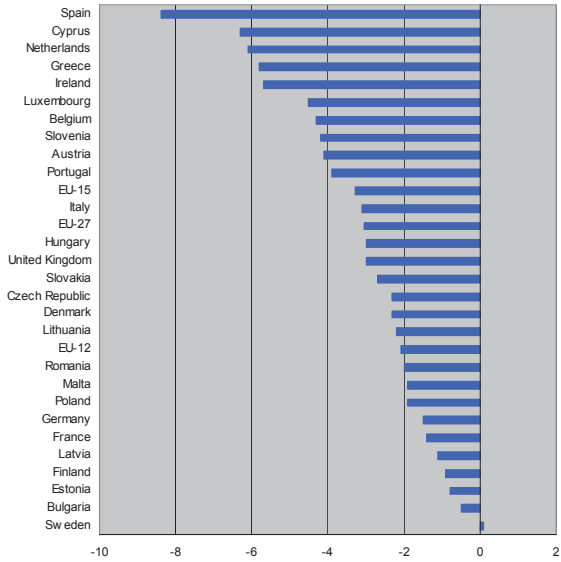
In all European countries a decline in the gender gap is to be expected with the exception of Sweden, where the gender gap is very small and will be nearly constant (*Figure 4.18*). The labour force participation rate of women would amount to 67.5% by the year 2020 which would then meet the deduced activity target in 2020. [20]. Only a few Member States would not reach the deduced target for female activity: Malta, Italy, Romania, Greece, Poland, Luxembourg and Hungary.

The overall activity rate for both men and women would be 73.2% in 2020 (EU-27) and would thus still lag behind the deduced activity target of 75% (*Figure 4.19*). The growth in overall activity would be higher in the EU-12 (3.1%-points) than in the EU-15 (2.5%-points). Thus, the overall activity in the EU-12 and EU-15 would converge. But half of the EU countries (14) would not reach the 75% marker in 2020 with Malta, Romania, Poland, Italy, Hungary and Luxembourg showing the highest differences (more than 8%-points).

4.4.2 Increasing trend in the labour force participation of older people

It is assumed that the trend of increasing labour force participation of the elderly will continue due to the ongoing regulation of early retirement schemes, the postponement of the regular retirement age for men and women, as well as the expectation that pensions may become less attractive than in the past.

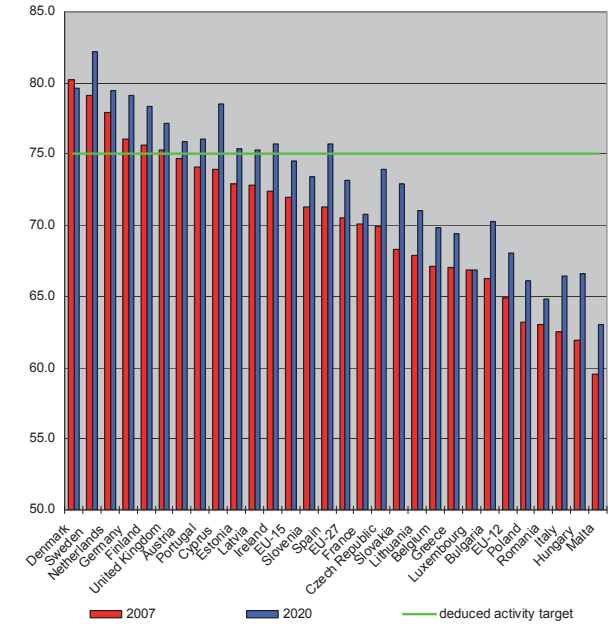
Figure 4.18 Changes between 2007 and 2020 in the gender gap in activity rates in EU countries (%-points)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

[20] Deduced activity target = Lisbon employment target and assumed equilibrium unemployment rate.

Figure 4.19 Activity rates of people aged 15 to 64 years in EU countries, 2007 and 2020 (%)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

In the EU-27 the activity rate of people aged 55-64 years increased on average by 7.2%-points between 2001 and 2007. The highest increase in activity of the older workforce was realized in Bulgaria (16.3%-points, coming from a relative low level), followed by Germany, Slovakia and the Netherlands. In 2007 the deduced activity target for the elderly was met in 10 out of 27 countries while two other countries were close.

According to the assumptions of the EU, the overall activity of elderly will further increase by 9.6%-points in the EU-27 by the year 2020. The increase would be higher for women (12.3%-points) than for men (6.7%-points), and would be higher in the EU-15 (10.6%-points) than in EU-12 (5.2%-points). The highest increase in activity of the elderly is expected for Italy, followed by Spain, Slovenia, Belgium and Hungary (*Figure 4.20*).

By the year 2020 13 out of 27 EU countries would not fulfil the deduced activity target for elderly people with Poland showing the largest discrepancy (20.1%-points), followed by Malta (16.9%-points: *Figure 4.21*). Although it is expected that Malta would be able to increase the activity of older people markedly, the current low participation is the cause that this increase would not be enough to close the gap to the deduced activity target.

Figure 4.20 Assumed changes between 2007 and 2020 in activity rates of people aged 55 to 64 in EU countries (%-points)

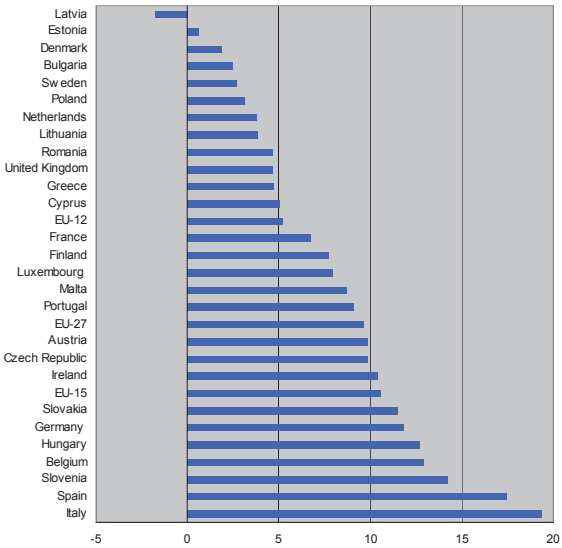
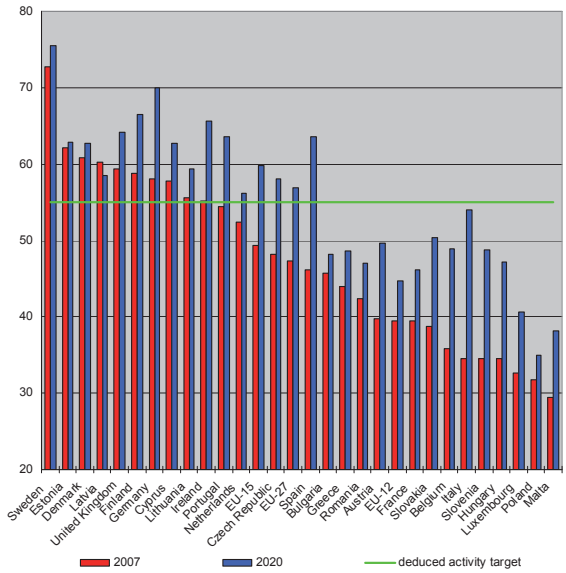


Figure 4.21 Activity rates of people aged 55 to 64 in EU countries, 2007 and 2020 (%)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

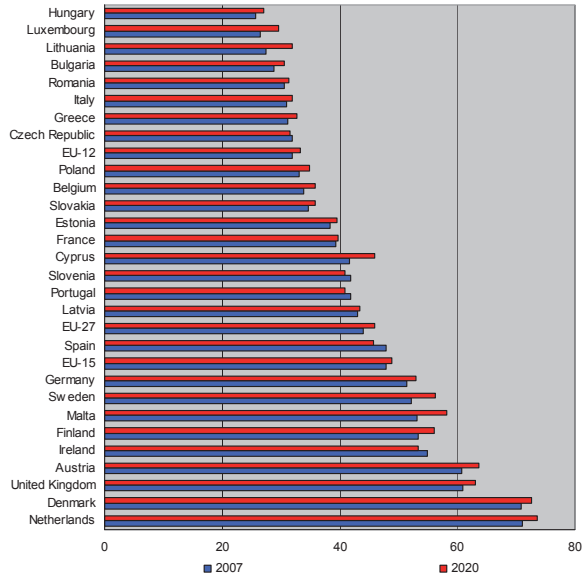
4.4.3 Labour force participation of young people will marginally increase until 2020

The activity rates of young people (15-24 years) reported in the Labour force survey differ widely between the European countries. Part of these differences can be traced back to the different accounting methods and definitions. Some countries, for instance, include working students in the labour force, while others only include working people who are out of the educational system. Labour force participation at younger ages then is also influenced by participation in the educational system either in school or in vocational training; the latter is not independent from the situation at the labour market for young people.

Youth unemployment is a severe problem in many Member States. Although several measures have been implemented, many Member States are still far away from the target of a 'new start' for young unemployed within 6 month by 2007 and within 4 months by 2010 (Council of the European Union, 2007). In a situation of high youth unemployment, young people may opt to stay in the educational system and try to obtain higher qualifications hoping to improve their chances on the labour market, thus lengthening their stay in the educational system. On the other hand, in most European countries measures have been implemented to increase the flexibility of the educational system, but as a result often the time spent in education is shortened, in particular in universities. These factors (differences in definition/accounting, in behaviour and in educational systems) have to be kept in mind when looking at the activity rates of young people.

In the EU-27 around 27.2 million people aged 15-24 were active in the labour market in 2007 and the activity rate amounted to 44%. It is assumed that youth labour activity will increase by 2.0%-points until 2020 (*Figure 4.22*). It is further assumed that the growth in youth labour activity will be somewhat higher in the EU-12 than in the EU-15.

Figure 4.22 Activity rates of people aged 15 to 24 in EU countries, 2007 and 2020 (%)



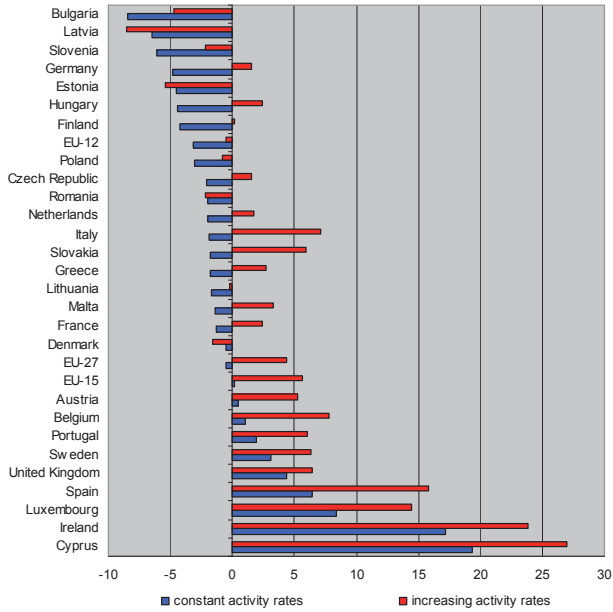
Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Compared to past developments (showing a decline in the EU-12) the trend is expected to reverse in the EU-12. The highest increase in youth activity is expected in Malta (5.1%-points), followed by Lithuania (4.4%-points) and Cyprus (4.3%-points). On the other hand, a marked decline is expected for Spain (-2.1%-points) and Ireland (-1.5%-points).

4.4.4 Impact of changes in activity on the labour force and differences with the "constant activity scenario"

The assumption of a further growth in activity leads to an increase in the labour force. In the EU-27 the total labour force (15+) would amount to 249.2 million people by the year 2020, which means 11.8 million more active people compared to the purely demographic scenario. The expected decline in the labour force of -1.2 million would thus reverse into an expected increase of +10.6 million. Also in several European countries the sign would change from negative to positive growth. Whereas the purely demographic effect leads to a downsizing of the labour force in 18 EU countries, the increase in activity will change the sign in ten of these countries, namely in Italy, Slovakia, Hungary, Germany, Malta, Greece, Finland, the Netherlands, France and the Czech Republic (*Figure 4.23*). Four Member States would experience a stronger decline in labour force compared to the constant activity scenario: Latvia, Denmark, Estonia and Romania. In these countries the assumed changes in participation would reinforce the purely demographic effect.

Figure 4.23 Changes between 2008 and 2020 in the total labour force (15+) in EU countries (%)



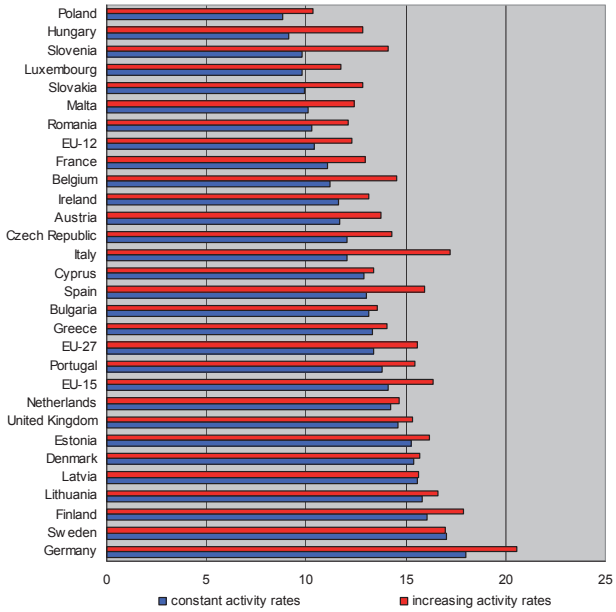
Sources: Eurostat convergence scenario, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Taking increases in activity into account changes the picture of further labour force development across the European Union. The total labour force (15+) would steadily increase during the projection period in the EU-27 (see Figure 4.3) as well as in the EU-15 (see Figure 4.4) and the EU-12 (see Figure 4.5). The difference with the purely demographic/constant activity scenario is growing during the period.

The assumed changes in activity of the elderly would lead to a shift in the age-profile to higher ages indicating a further ageing of the labour force. In the EU-27 the size of the labour force would be significantly larger, in particular in the age-groups 45-49 to 60-64 years as compared to the values in 2008, but also as compared to the values with constant activity rates (see Figure 4.9). In the EU-15 the labour force would be markedly larger in particular in the age-groups 50-54 to 60-64 years (see Figure 4.10) while in the EU-12 the difference with the constant rates scenario is mostly visible in the elderly ages (55-64 years) (see Figure 4.11).

The higher labour force participation of the elderly implies a higher share of the elderly workforce in the total labour force as compared to the purely demographic effect. The difference with the constant activity scenario amounts to 2.2%-points in the EU-27 as well as in the EU-15, and to 1.9%-points in the EU-12 (*Figure 4.24*). The increase in elderly activity has a significant influence on the share of the elderly in the labour force, in particular in Italy, Slovenia, Hungary and Belgium. In these countries the difference with the constant activity scenario is between 5.1 and 3.3%-points.

Figure 4.24 Percentage of active elderly (55-64) in the total labour force (15+) in EU countries, 2020



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

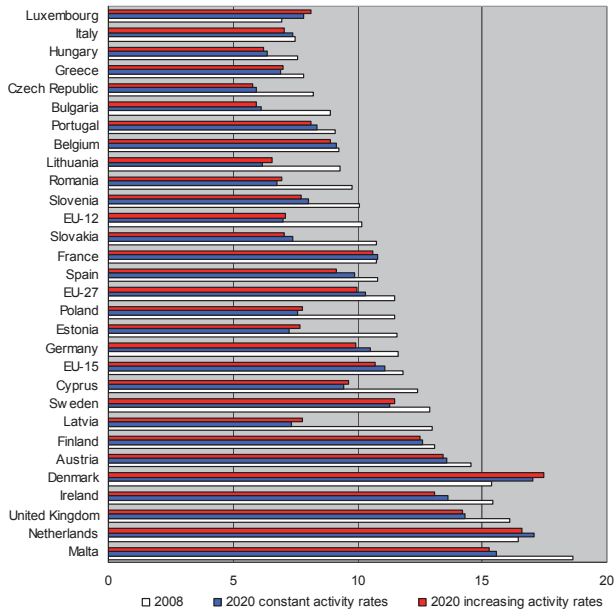
On the other hand, hardly any differences are expected for Sweden, Latvia and Denmark, as a result of the underlying assumptions. In Latvia the activity rates of elderly are assumed to decline, in particular for men. In Sweden the increase in activity rates of the elderly is less than the increase in overall activity and in Denmark the expected increase in elderly activity is low.

The share of young active people in the total labour force will on average be smaller than in the constant activity scenario in the EU-27 as well as in the EU-15 (-0.3%-points). On the other hand, in particular in some of the eastern and middle European countries the changes in youth activity will lead to a higher share of young active people (again as compared to the constant activity rates scenario): Latvia, Estonia, Lithuania, Romania and Poland.

By the year 2020 the share of young active people would amount to 10% in the EU-27 which is a decline of 1.5%-points as compared to the 2008 value. The share of young active people will still be higher in the EU-15 (10.7%) than in the EU-12 (7.1%) in 2020 (*Figure 4.25*). The share of young active people ranges from 5.8% in the Czech Republic to 17.4% in Denmark in 2020.

Whilst the purely demographic effect in the constant activity scenario would lead to a small downsizing in the share of women in the total labour force in the EU-27 on average, the further increase in activity of women will reverse this trend.

Figure 4.25 Percentage of young active people (15-24) in the total labour force (15+) in EU countries, 2020

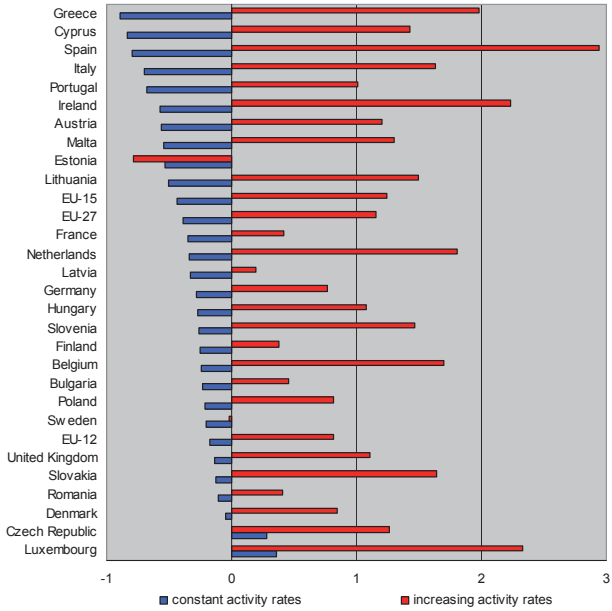


Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

In the EU-27 the share of women who are active on the labour market would rise by 1.2%-points between 2008 and 2020 and in all European countries the decline will turn into an increase, with the exception of Estonia (*Figure 4.26*).

The assumption concerning changes in female labour participation behaviour will lead to considerable higher shares of active women in some of the southern European countries: Spain, Greece, Italy, and Cyprus (*Figure 4.27*). Thus, the catching up process in female labour participation is reflected in the stronger increase of the share of active females.

Figure 4.26 Changes between 2008 and 2020 in the percentage of females in the total labour force (15+) in EU countries (%-points)



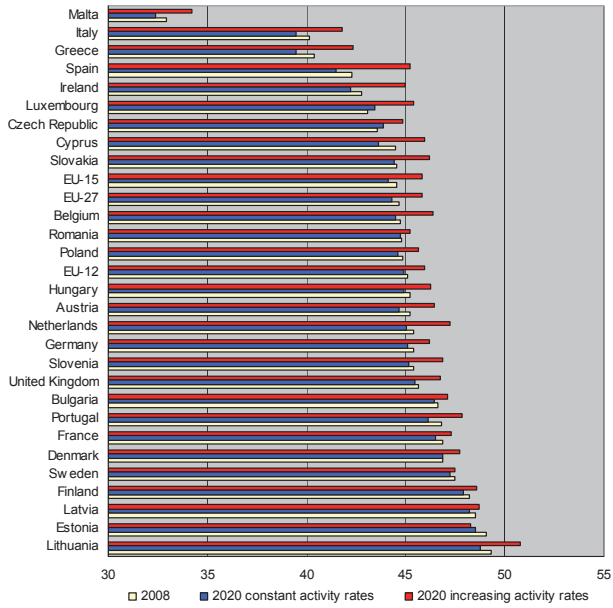
Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

4.5 Impact of demographic change on employment

Changes in activity rates are the result of changes in employment, but also in the share of people who are not employed and searching for a job. Most of the people searching for work are counted as unemployed people. The growth in employment and therefore the reduction in unemployment are mainly determined by economic growth.

In the EU-27 economic growth measured in real GDP was 2.9% in 2007 and the number of employed people increased by 4.1 million (from 214.4 million in 2006 to 218.5 million in 2007), an increase of 1.9%.

Figure 4.27 Percentage of females in the total labour force (15+) in EU countries, 2008 and 2020



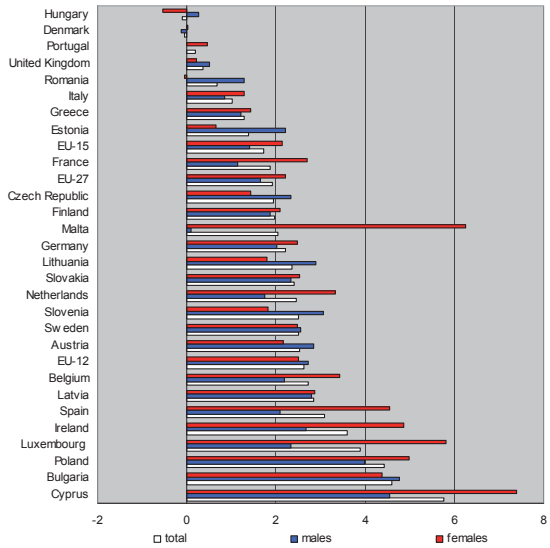
Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

The growth in employment was higher for women (2.2%) than for men (1.7%) and higher in the EU-12 (2.6%) than in the EU-15 (1.7%; *Figure 4.28*). In Malta and Portugal the growth in total employment was mainly caused by an increase in female employment, whilst male employment did not change much.

4.5.1 Changes in employment rates

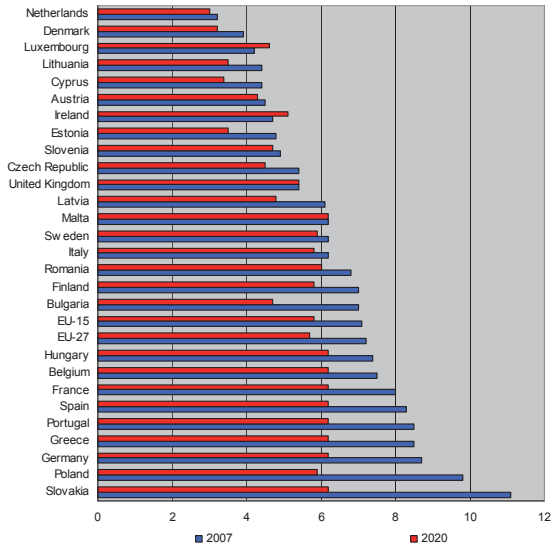
To calculate the further growth in employment, assumptions concerning economic growth and the effect on female and male employment are essential. The European Commission carried out employment projections too. To move from the labour force projection to an employment projection the NAIRU - a proxy for structural unemployment, calculated by the European Commission-DG ECFIN - was used. It was assumed that the unemployment rates for each country converge in general towards the estimated NAIRU in 2009. For countries with high levels of structural unemployment and NAIRU still above the EU-15 average of the NAIRU (6.2%) a convergence to the EU-15 average is assumed in a period up to 2020. Overall a reduction in the unemployment rate of around 1.5%-points is projected for the EU-27 (from 7.2% in 2005 to 5.7% in 2020). In 2007 the unemployment rate amounted to 7.2% in the EU-27 and 7.1% in the EU-15 (*Figure 4.29*).

Figure 4.28 Growth in employment in EU countries between 2006 and 2007 (%)



Source: Labour force survey; calculation by DIW Berlin.

Figure 4.29 Unemployment rates in 2007in EU countries and assumptions for 2020 (%)



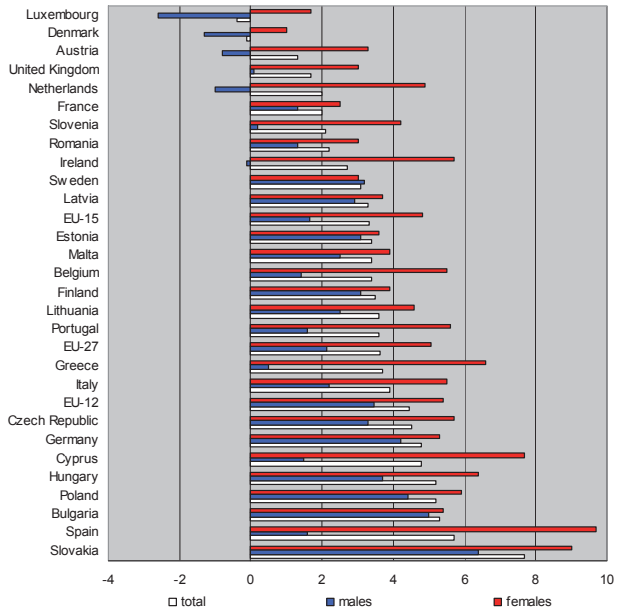
Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

To demonstrate the effect of demographic developments and changes in employment rates on overall employment, the employment rates calculated by the European Commission were used. Under these assumptions the overall employment rate in the EU-27 would rise from 65.4% in 2007 to 69% in 2020. The growth in employment would be higher in the EU-12 (4.5%-points) than in the EU-15 (3.3%-points), and higher for females (5.1%-points) than for males (2.1%-points; *Figure 4.30*). Thus, the observed trends in the last years would continue until 2020. High increases in employment rates are expected for Slovakia, Spain, Bulgaria, Poland and Hungary. On the other hand, in Luxembourg and Denmark the employment rates will decline albeit to a marginal degree.

Whereas a growth in employment is expected for nearly all European countries, 13 countries would not fulfil the Lisbon target for overall employment by the year 2020, but Slovenia would be close (*Figure 4.31*). Malta (10.9%-points) and Romania (9.0%-points) would still show overall employment rates which are well below the Lisbon target.

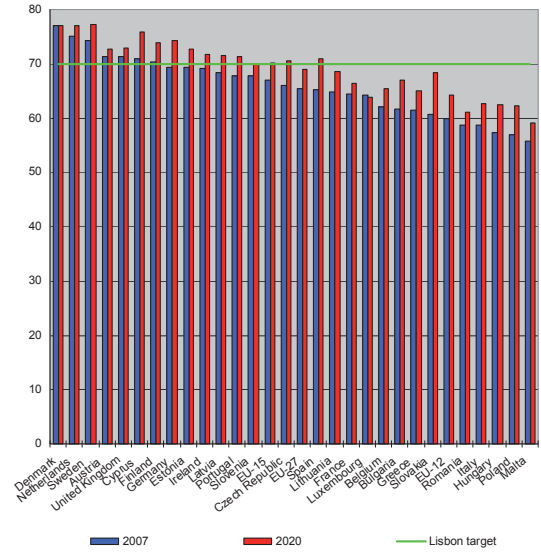
With respect to female employment the performance is better: only seven European countries would not fulfil the Lisbon target (Malta, Italy, Greece, Romania, Poland, Hungary and Luxembourg; *Figure 4.32*).

Figure 4.30 Changes between 2007 and 2020 in employment rates in EU countries (%-points)



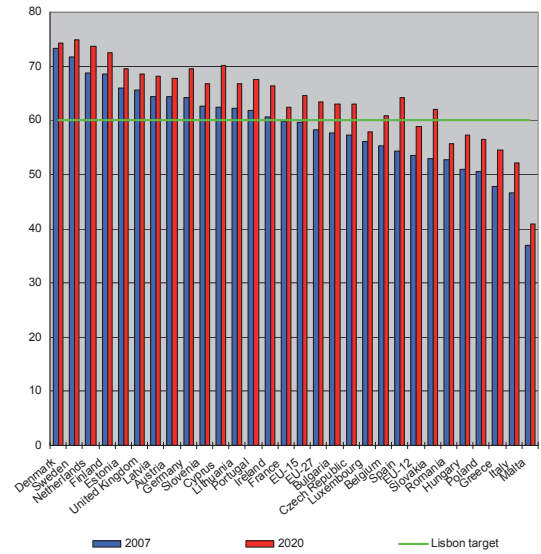
Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.31 Overall employment rates (15-64 years) in EU countries, 2007 and 2020 (%)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.32 Female employment rates (15-64 years) in EU countries, 2007 and 2020 (%)

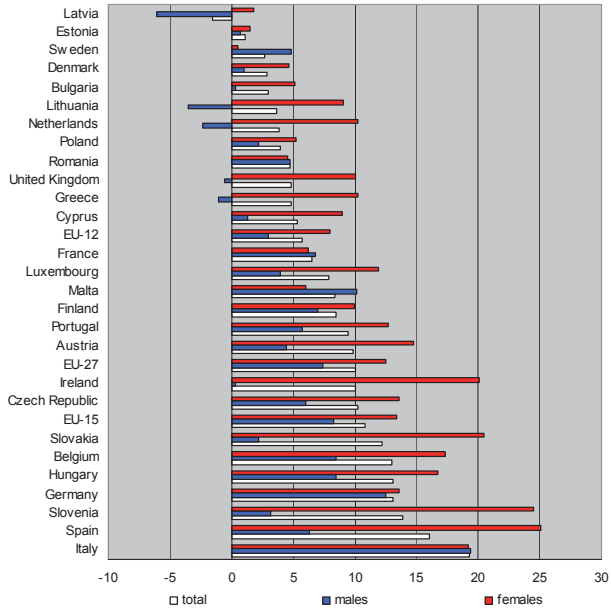


Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

The expected changes in overall employment rates are influenced by the assumed significant increase in employment of elderly people. It incorporates the expected positive effects of pension reforms which curtail access to early retirement schemes, raise statutory retirement ages and strengthen financial incentives to remain in the labour force. The European Commission assumed an increase in elderly employment of 10%-points between 2007 and 2020. The rise in employment rates of elderly people will be higher in the EU-15 (10.9%-points) than in the EU-12 (5.8%-points). The growth in employment rates is on average smaller for men than for women in the EU-27.

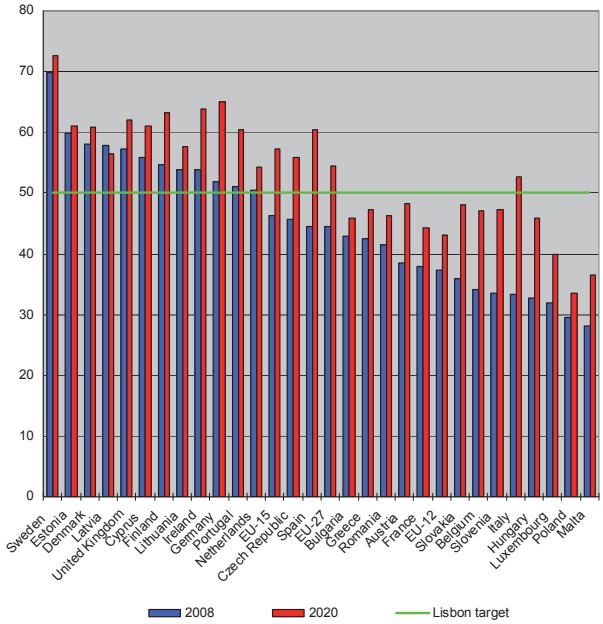
Large differences in the assumed development of employment rates of elderly men and women in the single European countries can be observed. In some countries (Sweden, Malta and France) the increase in employment rates of the elderly would be higher for men than for women (*Figure 4.33*). On the other hand, the increase in employment rates is less for men than for women, in particular in Slovenia, Ireland, Spain, the Netherlands, Lithuania, Greece, United Kingdom and Austria, with differences between male and female growth in employment rates of more than 10%-points. In total in 22 out of 27 countries a stronger increase in female employment rates than in male employment rates of people aged 55 to 64 years is expected until 2020. In 2020 the Lisbon employment target for elderly would be reached in 14 European countries (*Figure 4.34*). But in some EU countries the gap between elderly employment rates and the Lisbon target for elderly employment will still be high (Malta, Poland and Luxembourg).

Figure 4.33 Changes between 2007 and 2020 in employment rates elderly (55-64) in EU countries (%-points)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.34 Employment rates of elderly (55-64) in EU countries, 2008 and 2020 (%)



Sources: Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

4.5.2 Impact of increasing employment rates and demographic change on employment

The assumed demographic development and the expected changes in employment rates would lead to an increase in total employment (15+) of 13.6 million people between 2008 and 2020 in the EU-27. This is 3.1 million people more than the increase in labour force in the 'increasing activity' scenario. The difference is caused by a reduction in unemployment rates. It is expected that in six European countries total employment will decline: in Latvia, Estonia, Bulgaria, Slovenia, Romania and Denmark (*Figure 4.35*). In all other European countries an increase in employment is expected with the highest growth in Cyprus, followed by Ireland. In these countries the increase in the population aged 15+ will boost the effect of growing employment rates.

The increase in employment will be higher in the EU-15 (7.2%) than in the EU-12 (2.0%). The growth in female employment will be more than twice that of males (9.1% for women and 3.8% for men in the EU-27). In 2020 around 9 million more women would be employed compared to 2008 and around 4.6 million more men in the EU-27. The largest part of this additional employment will be realized in the EU-15: 8.2 million additionally employed women and 4.5 million additionally employed men.

Due to the stronger increase in female employment, the share of women in total employment will rise until 2020 by around 1%-points in the EU-27. Thus, the increase in the share of women in employment is less than the increase in the share of women in the labour force, but only to a marginal degree (0.2%-points). In the EU-27 the share of women in employment would total 45.7% and the share in the labour force 45.8% in the year 2020 (*Figure 4.36*).

Figure 4.35 Changes between 2008 and 2020 in total employment (15+) in EU countries (%)

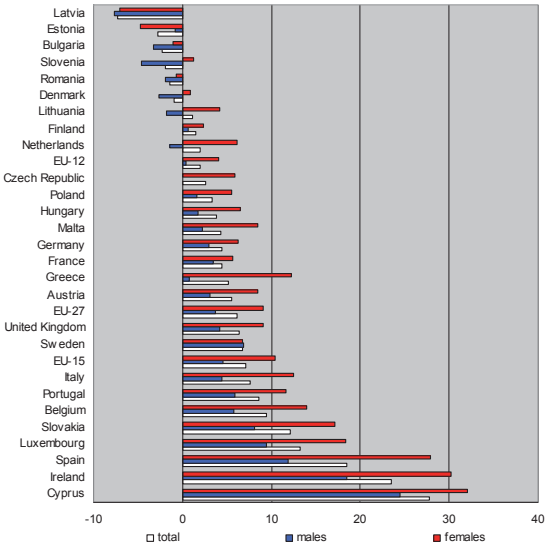
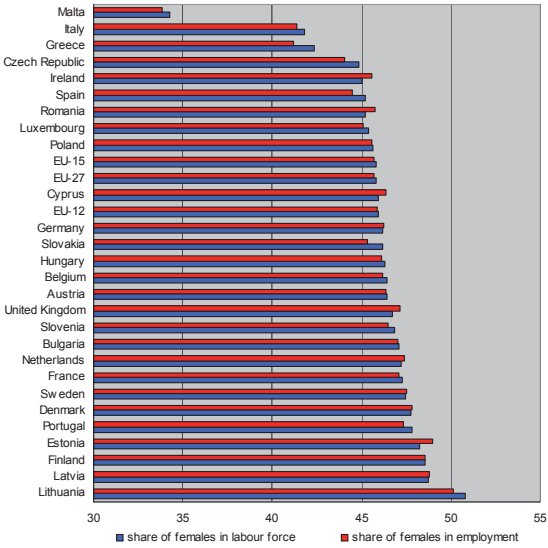


Figure 4.36 Percentage of females in labour force and employment in EU countries, 2020



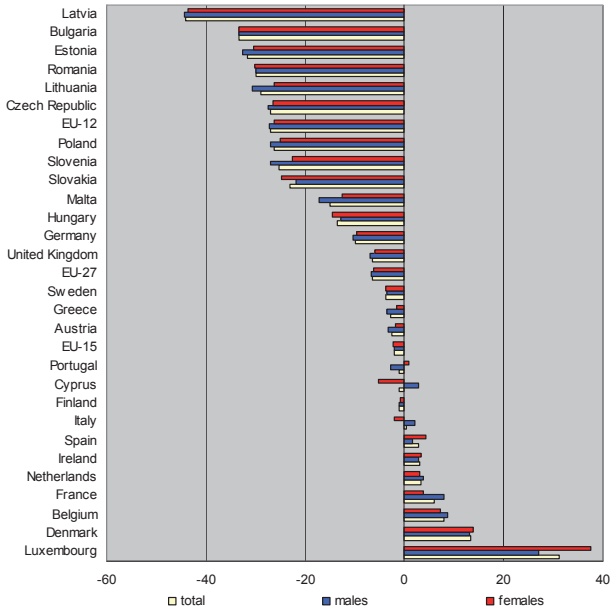
Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

4.5.3 Decline in youth employment stronger than in youth labour force

Whereas the number of employed women would increase to 107 million in the EU-27 in 2020, the number of employed young women aged 15-24 years would decline from 10.4 million in 2008 to 9.7 million in 2020. Also the employment of young men would decline from 12.8 million to 11.9 million. It follows that youth employment would decrease by 6.4% between 2008 and 2020. Noticeable differences in the development of youth employment can be expected between the EU-12 and the EU-15. The EU-12 is expected to witness a dramatic drop in youth employment of around 27%, whilst in the EU-15 the decrease will only be around 2% (*Figure 4.37*).

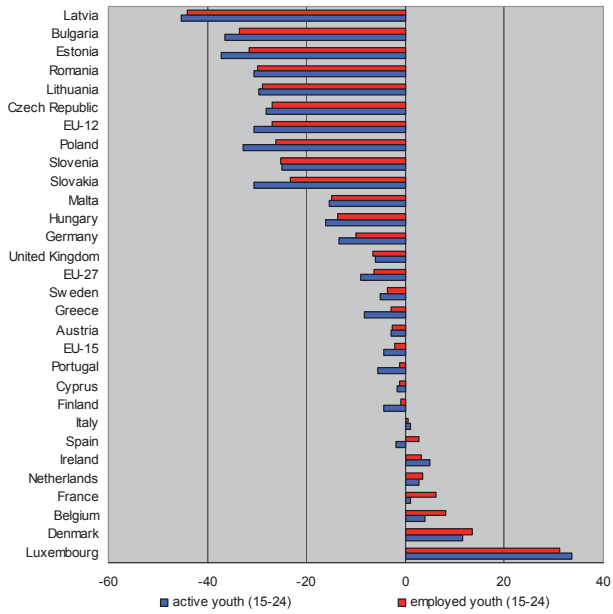
Large differences in the development of youth employment exist also between the single European countries. Some countries will realize an increase in youth employment: in total eight countries, with Luxembourg showing the highest growth (+31%). On the other extreme Latvia (-44%), Bulgaria (-33%) and Estonia (-32%) will face a marked decline in youth employment. But in general the decline in employment of young people is less than the expected downsizing in young active people (*Figure 4.38*). Whilst the difference between the expected changes in youth activity and youth employment accounts for 2.6%-points in the EU-27, some countries show greater disparities in the development of the youth labour force and youth employment. The decline in youth employment will be higher than the decrease in youth active people only in two countries Slovenia and UK, but only to a marginal degree (0.3%-points). On the other hand, the increase in youth employment will be higher than the rise in young active people in fife EU countries: France, Spain, Belgium, Denmark and the Netherlands.

Figure 4.37 Changes between 2008 and 2020 in youth employment in EU countries (%)



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Figure 4.38 Changes between 2008 and 2020 in the number of youth active people and youth employed people in EU countries (%)

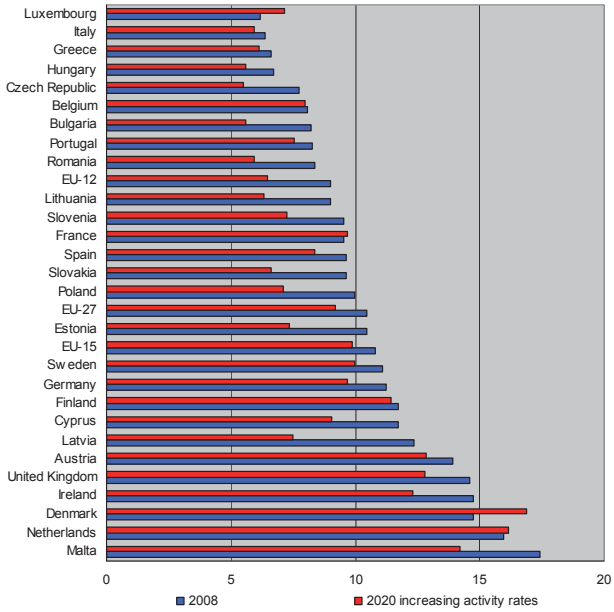


Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

The difference between the development in young active people and in youth employment is an indicator for the large disparity in the development of youth unemployment (defined as the difference between labour force and employment). In total, youth unemployment will be reduced by around 1 million people in the EU-27 until 2020, a reduction of 23.3%. It is expected that youth unemployment will increase only in three countries, namely in Luxembourg, Ireland and Italy (the countries with a lower increase in youth employment than in young active people). But these results need to be interpreted with caution as the uncertainty concerning the development of youth employment is higher than for total employment.

The expected decrease of youth employment leads to a decline in the share of young people in total employment. In the EU-27 the share of young employed people would decrease by 1.2%-points, from 10.4% in 2008 to 9.2% in 2020 (*Figure 4.39*). Only four European countries will experience an increase in the share of young employed people: Denmark, Luxembourg, the Netherlands and France. In these countries an increase in the population aged 15-24 years, as well as an increase in employment rates of young people, is expected.

Figure 4.39 Percentage of young employed people in total employment in EU countries, 2008 and 2020



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

4.5.4 Significant increase in elderly employment

The assumed strong increase in employment rates of the elderly and the ageing of the population will lead to a significant growth in the number of employed people aged 55-64 years. Based on the various assumptions the number of employed elderly in the EU-27 would increase by 11.1 million, from 26.0 million in 2008 to 37.1 million in 2020. This is an increase of 43%. The increase in elderly employment would be higher than the increase in the elderly labour force (40.8% in the EU-27; *Figure 4.40*). In all European countries the increase in elderly employment is higher than the increase in elderly active people with the exception of two countries: Lithuania and the United Kingdom. The increase in employment of the elderly is much larger than the increase in active elderly people in Slovakia (difference 5.9%-points), Germany (5.8%-points), Malta (3.9%-points) and Poland (3.5%-points).

Worth mentioning is the difference of the increase in male and female elderly employment. Only in two European countries the increase in male employment is larger than in female employment for people aged 55-64 years, namely in Sweden and Estonia (*Figure 4.41*). In the other European countries female employment often shows a much greater dynamic than male employment. The increase in female employment is twice the increase in male employment in Slovenia, Slovakia and Spain. The increase in female employment is partly caused by a cohort effect: a new generation of women with higher labour force participation will replace the generation with low labour force participation. Therefore, also the increase in active women aged 55 to 64 years is well above average in these countries.

Figure 4.40 Changes between 2008 and 2020 in the number of employed and active elderly in EU countries (%)

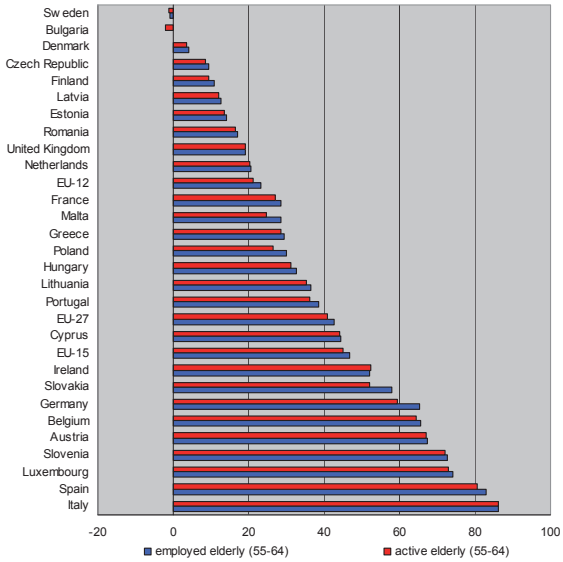
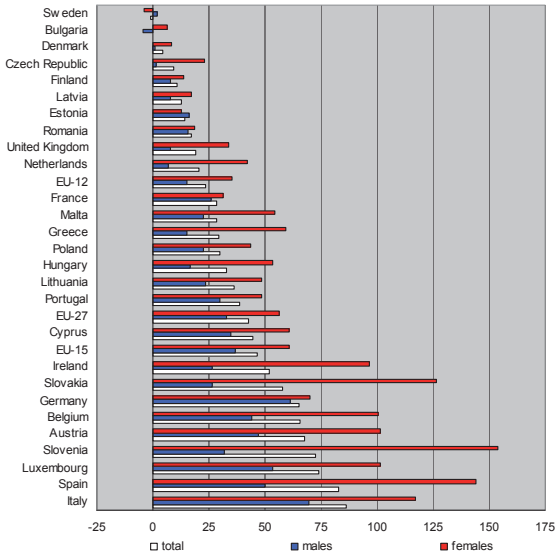


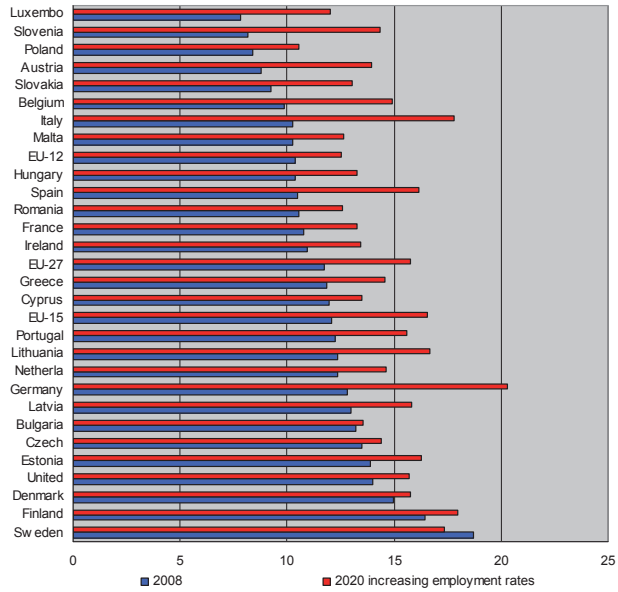
Figure 4.41 Changes between 2008 and 2020 in the number of employed elderly by sex in EU countries (%)



Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

Due to the strong increase in the number of employed elderly, the share of elderly employed people in total employment will also increase in all European countries, with the exception of Sweden (*Figure 4.42*). The ageing of employment will be highest in Italy and Germany, followed by Slovenia and Spain. In total eight countries will realize a rise in the share of employed elderly above the EU average of 4%.

Figure 4.42 Percentage of employed elderly (55-64) in total employment (15+) in EU countries, 2008 and 2020



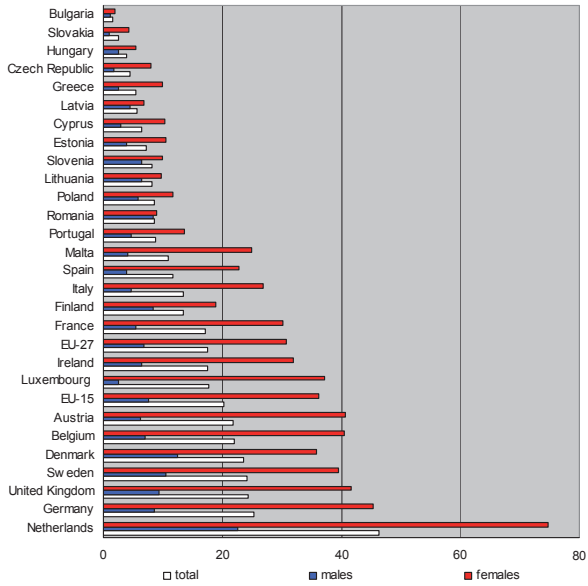
Sources: Eurostat convergence scenario, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

4.6 Changes in working time

The labour force participation rates as well as the employment rates used above are rates per head. These rates do not explicitly take the working time into account, but they are the result of the employment conditions and therefore reflect the average working time in the observed year. In the EU-27 the average working time amounted to 37.7 hours per week in 2007 (Romans, 2008). The average working time was lower for women (33.5 hours) than for men (40.9 hours) which is caused by the larger share of part-time employment among women as compared to men. In total around 18% of Europeans was employed part-time in the EU-27 in 2007 (8% of men and around 31% of women). The average working time of part-time employed people was 20.7 hours, with only marginal differences between men and women.

The share of part-time workers differs widely between European countries and ranges from 1.5% in Bulgaria to 46.3% in the Netherlands (*Figure 4.43*).

Figure 4.43 Percentage of part-time working people in total employment in EU countries, 2007



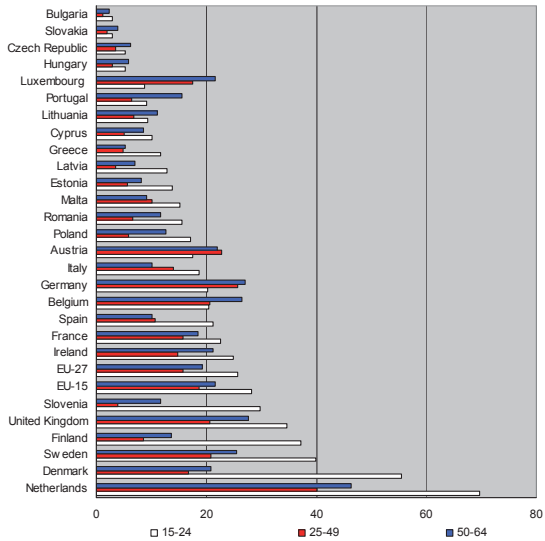
No or incomplete data for EU-12.
Source: Labour force survey; calculation by DIW Berlin.

Besides Bulgaria the share of part-time workers is less than 5% in Slovakia, Hungary and the Czech Republic. Around one quarter of employed people work part-time in Germany, United Kingdom, Sweden and Denmark.

In the past a trend towards more part-time work could be observed with a stronger increase in part-time female employment than in part-time male employment. Thus, the growth in female employment in recent years is in line with increasing part-time work (Eurostat, 2008). Countries showing the highest share of part-time workers realized also a high share in female part-time workers. Besides the leading country, the Netherlands, with three out of four women working part-time, high shares in female part-time work are observed in Germany, United Kingdom, Belgium and Austria (between 41 and 45%). In general the share of part-time workers is higher among young employed people than among the other age groups. In the EU-27 the share of part-time workers is around 26% among young employed people (15-24 years), 16% among employees aged 25-49 years and 19% among the elderly workers (50-64 years). In countries with relatively low shares of part-time working people the share of part-time workers is usually higher among the elderly than among the young workers, in particular in Slovakia, Czech Republic, Hungary, Portugal and Lithuania (*Figure 4.44*).

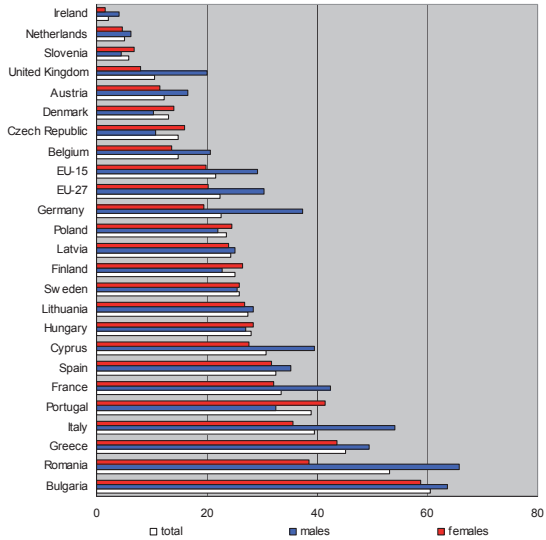
An important factor in part-time work is whether or not it is voluntary (Eurostat, 2008). Some 22% of the EU-27 part-time workers in 2007 aspired to a full-time job, with men (30.4%) accounting for a higher share than women (20.2%). An analysis by Member State shows large differences. The share of involuntary part-time workers ranges from some 2% in Ireland to 61% in Bulgaria (*Figure 4.45*).

Figure 4.44 Percentage of part-time working people by age-groups in EU countries, 2007



No or incomplete data for EU-12.
Source: Labour force survey; calculation by DIW Berlin.

Figure 4.45 Percentage of employees working involuntary part-time in EU countries, 2007



No or incomplete data for the EU-12, Estonia, Malta, Slovakia and Luxembourg.
Source: Labour force survey; calculation by DIW Berlin.

In some countries the share of involuntary part-time workers is higher among women than men, in particular in Slovakia, Malta, Portugal and the Czech Republic.

4.7 Scenarios and implications

As was shown above, the share of part-time working people in total employment increased in the past and the share of involuntary part-time workers also increased in the majority of European countries. In particular the growth in female employment was mostly an increase in part-time employment. In view of this development assumptions about the further division of full-time and part-time work need to be considered. In its recent analyses the European Commission did not explicitly focus on changes in working hours and kept the part time share by gender and for the three age-groups 15-24, 25-54 and 55-71 (in 2006) constant over the entire projection period. As a result the hours worked would increase by 5.4% between 2007 and 2020.

Ekamper (2007) carried out three single scenarios of further working time development for the EU-27. Based on the EUROPOP2004 baseline scenario and the assumptions from the European Commission and Carone (2005) made in a previous version of the study on the development of public expenditure, he calculated first the development of the number of people employed full-time with the assumption that the current patterns of part-time working would remain stable. As a result, the number of full-time workers increased between 2005 and 2025 by 7%. To illustrate potential effects of increasing part-time work, he carried out three additional simplified scenarios compared to the previous. In the first scenario an increase in elderly employment rates to the level of middle aged workers (40-54 years) was assumed and the additional employment was assumed to be part-time work. In the second scenario an increase in female employment rates to the level of male employment rates in the age-groups was assumed and the additional employment was assumed to be part-time employment. In the third scenario the changes in employment rates assumed by Carone (2005) were used, but the share of part-time workers was assumed to increase to the level in the Netherlands (the country with the highest share of part-time workers as mentioned above).

These tentative calculations indicated that an increase in employment of the elderly (scenario 1) and of women (scenario 2) would lead to an increase in employment as well as in hours worked. The scenario with an increasing share of part-time work would however decrease the number of hours worked The overall effect on employment and hours worked would depend on whether the first two trends of increasing elderly and female employment can offset the trend of increasing part-time work. (Ekamper, 2007) The latter depends mainly on the current employment situation in the single European countries. Countries with currently low employment rates for women and elderly people would most probably experience a positive net effect in working hours because the impact of higher labour force participation will more than compensate the effect of increasing part-time work. Countries with currently high employment rates of women and older workers might however realise a negative net effect as the effect of reduced working hours due to increasing part-time work would dominate the total effect.

Inspired by the paper of Ekamper (2007) three new simplified scenarios were carried out to demonstrate the impact of increasing part-time work. The scenarios are based on the most recent Eurostat population convergence scenario (EUROPOP2008) and use either constant age and gender specific employment rates of the year 2007 or the new estimations of employment rates for the year 2020 of the European Commission.

1. In the first scenario the current employment rates as well as the division between full-time and part-time work were kept constant (steady state).
2. In the second scenario an increase in employment rates is assumed based on the new estimations of the European Commission, but the share of part-time and of full-time

employment for the five-year-age-groups is kept constant. This scenario is comparable to the baseline scenario of Ekamper.

3. In the third scenario an increase in employment rates as in scenario 2 is assumed, but the calculated additional employment is assumed to be employment in part-time work (differentiated by gender and age-groups).

The results are shown in *Table 4.6*. The difference between scenario 1 and scenario 2 illustrates the effect of increasing employment rates. The difference between scenario 2 and scenario 3 shows the effect of changes in the share of part-time work.

Table 4.6 Changes between 2008 and 2020 in employment in the EU-27 (%)

	Total employment			Full-time employment			Part-time employment		
	men	women	total	men	women	total	men	women	total
Scenario 1									
Total	0.42	-1.15	-0.27	0.24	-1.41	-0.38	2.58	-0.56	0.19
15~24	-10.77	-10.34	-10.58	-10.77	-10.34	-10.60	-10.77	-10.34	-10.52
25~54	-1.15	-2.40	-1.71	-1.15	-2.42	-1.63	-1.03	-2.35	-2.13
55~64	15.95	14.14	15.20	15.83	13.87	15.17	16.89	14.62	15.30
65+	22.62	17.06	20.56	21.69	16.88	20.20	23.58	17.18	20.87
Scenario 2									
Total	3.75	9.13	6.14	3.16	7.96	4.95	10.79	11.73	11.51
15~24	-6.60	-6.17	-6.40	-6.60	-6.17	-6.42	-6.60	-6.17	-6.34
25~54	-0.86	3.10	0.91	-0.87	3.03	0.60	-0.73	3.26	2.61
55~64	32.83	56.30	42.55	32.26	53.99	39.57	37.47	60.39	53.54
65+	53.76	86.42	65.86	55.33	90.05	66.10	52.12	84.12	65.66
Scenario 3									
Total	3.75	9.13	6.14	0.24	-1.41	-0.38	45.50	32.64	35.72
15~24	-6.60	-6.17	-6.40	-10.77	-10.34	-10.60	11.21	1.93	5.71
25~54	-0.86	3.10	0.91	-1.15	-2.42	-1.63	5.06	16.44	14.58
55~64	32.83	56.30	42.55	15.83	13.87	15.17	172.13	131.33	143.53
65+	53.76	86.42	65.86	21.69	16.88	20.20	87.01	130.64	105.47

Scenario 1: constant employment rates and constant share of part-time work.
Scenario 2: increasing employment rates, but constant share of part-time work.
Scenario 3: increasing employment rates, additional employment is part-time work.
Sources: Eurostat EUROPOP2008, Labour force survey, European Commission and Economic Policy Committee (2008); calculation by DIW Berlin.

In scenario 1 total employment as well as full-time employment will decline, but part-time work will increase in the EU-27 between 2008 and 2020. The decline in full-time employment is caused by a decrease in the number of full-time employed young people (aged 15-24 years) and full-time employed people in prime working age (25-54 years). The latter is higher for women than for men so the total full-time employment of women would decline.

Taking increasing employment rates into account changes the picture (scenario 2). The sign in overall employment as well as in full-time employment will change. An increase in total employment of 6.1% is expected, driven by the high dynamic in the older ages. The increase in part-time employment will be twice the increase in full-time work.

It will not come as a surprise that, with the assumption that additional employment would only be part-time employment, a strong increase in part-time employed people and a decline in full-time employment can be expected. In this third scenario an increase in part-time employment is also expected for young people aged 15-24, while in scenario 2 a decline in part-time employment can be shown in the young ages. If the additional employment is part-time work than a significant rise in part-time employment of elderly people (55+) can be expected, in particular in the age-group 55-64 years.

It is not unrealistic to assume that a further increase in employment of the elderly will depend on a rise in the share of part-time workers among elderly employees. Past experience shows that countries with high employment rates of the elderly also have high shares of part-time workers among the elderly (for example Sweden, Denmark and United Kingdom). Part-time work may encourage older workers to stay longer in the labour market. In this respect the European Working Conditions Survey (Villosio *et al*., 2008) covering several dimensions of working conditions of the elderly found:

- a worsening in working conditions among those aged 45-55 years, particularly among women;
- older workers reported higher exposure levels to risks associated with physical condition and repetitive movements or heavy workloads;
- inflexible working time arrangements may discourage older workers from continuing to work for longer due to the difficulties in reconciling work and family life;
- although older workers show a lower engagement in caring for children, they have a higher likelihood of caring for an elderly or disabled relative compared with other age groups;
- employment contracts and working time arrangements play an important role in determining workers satisfaction with the work-life balance; elderly working part-time show a higher satisfaction with the work-life-balance than people in standard working hours.

In particular in view of the assumed increase in female employment among the elderly, the reconciliation of work and family life needs to be taken into account. As was shown elsewhere (Schulz, 2007) care givers to people in need of long-term care are mostly spouses, daughters and daughters-in-law. The need for care increases from the age of 75-80 onwards which implies that the potential care giving daughters themselves are of older working ages. Combining work and family life (in particular care giving to elderly parents) requires more flexibility in working time arrangements. But flexibility may come at a price as was shown by Jurczak and Hurley (2008) who stated: “While men continue to have secure career pathways, women are overrepresented in labour market categories that are considered ‘flexible’; in such categories, flexible is as likely to mean ‘marginal’, ‘non-standard’ or ‘atypical’ as it is to have any more positive meaning relating to control or choice over working time.” In this regard the European Foundation for the improvement of Living and Working Conditions (2008) asked for improvements in flexible working time arrangements to allow for a better work-life-balance. Noting that the rising levels of education among women will make them an even more needed human resource, the reconciliation of work and family life remains a crucial policy issue, also at higher ages.

5 Recent trends in older workers, retirement and pensions

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5.1 Highlights

- Older workers are staying longer on the labour market. Between 2001 and 2006 the average exit age from the labour market increased by 1.3 years for both men and women.
- Exit ages are higher for men. In 2006 the average male exit age in the EU Member States was 61.7 years compared to 60.7 years for women.
- The labour force participation of older persons is increasing. Between 2001 and 2007 the activity rate of 55-64 year old rose from 40.3% to 47.3%.
- For the European Union as a whole the growth of overall employment rates paralleled the increase of activity rates. Between 2001 and 2007 the employment rates of 55-64 year olds increased by 7%-points.
- The Lisbon target of achieving an employment rate for older workers of at least 50% has not yet been reached. In 2007 the overall employment rate of 55 to 64 year olds was 44.7%.
- In 2007 the unemployment rate of older workers of 55 to 64 year old was 5.5% for both men and women. From 2001 to 2007 unemployment rates of older workers decreased by 1.2%-points for men and 0.8%-points for women.
- In 2005 public old-age pension spending measured as a percentage of GDP was 9.4% for the EU-27 and 9.5% for the EU-15, respectively. Overall pension expenditure remained stable over the 2000-2005 period.

5.2 Trends in retirement behaviour

5.2.1 Age at exit from the labour market

Between 2001 and 2006 the average exit age in the EU-27 increased by 1.3 years for both men and women. The exit age is still higher for men. In 2006 the average male exit age was 61.7 years compared to 60.7 years for women (*Table 5.1*).[21]

As a result of significant steps taken by the EU-10 countries in recent years the gap with respect to male exit ages in the EU-15 countries has almost closed.[22] From 2001 to 2006 male exit ages increased by two years in the EU-10 as compared to an increase of 0.9 years in the EU-15. In 2006 men in the EU-15 retired at the age of 61.6 years while in the EU-10 the corresponding age was 60.8 years. Thus the average male exit age in the EU-10 is only 0.8 years below the EU-15 average. As regards women there still is a wide gap between the EU-15 and the EU-10 Member States. Due to policy reforms aimed at a stepwise equalisation of male and female exit ages, the latter are also considerably increasing in the EU-15 Member States.

[21] The indicator 'average exit age from the labour force' gives the average age of withdrawal from the labour market. It is based on a probability model considering the relative changes of activity rates from one year to another at a specific age. The average exit age from the labour force is calculated as the sum of ages at which withdrawals occur times its probability to withdraw at this age.

[22] EU-10: the Member States that joined the EU on 1 May 2004.

Table 5.1 Average exit age from the labour force, 2001 and 2006

	Females			Males		
	2001	2006	change	2001	2006	change
EU-27	59.4	60.7 [e]	1.3	60.4	61.7 [e]	1.3
EU-15	59.9	61.1 [e]	1.2	60.7	61.6 [e]	0.9
EU-10[1]	56.6	57.4 [e]	0.8	58.8	60.8 [e]	2.0
Belgium	55.9	59.6 [3]	3.7	57.8	61.6 [3]	3.8
Bulgaria	57.6 [2]	64.1	6.5	59.8 [2]	64.1	4.3
Czech Republic	57.3	59.0	1.7	60.7	61.8	1.1
Denmark	61.0	61.3	0.3	62.1	62.5	0.4
Germany	60.4	61.6	1.2	60.9	62.1	1.2
Estonia	:	:	:	:	:	:
Ireland	63.0	64.7	1.7	63.4	63.5	0.1
Greece	61.5 [2]	60.4	-1.1	61.1 [2]	61.8	0.7
Spain	60.0	62.3	2.3	60.6	61.8	1.2
France	58.0	59.1	1.1	58.2	58.7	0.5
Italy	59.8	60.0	0.2	59.9	60.5	0.6
Cyprus	:	:	:	:	:	:
Latvia	:	:	:	:	:	:
Lithuania	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:
Hungary	57.0	58.7 [3]	1.7	58.4	61.2 [3]	2.8
Malta	:	:	:	:	:	:
Netherlands	60.8	62.1	1.3	61.1	62.1	1.0
Austria	58.5	60.6	2.1	59.9	61.3	1.4
Poland	55.5	57.4 [3]	1.9	57.8	62.0 [3]	4.2
Portugal	61.6	63.8 [3]	2.2	62.3	62.4 [3]	0.1
Romania	59.2	63.2	4.0	60.5	65.5	5.0
Slovenia	:	:	:	:	:	:
Slovakia	56.0	57.6 [3]	1.6	59.3	61.1 [3]	1.8
Finland	61.3	62.5	1.2	61.5	62.3	0.8
Sweden	61.9	63.7	1.8	62.3	64.2	1.9
United Kingdom	61.0	62.6	1.6	63.0	63.8	0.8

[e] Estimated value.
[1] CZ, EE, CY, LV, LT, HU, MT, PL, SI, SK.
[2] Reference year 2002 due to missing value for 2001.
[3] Reference year 2005 due to missing data for 2006.
: not available.
Source: Eurostat.

Between 2001 and 2006 women's exit ages in the EU-15 countries accelerated by 1.2 years, exceeding not only the increase of their male counterparts but also the corresponding rise of female exit ages in the EU-10 (+0.8 years). In 2006 women retired at the age of 61.1 years in the EU-15 as compared to 57.4 years in the EU-10. Thus in 2006 women in the EU-15 left the labour force 3.7 years before their counterparts in the EU-10.

For men the country with the highest exit age is Romania with a male labour force population retiring at the age 65.5 years (*Table 5.2*). Male exit ages are also high in Sweden (64.2 years), Bulgaria (64.1 years) and the United Kingdom (63.8 years). France (58.7 years) and Italy (60.5 years) are the countries with the lowest exit ages.

For women the highest exit ages are recorded for Ireland (64.7 years), Bulgaria (64.1 years) and Portugal (63.8 years), whereas Poland (57.4 years), Slovakia (57.6 years) and Hungary (58.7 years) are the countries with the lowest female exit ages.

Most of the countries observed were more or less successful at raising retirement ages over the 2001 to 2006 period (see Table 5.1). Regarding men this especially accounts for Romania (5.0 years), Bulgaria (4.3) and Poland (4.2).

Table 5.2 Country rankings according to average exit ages, 2006

	Exit ages		Rankings	
	females	males	females	males
Belgium	59.6	61.6	15	15
Bulgaria	64.1	64.1	2	3
Czech Republic	59.0	61.8	17	12
Denmark	61.3	62.5	11	6
Germany	61.6	62.1	10	9
Ireland	64.7	63.5	1	5
Greece	60.4	61.8	13	12
Spain	62.3	61.8	8	12
France	59.1	58.7	16	20
Italy	60.0	60.5	14	19
Hungary	58.7	61.2	18	17
Netherlands	62.1	62.1	9	9
Austria	60.6	61.3	12	16
Poland	57.4	62.0	20	11
Portugal	63.8	62.4	3	7
Romania	63.2	65.5	5	1
Slovakia	57.6	61.1	19	18
Finland	62.5	62.3	7	8
Sweden	63.7	64.2	4	2
United Kingdom	62.6	63.8	6	4

Source: Eurostat.

With regard to Poland it may be mentioned that in 2001 the male exit age was 58.8 years, which was below the corresponding EU-27 average of 60.4 years. Thus Poland has achieved a large increase, having started from a relatively low level. This does not apply to Romania, where the male exit age already in 2001 was higher than the corresponding EU-27 average.

For women the country with the strongest increase is Bulgaria (6.5 years), followed by Romania (4.0) and Belgium (3.7). Among the EU-15 countries Belgium is the country with the most substantial increase. On average Belgian workers in 2006 left the labour force at the age of 59.6 years for women and 61.6 years for men, i.e. 3.7 and 3.8 years older respectively than in 2001. However, the female exit age still is beneath the EU-27 average. From all countries observed only Greece is experiencing a lowering of the exit age for women (-1.1 years) over the 2001 to 2006 period.

Despite a higher life expectancy, average exit ages are lower for women than for men (see Table 5.2.). In general the legal retirement age has a stronger influence on female retirement. While the average exit age of men mostly depends on the older male worker's employment rate, the (expected) net pension wealth and on the legal retirement age, female exit ages seem to be mainly influenced by the legal retirement age (which is still lower in some EU Member States) and the employment rates of older women.

One reason why the legal retirement age seems to be more relevant for women is the lower level of career continuity of women. Male work careers have fewer interruptions than female careers, which results in more pension contribution years; adequate pension levels are sometimes reached before retirement age which allows the use of early retirement opportunities. Female work careers, on the other hand, tend to be more interrupted or started at a later age due to family obligations. Therefore, necessary contribution years are reached at a later stage with less opportunity to consider early retirement; hence the female exit age is more strongly correlated to the legal retirement age, which is often lower for women than for men. Due to less continuity of work careers, women face lower pension wealth. As female employment behaviour becomes more continuous, which trend is expected to continue, women also will benefit by collecting more pension wealth. This could have

an impact on female retirement decisions which would become more similar to those of men in the future as women may become more responsive to their own pension incentives. Still legal retirement ages for women are often lower than those of men, but most of the EU Member States providing lower legal retirement ages to women have introduced pension reforms with a stepwise increase of the legal retirement age for women. All in all, a further convergence of female exit ages to those of men may be expected.

5.3 Trends in employment of older workers

5.3.1 Labour force participation of older workers (55-64)

As measured by activity rates the labour force participation of older workers in the EU-27 is increasing. Between 2001 and 2007 the activity rate of 55-64 year old rose from 40.3% to 47.3%, an increase by 7%-points (*Table 5.3*). Starting from lower activity levels the increase is generally stronger for women, whereas male activity rates show a more moderate dynamic. In 2007 the male activity rate in the EU-27 was 57.1% as compared to 38.1% for women. Between 2001 and 2007 average activity rates of 55 to 64 year old women in the EU-27 increased by 8%-points as compared to 6%-points for men. Activity rates of older workers are generally higher in the EU-15 countries than in the EU-12 countries. This applies to both men and women.

Table 5.3 Labour force participation of older workers (55-64): activity rates, 2001, 2006 and 2007

	Total			Males			Females			Ranking 2007			Change 2001 to 2007		
	2001	2006	2007	2001	2006	2007	2001	2006	2007	T	M	F	T	M	F
EU-27	40.3	46.4	47.3	51.1	56.2	57.1	30.1	37.2	38.1				7.0	6.0	8.0
EU-15	41.5	48.4	49.3	52.2	57.7	58.5	31.1	39.4	40.5				7.8	6.3	9.4
Belgium	25.9	33.6	35.9	36.3	42.7	44.4	15.9	24.6	27.5	21	24	21	10.0	8.1	11.6
Bulgaria	29.2	43.0	45.7	41.7	53.6	55.3	18.0	33.9	37.2	15	17	14	16.5	13.6	19.2
Czech Republic	39.0	47.7	48.2	55.0	62.7	62.5	24.6	34.0	35.2	13	13	15	9.2	7.5	10.6
Denmark	60.5	63.2	60.8	68.4	69.6	66.9	51.9	56.7	54.6	3	6	4	0.3	-1.5	2.7
Germany	42.9	55.2	57.5	52.2	64.0	66.1	33.6	46.6	49.1	8	7	8	14.6	13.9	15.5
Estonia	53.2	61.0	62.2	62.5	61.6	63.7	46.0	60.5	61.0	2	9	2	9.0	1.2	15.0
Ireland	48.0	54.4	55.2	66.4	68.7	69.8	29.4	40.0	40.4	10	3	12	7.2	3.4	11.0
Greece	39.9	43.9	43.9	57.7	61.0	60.8	23.9	28.0	28.2	16	14	20	4.0	3.1	4.3
Spain	41.9	46.8	47.4	61.2	63.5	63.1	23.7	31.0	32.5	14	11	17	5.5	1.9	8.8
France	33.8	40.5	40.4	38.3	43.1	42.8	29.5	38.0	38.1	18	26	13	6.6	4.5	8.6
Italy	29.2	33.4	34.6	42.3	45.0	46.3	16.9	22.5	23.5	22	22	23	5.4	4.0	6.6
Cyprus	51.7	55.5	57.7	69.5	74.1	74.8	34.7	37.8	41.6	7	2	10	6.0	5.3	6.9
Latvia	41.4	57.1	60.3	52.9	64.4	67.9	32.8	51.6	54.6	4	5	4	18.9	15.0	21.8
Lithuania	44.9	52.9	55.6	59.0	59.9	63.4	34.3	47.6	49.7	9	10	7	10.7	4.4	15.4
Luxembourg	25.7	33.6	33.6	36.1	38.9	38.4	15.2	28.5	28.5	25	27	19	7.9	2.3	13.3
Hungary	24.2	34.9	34.5	35.4	43.1	43.6	15.1	28.2	27.3	24	25	22	10.3	8.2	12.2
Malta	30.1	30.8	29.4	51.6	51.6	47.7	10.3	11.7	12.5	27	20	27	-0.7	-3.9	2.2
Netherlands	40.2	49.6	52.8	51.8	60.4	64.0	28.4	38.6	41.4	12	8	11	12.6	12.2	13.0
Austria	30.1	36.8	39.8	42.1	47.3	51.3	18.8	26.9	28.9	19	19	18	9.7	9.2	10.1
Poland	30.2	30.7	31.8	39.6	42.6	44.7	22.2	20.3	20.6	26	23	26	1.6	5.1	-1.6
Portugal	51.9	53.5	54.4	63.6	62.7	63.0	41.5	45.1	46.7	11	12	9	2.5	-0.6	5.2
Romania	48.7	42.8	42.4	55.3	52.0	52.1	43.1	34.8	33.9	17	18	16	-6.3	-3.2	-9.2
Slovenia	26.5	33.4	34.6	37.5	45.8	46.7	16.2	21.4	23.1	22	21	25	8.1	9.2	6.9
Slovakia	25.5	36.7	38.8	43.1	55.2	57.0	11.0	20.9	23.3	20	16	24	13.3	13.9	12.3
Finland	50.3	58.5	58.8	51.3	58.9	59.1	49.4	58.2	58.4	6	15	3	8.5	7.8	9.0
Sweden	70.0	72.8	72.8	73.1	76.0	76.2	66.9	69.6	69.4	1	1	1	2.8	3.1	2.5
United Kingdom	54.1	59.1	59.4	64.6	68.4	69.0	43.9	50.2	50.1	5	4	6	5.3	4.4	6.2

Change between 2001 and 2007 is expressed in %-points.
Source: Eurostat.

In 2007 the activity rate of 55-64 year old women was 40.5% in the EU-15 exceeding the corresponding EU-27 value of 38.1% by 2.4%-points.[23] As regards men the gap between the EU-15 and the EU-12 is smaller. In 2007 the activity rate of 55-64 year old men was 58.5% in the EU-15 which is only 1.4%-points higher than the corresponding EU-27 activity rate of 57.1%.

More pronounced increases in older workers activity can only be observed for women in the EU-15 as compared to the EU-27 countries, whereas for men activity rates accelerate to almost the same extent. Over the period observed the female activity rate increased by 9.4%-points in the EU-15 as compared to 8.0%-points in the EU-27. For men the increase was 6.3%-points in the EU-15. Likewise, in the EU-27 the activity rate of 55-64 year old men increased by 6.0%-points.

From all EU-27 countries Sweden reports the highest activity rates: in 2007 the activity rate was 76.2 for men and 69.4 for women. For men the activity rates of older workers are relatively high in Cyprus (74.8%), Ireland (69.8%), the United Kingdom (68.0%), Latvia (67.9%) and Denmark (66.9%). Older women's labour force participation is high in Estonia (61.0%), Finland (58.4%) and Denmark (54.6%).

Most EU countries successfully raised the labour force participation of older workers between 2001 and 2007. On a EU-27 average, activity rates increased by 6%-points for men and 8%-points for women. Since some countries have implemented pension reforms in order to harmonise female exit ages with those of men, the activity rate increases are generally higher for women over this period. In Slovakia (+12.3%-points) and Bulgaria (+19.2%-points) female activity more than doubled. However, Slovakia is still the country with the fourth lowest activity rate for women. In comparison more moderate increases in activity rates for older men were observed, ranging from about 15.0%-points in Latvia to 1.2%-points in Estonia. The labour force participation of older men decreased in Malta (3.9%-points), Romania (3.2%-points), Denmark (1.5%-points) and Portugal (0.6%-points).

5.3.2 Trends in employment rates (55-64)

Noting that both the average exit ages from the labour force as well as the activity rates of older workers show a positive trend, the following subsection discusses whether raising the labour market participation of older workers led to an increasing employment for this group or whether it was transferred into unemployment.

Table 5.4 shows that on a EU-27 level the growth of overall employment rates exceeded the increase of activity rates. Between 2001 and 2007 the employment rates of 55-64 year olds increased by 7.0%-points.

Generally employment rates of 55 to 64 year olds are higher for men (53.9%) than for women (36.0%). Furthermore, higher employment rates are recorded for the EU-15 countries as compared to the EU-12 countries. In 2007 the employment rate in the EU-15 was 46.6% as a total for men and women as compared to 44.9% in the EU-25 and 44.7% in the EU-27.

For men employment rates in the EU-15 and in the EU-12 accelerated at almost the same pace, varying from 6.4%-points in both the EU-25 and the EU-15 to 6.2%-points in the EU-27 countries.

[23] Eurostat did not record separate 2007 values for activity rates in the EU-12 Member States. Thus differences between EU-15 and EU-12 Member States were assessed on the basis of aggregated EU values for EU-27 and EU-15.

Table 5.4 Employment rates of older workers (55-64), 2001, 2006 and 2007

	Total			Males			Females			Ranking 2007			Change 2001 to 2007		
	2001	2006	2007	2001	2006	2007	2001	2006	2007	T	M	F	T	M	F
EU-27	37.7	43.5	44.7	47.7	52.7	53.9	28.2	34.9	36.0				7.0	6.2	7.8
EU-25	37.5	43.7	44.9	47.7	52.8	54.1	27.8	35.0	36.1				7.4	6.4	8.3
EU-15	38.8	45.3	46.6	48.9	54.1	55.3	29.1	36.9	38.1				7.8	6.4	9.0
Belgium	25.1	32.0	34.4	35.1	40.9	42.9	15.5	23.2	26.0	21	23	22	9.3	7.8	10.5
Bulgaria	24.0	39.6	42.6	34.2	49.5	51.8	14.7	31.1	34.5	15	17	14	18.6	17.6	19.8
Czech Republic	37.1	45.2	46.0	52.6	59.5	59.6	23.1	32.1	33.5	13	11	16	8.9	7.0	10.4
Denmark	58.0	60.7	58.6	65.5	67.1	64.9	49.7	54.3	52.4	3	5	4	0.6	-0.6	2.7
Germany	37.9	48.4	51.5	46.5	56.4	59.7	29.4	40.6	43.6	10	10	9	13.6	13.2	14.2
Estonia	48.5	58.5	60.0	56.7	57.5	59.4	42.1	59.2	60.5	2	12	2	11.5	2.7	18.4
Ireland	46.8	53.1	53.8	64.6	67.0	67.9	28.7	39.1	39.6	8	3	12	7.0	3.3	10.9
Greece	38.2	42.3	42.4	55.3	59.2	59.1	22.9	26.6	26.9	16	13	20	4.2	3.8	4.0
Spain	39.2	44.1	44.6	57.7	60.4	60.0	21.7	28.7	30.0	14	9	17	5.4	2.3	8.3
France	31.9	38.1	38.3	36.2	40.5	40.5	27.8	35.9	36.2	19	26	13	6.4	4.3	8.4
Italy	28.0	32.5	33.8	40.4	43.7	45.1	16.2	21.9	23.0	22	22	23	5.8	4.7	6.8
Cyprus	49.1	53.6	55.9	66.9	71.6	72.5	32.2	36.6	40.3	6	2	10	6.8	5.6	8.1
Latvia	36.9	53.3	57.7	46.2	59.5	64.6	30.0	48.7	52.4	4	6	4	20.8	18.4	22.4
Lithuania	38.9	49.6	53.4	49.2	55.7	60.8	31.1	45.1	47.9	9	8	7	14.5	11.6	16.8
Luxembourg	25.6	33.2	32.9	35.9	38.7	37.6	15.2	27.8	28.0	25	27	18	7.3	1.7	12.8
Hungary	23.5	33.6	33.1	34.1	41.4	41.7	14.9	27.1	26.2	24	24	21	9.6	7.6	11.3
Malta	29.4	30.0	28.3	50.4	50.4	46.2	10.2	11.2	11.8	27	20	27	-1.1	-4.2	1.6
Netherlands	39.6	47.7	50.9	51.1	58.0	61.5	28.0	37.2	40.1	11	7	11	11.3	10.4	12.1
Austria	28.9	35.5	38.6	40.1	45.3	49.8	18.4	26.3	28.0	18	19	18	9.7	9.7	9.6
Poland	27.4	28.1	29.7	35.6	38.4	41.4	20.4	19.0	19.4	26	25	26	2.3	5.8	-1.0
Portugal	50.2	50.1	50.9	61.6	58.2	58.6	40.3	42.8	44.0	11	14	8	0.7	-3.0	3.7
Romania	48.2	41.7	41.4	54.3	50.0	50.3	42.9	34.5	33.6	17	18	15	-6.8	-4.0	-9.3
Slovenia	25.5	32.6	33.5	35.9	44.5	45.3	15.8	21.0	22.2	23	21	24	8.0	9.4	6.4
Slovakia	22.4	33.1	35.6	37.7	49.8	52.5	9.8	18.9	21.2	20	16	25	13.2	14.8	11.4
Finland	45.7	54.5	55.0	46.6	54.8	55.1	45.0	54.3	55.0	7	15	3	9.3	8.5	10.0
Sweden	66.7	69.6	70.0	69.4	72.3	72.9	64.0	66.9	67.0	1	1	1	3.3	3.5	3.0
United Kingdom	52.2	57.4	57.4	61.7	66.0	66.3	43.0	49.1	49.0	5	4	6	5.2	4.6	6.0

Change between 2001 and 2007 is expressed in %-points.
Source: Eurostat.

For women, once again a widening gap between the EU-15 and the EU-12 Member States can be observed, especially for Romania. In Romania female employment rates between 2001 and 2007 decreased by 9.3%-points. Over the same time horizon employment rates of 55-64 year old women increased by 9.0%-points in the EU-15. In the EU-25 the equivalent increase was 8.3%-points. As mentioned above the corresponding measure on a EU-27 level (+7.8%-points) is strongly influenced by the situation in Romania, whereas in Bulgaria female employment rates show a considerable increase of 19.8%-points over the period observed.

The already mentioned overall trend of employment growth exceeding the corresponding increase of labour force participation of older workers holds for all EU-groupings and for both men and women. This does not, however, apply to all countries individually. Furthermore, it has to be kept in mind that employment rates do not take into account employment quality or working time. However, the comparison of changes in employment and activity rates indicates that an overall increase in labour force participation of older workers was accompanied by an even stronger increase of older workers' employment rates and thus was not transferred into higher unemployment.

5.3.3 Trends in unemployment rates (55-64)

In 2007 the unemployment rate of 55-64 year older workers for the EU-27 was 5.5% for both men and women (*Table 5.5*).

Table 5.5 Unemployment rates of 55-64 year old, 2001, 2006 and 2007

	Unemployment rates 55-64 year old						Change in unemployment rate 55-64		Change in total unemployment rate		Difference in change	
	males			females			males	females	males	females	males	females
	2001	2006	2007	2001	2006	2007			in %-points			
EU-27	6.7	6.2	5.5	6.3	6.1	5.5	-1.2	-0.8	-1.1	-1.6	-0.1	0.8
EU-25	6.7	6.3	5.5	6.6	6.3	5.7	-1.2	-0.9	-1.1	-1.5	-0.1	0.6
EU-15	6.4	6.1	5.5	6.6	6.4	5.8	-0.9	-0.8	0.0	-0.5	-0.9	-0.3
EU-10[1]	8.9	7.4	:	6.9	5.5	:	:	:	:	:	:	:
Belgium	3.9	4.2	3.6	:	5.7	5.3	-0.3	:	0.8	0.9	-1.1	:
Bulgaria	18.1	7.5	6.4	19.0	8.3	7.4	-11.7	-11.6	-13.7	-11.3	2.0	-0.3
Czech Republic	4.2	5.1	4.5	4.9	5.6	4.8	0.3	-0.1	-2.5	-3.0	2.8	2.9
Denmark	4.0	3.5	3.1	4.0	4.3	4.1	-0.9	0.1	-0.6	-0.8	-0.3	0.9
Germany	11.4	11.9	9.7	12.8	13.0	11.2	-1.7	-1.6	0.6	0.9	-2.3	-2.5
Ireland	2.6	2.4	2.6	:	:	:	0.0	:	0.8	0.4	-0.8	:
Greece	4.1	3.1	2.9	4.0	5.0	4.3	-1.2	0.3	-1.9	-3.3	0.7	3.6
Spain	5.6	4.8	4.9	8.1	7.4	7.7	-0.7	-0.4	-1.1	-3.9	0.4	3.5
France	5.5	5.9	5.3	6.3	5.6	4.9	-0.2	-1.4	0.8	-1.0	-1.0	-0.4
Italy	4.7	2.8	2.6	4.5	2.9	2.1	-2.1	-2.4	-2.2	-4.3	0.1	1.9
Cyprus	4.1	3.3	3.1	8.0	:	3.2	-1.0	-4.8	0.8	-0.7	-1.8	-4.1
Latvia	14.4	7.7	:	8.8	:	:	:	:	-7.8	-5.9	:	:
Lithuania	18.5	:	:	9.7	:	:	:	:	-14.3	-10.0	:	:
Hungary	3.5	4.0	4.5	:	3.9	3.9	1.0	:	0.8	2.7	0.2	:
Netherlands	1.7	4.1	3.9	:	3.4	3.2	2.2	:	1.0	0.8	1.2	:
Austria	5.7	4.3	2.9	5.2	:	3.1	-2.8	-2.1	0.8	0.8	-3.6	-2.9
Poland	10.7	9.8	7.4	7.5	6.2	5.7	-3.3	-1.8	-7.9	-9.5	4.6	7.7
Portugal	2.5	7.3	7.1	:	5.2	5.8	4.6	:	3.4	4.6	1.2	:
Romania	2.9	3.8	3.5	0.4	:	:	0.6	:	0.0	-0.5	0.6	:
Slovenia	5.0	2.7	3.0	:	:	3.8	-2.0	:	-1.6	-1.0	-0.4	:
Slovakia	12.2	9.9	7.8	10.0	9.5	9.0	-4.4	-1.0	-9.9	-6.0	5.5	5.0
Finland	9.3	6.9	6.8	8.6	6.7	5.9	-2.5	-2.7	-2.1	-2.5	-0.4	-0.2
Sweden	4.9	4.9	4.4	3.9	3.8	3.5	-0.5	-0.4	0.6	1.9	-1.1	-2.3
United Kingdom	4.3	3.5	4.0	1.8	2.3	2.2	-0.3	0.4	0.0	0.5	-0.3	-0.1

Change: difference between 2007 and 2001.
[1] CZ, EE, CY, LV, LT, HU, MT, PL, SI, SK.
: not available.
Source: Eurostat.

Older workers face the highest unemployment risk in Germany (9.7% for men and 11.2% for women), followed by Slovakia (7.8% for men and 9.0% for women). For men, Italy and Ireland (both 2.6%), Austria (2.9%) and Slovenia (3%) are the countries with the lowest unemployment rates. For women this is the case in Italy (2.1%) and the United Kingdom (2.2%).

It should be kept in mind that these countries show large differences as regards the labour force participation of older workers. Denmark and Ireland, for example, are countries with low unemployment for older workers and high participation rates. Along with the third highest older male labour market participation, Ireland is the country with the lowest unemployment rate of older male workers. Thus the labour market situation of older workers in Ireland is characterised by both high participation and low unemployment. Conversely, Italy and Austria have low unemployment rates and relatively low participation rates. Italy, for example, has the second lowest male unemployment rate in the EU but ranks 18th according to older males' labour force participation.

In general, unemployment rates of older workers decreased relative to the overall unemployment level. For women the unemployment rates of 55-64 year olds decreased in 12 out of 15 observed countries while for men unemployment rates decreased in 14 out of 17 countries. Since the

unemployment risks of older workers are also influenced by overall labour market trends, such as cyclical changes of labour demand, overall unemployment trends must be taken into account.

In order to assess changes of unemployment risks faced by older workers relative to the overall trend, the change of the unemployment rate of 55-64 year olds was calculated over the 2001 to 2007 period (in %-points) minus the corresponding change of the total unemployment rate (in %-points). This measure gives the difference of unemployment changes for older workers relative to changes in total unemployment and thus provides insight into changes in unemployment risks faced by older workers relative to the overall trend. A negative value indicates a decrease of the unemployment risks of older workers relative to the overall unemployment trend corresponding, for example, to a higher decrease of older workers unemployment compared to a decrease of the total unemployment rate.

Relative to the overall unemployment trend the male older workers' unemployment declined over the 2001-2007 period for most of the observed countries. On a EU-27 level, older male workers unemployment decreased by 1.2%-points, whereas total unemployment decreased only by 1.1%-points. Thus for the EU-27 as a whole the decrease in older men's unemployment exceeded the overall decrease by 0.1%-points.

This trend does not apply to women. From 2001 to 2007 the unemployment rate of 55 to 64 year old women decreased by 0.8%-points. At the same time, the overall female unemployment rate decreased by 1.6%-points, exceeding the unemployment rate decrease for older women by 0.8%-points. This corresponds to a relative increase of older women's unemployment rate.

The female unemployment pattern for the EU-15 follows that of males. Older women's unemployment decreased by 0.8%-points compared to an overall decrease by only 0.5%-points. Thus for the EU-15 the decrease of unemployment exceeded the comparative overall decrease by 0.3%-points.

Comparing countries, the unemployment risks of older male workers relative to the overall trend worsened especially in Portugal (+1.2%-points) and the Czech Republic (+2.8%-points). For women the unemployment risks increased more sharply than the overall trend in Greece (+3.6%-points) and Poland (+7.7%-points).

5.3.4 Labour market trends of older workers

The labour market trend for a given age group is influenced by a number of factors. First, allocative changes in the distribution of an age group into different labour market states are affected by general economic and labour market trends. Relevant factors influencing general trends are economic growth, the business cycle, productivity trends, changes of working time etc. These general factors apply to the labour force as a whole and not only to a specific age group. For example, with increasing economic growth the number of persons employed will tend to rise and likewise the number of unemployed will decline.

Secondly, changes in the number of persons employed, unemployed or inactive in a given age group are associated with changes in the size of this age group. For example, when the size of an age group increases one can expect that, *ceteris paribus*, the number of persons employed within this age group would grow at a proportional rate.

Finally the allocative dispersion of an age group into different labour market states is influenced by age cohort specific trends. Over the last years most EU Member States introduced policy reforms that aimed at increasing activity rates of older workers and rising effective retirement ages. These policy reforms were specifically targeted at older workers' employment behaviour. In the previous sections it was stated that these policy reforms had been more or less successful. In general the activity rates of older workers rose, and as a consequence so did exit ages. With regard to this trend it has to be mentioned that increasing activity rates might not only be associated with effective employment growth. Rising activity can also be associated with increasing unemployment. *Prima vista* the observed activation trend led to increases of effective retirement ages but without controlling for unemployment it cannot be automatically ascribed to effective employment growth.

To answer the question whether and to what extent the observed activation trend was associated with shifts in employment or unemployment we apply a shift-share-analysis in order to differentiate between these, and to identify cohort-specific labour market shifts by controlling for (1) general employment trends and (2) demographic changes regarding the age specific composition of the total labour force.

5.3.4.1 Labour market trends for 55 to 64 year old men in the EU-27

In this section we describe a positive employment trend for 55 to 64 year old men in the EU-27. We show that the growth rate of the number of employed within this age group (at 27.2% over the 2000 to 2007 period) exceeded the overall employment growth for the total male labour force. Furthermore the cohort specific growth of men employed outstripped the demographic effect, with the 55 to 64 years age-cohort growing at a higher rate than the total male labour force (by 7%-points). This employment increase can to a large extent be ascribed to a cohort specific employment shift effect.

Regarding unemployment, we observe a decline over the 2000 to 2007 period. However the number of men being unemployed in the 55 to 64 age group declined to a lesser extent than in the total male labour force. As a consequence the share of this age cohort within total male unemployment increased. However this increase proportionally followed a demographic increase in the share of 55 to 64 year old men within the total male labour force.

As a consequence of these trends inactivity declined due to a cohort specific negative shift effect. Despite a disproportional higher cohort growth and contrary to inactivity increasing marginally in the total labour force, the number of inactive 55 to 64 year old men declined by 4%.

Employment

On a EU-27 level the number of men employed within the age group of 55-64 increased from 11.9 million in 2000 to 15.1 million in 2007 (*Table 5.6*). This corresponds to an employment growth rate of 27.2% over the 2000-2007 period (*Table 5.7*). By comparison employment growth in the total male labour force was smaller at 6.2%. Thus we observe a significantly higher employment growth in the older male age-cohort than in the labour force as a whole.

Table 5.6 Changes in the distribution of labour market status, 55 to 64 year old men versus total labour force, EU-27, 2000 and 2007 (x 1 000)

	55-64		15-64		cohort vs labour force
	2000	2007	2000	2007	growth differential in %-points
Employed	11 857.3	15 081.5	112 278.6	119 185.6	21.0
Unemployed	946.9	875,4	10 166.6	8 486.0	9.0
Inactive population	12 499.2	12 002.9	36 410.8	36 664.3	-4.7
Total population	25 303.5	27 959.8	158 856.1	164 336.0	

Source: Eurostat Labour force survey.

Table 5.7 Shift-share-analysis, 55 to 64 year old men, EU-27, 2000-2007, in growth percentages

	Age cohort lm status change		Labour force lm status change		Demographic change		Net shift effect		Age cohort lm status shift		Labour force lm status shift
Employed	27.2	=	6.2	+	7.0	+	14.0	=	16.7	-	2.7
Unemployed	-7.6	=	-16.5	+	7.0	+	1.9	=	-18.0	-	-20.0
Inactive	-4.0	=	0.7	+	7.0	+	-11.7	=	-14.5	-	-2.8

Sources: Eurostat Labour force survey; IHS.

In order to assess employment shifts in a given age group we have to control for demographic changes, i.e. shifts in the age-specific composition of the labour force. The total male labour force increased only at a rate of 3.4%, whereas the age group of 55-64 grew by 10.5% over the period observed, a growth differential of 7%-points. Thus only a minor part of the employment growth for 55 to 64 year old men of 27.2% can be contributed to demographic changes.

The empirically observed growth of employed 55 to 64 year old men is to a large extent attributable to a cohort specific shift towards employment. The number of 55-64 year old men employed rose at a higher rate than the size of the age-cohort as a whole by 16.7%-points. The number of men employed in the total male labour force also rose at a higher rate than the male labour force as a whole, the difference in growth rate of 2.7% being distinctively smaller. That is to say, there was a cohort-specific net employment shift effect of 14%-points. It has to be mentioned that according to the Joint Report on Social Protection and Social Inclusion from the EU Commission (see EU Commission, 2008b) the employment increase among older workers is partially linked to an increase of part-time employment. "*The share of part time employment among older workers has significantly increased within the EU in the last decade. It is now nearly 25% for the EU15 (22.5% in the EU25 and 22% in the EU27).*" This trend applies not only to women, who generally work part time more frequently, but also to men.

Unemployment

The number of unemployed among 55 to 64 year old men decreased by 7.6% from about 950,000 in the year 2000 to 875,000 in 2007, compared to an overall unemployment decline of 16.5% for the male labour force as a whole. Thus the unemployment decline for 55 to 64 year old men fell behind the general development by 9%-points.

A large part of this difference is attributable to the above-mentioned demographic trend. This implies that, *ceteris paribus*, the number of 55 to 64 year old men who potentially would be unemployed would be 7%-points higher than in 2000. Looking at this another way, the share of 55 to 64 year old men among all unemployed rose by 1%-points, from 9.3% in 2000 to 10.3% in 2007, whilst the cohort share within the total labour force rose at a similar rate of 1.1%-points.

Inactivity
As a consequence of the trends described above the number of inactive 55 to 64 year old men (for example due to retirement) declined by 4%. In the total labour force the increase in inactivity was only marginal at 0.7%, which may be attributable to an overall increase in the average years of schooling. The relative decline of inactivity marks a cohort-specific labour market shift from inactivity into employment. Despite the size of the age cohort of 55 to 64 year old men rising by 10.5% or 7%-points more than growth in the total male labour force, the inactivity decline of 14.5%-points relative to the cohort of 55 to 64 year old men outstripped the small decrease at the total labour force level of 2.8%-points. Thus the observable inactivity decline (and employment increase) for this age-group has to be viewed as a cohort-specific trend.

5.3.4.2 Labour market trends for 55- to 64 year old women in the EU-27
The results from the shift-share-analysis indicate a strong activation trend for 55 to 64 year old women. To a large extent this activation trend was transmitted into employment. The largest contribution to the 45% increase in the number 55 to 64 year old women employed derives from a cohort specific employment shift.

On a EU-27 level the number of employed women within the 55 to 64 year old age group increased from 7.4 million in 2000 to 10.7 million in 2007, a considerable growth rate of 45% (*Tables 5.8 and 5.9*). At the same time the number of unemployed women within the observed age group increased at a slower pace of 8.5%, from approximately 579,000 in 2000 to 628,300 in 2007. The number of inactive women within the age group of 55 to 64 slightly decreased from 19.0 million in 2000 to 18.4 million in 2007.

The labour market trend observed for 55 to 64 year old women does not fully correspond to developments in the total female labour force. In the total female labour force the number of employed women rose from 86.0 million people in 2000 to 96.2 million in 2007. Employment among 55 to 64 year old women increased at a higher growth rate compared to the total female labour force. Also the number of unemployed in the total female labour force declined, whereas among 55 to 64 year old women we observe an increase of 8.5%. The number of inactive women both in the total female labour force and in the 55-64 age group declined at similar rates (-5.7% versus 3.0%).

Table 5.8 Changes in the distribution of labour market status, 55 to 64 year old women versus total labour force, EU-27, 2000 and 2007 (x 1 000)

	55-64		15-64		cohort vs labour force
	2000	2007	2000	2007	growth differential in %-points
Employed	7 385.1	10 702.0	86 030.3	96 168.3	33.1
Unemployed	579.0	628.3	10 323.8	8 255.7	28.5
Inactive population	18 986.8	18 423.4	64 031.0	60 403.9	2.7
Total population	26 950.8	29 753.7	160 385.1	164 827.9	

Source: Eurostat Labour force survey.

Table 5.9 Shift-share-analysis, 55 to 64 year old women, EU-27, 2000-2007, in growth percentages

	Age cohort lm status change		Labour force lm status change		Demographic change		Net shift effect		Age cohort lm status shift		Labour force lm status shift
Employed	44.9	=	11.8	+	7.6	+	25.5	=	34.5	-	9.0
Unemployed	8.5	=	-20.0	+	7.6	+	20.9	=	-1.9	-	-22.8
Inactive	-3.0	=	-5.7	+	7.6	+	-4.9	=	-13.4	-	-8.4

Sources: Eurostat Labour force survey; IHS.

Whilst the number of unemployed women in the labour force decreased by 20.0%, it increased by 8.5% for the 55-64 age group. This difference can only partially be explained by demographic change, but is also linked to the fact that unemployment was more persistent among 55 to 64 year old women. However, it has to be kept in mind that the largest part of the activity shift was transposed into employment and not into unemployment. As a consequence of the tremendous rise in the number of 55 to 64 year old employed women, the corresponding unemployment rate even declined over the 2000 to 2007 period. Furthermore it has to be mentioned that the unemployment rate for 55 to 64 year old women is still smaller than for the female labour force as a whole.

Employment
As mentioned above the number of employed women increased by 45% over the 2000 to 2007 period. If the older age cohort had mirrored the overall (female) labour force trend the number of 55 to 64 year old employed women would have grown only by 11.8%.

In part the positive employment growth differential can be ascribed to the demographic growth differential. Over the 2000 to 2007 period the cohort of 55 to 64 year old women grew by a 7.6%-points higher rate than the total female labour force. However, the largest contribution to the observed employment increase stems from a positive net employment shift and can thus be ascribed to a cohort specific employment trend. The share of employed women as a percentage of the cohort grew by a 34.5%-points higher rate than the cohort as a whole. The corresponding growth differential for the total female labour force was only 9%-points, resulting in a positive net shift effect of 25.5%-points.

Unemployment
Between 2000 and 2007, the number of unemployed 55 to 64 year old women increased by 8.5%. In contrast, the number of unemployed women within the total female labour force decreased by 20%. In part this trend difference can be ascribed to the demographic shift effect – a 7.6%-points higher growth rate in the cohort than in the total female labour force. However, we observe an age cohort specific trend: although the number of unemployed in the cohort increased at a 1.9%-points smaller rate than the cohort as a whole, the corresponding growth differential in the female labour force as a whole was as much as 22.8%-points – the female labour force grew by 2.8% whilst the number unemployed women declined distinctively by 20%. Thus unemployment was relatively more persistent in the group of 55 to 64 year old women.

It should be kept in mind that despite the increase in the absolute number of unemployed women between 55 and 64, the unemployment rate (5.5% in 2007 according to Eurostat) is still lower than the overall female labour force level (7.8%). Furthermore, given the tremendous shift into employment for 55 to 64 year old women the unemployment rate declined by 2.3%-points from 7.8% in 2000. Whilst effective employment of 55 to 64 year old women increased by 45%, or 3.3 million, the number of unemployed women increased by 49,300 on a EU-27 level (*Table 5.10*). Thus also for older female workers the main flow was that of a shift from inactivity into employment.

Table 5.10 Shift-share-analysis, 55 to 64 year old women, EU-27, 2000-2007, in absolute numbers (x 1 000)

	Age cohort lm status change		Labour force lm status change		Demographic change		Net shift effect		Age cohort lm status shift		Labour force lm status shift
Employed	3 316.9	=	870.3	+	563.5	+	1 883.1	=	2 548.8	-	665.7
Unemployed	49.3	=	-116.0	+	44.2	+	121.1	=	-10.9	-	-132.0
Inactive	-563.4	=	-1 075.5	+	1 448.6	+	-936.6	=	-2 538.0	-	-1 601.5

Sources: Eurostat Labour force survey; IHS.

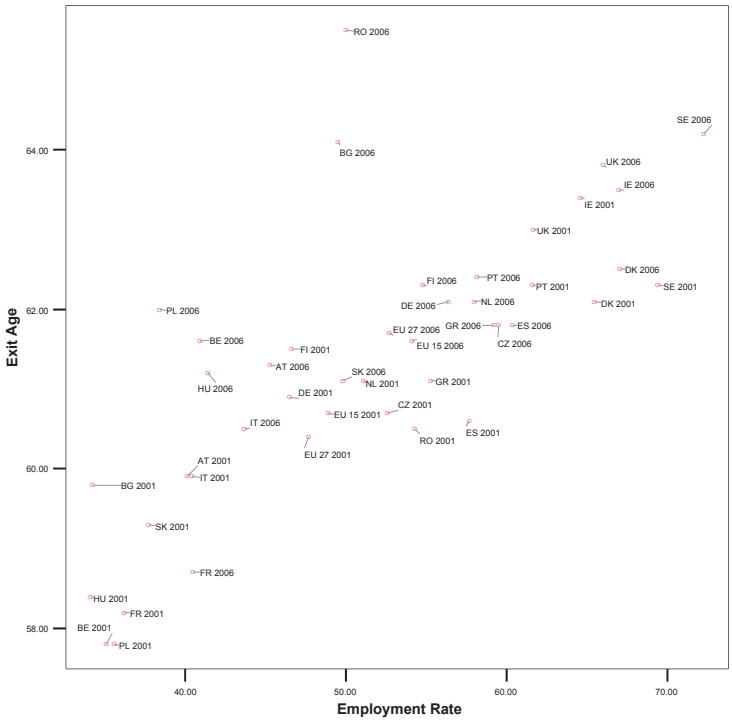
Inactivity
As a consequence of both rising employment and unemployment the number of inactive 55 to 64 year old women declined by 3%. However this decline is less than the corresponding reduction of inactivity at the labour force level of 5.7%. The difference may be ascribed to the above-mentioned demographic trend. Over the time span observed the age cohort of 55 to 64 year old women grew by a 7.6%-points larger rate than the corresponding female labour force. The resulting relative increase in the share of the older-age cohort within the total female labour force was only partially compensated by a cohort specific shift effect. While the cohort size grew by 10.4%, inactivity among 55 to 64 year old women declined by 3% (implying a shift effect of 13.4%-points), the total female labour force population increase of 2.8% was accompanied by an inactivity decline of 5.7% (implying a shift effect of 8.4%-points). Thus relative to the corresponding population growth, the age cohort of 55 to 64 year old women shows a stronger shift from inactivity into active labour market states than the female labour force as a whole by 4.9%-points. However, this cohort specific activation shift was not enough to compensate for the demographic change entirely.

5.3.4.3 Conclusions from the Shift-share-analysis and identification of outliers
The general conclusion from the analysis of shifts between different labour market states of older workers is that an activation trend can be observed for both men and women. This activation trend led to rising effective retirement ages. In general this activation trend was transmitted into an increase of effective employment and was generally not accompanied by worsening unemployment. This applies especially to older male workers, where an inactivity decline of 4% was accompanied by an increase in the number of persons employed by 27.2% and a decrease in the number of unemployed by 7.6%. For older male workers we observe an employment increase exceeding the demographic growth change as well as employment growth in the total male labour force. At the same time unemployment declined in absolute terms. However, the unemployment decline was smaller for 55 to 64 year old men compared to the male labour force as a whole. To a large extent this trend difference can be attributed to cohort specific demographic growth.

For women we observe an even stronger employment growth. Between 2000 and 2007 the number of employed 55 to 64 year old women rose by 45%. Employment growth among older female workers exceeded that of the female labour force as a whole as well as the cohort specific demographic growth. Thus also for women there was a cohort specific shift from inactivity into employment. However, for older women we observe an unemployment increase that contrasts with the general labour force trend. The number of unemployed women between 55 and 64 rose, in contrast to an unemployment decline at the overall level. However, on account of the strong employment increase for older female workers the corresponding unemployment rate declined over the 2000 to 2007 period and most of the activation trend was shifted into employment and less into unemployment.

This positive trend pattern applies to most EU-Member States. *Figure 5.1* and *Figure 5.2* show scatter plots of employment rates for older workers in 2001 and 2006 (on the x-axis) against exit ages (on the y-axis), for males and females respectively. Generally, a positive relationship between higher exit ages and higher employment rates can be observed. Countries with higher exit ages (for example Finland, United Kingdom and Sweden) usually have higher employment rates for older workers. Furthermore, the figures illustrate country-wise trends from 2001 to 2006. For most of the countries an upward-right shift can be observed which means that in these countries increasing exit ages for both older men and women are indeed, as one might expect, accompanied by increasing employment rates for older workers. Thus the standard trend-scenario is a bottom-left to top-right shift between 2001 and 2006.

Figure 5.1 Scatter-plot exit ages versus employment rates, males 2001 to 2006

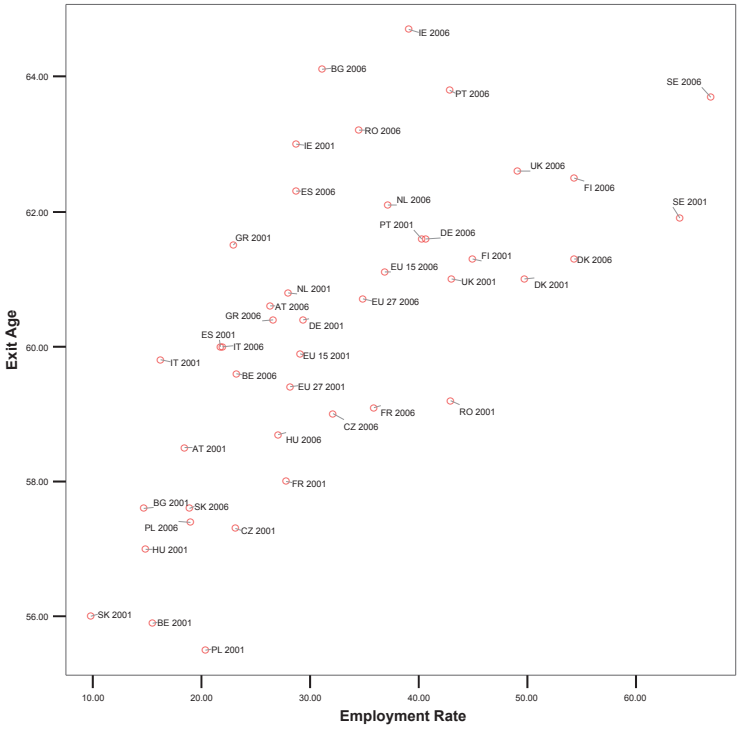


Source: Eurostat.

As countries raised average exit ages from the labour market, the employment rates for older male workers increased. For example, the EU-27 average male exit age increased from 60.4 years in 2001 to 61.7 years in 2006; at the same time the employment rate of older male workers increased from 47.7% to 52.7%. On a EU-27 level the pattern is similar for men and women. Between 2001 and 2006 the exit age of 55 to 64 year old women increased by 1.3 years, whilst employment rates increased from 28.2% in 2001 to 34.9% in 2006.

Despite most of the EU-Member States showing an upward right shift over the 2000 to 2007 period, corresponding to employment rate increases and rising exit ages we observe some apparent outliers. In Portugal, for example, employment rates of 55 to 64 year old men declined by 5.5% whereas male exit ages remained more or less constant (at 62.3 years in 2001 and 62.4 years in 2006). In Romania a considerable increase in exit ages (+4.2 years) was accompanied by a distinctive decline in older men's employment rate (-7.9%). This situation applies also to women. While exit ages increased by four years from 59.2 years in 2001 to 63.2 years in 2006, the employment rate of older women fell sharply by 19.6%.

Figure 5.2 Scatter-plot exit ages versus employment rates, females 2001 to 2006



Source: Eurostat.

5.4 Work after retirement

5.4.1 Trends in work after retirement

Since transitions into retirement are strongly influenced by legal retirement ages (see for example Duval, 2003) the employment rates of age groups beyond legal retirement age are a valid indicator to assess trends in work after retirement.

With regard to 65-74 year old men, employment rates are generally increasing (*Tables 5.11 and 5.12*). Whereas employment levels tend to be higher in the EU-12, the growth of employment rates is higher in the EU-15. In 2007 the share of 65-74 year old employed men relative to the total population group was 10.1% in the EU-27 and 9.2% in the EU-15. In the EU-27 the employment rates of 65-74 year old men grew by an annual average of 0.9% between 2000 and 2006. For the EU-15 the corresponding annual average growth rate was 3.8%.

Table 5.11 Employment rates, 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007
Men, 65-74								
EU-27	9.5	9.3	8.8	9.0	9.0	9.3	9.6	10.1
EU-25	7.8	7.7	7.8	7.8	8.2	8.7	9.0	9.3
EU-15	7.1	7.2	7.5	7.6	8.0	8.5	8.8	9.2
Women, 65-74								
EU-27	5.0	5.1	4.7	4.7	4.5	4.7	4.8	5.2
EU-25	3.4	3.5	3.6	3.6	3.7	3.9	4.1	4.3
EU-15	3.0	3.2	3.3	3.4	3.5	3.7	3.9	4.2
Women, 60-74								
EU-27	8.9	9.1	8.8	9.1	9.2	9.7	10.2	10.9
EU-25	7.3	7.6	7.9	8.3	8.6	9.2	9.7	10.4
EU-15	7.2	7.6	8.0	8.4	8.7	9.4	10.1	10.9

Source: Eurostat.

Table 5.12 Annual changes in employment rates, 2000-2006 (%)

	2000	2001	2002	2003	2004	2005	2006	average
Men, 65-74								
EU-27	-2.1	-5.4	2.3	0.0	3.3	3.2	5.2	0.9
EU-25	-1.3	1.3	0.0	5.1	6.1	3.4	3.3	2.6
EU-15	1.4	4.2	1.3	5.3	6.3	3.5	4.5	3.8
Women, 65-74								
EU-27	2.0	-7.8	0.0	-4.3	4.4	2.1	8.3	0.7
EU-25	2.9	2.9	0.0	2.8	5.4	5.1	4.9	3.4
EU-15	6.7	3.1	3.0	2.9	5.7	5.4	7.7	4.9
Women, 60-74								
EU-27	2.2	-3.3	3.4	1.1	5.4	5.2	6.9	3.0
EU-25	4.1	3.9	5.1	3.6	7.0	5.4	7.2	5.2
EU-15	5.6	5.3	5.0	3.6	8.0	7.4	7.9	6.1

Source: Eurostat.

In 2007 the corresponding employment rate of 60-74 year old women was 10.9% for both the EU-27 and the EU-15. Again, the annual average growth rate was higher for the EU-15 countries. On a EU-27 level the employment rate of 60 to 74 year old women accelerated with an annual growth rate of 3.0% on average compared to 6.1% for the EU-15.

The situation is rather similar with regard to 65-74 year old women. Whereas employment rates tend to be higher in the EU-12 (5.2% in the EU-27 in 2007) the annual average growth of employment rates is higher in the EU-15. From 2000 to 2007 the employment rate of 65 to 74 year old women grew by an annual average of 4.9% for the EU-15 compared to only 0.7% for the EU-27.

5.4.2 Replacement ratios

The replacement ratio gives information on the generosity of pension benefits relative to the older workers' level of labour income. Eurostat defines the replacement ratio as the ratio of income from pensions of persons aged 65-74 years and income from work of persons aged 50-59 years. Generally replacement ratios tend to be higher for men than for women (*Table 5.13*). For the EU-25 the male replacement ratio is 0.54 for men and 0.50 for women. Relative to the older workers' income level the average replacement ratio is higher in the EU-10 than in the EU-15. For men the replacement ratio is 0.58 in the EU-10 and 0.53 in the EU-15; for women it is 0.55 as compared to 0.49.

Table 5.13 Replacement ratio, 2006

	Replacement ratio			Rank		
	total	males	females	total	males	females
EU-25	0.51	0.54	0.50			
EU-15	0.50	0.53	0.49			
EU-10[1]	0.55	0.58	0.55			
Belgium	0.42	0.46	0.40	22	19	22
Bulgaria	0.60	0.62	0.58	3	5	5
Czech Republic	0.52	0.50	0.56	11	14	8
Denmark	0.37	0.37	0.39	24	24	24
Germany	0.46	0.48	0.49	18	16	15
Estonia	0.49	0.40	0.55	12	23	10
Ireland	0.35	0.35	0.48	25	25	17
Greece	0.49	0.57	0.49	12	9	15
Spain	0.48	0.51	0.50	16	13	14
France	0.58	0.61	0.53	7	6	11
Italy	0.58	0.64	0.46	7	3	19
Cyprus	0.28	0.32	0.33	26	26	26
Latvia	0.49	0.45	0.59	12	21	4
Lithuania	0.44	0.47	0.42	19	18	21
Luxembourg	0.65	0.59	0.63	1	7	1
Hungary	0.54	0.56	0.53	10	10	11
Malta	0.49	0.52	0.40	12	12	22
Netherlands	0.43	0.48	0.51	21	16	13
Austria	0.65	0.65	0.60	1	2	3
Poland	0.59	0.67	0.57	5	1	7
Portugal	0.59	0.59	0.63	5	7	1
Slovenia	0.41	0.49	0.37	23	15	25
Slovakia	0.57	0.55	0.58	9	11	5
Finland	0.47	0.46	0.47	17	19	18
Sweden	0.60	0.63	0.56	3	4	8
United Kingdom	0.44	0.42	0.45	19	22	20

Ratio of income from pensions of persons aged between 65 and 74 and income from work of persons aged between 50 and 59.
[1] CZ, EE, CY, LV, LT, HU, MT, PL, SI, SK.
Source: Eurostat.

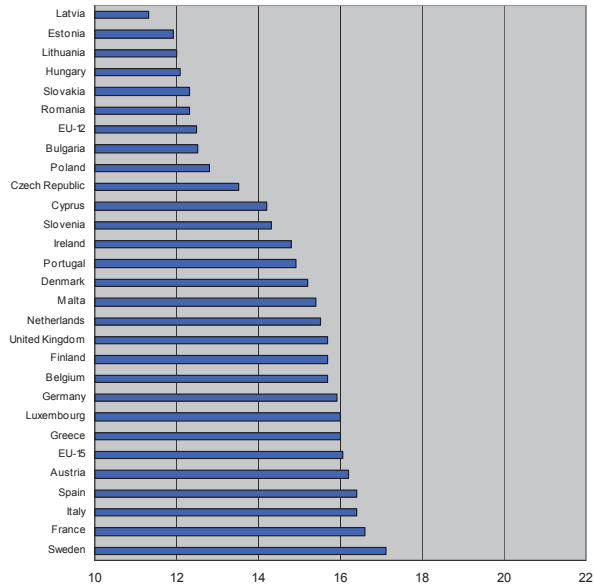
The generosity of pension systems varies between the EU Member States. Looking at the total average for men and women, Luxemburg and Austria are the countries with the highest replacement ratios (0.65), followed by Sweden, Bulgaria (both 0.60), Poland and Portugal (both 0.59).

5.5 Health status of older workers

5.5.1 Healthy life expectancy

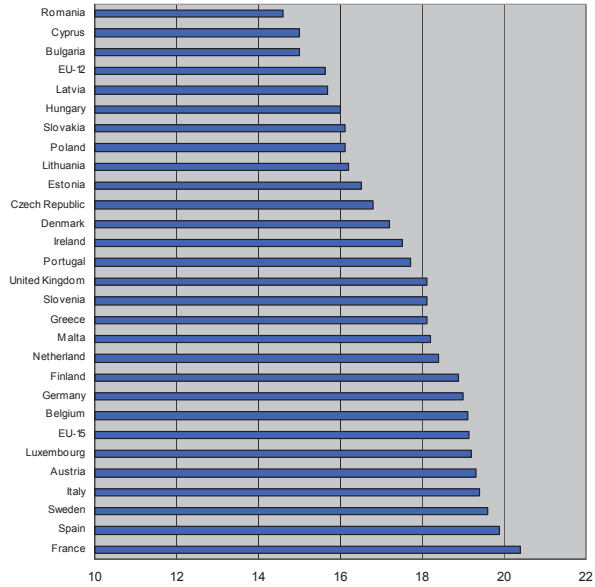
During the past years persistently a clear gap in health between the EU-15 and the EU-12 Member States could be observed, which refers to younger as well as to older persons. While men at age 60 in the EU-15 can expect to spend another 16 years in good health, women can expect to enjoy another 19 healthy years (*Figures 5.3* and *5.4*). Also in the EU-12 women are likely to spend more years in relative good health than men. But for both men and women healthy life expectancy in the EU-12 is still roughly 3.5 years lower than for citizens in the EU-15, with the exception of Malta. With regard to the health status of the elderly population the difference between both groups of Member States is still quite pronounced: no EU-12 Member State exceeds the EU-15 average, and no EU-15 Member State falls below the EU-12 average.

Figure 5.3 Healthy life expectancy, males, 2004



Source: World Heath Report, 2004.

Figure 5.4 Healthy life expectancy, females, 2004



Source: World Heath Report, 2004.

5.5.2 Disability

A recent OECD study assesses trends in disability among the population aged 65 and over in 12 OECD countries, including eight EU-15 countries (Lafortune and Balestat, 2007). The focus is on reviewing trends in severe disability (or dependency), defined where possible as one or more limitations in basic activities of daily living (ADLs), given that such severe limitations tend to be closely related to demands for long-term care. The main results of the study are rather mixed: in only four EU countries plus the United States there is clear evidence of a decline in disability among elderly people, in three countries the rate increases, and in two non-European countries the rate is stable. In France and the United Kingdom data from different surveys show different trends in ADL disability rates among elderly people, making it impossible to reach any definitive conclusion on the direction of the trend, and highlighting the methodological problems still prevalent in analyses of this kind, last but not least when analysed at a multi-country-level.

Facing those internationally mixed results, the OECD does not count on future reductions in the prevalence of severe disability among elderly people to offset completely the rising demand for long-term care that will result from population ageing. Even though disability prevalence rates have declined to some extent in some countries, the ageing of the population and the increasing longevity of individuals can be expected to lead to increasing numbers of people at older ages with a severe disability and in need of long-term care.

5.5.3 Risk factors for health

Among the multitude of factors contributing to the development of population health, some factors like education and obesity should be highlighted with regard to future trends. The average educational attainment of elderly people in most EU countries has increased significantly over the last few decades. In Austria, for example, only 2.9% of the population aged 50-59 years held a university degree in 1980, whereas the respective share had increased to 7.1% in 2000. In the same time span and age group the population share with only primary education fell from 54.4% to 31.4% (Riedel and Hofmarcher, 2002). The literature suggests that a higher level of education tends to coincide with a lower level of disability at all ages, albeit to a lesser degree at higher ages. Causal explanations for this effect are higher income and living standards and lower work-place related risks for better educated workers. Furthermore, a higher level of education could foster a healthier lifestyle, such as less smoking and alcohol drinking, a more healthy diet and more physical activity.

Freedman and Martin (1999) found education to be the most important factor in accounting for declining trends in functional limitations among older Americans, out of eight demographic and socio-economic variables considered. It was not so much a change in the link between education and functioning, but rather the increased educational attainment that helped to explain the decline. The positive link between education and health was later corroborated using British data (see Schoeni, Freedman and Wallace, 2001). Using SHARE[24] data, Bago D'Uva *et al.* (2007) demonstrate that inequalities in health by educational attainment are even likely to be underestimated if evaluations of self-assessed health are taken at face-value.

[24] See Börsch-Supan *et al.* (2005) for a description of the SHARE project and for initial research from the first wave of SHARE. Eleven countries have provided micro data (Denmark, Sweden, Austria, France, Germany, Switzerland, Belgium, the Netherlands, Spain, Italy and Greece) for the first wave in 2004. SHARE relies on self-reported information only and thus differs from databases containing information gathered by persons in the medical profession.

While the reduction in some risk factors to health like smoking may have contributed to reducing some functional limitations in old age, the rising prevalence of obesity among adults of all ages in EU countries might be having the contrary effect. Obesity is a risk factor for many of the leading causes of disability like arthritis, heart disease, diabetes. Peytremann-Brideveaux *et al.* (2008) found significant and substantial links between obesity and disability for European men and even more so for women. They use a pooled sample derived from the SHARE database consisting of non-institutionalized individuals aged 50 years and over from eleven European countries. They find that the odds ratios for high blood pressure, high cholesterol, diabetes, arthritis, joint pain and swollen legs were significantly increased for overweight and obese adults. Andreyeva *et al.* (2005) corroborate the strong association between obesity and major risk factors like diabetes and hypertension in European countries. But they find that cross-country differences exist in how obesity is related to depression, heart disease, and high cholesterol levels.

The prevalence of overweight and obesity is projected to increase in the near future, thus aggravating the strains to be expected for European health systems. The Surveillance of Chronic Disease Risk Factors (SuRF) Report 2 estimates that in Europe in 2010 the highest prevalence of obesity among adults aged 15 years and over will be found in Greece for men (30%) and in Greece and the United Kingdom (26%) for women. Those figures are by far not yet as high as those projected for the US, but nevertheless have to be considered when projecting future health (care cost) burdens. The costs of obesity are large. For the US, Sturm (2002) calculates that on the individual level, the effects of obesity on health care costs exceed those of smoking or problem drinking. At the aggregate level obesity accounts for about 6-10% of national health care spending in the US and 2.0-3.5% in other Western countries (see Andreyeva *et al.*, 2005).

With respect to several diseases like muscosceletal diseases which often are leading to early retirement, declines in the number of early retirement are observed, while mental health as a reason for early retirement is on the rise. According to Barnay and Debrand (2006), Parkinson's disease and cerebrovascular accidents are among the three diseases with the biggest impact on activity restrictions for European men and women as compared to a person reporting no disease, thus severely inhibiting the chances to stay in employment. Furthermore, in some countries disability pensions are quite often awarded for mental health problems (e.g. Austria: 19%, Denmark: 29%, Sweden: male 22%, female 19%, see Prinz, 2003). The share of mental ill health in all new disability pensions is rising, while the number of disability pensions due to cardiovascular or muscosceletal diseases is declining in several countries. In Austria in 1999, the share of psychiatric illnesses in all disability pensions granted for persons younger than 30 years of age was 40% (Prinz, 2003). Even though the rising (observed) prevalence of mental illness cannot be taken at face value (the awareness of mental health is rising and the stigma-effect is slowly being reduced) measures to improve the mental health situation in the workforce might contribute significantly to an extension of working life.

5.5.4 Self assessed health status and employment

Barnay and Debrand (2006) have evaluated the relationship between health and labour force participation using SHARE data for ten countries. In their sample the employment rate of 50-64 year olds is on average 62% (male) and 43% (female). This proportion varies from 23% (Italian women) to over 70% (in Sweden, Switzerland and Greece) and shows a different ranking in male and female sub-samples. Indicators of restrictions in activity are related to the capacity of individuals to participate in the labour market. Approximately one third (men: 31%, women: 38%) of the European population aged 50-64 is restricted in activities of daily living, about one of ten is even severely restricted (men: 9%, women: 11%). Northern European populations consider themselves more 'restricted in their activity' than other Europeans in the sample, with rates above

40% for women in Sweden, Denmark and the Netherlands and above 35% for men in Denmark and the Netherlands. However, based on other general health indicators from other sources, the Scandinavian countries have relatively good health states compared to the rest of Europe.

Barnay and Debrand (2006) evaluate also disease specific indicators of the health status. After controlling for the effects of age, educational level, marital status and country of residence on health status, their analysis shows that the diseases which are most detrimental to employment for men are hip fractures, cerebrovascular accidents, heart disease and diabetes. They find that the statistical interrelation between health and labour market participation in Europe shows that whatever health measurement tool is used, deterioration in health status leads to a reduction of the probability of employment for 50-64 year olds. Most importantly, they conclude that health states do not explain the differences in employment rate for men between European countries. Differences are more likely to relate to differences in national economic circumstances and to regulations like the legal age for retirement or mechanisms for leaving employment.

5.5.5 Health care systems and the extension of working life

If (early) retirement is to be reduced in order to extend working life, the question of the interrelationship between (early) retirement and health status arises. The seminal article by Bound *et al.* (1999) analyses the dynamic relationship between health and alternative labour force transitions. Their evidence suggests that not just poor health, but declines in health help explain retirement behaviour. Among those older workers who keep working, many change jobs within several years of the onset of their poor health, suggesting that changing jobs is an important way for older workers to enable continued labour force participation. This result was derived from US data, but might also become more relevant for Europe with the later transitions to retirement.

Disney *et al.* (2003) followed the approach by Bound *et al.* (1999) using the waves 1991-1998 of the British Household Panel Survey. They find deterioration in individual health to be strongly positively associated with movement out of work. Sensitivity analyses, however, raise doubts that the respective effects of health deteriorations and improvements on transitions out of and into work are symmetrical. Riphahn (1999) finds that also for older German workers a health shock increases transition probabilities: it trebles the probability of leaving the labour force and almost doubles the risk of becoming unemployed. The financial effects of the health shocks are relatively small.

To summarise, the existing literature suggests that a connection does exist between poor or deteriorating health and (early) transitions into retirement. Estimations for the strength of this relation depend upon estimation methodology and the health measure chosen, and several research questions are not yet solved. Furthermore, differences in specific national regulations concerning retirement make generalisations difficult.

While most of this paragraph is devoted to the issue of improving health as a means to shift retirement into higher age, also opposite effects must be taken into account. Higher labour force participation at older ages may lead to less time those workers can spend on informal care (of spouses and/or parents). Informal care by (mostly female) family members is still the predominant form of care in many EU countries, and even more so in countries with some kind of 'Bismarckian' health care system as compared to countries with a mostly tax-funded system. Therefore an extension of working life most likely will increase the pressure on institutional or formal arrangements of care for the frail elderly. This deserves close attention as some countries already face severe shortages in nursing staff, and some already increasingly rely on immigrants from poorer countries to fill gaps.

5.6 The welfare system and public pension spending

5.6.1 Trends of public spending on old-age pensions

Table 5.14 gives an overview of public expenditure for old-age pensions. In 2005 old-age pension spending measured as a percentage of GDP was 9.4% for the EU-27 and 9.5% for the EU-15 respectively. Overall pension expenditure remained stable over the 2000 to 2005 period. Among Member States old-age public expenditure in 2005 varied between 2.6% in Ireland and 11.4% in Italy. Public spending on old-age pensions also is relatively high in Austria (11.2%), Germany (10.9%) and France (10.5%). All of these countries not only have high levels of old-age pension expenditure at the moment, but saw their old-age pension expenditures also grow in absolute terms in the near past. In Germany and Austria, for example, old-age expenditure increased between 2000 and 2005 by 5.8% and 5.7% respectively.

Compared to the year 2000, public spending as a percentage of GDP decreased for example in Luxemburg (-38.8%), Latvia (-33.8%) and Estonia (-28.1%). In Ireland public spending accelerated by 52.9%. Having started from an initially low level in 2000 Ireland, however, still is the country with the lowest level of public old-age spending.

Table 5.14 Public expenditure on old age pensions as % of GDP, 2000 and 2005

	% GDP		Ranking		% Change
	2000	2005	2000	2005	2000-2005
EU-27	:	9.4			:.
EU-25	9.4	9.4			0.0
EU-15	9.5	9.5			0.0
Belgium	7.1	7.3	13	11	2.8
Bulgaria	:	6.0	:	20	:
Czech Republic	6.9	6.9	15	15	0.0
Denmark	6.6	7.3	19	11	10.6
Germany	10.3	10.9	3	3	5.8
Estonia	5.7	4.1	24	25	-28.1
Ireland	1.7	2.6	26	26	52.9
Greece	7.2	7.8	12	9	8.3
Spain	7.3	6.7	11	16	-8.2
France	10.3	10.5	3	4	1.9
Italy	10.9	11.4	1	1	4.6
Cyprus	5.2	6.2	25	19	19.2
Latvia	7.7	5.1	7	23	-33.8
Lithuania	6.7	5.3	18	21	-20.9
Luxembourg	6.8	4.2	17	24	-38.2
Hungary	6.5	7.2	20	13	10.8
Malta	7.1	8.1	13	7	14.1
Netherlands	7.7	8.1	7	7	5.2
Austria	10.6	11.2	2	2	5.7
Poland	7.7	7.8	7	9	1.3
Portugal	6.9	:	15	:	:
Romania	5.9	5.3	23	21	-10.2
Slovenia	7.4	6.5	10	17	-12.2
Slovakia	6.2	6.3	22	18	1.6
Finland	6.3	7.0	21	14	11.1
Sweden	8.6	8.5	6	6	-1.2
United Kingdom	9.8	9.1	5	5	-7.1

: not available.
Source: Eurostat.

5.6.2 Maintaining financial sustainability

In order to safeguard the fiscal sustainability of public pension systems it is essential to increase the effective retirement age. A number of recent scientific publications address the issue of the interaction of economic incentives with the retirement behaviour of individuals.

Duval (2004) analyses the relevance of standard and early retirement ages for retirement decisions. The author starts with a concept of pension wealth defined as the present value of expected pension benefits over his/her remaining life time. Changes in the net pension wealth from working for an additional years are regarded as implicit marginal tax (if negative) or subsidy (if positive) on continued work. A person who is already eligible to a pension or an early pension respectively but remains in the labour market faces forgone pension benefits over the remaining period of labour market participation plus additional pension contributions on labour income. If these additional costs are offset by increases in future pension benefits a pension scheme is actuarially neutral, if additional costs are not offset, a pension scheme provides implicit taxes on continued work. According to Duval changes in implicit tax rates and standard retirement ages explain a third of the trend decline in older males' labour force participation over the last three decades. Furthermore unemployment risks are found to have a significant influence on retirement decisions.

Blöndal and Scarpetta (1999) analyse determinants of retirement decisions on a cross-country OECD level. In their approach they focus on institutional disincentives for continuing work embedded in the pension systems. According to them retirement decisions are influenced by the legal retirement age, the replacement rate, the accrual profile and the contribution rate.

5.7 Pension reforms aiming at financial sustainability of public pension systems

The current trends cannot be separated from policy-reform efforts that aim at a prolongation of working lives and financial sustainability of public pension systems. OECD's 2007 edition of 'Pensions at a Glance' documents the policy reforms undertaken by OECD countries from 1990 onwards (OECD, 2007b). Thus a number of OECD countries have either undertaken far-reaching reforms that have changed the structure of their pension systems or adopted a series of smaller reforms "which, taken together, often also have had a substantial impact on future pension entitlements." (OECD, 2007b, p. 55). With population ageing and the expected shrinking of the working age population, most of these policy reforms were responses to the aim of 1) increasing the mid- and long-term financial sustainability of pension systems and 2) ensuring sufficient labour supply. Countries applied different strategies and ways of adapting pension system and labour force transitions to socio-demographic trends. Generally, pension systems feature a set of 'policy-levers' relevant to employment and retirement decisions. Accordingly policy reforms focused on various aspects of pension systems.

5.7.1 Increasing pension eligibility age

In the EU-27 the male standard pension eligibility age is 65 (*Table 5.15*). As of January 1st, 2007 this is the case in 16 out of the 27 EU Member States. In 11 countries male legal retirement ages are below 65. The only country with male legal retirement ages above 65 is Denmark, where people born before July 1st, 1939 are eligible to the residence oriented basic pension from an age of 67. Younger people can demand a pension from an age of 65 at a proportional reduction. Male legal ages are currently increasing for example in the Czech Republic and Slovenia, to 63 years, and in Romania, to 65 years. From all EU-27 countries France (60 years) is the country with the lowest male retirement age. In Germany male retirement ages are designated to increase up to 67 years between 2012 and 2029.

Table 5.15 Legal retirement age for men and women, 1 January 2007

Country	Men	Women	Additional Information and Comments
Austria	65	60 (+)	For women, the standard age is currently 60 years but will be increased to 65 by 2033.
Belgium	65	64 (+)	For women, the eligibility age will be raised to 65 in 2009.
Bulgaria	63	59 (+)	The conditions for acquiring a pension are related to a point system. The number of points is given as sum of the age in years plus the number of years insured. Currently men are eligible from an age of 63 and 100 insurance points, women are eligible from an age of 59 and 93 points. For women the age and the number of points required are increasing each calendar year by 6 months and 1 point until 2009 when the minimum age will be 60 and number of points required will be 94.
Czech Republic	61.7 (+)	60 (+)	The retirement age for women refers to women with no children. The pensionable retirement age for women decreases depending on the number of children. For women with 1 child it is 58 years and 8 months for women with 5 children it is 55 years and 8 months. The standard retirement age will be gradually (year by year) increased to 63 for men and women with no children. The pension eligibility age will be 59-62 for women with children (depending on the number of children).
Cyprus	65	65	An insured person is entitled to old age pension at the age of 63 years if: (i) he or she satisfies the contribution conditions and has weekly average of insurable earnings equal to 70% of the weekly amount of the basic insurable earnings, or (ii) he or she was entitled to invalidity pension immediately before reaching the age of 63 years.
Denmark	65	65	Retirement age refers to the basic social pension (Folkepension). For people born before the 1st July 1939 the standard age is 67. Standard age for supplementary pension is 67. People born after 1st July 1939 can demand the pension before 67 (at a proportional reduction), but not before the age of 65.
Estonia	63	60 (+)	Pensionable retirement age is gradually increasing and will be equalised for men and women at the age of 63 by 2016.
Finland	65	65	The national pension (Kansaneläke) is payable from age 65. Within the scope of the statutory earnings-related old-age pension (Työeläke) retirement age is flexible from 63 to 68.
France	60	60	Age refers to the general scheme for employees (RGAVTS). It is 65 within the scope of complementary schemes for employees (ARRCO) and management staff (AGIRC). There is a possibility to obtain a pension at the age of 60 if the basic pension was accorded at a full rate.
Germany	65 (+)	65 (+)	The pension is payable from age 65 with a minimum contribution period of five years and from age 63 with 35 years' for those born in 1952 and later. A legal basis for a gradual increase of the standard retirement age to 67 years between 2012 to 2029 (starting with those born in 1947) is provided.
Greece	65	65	Pension age refers to people who entered the labour market after 1st January 1993. It is 65 for men and 60 for women who entered the labour market before.
Hungary	62	61 (+)	For men the eligibility age was raised from 60. It reached 62 in 2000. For women legal retirement age is currently increasing. Legal retirement ages for men and women will be equalised at 62 from the end of 2009.
Ireland	65	65	Age refers to the basic retirement pension. It is 66 within the scope of the contributory Old-Age Pension.
Italy	65	60	Age refers to persons insured before 1st January 1996. For persons insured since 1st January 1996 retirement age is flexible from 57 to 65. For persons with a disability of at least 80% and blind people retirement age is 60 years for men and 55 years for women.
Latvia	62	61.5 (+)	For women, the retirement age is increasing by 6 months every year until it reaches 62 years. It was 61.5 by 1.1.2007 and 62 in 2008.
Lithuania	62.5	60	
Luxembourg	65	65	A standard pension is payable from an age of 60 with a contribution period of 40 years. Otherwise the normal pension age is 65.
Malta	61 (+)	60 (+)	Legal retirement age refers to persons born before 1st January 1952. For persons born after 1st January 1962 legal retirement age will be 65 years for both men and women. For age groups born between (1952 to 1962) legal retirement ages increase by one year up to 64 for persons born during the calendar years 1959 to 1961.
Netherlands	65	65	
Poland	65	60	
Portugal	65	65	
Romania	63 (+)	58 (+)	Retirement ages are currently increasing until they reach 65 for men and 60 for women in 2014.
Slovakia	62	60.75 (+)	Retirement age of 62 for all population groups will be reached in 2014. For men a pension age of 62 was already reached in 2006. Regarding women retirement ages are increasing by 9 month per year until it reaches 62 years for all women in 2014. Thus in 2007 female retirement age varied from 56.75 to 60.75 depending on the number of children.
Slovenia	62 (+)	60.67 (+)	Final retirement age of 63 for men and 61 for women is reached in 2009 for men and 2008 for women respectively.
Spain	65	65	
Sweden	65	65	Retirement age of 65 refers to the residence oriented guarantee pension. The maximum guarantee pension can be claimed with 40 years of residence. With regard to the income pension and the premium pension retirement age is flexible between 61 and 67. The income-tested guarantee pension can, however, not be claimed before 65.
United Kingdom	65	60 (+)	Retirement age will gradually increase to 65 for women over the period 2010 to 2020.

(+) Legal retirement age is either currently increasing or the legal basis for a later increase is provided.
Sources: European Commission, 2007; OECD, 2007b.

For women, the legal retirement age varies from 58 years in Romania to 65 years in 11 countries observed (for example Denmark, Spain and Ireland). In Romania the female exit age is being raised to 60 years by the year 2014. In another group of nine countries (such as Austria, Poland and the United Kingdom) women are entitled to a standard pension from the age of 60.

Some of the countries are currently equalising female legal ages with those of men by raising the former. This applies to Estonia, Latvia, Slovakia, Austria and the United Kingdom. Increases in legal pension ages that affect both men and women are currently implemented in the Czech Republic, Slovenia and the Slovakia (OECD, 2007b).

5.7.2 Increasing flexibility of retirement decisions and incentives for continuing in work

Various countries have sharpened the incentive structure for continuing in work. In this respect penalties for early retirement and bonuses for later retirement respectively have been either introduced or strengthened. In some countries the number of contribution years required to receive a pension (without deductions) has been increased.

In France the 2003 reform led to an increase in the number of contribution years required for a pension without deduction (this will be further increased in line with future increases in life expectancy). Furthermore incentives to work longer have been strengthened (European Commission, 2006b). The number of contribution years required to receive a pension without deduction was also increased in Austria. At the same time the incentives to take up early pensions decreased through a strengthening of the so-called bonus/malus system. The Finnish pension reform, implemented mainly between 2003 and 2005, strengthened the incentives to work by providing a higher accrual of pension rights for older workers. In Hungary previously higher accrual rates for younger workers were reduced to a uniform level for all groups. Similar measures have also been introduced in Germany and Portugal.

The 2003 Joint Report on Social Protection and Social Inclusion (see EU-Commission, 2003, p. 56) points out that that the age at which individuals choose to retire depends on the rules and incentives linked to early or deferred retirement. In Denmark, Ireland, the Netherlands and the United Kingdom, for example, it is not possible to draw a standard state pension prior to the age of 65. As a consequence the take-up of pensions at the age of 65 and over is high. On the other side, for example Hungary and Slovakia, offer relatively smooth conditions for early retirement. This leads to a high proportion of workers retiring before the statutory pension age. People tend not to defer their pension age when the conditions for early retirement are smooth and early retirement schemes are easily accessible.

Member States provide different conditions for drawing an early pension. In some Member States it is possible to draw a statutory pension prior to the standard pension age, when certain contribution periods or years are fulfilled. This is the case for example in the Czech Republic, where an early pension can be drawn three years prior to the standard retirement age, if the claimant has an insurance record of at least 25 years (see European Commission, 2008c). In Belgium workers can retire from the age of 60 (standard retirement age is 65 for men and from 2009 also for women) after 35 years of professional activity. In Italy after a contribution period of 35 years early pensions are accessible from the age of 58 for employees and 59 for self-employed respectively. After a contribution period of 40 years individuals can draw an early pension regardless of age.

Some Member States list certain professions in order to account for a ‘harder’ working life. This is the case for instance in Austria, Italy and Spain. In Spain the statutory pension eligibility age can be reduced for certain groups whose professional activity is arduous, toxic, dangerous or unhealthy.

Regarding working beyond the standard retirement age some countries such as Germany, Estonia, UK and Spain provide unlimited deferment rules. In order to set up incentives for prolonged working lives all countries that provide deferment rules within their standard pension schemes take account for employment periods after the standard retirement age has been reached. However, pension schemes vary in the extent to which additional employment periods are taken into account.

Another strategy to increase the flexibility of retirement decisions is the introduction of partial pension schemes. These allow people to continue working while drawing a certain part of their pension.

5.7.3 Changes in the calculation of benefits

In a number of countries with earnings-related pension schemes the assessment base for calculating benefits was extended. Since final earnings tend to be higher than the lifetime average, taking into account lower earnings from earlier years, the extension of assessment periods and contribution years generally has a diminishing effect on pension benefits.

France, for example, extended the assessment period from the best 10 years to the best 25 years. Austria is extending the assessment period to 40 years. Also Finland, Poland, Portugal, and Sweden are changing to a lifelong assessment period. This is also the case in Slovakia, where previously the best five years in the final ten years had been taken into account.

5.7.4 Changes of the valorisation of past earnings

In earnings-related public pensions schemes past earnings have to be re-valued in order to compensate for devaluation and to take account of changes in living standards. Some countries introduced changes in the valorisation of past earnings (for example by applying or changing weights to wage and/or price growth) and moved to a less 'generous' pre-retirement indexation in order to maintain financial sustainability. Some countries moved away from taking into account economy-wide wage growth. For example, in 1985 France introduced price valorisation in the public scheme. In 1996 the same was done with regard to the occupational schemes. In Finland, Poland and Portugal valorisation is based on a mix of wage and price growth.

5.7.5 Changing the indexation of pensions in payment

Whereas pre-retirement indexation concerns the valorisation of previous earnings, post-retirement indexation refers to the adjustment of pensions benefits. In recent years, some countries changed from an earnings-based calculation of benefits to a full or partial indexation to prices. In the 2007 edition of OECD's 'Pensions at a glance' the authors note, that "this preserves the purchasing power of pensions, but means that pensioners do not share in the general growth in living standards." (OECD 2007b, p. 61).

Hungary, Poland and Slovakia adjust pension benefits by applying a mixed index composed by wage growth and price inflation. In Germany in 2004 a 'sustainability factor' was introduced allowing for adjustments to the pension indexation formula if the (dependency-) ratio between contributors and beneficiaries changes. In Italy small and medium-level pensions are completely (100%) adjusted to price inflation, while higher pensions increase by less (75% to 90%).

5.7.6 Linking pensions to higher life expectancy

Changes in life expectancy can be taken into account by reducing the level of benefits and/or by increasing effective retirement ages and/or the number of contribution years necessary to receive a full benefit. Strict defined-benefit schemes often lack of mechanisms that compensate for changes in life expectancy. Defined contribution-schemes, on the other hand, automatically adjust benefits

to life expectancy by lowering annuity benefits in line with higher life expectancy. Some countries introduced elements of defined-contribution systems by taking into account higher life expectancy. For example, Hungary, Poland, Slovakia and Sweden have introduced funded defined-contribution plans as a substitute for part of their public defined-benefit schemes. Finland introduced a 'life-time coefficient' with the affect of adjusting future pensions to increases in life expectancy. This is also the case in Portugal where changes in life expectancy at retirement affect the calculation of benefits. Denmark, on the other hand, has introduced a linkage between the pension eligibility age and increasing life expectancy. France, with the 2003 reform, linked the required number of contribution years to increasing life expectancy.

5.8 Policy challenges, Lisbon and other targets

The Lisbon Strategy is the European Union's multidimensional policy approach aimed at increasing economic growth and social cohesion. The Lisbon Agenda comprises a network of guidelines and targets. EU Member States are encouraged to develop National Action Plans in which they formulate their strategies and policy measures in order to reach the Lisbon objectives. Regarding the integration of the elderly into the labour market the ultimate Lisbon target is to achieve an average employment rate for the EU of 50% for older workers between 55 and 64 years of age as well as to reduce unemployment and to raise labour force participation.

Concerning older workers the EU Member States still fall short of the employment target formulated within the scope of the Lisbon Strategy. As is shown in table 5.4, the overall employment rate for 55 to 64 year old workers was 44.7% in 2007. Regarding the other objectives to lower unemployment and inactivity gradual progress can be observed. As can be seen in table 5.5, unemployment rates declined over the 2001 to 2007 period by 17.9% for men and 12.7% for women in the EU-27. The unemployment rate decline for older men even exceeded the overall unemployment trend decline. For women the unemployment rate decreased by 12.7%. However, this corresponds to a lower decline as compared to the overall unemployment rate. The EU Member States have made considerable progress as regards the labour force participation of older workers. Female activity rates rose by 26.6% over the 2001 to 2007 period and the corresponding increase of male activity rates is 11.7%.

Although the Lisbon target is still not attained as regards older workers' employment rates, considerable progress was made in terms of lowering unemployment and raising the labour force participation of older workers. Furthermore, almost all EU Member States were successful at increasing the average exit ages from the labour market.

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