



# Demographic change and work in Europe

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This report is available in electronic format only.

*Demographic change is, without any doubt, one of the megatrends that will influence Europe in many ways during the next decades. The European Council and the European Commission have recognised this for some years now and it has even been reflected in the EU Treaty. This report focuses on the most relevant probable effects of demographic change on work in Europe – a shrinking workforce and the changing composition of this workforce.*

Demographic change is a major challenge to the European economy. This has been recognised by European policymakers who even included the necessity to keep the issue on the agenda in the [EU Treaty](#). Article 159 of the ‘social policy’ chapter states:

*The Commission shall draw up a report each year on progress in achieving the objectives of Article 151, including the demographic situation in the Union.*

Article 151 refers to the general objectives of EU social policies, explicitly mentioning:

*... the promotion of employment, improved living and working conditions, so as to make possible their harmonisation while the improvement is being maintained, proper social protection, dialogue between management and labour, the development of human resources with a view to lasting high employment and the combating of exclusion.*

This report is structured as follows. The first part outlines the basics of demographic change in Europe. The second part discusses the most relevant demographically driven trends in the work sphere. The final part identifies possible measures to cope with the demographic change.

## **Relevant features of demographic change in Europe**

Demographic development is constituted by the interplay of three factors: fertility, mortality and [migration](#). The first two are usually referred to as ‘natural’ factors.

### **Fertility**

The most relevant indicator measuring fertility is the so-called ‘total fertility rate’ (TFR). This indicator is defined by [Eurostat](#) in the [Demographic statistics](#) section of its Concepts and Definitions Database ([CODED](#)) as:

*The mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age of a given year. This rate is therefore the completed fertility of a hypothetical generation, computed by adding the fertility rates by age for women in a given year.*

The TFR is a standardised indicator that allows a comparison of fertility rates between different countries. It is also used to indicate the so-called ‘replacement level fertility’ (RLF), which is defined as the level of fertility at which a population exactly replaces itself from one generation to the next. In developed countries, the RLF can be taken as requiring an average of 2.1 children per woman.

The absolute number of children being born also depends on the size of cohorts of women of childbearing age. If there are many women in these cohorts, even a low TFR may result in a relatively high number of children being born, thus ‘hiding’ the long-term effects of a low TFR. Exactly this seems to have happened in Europe since the 1960s.

As shown in Table 1, the TFR was above the RLF of 2.1 in all EU27 countries (except Hungary) in the 1960s. This situation has changed radically with nine EU countries below the RLF in the

1970s, 22 countries below the RLF in the 1980s and all EU27 countries below the RLF since the mid-1990s. Only a handful of countries within the European Union report fertility rates anywhere near the replacement level in 2006, despite the small recovery in the TFR during latter years.

**Table 1: Total fertility rates in the EU, 1960–2006**

	<b>1960– 1964</b>	<b>1970– 1974</b>	<b>1980– 1984</b>	<b>1990– 1994</b>	<b>1995– 1999</b>	<b>2000– 2004</b>	<b>2006</b>
<b>EU27</b>	2.64	2.23	1.79	1.56	1.47	1.46	1.53
<b>AT</b>	2.78	2.08	1.61	1.49	1.39	1.38	1.40
<b>BE</b>	2.64	2.07	1.61	1.62	1.58		1.74
<b>BG</b>	2.23	2.16	2.01	1.57	1.18	1.24	1.37
<b>CY</b>	3.47	2.38	2.46	2.35	1.85	1.54	1.47
<b>CZ</b>	2.22	2.14	2.01	1.72	1.18	1.17	1.33
<b>DE</b>	2.64	1.77	1.48	1.32	1.33	1.35	1.32
<b>DK</b>	2.58	1.97	1.44	1.73	1.76	1.76	1.83
<b>EE</b>		2.13	2.12	1.67	1.33	1.39	1.55
<b>EL</b>	2.25	2.33	2.02	1.37	1.27	1.27	1.39
<b>ES</b>	2.86	2.87	1.94	1.30	1.17	1.27	1.38
<b>FI</b>	2.68	1.64	1.68	1.82	1.75	1.75	1.84
<b>FR</b>	2.83	2.36	1.88	1.72	1.80	1.90	2.00
<b>HU</b>	1.88	2.01	1.82	1.77	1.40	1.30	1.34
<b>IE</b>	3.91	3.84	2.92	1.99	1.89	1.93	1.90
<b>IT</b>	2.50	2.37	1.55	1.28	1.21	1.27	1.35
<b>LT</b>	2.57	2.28	2.04	1.86	1.49	1.29	1.31
<b>LU</b>	2.33	1.77	1.48	1.65	1.72	1.66	1.65
<b>LV</b>		2.01	2.01	1.70	1.18	1.24	1.35
<b>MT</b>	3.16	2.21	1.98	2.02			1.41
<b>NL</b>	3.17	2.15	1.52	1.59	1.58	1.73	1.70
<b>PL</b>	2.76	2.24	2.33	1.93	1.51	1.27	1.27
<b>PT</b>	3.16	2.71	2.05	1.53	1.46	1.46	1.35
<b>RO</b>	2.10	2.65	2.18	1.55	1.39	1.30	1.31
<b>SE</b>	2.30	1.90	1.64	2.04	1.57	1.64	1.85
<b>SI</b>	2.25	2.14	1.91	1.38	1.25	1.23	1.31
<b>SK</b>	2.93	2.50	2.29	1.94	1.42	1.22	1.24
<b>UK</b>	2.86	2.20	1.81	1.78	1.71	1.68	1.84

Source: European Commission, 2009

Within the EU there are roughly two groups of countries:

- those with a moderately low fertility (in the range of 1.6–1.9 births per woman) including Belgium, France, Ireland, the Scandinavian countries and the UK;
- those with very low fertility (in the range of 1.5 births or less) including the southern and eastern European countries of the EU as well as Austria and Germany and.

Despite the more than 40% decline in the TFR between the 1960s and 2006, the number of live births ‘only’ fell from 7.6 million in 1965 to 5.2 million in 2006, with the number of births increasing slightly during the last years of this period.

## Mortality

The European Commission [Demography report 2008: Meeting social needs in an ageing society \(3.16MB PDF\)](#) points out that:

*... one of the most impressive socio-economic achievements of developed societies has been the marked reduction in mortality or, in other words, the large increase in life expectancy. (p. 53)*

Despite the fact that statistics do not cover all current Member States for the whole period of time, there is a consensus among experts that there has been a continuous (and, in historical terms, dramatic) increase in life expectancy in Europe since the 1950s which is still continuing (Table 2).

**Table 2: Life expectancy in Europe, 1960–2007**

	1960	1970	1980	1990	2000	2007
AT		70.12	72.73	75.83	78.35	80.39
BE	69.72	71.00	73.27	76.17	77.86	79.89
BG	69.30	71.24	71.06	71.21	71.64	73.00
CY					77.73	80.03
CZ	70.66	69.59	70.39	71.47	75.13	77.02
DE	69.21	70.71	73.13	75.44	78.31	80.09
DK			74.18	74.90	76.87	78.40
EE				69.90	70.78	73.12
EL		73.84	75.28	77.07	78.01	79.42
ES			75.42	76.99	79.35	81.05
FI			73.70	75.06	77.76	79.57
FR					79.16	
HU	68.10	69.25	69.12	69.38	71.85	73.61
IE				74.80	76.58	79.75
IT				77.10	79.92	
LT		71.08	70.53	71.46	72.19	70.92

	1960	1970	1980	1990	2000	2007
LU			72.84	75.66	78.04	79.52
LV						71.16
MT			70.40		78.37	79.93
NL				77.09	78.19	80.42
PL				70.71	73.83	75.36
PT	63.97	66.71	71.46	74.08	76.71	79.13
RO		68.15	69.20	69.86	71.18	73.24
SE		74.73	75.79	77.68	79.77	81.09
SI				73.93	76.15	78.42
SK	70.30	69.84	70.44	71.07	73.30	74.55
UK					77.98	

*Source: Eurostat dataset 'Life expectancy by sex and age' (selection), 2009*

Again, there are considerable differences between the 27 EU Member States (EU27), of which the most obvious is the remarkably lower life expectancy in the new Member States from Eastern Europe.

It is well-known that women have a longer life expectancy than men. In 2004 (the last time the data were available for all EU27 countries), women lived on average 6.3 years longer than men (81.5 vs. 75.2 years).

In the past, the reduction of live births was overcompensated by the fact that, on average, people lived longer. Therefore, the natural population change has been positive in the EU27 over the last decades, though not in all individual Member States. However, it is easy to see that this natural growth of the population cannot be sustainable because of the long-term effects of the reduced TFR.

## Migration

Since the 1990s, migration has been the most important factor influencing the size of the population in the EU27 – much more than natural population growth. Whereas, in 2007, natural population growth in the EU27 accounted for a growth in the population of 483,538 people, net immigration led to a growth in the population of the EU27 of 2,101,579 people – that is more than four times greater than the natural population change. The Commission's 'Demography report 2008' (p. 62) points out that 'the EU has thus become a major destination for global migration flows, surpassing even the US.'

Migration from other EU27 countries as well as from third countries has resulted in a considerable number of non-nationals living in EU Member States. As shown in Table 3, these non-nationals are quite unevenly distributed among EU27 countries.

**Table 3: EU27 population by citizenship, 1 January 2007**

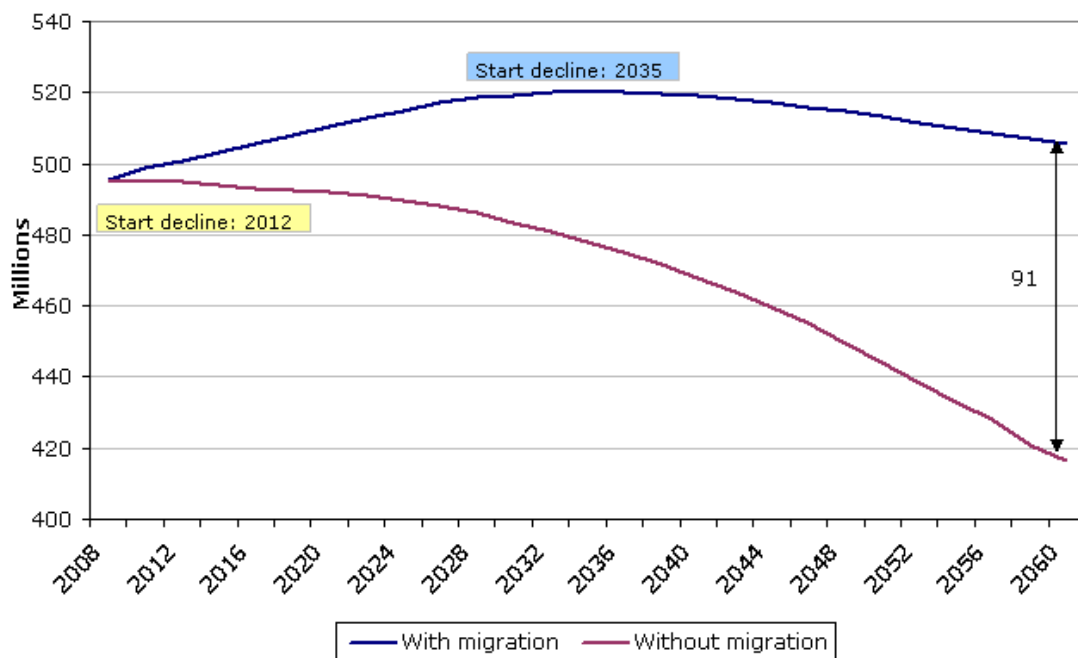
		Of which non-nationals		As % of total population		Acquisitions of citizenship in 2006	
	Total population	Non-EU27	EU27	Non-EU27	EU27	Total	As % of third-country nationals
<b>AT</b>	8,298,923	550,129	275,884	6.6	3.3	25,746	4.7
<b>BE</b>	10,584,534	300,816	631,345	2.8	6.0		
<b>BG</b>	7,679,290	21,690	3,800	0.3	0.0	6,738	31.1
<b>CY</b>	778,684	47,184	70,900	6.1	9.1		
<b>CZ</b>	10,287,189	186,370	109,866	1.8	1.1	2,346	1.3
<b>DE</b>	82,314,906	4,788,792	2,467,157	5.8	3.0	124,566	2.6
<b>DK</b>	5,447,084	196,877	81,219	3.6	1.5	7,961	4.0
<b>EE</b>	1,342,409	229,709	6,700	17.1	0.5	4,781	2.1
<b>EL</b>	11,171,740	729,840	157,700	6.5	1.4	1,962	0.3
<b>ES</b>	44,474,631	2,856,796	1,749,678	6.4	3.9	62,375	2.2
<b>FI</b>	5,276,955	79,277	42,462	1.5	0.8	4,433	5.6
<b>FR</b>	63,392,140	2,369,540	1,280,500	3.7	2.0	147,868	6.2
<b>HU</b>	10,066,158	66,827	101,046	0.7	1.0	6,101	9.1
<b>IE</b>	4,312,526	141,156	311,150	3.3	7.2	5,763	4.1
<b>IT</b>	59,131,287	2,332,734	606,188	4.0	1.0	35,266	1.4
<b>LV</b>	2,281,305	426,687	6,264	18.7	0.3	18,964	4.4
<b>LT</b>	3,384,879	37,354	2,333	1.1	0.1	467	1.3
<b>LU</b>	476,187	27,227	170,986	5.7	35.9	1,128	4.1
<b>MT</b>	407,810	4,610	9,261	1.1	2.3	474	10.3
<b>NL</b>	16,357,992	437,014	244,918	2.7	1.5	29,089	6.7
<b>PL</b>	38,125,479	30,955	23,928	0.1	0.1	989	3.2
<b>PT</b>	10,599,095	339,295	95,600	3.2	0.9	3,627	1.1
<b>RO</b>	21,565,119	20,095	5,974	0.1	0.0	29	0.1
<b>SE</b>	9,113,257	266,509	225,487	2.9	2.5	51,239	19.2
<b>SI</b>	2,010,377	50,549	3,006	2.5	0.1	3,204	6.3
<b>SK</b>	5,393,637	12,912	19,218	0.2	0.4	1,125	8.7
<b>UK</b>	60,852,828	2,203,028	1,456,900	3.6	2.4	154,015	7.0

Source: European Commission, 2009

## Future demographic scenario

In March 2008, Eurostat published population projections for 2008–2060 (EUROPOP2008) for EU Member States, Norway and Switzerland (Giannakouris, 2008). EUROPOP2008 is based on a mandate from the [Economic and Financial Affairs Council \(ECOFIN\)](#) which uses it as the basis for calculating projections of public expenditure related to population ageing in the EU. Its projections offer an insight into the possible future population development in individual Member States, taking into account socioeconomic and cultural differences among them. The main finding of the projection is that ‘without the assumed net migration inflow, Europe’s population would start shrinking from 2012 onwards’ (European Commission, 2009, p. 70).

Figure 1: Population size of EU27 with and without immigration, 2008–2061



Population size of EU27 with and without immigration, 2008–2061

Source: European Commission, 2009

## What does the demographic change mean for work?

The demographic change has manifold influences on the sphere of work. The most significant are the effects on the labour market. It is possible to distinguish between quantitative effects on the labour market supply and qualitative effects, in particular a changing composition of the workforce (with respect to age, gender and nationality) with various secondary effects such as health and safety, and [lifelong learning](#). The quantitative and qualitative effects are discussed in more detail below.

### Demographic change and future labour market supply

When examining the present age structure of the workforce in Europe it is easy to see how the so-called ‘baby boomer’ generation, which was born in the 1950s and 1960s, stabilises the labour market supply. But it is also clear that the baby boom cohorts will start to retire within a few

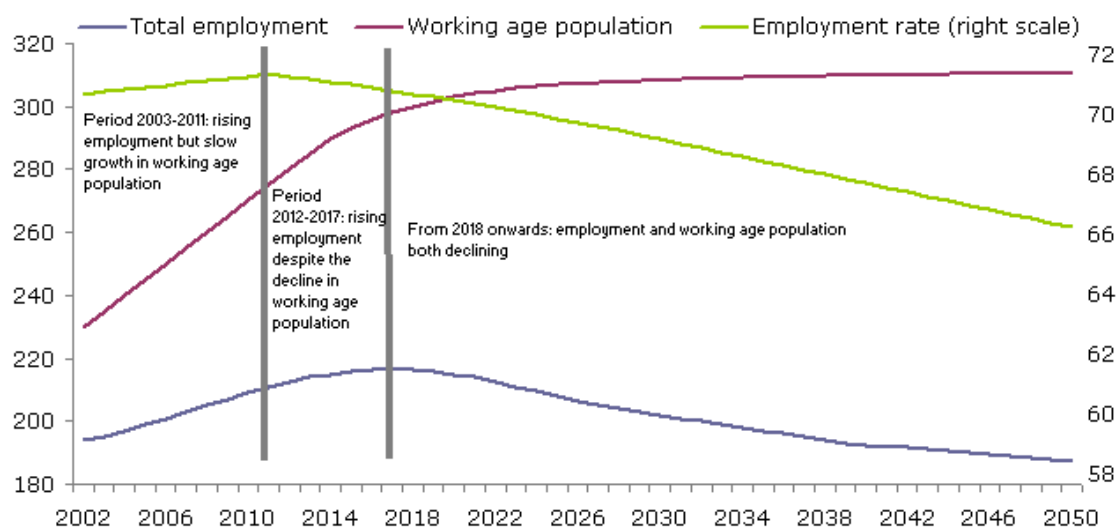
years. This will lead to a decline in the population of working age people (those aged 15–64 years) from 2011 onwards. Nevertheless, this will not automatically result in a shrinking workforce as, at the same time, a rise in labour market participation is expected. Female employment rates as well as the employment rates of older workers are expected to rise.

Therefore, experts expect the following scenario:

- until 2011, an increase in labour market supply is expected as both the working age population and labour market participation rates rise;
- between 2012 and 2017, the rise in employment rates will overcompensate for the decline in the size of the working age population and, therefore, the European workforce will still grow during this period;
- after 2018, the ageing effect will no longer be compensated for by growing labour market participation rates, leading to a decline in total employment in Europe.

This scenario is depicted in Figure 2.

*Figure 2: Projected working age population and total employment, EU25, 2002–2050*



### Projected working age population and total employment, EU25, 2002–2050

Source: European Commission, 2007

After 2018, European economies may face considerable shortages in their labour supply. Interestingly, a study for the European Commission by Alphametrics on [The implications of demographic trends for employment and jobs \(executive summary, 110Kb PDF\)](#) stressed that, even before 2018, there will not only be a shortage of workers with high-level qualifications as there is a general ‘shift in demand towards workers with higher educational levels’ (p. iv) but there will also be a growing demand for low-skilled workers. The latter results from the replacement demand for labour as many low-skilled members of the baby boom generation will be retiring.

### Changing composition of the workforce

There are three medium-term trends concerning the composition of the workforce which are direct or indirect results of the demographic change and which are relevant for the future of work in Europe. There will be:

- an ageing workforce;



- a feminisation of the workforce;
- a growing number of migrant workers.

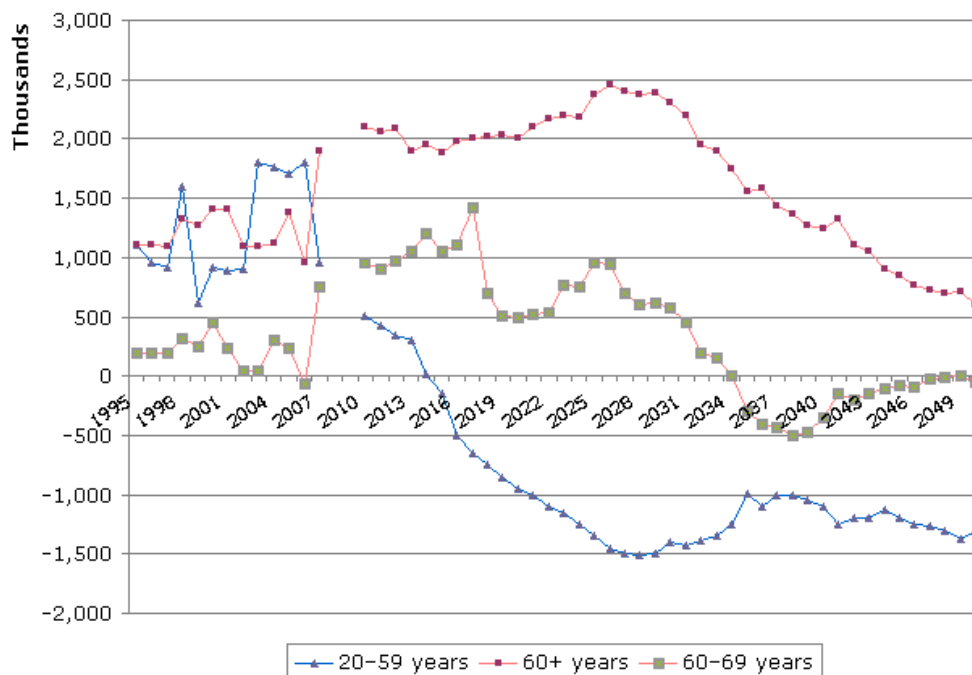
## Ageing workforce

Different reasons can be identified for the ageing of the workforce. One is the size of the cohorts of working age people and the other is the trend towards a higher rate of participation in the labour market by ‘older’ people (that is those above 55 years of age).

As mentioned above, the current situation on the supply side of the labour market is characterised by the fact that the strong birth cohorts from the 1950s and 1960s are approaching retirement age whereas the reduced fertility in the EU means that only weak birth cohorts are entering the labour market. This asymmetrical age structure automatically leads to an ageing workforce – at least until the strong cohorts leave the labour market.

As shown in Figure 3, the EU27 population aged between 20 and 59 years will shrink quite dramatically in the years after 2014, whereas the age group between 60 and 69 years (which might be called ‘potentially relevant’ for the labour market) will grow for another 20 years.

*Figure 3: Population change over previous year, EU27, 1995–2049*

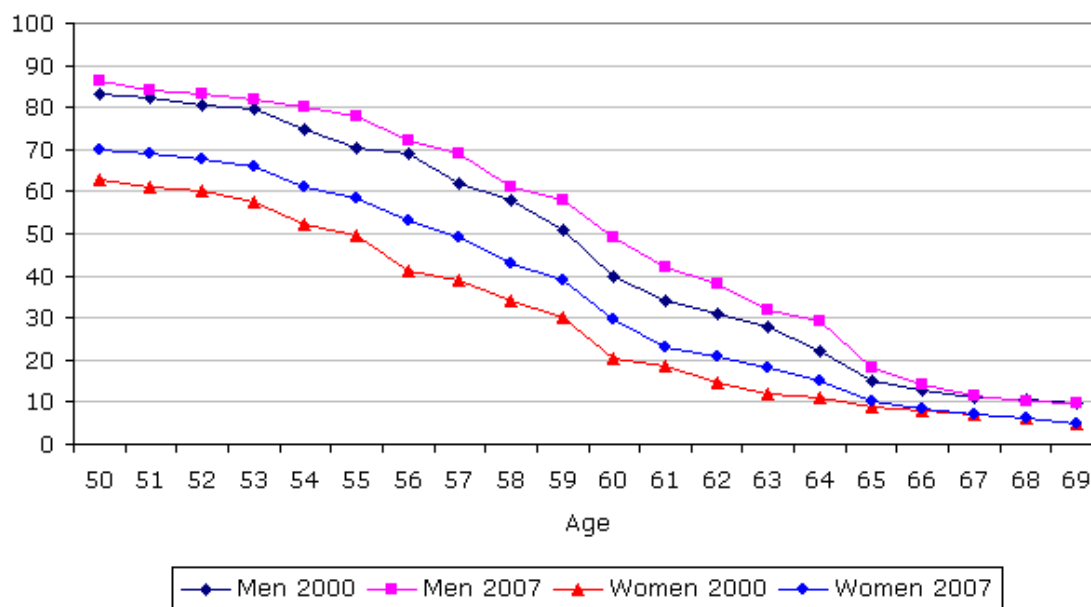


**Population change over previous year, EU27, 1995–2049**

Source: European Commission, 2009

Thus, while the ‘size of cohorts’ factor will lose its relevance in the 2020s when the baby boom generation will have retired, a higher employment rate of older workers seems to be sustained. The European Commission currently projects the employment rates of older workers to reach 47% by 2010 and 59% in 2025 for the EU25 (25 Member States prior to EU enlargement in 2007).

*Figure 4: Employment rate of people aged 50–69 years, by gender and age, EU27, 2000 and 2007 (%)*



**Employment rate of people aged 50–69 years, by gender and age, EU27, 2000 and 2007 (%)**

Source: European Commission, 2009

The ‘greying of Europe’ – as it was called in the report, *Facing the challenge: The Lisbon Strategy for growth and employment* (Kok High Level Group, 2004) – will also lead to a considerable increase in spending on pensions, which puts additional stress on public expenditure. Therefore it may be expected that:

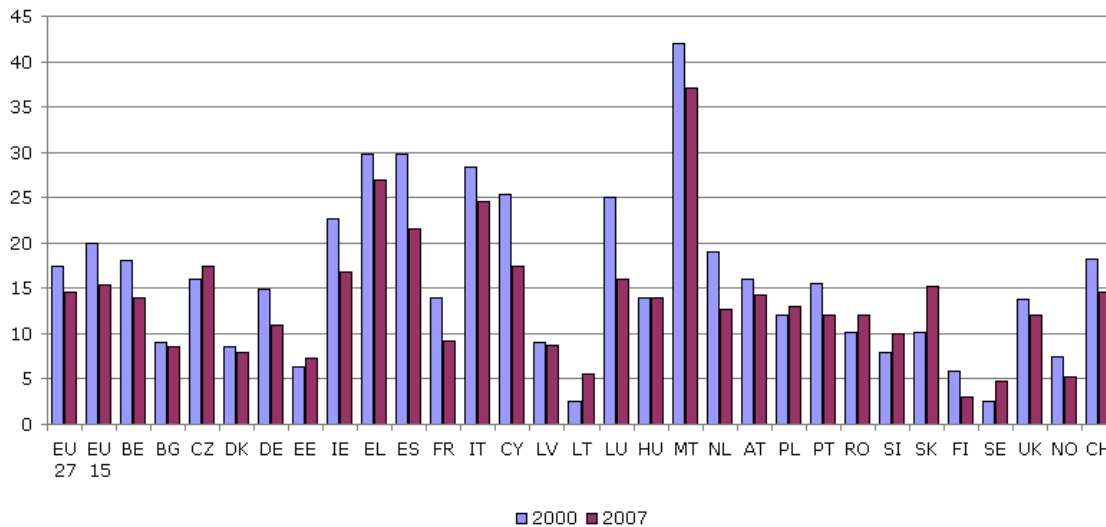
- the retirement age will be raised from present levels;
- access to early retirement schemes will be further curtailed;
- there will be improved incentives for older workers to remain in the labour market.

All this will lead to a further ageing of the workforce.

### Feminisation of the workforce

There is a historic trend of increasing female participation in the labour market since the 1960s. The increased participation in higher education and thus the better qualifications held by women has, in combination with the general trend to emancipation of women, led to a stronger labour market orientation and higher participation rates. Nevertheless, the employment rate of women is still below that of men (Figure 5), mainly resulting from a gendered division of labour in private households.

Figure 5: Gender gap in employment rates, 2000 and 2007(in percentage points)



### Gender gap in employment rates, 2000 and 2007 (in percentage points)

Note: EA15 refers to the 15 Member States in the euro area, prior to Slovakia joining in 2009.

Source: Ramb, 2008

In addition, women tend to work part time to a much greater extent than men. Indeed, the gender gap with respect to part-time work increased in the EU between 2000 and 2007 (Table 4).

Table 4: Share of part-time employment, by gender, gender gap and trend, 2000 and 2007 (%)

	2000		2007		Gender gap		Trend
	Men	Women	Men	Women	2000	2007	
EU27	5.9	28.7	6.9	30.7	-22.8	-23.8	↑
EA15	5.1	30.4	6.9	34.8	-25.3	-27.9	↑

Source: Ramb, 2008

Therefore, women are still regarded as a ‘labour market reservoir’: women’s participation rate is expected to rise to as high as 65% by 2025, as older women with low participation rates are replaced by younger women with a higher educational attainment and consequently a stronger attachment to the labour market. In addition, bringing more women from part-time into full-time jobs may also compensate for the loss of overall employment volume in the wake of demographic change.

The feminisation of the workforce may also be regarded as necessary for a different reason. In many EU27 countries, young women have outpaced their male companions in terms of educational levels attained. The report [Key data on education in Europe 2009 \(4.03Mb PDF\)](#), summarises this situation as follows: ‘In almost all European countries, more women than men enroll in tertiary education. For the EU27, in 2006, there were, on average, 123 women enrolled for every 100 men.’

If there is a trend towards a knowledge society and if there is a shortage of more highly qualified people in the labour market, the pressure to increase female participation rates even further would build up, even if the gender gap is already narrower, the higher the educational level.

Table 5 shows employment rates in the EU27 by level of education attained for 2000 and 2007, together with the gender gap and trends. It shows that, compared with 2000, workers in the EU27 are better educated. Moreover, it appears that the higher the educational attainment, the higher the employment rate for men and women. For instance, the employment rate of women with a high level of education reached 80.5%, while it was only 39.1% for those with a low educational level. The corresponding figures for men are 87.3% and 58.3% respectively.

**Table 5: EU27 employment rates by level of education attained, 2000 and 2007 (%)**

Level of education	2000		2007		Gender gap		Trend
	Men	Women	Men	Women	2000	2007	
Low	60.1	38.7	58.3	39.1	21.4	19.2	↓
Medium	75.1	61.0	76.5	63.7	14.1	12.8	↓
High	86.3	78.3	87.3	80.5	8.1	6.8	↓

Source: Ramb, 2008

### Growing number of migrant workers

As mentioned above, the EU27 is an immigration area. There is a consensus among experts that migration is one of the main factors that might help EU Member States cope with the negative labour market effects that stem from demographic change. The European Commission commented on this appraisal of the effects of migration on the future labour supply in its 2005 Communication [Policy plan on legal migration \(280Kb PDF\)](#):

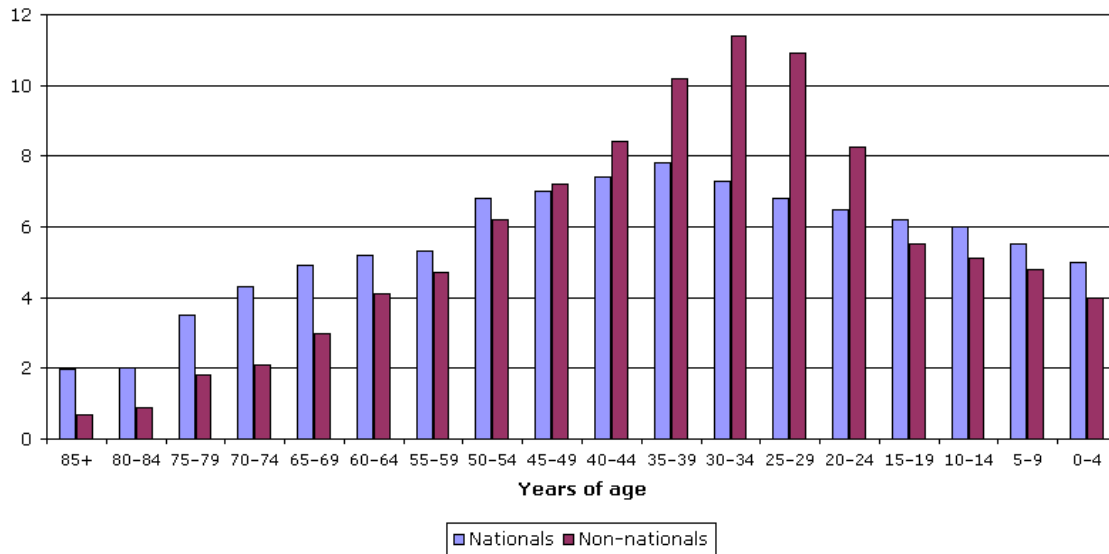
*In the short to mid-term, labour immigration can – as part of Lisbon Strategy’s comprehensive package of measures aimed at increasing the competitiveness of the EU economy – positively contribute to tackling the effects of this demographic evolution, and will prove crucial to satisfying current and future labour market needs and thus ensure economic sustainability and growth.*

According to experts writing in the European Commission report [Europe’s demographic future: Facts and figure on challenges and opportunities \(1.35Mb PDF\)](#):

*Around 56 million persons entering the country and finding jobs would be needed to compensate for the projected reduction in the population of working age for the EU27. (...) All in all, net migration well above the European levels of recent decades would be necessary to compensate for the decline in the working age population. (p. 99)*

Migration is generally thought to improve the age structure of a population and the workforce as younger adults tend to be the biggest group among migrants. The positive effect is illustrated in Figure 6.

Figure 6: Nationals and non-nationals by age in EU Member States, 2002 (%)



#### Nationals and non-nationals by age in EU Member States, 2002 (%)

Source: EU-OHSA, 2007

As shown by the 2008 study, [Future skill needs in Europe \(978Kb PDF\)](#), by the [European Centre for the Development of Vocational Training \(CEDEFOP\)](#) as well as the earlier 2005 Alphametrics study for the European Commission, there will be a certain polarisation of qualifications in the near future as not only highly qualified jobs expand but also low qualified ones in the services sector. Thus, the [summary \(110Kb PDF\)](#) of the Alphametrics report concludes:

*There is an equal need to reconsider policy on immigration, to encompass the possibility that labour shortages in future years will not be confined to high skill activities but might extend to the lower end of the job market as well. (p. xi)*

## Commentary

Demographic change has been on the political agenda of the European Union for some time now. This survey report focuses on recent data on the effects of the demographic change on work. The material presented in the report shows that the shrinking and ageing of the workforce are at the core of the problems to be faced. Therefore, creating suitable conditions for an increase of labour supply and for useful utilisation of the available labour power seem to be of the utmost importance. This may include new technologies for older workers, different measures to integrate immigrants, and family-friendly policies as well as strategies to improve lifelong learning.

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## Annex: Methodology and data sources

Data used in this report come mainly from different Eurostat data sources. The most relevant data for demographic changes can be found in the database on 'population and social conditions' in the section on 'population'. All Eurostat's concepts and definitions are explained in a special section of its website ([CODED](#)). The same applies to the methodologies behind its data (see the sections on [methodological manuals relating to statistics](#) and [national methodologies](#)).

Prognostic data are sourced from EUROPOP2008 and its 'convergence scenario' [see first results and a short introduction to the methodology in [Ageing characterises the demographic perspectives of the European societies \(129Kb PDF\)](#)].

Data on the working population and working conditions rely partially on the [European Union Labour Force Survey](#) (EU-LFS). The EU-LFS is a quarterly large sample survey covering the population in private households in the EU, the [European Free Trade Association \(EFTA\)](#) (except Lichtenstein) and candidate countries. It provides quarterly results on labour participation by people aged 15 years and over, as well as those outside the labour force. Conscripts in military or community service are not included.

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