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1. Demography Monitor 2005: Executive Summary

Nico van Nimwegen (NIDI)

1.1 Highlights

On Demography and the life course:

- Population ageing and imminent population decline signal the onset of an unprecedented demographic era for Europe. Low fertility and increasing life expectancy are the main drivers of this demographic revolution; the role of migration is hard to foresee.
- Low fertility is a root cause of population ageing and population decline. Is low fertility "here to stay"?
- Changing mortality is the second root cause of population ageing. Life expectancy increases and the gender gap is slowly closing.
- International migration is a major cause of population growth in Europe and migrants (and their offspring) make up an increasing share of the population.
- Population ageing is the medium term and man-made outcome of ongoing population trends of past decades.
- Population projections are important tools for policymaking. The revised Eurostat demographic projections assume lower fertility, longer life expectancy and somewhat higher migration resulting in slightly higher population growth and less or later population decline, shrinking working-age populations and accelerating population ageing.

On Employment and the life course:

- Men are working less and women more.
- The labour force participation of the young declines due to longer education, but it especially also declines for older male workers because of early retirement.
- Will the downward trend in elderly labour force participation be halted and reversed?
- Labour force participation in the family-phase of the life course is increasing and finding a proper balance between work and family life is a major challenge.
- The European labour force is ageing, with smaller proportions of young workers but also declining proportions of older workers. The middle ages have become dominant in the labour force and the average age of the work force increases.
- European men spend less time on the labour market: the labour-active life span is shorter (life time) and the number of working hours (working time) is lower. The labour-active life span for women, on the contrary has increased in the old Member States.
- Early retirement is common in all Member States, but recently effective retirement ages have started to increase again. Retirement may become less standard and more flexible.
- Early retirement did not increase youth employment, but seems to be conducive to policy interventions.
- Public pension schemes are becoming more restrictive to early retirement, but other social benefits play a role as well.

On Social protection and the life course:

- Population ageing has a significant impact on social protection and pension systems.
- It will lead to rising expenditure and ongoing reforms to make systems more ageing-proof.
- Longer and healthier lives of the elderly will lead to health and health care challenges. However the demand for health care will increase with population ageing and costs of health care systems will rise.

On Time use and the life course:

- Gender and childbirth are still decisive factors when it comes to changing one's individual time use.
- However, the gender differences in time devoted to different activities has diminished.
- Across Europe the variance of time devoted to paid and unpaid work, personal care and leisure is relatively small.

The Demography Monitor 2005 reviews the demographic situation and related socio-economic developments in the European Union. Also the candidate countries and Turkey are included in the analyses to the extent possible. Special emphasis is given to the policy implications of socio-economic and demographic developments. The major demographic focus in the report is on population ageing, by far the most dominant demographic challenge that the European Union is facing. From the major world regions, population ageing is most advanced in Europe. The social and policy implications of population ageing are manifold: the report pays special attention to the two broad and partly interrelated domains of employment and social protection. It discusses critical policy-relevant issues like increasing participation on the labour market, the extension of working life, retirement and pensions. It also deals with related topics like the combination of work and family, education and health as well as time-use. The life course, as this is shaped by socio-economic and demographic trends, is used as an integrative framework. Changes in the passing between and sequencing of the phases in the life course of Europeans are analysed.

1.2 Demography and the life course

→ Population ageing and imminent population decline signal the onset of an unprecedented demographic era for Europe…

In the 20th century the world population increased from 1.6 to 6 billion and in the next half century a further increase to some 9 billion is expected for the world as a whole. In the same period the population of the current 25 Member States of the European Union (EU-25) grew from 240 to 456 million and by the year 2050 this is expected to be 449 million. A century ago some 15% of the world population lived in the area of the current EU-25; nowadays this is 7% and by the year 2050 the share of EU-25 in the total world population will be 5 percent. These demographic shifts do not change the ranking of the major world regions according to population size. Currently EU-25 with 456 million inhabitants ranks third after China (1.3 billion inhabitants) and India (1.1 billion), followed by the United States with 298 million inhabitants. By the year 2050 EU-25 will still rank in the third place with 449 million, after India (1.6 billion) and China (1.4 billion) and before the United States with 395 million inhabitants. It should however be noted that from the

major world regions EU-25 is the only where the total population is projected to decline. This imminent population decline signals the onset of a completely new demographic era in modern history, with unprecedented implications. Within the European Union the new Member States of Central and Eastern Europe are already witnessing population decline, but other Member States are expected to follow. Declining population growth is inevitably linked with population ageing. Although this process will affect all major world regions, population ageing is most advanced in the European Union, especially in the southern Member States.

Jointly, population ageing and imminent population decline are the major features of the demographic development of Europe which may be labelled as revolutionary in modern history.

→ …low fertility and increasing life expectancy are the main drivers of this demographic revolution; the role of migration is hard to foresee.

The main drivers of these developments are low fertility and increasing life expectancy. Migration is the third engine of demographic change, but as compared to fertility and mortality, its future course is hard to predict, yet its implications are far-reaching.

→ Low fertility is a root cause of population ageing and population decline. Is low fertility "here to stay"?

Since the 1970s most Member States witnessed fertility decline, sometimes very substantial and at a fast speed. In Ireland, for instance, the average number of children per woman (measured as the total fertility rate, TFR) declined by 50% from 3.75 children in 1975 to 1.85 in 1994. In the Netherlands fertility halved from 3.17 children in 1964 to 1.58 children in 1977, in Portugal from 3.00 children in 1968 to 1.51 in 1993 and in Germany from 2.51 in 1963 to 1.25 in 1995. Also several of the new Member States saw their fertility rates halved. For example in Cyprus the rate was 3.51 in 1960 and fell below 1.75 after 1999, in Malta the rate fell from 3.62 in 1960 to below 1.80 after 1998, while it dropped in Poland from 2.98 in 1960 to below 1.50 in 1998 and in Slovakia from 3.07 in 1960 to below 1.50 in 1996. Fertility declines were less abrupt in Member States like Belgium, Denmark, Estonia, France, Greece, Latvia, Sweden and the United Kingdom. Currently women in EU-25 have on average 1.48 children (1.52 in the old Member States and 1.24 in the new Member States). By 2003 Ireland (1.98 children per woman) and France (1.89) reported the highest fertility rates, while the Czech (1.18) and Slovak (1.17) Republics had the lowest rates. All Member States have fertility levels below the so-called population replacement level (2.1 children per woman), which indicates the onset of population decline also since in many countries below-replacement fertility has become structural. The latter is substantiated when the ultimate number of children born to a woman (completed fertility of birth cohorts) is taken into account. These so-called cohort fertility rates are less sensitive to periodic differences in the timing of children (postponement) and thus a more stable indicator of long term trends. Taking differences in postponement patterns into account, cohort fertility is slightly higher than the period rates. The average cohort fertility for the generation of women born in 1955 and 1965 in EU-25 (1.94 and 1.77 respectively) is also below replacement. However in the new

Member States the average for the 1955 generation was 2.10 and so above replacement, but for the 1965 generation –women who are currently 40 years of age– it is 1.96.

Period fertility rates are below cohort rates. A slight upturn in European fertility levels might occur, especially when the postponement of childbirth beyond age 30 would diminish. It is however uncertain if and to what extent this so-called "tempo" effect in fertility will change, as it is uncertain how policies could have an impact on the tempo of fertility. Low fertility seems to be "here to stay" and a recovery of European fertility to, for instance, replacement level is highly unlikely.

→ Changing mortality is the second root cause of population ageing. Life expectancy increases and the gender gap is slowly closing.

Declining mortality results in the extension of the life span, measured as the average life expectancy at birth, which is the number of years a newborn baby may expect to live when current mortality rates prevail. Primarily due to the overall decline of infant mortality in all Member States (currently 1% of newborn babies die within a year from birth), life expectancy has substantively increased in the past decades in all Member States. European women currently may expect to live 81.1 years, while the life expectancy for men is 74.8 years. Life expectancy generally is higher in the old Member States (81.6 and 75.8 for women and men respectively) than in the new Member States (78.3 and 70.0 for women and men). Currently the Baltic States report the lowest life expectancies (around 75 years for women and 65 for men), also indicating large gender differences. Relatively large gender differences are also reported for France and Spain (7-8 years). Overall gender differences in mortality are nevertheless declining in the European Union as male mortality rates are catching up with women (with declining male life expectancies in some new Member States as the exception).

A further increase in life expectancy is expected for the European Union to 86.8 for women and 81.7 for men by the year 2050. The differences between the old Member States (87.3 and 82.3 for women and men) and the new Member States (84.1 and 78.6 respectively) tend to become smaller by 2050, especially for men. The future increase in life expectancy will primarily be caused by declining mortality at higher ages. The latter is evidenced by increasing life expectancy at age 60. Current mortality rates imply that if a European man retires at age 60, he will have an additional 20 years to live (about a quarter of his total life span). A 60 year-old European woman may expect to live an additional 24 years or about a third of her total life span. Although data are more scarce, there is evidence, at least in some countries, that an increasing share of life is experienced in good health.

→ International migration is a major cause of population growth in Europe and migrants (and their offspring) make up an increasing share of the population.

In the second half of the 20th century many European countries witnessed a historical change from emigration to immigration, but the total number of migrants residing in Europe is unknown. United Nations estimates for the year 2000 amount to about 60 million migrants (defined as people living in another country than their country of birth)

in Europe including the Russian Federation, about 4% being refugees. This European share of migrants (8%) in the total population of 728 million people is much lower than in Africa (22%) and Asia (23%), but higher than in Northern America (2%) or Oceania (1%). Other estimates put the number of (first generation) migrants at 33 million for EU-15. Member States with large shares of foreign born immigrant populations are France with 11% of the total population, Austria and the Netherlands (10%), Germany (9%), the United Kingdom (7%), Poland (5%) and Italy (3%). Despite transitional restrictions, the most recent enlargement of the European Union may lead to a short term increase in regular and irregular migration from the new Member States. With ongoing economic development in these countries, the inclination to emigrate is expected to decline. In the longer run the composition of the European population will increasingly be influenced by migration from other regions. Thus it is expected that Europe will have to compete with traditional countries of immigration like the United States, Canada and Australia, for qualified migrants to fill possible shortages on the labour market.

Population ageing, also implying the ageing of the work force, as well as imminent population and work force decline, will act as a major pull factor of international migration into the European Union. High population growth in the neighbouring countries and especially in Africa imply increasing migration pressure as a major push factor of international migration. Although international migration may serve a function with respect to solving labour market shortages, its numerical impact on population ageing is small. Scenario calculations underpin that to halt, let alone to reverse population ageing truly massive and increasing flows of (labour) migrants would be needed. Replacement migration studies show that millions of immigrants are needed each year to keep the age-structure unchanged, for example over 3 million migrants per year in Germany alone, which is an unrealistic scenario. It follows that population ageing is here to stay.

Especially with respect to labour migration the trend of further diversification of migration flows into the European Union is expected to continue, caused by skills shortages, the opening up of the central and eastern European region, asylum seeking, globalisation and the creation of transnational communities. The gender imbalance in international labour migration seems to be shifting, with male domination (around two thirds) falling in most countries, signalling the feminisation of labour markets.

As the most volatile process of population change, international migration may play a key role in the demographic future of the European Union. A (further) harmonisation of immigration and integration policies would foster the optimization of the impact of international migration.

→ Population ageing is the medium term and man-made outcome of ongoing population trends of past decades.

All Member States are witnessing population ageing i.e. changes in the age-structure where the older age-groups take prominence over the younger and the mean age of the population is rising. The degree of population ageing however varies among Member States, witnessing different demographic histories. As was shown before, low fertility and

increasing life expectancy are the root causes of population ageing. These root causes are firmly embedded in the social, cultural, economical and medical developments of society and thus population ageing, in addition to being a natural outcome of ongoing and structural trends, basically is man-made.

The main ageing trends are the following. The number of young people (age 0-14) in the European Union will continue to decline in absolute terms from around 100 million in 1975 to some 66 million by the year 2050. Their share related to the working-age population as expressed in the young-age dependency ratio (also labelled as "green population pressure") however will rise slightly from currently 24 to 26 in EU-25 (by 2050 the green pressure will be 27 in the old and 24 in the new Member States).

The potentially active population of 15-64 will be most numerous around the year 2010 (310 million) and will subsequently decline to about a quarter of a billion by the year 2050. It is worthwhile to note that the share of this working-age population in the total population will be slightly larger in the new Member States (currently 70% and 57% in 2050) than in the old Member States (currently 68% and 56% in 2050). This indicates that the new Member States may still benefit from the so-called "demographic dividend", a demographic window of economic opportunity, with fewer young dependent and older people relative to the working-age population. This dividend pays off when sufficient investments are made to spur economic growth. The window of opportunity closes when population ageing continues and the relative share of both young and older dependents increases.

The population aged 65 and over will continuously increase from currently 67 million to 129 million by the year 2050. Their share relative to the working-age population in the European Union, the old-age dependency ratio (also labelled as "grey population pressure"), has increased from 20 in 1975 to currently 25. It is projected to increase further to 51 by 2050. The different levels of "grey pressure" (26 in the old Member States and 19 in the new Member States) indicate the different stages of population ageing within the European Union.

The relative share of the population aged 80 and over to the working-age population will even increase sharper: from currently 6 to 20 by the year 2050 (the old Member States from 6 to 21; the new Member States from 4 to 15).

Jointly, the "green" and "grey" pressures constitute the overall demographic dependency. This dependency currently is 25 for the European Union as a whole and is projected to increase to 51 by the year 2050 (in the old Member States from 26 to 51 and in the new Member States from 19 to 52).

→ Population projections are important tools for policymaking.
As population projections are important instruments for policymaking and medium and long term planning, the most recent sets of European Union projections were compared. Since the 1980s 6 sets of population projections for the countries and regions of the

European Union were prepared under the aegis of the European Commission (1980, 1985, 1990, 1995, 1999 and 2004). As compared to the population projections of the National Statistical Institutes of the Member States, the EU projections are internationally consistent and based on harmonized data, a common projection model and a common set of assumptions, which gives them substantive added value for European policymaking. Acknowledging that the future is inherently unpredictable, several scenarios with contrasting variants of population development are prepared.

Each new round of projections is an update of the previous one, with improvements in the model and data as well as updated assumptions taking actual developments into account. The latter holds particularly for the latest round of projections of 2004 where information from the most recent 2000/2001 population censuses was used. The 2004 projections (EUROPOP2004) for the first time included the 10 new Member States. Five scenarios were made: a baseline scenario (describing the outcome of a continuation of current trends), a low and high scenario (two contrasting variants assuming low and high values of fertility, life expectancy and net international migration), a 'no migration' scenario (combining baseline assumptions on fertility and life expectancy with zero migration), and a high fertility scenario (combining baseline assumptions on life expectancy and migration with high fertility). As recent demographic patterns in transition countries were strongly influenced by temporary post-communist turbulence, a continuation of current trends would be unrealistic, and thus the baseline scenario for the transition countries slightly adjusted current trends, allowing country-specific convergence to Western patterns. A review of the two sets of projections reveals that the 2004 edition is of equal merit to the old projections; its assumptions are in line with recent observations.

→ Lower fertility, longer life expectancy and somewhat higher migration are assumed…
For policymaking it is important to know to what extent the 1999 and 2004 projections differ. In other words, which new demographic realities become visible when comparing these two sets of projections? Generally speaking the differences in assumptions between the two sets of projections closely reflect recent demographic developments. With respect to fertility the assumptions were slightly adjusted downwards for most countries, with some upward adjustment for a few countries (France, Finland and Sweden). Also somewhat more diversity across and slightly larger differences between countries was assumed in 2004, with a 2050 total fertility rate ranging between 1.40 in Spain and Italy and 1.85 in France and Sweden (in 1999 the range was from 1.50 to 1.80). The lower fertility assumptions in 2004 seem to reflect a more pessimistic view on the possibilities of catching up with postponed births. For mortality a continuation of increasing life expectancy was projected in all scenarios, with systematically lower life expectancy in the transition countries. Although the differences between the old Member States and the new Member States in transition are expected to decrease, it is also expected that these will not have vanished by the year 2050. In general the most recent mortality assumptions reflect a slightly more optimistic view on long term developments of life expectancy. International migration caused important differences between the two sets of projections with ultimately positive net migration for all countries. Irrespective of the

assumptions, the base populations for countries like Ireland, Portugal, Greece and especially Spain were upwardly adjusted as their current populations outnumbered the ones in the 1999 projections, primarily due to international migration.

→ …resulting in somewhat higher population growth and less or later population decline.
For most countries and in the short, medium and longer run, the 2004 projections indicate larger populations than in 1999. Portugal (with lower fertility and lower net migration) and Denmark (with lower migration) are the exceptions, with lower projected populations in the long run. The total EU-15 population as projected in 2004 for the year 2050 numbers 384 million, as compared to 364 million in the 1999 projections. Notwithstanding the slightly more numerous populations, for most Member States the population is yet expected to decline sooner or later. The fact that Europeans will live longer and international migration will continue does not fundamentally change the perspective of emerging population decline, although this may postpone the onset of the downward trend. With the exception of Cyprus, Malta and Slovenia, all new Member States are countries were the population is already declining. They will be joined by Italy (in 2013), Germany and Slovenia (in 2014) and Portugal (in 2018) in the shorter run and by most of the remaining countries in the longer run. Ireland, Cyprus, Luxembourg and Sweden are the only countries with projected continuous population growth until the year 2050.

→ Shrinking working-age populations and accelerating population ageing.
Several years before a country will experience population decline its working-age population will start to diminish. Due to the lower fertility assumptions in the most recent population projections, this process will start earlier than foreseen in the previous projections. Nevertheless the 2004 projections calculate larger working-age populations for all countries by 2050 than the 1999 edition. The working-age population indicates the potential labour supply. Currently the EU-15 working-age population numbers 255 million; by the year 2050 this will be 217 million according to the 2004 projections (as compared to 210 million in the 1999 projections).

As a result of declining and sustained low fertility and increasing life expectancy, the pace of population ageing is set to further accelerate according to the latest projections. Except for Luxembourg, the Netherlands and Sweden the old-age dependency ratio for all Member States is higher than in the previous projections. Currently, old-age dependency ratios vary from 0.16 in Slovakia to 0.29 in Italy, with an overall ratio of 0.25 for the EU-25, 0.26 for the EU-15 and 0.20 for the new Member States. Under both scenarios, the old-age dependency ratio will rise significantly, to 0.53 according to the 2004 projections (EU-25 as well as EU-15) and to 0.49 in the 1999 projections.

In summary the new set of EU population projections indicate larger overall populations in the Member States, somewhat later but still inevitable population decline and a faster pace of population ageing. As portrayed in these projections, the new demographic realities in Europe invariably call for demographic developments to be seriously taken into account by policymakers.

1.3 Demographic and socio-economic trends and the life course

After discussing the major demographic trends, the focus will now gradually shift to the life course. Population trends are the outcome at the macro-level of the behaviour of individuals, couples, families or households. This behaviour is partly shaped by the social context, including policy interventions, and in its turn shapes the way in which the lives of people are structured into the individual life course.

In the individual life course of Europeans we will broadly distinguish three, partly overlapping phases. In the first, formative phase children grow up and are socialised into the community. Education takes priority in this phase which ends when the adolescent enters the labour market. The transition to adulthood is partly taking place in this phase. The current report does not explicitly deal with this phase in the life course. The second, labour-active phase in the life course commences with the entry into the labour market and ends upon retirement. Employment takes priority in this phase. The third phase in the life course is the retirement phase; leisure takes priority over employment in the initial stages of this phase and gradually frailty and dependency set in. The current report focuses especially on the second and third phases of the individual life course. Although the distinction of these phases serves analytical purposes, it will become obvious that increasingly activities are not confined anymore to a single phase in the life course. Educational and formative activities, for instance, do not end upon entry into the labour market and continue throughout most of the life span. Life-long learning is the most obvious example. Alternatively, repeated entries and exits from the labour market are becoming a common reality for increasing numbers of Europeans and not only for women. Part-time labour force participation is another example of fluidity, while (early) retirement also is becoming a process rather than a single event.

Nevertheless, the distinction of the various phases in the life course may help to understand differences in the timing and sequence of events which shape the lives of Europeans.

1.4 Employment and the life course: the phase of working

As was indicated above, the working-age population (15-64) is already declining or is set to decline in the near future in several Member States due to demographic developments. The working-age population, however, gives only an indication of the number of persons that may, in principle, be active on the labour market: the potential labour supply. It does not reflect the actual labour force. Labour force participation rates, indicating the share of the working-age population that is active on the labour market (either working or seeking employment) are needed for the latter. Labour force participation rates vary over the life course. In fact the individual life course is to a large extent structured by employment as the years spent in employment cover an important part of the entire life span.

Several general trends may be discerned in European labour force participation from a life course perspective. First the onset of the labour career and thus the start of the working phase is increasingly being postponed. Young adolescents of today are spending more time in education than previous generations. The demands of the labour market are increasing and also strong competition on the labour market stimulates adolescents to raise their educational skills and qualifications. A prolonged stay in (fulltime) education implies a later entry into the labour market. Another general trend concerns the exit from the labour market, which increasingly is occurring earlier in life because of early retirement. Later entry and earlier exit combined, result in a shortening of the working phase in the life course. These general trends are substantiated below.

→ Trends in labour force participation: men are working less and women more…
In the last three decades, the overall labour force participation of European men declined substantively in both the old and the new Member States, with the exception of Sweden. The trends for women show a different pattern for the old and the new Member States. In the old Member States female labour force participation increased substantially from low to markedly higher levels. The opposite is the case in most of the new Member States, notably the ones in Central Europe. Here the traditionally high female labour force participation from the Soviet era substantively declined when the Iron Curtain opened and economic transformation set in.

For men, as mentioned above, two coinciding developments are causing this decline in labour force participation: later entry on the labour market of the young and earlier retirement from the labour market of the older workers; the labour force participation for the middle age groups remained relatively stable. For women, the overall increase in labour force participation in the old Member States is clearly associated with higher levels of education resulting in the wish to enter and/or stay on the labour market, also in the phase of family formation. Policies that enable women to combine family and work more easily also contributed to rising labour force participation. Yet despite this, the lack of institutional arrangements to reconcile family responsibilities and occupational ambitions can still be regarded as one of the major barriers to women's continued participation on the labour market. In most of the Member States the demand for childcare at prices affordable to parents exceeds the existing supply, as has regularly been noted by the European Council.

→ Declining labour force participation of the young because of longer education…
Some thirty years ago labour force participation rates of 15-24 year old men fluctuated from a high of 85% in Portugal to a low of 47% in Greece. The corresponding rates for young women were 66% in Germany and 32% in Greece. Currently the labour force participation rates in the European Union range from 70 to 30 for young men and 70 to 25 for young women. The "education factor" can be viewed as the dominant cause of decreasing labour force participation of the young. The current rates of young labour force participation show less variation between countries, indicating a convergence of trends across the European Union. The data do not allow to conclude that initial

differences in the length of education of young Europeans have decreased as well, although this is highly probable.

It goes without saying that education plays a key role in national development and also has a direct impact on economic growth and productivity. During the last three decades, most industrialized countries have experienced a remarkable increase in the educational attainment of their labour force, which is expected to continue over the coming decades. Recent projections for the old Member States as a whole (data for the new Member States are not yet available) indicate that the average level of educational attainment as measured by completed years of schooling of the potentially active population, will increase from 11.1 years of schooling in 2000 to 13.8 years by the year 2050 or by 2.7 years. Two driving forces determine this increase: demographic change and, more importantly, increasing educational enrolment. As to the former, younger and better educated generations will gradually replace older and lesser educated generations on the labour market. This pure demographic composition effect would account for 1.1 years of the overall increase. The remaining 1.6 years would be achieved by more enrolment in higher (upper-secondary and tertiary) education. Especially the latter enrolment effect will be conditional upon a corresponding rise of educational services needed to provide quality education. Among all Member States the scope for an increase of educational attainment over the long term will of course be considerably larger in countries where the initial level of schooling is comparatively low. Within the EU-15 the projected rise in educational attainment due to higher enrolment ranges from a low of 0.48 years in Finland to a high of 2.02 years in Portugal, where the starting point in the year 2000 was only 8.3 years as compared to 12.6 years in Germany. It should be noted that despite of this ongoing increase in the educational attainment of the European work force, it is likely to remain lower than that of the United States, where educational attainment is increasing as well.

As already indicated above and viewed from a life course perspective, the lengthening of the educational career will yield a shortening of the labour career, unless it would be accompanied by a corresponding increase in the effective age at retirement. An important issue in this respect is whether the increase in schooling will have as its counterpart an increase in productivity and incomes providing the resources needed to compensate for the shortening of the labour career and to accommodate the rising costs of an ageing society. Studies indicate that additional schooling may indeed have a positive impact on the level of GDP. But there is also evidence that the impact of additional schooling on economic growth and productivity is also dependent on the quality and efficiency of the educational system and that there may be a declining rate of return on the duration of schooling. The economic returns of additional schooling in countries with already high levels of productivity may not provide as large a boost to the economy as in countries where the initial productivity is low.

→ …and declining labour force participation especially of older male workers because of early retirement.

For the age-group of 55-59 current labour force participation ranges from a high of 85% in Denmark and a low of 50% in countries like Belgium, Poland, Slovenia and Turkey. Some 30 years ago the range was considerably smaller (between 95% in the United Kingdom and 74% in Cyprus) and labour force participation levels higher. This trend is even stronger for the age-group 60-64 with current levels ranging from 64% in Sweden to 13% in Slovakia. Labour force participation above the age of 65 is practically non-existent in countries like Belgium, France, Spain Luxembourg and Slovakia (2%), below the 10% level in most countries, but still relatively high in for instance Portugal (26%). The substantial decrease in older male labour force participation is mainly the result of the reduction in the average age at retirement (see below), but also of the decreasing share of self-employed persons. As regards older female workers, an increase in the labour force participation of 55-59 year old women may be noted, but beyond that age no clear trends are discernible.

→ Will the downward trend in elderly labour force participation be halted and reversed?
It is interesting to note that in recent years the downward trend in elderly male labour force participation seems to have come to an end and that there are signs of a reversal in many countries (with the exception of for instance Austria, Portugal and Poland). Growing concerns among governments about the impacts of population ageing and the sustainability of pension systems have given rise to policies which foster labour force participation and make early retirement less attractive. These policies seem to have an impact on labour force participation rates, although it is still too early to conclude that the reversal of the trends is structural and mainly caused by the new policy interventions. Various studies indicate that, for instance, economic developments also have an impact on labour force participation. The relation is however a complex one. In times of an economic downturn, employers are inclined to reduce costs and lay-off employees. Older workers, who are in general more expensive than younger workers are more at risk to be fired. Also employers may encourage older workers to make use of the early retirement exit of the labour market, especially in cases where early retirement is (partly) publicly financed and thus less expensive for the individual employer. At the macro-level, halting economic growth may thus foster lower labour force participation of older workers. At the micro-level, the rather weak economic conditions currently common to most Member States and having a direct impact on the economic well-being and living conditions of the population, may have a reverse impact, where older workers in search of economic security are less inclined to take up early retirement, which usually implies lower income levels. At any rate it is difficult to ascertain the separate impact of changes in early retirement policy on labour force participation rates, although the recent changes making early retirement less attractive are bound to have some impact. In addition to early retirement policies, also changes in the social security system, may have an impact on the labour force participation of the elderly, like policies limiting access to disability pensions and policies that raise the age at retirement.

→ Labour force participation in the family-phase of the life course is increasing…
Family, fertility and household dynamics are closely related to labour force participation. Indeed, one of the great challenges for couples, and especially for women, is to combine

family and working life. The so-called family phase in the life course (30-44 years), delineates the period where in most families young children are present and in need of parental care. As was described above, the average age of the mother at the birth of her first child has significantly increased in recent decades and now is around or approaches the age of 29 in a growing number of Member States, thus indicating the start of the family phase. Taking a closer look at the labour force participation of women in this part of the life course, reveals that the differences in labour force participation between the Member States have substantively narrowed over the past decades. Typical examples are Spain and the Netherlands where female labour force participation in this age-group increased from respectively 14 and 22% in the early 1970s to a current 69 and 78%. Participation rates now range from 85% (Denmark) to 64% (Italy) in the old Member States and from 89% (Lithuania) to 39% (Malta) in the new Member States. Especially in the old Member States, the increase of the labour force participation of women in the family phase has been substantive. It should be noted that this does not only concern working mothers; in the younger cohorts voluntary childlessness has become quite substantive and childless women have significantly higher labour force participation rates than women with children.

Traditionally the levels of female labour force participation were higher in the Central and Eastern European countries, but with the socio-political and economic transformations of the 1990s female labour force participation declined, also in the family phase. The latter was most probably also connected to rising parental costs for childcare.

For all Member States and candidate countries a (further) rise in female labour force participation seems feasible, also in the family phase of the life course, if institutional arrangements to reconcile work and family responsibilities improve. Indeed the demand for childcare services at affordable prices to parents still exceeds the supply, as was noted before.

→ …and finding a proper balance between work and family life is a major challenge.

The rising labour force participation of women in the family phase of the life course puts additional demands on individuals and families with respect to finding a proper balance of work and family life. The latter does not only concern the care for children, but also for other dependents, like frailing parents. In this regard it must be noted that the overall demographic trend of delaying childbirth of course implies that parents are older in the family phase. With their increasing age, also the likelihood that they will have to provide support to frailing elderly kin, like grandparents, increases. This intergenerational support, which is a two-way process since this support is mutually provided, nevertheless adds another demand on particularly women in the family phase of the life course. In this context the so-called "rush hour" family or "dual carer" family is becoming a reality for increasing numbers of Europeans: balancing work, children and intergenerational support makes for a hectic phase in the life course. Giving prevailing and (lasting?) dominant gender roles where women take on the majority of care and support activities, the rush hour especially concerns women. Policies that facilitate the combination of work and care are called for. These policies go beyond the provision of affordable childcare facilities and

include, for instance, also policies that enable women and men to (temporarily) retreat from the labour market during critical periods in life when care is needed most, as well as policies fostering formal and informal elderly care.

The European Employment Strategy (EES), which aims to increase overall labour force participation in the European Union, including for women, is the main policy framework in this regard. The related Employment Guidelines, for good reasons, adhere to an integrated approach to achieve the targets of the EES and extend beyond active labour market policies to social, educational, fiscal and other policies. They also address measures for finding a balance between work and family life, including for instance incentives to enter and stay in the labour market (also when children arrive in the family), the level of participation (fulltime or parttime employment) as well as re-entering the labour market after a period of absence. Also the provision of care for dependents is included.

→ Time-use in a life course perspective: gender and childbirth are still decisive factors.
The changing life course of Europeans is also reflected in the way time is used. The analysis of time-use not only reveals how much time people spend on various activities in everyday life, but it also reveals where trade-offs between these activities are made. Time-use analysis thus may also serve to study the impact of (policy induced) changes in, for instance, the family-work balance, and give an insight into the way in which Europeans shift their time from market work to homework or leisure.

On average Europeans today have some 40 million minutes to spend during their entire life span, which is 4 million more than in 1960. As women have a higher life expectancy than men, they have some 42,600,000 minutes available compared to some 39,300,000 minutes for men.

As the available time of an individual is restricted, time-use is characterized by trade-offs: pursuing one activity implies forgoing another. Individual choices and preferences are, however, restricted by cultural, economic and institutional forces which give rise to significant differences in the use of time over the life course. Across European countries the variance of time devoted to paid and unpaid work, personal care and leisure is relatively small. The most striking feature of time-use patterns over the last decades is the declining difference in time-use of women and men: the amount of time spent on paid work in the labour market is decreasing for men and increasing for women, while the opposite holds for time spent on homework in the family. Nevertheless men still spend considerably more time than women in paid work in all phases of the life-course.

While men still pursue a rather stable and durable commitment to paid work which is hardly interrupted by events such as marriage and childbirth, women show much stronger substitution between paid work and homework, especially when they become mothers. Consequently men and women make different trade-offs between various activities: with competing activities, women tend to substitute between market work and homework, while men tend to substitute between market work and leisure.

The prevailing gender inequalities with respect to time-use thus become more visible in the phase of family formation. Especially in countries with lower compatibility of work and family, women increase their homework duties and decrease their labour market activities upon the arrival of a child, while the opposite holds for men.

However, demographic trends like lower fertility and later entry into parenthood decrease the level of family obligations and open the way to the labour market for women. Also the rising educational attainment of women and shifting cultural perceptions to equal opportunities for women and men play an important part, as do (policy induced) family friendly institutional arrangements. Taken together, these trends point to more equal time allocations of parents. Here, the significant and prevailing cross-country differences in time-use reveal the potential scope for policy measures addressing the work-family imbalances, such as the availability of parttime employment, adequate childcare arrangements, parental leave, fiscal policies and the like. Typically these family friendly policies have a stronger impact on the time allocation of women rather than of men.

→ The European labour force is ageing, with smaller proportions of young workers…
Overall population ageing combined with changes in age-specific labour force participation rates, inevitably results in the ageing of the European labour force. Three indicators illustrate this process: the declining share of young (15-24 years) workers, the increasing share of older (55 plus) workers in the labour force, as well as the mean age of the labour force.

In the 1970s the share of young male workers in the European labour force ranged from 14% (Sweden) to 23% (Finland, Portugal) in the old Member States and was generally higher in the new Member States. In Turkey young male workers constituted 28% of the labour force in the 1970s. The corresponding proportions of young female workers were substantively higher in the 1970s ranging from 19% (Sweden) to 47% (The Netherlands) in the old Member States and from 19% (Poland) to 34% (Cyprus) in the new Member States. The current proportions of young male workers are substantively lower (on average about 10 percent) and range from 7% (Luxembourg) to 18%t (Bulgaria). For young female workers the declining shares are even more striking, with declines from 47% to a current 18% in the Netherlands and from 43% to 13% in Spain. The lower shares of young workers are predominantly caused by the declining participation rates of the young and, for women, the rapidly increasing labour force participation of workers in the middle age ranges of the labour force.

→ …but also declining proportions of older workers. The middle ages have become dominant in the labour force and the average age of the work force increases.
As a result of early retirement the share of the older (55 and over) workers in the European labour force is declining, although the declines are smaller than for the younger workers. Only in Cyprus, Malta and Bulgaria the proportion of older male workers has increased over the past decades. For older female workers the declining trend is less visible and an increase in their share of the work force could be observed in several Member States like the Scandinavian countries and Portugal. Currently the share of older

workers in the labour force is between 10 and 20% in most countries. It will be obvious that when the shares of workers at the edges of the age range decline, the middle ages (25-54) become more prominent. It is equally obvious that the mean age of the European labour force is increasing as well. The highest increase in the average age could be noted for Finland for males: an increase of 2.6 years from 37.9 years in the early 1970s to a current 40.5 years. Also in Italy the mean age for men in the labour force rose substantively with 1.8 years. The largest increase in the mean age for women was observed in Portugal (an increase of 6.5 years) and in the Netherlands (plus 5.8 years). The overall mean age of the work force in the European Union currently is just over 40 years for men and just under 40 years for women.

→ European men spend less time on the labour market: the labour-active life span is shorter (life time) and the number of working hours (working time) is lower. The labour-active life span for women, on the contrary has increased in the old Member States.

The life span of Europeans is increasing which trend is expected to continue, as was discussed above. The time spent on the labour market, however, decreases both in absolute (years and hours worked) and relative (as a share of the entire life span) terms. Especially for men the labour-active life span has decreased, but they are still spending more years of their life on the labour market than women. Women, however, are catching up, especially in the old Member States and the differences between the genders are becoming smaller. As compared to the 1970s, when men spent on average 42 years of their life on the labour market, currently the average is 38 years. The labour-active time span of men decreased for all Member States and Candidate Countries. Poland (minus 12 years), Hungary and Turkey (minus 11 years) and Belgium and Portugal (minus 10 years) saw the largest declines, while Sweden showed the lowest (less than 2 years). For women the active life span increased in the old Member States, most markedly in Portugal and the Netherlands (plus around 20 years) but also in Spain (plus 16 years) but declined in most new Member States. Currently the average labour-active life span for European women is 30 years, as compared to 20 years in the early 1970s.

The active life span as presented above in years spent on the labour market, does not take the actual number of hours worked (working time) into account. Over the past years, most Member States saw a reduction in average working time per week, both for men and women. The average working week varied in 2003 from 36 to 41 hours for men and from 25 to 41 hours for women. In all Member States women work on average fewer hours than men. The differences between the Member States in average working time do not seem to converge. It is interesting to note that the average working time decreases for women in the family phase of the life course (see below), presumably as an adaptation to the strains of combining work and family life. It is equally interesting that, both for women and men, the average working time declines in the older age groups as well, also above age 65, which leads to the assumption that reducing working hours may foster older workers to remain on the labour market longer.

In most Member States the share of parttime work increased, both for women and men, but still more women are working parttime than men. The highest proportions of

parttime working women are recorded for the Netherlands (60%), the United Kingdom (46%) and Germany (37%). In countries with the lowest average working time per week (Denmark and the Netherlands) the share of parttime work of men is highest (12 to 15%) as well. Increasingly parttime work seems to be one of the means for couples to find a proper balance between work and family life.

→ Early retirement is common in all Member States, but recently retirement ages have started to increase again. Retirement may become less standard and more flexible…
"Early" retirement refers to retirement before the standard age set for retirement. The standard retirement ages vary between countries and usually are different for men and women. In the Member States the retirement age for men is between 60 and 65 years of age. While most Western countries apply a minimum age of 65, lower ages are common in Central and Eastern European countries. Standard retirement ages for women on average are lower than for men, within the range of 55-65 years. Especially in the Western part of Europe the same standard age of 65 is applied for both genders.

Although there are different methods to compare the actual retirement age cross-nationally, the outcomes do not really differ: from 1950 to 1990 the retirement age declined in all Member States. More recently this downward trend seems to have stopped and even reversed. In 1950 retirement ages ranged from around 64.8 (Belgium) to 69.1 years (Turkey) and thus were in most countries above the standard 65-year threshold which is applied today in most European countries.

The effective retirement age still varies considerably across countries. In 2003 the highest exit age was reached in Ireland (64.4) and the lowest in Slovenia (56.2). The European Union average age at retirement was 61 years in 2003. From 2001 to 2003 the overall effective retirement age increased in most countries by 1.1 years on average. Again on average, men retire one year later than women. Interpreting these indicators for actual retirement it should be noted, that they may become less reliable since trends like parttime work and partial retirement may become more common in the future. Thus, withdrawal from the labour market needs increasingly be interpreted as a gradual process instead as a one-time event. It will be evident that this will have implications for policymaking, inter alia calling for policies that foster flexibility.

It is obvious that the retirement phase in the life course has increased substantively in the past decades and also due to gender differences in longevity, more so for women than for men. While male retirees in 1970 could expect to live 8 to 15 years after retirement, the expected duration of the retirement phase was between 14 to 21 years in 1999. For women the expected duration of retirement increased from between 13 to 20 years in 1970 to about 16 to 26 years at the turn of the century. The longest expected retirement periods are recorded for France and Italy, as a result from below average retirement ages and comparatively high longevity in these countries. It is self evident that the lengthening of the retirement phase in the life course puts a strain on the financial sustainability of pension systems.

→ Early retirement did not increase youth employment…

When the early retirement policies were introduced in the 1970s and 1980s it was generally assumed that this would stimulate youth employment. Older (and more expensive) workers would be replaced by younger workers and help combat high levels of youth unemployment. If this was the case, then countries with the lowest retirement ages would have the highest employment rates for the young. Such a positive correlation between these two indicators can however not be found when inspecting the most recent data for 2003. Actually, countries with relatively high effective retirement ages also seem to perform well with respect to levels of youth employment (for instance Ireland, the United Kingdom, Lithuania and Sweden).

Policies to replace older workers by young therefore do not seem to have been effective; they did however help employers to reduce labour costs by reducing the total work force and especially the share of (more highly paid) older workers. As a well-performing labour market should be capable to provide employment for all productive persons, irrespective of age, policies that improve the labour market conditions for all generations, providing opportunities to work longer and allow flexibility in retirement, seem to be the best option to foster overall economic performance and financial sustainability of social security, including pension schemes.

→ …but seems to be conducive to policy interventions…

As actual retirement is (well) below the standard age at retirement, as established by statutory pension schemes, it is important to know which are the main causes of the observed trends in retirement; how may these trends be explained? The institutional arrangements of retirement-related policies are one of the causal factors as they may include incentives for early retirement. At least two types of incentives are relevant: the replacement rate, giving the ratio of (early) retirement benefits to earnings immediately before retirement (an indicator for current economic well-being) and the change in pension wealth resulting from working an additional year (an indicator for future wealth). Public pension schemes are one of the components of this institutional framework.

→ Public pension schemes are becoming more restrictive to early retirement…

Most of the European public pension schemes include early retirement arrangements, subject to conditions like for instance the minimum number of insured years and the time period between early and standard retirement. However the public pension systems of Denmark, Ireland, Latvia, Malta, the Netherlands, Turkey and the United Kingdom do not provide such incentives and mostly offer flat-rate pensions. In addition to full early retirement, many schemes provide gradual retirement options, i.e. the possibility to reduce the working time in the last years before reaching the standard retirement age. This is especially the case in the old Member States, with the exception of the United Kingdom. The new Member States, until now, do not provide gradual retirement options. In most countries special early retirement options for certain professions exist (for hard or hazardous work, but also for specific professions like for instance teachers, local politicians, railway workers and the like). In recent years, however, most pension schemes are being harmonized. Looking at the incentives for early retirement, generally speaking

the statutory pension schemes do not seem to be the major reason for early retirement in the European Union.

More recently a dominant shift in policies away from early retirement and towards promoting the extension of working life is visible in the European Union. Policies to increase the standard age at retirement, to restrict access to early retirement options or to make these options financially less attractive, are among the measures introduced. Apart from setting disincentives for early retirement, other policies aim to make postponing an early exit from the labour market financially more attractive.

→ …but other social benefits play a role as well.
Public pension schemes have become tighter on early retirement but have had, until now, a relatively minor impact on actual retirement. This is partly caused by the long transition periods which are usual in pension reforms, but there are also other sources of income or benefits that are conducive to early retirement: unemployment benefits for older workers, disability benefits, means-tested benefits and private pension schemes.

To some extent unemployment benefits take the place of early pensions in a large number of Member States. Older workers losing their job, often receive more generous benefits and/or receive them for a longer period, which may encourage the employer to dismiss older workers and may discourage older workers from re-entering the labour market. More recently also policies in this domain have become stricter in many countries, while on the other hand policies were introduced stimulating higher labour force participation of the older worker. Despite relatively high initial replacement rates for older workers, there are however no strong incentives for using unemployment programs for retirement long before the minimum pensionable age.

Another major exit route from the labour market is working incapacity. In most countries over 10% of male workers in the age group up to 5 years before standard retirement receive disability benefits, and in some countries like Ireland, Cyprus, Luxembourg and the Netherlands, this exceeds 20 percent. These differences in disability take-up do not seem to entirely reflect the health status of European workers, but rather differences in the benefit system, entitlement conditions and labour market opportunities for older workers. As such they partly function as a bridge to (early) retirement. Again, recent policies aim to improve working conditions and medical and professional reintegration and restrict access to disability schemes.

Several forms of means-tested minimum income guarantees for older people may represent a considerable incentive for early retirement, especially for low-income earners if the eligibility age for such minimum benefits is below the standard retirement age. The larger the share of means-tested benefits in total old-age income is, the stronger will be the disincentive to continue work. However, these benefits do not seem to be widely used as bridging income until a pension is received.

Private pension schemes and in particular occupational pension schemes are a major route to early retirement in a number of Member States, such as the United Kingdom and the Netherlands, where occupational pensions build a major part of old-age income. But also in other countries private pensions may be an important bridge between early retirement and receiving a public pension. The early retirement schemes in private pensions often benefit from favourable tax treatment of the benefits and constitute a strong incentive for early retirement.

All in all early retirement is common to all Member States where the decline in the actual age at retirement, a downward trend of decades, more recently seems to have come to a stop and an increase is becoming evident. Some cohort effects are visible where younger generations tend to work longer than their predecessors. The generosity of early retirement policies, inter alia stimulated by the wish to combat youth unemployment, is shifting towards a much more restrictive approach aimed at raising overall labour force participation as well as the labour force participation of older workers. Social benefits other than public pension schemes however still constitute major incentives for early retirement, where the various exit routes from the labour market function as communicating vessels. Both disincentives to early retirement as well as incentives for longer employment by older workers are applied as policy tools. Further reforms and adjustments seem to be necessary to structurally increase the actual age at retirement. In view of the overall negative public attitude towards later retirement, especially among retirees-in-spe, a strengthening of the incentives and possibilities to work longer should be considered, making this a more attractive option. In the same vein, also the incentives for employers to maintain older workers in the work force need to be considered. To achieve an increase in the effective retirement ages, it is of course of vital importance to improve the labour market opportunities for older workers, allowing those that want to work longer to realise this option. As to the latter it needs to be noted that a substantive share of early retirement may not be voluntary, but masquerades forced unemployment of older workers. In general, a repreciation in stead of a depreciation of the human capital embedded also in older workers needs to be fostered by retirement-related policies.

1.5 Social protection and the life course: the phase of retirement

The phase of retirement is also referred to as the "third" phase in the life course, after the first "formative" phase and the second "labour active" phase. There are no fixed statistical boundaries for the start of the retirement phase. Although it would be tempting to use the official age at retirement (65 years in many Member States), we have shown above that increasingly Europeans opt for early retirement (long) before this official retirement marker, making the latter less relevant as a benchmark. It may be clear that the retirement phase begins when a person withdraws from the labour market. For those who did not participate on the labour market themselves, the onset of the retirement phase is still harder to define as they mostly will experience retirement indirectly through their possible partner. It should further be noted that withdrawal from the work force increasingly takes shape as a process, and not as single event, for instance in the case of

partial retirement. And finally it should be noted that, also after (early) retirement, people may go back to the labour market. In the Netherlands, for instance, the number of (early) retirees turning back to the labour market doubled over the last 4 years. At any rate it will be clear that also the phase of retirement is a varied one in the life course, ranging from healthy and resourceful retirees in their mid-fifties to dependent and frail centenarians. Increasing dependency signifies this phase of the life course where public and private benefits are the major source of income for most retirees.

→ Social protection and pension systems…

Population ageing also implies a shifting balance between the economically active and non-active populations (see Figures 2.16 – 2.18 in Chapter 2). This balance has the tendency to become more lopsided to the advantage of the non-active, imposing major challenges to the economy and the social protection systems. Whereas the economically active generally contribute to public budgets and social security funds, the non-active are predominantly recipients of benefits. The case of pension systems and related types of expenditure is a clear example of the way in which population ageing will have an impact.

All pension systems in the Member States and candidate countries have a strong public component. Around half of the public pension systems provide a universal pension, which is usually means-tested. With the exception of the Netherlands, the public pension schemes are labour-market based, covering workers in the private and public sectors and some of the self-employed. The financing of the public schemes usually is on a pay-as-you-go basis (PAYG), making them vulnerable to population ageing, because of the shifting balance of active and non-active populations. Some schemes are still fully or partially financed directly from the public budget through transfers.

→ … rising expenditure…

As population ageing shifts the balance between the economically active and the non-active, it directly affects the financing of public pension schemes. Thus, public old-age pension expenditure has increased in recent decades, and a further increase is expected. The variation among countries is large. In 2002 public old-age pension expenditure ranged between 1.6% of GDP to 11.4% in the old Member States and between 5.4 and 8.5% in the new Member States. On average public old-age pension expenditure increased from 8.6% of GDP in 1990 to 9.6% in 2002; the average for the enlarged EU was about the same with 9.5% in 2001. In 2002 Italy spent the largest share on public old-age pensions (11.4 percent) followed by Germany (10.7%) and France (10.3%), while Ireland (1.6%) spent the least. The share in the new Member States ranged from 5.4% in Estonia to 8.5% in Poland. It should be noted that old-age pensions are the largest portion of all pension expenditures, but other types, like partial pensions, disability pensions, survivor's pensions and early retirement pensions should be taken into account as well. Taken together, the overall public pension expenditure in the EU-15 amounted to 12.6% in 2002 as compared to 11.8% in 1990.

The ageing of the population will significantly influence future public finances as the post-war baby boom generations will reach retirement age. Without counteracting

measures, it is expected that population ageing will lead to an increase of public spending on pensions of between 3 and 7 percentage points of GDP in most Member States by 2050. Most of this increase will be on account of pensions, health care and long term care, with potentially offsetting savings in education and unemployment benefits will be relatively small. Public spending on pensions alone is expected to increase between 3 and 5% of GDP in the coming decades. The largest increases are expected for Greece (12.2 percent) and Spain (7.9 percent) and the major part of the increases will occur between 2010 and 2030. Although data on the number of pension beneficiaries are currently insufficient, Italy has the highest number of total pension recipients (including disability pensions and the like) of 280 pensioners per 1000 inhabitants.

→ …*and ongoing reforms to make systems more ageing-proof.*

In view of these developments, Member States since the 1990s have made efforts to achieve financial sustainability of public pension systems, such as increasing the effective retirement age, reducing benefit levels and diversifying the pension system. As to the latter the role of the so-called "second pillar" was strengthened in several countries. Working in addition to the so-called "first pillar" of PAYG-funded public pensions, the second pillar is an obligatory, privately-funded system with contributions invested in the financial markets through pension funds. The "third pillar" of voluntary and privately funded old-age insurance still plays only a marginal role for the provision of pension benefits in the Member States. The diversification of the pension system towards a full-fledged three pillar system is generally aiming to make old-age pensions more ageing-proof and thus more sustainable. The overall direction of pension reforms in the new Member States and candidate countries is similar to that in the old Member States, signalling converging trends in response to the overall impact of population ageing across Europe.

→ *Population ageing has a direct impact on the health care system…*

Increasing longevity is resulting in larger numbers of the elderly in the population. As, by and large, the use of health care increases with age, population ageing yields larger demands for health facilities and increasing health care costs. In this respect it should be noted that in virtually all Member States the health status of the elderly has significantly improved, as is evident in increasing life expectancies. This improvement is, for instance, reflected in declining mortality rates for some of the major "killer diseases" like diseases of the circulatory system and ischemic heart diseases. Mortality from these diseases fell to respectively 51 and 57% of their 1975 levels in the old Member states. Although the health status and longevity of the elderly is improving as well in the new Member States, there still is a considerable gap to be bridged, which according to some observers may take at least another two or three decades. Significant mortality differences between the old and the new Member States involve all major causes of death with a higher incidence of circulatory diseases, slower improvement in ischemic heart diseases and deteriorating cancer-related mortality in most of the new Member States. Also mortality due to external causes is generally higher in the new Member States, with the exception of traffic related mortality and suicide.

A substantive part of the longer life is spent in good health. Based on data of the ECHP clearly less than half of the number of years one may expect to live beyond the age of 65 will be spent in good health in countries like Greece, Spain, France, Italy, Germany and Portugal, while this is close to or over 50% in countries like Ireland, Denmark, the United Kingdom, the Netherlands and Belgium. But although the elderly are in general more healthy today than in the past and further health improvements, for instance related to improving levels of education, are to be expected, population ageing and notably a growing elderly population including the population of the oldest-old, implies a major challenge to the health care system.

→ … do not prevent that the demand for health care will increase with population ageing and costs of health care systems will rise.

In most of the old Member States health expenditures continued to increase in the 1990s. Also as a reaction to the even steeper rises in health expenditure during the 1970s and the 1980s, health system reforms were introduced to contain costs, inter alia utilizing incentives and stimulating competition. In many countries the growth of health expenditure as a share of GDP was significantly reduced. In 2002 the share of GDP for total health expenditure was 9.1% for the old Member States on average, with countries like Germany (10.9 percent), France (9.7 percent) and Greece (9.5 percent) as the highest ranking. The levels are significantly lower in the new Member States with, for instance, Poland at 6.1 percent.

As in most countries more concerns where expressed by governments with regard to public than to overall health expenditure, the introduction or extension of cost-sharing mechanisms was among the favourite system reforms. Consequently stronger cost containment in public as opposed to overall health expenditures can be observed. Yet public health expenditure generally is around 70 to 80% of total health expenditure in most Member States with an EU-15 average of 76.8%. It is evident that the containment of public health expenditure yielded a rise in private (out-of-pocket) expenditure.

Projections of future expenditure related to acute health care and long term care (a subset of total health expenditure indicative for the impact of population ageing) indicate a continuing rise in costs reaching an average of 6.6% of GDP by 2050. Countries like Ireland, France and Germany will have the highest expenditure rates for acute health care amounting to over 7% of GDP. In countries like the United Kingdom, Finland and the Netherlands, which are at the bottom of the list, the increase in expenditure on acute care is below average amounting to some 6% of GDP for acute care and 8% if long term care is included. From the year 2000 to 2050 the growth of public expenditure for acute care ranges from 0.7% in Denmark to 2.3% in Ireland, with a EU-average of 2.2 percent.

Especially long term care is sensitive to population ageing as it concerns the rapidly growing population of the elderly and specifically the oldest-old. Overall, some 40% of the growth in total health expenditure can be attributed to long term care. Here the growth in expenditure ranges from 0.2% in Ireland to 2.2% in the Netherlands. The high-expenditure countries will experience the highest future increase in long term care

expenditure and the low-expenditure countries the lowest increase. Examples of high-expenditure countries are Sweden, Denmark and the Netherlands, with expenditure rates of 2.5 to 3% of GDP. Low-expenditure countries, with less than 1% of GDP for long term care expenditure are, for instance, Austria, Belgium, France and Italy. It is evident that the level of expenditure on this type of care also reflects the different ways in which health care systems are organized in the Member States.

Although up-to date comparative projections of the level of health care expenditures are not yet available for the new Member States and candidate countries, it may easily be assumed that these expenditures will rapidly increase in the coming decades, also taking the health status of the elderly population into account, which is generally lower than in the old Member States.

2. Demographic developments in the European Union

Gijs Beets

2.1 Highlights

- Europe will be the first continent to face population decline and significant population ageing.
- As a result of the decline in the fertility rate and the postponement of the first child, together with a further increase in life expectancy, population size will come to a maximum and then decline will start, maybe offset for a while by immigration surpluses.
- This process started, roughly spoken, in the northern part of the EU, 'travelled' to the western, and then to the southern part. After the fall of the Berlin Wall also the eastern parts of Europe were 'infected' although the change to a free market economy had there an effect as well.
- Currently the EU-citizen has a 'life course' in which low and late fertility are prominent, as well as low and late mortality. Moreover the EU has turned into an immigration continent.
- Most EU citizens still opt for marriage, although that may occur only after a period of non-marital cohabitation. The age at marriage is high, in some countries even after a child has been born. Divorce has become a normal way of ending a marriage, although the majority of marriages still end due to death. Individual life courses have diversified, also if looked from only a demographic perspective.
- Household are small, also as an effect of population ageing. One person households have become 'popular'.
- In all these trends regional variation within the EU may be large. Most specifically: the ten new Member States can still make a profit of the demographic dividend. Due to low fertility and early mortality the potential labour market population is relatively large, which may create extra stimuli to economic growth. Other EU regions have higher demographic dependency ratios.

This overview describes the components of population growth as well as population ageing in the Member States of the European Union and its candidate countries, based on

the latest available information from (mainly) Eurostat, including population projections where applicable. Additional information on nuptiality and household formation is provided as well. These demographic trends might have significant impacts on European and national level policies.

2.2 Population size and growth

In the course of the 20th century significant demographic developments took place in Europe and the EU but also elsewhere. No demographic factor was undisturbed. Just to mention a few: fertility rates dropped; the age at first birth increased; life expectancy increased; migratory moves increased; the age at first marriage increased; cohabitation gained popularity; divorce increased. These changes had fundamental effects on societies and will continue to do so, for example on population sizes, population ageing, family structures, intergenerational relations, labour market populations, social and economic sustainability, minority populations, family norms and values.

From 1900 to 2000, the world population increased from 1.6 to 6.0 billion and in the coming 50 years a further increase to 9 billion is expected (Medium variant, United Nations, 2005).[1] In the past century Europe's population grew from 422 to 730 million (including the Asian part of the Russian Federation). In the 20th century the population of the current 25 European Union Member States increased from around 240 to 457 million. A century ago, about one quarter of the world's population was living in Europe and some 15% in the area of the current EU-25; these shares have recently diminished to 12 and 7% respectively, i.e. they halved over the last hundred years. In the past century, overall world population growth was substantially larger than population growth in Europe. In the foreseeable future this trend will continue: the most recent projections of world population growth indicate a declining share of Europe's population to 9% in 2025 and 7% in 2050. For the current EU-25 the share will decrease to 6% by 2025 and further to 5% around 2050 (United Nations, 2005).

The main reasons for this fundamental change in the coming decades are:

- the fertility levels that will remain below replacement in the EU, against much higher although decreasing levels in the world as a total,
- the mortality levels that are characterised by a high life expectancy in the EU and a much lower life expectancy elsewhere; both in the EU and the world increases in longevity are expected,

[1] In this Chapter only the Medium variant will be referred to unless stated differently. To sketch the scope of variation between the UN variants: in 2050 world population is estimated at 9.1 billion persons in the Medium variant, 10.6 billion in the High variant, 7.7 billion in the Low variant and 11.7 billion in the Constant fertility variant. It means that even in the High variant the UN expects a fall in fertility from the current level.

- the low to negative natural population increase in the EU as against a positive natural increase elsewhere,
- the fact that in the EU population is still slightly increasing, mainly as a result of an immigration surplus.

One of the most fundamental effects of these trends is that Europe is expected to continue its leading position in the world as the 'oldest' continent. Population ageing is a major challenge for the coming decades, and it will even be more prominent in the EU than in Europe as a total.

EU-25 now ranks third place in the world, and this is expected to stay so in the foreseeable future. Currently China is the most populous country with 1.3 billion inhabitants, India follows with 1.1 billion; after the EU with 457 million follow the USA (298 million), Indonesia (223 million) and Brazil (186 million) (*Figure 2.1*). By 2050 the United Nations (2005) expects the following ranking: India (1.6 billion), China (1.4 billion), EU-25 (449 million), USA (395 million), Pakistan (305 million), and Indonesia (285 million).

World population growth depends on numbers of births and deaths and fluctuations in these numbers. For individual regions and countries, also international migration has to be taken into account. As all demographic components of population growth —fertility, mortality and migration— are closely related to the age structure of the population, it is not surprising that significant differences in age structures exist throughout the world where population ageing has become a dominant feature.

Population ageing is becoming a world wide phenomenon (see also Chapter 7). According to the 2004 UN population prospects, the median age is increasing everywhere, also in Africa (*Figure 2.2*). On a world scale, Europe has the oldest population; and within Europe, Southern Europe is the oldest. All indicators suggest that population ageing will be one of the most fascinating demographic characteristics of the 21st century. While population ageing is expected to come to a top in EU-25 around 2040, after which some rejuvenation starts, ageing will continue elsewhere also after 2040, most notably in China and Japan.

How did the average population size evolve within the European Union? The trend of decreasing average population sizes per country when new Member States enter will most likely come to an end. In 1957 the European Economic Community started with six Member States, in 1973 three new Member States joined, another in 1981, 2 more in 1986 and 3 more in 1995. In 2004 a group of 10 new Members joined.[2] *Table 2.1* gives

[2] In 1957: Belgium, West Germany (=former Federal Republic of Germany), France, Italy, Luxembourg and the Netherlands.
In 1973: Denmark, Ireland and the United Kingdom.
In 1981: Greece.

the increase in population size of these various EU-groupings since 1957: the EU started out to administer some 166 million Europeans, but currently accommodates 2.7 times as many inhabitants (457 million). New entries into the EU accounted for 64 million people in 1973, almost 10 million in 1981, 48 million in 1986, 22 million in 1995 and around 74 million in 2004. This indicates that the population of the EU mainly grew because of new Member States entering: in total 235 million inhabitants were added since its start in 1957 due to new Members States entering the EU (including the entry of the former German Democratic Republic), i.e. a much larger number than the initial 166 million inhabitants in 1957. Demographic processes (fertility, mortality and migration) only contributed to a minor extent (55 million) to the demographic extension of the EU (Monnier, 2004).

In the course of time most countries entering had relatively small populations. *Figure 2.3* shows that at each entry of new Member States the average number of inhabitants per country diminished. The most significant decline in the average country population size resulted from the 2004 extension.

Today EU-25 counts six 'large' Member States (France, Germany, Italy, Poland, Spain, and the United Kingdom each have over 30 million inhabitants) and seven 'small' (Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia each have less than four million) (*Table* 2.2). Of these smaller Member States only Luxembourg belonged to the EU already in 1957, the other six joined very recently. Three out of four EU citizens live in one of the six large Member States; eight Member States each accommodate less than one per cent of all EU Member States (Monnier, 2004). If, say by 2015, the EU would consist of 29 Member States (enlarged by two bigger countries, Romania and Turkey, and two smaller, Bulgaria and Croatia), then the EU would grow from 467 million inhabitants by that time to 585 million. The average population size per EU country would then be 20.2 million, i.e. larger than currently.

Population growth within the EU has different faces across the various Member States. In the period 1960-2004, EU-15 and EU-25 always witnessed yearly population increases. However, several Member States saw population declines. For example in Malta declines occurred in the 1960s and early 1970s, in Austria and Germany in the late 1970s and early 1980s. Portugal experienced some stagnation in the 1960s and 1990s, Belgium and Ireland in the 1980s. More recently these Member States saw population increases again. Several of the new Member States, like the Baltic States, the Czech Republic, Hungary, Poland and the Slovak Republic have seen declines in population size in specific years since 1990 and that is also the case for Bulgaria, Croatia and Romania.

In 1986: Spain and Portugal.
In 1995: Austria, Finland and Sweden.
In 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, and Slovenia.
Note that in 1991 'East Germany' entered the EU when Germany re-unified.

From 1960 to 2004 EU-15 and EU-25 populations increased by about 20%. Increases in population size were even larger in Cyprus, France, Greece, Ireland, Luxembourg, Malta, the Netherlands, Poland, Slovenia, the Slovak Republic and Spain. In 2004, no country had a lower population size than in 1960, although Hungary is close, and so is Bulgaria.

Compared to 2000 the 2003 population sizes were smaller in the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, and the Slovak Republic, and in Bulgaria, Croatia and Romania. It indicates that all the 'old' Member States, and three of the 'new' States (Cyprus, Malta and Slovenia) had positive population growth in the past few years. In this period population growth was largest in Ireland (+4.9%), and lowest in Latvia (-2.1%), although more negative in candidate countries Croatia (-2.7%) and Romania (-3.0%).

Most striking is the enormous variation in population growth in the various Member States in the coming decades. In *Figure 2.4* the Member State specific population sizes are shown in 1975, 2004 and 2050, in descending order by population size in 2004. The figures for 2050 are based on the EUROPOP 2004 baseline population projections (except for Bulgaria, Croatia, Romania and Turkey, which are taken from the 2004 UN World Population Prospects (UN 2004)). In 2050 population size will be 25% larger than currently in Cyprus, Ireland, Luxembourg, Malta, and Turkey. If Turkey is an EU member by that time, it will then be the most populated EU Member State. France and Sweden will see their population grow between 10 and 15%, Belgium, the Netherlands and the UK between 5 and 10%. Four countries will have almost the same number of inhabitants as currently: Austria, Denmark, Finland, and Spain. A decline of 4-10% is foreseen for Germany, Greece, Italy, Portugal and Slovenia, a 10-20% decrease in Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia, and a more than 20% lower population size is expected in Bulgaria and Romania. The ten New Member States (NMS-10) are expected to witness a 12% decrease in population between now and 2050, while EU-15 will almost remain constant in population size. In sum, EU-25 will decrease very slightly (see also the Map in Chapter 7).

The baseline projection expects that EU-25 will have 450 million inhabitants by 2050 (384 million in EU-15, and 66 million in NMS-10). Due to different assumptions on the fertility and mortality levels and on migration flows the other variants show different numbers. Given the High and Low variants we can say that the EU-25 population will most likely be between 529 and 388 million persons, EU-15 between 446 and 335 million, and NMS-10 between 84 and 53 million. It means that in 2050 the NMS-10 share in the total EU-25 population is expected to be between 15.8% in the High variant and 13.7% in the Low variant (14.5% in the Baseline). Currently this share is 16.2%.

In the past natural population growth (the number of births minus deaths) was the major source of the total population increase of 55 million; more recently the share of natural growth is diminishing. Total natural growth amounts to 32 million since 1957, and the migration surplus to 23 million over this period. In the past ten years the balance shifted

to migration as the most important population growth factor. According to *Figure 2.5* immigration is currently the main driving force of population growth in the EU and this has of course implications for the demographic structure of the Union (Monnier, 2004). Only in Finland, France and the Netherlands the rates of natural population increase are still larger than those by immigration (and both are positive), but also for these Member States the population projections show diminishing natural growth and ultimately negative population growth.[3] The situation in NMS-10 is opposed to that in EU-15.

Natural growth in the EU peaked in 1964 when the six Member States of that time accounted for 1.4 million additional citizens. Even though the Union extended to 25 countries, since the mid-1990s the total yearly natural growth has not been larger than 400 thousand. In contrast, the migration surplus rose significantly around 1990, mainly due to the turbulent period in Central and Eastern Europe. Moreover it is remarkable that all EU-15 Member States turned into immigration countries, while for example until recently Greece, Ireland, Italy and Spain were emigration countries (Monnier, 2004).

The extension of the EU to 25 Member States will reduce total EU population growth as several of the new Member States already have negative natural growth at the moment (a higher number of deaths than births) and several have an emigration surplus. The demographic profiles of almost all EU-15 Member States are more or less similar: low or negative natural growth, low and late fertility, increasing immigration and population ageing (rising numbers and shares of older persons, mainly due to the low fertility in the past two or three decades as well as increases in life expectancy, specifically also at higher ages). Especially Ireland, Luxembourg, Portugal and Spain have relative high net immigration, while France, Ireland, Luxembourg and the Netherlands (still) have high natural increase. NMS-10 has a different profile. Except for Cyprus and Malta where positive natural growth continues together with an immigration surplus, the new Central and Eastern EU-Member States have low or negative population growth. The Slovak Republic still has positive natural population growth although small, while the other Member States all experience negative natural growth. The 'lowest low' fertility rates in these Member States are a major cause of this. In Slovenia the population is still growing due to a larger positive immigration rate than the (smaller) negative rate of natural increase. Bulgaria, Estonia, Hungary and Latvia already have substantial natural decrease.

The slowing down of population growth leads to shifts in the age structure of a population, generally referred to as population ageing. Population ageing is caused by declining fertility and increasing life expectancy. Young populations normally have relatively elevated levels of fertility and low levels of mortality which make them grow (significant excess of births over deaths) while older populations normally have a much smaller or even negative natural increase (excess of deaths over births). The absolute

[3] Rather unexpectedly the Netherlands has, in 2004, an emigration surplus. Immigration has decreased substantially compared to 2003, and emigration has increased significantly.

number of births and deaths in a population result from the relative levels of fertility (number of children per woman) and mortality (life expectancy) in combination with the age structure, i.e. the number of individuals present in each of the age-specific bars in the population pyramid. In turn, changes in the absolute numbers of births and deaths have effects on the shape of the population pyramid. Such changes may result from changing fertility and mortality levels, for example if the number of children per woman rises or declines, or if the life expectancy changes.

Currently all European countries are facing population ageing albeit in various degrees. In many countries population is already ageing as long as reliable population statistics are available —for the past 50 or 100 years or so— and it is expected to stay on the agenda for the coming decades. Generally the effect of fertility decline on ageing trends is much more profound than the effect of increasing life expectancy. Migration usually only has a small effect on population ageing if an effect at all. In the second half of the 21st century many EU Member States may face some 'population juvenation' as soon as the post Second World War baby boom has disappeared (see also in the next section).

Before addressing population ageing more closely, the root causes of this process —the components of population change— will be discussed.

2.3 Components of population change

2.3.1. Fertility

Fertility decline is one of the two root causes of population ageing. The European picture of fertility decline is quite diverse, and consequently the pattern of population ageing shows diversity. The average number of children per woman was about two to three in the 1960s. At that time the total period fertility rate (TFR = an indicator of the mean number of children per woman) was below 2.5 only in the Czech Republic, Germany, Greece, Hungary, Italy, Luxembourg, Slovenia and Sweden, as well as in Bulgaria, Croatia and Romania. Nowhere in Europe was the number below 2.0 (*see Table 2.3*). In several Member States the TFR was above 3.0: Cyprus, Ireland, Malta, the Netherlands, Portugal and the Slovak Republic. Since 1970 fertility declined in most Member States, sometimes quite substantial. In Ireland for example, the TFR even halved between 1975 (3.75) and 1994 (1.85), in the Netherlands between 1964 (3.17) and 1977 (1.58), and in Portugal between 1968 (3.00) and 1993 (1.51). In Germany fertility also dropped 50%: from 2.51 to 1.25 (1963- 1995). Fertility decline was less abrupt in other Member States like France and Sweden. Generally speaking, fertility decline is the common trend in the last quarter of the 20th century, and each country has its own fertility history.

In the new millennium no Member State has a TFR above 2.0, which means that fertility is below the so-called replacement level of 2.1 children per woman. In 2003 Ireland (1.98) and France (1.89) reported the highest fertility rates, while the Czech (1.18) and Slovak (1.17) Republics have the lowest. 17 out of the 25 EU Member States have fertility rates

below 1.5 in 2003; the EU-25 average is 1.48 (1.52 in EU-15 and 1.24 in NMS-10) (*Figure 2.6*).

The overall fertility decline resulted in smaller fertility differences across the various Member States; the result is that a more homogeneous fertility pattern emerged over the past decades. Northern and Western Europe were the first regions where the TFR started to decline to (well) below the replacement level; currently these regions have slightly higher fertility rates than elsewhere in the EU, although still below replacement. Southern and Eastern European fertility decline occurred later.

Determinants of changing fertility patterns include female labour force participation and education. However, closely related to both also is a demographic factor i.e. the rise in the mean age of the mother at the birth of her first child. Postponement of having children[4] triggers a decline in (period) fertility rates. As soon as the postponement trend diminishes the (period) fertility rates may stabilize or even rise. An example is the Netherlands, where in the 1970s the age of the mother at first birth started to increase sharply and the TFR dropped considerably. In the course of the 1980s the TFR rose slightly due to 'catching up' of women who had not yet given birth to a first child. In the 1990s the TFR rose slightly further due to the fact that the increase in the age at first birth slowed down. Especially the rising levels of female education were important: if the educational levels had not risen, the age at first birth would have been lower than currently is the case. As higher educated women have their first child later in life than less educated women the mere increase in the number of women with higher education explains about half of the general rise in the age at first birth over the past decades, at least in the Netherlands (Beets *et al.*, 2001; Beets and Dourleijn, 2001).

The profound impact of educational expansion on the age at first motherhood has also been demonstrated for other countries. It appears that having a child during educational enrolment is not a preferred option for most women, and the access to and use of effective contraceptives nowadays provide the opportunity to prevent pregnancies. When education is finished family formation may become an option although there are other options as well, such as participation on the labour market. Mothers from various educational levels do not vary much in number of children. However childlessness is much more prominent among the higher educated (see also the section on Education in Chapter 3).

The trend towards postponing the first child started in the Scandinavian and Western European countries in the early 1970s; elsewhere the age at first motherhood started to

[4] Postponing the first child should be understood in a macro context, i.e. the relative change that occurs in the mean age of the mother at first birth, when comparing fertility behaviour in successive years or to women from successive birth cohorts. Individual women may not be aware themselves that they are postponing to have a child as they may not have (had) concrete plans or a fixed timing from which they deviated.

rise somewhat later (Table 2.3). In Eastern Europe this trend is visible since the late 1980s or early 1990s. In the 1960s the mean age at first birth was 23 to 24 year in many EU Member States, although slightly lower in Eastern Europe. Currently the age is around 27 to 29 in most EU Member States in Northern, Western and Southern Europe, while Eastern Europe is lagging behind with levels between 24 and 26 year. The EU-25 average is 27.5, for EU-15 it is 28.0, and for NMS-10 it is 25.3.

Closer inspection of the TFR in a birth cohort perspective shows that women born at the end or just after the Second World War were the first to finish their fertility career with a number of children below replacement. Women from birth cohort 1955, who turned 50 years in 2005 (i.e. they currently are at the end of their reproductive life) finished with below replacement fertility in all countries except France (2.13), Ireland (2.67), Poland (2.19), the Slovak Republic (2.85), Romania (2.26) and Turkey (3.97). Cohorts born in the 1930s only rarely had completed fertility below replacement (*Table 2.4*). On average, women born in the 1930s had their first child earlier than women born later. Women born in 1955 still had their first child relatively early in many EU-countries, at ages between 24 and 26. Only in younger cohorts steep rises in the age at first birth occurred: women born in 1965 had their first child on average between ages 25 and 28, although a bit earlier in Eastern Europe.

Currently cohort TFRs are more elevated than period TFRs due to changes in fertility timing. If women born in a certain year (birth cohort) postpone a birth, the fertility rate for that particular year (period TFR) is lower, but the ultimate number of children born to women of that particular cohort (cohort TFR) may remain unchanged.[5] This implies that period TFRs will fluctuate much more than cohort TFRs (a cohort TFR may, more or less, be interpreted as the moving average of the period TFR; see examples for some selected countries in *Figure 2.7*). The fact that period TFRs currently are below cohort TFRs, suggests that some increase in period TFRs may occur. As soon as the rise in the age at first birth levels off, period TFRs may increase, at least as long as the ultimate number of children per woman does not change. This is one of the main reasons that countries in Eastern and Southern Europe with currently 'lowest low fertility' will most likely have (somewhat) higher fertility in the future. An analysis of the timing of fertility is therefore highly relevant for understanding current and projected future levels of fertility, and the population ageing process.

In 2003, 16 EU governments judge their fertility levels to be too low, the other 9 governments are satisfied with the level, and no one thinks it is too high[6] (see also Chapter 6, Section 2) (United Nations, 2003). The first group of Member States will, most

[5] Vice versa it means that if women in a birth cohort would start getting their babies earlier than in previous cohorts, the period TFR would become higher than the cohort rate.

[6] Also Bulgaria, Croatia and Romania judge their fertility levels as 'too low', Turkey as 'too high'.

likely be in favour of policy interventions in order to try to raise the fertility level. But how successful could interventions be? According to Kamarás *et al*. (1998, p. 248) "it seems obvious that the willingness of governments to set demographic targets will be related to the discrepancies between fertility preferences and actual fertility of individual couples on the one hand, and to the acceptance of policy measures that are considered on the other." Next year new data will be available on fertility levels that women intend to realise and how successful they are in fulfilling their wishes? The data will most likely show that the total intended number of children is slightly higher than the cohort TFR (the ultimate number to be realised) but both will remain under the replacement level. Concrete introduction of policy measures that people prefer to be available before trying to have an additional child, would most likely lead to an extra 10 to 20 children per 100 women at the maximum. However it remains of course uncertain whether people will realise what they say they are willing to do if preferred policy measures are put into practice (Gauthier, 2005; see for an overview also Chapter 6 section 2).

The drop in the TFR went together with a rise in the proportion of women that remain childless (Table 2.4). Data show that childlessness stood at about 10% in birth cohort 1935 in Belgium, France, and the United Kingdom, and 12-13% in Italy and the Netherlands. In Ireland and Portugal the percentage was about 5. In general, the percentages are higher in later birth cohorts, in cohort 1955 for example up to about 18% in Finland, the Netherlands and the United Kingdom, but in Belgium, Italy and Spain they are more or less stable (at about 10%) and even lower in France (8%). More recent cohorts show higher levels, but women from these cohorts may still have a child. Whether childlessness levels for women born in the 1960s, 1970s or later will really top 20% remains to be seen. In birth cohort 1965 the NMS-10 levels are lower than the EU-15 levels.

Birth cohorts in which 25% of the women already have a child at the age of 20 years —so 75% is still childless— finally end up with a childlessness level of around 10%. This 'pattern of early childbearing' is characteristic for Eastern European countries. Opposite is the 'pattern of late childbearing', where the 25% border is not reached before the age of 25, which leads to a childlessness level of 15% or over (see the examples of the Czech Republic and the Netherlands in *Figure 2.8*). Also Rowland (1998) and Toulemon (1995) showed that late childbearing leads to levels of higher childlessness.

More men than women remain without children, due to lower ever-marriage-rates for men than for women (Toulemon, 1995). Research shows that having a partner or not is the most important reason for remaining without children. Next to that education is crucial (Bloom and Trussell, 1984; Prioux, 1993; see also the section on Education in Chapter 3). Higher educated women are much more likely than lower educated women to remain childless. This does not always imply that higher educated women opt voluntarily for this situation. Difficulties in finding a partner to share parenthood with may be a reason, as well as difficulties in becoming pregnant at higher ages. However there is

evidence that higher educated women conceive more easily, ceteris paribus, than lower educated women (Beets and Dourleijn, 2001; Esveldt *et al.*, 2001, p. 61).

Increasingly, children are born outside marriage. In 1960 only Austria, Estonia, Latvia and Sweden had over 10% of children born outside marriage (Table 2.3). Currently Cyprus and Greece (and most likely also Turkey) have a level below 10%. More than 40% of the children are born outside marriage in Denmark, Estonia, Finland, France, Latvia, Slovenia, Sweden, the United Kingdom, and Bulgaria. These levels may even be slightly flattered as women may get married after discovering a pregnancy, i.e. the conception rates outside marriage are higher than the birth rates outside marriage.[7]

Remarkably, several Member States where a majority of the inhabitants adhere to the Roman Catholic Church —which explicitly preaches to conceive within marriage— show significant increases in the percentage of children born outside marriage over the past few decades, like for example Ireland, Spain and Portugal. Compared to Ireland, Italy and Spain, Portugal also has a relatively high divorce rate (see section on Household structures and living arrangements).

The number of children born to immigrants usually reflects the cultural background these immigrant groups have lived with previously. Over the past decades first generation immigrants from Western Asia and Northern Africa had higher fertility rates than non-immigrants. However their children, the second generation, have much lower rates, mostly only slightly more than the non-immigrants. Childlessness is rather rare among minority groups, although a bit rising. Fertility to immigrants from western countries (EU Member States, Northern America, Japan) does usually not deviate very much from non-immigrants.

2.3.2. Mortality

Changing mortality patterns provide the second root cause of population ageing. Declining mortality results in the extension of the life span, usually measured by the average life expectancy at birth, i.e. the number of years a newborn baby may expect to live when current mortality rates prevail. Infant mortality used to have a significant impact on the average life expectancy level.

Infant mortality rates measure the numbers of newborn children that die before they turn one year (*Table 2.5*). In the 1960s rates under 25 were only observed in the Czech Republic, Denmark, Finland, the Netherlands, Sweden and the United Kingdom. By contrast, in 2003 only Turkey had a rate over 25, while Bulgaria and Romania had rates between 10 and 20 and EU-25 had a rate below 10. This means that nowadays only 1% of all newborn babies die within one year after birth; the majority of these deaths occur

[7] However, non-marital birth rates may not include children born to married women whose husbands are not the biological father.

within the first month of life. Infant mortality rates are normally higher among immigrant groups.

The enormous decline in infant mortality rates and the fact that these rates are much more similar now across EU-25 contributed significantly to the increase of the average life expectancy at birth. In EU-15 and EU-25 both male and female life expectancy at birth has risen considerably over the past 25 years. In 1980 male life expectancy was around 70 years as compared to currently about 75. For women the increase was from 77 to 81. The figures are somewhat higher in EU-15 than in EU-25, due to the fact that NMS-10 has much lower life expectancies, showing for males even some drops over the period 1980-2005. Here males had in 1980, on average, about 67 years to live and currently around 70, females 75 and 78 respectively. These figures indicate that the sex difference in duration of life is much larger in NMS-10 (8 years) than elsewhere in the EU (6 to 7 years).

The 2003 average life expectancy in NMS-10 for males is estimated at 70.0 years, and at 78.3 for females. These averages are 75.8 and 81.6 respectively in EU-15. The EU-25 average is 74.8 for males and 81.1 for females.

The baseline Eurostat projection expects that EU-25 will have 449.8 million inhabitants by 2050 (384.4 million in EU-15, and 65.5 million in NMS-10) (see also Chapter 8). Due to different assumptions on the fertility and mortality levels and on migration flows the other variants show different numbers. Given the high and low variants we can say that the EU-25 population will most likely be between 529.0 and 388.1 million persons, EU-15 between 445.5 and 334.8 million, and NMS-10 between 83.5 and 53.3 million. It means that in 2050 the NMS-10 share in the total EU-25 population is expected to be between 15.8% in the high variant and 13.7% in the low variant (14.5% in the baseline). Currently this share is 16.2%.

In 2003 the Baltic States had the lowest life expectancy at birth (*Figure 2.9*): just above 65 years for males and around 75 for females, showing a significant sex difference. Relatively high life expectancies are observed in Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Luxembourg, Malta, the Netherlands, Spain, Sweden and the United Kingdom. The sex difference in life expectancy is also large in France and Spain (7 to 8 years), whereas it is small in Sweden (only 4½ years).

For the future a further rise in life expectancy is expected, to, by 2050, 81.3 for men in EU-15 and to 77.2 in NMS-10, and to 86.9 respectively 83.8 for women. However, Denmark, Estonia, Greece, Latvia and the Netherlands are slightly more sceptical than other Member States about the future path. Expected improvements are mainly based on recently observed country-specific trends.

Life expectancies at the age of 60 years, indicating how many more years, on average, a 60-year old person may still expect to live given the age-specific mortality rates in a

specific year, show less variation across the EU countries than the overall life expectancies. Around 1980 males had about 16 more years to live, females around 21, i.e. a difference of 5 years. In 2003 the numbers were around 20 and 24 years. Obviously men benefited more from changing mortality than females. It is also clear that the sex difference in life expectancy is larger at birth than at age 60, mainly due to selection (differential mortality) before that age, and infant mortality is one of them (infant mortality rates are much higher for boys than for girls).

The 2003 average life expectancy at age 60 in NMS-10 for males is estimated at 16.9 years, and at 21.7 for females. In EU-15 these averages are 20.1 and 24.2 respectively. The EU-25 average comes then at 19.6 for males and at 23.8 for females. If males retire at the age of 60 they still have 20 additional years to live, i.e. a quarter of their life. For females this currently is even 24 years, i.e. about 29% of their life.

Relatively short lives remain after the age of 60 years in the Baltic States (around 16 years for men and 20 for women), Hungary, the Slovak Republic, Bulgaria and Romania, while Austrian, French, Greek, Italian, Spanish and Swedish men still have 20 years to live. Women in Hungary, Latvia, Bulgaria, Croatia and Romania have relative low expectancies, in Austria, Finland, France, Italy, Luxembourg, Spain and Sweden relative high.

Life expectancies at birth and at age 60 are almost perfectly correlated. The higher the life expectancy at birth, the higher the life expectancy at age 60 (*Figure 2.10*). Currently a 60-year old woman is expected to live another 23.8 years, i.e. she is expected to live 83.8 years and that is 2.7 years more than the expectation for a newly born girl. For men these numbers are: 19.6, 79.6 and 4.8. It means that not-dying is much more beneficial for men than for women in terms of additional life expectancy. This is even more so the case in NMS-10, where 60 year old women have a 'profit' of 3.4 years and men of 6.9 years.

The correlation between life expectancies at different ages is to a large extent of course an 'open door' since the mathematical formulas to calculate each of them are related. There also exists a relationship with the infant mortality rate (Figure 2.10): the lower the infant mortality rate, the higher the life expectancy at birth or at age 60. It means that if countries that currently still have high infant mortality rates are successful in bringing down these rates life expectancy at birth will most likely increase substantially.

However rises in the life expectancy at age 60 are mainly dependent on the successful combat of bad health conditions in old age. Over the past 40 years the life expectancy at birth for women rose from 72.9 to 81.6 years in EU-15, a rise of 11%. In the same period the life expectancy at age 60 increased by 27% for women (from 19.0 to 24.2 years), a sign that medical and other treatments in old age have been successful. In NMS-10 these increases were 10% versus 17%.

Like in fertility research also for mortality period and cohort indicators exist: the cohort life expectancy may, more or less, be interpreted as the moving average of the period life expectancy. Research indicates that "period life expectancy has increased more slowly than its cohort counterpart. (…). The widening of the gap between the two life expectancies is primarily a consequence of the dramatic mortality decline at older ages that occurred during the 20th century." It implies "that the divergence between the two measures is likely to become even greater in the future as reductions in deaths are concentrated at older ages" (Canudas-Romo and Schoen, 2005).

Another mortality aspect that resembles fertility is the fact that mortality rates are negatively correlated with educational level (see the section on Education in Chapter 3).

What are the main causes of death EU citizens face and what is the variation across countries?[8] Both for men and women the overall mortality rates are higher in NMS-10 than in EU-15. Over one third of all deaths are attributable to diseases of the circulatory system (the range goes from 26% in France to 58% in Latvia and Lithuania) and a quarter to neoplasms (ranging from 17% in Latvia to 33% in France). AIDS is only responsible for 0.2% of all deaths in EU-25 (0.3% in EU-15), endocrine, nutritional and metabolic diseases for 2% (3% in EU-15), mental and behavioural disorders as well as diseases of the nervous systems and the sense organs both for another 2%, while the diseases of the respiratory system account for some 8% (9% in EU-15). The diseases of the digestive systems come to nearly 5%, accidents to 4%. Suicide and intentional self-harm stand at 1%. Relatively elevated are the AIDS mortality levels in Portugal, Romania and Spain. Of course these figures vary per age group.

For countries with adequate mortality and causes of death registration, maternal mortality rates can be estimated (WHO, Unicef and UNFPA estimates). This rate gives the (adjusted) number of maternal deaths per 100,000 live births.[9] The 2000 estimates show low maternal mortality (under 10 per 100,000 live births) in Austria, the Czech and Slovak Republics, Denmark, Finland, Germany, Greece, Ireland, Italy, Portugal, Spain, Sweden and Croatia, and high (over 20) in Estonia, Cyprus, Latvia, Luxembourg, Malta, Bulgaria and Romania.

8 See also Chapter 4 for a further overview of causes of death.

9 Even when coverage is complete and all deaths medically certified, in the absence of active case-finding, maternal deaths are frequently missed or misclassified. In many countries, periodic confidential enquiries or surveillance are used to assess the extent to misclassification and underreporting. A review shows that registered maternal deaths should be adjusted upward by a factor of 50% on average (WHO, Unicef and UNFPA estimates).

2.3.3. International migration: migrant stocks[10]

According to UN statistics and comparing all the world's countries the United States and the Russian Federation host by far the largest numbers of immigrants. In 2000 the number in the USA amounts to about 35 million persons (i.e. about one fifth of the total world population that lives in another country than the country of birth; and about 12% of the total US population), and in the Russian Federation to over 13 million (9% of its population). Within EU-25 Germany stands out with over 7 million immigrants (9%), but also France (11%), the UK (7%), Poland (5%), Italy (3%) and the Netherlands (10%) all have more than 1 million citizens born abroad. Together these EU Member States accommodate 23 million immigrants, i.e. over 7% of their population. Luxembourg has a smaller absolute number, but its share of the total population is large: 37%.

The UN estimates that the number of immigrants in Europe (including the Russian Federation) is about 60 million in 2000. About 4% of them are refugees. This percentage is much higher in Africa (22%) and Asia (23%), but Northern America (2%) and Oceania (1%) have lower shares.

"In the second half of the 20th century large parts of Europe experienced a historical shift from emigration to immigration. However the exact number of migrants residing in Europe is still unknown. This is partly due to the fact that (…) many European countries use nationality, not the place or country of birth, as the standard criterion in their demographic, economic and social statistics" (IOM, 2005, p. 141). The IOM report also overviews various other sources: Eurostat's Chronos database shows that "the 15 pre-enlargement EU Member Sates were home or host to some 18.7 million legal foreign residents" (p. 142). However other sources give other numbers and depending on the definition the range goes from 13.9 to 26.4 million. By combining data from different sources IOM judges these figures to be too low and the report (IOM, 2005, p. 144) continues to say that "the number of 'visible' first-generation immigrants in the EU-15 (2002) can be put at 33.0 million."

Despite transitional restrictions the EU enlargement will lead to short term increases in regular and irregular migration from NMS-10 due to the basic freedom of settlement and the transitional restrictions on employment and welfare (IOM, 2005, p. 145). Whether this will remain so in the longer run depends on the revival of the NMS-10 economies, countries that are confronted with population decline more heavily than EU-15. If these NMS-10 economies are developing successfully pressures to emigrate may cease. Currently studies suggest that 1% of the NMS-10 population intend to emigrate (Alvarez-Plata *et al.*, 2003). It is very likely that in the longer run migration will arrive from other

[10] Statistics on international migration —immigration and emigration— are currently under revision at Eurostat. Therefore now and here some highlights on migration, mainly on migrant stocks, are presented based on other sources, like the IOM World Migration reports. In the next monitoring report we hope to focus on international migratory streams and stocks more extensively if accurate Eurostat statistics are available again (see Table 2.2 for the crude rate of net migration).

world regions. "Europe will have to compete with traditional countries of immigration, in particular Australia, Canada and the US, for qualified migrants to fill their labour gabs" (IOM, 2005, p. 152).

2.4 Population structure

2.4.1. Population ageing

Together with the initial age-sex structure of the population, the fertility, mortality and migration rates in a specific period constitute the age-sex structure at the end of that period. Since population pyramids depict persons of 0 to about 100 years of age, these pyramids illustrate the demographic history of a country in the past 100 years. In addition to population dynamics, also changing social, economical, political and policy contexts are reflected in these pyramids.

To what extent does the age-sex composition of European populations vary? First of all, the shape of the pyramid for EU-15 and EU-25 is remarkably similar, which is also caused by the fact that the 10 new Members States only constitute 16% of the EU-25 population. Peculiarities are absorbed in the overall picture although the NMS-10 pyramid is rather rugged (*Figure 2.11*). Up to 2050 this variation between EU-15 and NMS-10 will not come to a halt.

Currently the largest age bracket in the EU-15 and EU-25 pyramids is those born in 1963 (43 years of age in 2005). Persons born in later years are less numerous and their numbers decrease almost linearly. While about 1.6% of all EU citizens were born in 1963, this diminishes to 1.0% for those born in 2002, about as many as today's survivors born in 1940. Some slight indentation is visible for the cohorts born during the Second World War (around 60-65 years of age now), as well as for those born during the First World War (around 85 years now); both are more related to lower fertility then than to higher mortality. The pyramid for NMS-10 shows two bulges: those born just after the Second World War (1946-1955), and those born around 1972-1990. These cohorts are larger than in EU-25, other cohorts are smaller.

What then are the basic details in population ageing in the recent past (*Table 2.6*) and in the coming decades? As an introduction *Figure 2.12* shows the median age in EU-15, EU-25 and NMS-10 separately. It shows that, since 1950, NMS-10 had a substantially younger population than EU-15. However that situation will change from about 2035 onwards. While currently half of the EU-25 population is older than 39.8 years (=the median age; 37.4 in NMS-10 and 40.3 in EU-15), in thirty years time that will be at 47 years.

Obviously all other indicators are in accordance with this trend in ageing. *Figures 2.13-2.15* show the percentages of the population aged 0-14, 15-64 and 65+. They picture the decreasing shares of youngsters and increasing shares of older people over the past

and in the coming decades. They clearly show that the trends in NMS-10 are fluctuating more than in EU-15 (see also Chapter 4). In a certain way NMS-10 is lagging behind in ageing trends. However that also has an advantage from the labour market perspective, as the share of the potential labour market population will be, in the years to come, much larger in NMS-10 countries than in EU-15 (the so-called 'demographic dividend'). As a consequence the demographic dependency ratios are 'much milder' in NMS-10 than in EU-15 (*Figures 2.16-2.18*). At least that is expected to be so up until about the middle of this century. The EU-15 countries can also still make a profit of their demographic bonus, since its total dependency ratio is currently at the lowest level. However that will change within the coming decade.

The absolute numbers of young people will diminish substantially and those of older persons will increase (*Table 2.7*). And while the number of youngsters will continue to diminish further, the number of people aged 15-64 is nearing its top around 2010 and will start to diminish from then onwards, while the number of 65+ will not diminish before 2050.

Over the past two decades old-age dependency —the ratio of the number of older, in general economically inactive persons (65+) to the number of persons of working age (15 to 64)— rose in EU-15 from 21.6 in 1980 to 25.5 in 2004. The country specific trends are rather similar: after a decline in the beginning of the 1980s in most countries, caused by the baby-boom generation entering the working age population, old-age-dependency rose steadily afterwards (*Figure 2.19*)[11]. This effect was chiefly driven by a subsequent fall in fertility rates in the late 1960s and by increasing life expectancy. In 2004 Italy was the country with the highest dependency value (28.9), followed by Germany (26.8), Sweden (26.4) and Belgium (26.1). In this group of countries only Sweden shows an atypical trend, having declining ratios more recently.

On average the annual growth of the EU-15 old-age dependency ratio was 1.1% during the last 20 years, varying between 1% and 1.2% over certain periods. The country with the most rapidly ageing population over the whole period of observation is again Italy with an average annual growth of 2%, followed by Portugal (1.6%) and Spain (1.5%).

Nevertheless some countries show declining old-age dependency ratios in certain years. Ireland is the only country with a negative development (-0.4% per year) over the period of observation. Sweden and Denmark show some stagnation over the last 20 years. All other countries saw their old-age dependency ratios increase, varying from 0.3% for the United Kingdom to 2% for Italy. The country with the most rapidly ageing population during the last observation period (2000-2004) is Germany. Whereas the annual growth varied from 0.6% to 1.0% over the periods from 1985 to 1999, the old-age-dependency

[11] Figure 2.19 will be extended with NMS data in the 2006 Monitor report. Moreover it will include then the 2004 Europop data for the near future.

ratio rose by 2.8% in the period from 2000 to 2004. The recent value amounts to 26.8 for 2004, which corresponds to the second highest ratio after Italy.

According to the baseline projection of EUROSTAT the old-age dependency ratio for EU-15 will rise on average from 25.9 in 2005 to 53.2 in 2050 (see also Chapter 8). This means that in 2050 there will be two persons of 15-64 years per one person of 65+ (compared to four at present).

These general trends are rather similar across Member States. Compared to the 2005 values all ratios increase in the coming decades. Nevertheless some variation exists. Whereas the increase is relatively low for Sweden old-age-dependency ratios will rise by 43 points in for example Spain (*Table 2.8*).

According to the baseline EUROSTAT projection Spain and Ireland will, in EU-15 have the highest average annual growth rates from 2005 to 2049. Their old-age-dependency ratios will increase by 2.3% per year. The countries with the lowest growth rates are again Sweden (1%) and Luxemburg (1.2%).

Let us now have a closer look at the various age groups, the 'Children' of 0-14 years to start with. In *Figure 2.20* the share of these 'children' in each EU Member State is given in 1975, 2004, 2010 and 2025. The countries are ordered by their share in 2004. Bulgaria, Italy, Greece, Spain and Slovenia have the lowest shares, while Luxembourg, Denmark, Cyprus, Ireland and Turkey have the highest. Over time the order is only changing to a minor extent. However, the variation between the Member States is diminishing substantially. It means that several countries witness large changes in the relative number of 'children' over time (Turkey, Cyprus, Malta, Spain, Portugal), while others only have minor changes (Luxembourg, Sweden, Belgium, France, United Kingdom).

Young people (15-24 years) have currently small shares in Italy, Denmark, Luxembourg, Germany, and the Netherlands, while Cyprus, Ireland, Slovakia, Poland and Turkey have high shares (*Figure 2.21*). Also here the variation across countries diminished over time, although the variation over time was much lower than for 'Children'. Sweden, Denmark, the United Kingdom, France and Austria had only minor changes over time, while those in Poland, Cyprus, Romania, Greece and Slovakia were substantial.

The shares of Young adults (25-39 years) hardly changed over time (*Figure 2.22*). The rates slightly rose in the past few decades but will now start to decline. Spain, Turkey, Ireland, Romania and Luxembourg have the highest shares; Finland, Malta, Sweden, Estonia and Croatia the lowest. Changes over time are most substantial in Spain, Italy, Turkey, Ireland and Greece.

Adults (40-54 years) are most prominent in Slovenia, Poland, Finland, Germany and Croatia (*Figure 2.23*). Small shares are characteristic for Turkey, Ireland, Sweden, the

United Kingdom and Spain. Over time the variation has diminished somewhat, and the most heavy changes are in Turkey, Cyprus, Germany, Slovakia and Spain.

Although the shares of the so called 'Older workers' (55-64 years) increased, the variation was only small and did not change much over time (*Figure 2.24*). Poland, Slovakia, Bulgaria, Lithuania and Turkey have the heaviest increases, Sweden, the UK, Luxembourg, Belgium and France with the smallest. Currently the shares are low in Turkey, Ireland, Poland, Slovakia and Cyprus, and high in Denmark, Sweden, the Czech Republic, Finland and Bulgaria.

The shares of Elderly people (65-79 years) are increasing substantially, however the variation per period is small. Bulgaria, Poland, Spain, Slovakia, and Romania have the largest changes, Luxembourg, Sweden, the UK, France and Belgium the smallest. *Figure 2.25* shows that currently Turkey, Ireland, Slovakia, Cyprus and Malta have low shares, while Greece, Italy, Croatia, Bulgaria and Germany have the highest.

Finally, the 'Very elderly people' (80+ years): in EU-15 their share rose from 1.2% to currently 4.2%. In 2025 a figure of 6.6 is expected. The EU-25 figures are slightly less, which indicates that the NMS-10 figures are significantly lower. The largest changes are in Italy, Germany, Spain, Austria, and Slovenia. *Figure 2.26* shows that Sweden, Italy, France, the UK and Germany are currently the 'most aged nations' within the EU according to this criterion, while Slovakia, Poland, Cyprus, Ireland and Malta are the 'least' (Turkey and Romania have even lower shares but are not (yet) Member States).

What then is the conclusion? In these top-5s of low and high rankings in shares of several age groups a lot of variation is visible. Only for a few Member States it is clear that they stand out, but we cannot conclude that specific regions within the EU have a special ageing profile. The picture is too diverse: the same general trend in population ageing has many faces. However if we sum the number of times that specific countries have been mentioned in the previous overview we can conclude that Turkey, Ireland, Cyprus, Italy, Slovenia, Germany, Poland, and Sweden are mentioned most often. Turkey (with in 2005 a median age of 26.3 years), Ireland (34.2), Cyprus (35.3), Slovakia (35.6) and Poland (36.5) are the 'youngest countries', while Italy (42.3) and Germany (42.1) are the oldest. Surprisingly, Sweden (with high shares of 'Elderly' and 'Very elderly people') has a lower median age (40.1) than Austria (40.6), Belgium (40.6), Bulgaria (40.6), Croatia (40.6), Finland (40.9) and Slovenia (40.2). That probably has to do with Sweden's stable population age structure.

2.4.2. Household structures and living arrangements

The changing household structures and numbers of households are mainly the result of demographic processes like fertility, mortality and migration, but also of changing age structures. With respect to living arrangements people make individual choices in various ways, depending on whether one chooses to live alone or not, to marry, divorce, have children, but also on children leaving the parental home, and on sequential living

arrangements (for example unmarried cohabitation, which is also becoming more popular for widowed elderly). Also the moments of start and end (duration) of each of the various life course phases are important for household developments. In general the number of households tends to increase at a faster rate than population growth, signalling that households are becoming smaller on average. Population ageing is reflected in the fact that currently more people are living in specific 'older' life course phases (with smaller household sizes) than before, for example in the 'empty nest' phase where all children have left the parental home.

Data on the average household size show that in EU-15 around 3.2 persons were living together around 1960; currently this is 2.4 (*Figure 2.27* and *Table 2.9*).[12] The absolute number of household increased in EU-15 from slightly over 100 million around 1960 to currently some 190 million, indicating that the number of households increased much faster (90%) than population size (30%) in this period. There is substantial variation in household sizes within Europe, mainly echoing the moment that fertility started to decline. Currently for example Ireland, Portugal and Spain and to a lesser extent Greece and Italy —countries where the decline in fertility started later— still have much larger household sizes than elsewhere in the EU-15. In other EU-15 Member States households are smaller, between 2.0 and 2.3 persons on average. The differences also indicate that there is quite some variation in the age at leaving the parental home and the way older people live after the death of their spouse.

The share of one-person households is increasing. Currently many more persons than before are living alone, although sometimes only for a short period. After leaving the parental home, young people may live alone for a while before a 'living-together relationship' starts. However, 'living together' may end due to separation (after cohabitation) or divorce (after marriage). If children are involved in either separation or divorce, a one parent family may result. When the children have left the parental home the spouse's death may also leads to a one person household. Since on average women live longer than men, and generally marry older partners, large shares of older one person households involve women. Widowed women may still live five or more years alone before death. In Member States where male and female life expectancies have recently come closer the duration of widowhood may have become smaller.

In EU-15 the share of one-person households increased from 16% to, currently, 28%. Portugal and Spain still have relative low shares and Sweden the highest. The Swedish share (40%) of one person households indicates that about 20% of the population is living alone. For Spain, where currently 15% of the households are run by one person, about 5% of the population is living alone.

[12] Figure 2.27 and Table 2.9 will be extended with NMS data in the 2006 Monitor report.

If the share of people living alone is rising and the overall average household size is declining, the average household size for households with more than one person is declining as well. This reflects fertility decline and the fact that families have become smaller over time. This trend is observed throughout the EU-15: the share of large households diminished, i.e. the share of households with five or more persons is dropping almost everywhere.

To a large extent household formation depends on union formation and childbearing. For most people these issues are essential in their life course. Marriage used to be a precondition for having children in all EU Member States, although the propensity to marry has always been somewhat lower in Scandinavia. Rising levels of births outside marriage indicate that the bond between marriage and childbirth is becoming weaker. A pregnancy used to be an incentive for an unmarried woman to marry the father of the child to be born (forced marriage), currently it is not exceptional anymore that the parents have their child and may marry or not after the child is born. This is especially the case in Austria, Bulgaria, Denmark, Estonia, Finland, France, Sweden and the UK where the mother's mean age at first birth is even higher than women's age at first marriage (*Figure 2.28*). Late first marriages are nowadays characteristic for women in Austria, Denmark, Finland, Luxembourg, the Netherlands, Slovenia and Sweden (at age 27 or over) (*Table A.2.10*). Early marriages (at ages up to and including 24) are still prevalent in Bulgaria, Latvia, Lithuania, Poland and Romania. The mean ages at first marriage of men closely follow this pattern: men usually are 2 to 3 years older than their partner. A difference of more than 3 years is observed in Bulgaria, Croatia, Greece and Romania.

On average the age at first marriage is, for women, 27.8 in EU-25 (i.e. only slightly lower than the mean age at first birth (28.0)) versus 24.9 in NMS-10. However the groups of women marrying and having a first baby usually do not overlap in a given calendar year.
In many countries unmarried cohabitation has become a prominent living arrangement.[13] Also having children has become more prominent among cohabiting couples. This is particularly the case in Scandinavia, but also in for example France and the Netherlands. This trend is not (yet) as evident in Central and Eastern Europe. Also in Southern Europe unmarried cohabitation is still in an initial stage.

Unmarried cohabitation mirrors the decline in marriage. The total (period) first marriage rate shows, both for women and men, structural declines in the past, but there are reasons to believe that the lowest levels have been reached now. Currently levels are lowest in Belgium, the Czech Republic, Estonia, Latvia, Hungary, Slovenia, and Sweden. In other countries levels have increased to some extent, for example in Denmark and the Netherlands. The latter may mirror the levelling off of the increase in the age at first marriage. Also when looking at the proportion of ever-married women by generation one may come to such a conclusion. In the generation born in 1965 (=women currently over 45 years of age) more than 85% ever married in the Czech Republic, Greece, Hungary,

[13] Data to be added in the 2006 Monitor report.

Poland, Portugal, the Slovak Republic, Spain, and in Bulgaria and Romania. France, Slovenia, Finland, and Sweden have values below 75%.

Not only has the propensity to marry diminished, but also divorce has increased. The total divorce rate indicates how many marriages in hypothetical generations end by divorce. In 1980 about one fifth of all marriages ended by divorce, both in EU-15 and EU-25 (*Table 2.11*). Currently this is the case for about one third of all marriages (*Figure 2.29*). The EU-15 level is slightly higher than the NMS-10 level. High divorce levels are characteristic for Scandinavia, the Baltic States, but also for Austria, Belgium, and the Czech Republic. Low levels are observed in Cyprus, Greece, Italy, Poland and Spain, but for several countries recent data are lacking. The situation may have changed significantly: for example, Portugal used to have low levels as well but is now slightly above the EU average.

The mean duration of marriage at divorce does not vary much in the EU Member States. Moreover this indicator does not show much variance over time: the overall mean duration is around 11 or 12 years, but slightly higher (13 to 14 years) in Belgium, France, Italy, Portugal, and Spain, and somewhat lower in the Baltic States, Hungary, Bulgaria and Romania.
Due to the rise in divorce, but also related to population ageing —more adults are 'active on the sequential marriage market'— non-first marriages are becoming more popular. Table 2.10 shows, that it is not exceptional for women that a quarter of all marriages in a certain year are non-first marriages. For the EU as a whole, about 1 in 5 women enter such marriages, in NMS-10 this is 1 in 6. However in Greece, Italy, Poland, Portugal, the Slovak Republic, Slovenia and Spain, and also in Bulgaria and Romania, the rate is (still?) about 1 in 10.

Although it seems that no specific shifts in timing occurred in the age at first union, the increase in unmarried cohabitation and its subsequent effect on the timing of marriage had profound effects on household formation and living arrangements. Separation and divorce created ex-families. Repartnering confronts many more EU citizens with the simultaneous existence of old and new family networks (ex-partners, ex-grandparents, ex-grandchildren, etc.). However marriage seems to remain the preferred option in union formation although there are "marked variations in the ways men and women are forming and maintaining partnerships across European nations. (…) In most western and northern European countries, cohabitation has eclipsed marriage as the marker for first partnership, and in northern countries and France there is evidence that long-term cohabitation has become more prevalent" (Kiernan, 2002). As also living alone is becoming a more prominent household feature —temporarily for many young adults, or more permanently after separation/divorce or in widowhood— EU variation in living arrangements over the life course has greatly increased while household sizes diminished. Population ageing as such also has an effect on household sizes, as the increasing numbers of older people live in smaller households (empty nest phase, or finally without partner).

2.5 Discussion

Europe will be the first continent to face population decline and severe population ageing. As a result of fertility decline and postponement and a further rise in life expectancy, population size will come to a maximum and then decline, maybe offset for a while by immigration surpluses. This process started, roughly spoken, in the northern part of the EU, 'travelled' to the western, and then to the southern part. After the fall of the Berlin wall also the eastern parts 'adopted' this pattern although the change to a free market economy had there an effect as well.

Currently the EU is characterized by low and late fertility, as well as low and late mortality. Most EU citizens still opt for marriage, although increasingly after a period of non-marital cohabitation. The age at marriage is high, in some countries even after a child has been born. Divorce has become kind of normal, but the majority of marriages still end with death. Households are small, also as an effect of population ageing. One person households have become 'popular'. Moreover the EU has turned into an immigration continent.

In all these trends regional variation within the EU may be large. Postponement of marriage and childbearing causes period rates to lower. However surveys show that marriage and childbearing remain important for the majority. As a consequence period fertility rates will likely increase somewhat when postponement slows down or comes to a halt, and that would give some relief to population ageing and population decline. Although Europe will be more heavily hit by population ageing in the coming decades than other world continents there is much within-Europe variation in the ageing process. Demographic changes have always occurred, will always occur, and always have effects on societies. Societies will have to deal with new demographic realities and normally have some time to do so. Demographic forecasts are rather accurate, compared to forecasts on future economic developments, So normally there is time to see changes coming, and within the EU several countries are much more advanced —and experienced— in population ageing than others. Combing knowledge from various backgrounds may create solutions for the socio-economic challenges Europe is facing. One of the positive elements is that currently most specifically NMS-10 can make a profit of the demographic bonus (see section 2.4.1). Due to currently low fertility and early mortality the potential labour market population is relatively large there, and that may create extra stimuli to economic growth. The other EU regions have already much higher demographic dependency ratios.

Coming generations will be better educated (see Chapter 3) and that may be profitable as well when they become 'the elderly'. However they will also have undergone more family changes than earlier generations (sequential marriage, divorce, fertility), and a larger share will be childless. Personal networks have become more complex, and may have become weaker. Life courses have increasingly diversified also if looked from only a demographic perspective. Moreover more and better education leads to a later start at

the labour market. People may doubt for a while about when to have children —or not to have children at all— since they see their peers with children struggle with the 'family rush hour', i.e. the micro incompatibility of family and work careers (Van Nimwegen and Esveldt, 2003). And, most employees prefer to leave the labour market via early retirement schemes and not to wait until the official retirement age (see Chapter 4; Henkens and Van Solinge, 2003) in order to enjoy a good and long old age.

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Table 2.1. Population size in the various EU stages, 1957–2004 (millions)

	EU-6*	EU-9*	EU-10*	EU-12*	EU-15	EU-25
1957	166.3					
1973	191.9	256.1				
1981	196.6	261.5	271.2			
1986	197.8	263.2	273.1	321.6		
1995	222.1	289.4	300.0	349.3	371.2	
2004	227.4	296.9	307.9	360.6	382	456

Source: Eurostat.
* From 1957–1986 excluding 'East Germany' (=former German Democratic Republic).

Table 2.2. Population size and growth, selected calendar years

	Population size (x 1000)			Crude rate of population increase			Crude rate of natural increase			Crude rate of net migration		
	1960	1980	2004	1960/64	1980/84	2000/03	1960/64	1980/84	2000/03	1960/64	1980/84	2000/03
EU-25	376,423	438,647	456,815	8.8	2.8	3.9	8.2	2.7	0.6	0.6	0.1	3.4
EU-15	314,826	363,719	382,674	8.6	2.2	4.9	7.9	2.0	0.9	0.6	0.2	4.1
NMS-10	61,597	71,512	74,141	9.9	6.0	-1.1	9.8	6.3	-1.1	0.5	-0.3	-0.1
Austria	7,030	7,546	8,114	6.1	0.5	4.3	6.0	0.0	0.2	0.1	0.4	4.1
Belgium	9,129	9,855	10,396	6.5	0.0	3.8	5.0	0.8	0.8	1.5	-0.7	3.0
Cyprus	572	510	730	5.6	10.8	14.1	14.9	10.1	4.2	-9.3	0.7	9.8
Czech Republic	9,638	10,316	10,212	2.4	0.3	-1.6	4.2	1.0	-1.7	-1.7	-0.6	0.1
Denmark	4,566	5,122	5,398	7.6	-0.4	3.2	7.4	-0.6	1.3	0.2	0.2	1.8
Estonia	1,209	1,472	1,351	12.1	6.9	-3.9	5.5	3.3	-4.0	6.7	3.5	0.1
Finland	4,413	4,614	5,220	6.5	5.1	2.4	8.9	4.2	1.4	-2.5	0.8	1.0
France	45,465	53,731	59,901	13.2	5.3	4.9	6.7	4.3	3.9	6.5	0.9	1.0
Germany	72,543	78,269	82,532	8.2	-1.2	1.1	6.0	-1.2	-1.3	2.2	0.0	2.4
Greece	8,300	9,588	11,041	5.3	6.9	3.1	10.3	5.0	-0.1	-5.0	1.8	3.2
Hungary	9,961	10,710	10,117	3.5	-1.0	-2.6	3.5	-1.0	-3.7	0.0	0.0	1.1
Ireland	2,836	3,393	4,028	2.6	8.7	16.0	10.0	10.6	7.4	-7.4	-1.9	8.6
Italy	50,026	56,389	57,888	7.4	0.7	4.2	9.2	1.2	-0.4	-1.8	-0.5	4.6
Latvia	2,104	2,509	2,319	13.9	4.8	-6.7	5.8	2.3	-5.2	8.1	2.6	-1.4
Lithuania	2,756	3,404	3,446	13.9	7.2	-4.8	12.9	5.2	-2.6	1.0	2.0	-2.2
Luxembourg	313	364	452	10.6	1.5	10.2	4.0	0.4	3.7	6.6	1.0	6.5
Malta	327	330	400	-4.1	9.6	12.6	14.0	7.7	2.4	-18.0	1.8	10.2
Netherlands	11,417	14,091	16,258	13.5	5.1	6.1	13.1	4.1	3.9	0.3	1.0	2.3
Poland	29,480	35,413	38,191	12.2	9.1	-0.5	12.5	9.8	0.0	-0.3	-0.7	-0.5
Portugal	8,823	9,714	10,475	4.5	6.2	6.8	13.2	5.5	0.8	-8.7	0.6	6.0
Slovak Republic	3,970	4,963	5,380	18.3	7.2	-0.9	12.9	8.3	0.0	5.5	-1.1	-0.9
Slovenia	1,581	1,893	1,996	7.2	4.6	1.1	8.4	4.6	-0.6	-1.2	0.0	1.7

Table 2.2. (end)

Spain	30,327	37,242	42,345	9.3	5.9	14.5	12.9	5.8	1.1	-3.6	0.0	13.3
Sweden	7,471	8,303	8,976	5.9	0.9	3.2	4.5	0.3	0.1	1.4	0.6	3.2
United Kingdom	52,164	56,546	59,651	7.5	1.1	4.3	6.4	1.3	1.2	1.1	-0.2	3.1
Bulgaria	7,829	8,846	7,801	8.7	2.8	-5.4	8.7	2.8	-5.6	0.0	0.0	0.2
Croatia	4,125	4,579	4,442*	6.6	2.4	-28.9	7.6	3.1	-1.4	-0.9	-0.7	-27.4
Romania	18,319	22,133	21,711	7.1	4.9	-2.1	8.1	5.8	-2.0	-1.0	-0.8	-0.2
Turkey	28,233*	46,316*	71,254*									

* UN 2004 World Population Prospects.

Table 2.3. Fertility indicators, selected calendar years (*in yellow: estimates*)

	Total period fertility rate			Mean age mother at first birth (*to the mother*)			% children born outside marriage		
	1960	1980	2003	1960	1980	2003	1960	1980	2003
EU-25	2.63	1.88	1.48	24.4	24.6	27.5	4.5	9.1	28.6
EU-15	2.62	1.82	1.52	24.5	25.0	28.0	4.3	9.7	29.6
NMS-10	2.65	2.17	1.24	24.0	23.1	25.3	5.3	6.0	23.2
Austria	2.69	1.65	1.39			26.9	13.3	17.8	35.3
Belgium	2.56	1.68	1.61				2.1	4.1	
Cyprus	3.51	2.46	1.46	23.8	23.8	26.9		0.6	3.5
Czech Republic	2.11	2.10	1.18	22.9	22.4	25.9	4.9	5.6	28.5
Denmark	2.57	1.55	1.76	23.1	24.6	27.8**	7.8	33.2	44.9
Estonia	1.96	2.02	1.35		23.2	24.6*	13.7	18.3	56.3*
Finland	2.72	1.63	1.76	24.7	25.6	27.9	4.0	13.1	40.0
France	2.73	1.95	1.89	24.8	25.0	28.0**	6.1	11.4	44.3*
Germany	2.37	1.56	1.34				7.6	11.9	27.0
Greece	2.28	2.21	1.27		24.1	27.9*	1.2	1.5	4.4*
Hungary	2.02	1.92	1.30	22.9	22.5	26.1	5.5	7.1	32.3
Ireland	3.76	3.25	1.98		25.5	28.2	1.6	5.0	31.4
Italy	2.41	1.64	1.29	25.8	25.0		2.4	4.3	13.6
Latvia	1.94	1.90	1.29		22.9	24.9	11.9	12.5	44.2
Lithuania	2.60	2.00	1.25		23.8	24.5	7.3	6.3	29.5
Luxembourg	2.28	1.49	1.63				3.2	6.0	25.0
Malta	3.62	1.99	1.41					1.1	16.8
Netherlands	3.12	1.60	1.75	25.7	25.7	28.7*	1.4	4.1	30.7
Poland	2.98	2.28	1.24	25.0	23.4	24.9	4.5	4.8	15.8

Portugal	3.10	2.18	1.44		24.0	26.8*	9.5	9.2	26.9

Table 2.3. (end)

Slovak Republic	3.07	2.32	1.17	22.7	22.7	24.9	4.7	5.7	23.3
Slovenia	2.18	2.11	1.22	24.9	22.8	27.3	9.1	13.1	42.5
Spain	2.86	2.20	1.29		25.0	29.2*	2.3	3.9	21.8*
Sweden	2.20	1.68	1.71	25.5	25.3	28.5	11.3	39.7	56.0
United Kingdom	2.72	1.90	1.71		24.7	26.9		11.5	41.5
Bulgaria	2.31	2.05	1.23	22.1	21.9	24.3	8.0	10.9	46.1
Croatia	2.21	1.93	1.34*		22.8	26.1	7.4	5.1	10.1
Romania	2.33	2.43	1.27		22.4	24.3		2.8	28.2
Turkey	6.18	4.36	2.52**		20.8			2.9	

*2002 **2001 ***2000.

Table 2.4. Fertility indicators, selected birth cohorts of women *(in yellow: estimates)*

	Total cohort fertility rate				Mean age mother at first birth				% women without children				Number of children per woman, cohort 1960 (%)			
	1935	1945	1955	1965 *	1935	1945	1955	1965 *	1935	1945	1955	1965 *	0	1	2	3+
EU-25	2.37	2.11	1.94	1.77				26.3				15.7	15	18	40	27
EU-15	2.36	2.10	1.90	1.73				26.9				16.1	16	18	39	26
NMS-10	2.40	2.16	2.10	1.96				23.2				13.4	10	17	44	29
Austria	2.45	1.96	1.77	1.64				25.3				21.0	17	23	39	15
Belgium	2.27	1.93	1.83						9.4	8.7	10.5		17	28	34	20
Cyprus			2.31	2.56												
Czech Republic	2.12	2.03	2.07	1.93				22.5				7.0	6	15	55	23
Denmark	2.35	2.06	1.84	1.94		23.3	25.0	27.1		8.1	13.1	13.0	10	22	43	25
Estonia		1.85	2.00	1.87												
Finland	2.29	1.88	1.90	1.91		24.4	25.2	27.0		14.2	18.2	20.0	19	14	36	31
France	2.57	2.22	2.13	2.02	24.5	24.0	24.7	26.3	10.3	7.0	7.8		28	18	32	22
Germany	2.16	1.80	1.67	1.53									30	19	35	15
Greece		1.98	2.01	1.75				25.2				18.0	11	16	52	22
Hungary	1.99	1.90	1.94	1.97				23.0				10.0	7	20	49	23
Ireland	3.52	3.27	2.67	2.18	25.7	24.9	25.1	27.4	4.5	6.2	13.2	21.0	16	10	28	46
Italy	2.28	2.07	1.80	1.49	25.3	24.4	24.5	27.0	13.1	10.2	11.1	20.0	15	25	43	17
Latvia			1.84	1.77												
Lithuania		1.97	1.94	1.72												
Luxembourg		1.82	1.69	1.82												
Malta				2.00												
Netherlands	2.49	2.00	1.87	1.77	25.5	24.5	26.3	28.4	12.5	12.4	17.4	19.0	18	15	42	25

Poland	2.60	2.27	2.17	2.00				23.3				16.0	11	17	39	33
Portugal	2.88	2.42	2.04	1.82	25.2	24.6	23.9	25.2	4.1	4.9	7.5	5.0	6	30	45	21
Slovak Republic	2.72	2.38	2.22	2.04				22.7				11.0	10	13	45	32
Slovenia	2.07	1.83	1.96	1.77				23.7				9.0	4	26	54	16
Spain	2.63	2.43	1.92	1.61		25.4	25.2	27.2		6.1	10.7	14.0	10	26	47	17
Sweden	2.14	1.98	2.03	1.98		24.0	25.4	26.8		12.2	12.8	13.0	13	15	41	31
United Kingdom			2.01	1.89					11.1	9.8	17.2					
Bulgaria	2.04	2.07	2.03	1.83				22.1				5.0	3	21	60	16
Croatia	2.00	1.78	1.92	1.88				23.9				12.0	5	22	52	21
Romania	2.38	2.44	2.28	1.91				22.5				12.0	8	24	39	28
Turkey		4.48	3.97													

* Women in this birth cohort are still in their reproductive period.

Table 2.5. Mortality indicators, selected calendar years *(in yellow: estimates)*

	Infant mortality rate			Life expectancy at birth, Males			Life expectancy at birth, Females			Life expectancy at age 60, males			Life expectancy at age 60, females		
	1960	1980	2003	1960	1980	2002	1960	1980	2002	1960	1980	2003	1960	1980	2003
EU-25	34.6	14.8	4.6	67.1	69.8	74.8	72.6	76.8	81.1	15.8	16.5	19.6	19.0	20.9	23.8
EU-15	32.6	12.7	4.2	67.4	70.5	75.8	72.9	77.2	81.6	15.9	16.8	20.1	19.0	21.2	24.2
NMS-10	44.7	22.1	6.6	65.7	66.5	70.0	71.2	74.7	78.3	15.6	14.6	16.9	18.6	19.1	21.7
Austria	37.5	14.3	4.5	66.2	69.0	75.8	72.7	76.0	81.7		16.3	20.2		20.2	24.1
Belgium	23.9	12.1	4.3	67.7	70.0	75.1	73.5	76.8	81.1	15.5	16.3	19.6	18.7	20.9	23.9
Cyprus		14.4	4.5		72.3	76.1**		77.0	81.0**						
Czech Republic	20.0	16.9	3.9	67.9	66.8	72.1	73.4	73.9	78.7	15.6	14.3	17.3	18.4	18.2	21.5
Denmark	21.5	8.4	4.4	70.4	71.2	74.8	74.4	77.3	79.5	17.1	17.0	19.1	19.3	21.4	22.4
Estonia	31.1	17.1	6.8	64.3	64.1	65.3	71.6	74.1	77.1	15.3	14.8	15.4	19.0	19.4	21.3
Finland	21.0	7.6	3.1	65.5	69.2	74.9	72.5	77.6	81.5		15.6	19.5		20.5	24.0
France	27.7	10.0	3.9	66.9	70.2	75.8	73.6	78.4	83.0	15.6	17.3	20.6**	19.5	22.4	25.7**
Germany	35.0	12.4	4.2		69.6	75.4		76.1	81.2			19.8**			23.9**
Greece	40.1	17.9	4.8	67.3	72.2	75.4	72.4	76.8	80.7	16.9	18.2	20.1***	18.5	20.8	23.1***
Hungary	47.6	23.2	7.3	65.9	65.5	68.4	70.1	72.7	76.7			16.1			20.9
Ireland	29.3	11.1	5.1	68.1	70.1	75.2	71.9	75.6	80.3	15.8	15.9	19.2	18.1	19.5	22.9
Italy	43.9	14.6	4.3	67.2	70.6	76.8	72.3	77.4	82.9	16.7	16.8	20.4***	19.3	21.2	24.8***
Latvia	38.0	15.4	9.4	65.2	63.6	64.8	72.4	74.2	76.0		15.1	15.2		19.7	20.8
Lithuania	27.0	14.5	6.7	64.9	65.5	66.3	71.4	75.4	77.5	17.1	16.5	16.1	19.8	20.5	21.7

Luxembourg	31.5	11.4	4.9	66.5	69.1	74.9	72.2	75.9	81.5	15.5	15.5	19.6	18.3	19.9	24.2
Malta	38.3	15.2	5.9	66.5	68.5	75.9	70.5	72.7	81.0			19.0			23.3
Netherlands	16.5	8.6	4.8	71.5	72.7	76.0	75.3	79.3	80.7	17.7	17.5	19.5	19.7	22.6	23.5
Poland	56.1	25.4	7.0	64.9	66.9	70.4	70.6	75.4	78.7			17.1			22.0
Portugal	77.5	24.2	4.0	61.2	67.7	73.8	66.8	75.2	80.5	16.2	16.3	19.4	19.1	20.6	23.3
Slovak Republic	28.6	20.9	7.9	68.4	66.8	69.9	72.7	74.3	77.8	16.6	15.5	16.4	18.4	19.2	21.0
Slovenia	35.1	15.3	4.0	66.1	67.4	72.7	72.0	75.2	80.5			18.0			23.1
Spain	35.4	12.3	3.2	67.4	72.5	75.8	72.2	78.6	83.5	16.5	18.4	20.3***	19.2	22.1	24.9***
Sweden	16.6	6.9	2.8	71.2	72.8	77.7	74.9	78.8	82.1	17.3	17.9	20.9	19.3	22.1	24.3
United Kingdom	22.5	13.9	5.3	67.9	70.2	75.9	73.7	76.2	80.5	15.0	15.9	19.4***	18.9	20.4	23.0***
Bulgaria	45.1	20.2	12.3	67.8	68.7	68.9	71.4	74.0	75.6	16.9	16.4	16.1	18.5	18.9	19.7
Croatia	70.4	20.6	7.0*	64.3	66.6	71.2	69.0	74.2	78.3			16.2***			20.7***
Romania	75.7	29.3	16.7	64.2	66.5	67.5	67.7	71.8	74.8			16.1			19.7
Turkey	198.2	93.0	38.3												

*2002 **2001 ***2000.

Table 2.6. Age structure, selected calendar years *(in yellow: estimates)*

	Median age*			Young dependency (0-14/15-64)			Old dependency (65+/15-64)			Total dependency		
	1960	1980	2005	1960	1980	2005	1960	1980	2005	1960	1980	2005
EU-25	32.2	33.3	39.8	40	34	24	15	21	25	55	55	49
EU-15	32.9	33.8	40.3	38	34	24	16	22	26	54	55	50
NMS-10	28.5	31.0	37.4	49	36	23	11	17	20	60	53	43
Austria	35.4	34.7	40.6	34	32	24	18	24	24	52	56	47
Belgium	35.2	34.2	40.6	36	31	26	19	22	26	55	52	52
Cyprus	23.0	28.7	35.3	64	37	28	10	16	18	74	53	46
Czech Republic	32.8	33.0	39.0	40	37	21	13	21	20	53	58	41
Denmark	33.0	34.3	39.5	39	32	28	16	22	23	56	54	51
Estonia	32.0	33.9	38.9	34	33	23	16	19	24	50	52	47
Finland	28.2	32.8	40.9	49	30	26	12	18	24	60	48	50
France	33.0	32.5	39.3	43	35	28	19	22	25	61	57	54
Germany	34.7	36.4	42.1	32	28	22	17	24	28	49	52	49
Greece	29.1	34.2	39.7	41	36	21	13	21	27	53	56	48
Hungary	32.1	34.4	38.8	39	34	23	14	21	23	52	55	45
Ireland	29.8	26.4	34.2	54	52	31	19	18	16	73	70	47
Italy	31.3	34.0	42.3	38	34	21	14	20	29	52	55	51
Latvia	32.1	35.0	39.5	32	31	22	16	20	24	48	50	46
Lithuania	28.3	31.8	37.8	41	36	25	12	17	23	53	54	48
Luxembourg	35.2	34.8	38.1	31	28	28	16	20	21	47	48	49
Malta	23.1	30.0	38.1	66	34	26	13	15	19	79	49	45
Netherlands	28.7	31.3	39.3	49	34	27	15	17	21	64	51	48
Poland	26.5	29.5	36.5	55	37	24	9	15	19	65	52	43

Portugal	28.0	29.1	39.5	46	41	23	13	16	25	59	57	49
Slovak Republic	26.8	29.0	35.6	54	41	24	11	16	16	65	58	40
Slovenia	29.3	31.7	40.2	42	36	20	12	17	22	54	53	42
Spain	29.6	30.3	38.6	43	42	21	13	17	24	55	59	45
Sweden	36.2	36.2	40.1	33	31	27	18	25	26	51	56	53
United Kingdom	35.4	34.6	39.0	36	33	27	18	24	24	54	56	52
Bulgaria	30.4	34.2	40.6	39	34	20	11	18	25	51	52	45
Croatia*	29.4	33.6	40.6	42	31	23	11	17	26	53	49	49
Romania	28.4	30.7	36.7	43	42	23	10	16	21	54	59	44
Turkey*	19.5	19.5	26.3	78	73	45	6	8	8	85	82	53

* UN data..

Table 2.7. Population in three age groups, absolute numbers (millions)

	1975	2005	2050	2050 / 1975
		0–14 years		
EU–15	82.8	61.5	58.2	0.70
EU–25	98.9	73.4	66.5	0.67
NMS–10	16.1	11.9	8.3	0.52
		15–64 years		
EU–15	220.2	256.5	218.3	0.99
EU–25	265.8	308.9	253.4	0.95
NMS–10	45.6	52.4	35.1	0.77
		65+ years		
EU–15	45.5	66.8	110.7	2.43
EU–25	52.9	77.0	129.1	2.44
NMS–10	7.4	10.2	18.4	2.49

Source: Eurostat.

Table 2.8. Old-age dependency ratio (Member States, EUROSTAT baseline variant, 2005-2050)

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	Growth 2005-2050
Spain	24.5	25.4	27.7	30.0	33.6	38.9	45.9	54.3	63.2	67.5	43.0
Italy	29.4	31.3	34.3	36.6	39.7	45.2	52.4	59.8	64.6	66.0	36.6
Portugal	25.2	26.5	28.8	31.5	34.7	39.0	43.4	48.9	54.7	58.1	32.9
Greece	26.8	28.0	30.3	32.5	35.5	39.1	44.3	49.8	55.2	58.8	32.0
Austria	23.6	26.3	28.1	30.3	34.5	40.8	47.1	50.4	51.5	53.2	29.6
Ireland	16.5	17.5	19.9	22.5	25.2	28.3	31.6	35.9	40.9	45.3	28.8
Germany	27.8	31.0	32.0	35.1	39.3	46.0	52.6	54.6	54.9	55.8	28.0
Finland	23.7	25.4	31.6	37.0	41.4	45.0	47.0	46.1	46.1	46.7	23.0
France	25.3	25.9	29.5	33.2	36.9	40.7	44.1	46.9	47.2	47.9	22.6
Belgium	26.3	26.4	29.1	32.2	36.5	41.3	45.1	47.2	47.8	48.1	21.8
United Kingdom	24.4	25.1	28.1	30.3	33.2	37.4	41.4	43.8	44.2	45.3	21.0
Netherlands	20.7	22.2	26.0	29.0	32.5	36.7	40.3	41.6	40.2	38.6	17.9
Denmark	22.6	24.8	28.7	31.2	33.8	37.1	40.4	42.1	42.0	40.0	17.4
Luxemburg	21.2	21.6	22.8	24.7	27.7	31.5	35.1	36.7	36.6	36.1	15.0
Sweden	26.4	28.0	32.0	34.4	36.5	38.5	40.6	41.5	41.2	40.9	14.5

Source: Eurostat, IAS

Table 2.9. Households, around selected calendar years *(in yellow: estimates)*

	Average household size			% one person households			% households with 5 or more persons		
	1960	1980	2001	1960	1980	2001	1960	1980	2001*
EU-25	3.3	2.8		16	21				
EU-15	3.2	2.8	2.4	16	22	28	21	13	
NMS-10	3.5	3.1		15	18				
Austria	3.0	2.7	2.4	20	28	29	17	13	
Belgium	3.0	2.7	2.4	17	23	29	16	11	
Cyprus	3.9	3.5		11	10		37	25	
Czech Republic									
Denmark	3.0	2.5	2.2	20	29	37	15	7	
Estonia									
Finland	3.3	2.6	2.1	22	27	37	25	10	
France	3.1	2.7	2.4	20	25	31	20	12	
Germany	2.8**	2.4**	2.1	21**	31**	35	14**	8**	
Greece	3.8	3.1	2.6	10	15	22	32	17	
Hungary	3.2	2.9		15	20				
Ireland	4.1	3.8	3.0	13	17	21	35	32	
Italy	3.6	3.0	2.6	11	18	23	27	15	
Latvia									
Lithuania									
Luxembourg	3.3	2.8	2.5	12	21	26	19	12	
Malta	4.2	3.3		11	13		37	19	
Netherlan	3.2	2.5	2.3	12	22	33	27	12	

ds								
Poland	3.6	3.2		16	17			
Portugal	3.8	3.4	2.9	11	13	15	29	21
Slovak Republic								
Slovenia								
Spain	3.8	3.4	3.0		10	15		26
Sweden	2.8	2.3	2.0	20	33	40	13	6
United Kingdom	3.1	2.7	2.3	13	22	30	16	11
Bulgaria	3.9	3.2		6	17			
Croatia								
Romania								
Turkey	5.7	5.2		3	6			

* Data to be added in the 2006 Monitor report.
**FRG.
Source: Council of Europe (1990); Van Imhoff *et al.* (1995).

Table 2.10. Marriage indicators, women, selected calendar years *(in yellow: estimates)*

	Mean age at first marriage			% of first marriages			Total first marriage rate			% ever married by generation		
	1960	1980	2002	1960	1980	2002	1960	1980	2002	1945	1955	1965
EU-25	23.9	23.1	27.2	92.5	87.6	81.8		76	57			81
EU-15	24.1	23.3	27.8	92.9	87.8	81.1		73	57		89	79
NMS-10	22.3	22.2	24.9	90.2	86.4	85.1		86	53			87
Austria	24.0	23.2	27.4	87.3	85.3	74.2	103	77	50	87	83	76
Belgium	22.8	22.3	26.7	91.0	89.8	75.0	105	77	46	93	88	81
Cyprus		23.3			76.6	80.1						
Czech Republic		21.5	25.2	87.3	77.6	74.6		78	48			94
Denmark	22.8	24.6	29.6	86.6	73.9	72.7	101	53	73	94	84	77
Estonia		22.6	25.5			69.2		94	42			
Finland	23.8	24.4	28.5	91.3	87.1	77.1	96	67	64	91	82	73
France	23.0	23.0	28.1**	90.5	88.6	83.3**	103	71	60**	92	86	73
Germany	23.4	22.9	27.2**	89.1	82.0	71.3**		69	54**		87	77
Greece	25.2	23.8	26.6***	96.5	95.3	89.2***						92
Hungary	21.9	21.3	25.5			78.3	100	89	47			89
Ireland	27.6	24.7		98.7	99.1			75			87	84
Italy	24.8	23.9	27.4***	98.9	97.8	94.6***	98	78	64***	93	94	83
Latvia		22.8	24.8		74.9	73.1		97	44			
Lithuania			24.1		82.4	79.7		94	54			
Luxembourg			27.7	94.3	87.9	76.6			50			75
Malta				98.5	98.6				73**			
Netherlands	24.2	23.2	28.2	93.2	89.0	75.3	105	68	58	94	88	78
Poland		22.5	24.4			90.7		89	57			88

Table 2.10. (end)

Portugal	24.8	23.1	25.9	97.7	95.2	91.9		86	66			96
Slovak Republic	21.8	21.9	24.6			88.7			50			89
Slovenia		22.5	27.4			89.7		79	43			73
Spain	26.1	23.5	27.8***	98.7	99.2	94.6***		76	63***		87	85
Sweden	23.9	26.0	30.1	88.7	79.4	76.3		52	49	87	73	61
United Kingdom			27.2***	90.7	76.3	70.6***			54***		92	78
Bulgaria	21.7	21.2	24.5	88.0	86.6	89.2		97	47			93
Croatia			25.5			91.0	90	79	65***			
Romania		22.0	23.8		87.5	85.5		102	66			93
Turkey												

*2002 **2001 ***2000.

Table 2.11. Divorce indicators, selected calendar years (in yellow: estimates)

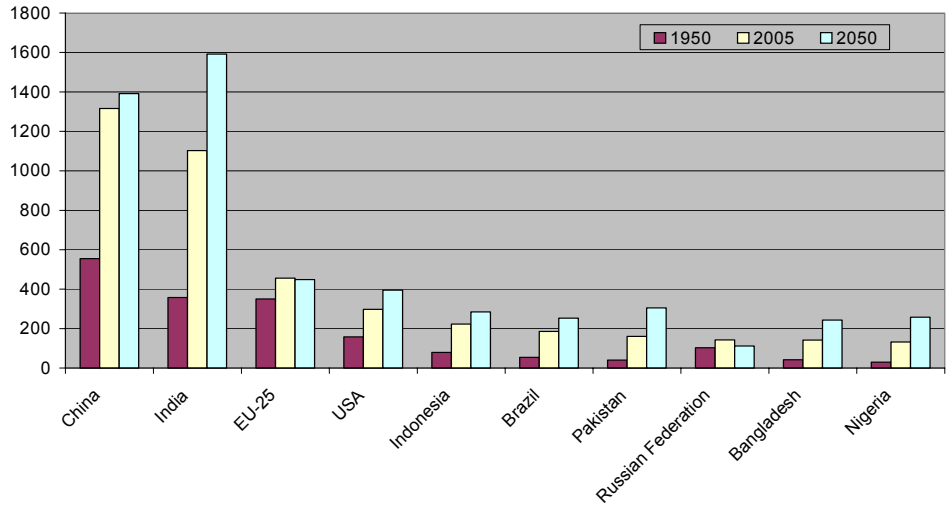
	Total divorce rate			Mean duration of marriage at divorce		
	1960	1980	2003	1960	1980	2002
EU-25		20	32			12.3
EU-15	8	20	33		11.6	12.5
NMS-10		22	30			11.8
Austria	14	26	43	9.2	9.5	11.1
Belgium		21	54*		13.6	12.8
Cyprus		4	23			13.4
Czech Republic	16	31	48			11.3
Denmark	19	40	47		11.1	11.1
Estonia		50	48*			10.1
Finland	11	28	51	10.6	12.0	12.5
France	9	22	43*		12.2	13.3*
Germany	12	25	41***	9.4	9.7	12.1*
Greece		10	18***		15.1	11.4***
Hungary	18	29	42			10.9
Ireland						
Italy		3	13*		20.4	16.7***
Latvia		54	32			10.2
Lithuania	7	32	42			11.0
Luxembourg	7	26	48	12.8	12.0	12.4
Malta						
Netherlands	7	25	33		12.8	12.8
Poland	7	14	20			12.3
Portugal	1	8	39*	18.5	16.0	12.5

Table 2.11. (end)

Slovak Republic	7	18	32		12.0
Slovenia		16	24		12.8
Spain			10*		
Sweden	16	42	54	12.0	11.8
United Kingdom		39	43***	12.1	12.2***
Bulgaria	10	18	26		10.2
Croatia		15	17		11.8
Romania	20	21	21		10.2
Turkey		5	9		

*2002 **2001 ***2000.

Figure 2.1. Ten most populous countries in 2005, by population size in 1950, 2005 and 2050



(Source: UN 2005 World Population Prospects, Medium variant) (millions)

Figure 2.2. Median age of the population per region, 1950–2050 (UN 2004 World Population Prospects, * =Medium variant)

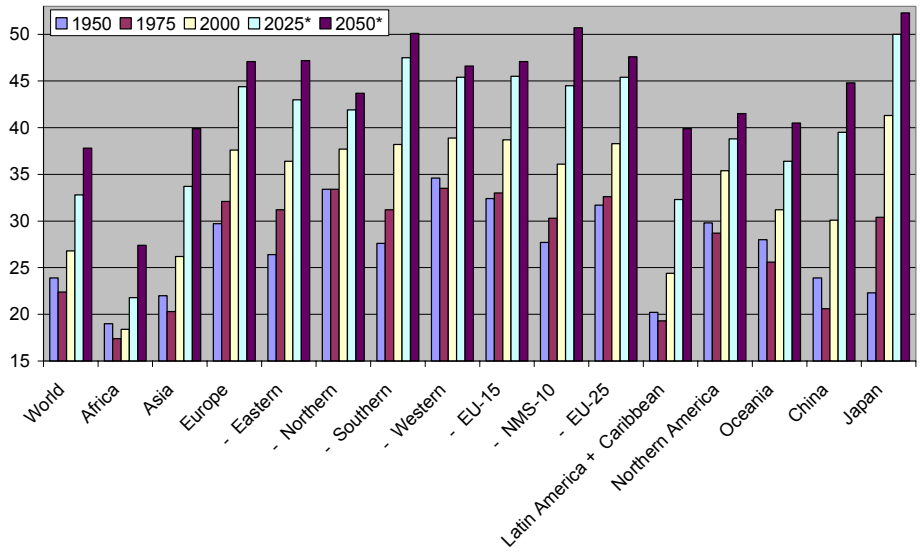


Figure 2.3. Average population size per Member State in the various EU-groupings, 1957-2004 (millions)

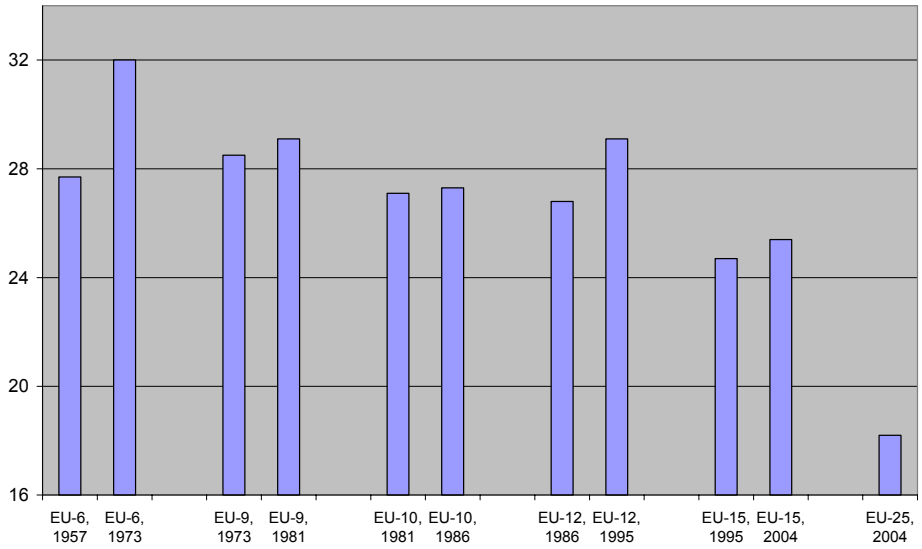


Figure 2.4. Population size per Member State, 1975, 2004 and 2050 (EUROPOP 2004) (thousands)

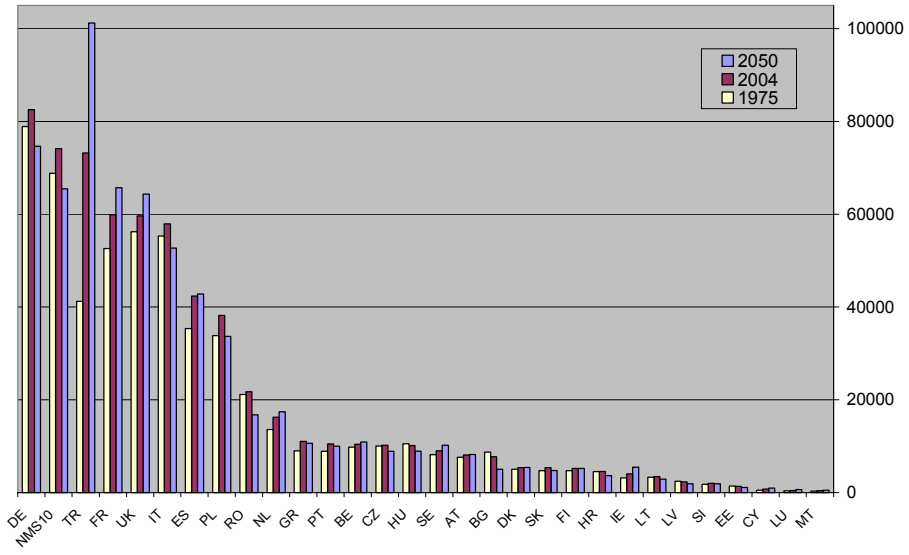


Figure 2.5. Natural increase rate and migration rate (per 1,000 population), 2000/2003

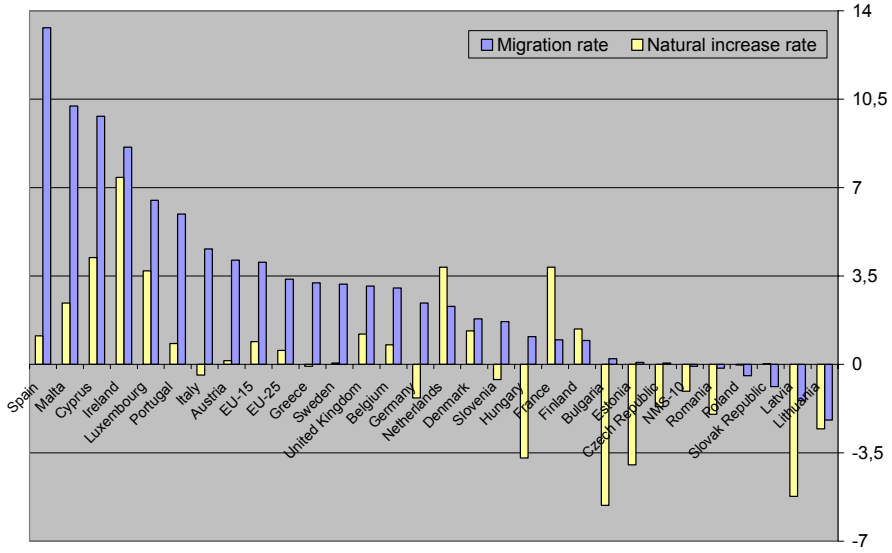


Figure 2.6. 2003 TFR in descending order in the EU-25 Member States (+ "Candidate countries"), including the 1960 and 1980 TFR, and the figure for 2050 (EUROPOP 2004 baseline; 2050 figures for Croatia and Turkey from UN prospects)

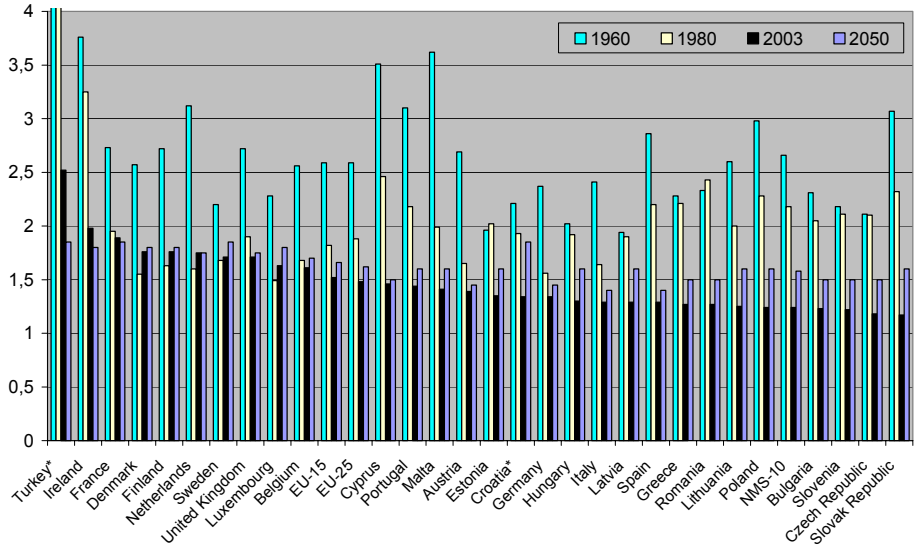
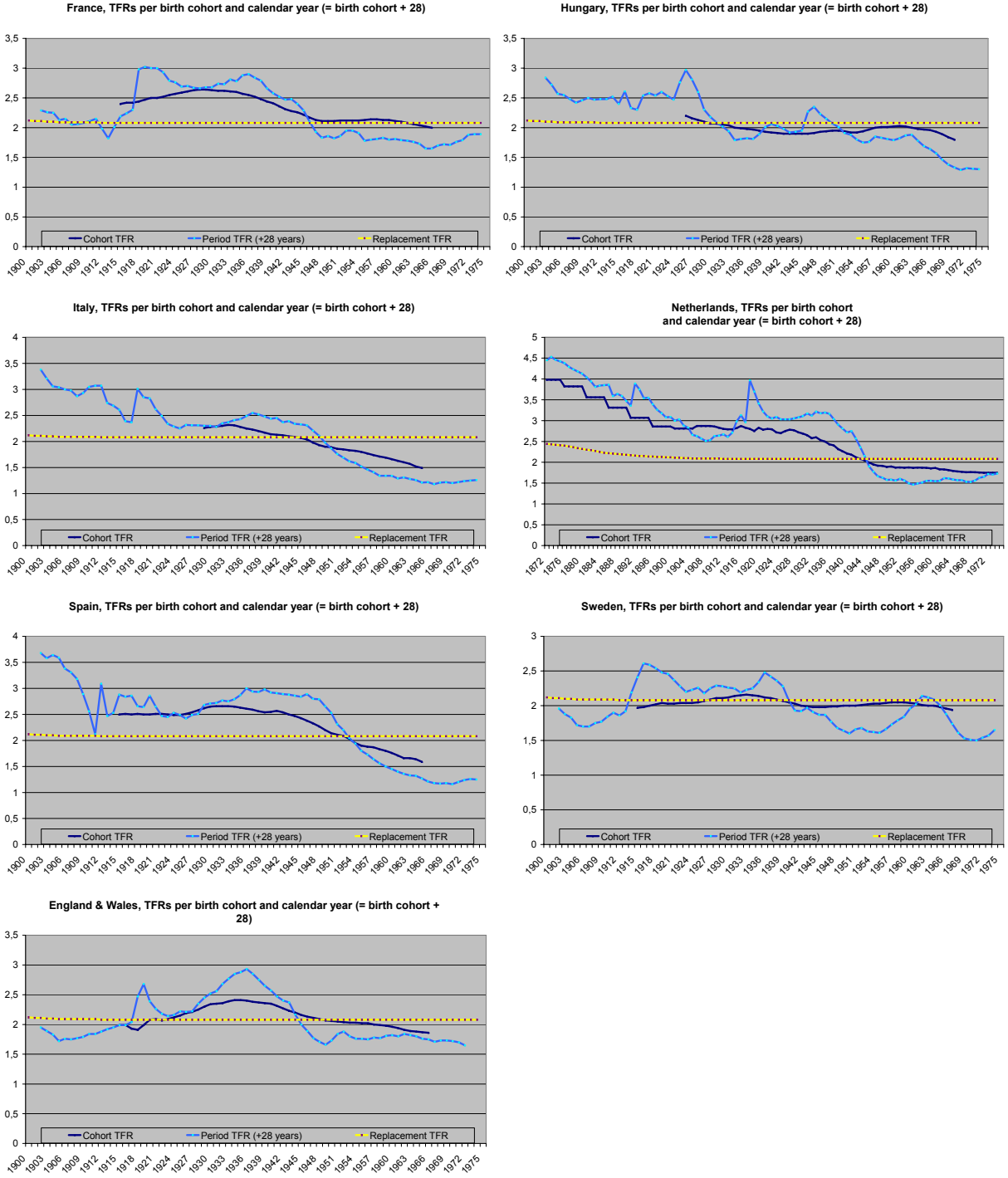


Figure 2.7. Period and cohort TFRs, France, Hungary, Italy, the Netherlands, Spain,



Sweden, UK

Figure 2.8. Fraction of (still) childless women by age: early (Czech Republic) and late (Netherlands) childbearing pattern, mid-1990s (Source: FFS) (Curves between the two countries mentioned are for the other FFS countries) (Note that the age at first birth in the Czech Republic shifted upwards since the 1990s)

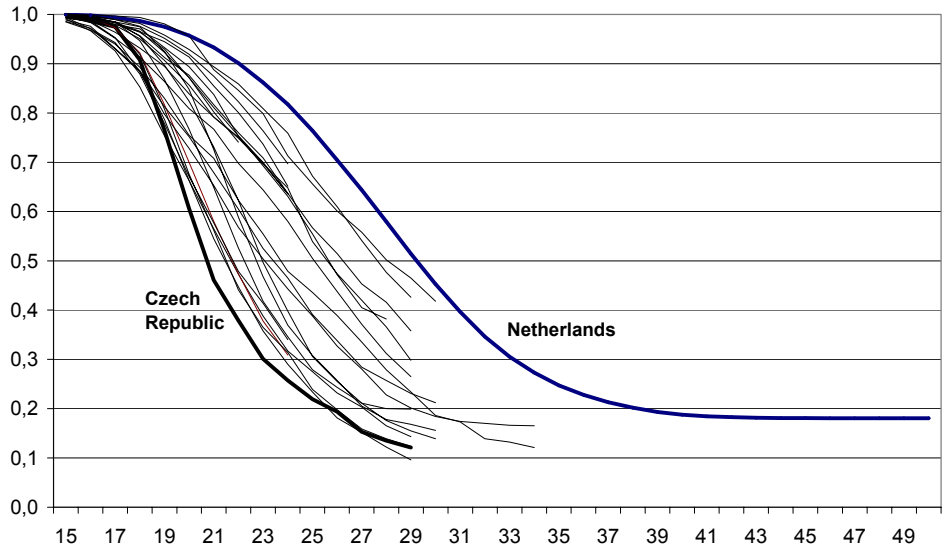
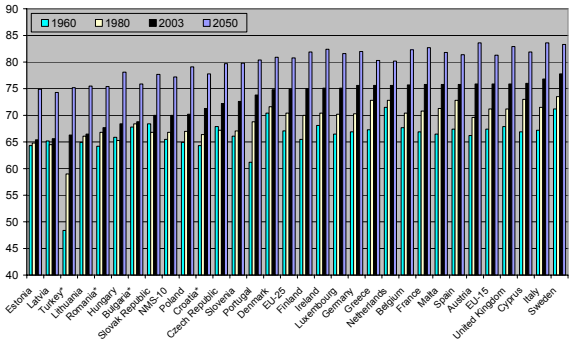


Figure 2.9. 2003 life expectancy, by sex, in descending order in the EU-25 Member States (+ "Candidate countries"), including the 1960 and 1980 life expectancy, and the figure for 2050 (EUROPOP 2004 baseline; 2050 figures for Croatia and Turkey from UN prospects)

Males



Females

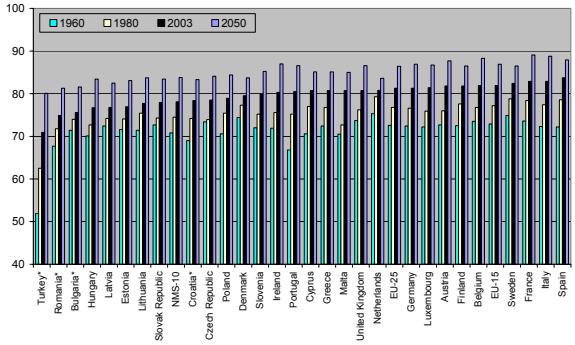


Figure 2.10. Relationship between life expectancy at birth (E_0), life expectancy at age 60 (E_{60}) and infant mortality rate (IMR), women, year 2000

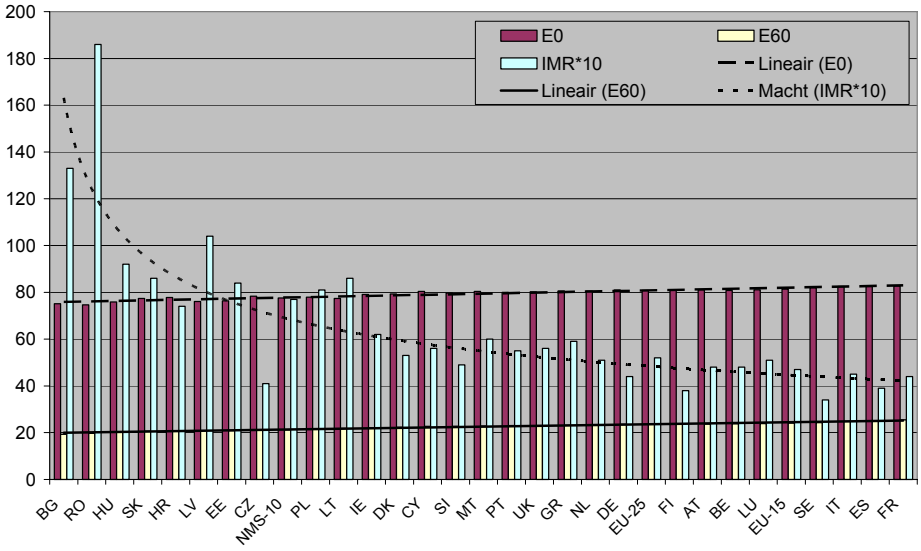
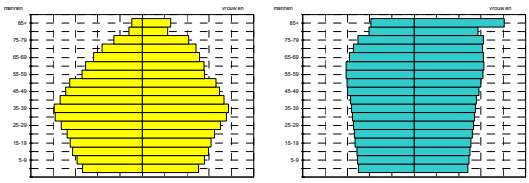
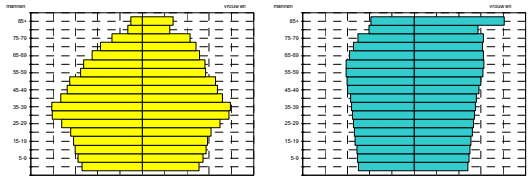


Figure 2.11. Population by sex and age, EU-25, EU-15 and NMS-10, 2000 (yellow) and 2050 (green)

EU-25



EU-15



NMS-10

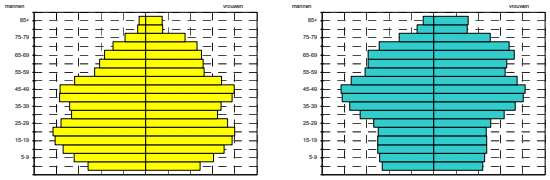


Figure 2.12. Median age, EU-15, EU-25, NMS-10 (Source: UN 2004 World Population Prospects, * =Medium variant)

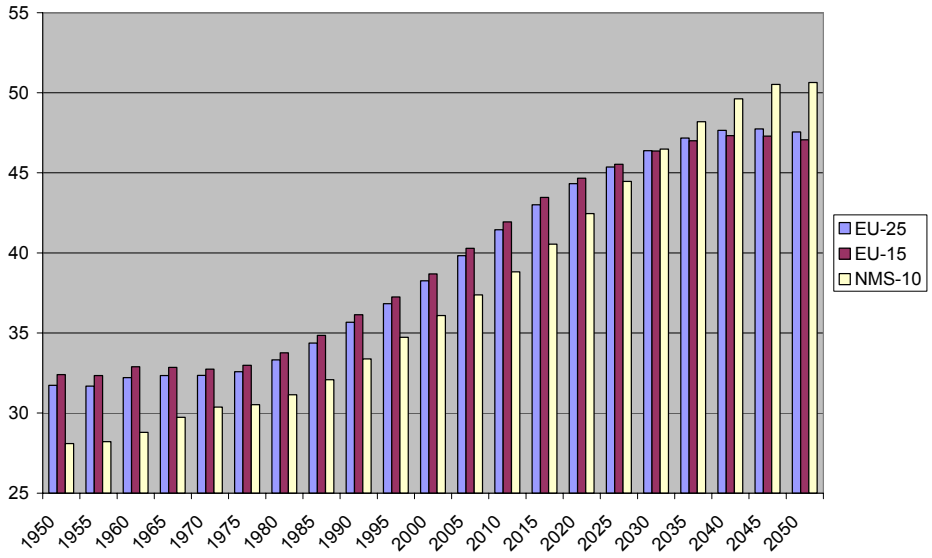


Figure 2.13. Share of population 0-14 years, %, EU-15, EU-25, NMS-10

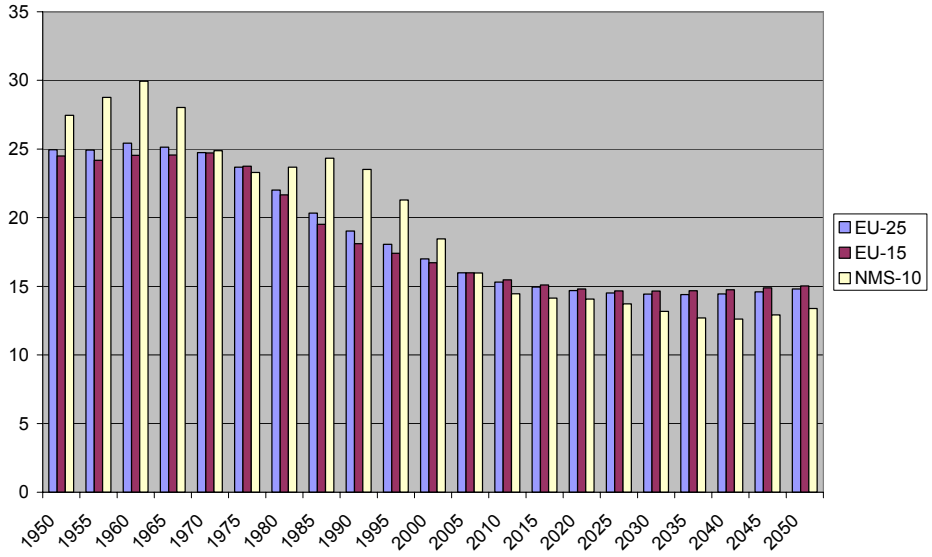


Figure 2.14. Share of population 15-64, %, EU-15, EU-25, NMS-10

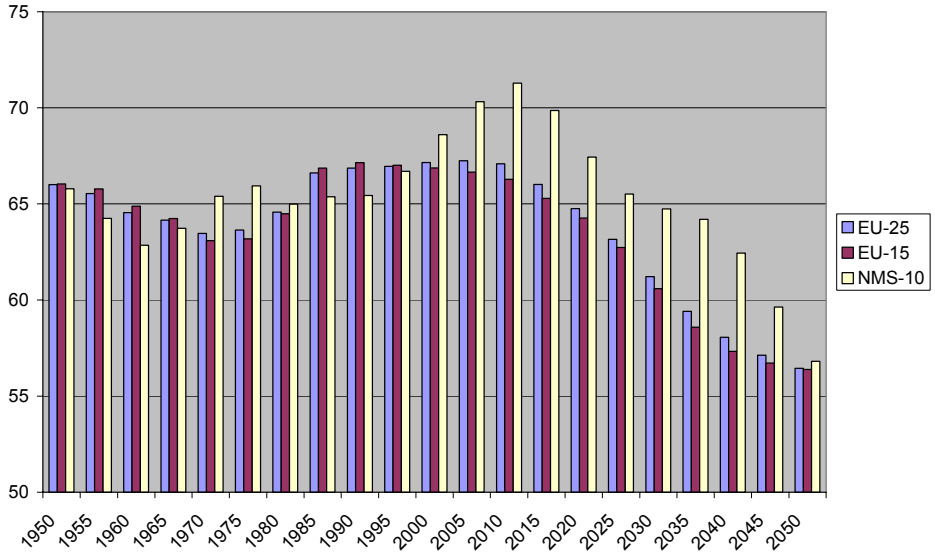


Figure 2.15. Share of population 65+, %, EU-15, EU-25, NMS-10

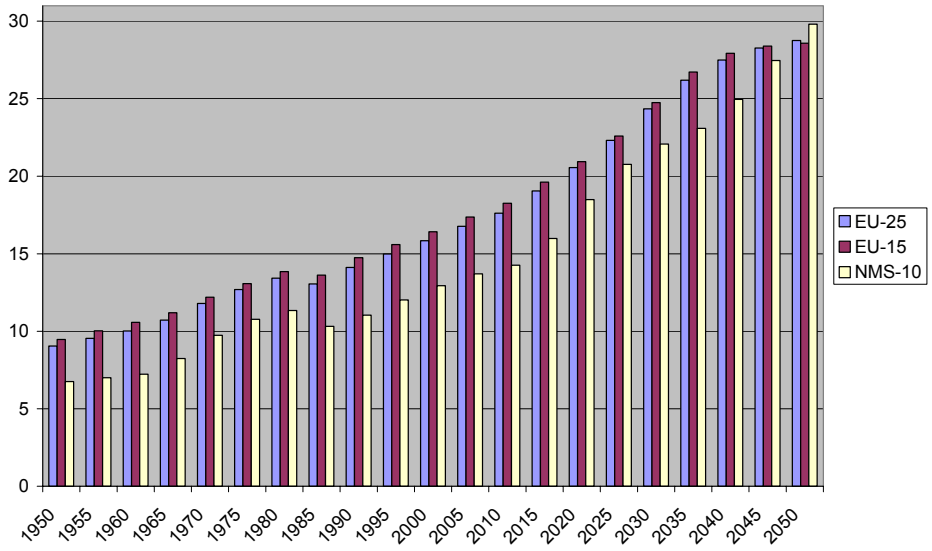


Figure 2.16. Young dependency ratio (0-14 / 15-64), EU-15, EU-25, NMS-10

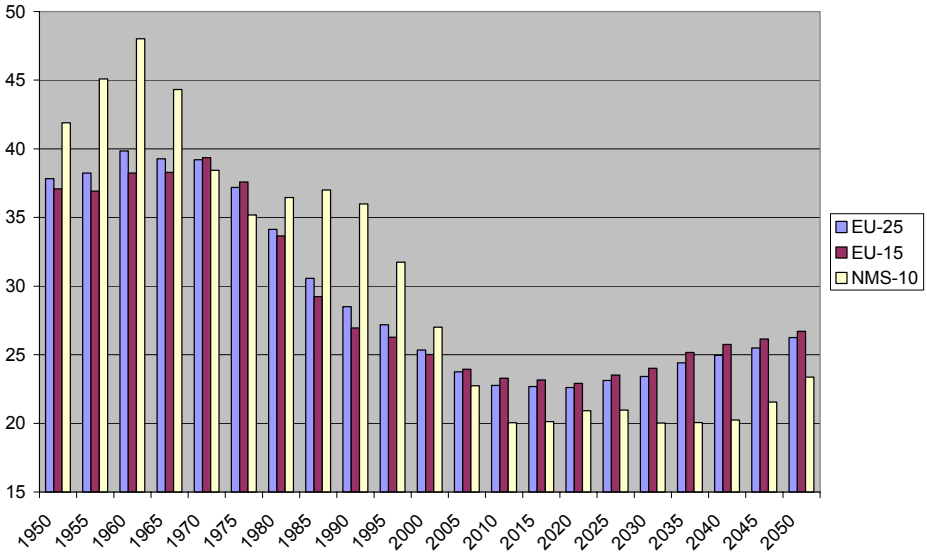


Figure 2.17. Old dependency ratio (65+ / 15-64), EU-15, EU-25, NMS-10

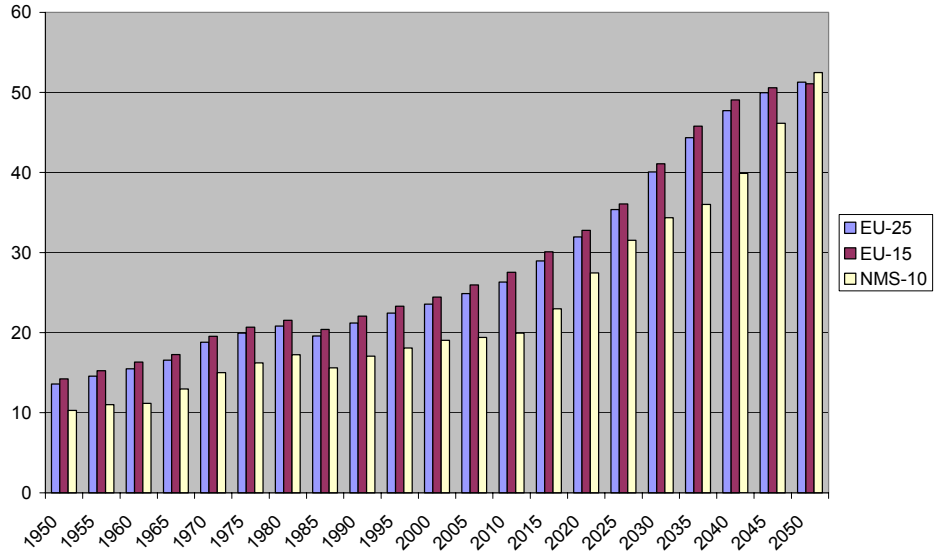


Figure 2.18. Total dependency ratio ((0-14+ 65+) / 15-64), EU-15, EU-25, NMS-10

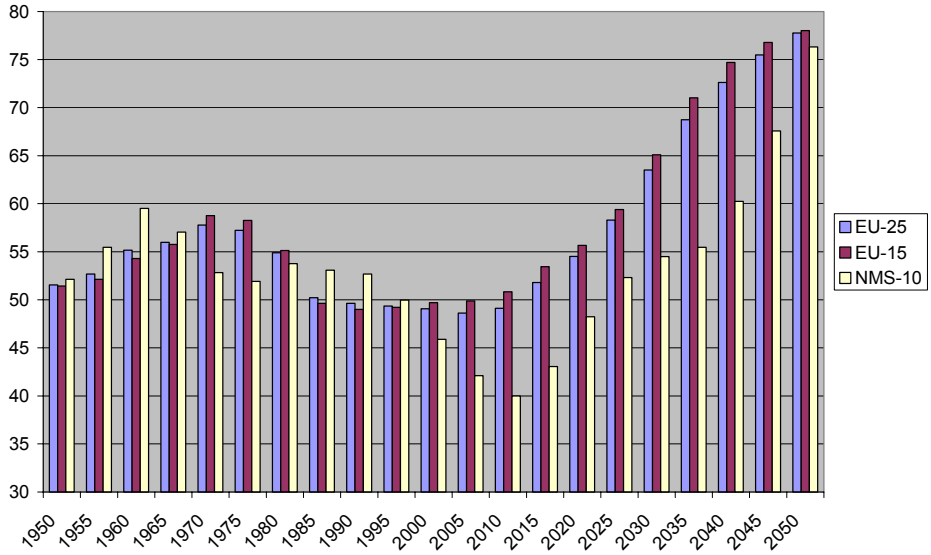


Figure 2.19. Old age dependency ratios, EU-15, 1970-2004

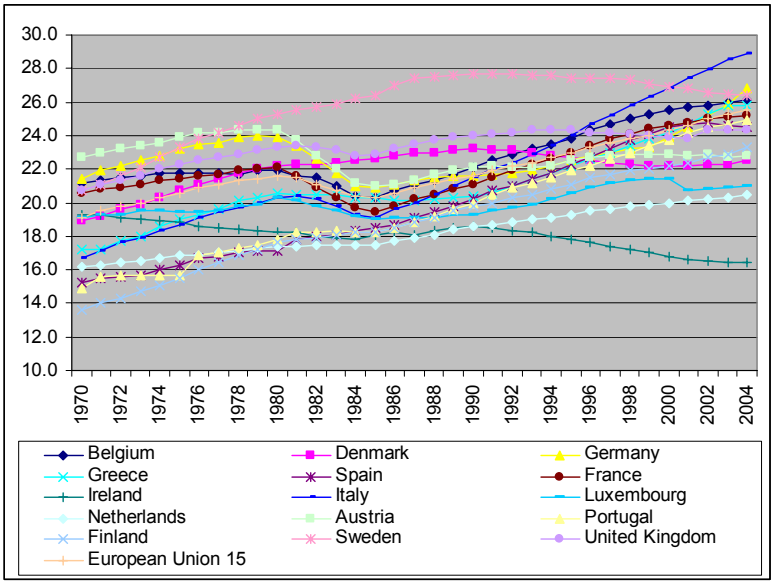


Figure 2.20. Share in population of 'Children' (0–14), 1975, 2004, 2010, 2025

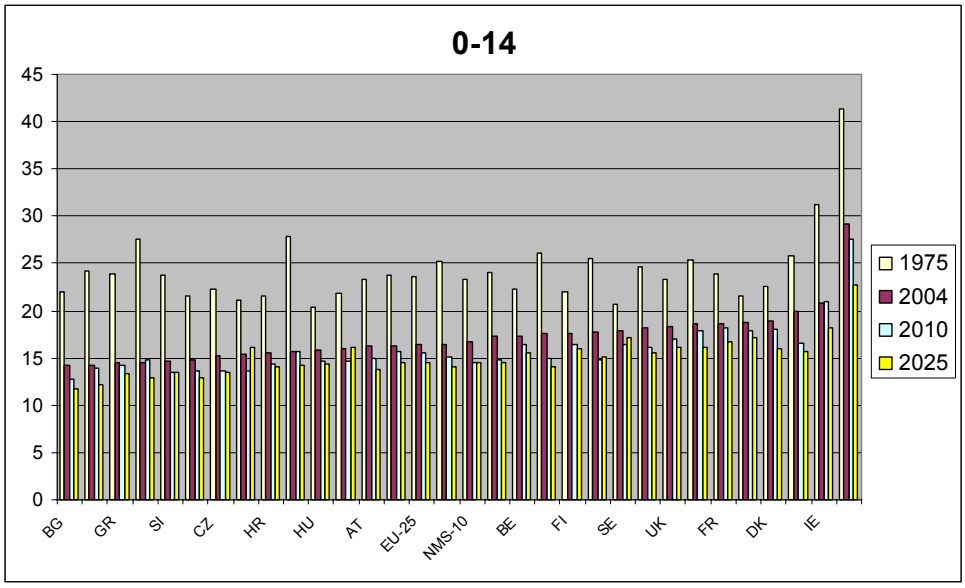


Figure 2.21. Share in population of 'Young people' (15–24), 1975, 2004, 2010, 2025

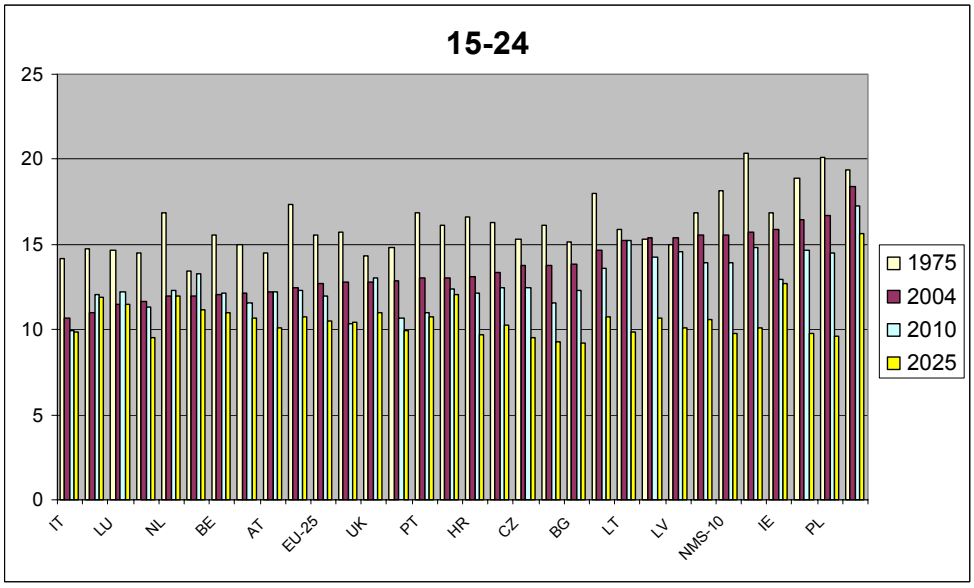


Figure 2.22. Share in population of 'Young adults' (25-39), 1975, 2004, 2010, 2025

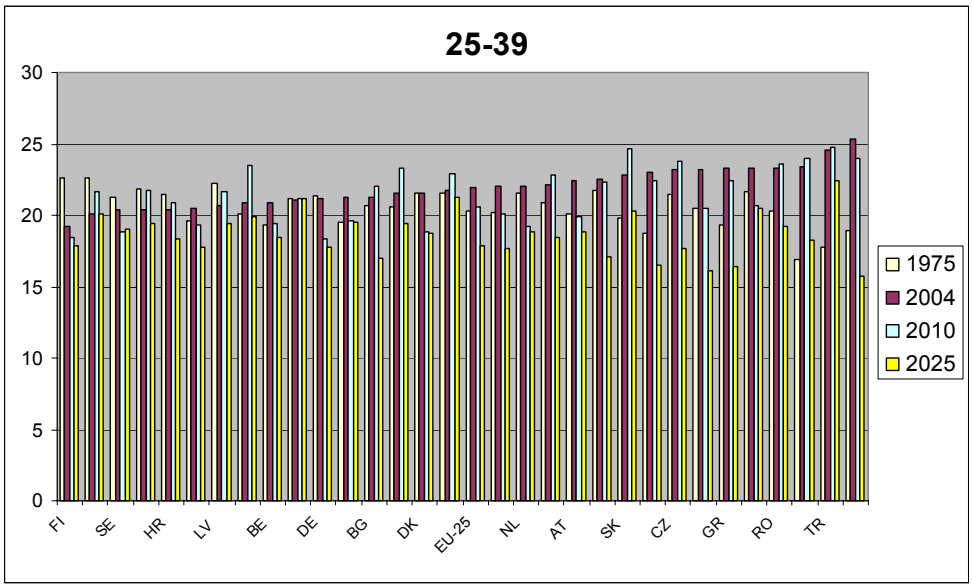


Figure 2.23. Share in population of 'Adults' (40-54), 1975, 2004, 2010, 2025

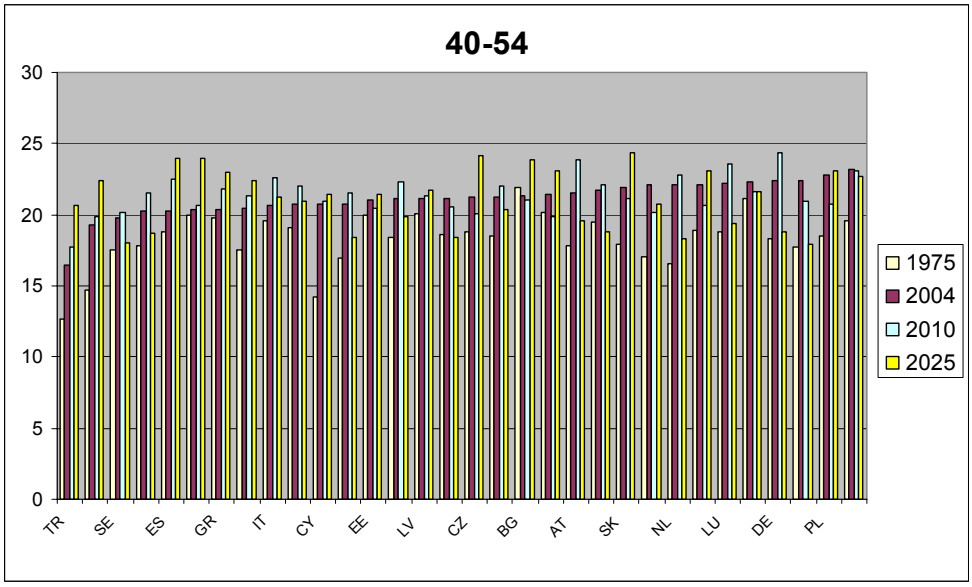


Figure 2.24. Share in population of 'Older workers' (55-64), 1975, 2004, 2010, 2025

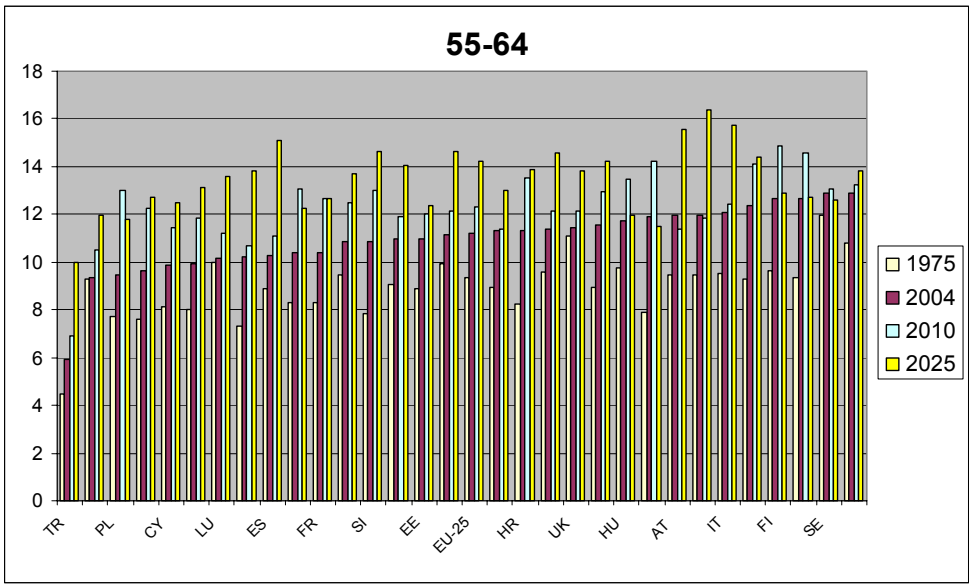


Figure 2.25. Share in population of 'Elderly people' (65-79), 1975, 2004, 2010, 2025

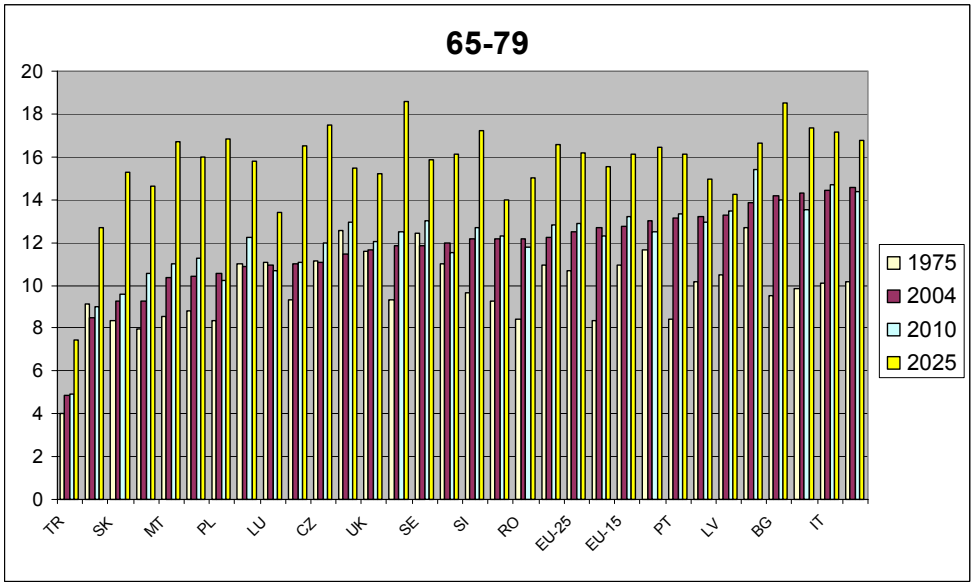


Figure 2.26. Share in population of 'Very elderly people' (80+), 1975, 2004, 2010, 2025

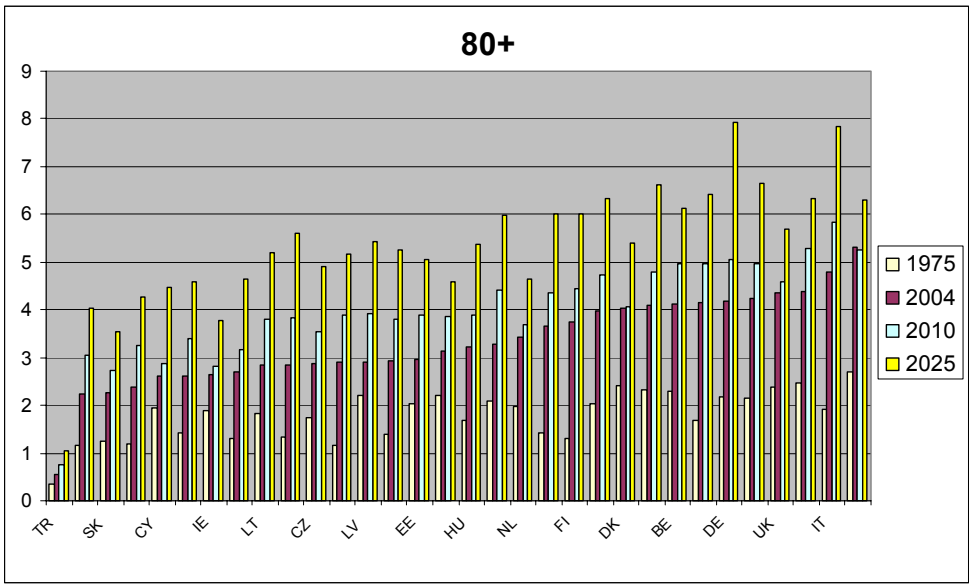


Figure 2.27. Average household size, around 1960 to around 2000 (to be completed)

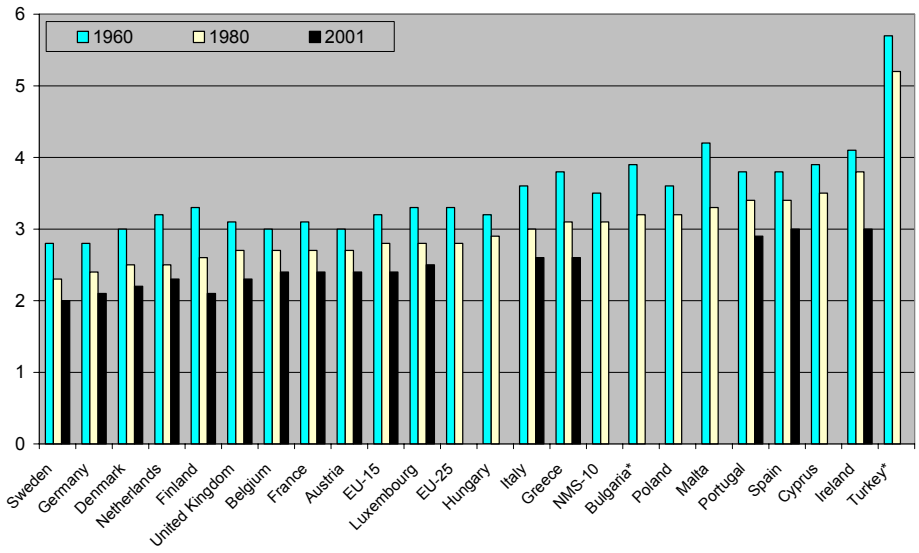


Figure 2.28. Mean age at first marriage and mean age at first birth to the mother, around 2003, women

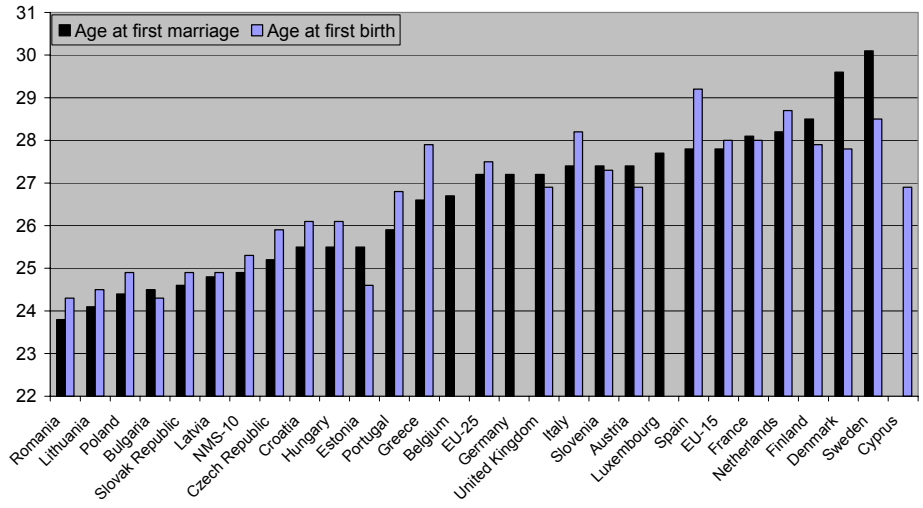
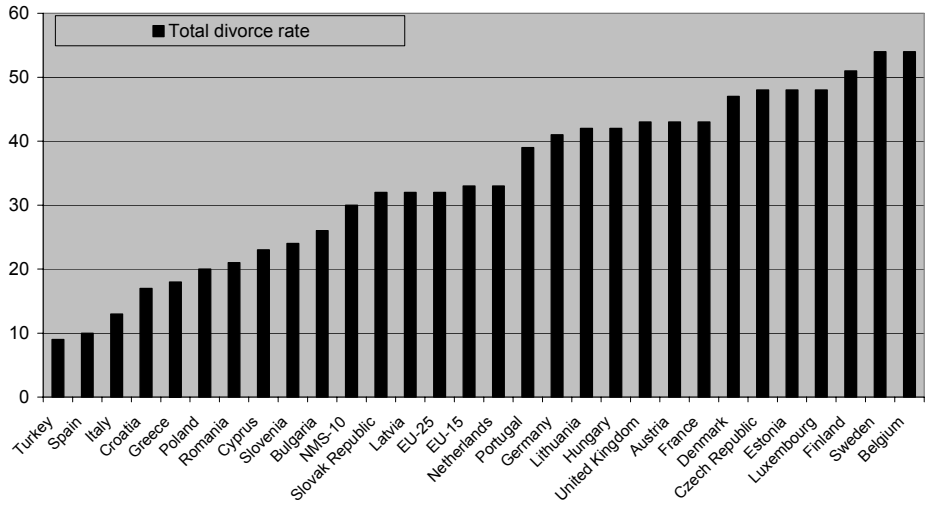


Figure 2.29. Total divorce rate, around 2003



3. Education, employment and the life course

Erika Schulz, Jørgen Mortensen, Johannes Geyer, Birgit Mattil, and Svetla Tsolova

The working phase of the life course is an important period in the individual life span. The improvement of the average education level in the past decades has led to an increase in the average entry age into the labour force. Simultaneously, the tendency towards early retirement arrangements has led to a decrease in the average exit age from the labour force. Hence, the time an individual spends in the labour force may be shortened. But, focussing on the total active population, the increasing labour force participation of middle aged women had a contrary effect. The latter is caused by an increasing share of higher educated women with traditionally higher participation rates and changes in the employment behaviour of mothers. To assess the changes of the duration of labour force participation changing employment conditions have to be taken into account. In the past decades temporary and part time jobs have increased markedly. The changes in usual working hours have to be kept in mind for the interpretation of these developments.

3.1 Highlights

The time spent in the labour force decreased for men on average around 5 years in EU-15 (1970 - 2003) as well as in the ten new Member States (NMS-10) and the three candidate countries (CC-3) (1991 - 2003). Whereas for women in EU-15 a marked increase of around 10 years could be observed, women in the NMS-10 as well as in the CC-3 reduced their time spent in the labour force by 4 respectively 7 years. These trends were influenced by

- decreasing labour force participation of young people caused by higher participation rates in schools with higher education level and universities
- decreasing labour force participation of older workers caused by early retirement and other social benefits which can be used to bridge the period between withdrawal from the labour force and the first date of pension receipt
- increasing labour force participation of middle aged women in EU-15 caused by changes in employment behaviour and an increasing share of women with higher educational attainment.

Additionally the total hours spent in employment were influenced by

- decreasing weekly working hours of male employees,
- increasing weekly working hours of female employees, in particular for middle aged women and mothers in the old Member States,
- an increasing share of temporary employment.

Latter points have to be kept in mind for the assessment of the total time active people spend on average in the labour force.

During the last three decades most industrialised countries have experienced a remarkable increase in the educational attainment of the labour force and this is expected to continue over the coming decades. The rise in educational attainment among the working-age population in the EU will in part result from the shift in the composition of this population. But the projected increase in attainment will accrue due to an increase in the enrolment of the younger generations and thus be conditional upon a corresponding rise in the supply of educational services.

Whereas increasing educational attainment is an important determinant of the transition to lower fertility in the less developed countries, trends in fertility among the EU countries seem to depend on educational attainment to a lesser extent and more on socio-economic factors.

3.2 Demographic developments and educational attainment

Education plays a key role in national development, besides being a prime component of individual well-being. Through education, individuals are empowered to have choices and

make decisions, in such areas as work, place of residence, family size, health and lifestyles, and personal development. These individual choices and decisions have dramatic societal consequences. The right to education is proclaimed in the Universal Declaration of Human Rights (1948), and the importance of education with respect to population and individual development has been strongly endorsed by the governments (United Nations, 2003).

During the last three decades, most industrialized countries have experienced a remarkable increase in the educational attainment of their labour force. The average skill level is expected to increase further in the coming years as younger (and more educated) cohorts progressively replace older (and less educated) ones. In spite of this, returns to skills have also increased substantially in countries such as the US, the UK and, to a lesser extent, Canada. By contrast, in most countries of continental Europe, the skill-premium has remained constant or has decreased as in France (Croix and Docquier, 2003).

The interfacing between demography, educational attainment and economic development is, indeed, a three-way cause-effect relationship with a huge problem of identification of the direction of causality and the causes of a specific correlation. However, in a broad comparative analysis (whether between or within countries and between social groups):

- The higher the average level of educational attainment and literacy the lower the total fertility rate, the later the first marriage and the later the birth of the first child;
- The higher the level of educational attainment, the higher the life expectancy;
- The higher the level of educational attainment the higher the per capita income level.

3.2.1. Projections of educational attainment

Projections of educational attainment over the coming decades suggest that the *pure demographic effects on educational attainment in the EU will be relatively small*. In fact, as shown in a study by DG ECFIN (Montanino *et al.*, 2004), the largest contribution to a likely increase in educational attainment in the EU over the coming decades is projected to accrue as a result of an increase in *enrolment in upper-secondary and tertiary education.*

In fact, for EU-15 as a whole (data for the new Member States are not yet available) the average level of educational attainment for the population aged 25-64 is projected to increase from 11.1 years of schooling in year 2000 to 13.8 in 2050 or by 2.7 years. The increase in educational enrolment would account for 1.6 years while pure demographic effects (with constant enrolment for the various cohorts) would account for the remaining 1.1 years. However, the demographic effect would in itself be influenced in two different directions: an increase in the average enrolment will result from the fact that the elderly cohorts with a lower level of educational attainment are progressively replaced by cohorts with a longer period of schooling. On the other hand, due to the decline in fertility, the younger cohorts with a higher educational attainment will be smaller and thus weigh less in the average for the 25-64 year olds. According to the DG ECFIN estimates, this latter

effect will however be small in proportion to the effect of the cohorts with a lower number of years of schooling being progressively eliminated from this calculation (Table 3.1).

Among EU Member States the scope for increase in educational attainment over the long-term will of course be considerably larger in countries where the initial level is comparatively low. The rise in educational attainment due to increase in years of schooling thus ranges from a low of 0.48 and 0.73 years in Finland and Sweden respectively to 2.02 in Portugal where the starting point in 2000 was only 8.3 years. However, as underlined in the DG ECFIN study from which this information is extracted, for some countries with a high level of schooling already (notably Sweden and Finland) the future gains will be more limited.

Despite an increase of three years in the average duration of schooling in EU-15 from 1960 to 1995 the gap of about 2 years vis-à-vis the United States in 1960 was hardly reduced during the following 35 years as the latter rose almost at the same rate with little sign of slowdown. The shortfall of duration of schooling in the EU as compared to the United States may therefore not be much reduced over the coming decades.

3.2.2. Educational attainment and fertility

The average level of education in a population has been shown to be of central importance for the long-term demographic transition from high to low levels of fertility. Caldwell (1980), in particular, has maintained that high levels of fertility would nowhere persist for long once a society had achieved "mass education", that is to say, once a large majority of children were sent to school. More recent studies have generally underpinned this observation (Lloyd, Kaufman and Hewett, 2000).

In fact, educational attainment is strongly related to differences between countries in levels of fertility and mortality. In general, such cross-national associations may reflect both the effects of education on demography and the effects of demographic factors on education, as well as the joint effects of other factors that may separately influence both education and demographic variables.

Differentials in fertility by educational level appear in both more and less developed countries. However, in the more developed countries fertility differentials by education exhibit two major differences from those found in the developing countries. First, the gap in completed fertility between women in the lowest educational group and those in the highest educational group is smaller in developed countries than in developing countries —usually less than 1 child— an outcome related to the overall low level of fertility in the developed countries. Second, fertility differentials by education have become less pronounced in many countries, such as Canada, Belgium, Hungary, Italy, Latvia, Norway, Portugal, Slovenia, Spain and Sweden, where women in the highest educational group (with a post-secondary degree) in fact have a number of children that is equal to or even greater than the number of children of women in the intermediate educational group (with a secondary school diploma).

In Eastern Europe and the other countries of the former Eastern bloc, the difference in completed fertility between women in the highest educational category and women in the lowest educational category is about 1 child or less. In the other developed countries, education affects current fertility mainly through its influence on the timing of first births: more educated women have a lower number of children at the time they are interviewed because they have had their first birth at a later age. For example, in Italy in the 1990s, the mean age at first birth among women aged 35 years or over was 22.5 in the lowest educational group compared to 28.2 in the highest educational group. In Spain, the corresponding ages were 24.4 and 25.8, respectively. In the Scandinavian countries, the mean age at first birth varied from a range of 21.0 to 21.7 in the lowest educational group to a range of 25.4 to 25.7 in the highest educational group.

Education also exerts a significant influence on childlessness in the developed countries, except in countries with economies in transition. Thus, in Northern America, Southern Europe, Western Europe and, to a lesser extent, Northern Europe, more educated women have a greater probability of remaining childless compared with women with a lower level of education.

Whereas there is a large (negative) correlation between educational attainment and fertility over a wide range of economic development, the projected increase in the years of schooling between 2000 and 2050 should perhaps not be expected in itself to lead to a further decline in the already low level of fertility in a number of EU countries. In fact, within the EU the fertility rate is already low in the countries with the lowest level of years of schooling (Portugal, Spain, Italy and Greece) and still comparatively high in the countries with the longest duration of average schooling. Consequently, within the EU the level of educational attainment does not (at least not any longer) exert a strong influence on the average rate of fertility.

3.2.3. Educational attainment and longevity

As underlined in the UN's "Concise Report" (United Nations, 2003) education is a strong predictor of the health and mortality experience of individuals and their households in developed countries. Education differentials in health and mortality exist in all societies, irrespective of development policies, health-care systems or mortality levels. Education differentials in health and mortality are also not limited to particular ages, although the evidence discussed relates to adults.

In Denmark, Norway and Sweden, differentials with respect to the correlation between mortality and educational attainment are relatively small; they are larger for England and Wales, Finland, France and Italy (Kunst and Mackenbach, 1994). Data for Finland for the period 1971-1995 indicate a six-year survival advantage of men with tertiary education over men with only primary education (Valkonen, 2000). Evidence for France for the period 1976-1980 suggests that men who were poorly educated experienced a 50 per cent higher mortality than more educated men.

An apparent difference between the United States and Europe is that in the United States, years of schooling affect equally the mortality of men and women, while in European countries mortality for males appears to be more responsive than that for females to additional education. There are large gender differentials in life years gained from an additional year of education for Denmark, Hungary and Sweden. In all cases, except England and Wales, males gain more longevity from an additional year of education than females. At each level of education, however, the death rates for males remain well above the death rates for females.

Cardiovascular disease is one factor closely associated with the persistence and widening of education differentials in mortality in developed countries. Martikainen *et al.* (2001), analysing social class differentials in mortality in Finland between the 1970s and the 1990s, showed that there was a slower rate of decline in mortality from cardiovascular diseases among those working in manual occupations. Education was also found to be a stronger determinant of cardiovascular disease than income or occupation and the relationship is particularly strong among women (Winkleby *et al.*, 1992). This suggests that prevention through better education is still an important source of improvements in the health status of the population.

Given the strong evidence of a positive correlation between educational attainment and longevity, the projected increase in the former in the EU over the coming decades should, other things being equal, contribute significantly to sustaining the rise in longevity. As stressed a large part of the morbidity in the more developed countries is dependent upon life styles (smoking, drinking, bad nutrition and sedentary life) and appears to be closely related to the level of education. However, the demographic projections by Eurostat and the UN are based on assumptions on increased longevity which no doubt already incorporate at least implicitly a hypothesis concerning an increase in educational attainment. Taking the latter explicitly into account would therefore not be expected per se to justify changes in the assumptions concerning longevity. However, there may well be a need for a deeper analysis of the *timing* of the further increase in longevity in relation to the projected rise in educational attainment.

3.2.4. Education and the life course

One important effect of the projected lengthening of the duration of schooling in EU Member States will be a corresponding shortening of the duration of active life, unless accompanied by a corresponding increase in the effective age of retirement. The order of magnitude of the increased duration of schooling, 2.7 years on average for EU-15 and possibly somewhat longer for the new Member States, corresponds to more than half the increase of some five years in the effective age of retirement required to ensure sustainability of the systems of old-age income maintenance over the coming decades. An important issue is, therefore, whether this projected increase in the duration of schooling will have, as its counterpart, an increase in the productivity and incomes providing the resources needed to compensate the lowering of the duration of working life. If this were not to be the case the postponement of entry into active life would need to be accompanied by a corresponding postponement of retirement, coming *in addition*

to the postponement of retirement needed to ensure sustainability of the pension schemes.

Fortunately, as argued by Montanino *et al.* (2004), there is evidence (notably provided or reviewed by De la Fuente and Antonio Ciccone (2002) in a report to DG EMPL) that the addition of years of schooling may exert a positive impact on the level of GDP. Thus according to a number of estimates one extra year of schooling (corresponding to some 2-3% of a normal working life) would boost productivity (GDP per employed) by up to 5-6% and more than compensate for the shortening of the duration of the working life.[14]

Montanino *et al.* (2004), however, also underline (i) that the future impact on productivity and growth of the rise in the number of years of schooling depends also on the quality and efficiency of education, (ii) that there may be a declining rate of return on the duration of schooling and (iii) that, consequently, additional years of schooling in countries where the level is already high may not provide as large a boost to productivity as in countries where the level is still relatively low.

3.2.5. Summary and conclusions

Educational attainment, that is, years of schooling and the quality of education, is an important determinant of economic growth and productivity *and* of the demographic transition to lower fertility and mortality. During the last three decades most industrialised countries have achieved a remarkable increase in the educational attainment of the labour force and this is expected to continue over the coming decades. The average duration of schooling in the EU is expected to increase by close to 3 years between 2000 and 2050 but likely to remain lower than that of the United States where the educational attainment shows no sign of slowing down.

The rise in educational attainment among the working-age population in the EU will in part result from the shift in the composition of this population as the younger generations with a higher level of schooling years gradually replace the generations with a lower attainment. However, the projected increase in attainment will for about two thirds accrue due to an increase in the enrolment of the younger generations and thus be conditional upon a corresponding rise in the supply of educational services.

The level of educational attainment clearly is an important factor in the profile of demographic transition in the less developed countries and also in the past in the more developed part of the world. In particular, both the transition to lower fertility and the shift to lower mortality both for children and adults appear to be intimately conditioned upon an increase in the educational attainment of the adult population. This relation would also seem to hold even among and within the highly developed countries as far as

[14] It should be underlined in this context that the average duration of schooling in the United States even in year 2000 was some 2 years longer than the average for EU-15 and that, consequently, the average age of entry into the labour market in the United States is correspondingly higher.

morbidity and mortality is concerned. However, the more recent decline in fertility in a number of European countries does not seem to be closely related to changes in the level of education: in fact, fertility is still comparatively high in some EU countries with the highest level of educational attainment and is also still high in the United States, which, as indicated, remains well ahead of the EU as far as the duration of schooling is concerned.

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3.3 Trends in labour force participation

Global trends

The labour force participation of *men* decreased over the last three decades in all EU-15 countries (with the exception of Denmark and Sweden), and in the last decade also in the ten new Member States (NMS-10) (with the exception of Cyprus) and in the three candidate countries (CC-3). The decline accounts for 10%-points between 1971 and 2003 on average in EU-15, and for about 9%-points between 1991 and 2003 in the NMS-10 and the CC-3 (Figure 3.1). However, variation is large: Poland (-18%-points) and Portugal (-17%-points) experienced the highest decline while Denmark and Sweden only show increases of 4%-points and 3%-points respectively. In 2003 around two thirds of the male population aged 15+ participated in the labour market in EU-15, while the activity rate in the NMS-10 was a bit lower (64%). But the range in the participation rates is still broad: Denmark has the highest activity rate with 82% and Bulgaria the lowest with 55% (Figure 3.2).

Whereas the global trends of labour force participation of men were nearly the same in all 28 countries, the development of the activity rates of *women* showed different trends in EU-15 and NMS-10. In the early 1970s on average only one third of the women aged 15+ participated in the labour market in EU-15, but over the intervening years the activity rates have markedly risen, on average about 14%-points, i.e. an increase of around 43%. The highest increase was observed in the Netherlands and Portugal (around 30%-points), the lowest in Finland (8%-points). Due to the former soviet system, the participation of women in the labour market has been traditionally high, but during the last decade the activity rates declined as a result of changes in the economic and political situation, on average about 7%-points (Figure 3.3). In 2003 48% of women aged 15+ participated in the labour force in EU-15. The activity rates were in NMS-10 a bit higher with 49% and in CC-3 with 34% significant lower (Figure 3.4).

Young people

The global trend of declining labour force participation for *men* was mainly caused by developments in the younger and older age groups, whereas only moderate changes were observed for middle aged men. This is true for EU-15 and NMS-10, whereas developments in CC-3 shows the same developments for the younger age groups, but there were hardly any changes in the older age groups (Figure 3.5). Three decades ago the labour force participation of men aged 15-24 years was on average around two thirds in EU-15, with values ranged from 85% (Portugal) to 47% (Greece). The activity rates of young men declined on average to nearly 50% in 2003 (EU 15). NMS-10 and CC-3 showed similar trends between 1991 and 2003. In NMS-10 a decline from 53% to 39% and CC-3 from 71% to 47% could be observed (Figure 3.6). Significant variation remains between countries: activity rates range from 72% (Netherlands) to 29% (Luxembourg).

Similar to men the activity rates of young *women* have declined on average in the EU-15 (since 1970), as well as in NMS-10 and in CC-3 (since 1991), but with 6%-points the EU-15 changes were only moderate (the NMS-10 and CC-3 changes were similar as for young men). Despite the same global trends in young female labour force participation great differences across countries exist. Some countries showed —contrary to the global

trend— increasing labour force participation for young women (Denmark, Finland, Sweden as well as the Netherlands, UK, Spain and Cyprus) and some showed marked declines (more than 20% in Belgium, Luxembourg, Turkey, Hungary, Bulgaria) (Figure 3.7). In 2003 the activity rates of young women ranged from 70% in the Netherlands to 25% in Belgium (Figure 3.8).

The global trend of declining labour force participation of young people can be traced back to increasing shares of higher educated people. In the past the share of young people enrolled in higher education or universities increased markedly. In many Member States young people begin their transition to work later, and in some cases over a longer period (OECD 2005, p. 320). In some countries it is common to work during study (Denmark, Sweden, Germany). The share of people aged 25 to 34 with tertiary education increased on average in the OECD countries from 20% in 1991 to 28% in 2002 (OECD 2005, p.74/75). Finland and Sweden showed the highest share of young people with tertiary education, around 39% in 2002 (Figure 3.9). Compared to older cohorts (55-64 years) a markedly increase of higher educational attainment can be observed in Spain (27% increase), followed by Ireland (+23%) and Belgium (+20%).

Whereas the increasing share of women attending higher education or university led to a decrease in activity rates in the age group 15-19, the global trend of increasing labour supply of women led to an increase in the activity rates in the age group 20-24. Both effects together of course influenced the developments in the age group 15-24. In some Member States the global trend of increasing labour market participation dominated the decreasing "educational effect".

As a result the time young people aged 15-24 spent in the labour force decreased on average from 6.7 years in 1970 for men to around 5 years in 2003 in EU-15, and from 5 years in 1970 to 4.3 years in 2003 for women. The same trend is observed in NMS-10 and CC-3 in the last decade. In 2003 young men spent around four years in NMS-10 and around five years in CC-3 in the labour market, women three (NMS-10) and 2.7 years (CC-3) respectively.

Education and employment

Higher educational attainment of young cohorts does not only affect the labour force participation of young people, but also of workers aged 25+. Higher educated people participate more in the labour market (markedly higher employment rates and lower unemployment rates). This is true for both men and women, but the differences are significantly higher for women. In 2001 the labour force participation of men aged 25-64 varied between 77% (below upper secondary level) and 93% (tertiary education type A), while the activity rate of women lay on average between 50% (below upper secondary education) and 83% (tertiary education type A) in the OECD countries (OECD 2003). Whereas the differences between the educational levels remained in the last decade, no global trend in participation rates in a single educational level could be observed.

The variation in labour force participation by educational attainment, gender and age group can be shown exemplarily for selected countries: a Nordic country (Sweden) with traditionally high female labour force participation, a Southern country (Italy) with traditionally low female labour force participation and a country between these two extremes (Germany) with remarkable changes in the labour force participation of mothers. In all countries labour force participation is higher for higher educated people, in particular for women. But the differences in female labour force participation between the education levels are significantly higher in Italy than in Sweden (Figure 3.10). The total labour force participation of low educated women in Italy was 22% as against 77% for high educated women in 2003, whereas the difference in Sweden was 58% to 86% and in Germany 28% to 75%. Thus, the time women spent in the labour force ranges from 18 to 35 years in Italy, from 32 to 38 years in Sweden and from 26 to 36 years in Germany. The variation by educational level for men are not as high as for women, but also higher educated men spent more years in the labour force, around 4 more years in Italy and Germany and one in Sweden in 2003.

Older workers

The reduction in the participation rates for older workers had an important effect on the total labour force participation and therefore on the total time spent in the labour force. The participation rates of *men* aged 55+ changed considerably in the last three decades with the highest declines in the age group 60-64 (Figure 3.11). In the early 1970s labour force participation of men aged 55-59 lay in EU-15 at 83% on average and has decreased since to 73%, the activity rates of men aged 60-64 decreased from 64% to 37% and of men aged 65+ from 17% to 6% (EU 15). A declining trend is also observed in the last decades in NMS-10 and CC-3. As a result the activity rates of men aged 55-64 were lower in these countries than the average in EU-15 in 2003. Beside the global declining trend, large cross-country variation still existed in participation rates existed in 2003. Men aged 55-59 years in Denmark show the highest rates (85%), men in Slovenia the lowest (48%). The activity rates for men aged 60-64 range from 64% in Sweden to 13% in Slovenia and for men aged 65+ from 26% in Portugal to 2% in Slovenia (Figure 3.12).

The substantial decrease in the labour supply of older male workers in the last three decades resulted from the lower average retirement age and the decreasing share of self employed persons. The trends in early retirement are discussed in section 3.4 and Chapter 4. The share of self employed persons accounted for 26% in the age group 55-59 and for 36% in age group 60-64 in EU-15 in 1983 and declined to 23% respectively 33% in 2003. The downward trend of labour force participation of older workers seems to have stopped recently. Between 2001 and 2003 participation rates increased in the EU Member States (with the exception of Austria, Portugal and Poland).

Whereas male labour force participation in the three age groups decreased over the longer run, participation rates of *women* in the older age groups did not show a general trend. The activity rates of women aged 55+ decreased between 1970 and 1991 and increased over the last decade. In 2003 the activity rate was with 14.5% a bit higher than in 1970 (EU-15). This development can be traced back to different trends in the single

age groups. The age group 55-59 in all EU-countries is characterised by an increasing trend, whereas the 60-64 age group shows a decrease over the first 20 years and afterwards an increase in female labour supply. The activity rates of age group 65+ decreased (Figure 3.13). In NMS-10 and CC-3 the female labour supply decreased over the last decade, too, but participation is still higher than in EU-15. Beside the changes in the average retirement age the general increase in the labour force participation of women led to this EU-15 trend. But, as for men the participation rates have increased in most EU-countries more recently. In 2003 the activity rates ranged from 79% (Sweden) to 20% (Slovenia) in the age group 55-59, from 56% (Sweden) to 4% (Slovakia) in the age group 60-64, and from 16% (Romania) to 0,7% (Luxembourg and Belgium) (Figure 3.14).

The recent increase in labour force participation may be the result of changes in regulations in the social security systems. In Germany for example the possibility to get disability pension was restricted, the regular retirement age of women and unemployed people raised stepwise and replacement levels were shortened. Therefore, more older people stay in the labour market.

The time older male workers (55+) spent in the labour force declined in all Member States, on average in EU-15 from 8.2 years in 1970 to 5.8 years in 2003, whereas for women an increase from 2.8 years to 3.5 years could be observed. In the last three years the time spent in the labour force increased for both men and women by around 0.3 years. The declining trend was also observed in NMS-10 and in CC-3 in the last 10 years. But, as for the old Member States the downward trend seems to have stopped in the last years.

3.4 Trends in early retirement

Both for men and women the average age at retirement decreased markedly in the last decades. Whereas the standard EU retirement age (normal age for being entitled to a regular old-age pension) lay between 60 and 65 for men and between 55 and 65 for women, the effective retirement age is lower. Blöndal and Scarpetta (1998) estimated the average withdrawal age from the labour force over the long run with a static approach and Scherer (2002) with a dynamic approach. Both models show a decline in the age at retirement, but in general the dynamic estimates show higher retirement ages for women and lower for men than the static model. EUROSTAT started to calculate average exit ages from the labour force in 2001 using a dynamic approach similar to Scherer: the average exit age was 61.5 for men and 60.5 for women in EU-25 in 2003 (Figure 3.15). Contrary to the trend in the past decades an increase in the age at retirement is evidenced in more recent years.

Incentives for early retirement can by traced back to early retirement options in the statutory pension schemes, but also to other social benefits, such as unemployment benefits for older workers, working incapacity benefits or means tested social assistance benefits. Most of the EU public pension schemes include early retirement arrangements

often subjected to a minimum number of insured years and reductions in pension benefits according to the time period the pension receipt has been advanced relative to the standard pension age (Table A3.1 in Appendix). Some pension schemes have special early retirement options for disabled or unemployed persons. But Casey *et al.* (2003) showed for selected EU-countries that there are no financial incentives for retiring before 60 and that the picture is mixed for the age group 60 to 65.

Beside early retirement options social benefits can be used to bridge the period between withdrawal from the labour force and pension receipt. The Social Protection Committee (2004, p. 15) finds that unemployment benefits tend to take the place of early pensions in many EU Member States. Mostly special rules for the unemployed elderly exist: they receive more generous benefits and / or for a longer period, and often they do not have to be available for work. Additionally, working incapacity is a major reason for an early exit from the labour force. Of men aged 60-64 10-20% receive invalidity pensions (Social Protection Committee, 2005, Table 8). Differences in invalidity rates reflect differences in benefit systems, entitlement conditions and labour market opportunities for older workers, but mostly not differences in the health status of the elderly. Based on econometric analyses of retirement incentives Casey *et al.* (2003, p. 18) confirm that disability schemes encourage early retirement.

Thus, early retirement policies obviously led to falling retirement ages from the 1970s to the early 1990s. But more recently retirement policies have changed. Due to population ageing and the foreseen financial problems in the statutory pension schemes Member States often react by raising standard retirement ages and restricting access to special early retirement schemes and other pathways to labour force withdrawal before the standard age at retirement. Nevertheless, social benefits other than public pension schemes still set considerable incentives to early retirement.

3.5 Labour force participation of middle aged women

Housework as well as family work (child care and nursing care for older family members) were and remain to be mostly a task for women. Female employment rates seem to be adversely related to family work, but significant differences in female labour force participation rates in the middle age groups exist across EU countries. The focus on age group 30-44 is related to the average age at childbearing, which is on average 29 years in the EU-countries. So, women in these age groups often have small children in need for care. The connection between child care and employment will be discussed in the next section. Here the development of labour force participation, the changes in the contribution of middle aged active women to the total female labour supply and the average time middle aged women spend in the labour force will be discussed.

The activity rates of women (30-44) increased in the last three decades from 40% to 76% in EU-15 on average. Also the changes in the age group 25-54 were significant (Figure 3.16). In the early 1970s the EU-countries could be divided into a

share with low participation rates (Belgium, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Cyprus) and another share with relatively high participation rates (all others). Over the last three decades the participation rates increased significantly in all countries and the differences between countries narrowed (Figure 3.17). For example, the labour force participation rate in Spain was 14% in 1971 and increased to 69% in 2003. Another example is the Netherlands with an increase from 22% up to 78%. The participation rates lay between 85% (Denmark) and 64% (Italy) in EU-15 in 2003 and between 89% (Lithuania) and 39% (Malta) in NMS-10.

The figures show that, with regard to the labour force participation of women, in EU-15 a substantial change in the behaviour and in the position took place, in particular for mothers. Changes in family policies and other related policies may have had an effect, too (Jaumotte, 2003). Unlike their mothers or grandmothers, young women take the compatibility of motherhood and work for granted, also in the traditionally family oriented southern EU Member States. Additionally, the proportion of childless women increased rapidly in younger cohorts (see Chapter 2), and childless women have higher participation rates than mothers.

In the countries with a former soviet system also the labour force participation of women with young children was high. Child care was organized by the state or the employer, and mostly full time care was available. The changes in the political and economic system led to reduced labour force participation rates, not only, but also for middle aged women. We may assume that the possibilities for child care were reduced and that the costs for child care day centres, such as Kindergartens, were raised, so that more women decided to start caring for their children themselves.

The increase in labour supply of middle aged women changed the contribution of middle aged women to the total female labour supply. In EU-15 the share of active women to the female labour supply has risen from nearly 30% in 1970 to 42% in 2003. This cohort effect was nearly the same for all EU-15 Member States, and the differences between the countries narrowed in the last three decades. In 2003 Belgium showed the highest share of middle age groups in the female labour supply, around 81%, and Finland the lowest with 36%. In NMS-10 the changes in female labour force participation led to a decline in the contribution of the middle age groups to the total female labour supply. In CC-3 no clear trends exist. Whereas in Turkey the share increased over the cohorts, Bulgaria showed a decreasing trend and Romania no clear trend (Figure 3.18).

As a result of the growing labour supply of women, the years spent on average in the labour force for women aged 30-44 nearly doubled (from 6 to 11.3 years) between 1970 and 2003 in EU-15. In particular in the southern Member States the increase in years spent in the labour force was markedly higher than in EU-15. In Spain, for example, women aged 30-44 spent only 2 years, and in Portugal 3.5 years in the labour market in 1970. This changed rapidly to 10.3 years in Spain and 12.5 years in Portugal (2003). Whereas the time spent in the labour force was nearly the same in the last decade in

NMS-10 (around 12 years), the years spent in the labour force decreased in CC-3 from 9 years in 1991 to 6.6 years in 2003 (Figure 3.19).

3.6 Women, employment and childcare

To meet the challenges of ageing societies, as part of the Lisbon Strategy, the European Union is aiming at a 60% female employment rate in 2010.[15] A higher participation of women in the labour market would have a positive effect on Europe's social systems and reduce gender inequality (see for example EU, 2002). Reducing discrepancies between actual and preferred employment patterns of women could lead to the desired increase in female employment (Jaumotte 2003).[16]

Thus, it is of crucial importance to identify the main reasons for these discrepancies[17]. Women's labour market position is still disadvantageous: for example, women earn less than men, more often than men they work in precarious jobs and unstable employment relations and they have more responsibilities for childcare.[18]

Children[19] are a very important factor negatively affecting female labour market performance (Uunk *et. al.*, 2003; Stier and Lewin-Epstein 2001, Van der Lippe 2001). In most ECHP countries[20] mothers participate in the labour market to a lesser extent (Figure 3.20) and work less hours than childless women[21] (Figure 3.21). This result holds for all countries except Denmark and especially for the age group of 25-54 years.[22]

A cross-country comparison detects large differences. While for example relatively few Portuguese mothers decide to stay from the labour market, working mothers work nearly as much as women without children. The opposite holds for the Netherlands, where relatively high numbers of mothers withdraw from the labour market. Those who do work report reduced working hours compared to childless women. One reason is the flexibility

[15] Other related targets are a 57% female employment rate in 2005 and 33% available childcare for children under 3 in 2005 and a target of 90% for children over 3 in 2010.
[16] For example, the male breadwinner model seems to be more common among young parents than desired.
[17] For a broader discussion of occupational segregation by sex see Anker (1997).
[18] It appears that in the care-intensive period (age range 30-44 years) in most countries more than 60% of women report to look after children daily, while the share of men in the same age group is up to three times less (Table A3.2).
[19] Family responsibilities are the most important reasons for inactivity in Europe (EU 2002). Half of the inactive women between 25 and 54 are inactive due to family reasons. Only one third of the inactive has no intensions to take up a job in the future.
[20] Data come from the European Community Household Panel (ECHP). See the Appendix at the end of this Chapter.
[21] Table A3.4 shows that differences in participation rates are even larger for women 25-44 years of age.
[22] See Table A3.4 and Table A3.5 for further details across age groups.

of the Dutch labour market. Germany, Ireland, and the UK also exhibit large differences in working hours between mothers and childless women in the age group 30-44 years. This gap between mothers and childless women increases with the number of children. Figure 3.22 shows the variation in labour force status for women aged 30-44 by number of children.

In general, the pattern of employment behaviour is as expected: full time employment declines while part time employment increases. Table A3.7 reports figures for other countries. The non-active population increases as well.[23] Portugal and Denmark still have high full time employment rates while the Netherlands, Germany, the UK and Ireland show relatively low rates of full time but higher rates of part time employment which corresponds to the averages of working time in Figure 3.21.

The mean age of first motherhood in the ECHP sample is relatively similar across countries. The effect of first childbirth on employment status however varies: On the one hand, for Germany, a sharp and persistent decrease of women's labour market participation after first childbirth (60%) and a decline in average weekly working hours by seven is observed (Table A3.8). Portugal, Belgium, Italy and Greece on the other hand exhibit small differences between the status before and after first childbirth.[24]

To quantify the effect of children on women's labour market behaviour a regression analysis estimating the impact of children on extensive (participation) and intensive margins (hours) is performed. Both short term and long term effects are identified. The decision to participate in the labour market as well as the decision on how many hours to work are modelled via a dynamic GMM regression.[25] Figure 3.23 and Figure 3.24 report the results for Austria, Denmark, and Spain. In Austria, the effect turns out to be strong in both scenarios. For Denmark, the results show only a weak effect of children on the extensive margin. Finally in Spain, the results show only a weak effect of children on working hours. This is in line with Figures 3.20 and 3.21 reporting similar results for differences in the average working hours and participation rates respectively.[26]

[23] In general, inactive mothers spend more time with their children than working mothers. But even when working full time, women spend up to 50 hours per week (Ireland) on looking after children, most countries ranging between 30 and 40 hours (Table A3.3).

[24] See for further discussions on employment and childbirth decision for example Lauer and Weber (2003).

[25] Participation is estimated by a linear probability model. While the model is not constrained to the unity interval, coefficients should be interpreted cautiously: they rather constitute an approximation to percentages than real percentage figures. The predictive qualities prove to be better for values outside the marginal areas around unity and zero. See the Appendix for a detailed discussion of regression techniques, full results, specification tests, and the advantages and disadvantages of the method used.

[26] A valid model specification could not be achieved for every country in the sample. However, the classification of Figure 3.23 and Figure 3.24 can be approximately reproduced in any case. Differences may result from variation in sample composition.

Educational attainment is another important factor influencing women's labour market position: mothers with higher education participate more frequently in the labour market than less educated mothers (Figure 3.25). The educational effect might reflect better opportunities to reconcile work and family life. But also opportunity costs for staying at home are higher for better educated women (Becker, 1964). The inverse holds for women with lower education: institutional childcare arrangements, for example maternal leave, might constitute adverse incentives to withdraw from the labour market. On the other hand, these women are likely to face higher economic pressures to work (Table A3.6).

3.7 Ageing of the labour force

Population ageing as well as declining participation rates of young people led to ageing of the labour force over the past three decades. The declining elderly labour force participation had indeed a reverse influence, but the latter could not compensate both other effects (population ageing, declining labour supply of young people). Whereas the proportion of young workers (15-24 years) as well as of older workers (aged 55+) decreased, the mean age of the labour force increased on average.

The proportion of young people in the population (15+) decreased in the last three decades in all EU-countries (see Chapter 2), but the decline in the share of young workers in the total labour force was significant higher caused by additional declines in labour force participation and —in the case of women— the increasing contribution of middle aged women to total female labour supply (which reduced the weight of the young). The proportion of young male workers decreased from 19% in 1970 to 12% in 2003 in EU-15 on average. Changes were higher for women: from 27% (1970) to 12% (2003) in EU-15. A declining trend is also visible in NMS-10 and CC-3 in the last decade, but the share of young active people was still higher in these countries than in the EU-15 average in 2003, except for women in NMS-10 (Figure 3.26). Differences between the countries still exists in 2003 despite the global trend, with the highest share of young active people in Turkey (18% for men) and Malta (32% for women) and the lowest in Luxembourg (7% for men) (Figure 3.27) and Lithuania (8% for women) (Figure 3.28).

The proportion of older workers decreased in the last three decades, too, but to a lower degree: from 16% to 13% for men and from 14% to 11% for women in EU-15 on average between 1970 and 2003. NMS-10 also showed a declining trend, but Cyprus, Malta and candidate country Bulgaria showed an increase in the proportion of older *male* workers (Figure 3.29). Contrary to the global decreasing trend in EU-15 some countries experienced increases in the share of older *female* workers (Denmark, Finland, Portugal, and Sweden) and also in NMS-10 some countries showed increasing shares of older female worker (Figure 3.30).

Declining proportions of young and older workers imply increasing proportional weights of active people in the ages range 25-55. But in general, nearly all EU countries showed an increase in the mean age of the male and female active population between 1971 and 2003. The mean age of the labour force increased on average from 39.2 to 40.4 for men and from 37.2 to 39.4 for women in EU-15 over the last three decades (Figure 3.31). The highest increase in the mean age of male labour force was realised in Finland with 2.6 years (Cyprus 4 years), followed by Italy with 1.8 years (Figure 3.32). The female labour force is ageing even more profoundly. In Portugal the mean age increased by 6.5 years, followed by the Netherlands with 5.8 years (Figure 3.33). The changes age structure of the female labour force results from the increasing labour supply in middle age groups. The mean age increased by 0.5 years over the last decade in NMS-10, but labour force

ageing was even faster in the candidate countries, which experienced an increase of around two years (for men and women).

EUROSTAT projected high increases in the numbers and shares of the elderly within total populations (see Chapter 2). Thus, labour force ageing will continue. The expected increase in the labour force participation of older workers (caused by limiting the access to early retirement schemes or other social benefits for elderly) will have an additional effect on further labour force ageing. Thus, labour force ageing will show higher dynamics than population ageing.

3.8 Working time

Besides the development in labour force participation rates changes in usual working hours have an impact on the life time spent in employment. Whereas activity rates include both the employed and unemployed people, usual working hours per week are only available for employed people, not for people searching for work (wanted working time). Based on information included in labour force surveys the average usual weekly working hours and the share of part time workers (less than 30 hours) by gender and age groups was calculated for 1983, 1993 and 2003[27]. The results of the analysis are in brief:

- in all EU-countries women still have lower usual weekly working hours than men, for example in 2003 on average 6.5 hours less in EU-15
- between 1983 and 2003 the average weekly working time decreased in most countries both for men and women, on average in EU-15 1.5 hours for men and 0.9 hours for women
- the differences in the weekly working hours between the countries are noticeable in all years and do not converge over time
- the share of part time workers is still higher for women (32%) in EU-15 in 2003 than for men (7%)
- the share of part time workers increased over the last twenty years in most countries for women, but also for men, on average in EU-15 by 1.7% (women) and 3% (men).

Denmark and the Netherlands have the lowest working time with each 36 hours for men (Figure 3.34) and 32 (Denmark) respectively 25 hours (Netherlands) for women (Figure 3.35). These countries showed the highest share of part time working men (12% respectively 15%), the UK had 13% part time male workers in 2003 as well (Figure 3.36). The Netherlands is in the vanguard of part time working women with around 60% part timers in 2003, followed by the UK with 46% and Germany with 37% (Figure 3.37).

[27] The labour force surveys provided information on the usual weekly hour bands of employed people since 1983 for most EU-15 countries and since 1993 for some of the NMS-10 and CC-3 countries.

The changes in the average working time in the older and intermediate age groups, in particular for women, are of special interest. The hypotheses are that women looking after small children make a break in their working life or if they stay in the labour force reduce working hours; older workers who stay in the labour market on average also reduce working hours compared to middle aged workers. But information on usual weekly working hour in single age groups are only available from (sometimes small) sample surveys. It is therefore impossible to calculate the average usual weekly hours in the middle and older age groups for all EU-countries and in some cases also not for all three survey years.

Men in the middle age groups worked on average 39.4 hours in 2003 in the EU (excluding Finland and Luxembourg) and this was nearly the same for all three observed age groups (30-34, 35-39, and 40-44 years). Over the last twenty years the usual working time declined by around one hour per week (EU without Finland and Luxembourg). Men in Denmark had the shortest working time (around 38 hours per week), men in Hungary the longest (41.5 hours). Whereas men in the middle age groups worked nearly full time, the working hours for women were significantly lower and varied per age groups. In the EU-15 (without FI, LU) women aged 30-35 worked on average 32.9 hours per week in 2003, i.e. 0.4 hours more than in 1983. Compared to the average working time in age group 30-34 women aged 35-44 had less working hours, on average in EU-15 (without FI, LU) around 1.6 hours less in 2003 (Figure 3.38). Women in the latter age group mostly have one or more small or school age children. For them employment and child care are hard to combine.

Comparing the working time of the middle with the older age groups we observe a reduction in the average working time both for men and women, in particular for the age group 65+ (Figure 3.39). Men aged 60-64 worked 36.6 hours per week on average in 2003 in EU-15 (without FI, LU). Over the last twenty years the usual working hours reduced notably by 2.6 hours per week, but in the age group 65+ the reduction was with 2.8 hours even a little higher (from 31.5 hours to 28.7 hours per week). As mentioned above some retirement schemes provide options to combine part time work and pension benefits in the older age range, which may be a reason for increases in elderly part time work.

Women aged 60-64 worked 28 hours and women aged 65+ 22 hours on average per week in 2003 in EU-15 (without FI, LU). As for men the usual working time lowered over the last two decades by around 2.3 hours in age group 60-64 and 4.2 hours in age group 65+ respectively.

Declining labour force participation combined with a reduction in usual working hours per week led to a marked reduction in the total working hours per year for the elderly. This has to be kept in mind by interpreting labour force ageing and the time spent by the active population in the labour force.

3.9 Time spent in the labour force

Life expectancy increased in the past decades in all EU-countries for men and women, but over the last three decades the labour force participation of younger and older workers decreased markedly. By contrast, the labour supply of EU-15 women increased, in particular for mothers in the middle age groups. A longer life but a shorter time of labour market activities than previously lead to the hypotheses that the share of life spent in the labour force shortened and that the time spent in retirement increased. To proof the first hypothesis, we calculated the average time spent in the labour force based on participation rates. This indicator does not show the individual time spent in the labour force, but the average time spent in the labour force for a population. The working time is not taken into account, but considering the great share of part time workers among women and in the older age groups changes in working time have to be kept in mind to assess the period of time spent in the labour force.

The labour force participation of men is still higher than of women, and therefore, also the time spent in the labour force. Men aged 15+ spent on average 38.4 years and women 29.9 years in the labour force in EU-15 (2003 data). Over the last three decades the time men spent in the labour force declined by around 5 years, while it increased for women by around 10 years (EU-15). For both men and women a declining trend in active years is observed in NMS-10 and in CC-3. In 2003, the average time spent in the labour force was 35.4 years (NMS-10) and 36.2 years (CC-3) for men, and 29 and 18,6 years for women, respectively. The latter was mainly a result of developments in Turkey (Figure 3.40).

Large differences exist in time spent in the labour force across the various EU-countries. According to 2003 data, men in Portugal spent 42 years and in Belgium 32 years in activity (Figure 3.41). For women the range goes from 37.5 years in Sweden to 14 years in Turkey (Figure 3.42). A noticeable reduction in the active life span of men can be observed for Poland (12 years), Hungary and Turkey (11 years), Belgium and Portugal (10 years). Sweden showed the lowest reduction (less than two years). As discussed in the previous section this development results mainly from a decrease in the labour participation in the younger and older age groups.

Contrary to the development for men the life time spent in the labour force increased between 1971 and 2003 for *women* in EU-15, whereas in NMS-10 a decline is observed (except Cyprus). Portugal and the Netherlands show marked increases in the active life span (20 and 19 years respectively), followed by Spain with 16 years. The reduction in the active life span of men and the increase in the active life span of women led to a convergence of their active life times over the last three decades. Nevertheless, women still spend a smaller share of life in the labour force than men.

But not only part-time work increased in the last decades, also the share of temporary work increased markedly and this also affects the time spent in employment. Fixed-term

contracts were held by just around 12.6% of male and 14.4% of female employees in EU-15 in 2004. The NMS-10 figures were nearly the same. Between 1997 and 2004 the share of temporary in the total employment increased by around one percentage-point for both male and female employees (EU-15). This is also observed in most NMS-10 countries. In particular, Poland shows a significant rise in fixed-term contracts, with a share of employees raising from 6% (men) and 5% (women) in 1997 to 24% (men) respectively 21% (women) in 2004 (Table A3.21).

Spain shows an exceptional situation with a share of 30% temporary male and 35% temporary female workers in 2004. In June 2001, for example, only 9.5% of all new employment contracts signed were permanent, the rest being non-permanent contracts — indicating the high employee turnover among such workers (EIRO 2002, p. 5). Spain's strict legal protection against dismissals for 'permanent' employees has been one reason why companies make such extensive use of fixed-term employment and temporary agency work. There is a wide variety of different types of non-permanent contracts, including job training contracts, work-experience contracts, temporary contracts for production reasons, temporary posting contracts, contracts to replace workers who retire early or temporary agency work.

3.10 Discussion

The time spent in the labour force increased in the last decades for EU-15 women, while a declining trend exists for EU-15 men as well as for men and women in NMS-10 and CC-3. Thus, the share of women in the total labour force increased in EU-15 and declined slightly in NMS-10 and CC-3. Although the female labour supply expanded in particular in the middle age groups, the mean age of the labour force increased. Demographic developments had a large influence on labour force ageing, more so than the contrary effects of reduced labour participation of older workers and increased participation of middle aged women. Demographic projections show continued labour force ageing, and the expected increase in the exit age of the labour market for both men and women will boost the demographic effect.

To compensate for the projected fall in the numbers of working age persons, a further increase in employment rates, in particular for women and older workers, has to be encouraged together with greater investments in human capital (EC, 2005). The objectives in the Lisbon Strategy —an employment rate of 70%— has to be exceeded to compensate for the expected drop in the working age population. Great efforts are needed to integrate young people into the labour market and to support them as they pursue "non-linear" careers, alternating between employment, study, unemployment and retraining or the updating of skills (EC, 2005, p. 3.) It is essential to raise the level of education, but also to refresh the skills of older workers (life long learning). A higher labour force participation of older worker requires more adequate jobs for elderly. Therefore, companies have to focus on the expected changes in the labour force, more women and more older workers. They also have to ensure working conditions, allowing

women to combine family and economic life and allowing the elderly to stay longer in the labour market. That must be self-interest to all employers.

With regard to the time spent in the labour force further analyses are essential: trying to combine information of changes in labour force participation, changes in employment rates and unemployment rates, changes in usual weekly working hours and temporary employment. Further research has to focus more on cohort effects (i.e. changes between the generations), because comparing cohorts may provide better inside in the dynamics of change. But cohort data availability may be restricted. If long time series exists for some countries such data can be used to analyse cohort effects.

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Table 3.1. Projection of educational attainment EU 15

	2000	2050	Change 2000–2050	Of which due to	
				Demography	Years of schooling
Belgium	11.1	13.5	2.42	1.1	1.32
Denmark	12.5	14.4	1.84	0.4	1.44
Germany	12.6	13.9	1.27	0.1	1.17
Greece	10.5	13.5	3.01	1.5	1.51
Spain	9.4	13.5	4.10	2.2	1.90
France	10.8	13.7	2.96	1.2	1.76
Ireland	10.7	14.4	3.71	1.8	1.91
Italy	9.8	12.9	3.10	1.3	1.80
Luxembourg			0.85		0.85
Netherlands	11.7	14.1	2.30	0.6	1.70
Austria	11.9	13.9	1.97	1.1	0.87
Portugal	8.3	11.4	3.12	1.1	2.02
Finland	11.9	14.2	2.18	1.7	0.48
Sweden	11.9	13.4	1.53	0.8	0.73
UK	12.0	14.8	2.81	0.8	2.01
EU-15	11.1	13.8	2.72	1.1	1.62

Source: Montanio, Przwara and Young (2004).

Figure 3.1. Changes in total activity rates of men

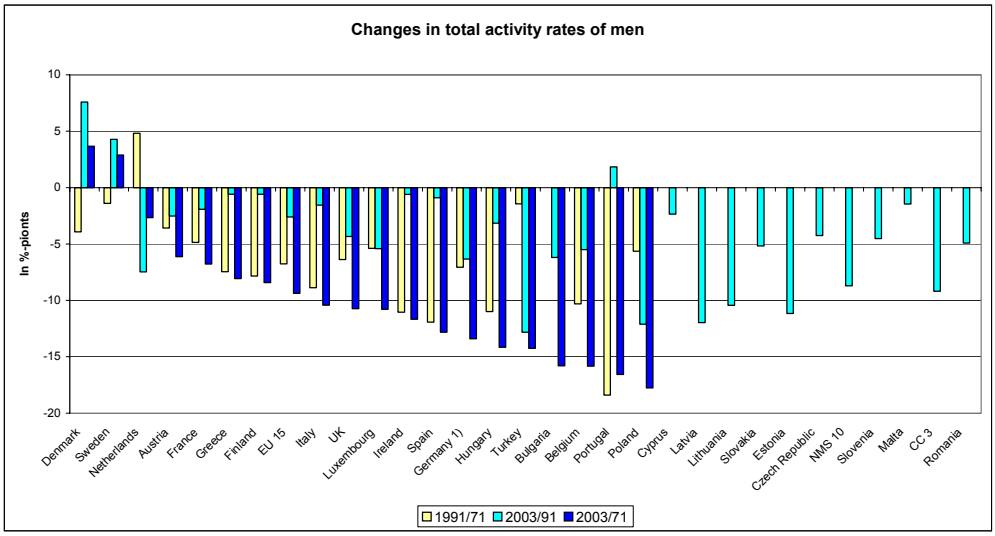


Figure 3.2. Total labour force participation rates of men (15+)

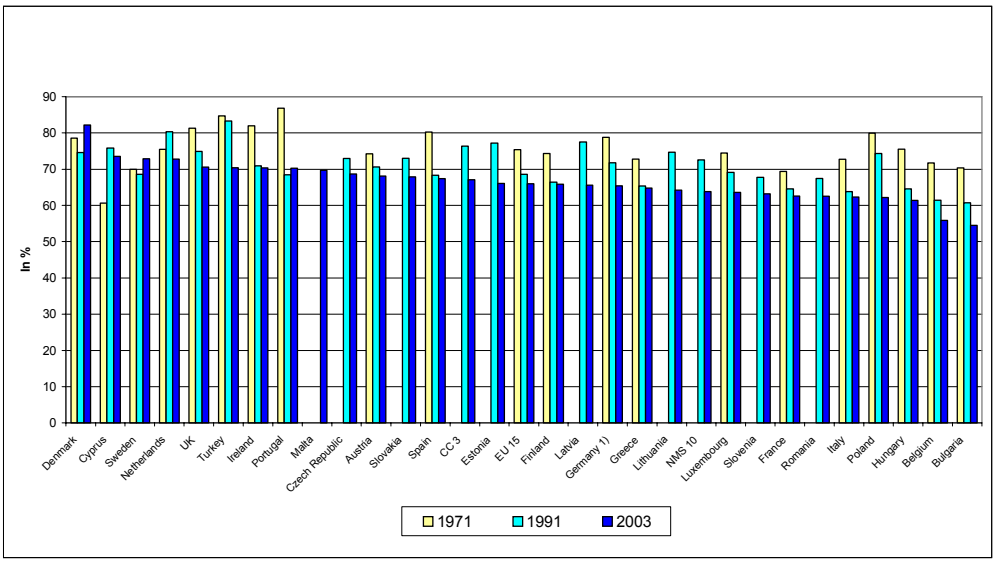


Figure 3.3. Changes in total activity rates of women

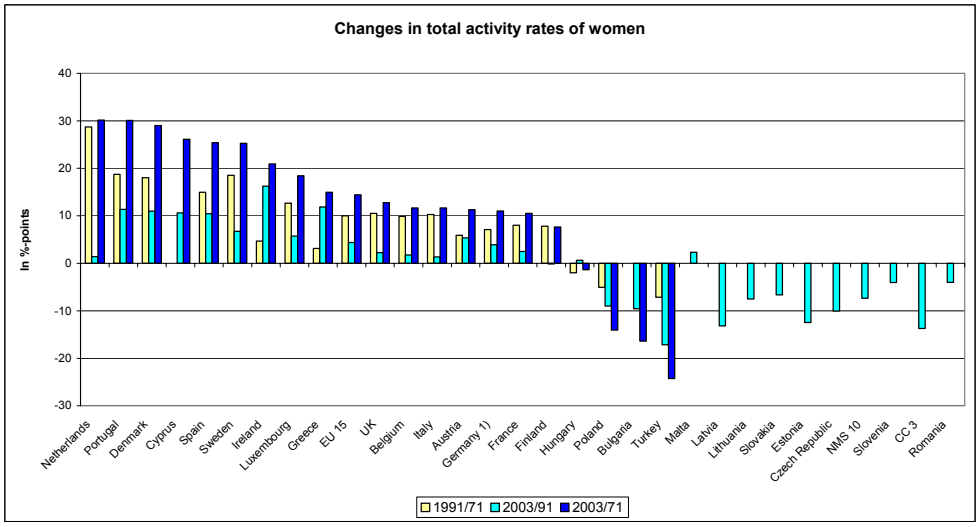


Figure 3.4. Total labour force participation rates of women (15+)

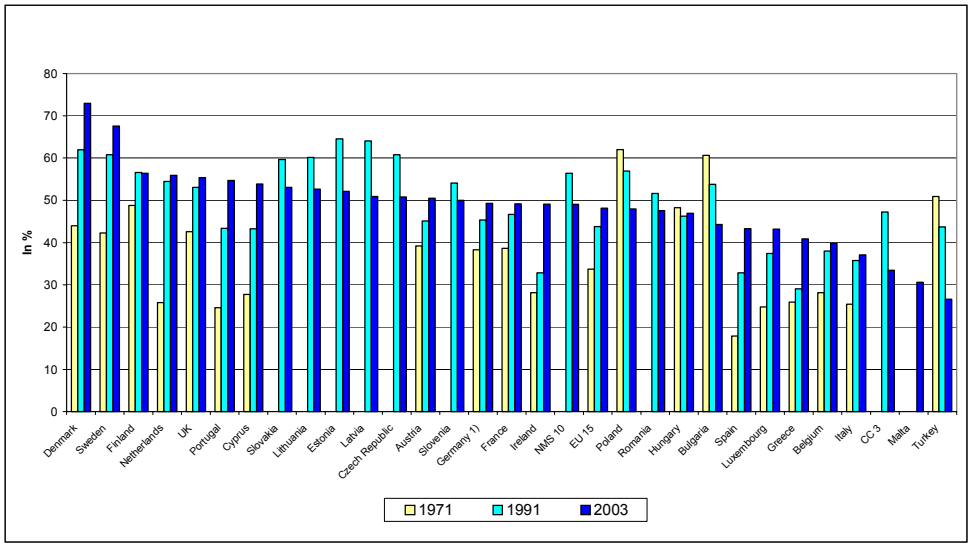
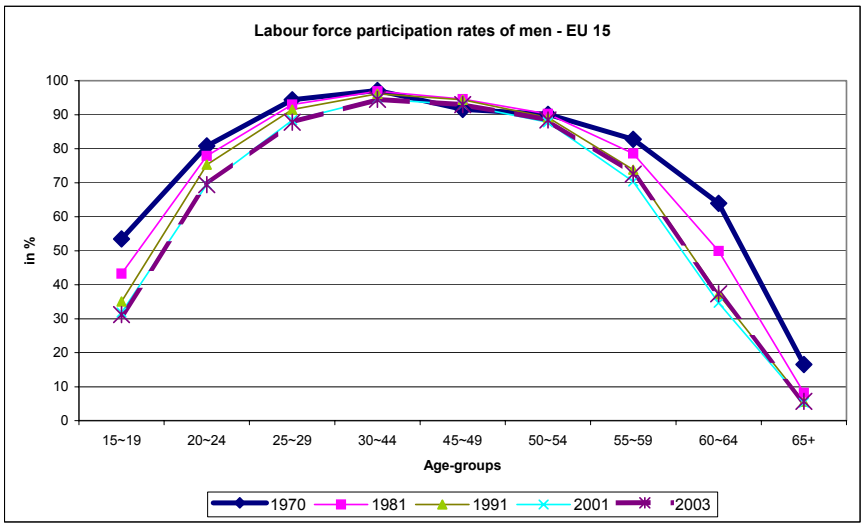
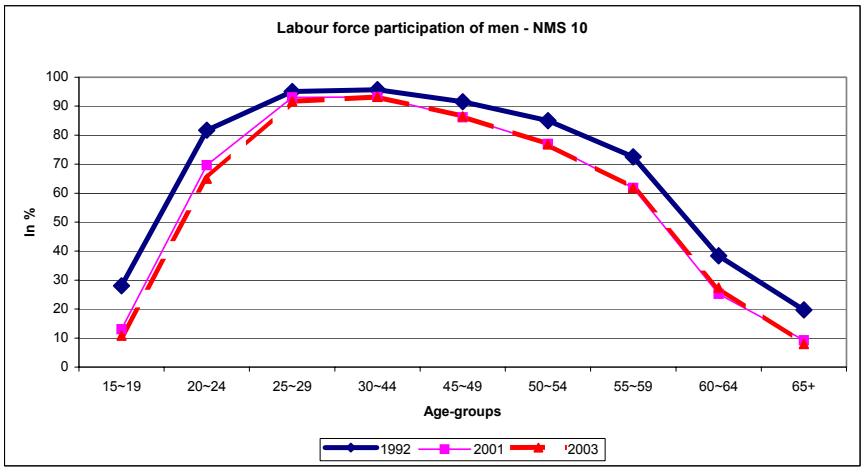


Figure 3.5. Labour force participation





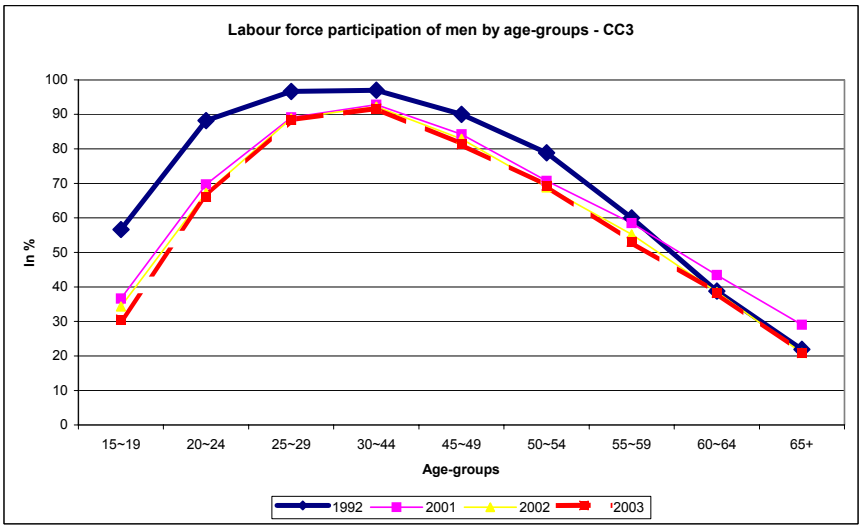


Figure 3.6. Labour force participation of men aged 15 to 24 years

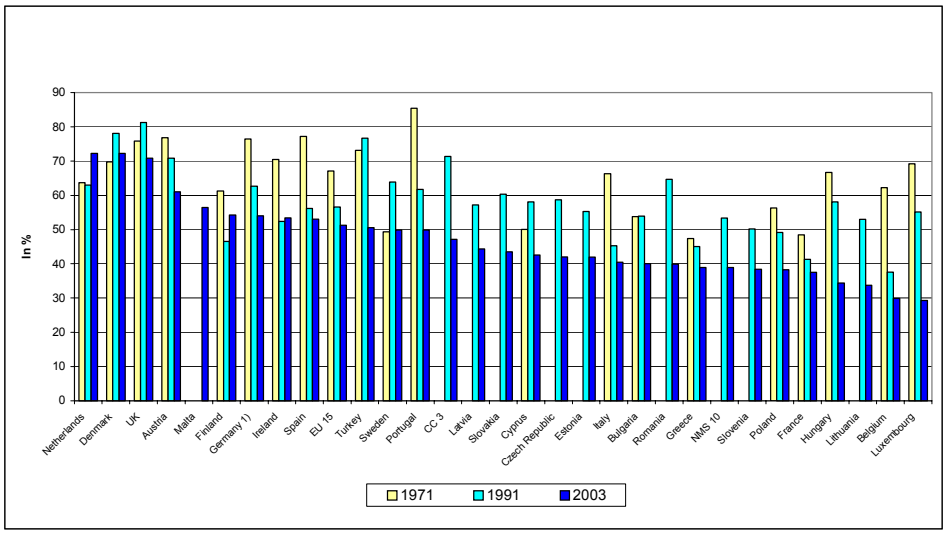


Figure 3.7. Changes in activity rates of young women (15–24)

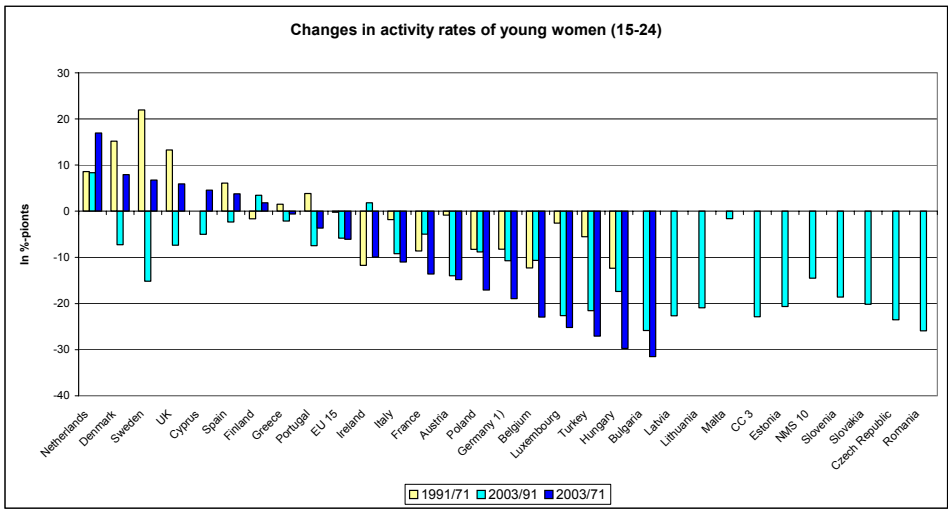


Figure 3.8. Labour force participation of women aged 15 to 24 years

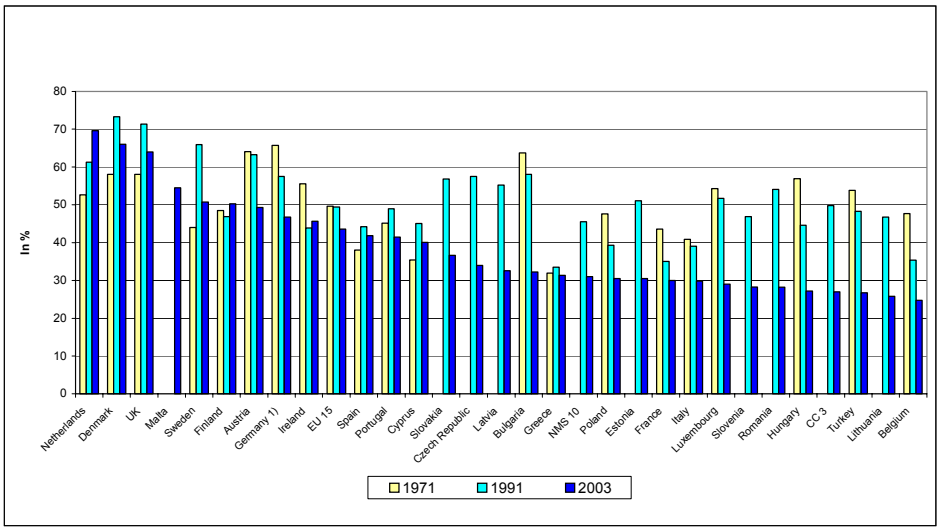


Figure 3.9. Population that has attained tertiary education 2002

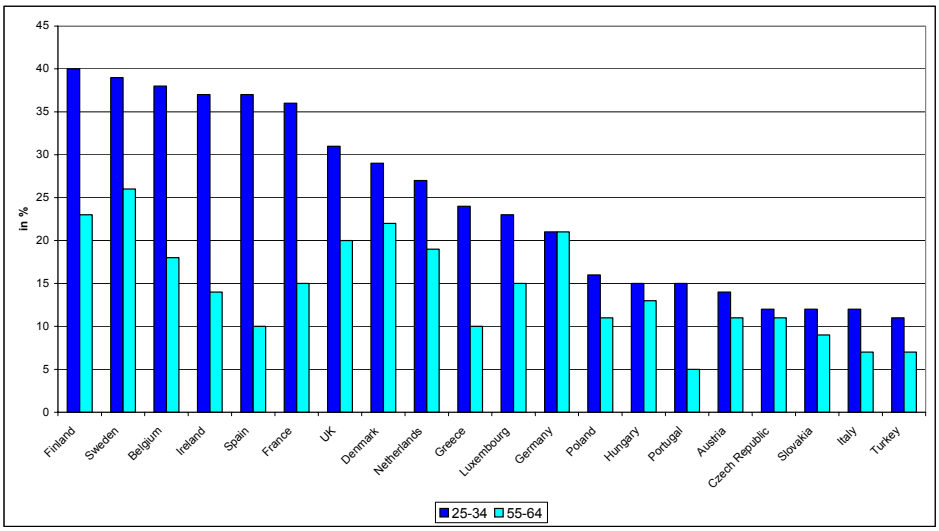


Figure 3.10. Labour force participation by education level in selected countries 2003

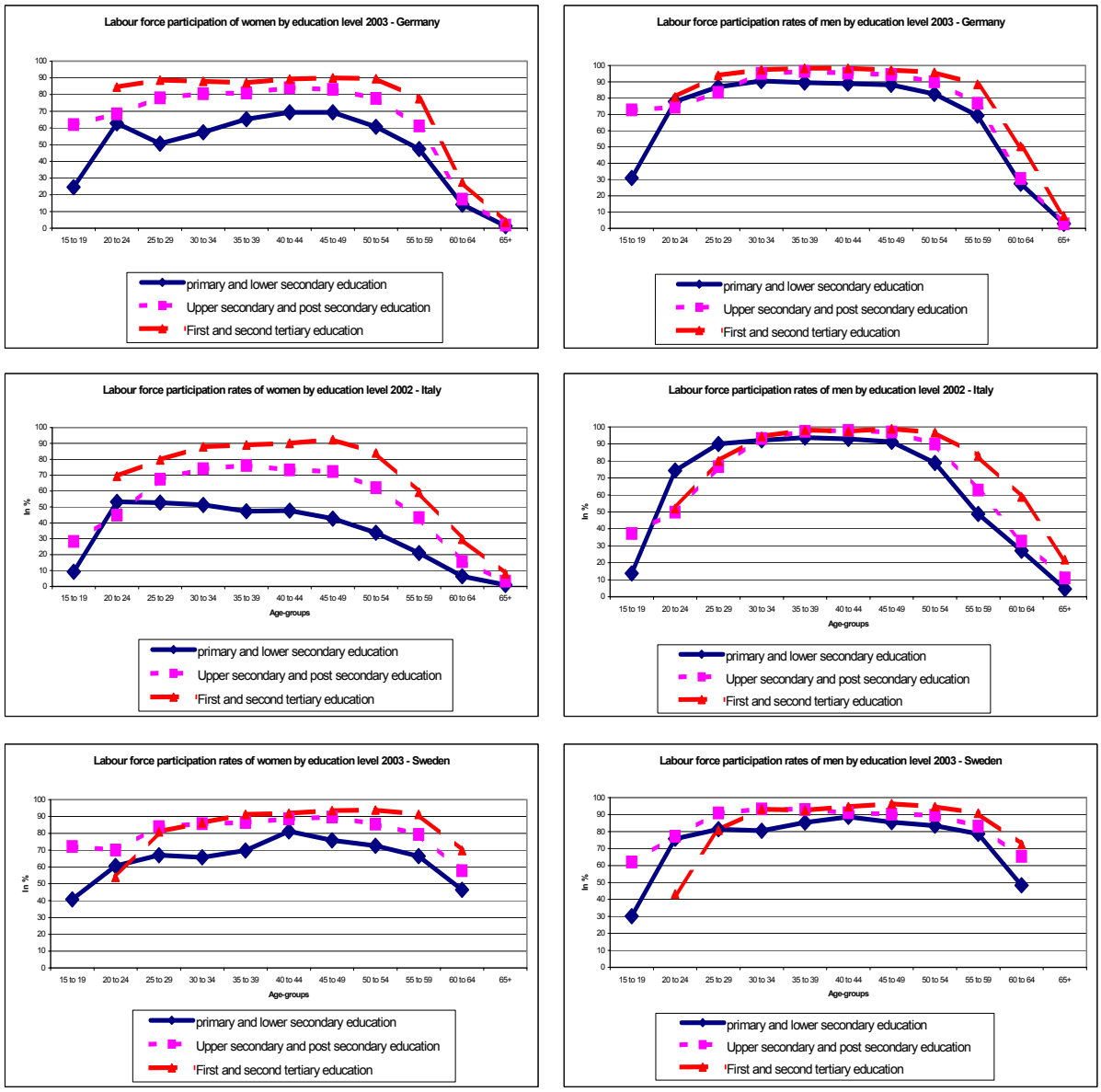


Figure 3.11. Labour force participation of men aged 55+

Figure 3.12. Activity rates of elderly men 2003

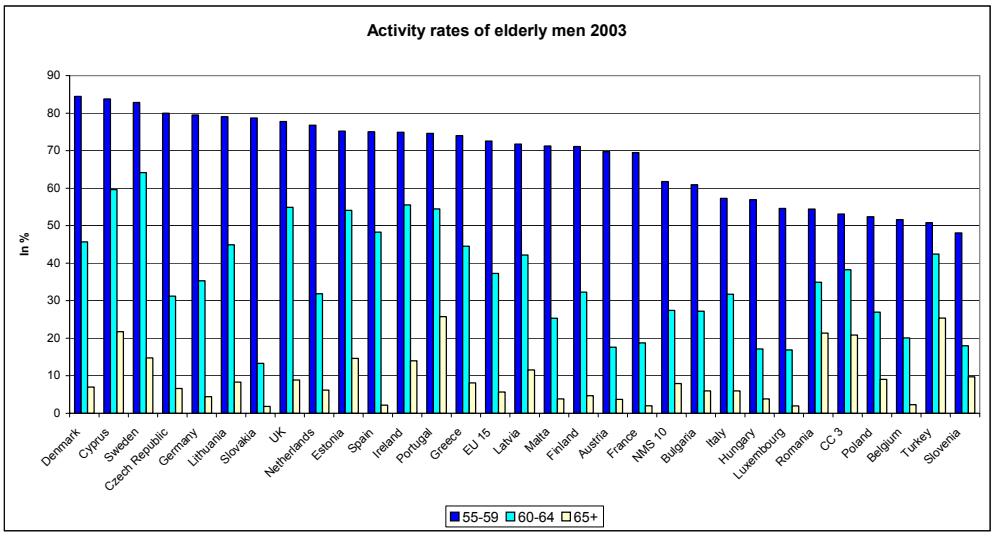


Figure 3.13. Labour force participation rates of women aged 55+

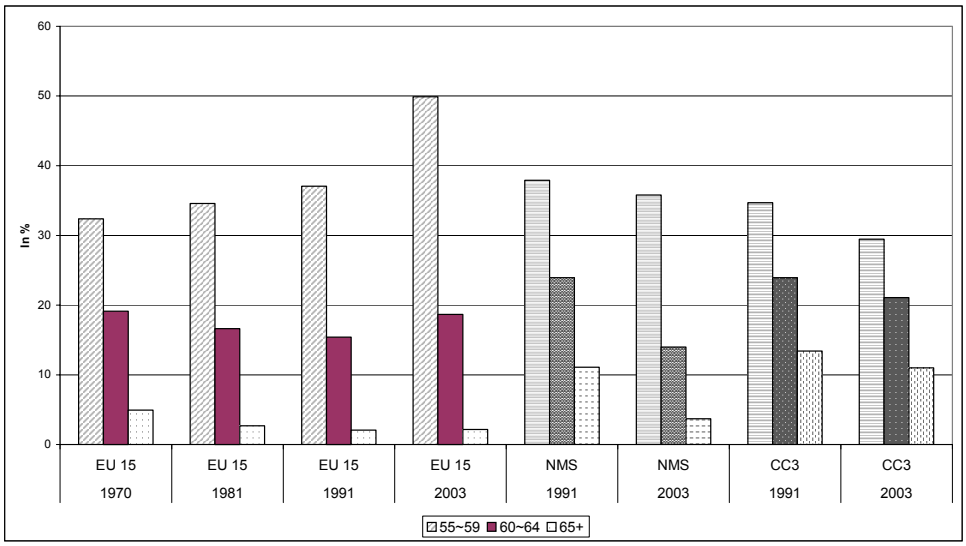


Figure 3.14. Activity rates of elderly women 2003

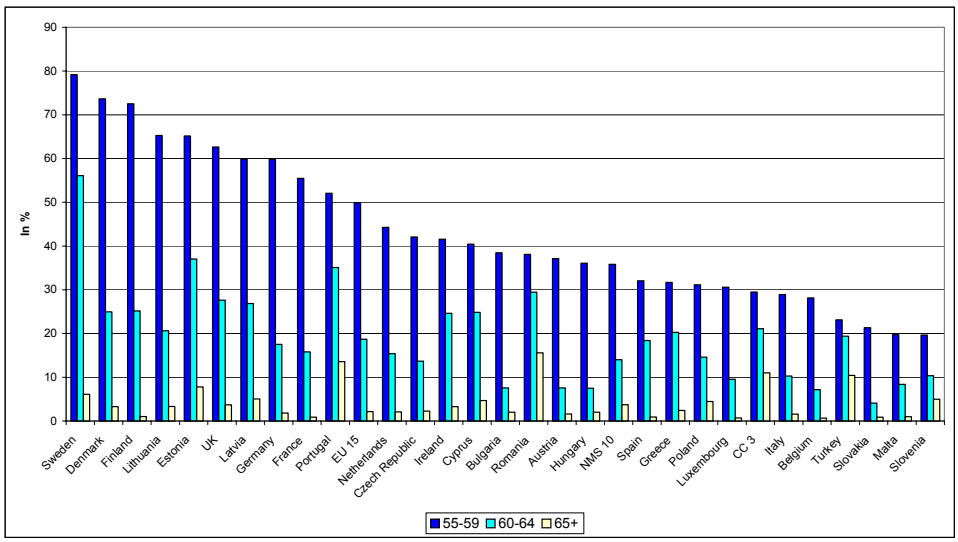


Figure 3.15. Average effective retirement age in 2003

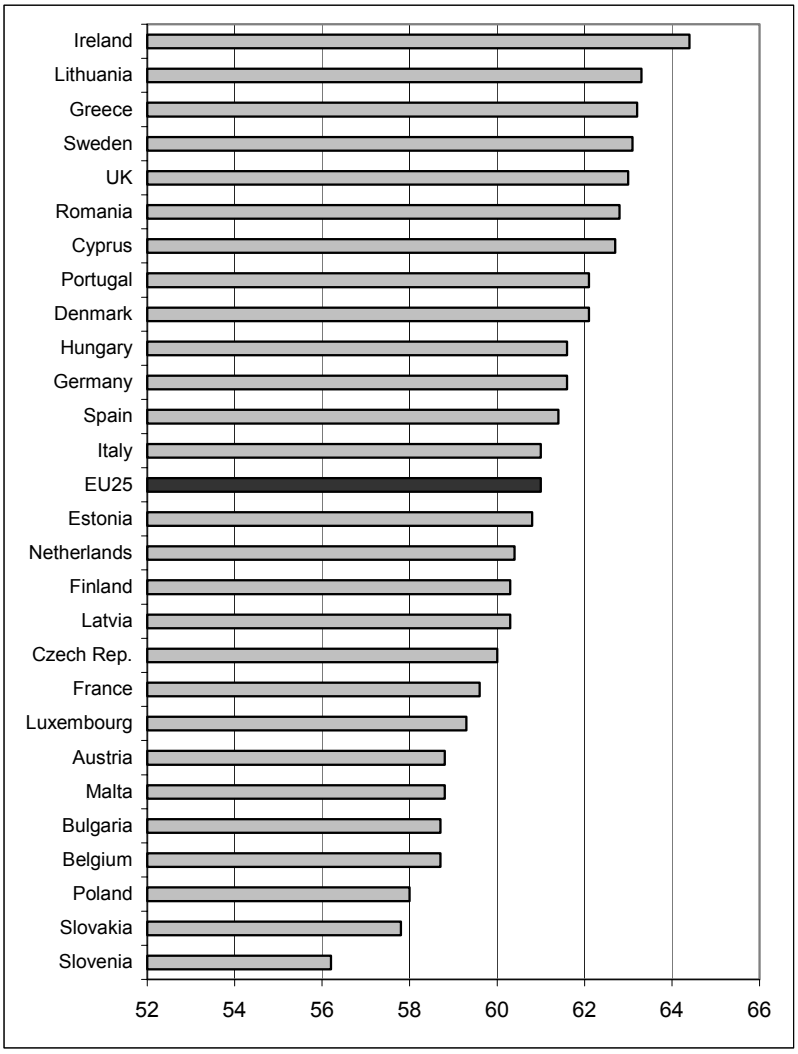


Figure 3.16. Labour force participation rates of women – EU 15

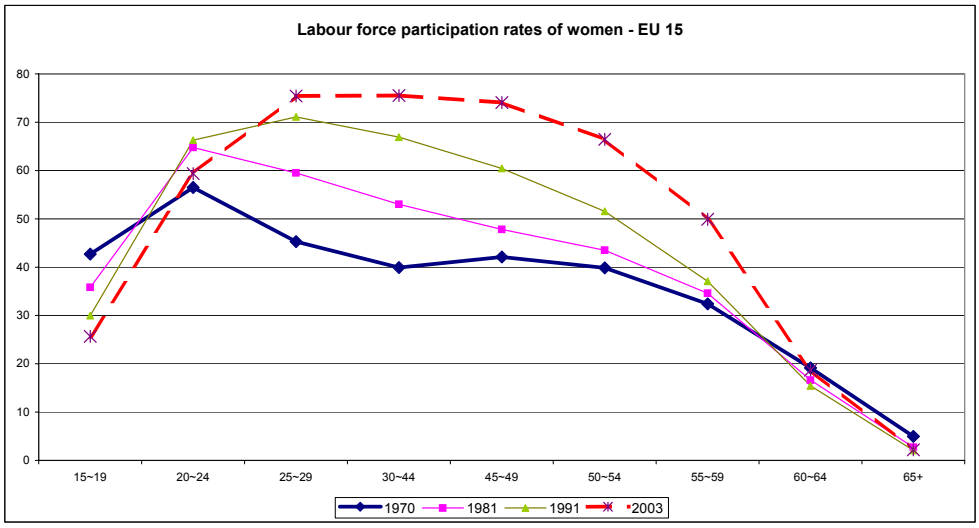
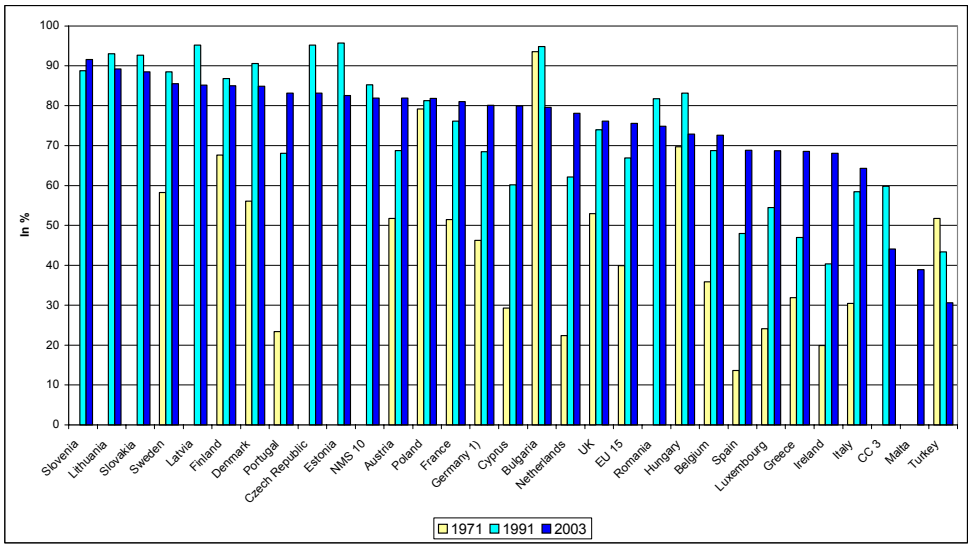


Figure 3.17. Activity rates of women aged 30 to 44



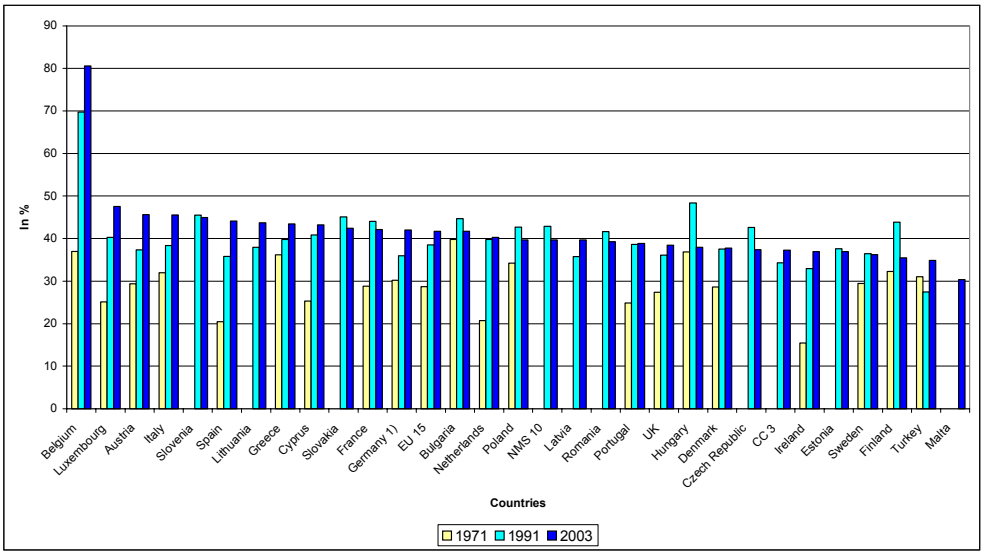


Figure 3.18. Percentage of middle aged women at total female labour supply

Figure 3.19. Time spent in the labour force of women aged 30-44

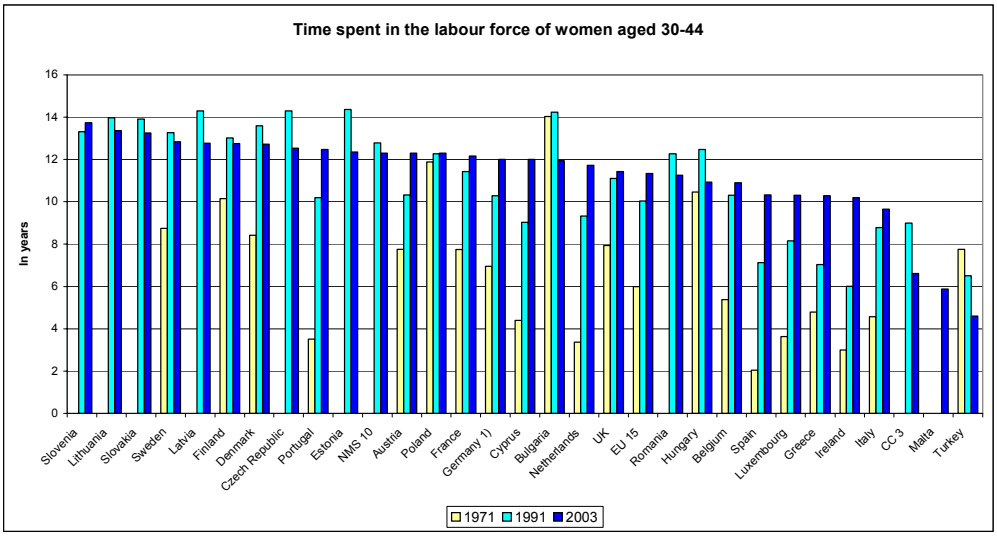
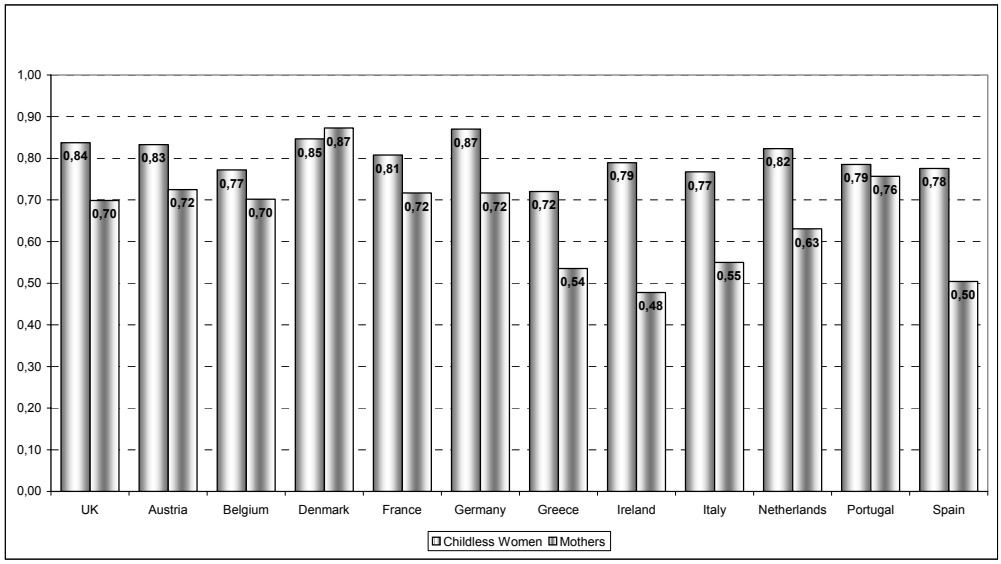


Figure 3.20. Labour force participation rates of mothers and childless women in the prime
age 25–54

Figure 3.21. Average weekly working hours of mothers and childless women between 25 and 54 years (1994–2001)



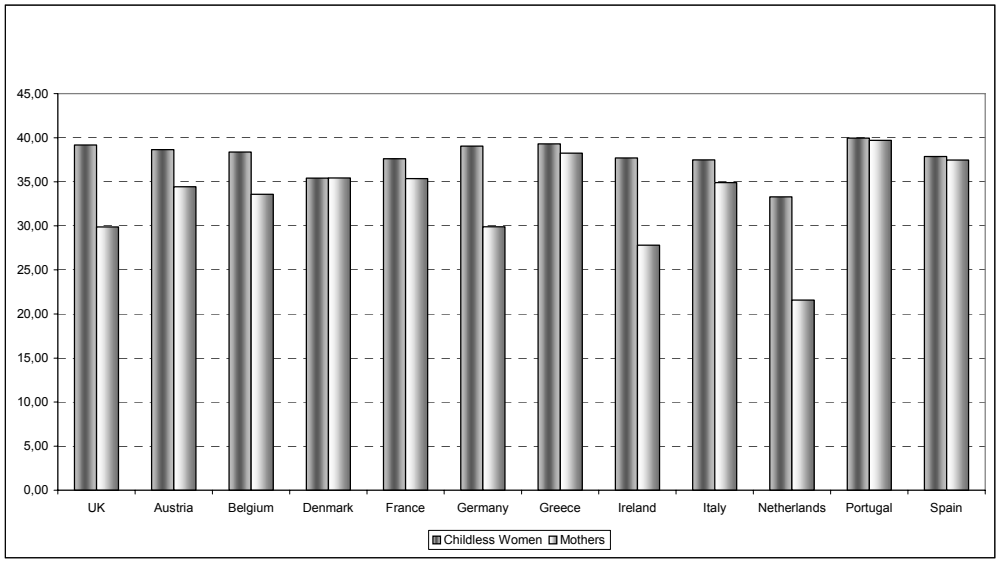


Figure 3.22. Shares of women between 30 and 44 by employment status and number of children (1999–2001)

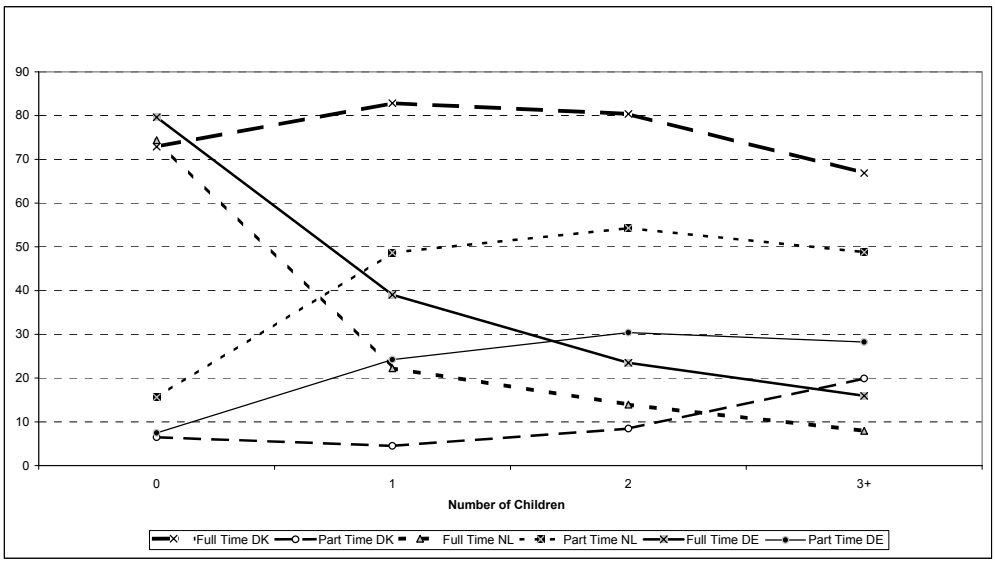


Figure 3.23. Short and long run effects of children on women's labour market participation (Denmark and Austria)

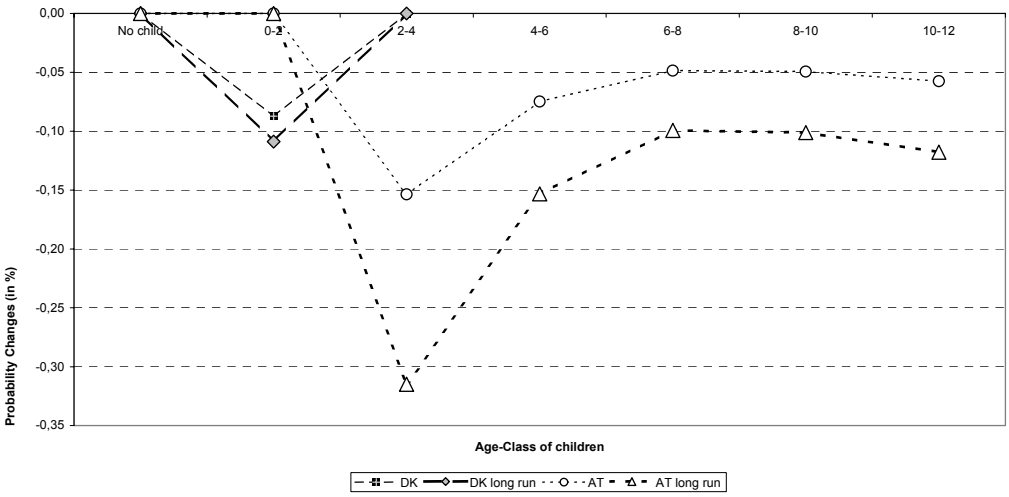


Figure 3.24. Short and long run effects of children in different age-groups on supplied working hours (Spain and Austria)

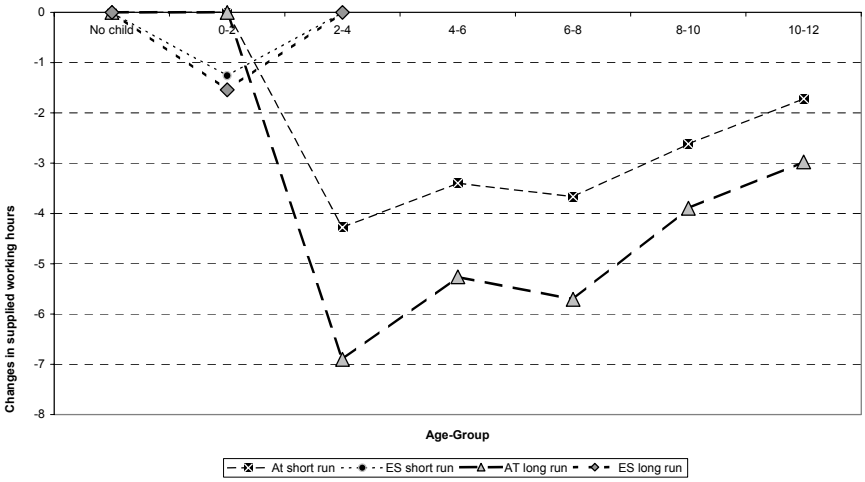
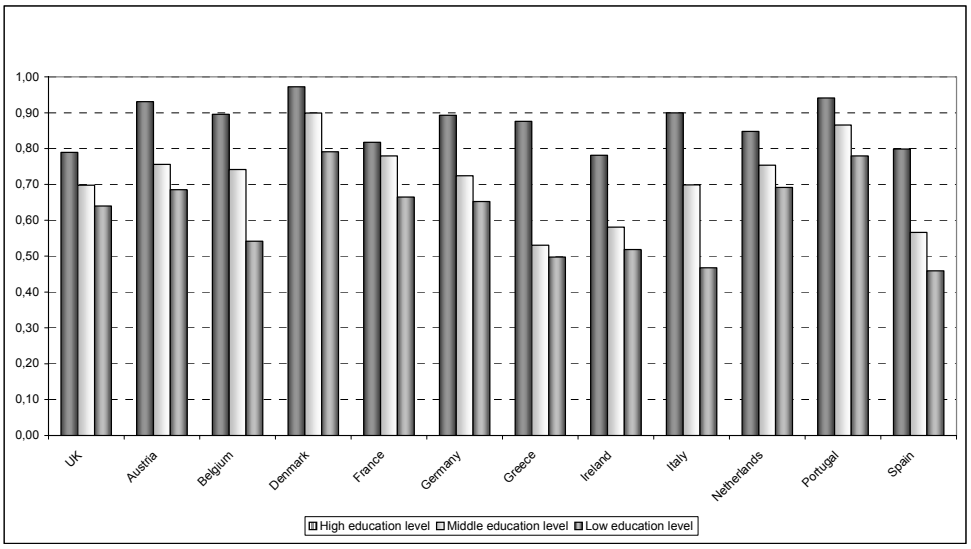


Figure 3.25. Labour force participation rates of mothers between 30-44 years by education level (1998-2001)



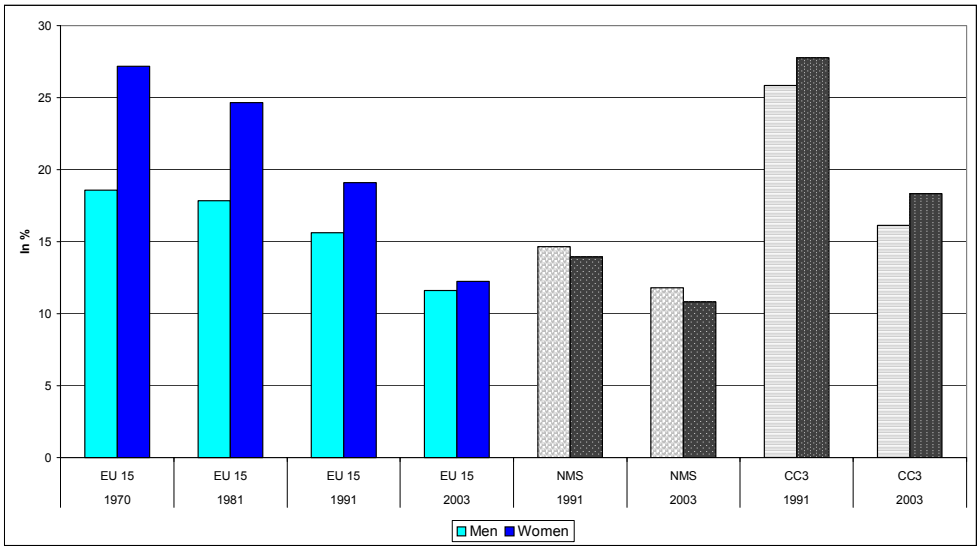


Figure 3.26. Share of young people on total labour force

Figure 3.27. Proportion of young male workers (15-24 years) on total male labour supply

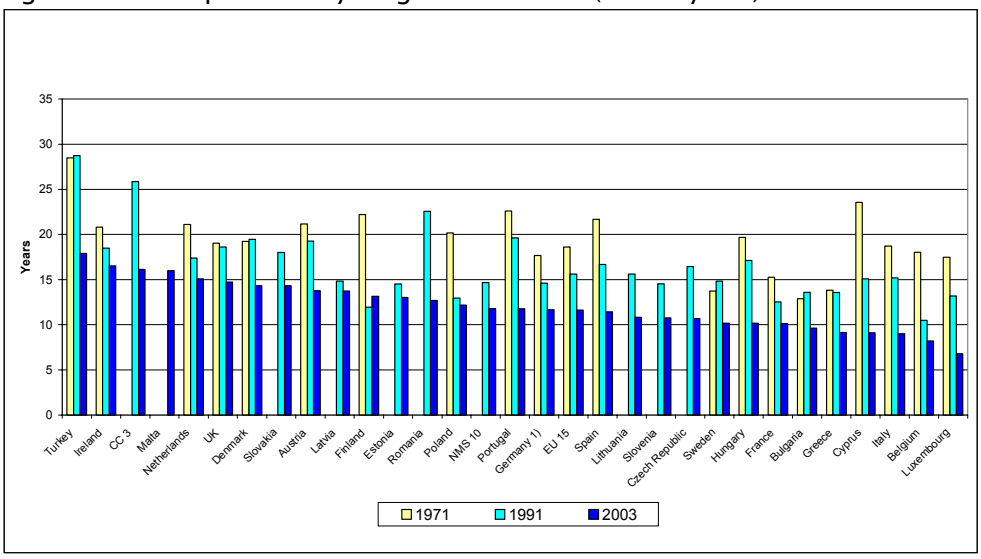


Figure 3.28. Proportion of young female workers (15–24 years) on total female labour supply

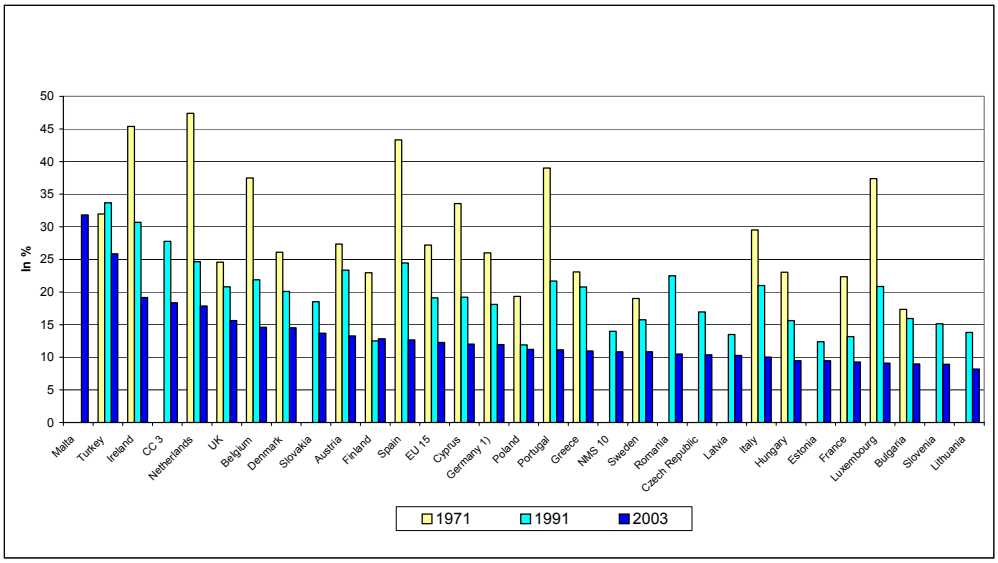


Figure 3.29. Proportion of older male workers (55+ years) on total male labour supply

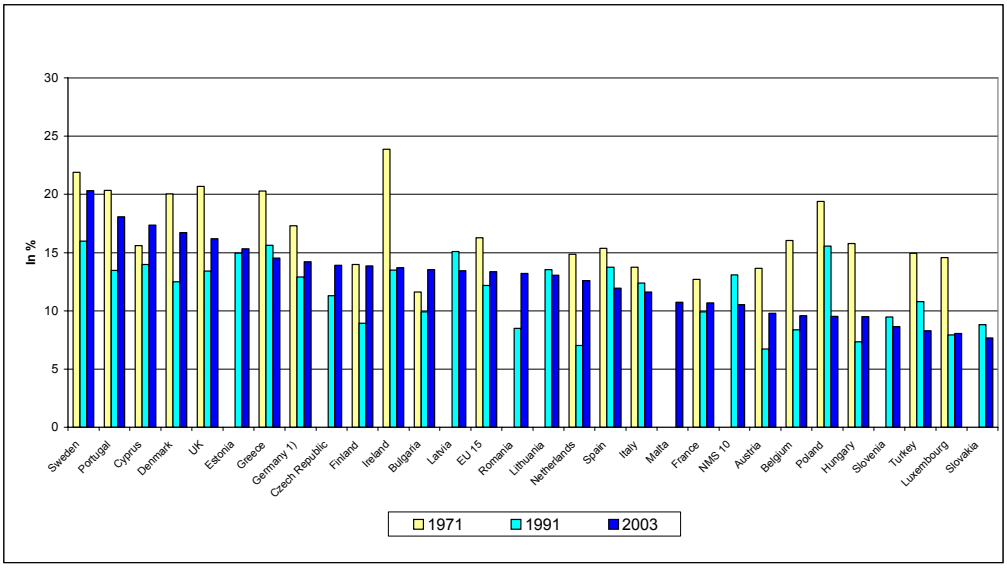


Figure 3.30. Proportion of older female workers (55+ years) on total female labour supply

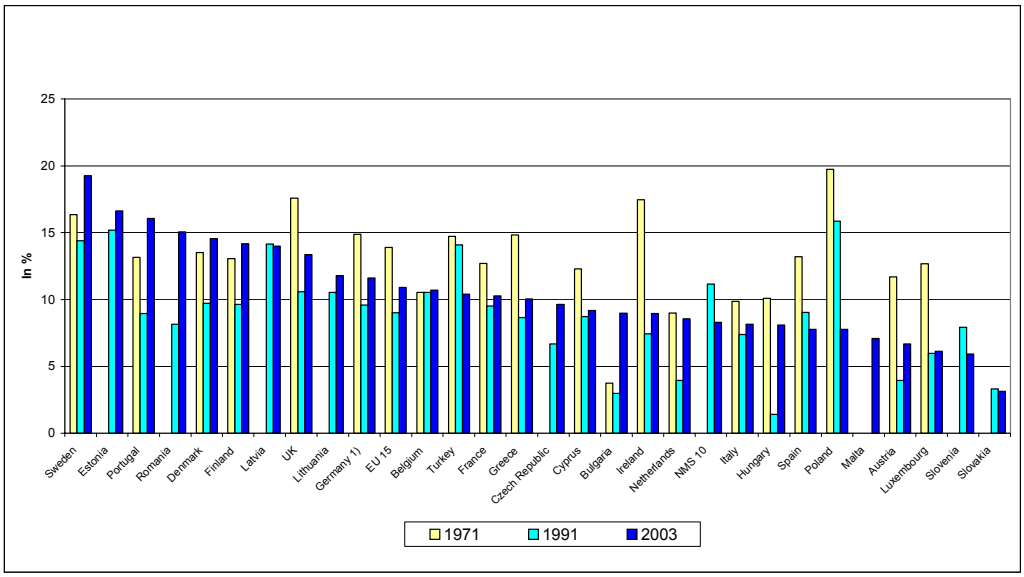


Figure 3.31. Mean age of the labour force

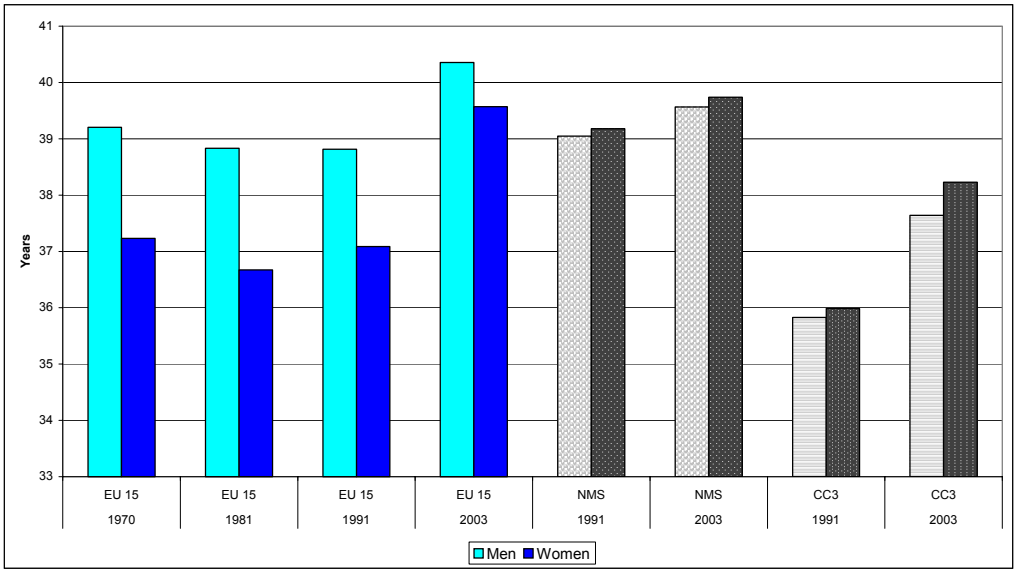


Figure 3.32. Mean age of male labour force

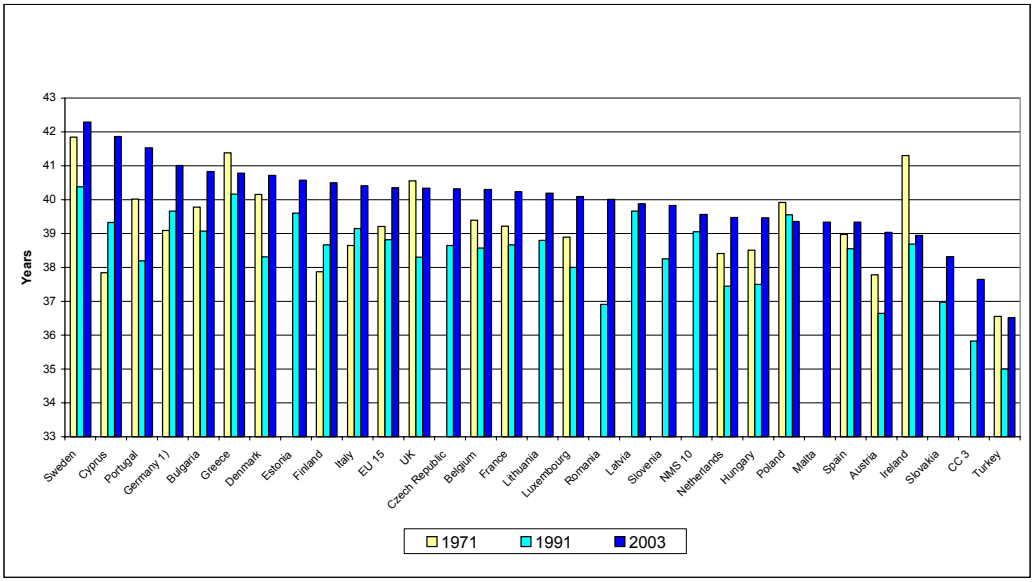


Figure 3.33. Mean age of female labour force

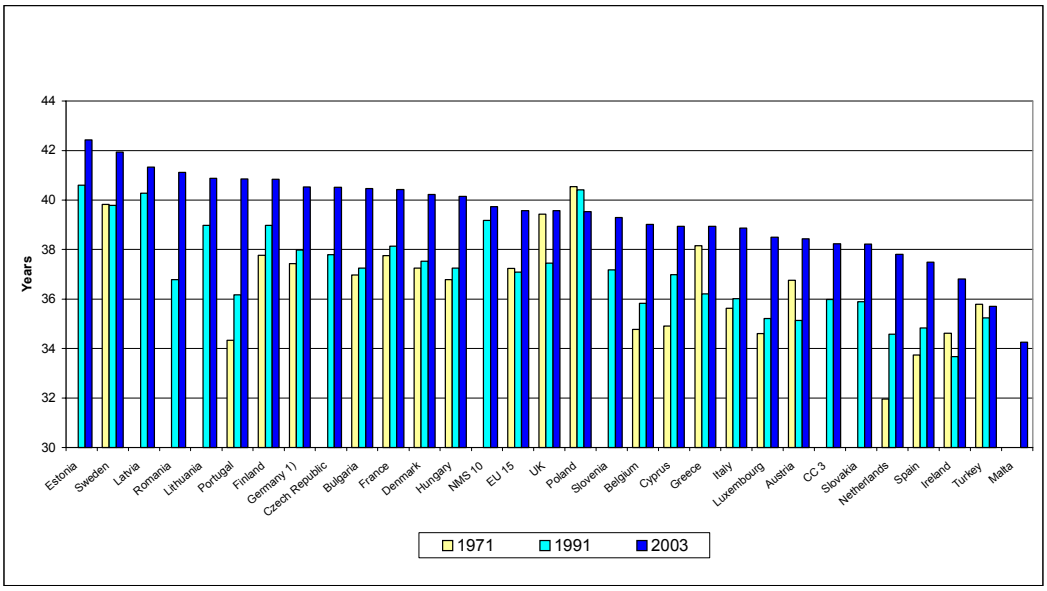
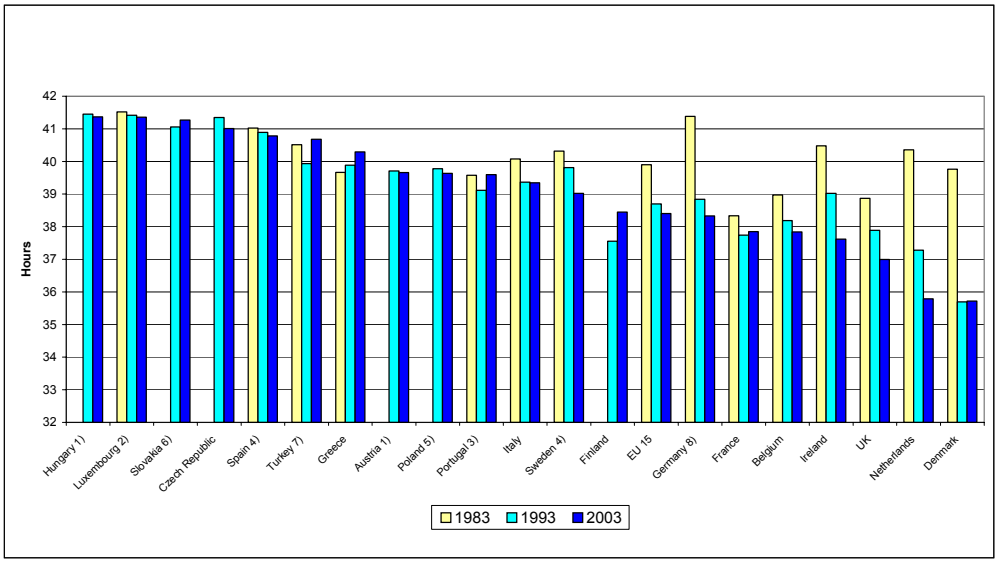
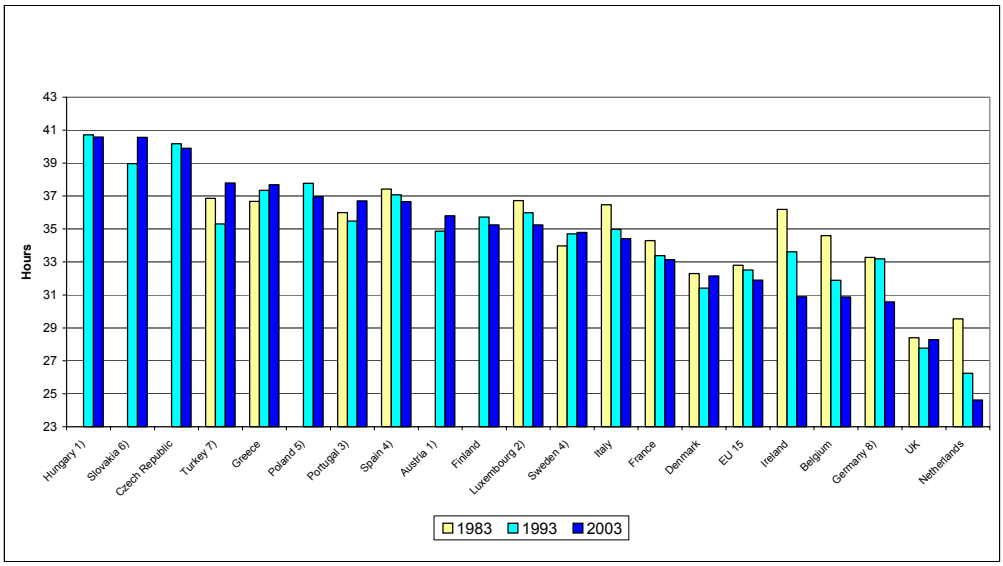


Figure 3.34. Average usual weekly working hours of men



1) 1993=1995. – 2) 2003=2002. – 3) 1983=1986. – 4) 1983=1987. – 5) 1993=1997. – 6) 1993=1994. – 7) 1983=1988. – 8) Until 1991 Germany-West.

Figure 3.35. Average usual weekly working hours of women



1) 1993=1995. – 2) 2003=2002. – 3) 1983=1986. – 4) 1983=1987. – 5) 1993=1997. – 6) 1993=1994. – 7) 1983=1988. – 8) Until 1991 Germany-West.

Figure 3.36. Share of male part-time (less than 30 hours) workers in total male employment

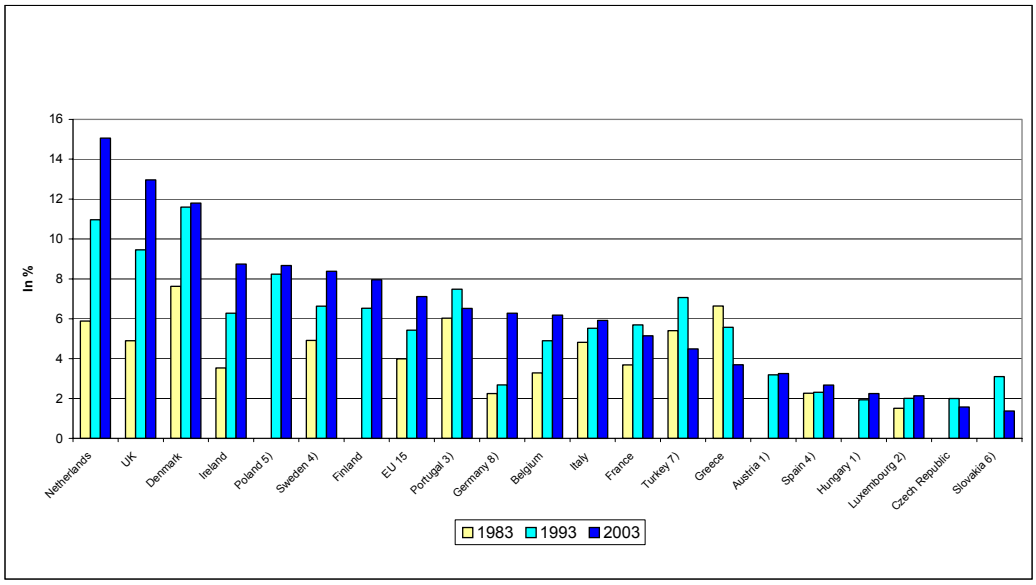


Figure 3.37. Share of female part-time (less than 30 hours) workers in total male employment

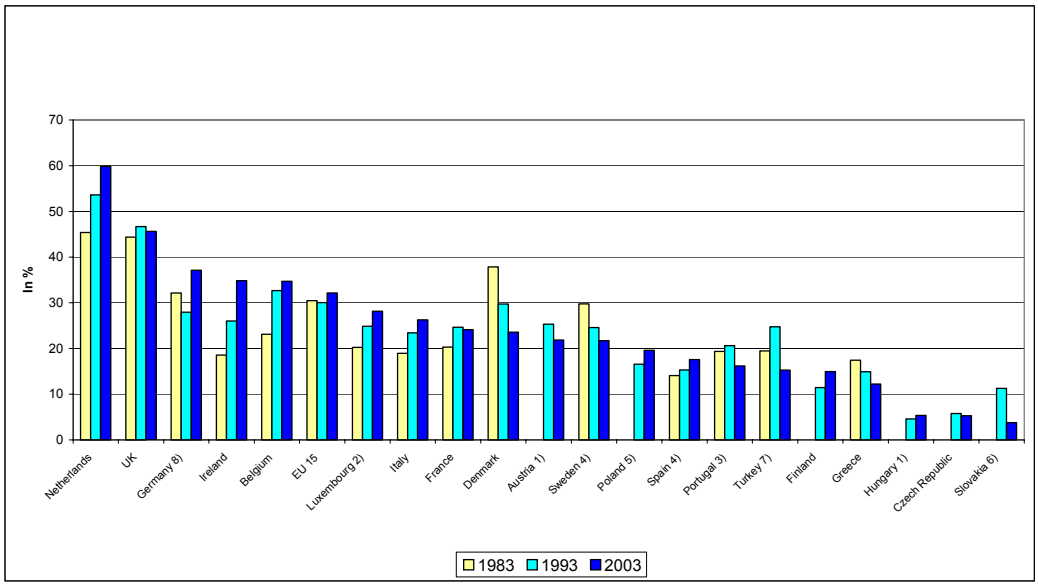


Figure 3.38. Working time in the middle age-groups 2003

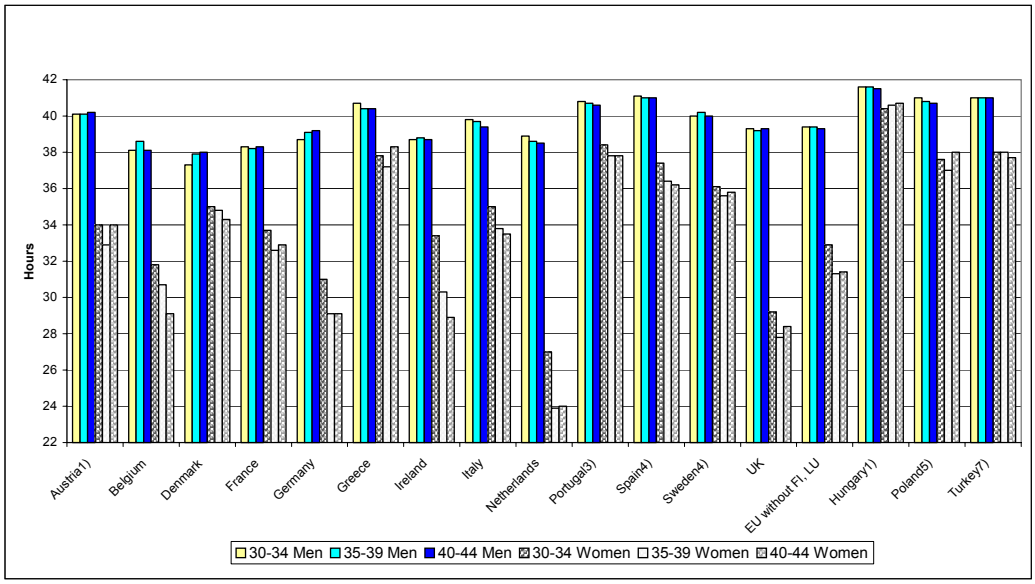


Figure 3.39. Working time in the older age-groups 2003

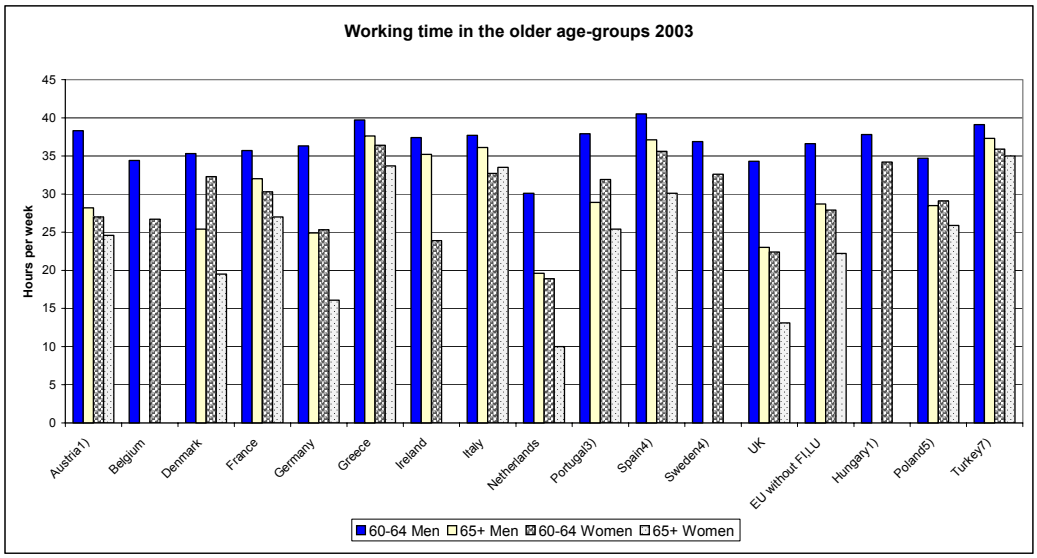


Figure 3.40. Time spent in the labour force

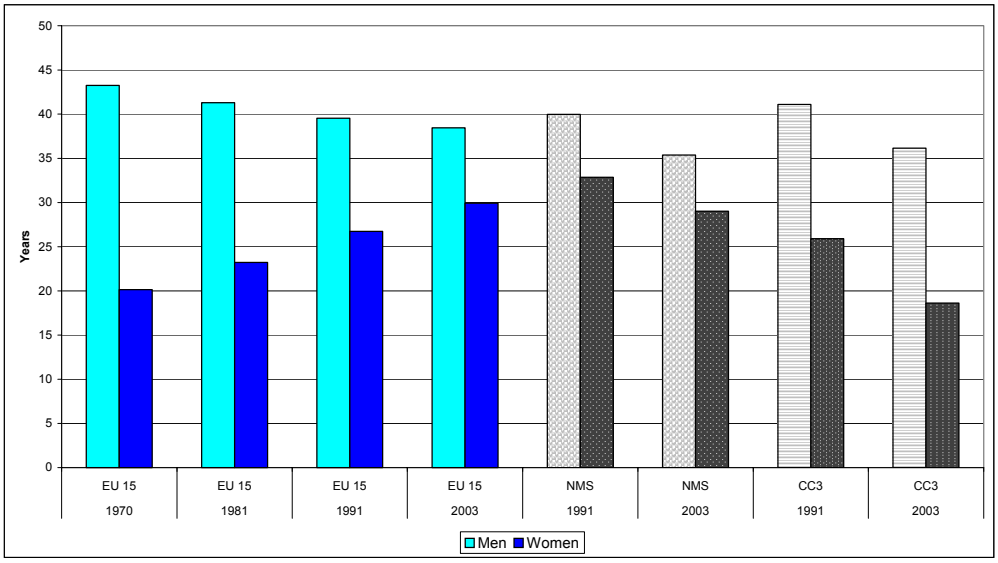


Figure 3.41. Average life time spent in the labour force in years (population 15+) – Men

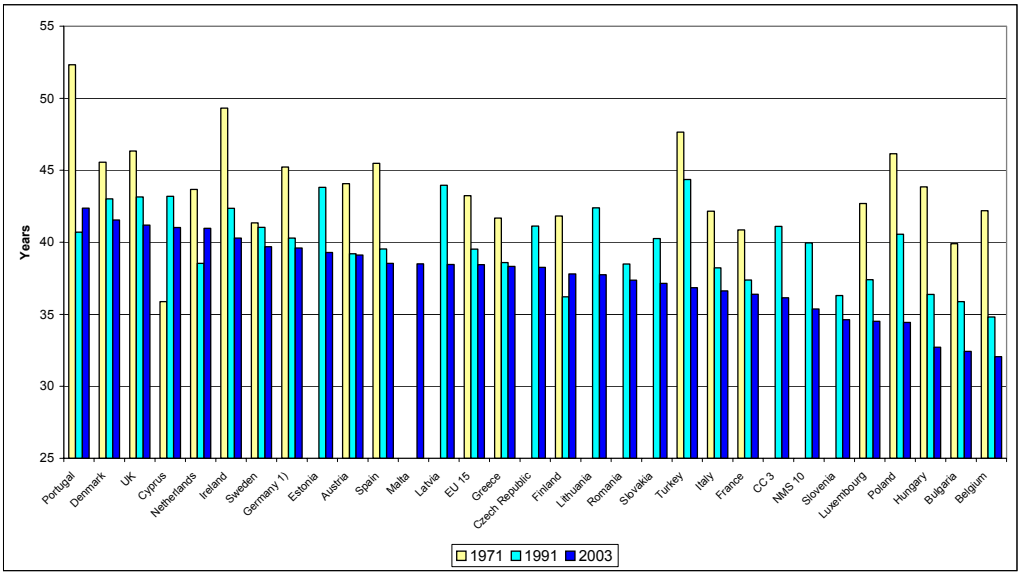
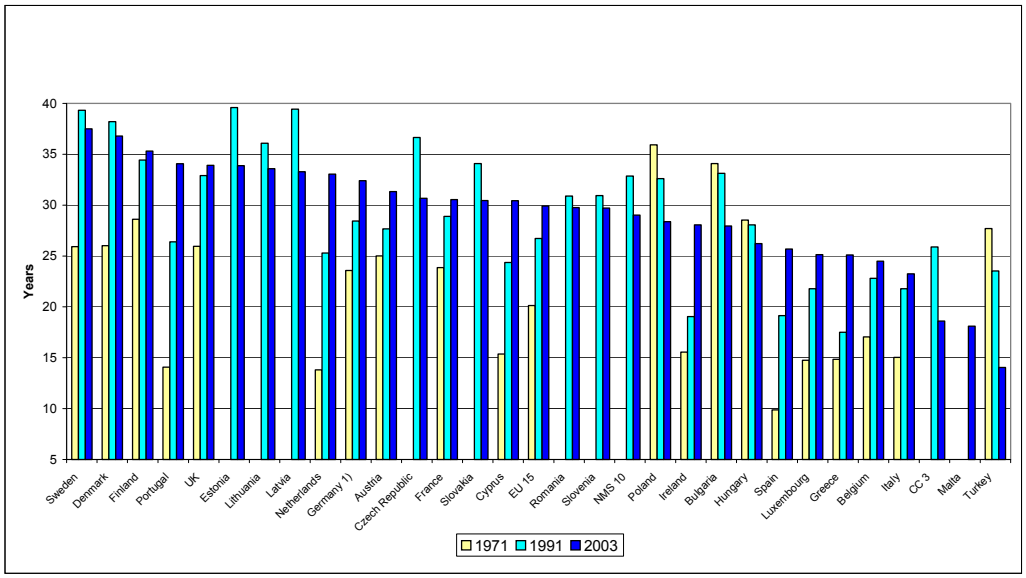


Figure 3.42. Average life time spent in the labour force in years (population 15+) – Women



Appendix to Chapter 3

This Appendix contains all descriptive statistics of section 3.6: a description of the data set and the sample. Subsequently a description of regression techniques and robustness checks is given, and then follow regression and test results for both equations.

The dataset

The data analysis is based on the European Community Household Panel (ECHP), a longitudinal survey set up and funded by the European Union. The first wave was conducted in 1994 in twelve European countries.[28] The last wave was carried out in 2001 within fifteen European countries.

The sample focuses on women aged 30–44 years, i.e. the life span with the most intensive phase of caring for children. ECHP data show that in almost all European countries the mean age at first motherhood is about 26 to 27 years (Table A3.8).[29] The regression analysis is performed for a sample of married women aged 18–60 years, and is restricted to twelve countries: Austria, Denmark, Belgium, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, and the UK.

GMM estimation of women's labour supply

The panel structure of the ECHP offers different advantages for the empirical analysis of individual behaviour. One of the most important features is that econometric techniques based on the combination of the cross-sectional and the time dimension of the data allow to take into account the effect of variables not explicitly observed, for example time invariant individual-specific effects. For this reason, panel data techniques are more robust with respect to incomplete model specification. In particular, they provide an easy solution to the problem of endogeneity of explanatory variables.

Panel data models can either be static or dynamic. In this context, static means that the dependent variable is expressed as a function of other contemporaneous variables. Static models neglect the dynamic structure of individual behaviour. Since an individual's behaviour is characterised, for example, by persistence or state dependence, lagged impacts of influencing factors, and other time-specific effects a model taking into account these dynamics is more appropriate. Dynamic panel techniques allow the explanatory variables to have both a short-run and a long-run impact on the variables of interest.

In our model the dependent variable (participation or working hours per week) is expressed as a function of its lagged level and some explanatory variables:

[28] For further details see EUROSTAT (1996) and Clémenceau and Verma (1996).

[29] The mean age is computed as the average over a period of seven years (1995–2001). Since age at first motherhood has increased in this period (e.g. EU, 2005), there might be a bias downwards. Due to case number problems the data had to be pooled.

$$y_{it} = \beta_y y_{it-1} + Z'_{it}\beta_z + \underbrace{\alpha_i + \varepsilon_{it}}_{u_{it}} \quad (1)$$

where y_{it} represents the weekly working hours (or participation status) for individual i at time t, α_i an unobserved individual specific effect staying constant over time, Z_{it} a vector of explanatory variables and ε_{it} a random disturbance distributed normally.

Introducing a lagged dependent variable as explanatory variable causes different problems, for example y_{it-1} will be correlated with the composite error term u_{it} due to the fixed effect. Biased estimators are a consequence. One way to solve this problem is by first differencing the model and then using OLS. However, even if there is no autocorrelation in the error term in levels, the error term in first differences is correlated with the first differences of the lagged dependent variable, since y_{it-1} is correlated with ε_{it-1}.

Arellano and Bover (1995) developed a GMM estimator capable of dealing with this problem by using lagged levels of the dependent variable as instruments to generate consistent estimates. Blundell and Bond (1998) improved on the estimator and developed a so called "System-GMM" that uses also lagged differences as instruments for the equations in levels.[30]

Consistency of Arellano-Bond requires that the instruments are orthogonal to the lagged errors and correlated with the differences of y_{it-1}. This condition is met if no second order serial correlation occurs (Bond 2002). By definition this estimator generates a large number of instruments. To test the validity of over-identifying restrictions, a Sargan Test or Hansen Test can be applied (Hansen 1982). We also use a Difference Sargan Test testing two models against each other with respect to additional instruments (Blundell *et al.,* 2000).
If the model is considered as valid, a long run effect can be computed by a transformation of the coefficients: short run effect β_z and long run effect $\beta_z / 1 - y_{t-1}$.

Regression Results
This part documents the regression results. Quantifying human behaviour is a difficult task and needs special attention for both the implementation and interpretation of empirical models like regressions. Therefore different model specifications are reported and discussed. All GMM estimations are estimated by the two step approach using Windmeijer's finite sample correction (Windmeijer, 2000).

[30] The estimator is called "system" because it simultaneously models moment conditions for equation (1) in levels and in first differences.

Beside controls for children, variables for age, years, other income, own health and husband's characteristics are introduced. The homogenous model specification might be a reason to the fact that not all specifications work and sometimes more than one seems to be valid.

To deal with that problem a model is preferred if the specification tests confirm the crucial assumption of exogenous instruments. If there are two or more valid specifications, a Difference Sargan Test is applied —if possible— and if it results in different valid models, the model which uses more instruments is used because of its efficiency gains.

The first step is to conduct two auxiliary regressions: theoretically, an OLS-regression which does not take into account the endogeneity of the lagged dependent variable should result in an upward biased estimator of the state dependence parameter. Conversely, a regression with a static linear Fixed Effect estimator should produce downward biased coefficients through the within-transformation.[31]

The theoretic expectation is confirmed by the results in Table A3.9 and Table A3.10 for the participation and in Table A3.15 and Table A3.16 for the hours equation compared to all tables with GMM estimators, i.e. the GMM state dependence estimator lies between both other estimators.

Participation Equation

The extensive margin is modelled by a linear probability model. The disadvantage of this model is its poor predictive quality because coefficients cannot be exactly interpreted as percentage points. This approach was nevertheless chosen because of the advantages that a dynamic GMM approach has. In particular, individual heterogeneity need not be modelled exactly, marginal effects can be computed and transformation prevents selection bias in the hours equation (with the mild assumption that the random time-variant error terms in both equations are uncorrelated) (Croda and Kyriazidou, 2005; Hyslop, 1999).

It is a well known problem that levels often turn out to be weak instruments and perform poorly especially in the case of highly persistent series (Arellano and Bover, 1995; Blundell *et al.*, 2000). Particularly in the linear probability model lagged levels perform poorly. The first model (Table A3.11) uses differences as instruments and results in five (Austria, Denmark, Greece, Spain, and UK) valid specifications.[32] Spain and the UK are the only models accepted in the levels specification (Table A3.12). When both instruments are

[31] Both statements are only valid in the case that α_i is positive. For a detailed description of momentum conditions and attributes of the estimator see e.g. Blundell *et al.* (2000).

[32] Arellano and Bover (1995) improved on the classical Arellano-Bond estimator with a formulation of sufficient conditions to use lagged differences as instruments for the levels equation.

used, the test accepts Greece, Spain and the UK (Table A3.13). Table A3.14 reports the corresponding long run effects.
To choose the best specified model, a Difference-Sargan test is applied. The test statistic is $Dif.Sar = Sar_s - Sar_{d/l}$ with $Dif.Sar$ asymptotically chi-squared distributed under the null hypothesis that the additional moment conditions are valid. Sar_s is the Sargan test statistic for the model which uses both instruments, a System-GMM estimator, and $Sar_{d/l}$ the Sargan test statistic of the model in levels or differences. The degrees of freedom are the additional moment conditions (Blundell *et al.*, 2000).

For Greece we get a test statistic of 8,1 with six degrees of freedom, i.e. additional instruments are accepted on the 5% level. The model for Spain in levels shows the lowest Sargan statistic, therefore it is the base model. Against the System-GMM a test statistic of 15,4 results which implies a rejection of the system specification on the 5% level. The System-GMM model for the UK is accepted on the 5% level (test statistic: 11,2 with base model in differences).

Hours Equation
The test idea is the same as for the participation equation. Six valid models are given in the differences equation: Denmark, Belgium, Greece, Ireland, Spain, and Portugal (Table 3A.17). Austria, Belgium, Ireland, Italy, and Spain are accepted in the levels equation (Table A3.18). System GMM accepts Belgium, Denmark, Greece, Ireland and Spain (Table A3.19 and Table A3.20).

For Denmark results a $Dif.Sar$ of 11,7 that accepts the additional restrictions of the System GMM on a 5% level. The same results for Belgium, Greece, Ireland, and Spain.

Table A.3.1. General early retirement options in statutory pension schemes[a]

Country	Earliest retirement age	Conditions	Benefit reduction
Belgium	60 years	35 years of employment	5% per year for self-employed (except after full career, men: 45 years, women: 43 years)
Bulgaria	depending on insured period	number of insured years + age = 100 for men, 90 for women (increases to 94 by 2009)	no reduction
Croatia	men 60, women 55 years from 2007 (increase from 55/50 with standard retirement age)	40 / 35 years (men/women) of qualifying period from 2007 (increase from 35/30 with standard retirement age)	no reduction
Czech Republic	3 years before standard retirement age, disability reduces retirement age		0.9% per 90 days
Denmark	1) no early retirement in public pension scheme 2) 65 for supplementary scheme		2) actuarial reduction
Germany	until 2011: men 63, women 60 from 2012: reduction of retirement age to 62 (by 2022); disabled: 60 unemployed persons: 63 (from 2006)	35 insured years	0.3% per month
Estonia	3 years before standard retirement age	15 insured years	0.4% per month
Greece	1) depending on insured period no age limit after 37 years 2) reduced pensions possible for men from 60, women from 55	2) 12.5 insured years, insured before 1993	1) no reduction 2) reductions
Spain	1) 64 years 2) insured before 1967: 60 insured from 1967: 61 if unemployed	1) Replacement by another worker	1) no reduction 2) reductions depend on the insured period (6-8% per year)
France	56 years	entry to the labour market at age 14-17, 40-42 contribution years	no reduction
Ireland	no early retirement		
Italy	1) old public pension scheme: 57 years for employees, 58 for self-employed depending on insured period, no age limit after 38 years (40 by 2008) 2) new DC scheme: 57 years	1) with 35 contribution years 2) entitlements exceed 1.2 times the amount of social assistance	1) no reduction 2) actuarial reductions
Cyprus	63 years	Weekly earnings are at least 70% of insurable earnings	no reduction
Latvia	no early retirement after July 2005		
Lithuania	5 years before standard retirement age	30 insured years or unemployed for at least 12 months	0.4% per month
Luxembourg	57 years	40 contribution years (early retirement from 60 years with 40 insured years including credited periods)	no reduction
Hungary	men 60, women 55 years	38 insured years	0.1-0.5% per month, depending on the number of years before standard retirement age
Malta	no early retirement		
Netherlands	no early retirement		

Country	Earliest retirement age	Conditions	Benefit reduction
Austria	increase men 61.5–65, women 56.5–60, 2004–2017, no early retirement after July 2017	35 contribution years or 37.5 insured years including credited periods	4.2% per year
Poland	1) old pension scheme until 2006: women 55 , disabled persons 60 years 2) new pension scheme (implemented by 2007): no early retirement	1) women: 30 years of work experience, disabled: 25 years of work experience	reduction due to shorter contribution period (average accrual rate 1.3% p.a.)
Portugal	55 years	30 contribution years	4.5% per year
Romania	5 years before standard retirement age	10 contribution years	reductions if less than 35 (men) / 30 (women) contribution years
Slovenia	58 years	men 40, women 38 insured years and unemployed or disabled	no reduction (reduction progressive with number of years for other groups)
Slovakia		10 insured years and pension entitlement of 1.2 times subsistence benefit	0.5% per month
Finland	62 years		0.6% per month
Sweden	61 years		actuarial reductions
Turkey	no early retirement		
United Kingdom	no early retirement		

[a] legal status as of January 2005

Source: European Commission (2003b), Table 10, p. 67; Social Protection Committee (2005), Table 3; Croatian Government: http://www.vlada.hr (22.04.2005)

Table A.3.2. Weighted shares of interviewed persons by gender and age-groups who answered the question "Do your present daily activities include, without pay, looking after children or other persons who need special help because of old age, illness or disability?" either with "Yes, looking after children" or "No, not looking after anyone".

	Total												
No.	**Country**	**18-24**		**25-30**		**31-44**		**45-49**		**49-54**		**55+**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
1	**UK**	5,54	87,92	19,62	73,29	30,79	57,47	10,08	69,58	2,66	73,36	0,21	79,4
2	**Austria**	9,21	89,68	29,82	68,05	43,13	52,97	18,4	74,59	11,72	79,96	6,77	86,99
3	**Belgium**	6,72	91,31	26,44	71,78	46,82	48,56	25,33	64,98	16,78	72,35	15,7	74,55
4	**Denmark**	9,53	88,61	41,38	57,08	57,32	38,51	18,84	74,37	8,43	81,47	4,57	88,29
5	**France**	5,2	93,61	25,55	73,2	34,81	62,28	9,42	86,35	6,4	87,92	6,81	86,24
6	**Germany**	7,6	92,34	30,49	69,36	53,35	45,81	27,37	71,49	15,25	82,64	7,91	86,17
7	**Greece**	6,77	92,46	26,3	72,42	45,41	51,15	26,67	67,34	16,51	77,48	7,31	88,64
8	**Ireland**	7,57	91,31	29,57	68,34	50,86	43,64	35,08	56,71	20,19	71,45	5,08	89,3
9	**Italy**	4,49	92,82	16,29	80,21	47,63	46,56	38,65	49,88	26,94	60,88	15,43	76,74
10	**Netherlands**	4,12	94,31	22,88	75,02	62,35	32,86	53,97	36,01	32,46	56,02	9,21	81,18
11	**Portugal**	6,33	92,79	24,14	74,65	32,84	63,87	12,13	83,26	9,39	84,89	6,22	88,18
12	**Spain**	4,31	93,95	16,68	80,89	42,63	52,71	18,39	73,29	8,86	79,98	6,2	86,91
	Men												
No.	**Country**	**18-24**		**25-30**		**31-44**		**45-49**		**49-54**		**55+**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
1	**UK**	1,87	91,72	9,19	83,62	18,74	72,1	8,64	75,32	3	76,62	*0,37*	79,29
2	**Austria**	3,34	95,89	11,81	87,3	26,57	71,9	11,22	85,75	5,26	91,38	4,07	92,39
3	**Belgium**	3,22	95,22	11,46	87,17	32,43	64,33	16,34	77,33	10,82	81,2	12,73	79,22
4	**Denmark**	4,52	94,1	31,68	67,4	52,97	43,51	22,58	72,78	9,52	82,58	3,81	91,07
5	**France**	2,03	96,7	14,1	84,87	25,83	72,11	7,63	89,68	4	92,1	4,77	89,98
6	**Germany**	3,87	96,1	20,42	79,43	44,28	54,71	26,01	72,22	14,98	81,77	5,83	87,13
7	**Greece**	0,7	99,05	6,47	93,16	23,75	74,7	15,97	81,27	7,34	90,36	2,48	95,58
8	**Ireland**	1,75	97,75	15,26	83,51	32,4	64,1	21,41	73,68	9,55	86,25	2,94	93,64
9	**Italy**	1,17	97,09	5,85	92,14	31,93	64,99	26,54	67,08	15,58	77,68	9,21	85,01
10	**Netherlands**	1,61	97,64	14,25	84	53,98	43,05	49,03	44,66	29,03	63,04	8,97	82,46
11	**Portugal**	1,4	98,05	7,43	91,66	16,52	82,53	5,85	93,56	2,18	96,6	1,86	96,19
12	**Spain**	1,18	97,93	6,14	92,61	25,35	72,82	11,46	85,77	4,21	91,69	3,6	91,97
	Women												
No.	**Country**	**18-24**		**25-30**		**31-44**		**45-49**		**49-54**		**55+**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
1	**UK**	9,2	84,13	29,53	63,47	42	43,86	11,38	64,37	2,36	70,47	0,08	79,49
2	**Austria**	15,06	83,47	48,26	48,35	59,97	33,73	25,81	63,07	17,75	69,3	8,72	83,1
3	**Belgium**	9,92	87,74	39,88	57,97	61,08	32,94	33,25	54,11	23,01	63,12	17,99	70,96
4	**Denmark**	14,51	83,14	50,6	47,27	61,91	33,24	15,35	75,86	7,23	80,23	5,2	86,01
5	**France**	8,44	90,45	36,7	61,85	43,66	52,6	11,22	83	8,68	83,95	8,42	83,29
6	**Germany**	11,41	88,5	40,45	59,4	62,64	36,71	28,68	70,79	15,53	83,54	9,5	85,43
7	**Greece**	11,28	87,55	44,8	53,07	65,61	29,2	37	53,89	25,27	65,16	11,46	82,68
8	**Ireland**	13,38	84,88	43,13	53,97	68,83	23,73	48,39	40,17	31,06	56,33	6,93	85,55
9	**Italy**	7,88	88,45	26,97	68	63,19	28,29	50,99	32,34	37,79	44,85	20,3	70,28
10	**Netherlands**	6,6	91,01	31,55	66	70,62	22,79	58,82	27,52	35,82	49,14	9,41	80,13
11	**Portugal**	11,41	87,37	40,56	57,95	48,67	45,77	17,83	73,93	16,21	73,81	9,55	82,06
12	**Spain**	7,55	89,81	27,45	68,92	59,55	33,01	25,13	61,13	13,29	68,83	8,28	82,86

Source: Calculation of DIW Berlin based on ECHP data 1995-2001

Table A.3.3. Share of women in hours per week (grouped) looking after children and mean hours looking after children by employment status

		Does not work				Part time work				Full time work			
No.	Countries	less than 14h	between 14 and 28h	more than 28h	mean hours	less than 14h	between 14 and 28h	more than 28h	mean hours	less than 14h	between 14 and 28h	more than 28h	mean hours
1	Austria	2,70	10,16	87,13	56,40	4,26	16,02	79,72	47,12	9,20	24,92	65,88	39,99
2	Belgium	8,19	9,02	82,79	59,52	9,72	13,69	76,59	47,88	14,81	16,12	69,07	43,04
3	Denmark	6,99	10,72	82,29	53,63	8,71	15,02	76,27	46,66	7,29	14,57	78,14	47,54
4	France	4,88	9,57	85,55	54,31	8,10	18,57	73,33	41,38	11,99	23,55	64,46	35,84
5	Germany 1)	8,55	19,75	71,70	51,71	10,90	29,84	59,26	40,91	25,89	35,58	38,53	27,50
6	Greece	3,34	23,71	72,95	39,48	5,71	29,28	65,01	34,72	7,04	37,06	55,90	30,58
7	Ireland	0,79	3,76	95,45	71,87	1,61	4,94	93,45	62,57	1,30	9,61	89,09	51,80
8	Italy 2)	7,03	16,69	76,28	43,85	5,87	20,86	73,27	39,08	9,55	26,26	64,19	34,13
9	Netherlands	0,91	14,76	84,33	55,98	1,36	21,61	77,04	48,64	7,67	51,24	41,10	30,51
10	Portugal	10,09	16,23	73,69	43,90	9,88	28,62	61,50	35,01	10,84	35,84	53,32	30,50
11	Spain	2,32	6,07	91,61	61,51	3,63	15,21	81,17	49,07	4,20	17,55	78,25	42,83
12	UK 3)	na	na	na	na	na	na	na	na	na	na	na	na

Source: Calculation of DIW Berlin based on ECHP data, waves 1995-2001

1) Germany provides information for 1995 and 1997 only

2) The hours are Top Coded in 1996 until 2001 at 70 hours per week

3) No information available

Table A. 3.4. Labour force participation rates by age groups and mother-status (1995-2001)

		Age groups														Prime age	
No.	Country	16-24		25-29		30-34		35-39		40-44		49-54		55+		25-54	
		Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother
1	UK	0,74	0,33	0,93	0,50	0,94	0,64	0,90	0,70	0,81	0,78	0,74	0,74	0,16	0,28	0,84	0,70
2	Austria	0,63	0,74	0,89	0,73	0,92	0,72	0,93	0,76	0,86	0,75	0,68	0,67	0,06	0,12	0,83	0,72
3	Belgium	0,35	0,56	0,93	0,75	0,92	0,80	0,90	0,73	0,81	0,69	0,50	0,60	0,05	0,11	0,77	0,70
4	Denmark	0,71	0,42	0,83	0,71	0,86	0,84	0,84	0,92	0,89	0,92	0,83	0,88	0,20	0,40	0,85	0,87
5	France	0,35	0,53	0,84	0,68	0,90	0,71	0,85	0,75	0,80	0,76	0,74	0,68	0,08	0,15	0,81	0,72
6	Germany	0,66	0,48	0,89	0,64	0,94	0,68	0,91	0,74	0,87	0,75	0,77	0,69	0,14	0,26	0,87	0,72
7	Greece	0,42	0,34	0,85	0,48	0,86	0,54	0,78	0,60	0,72	0,60	0,46	0,47	0,09	0,12	0,72	0,54
8	Ireland	0,60	0,33	0,89	0,47	0,87	0,51	0,79	0,49	0,70	0,51	0,57	0,43	0,09	0,13	0,79	0,48
9	Italy	0,42	0,41	0,75	0,48	0,84	0,60	0,84	0,60	0,76	0,62	0,58	0,47	0,05	0,11	0,77	0,55
10	Netherlands	0,70	0,47	0,92	0,56	0,94	0,60	0,90	0,67	0,86	0,69	0,63	0,59	0,11	0,20	0,82	0,63
11	Portugal	0,48	0,68	0,82	0,82	0,92	0,81	0,85	0,79	0,75	0,79	0,61	0,66	0,20	0,30	0,79	0,76
12	Spain	0,43	0,48	0,81	0,51	0,84	0,56	0,79	0,57	0,73	0,56	0,55	0,41	0,06	0,09	0,78	0,50

Source: Calculation of DIW Berlin, based on ECHP data 1995-2001

Table A.3.5. Women with and without children by age-groups and weighted average weekly working hours (1994-2001)

		Age Groups														Prime Age	
No.	Country	16-24		25-29		30-34		35-39		40-44		45-54		54+		25-54	
		Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother	Childless	Mother
1	UK	33,33	26,41	41,65	27,25	40,86	26,99	41,78	28,69	40,86	31,22	34,85	31,74	26,47	29,96	39,16	29,88
2	Austria	37,88	36,64	38,07	33,83	40,02	32,39	39,84	32,80	38,97	34,50	37,56	37,88	35,17	40,87	38,64	34,42
3	Belgium	32,43	33,01	39,41	33,60	40,44	33,07	38,71	32,89	36,44	34,42	35,86	34,45	32,16	34,27	38,38	33,59
4	Denmark	27,82	35,09	34,96	34,82	37,16	35,50	36,80	35,96	37,45	36,33	34,84	34,49	30,87	29,52	35,40	35,43
5	France	34,73	33,34	37,37	35,26	38,04	34,95	37,46	35,38	36,22	35,90	37,55	35,55	35,44	39,59	37,61	35,36
6	Germany	35,83	31,95	38,91	28,75	40,29	29,57	42,34	29,92	38,78	30,82	37,06	29,79	30,53	27,64	39,04	29,90
7	Greece	38,30	38,45	39,46	37,48	39,75	37,01	40,18	38,65	40,02	39,34	37,70	38,17	36,99	37,33	39,30	38,24
8	Ireland	34,74	30,02	38,59	29,85	38,44	29,66	38,27	28,51	36,77	27,17	35,28	26,78	29,86	26,42	37,71	27,80
9	Italy	37,10	36,97	37,76	34,44	37,65	34,80	37,49	34,72	37,66	34,68	36,69	35,39	35,08	36,71	37,48	34,90
10	Netherlands	23,47	18,85	34,98	20,21	35,95	20,40	33,70	20,78	32,89	21,89	28,24	22,63	22,53	19,44	33,30	21,56
11	Portugal	40,18	38,90	39,77	40,19	40,71	40,23	41,27	40,72	43,53	40,20	37,68	38,39	34,17	34,74	39,96	39,70
12	Spain	36,07	35,25	37,03	37,56	38,08	36,79	37,03	36,84	39,01	37,20	40,48	38,16	38,69	38,16	37,87	37,47

Source: Calculation of DIW Berlin based on ECHP data 1994-2001

Table A.3.6. Labour force participation rates of mothers and women without children by age-groups and education (1995-2001)

		Childless									Mother								
		18-29			30-44			45-64			18-29			30-44			45-64		
No.	Countries	Education level (ISCED: low ~ 0-2 ; middle ~ 3 ; high ~ 5-7)																	
		high	middle	low	high	middle	low	high	middle	low	high	middle	low	high	middle	low	high	middle	low
1	UK	0,87	0,81	0,84	0,94	0,92	0,80	0,67	0,62	0,45	0,58	0,50	0,35	0,79	0,70	0,64	0,82	0,75	0,58
2	Austria	0,99	0,80	0,65	0,99	0,93	0,85	0,71	0,41	0,34	0,70	0,76	0,75	0,93	0,76	0,69	0,77	0,59	0,41
3	Belgium	0,82	0,43	0,45	0,98	0,89	0,61	0,51	0,32	0,15	0,98	0,71	0,55	0,90	0,74	0,54	0,74	0,50	0,31
4	Denmark	0,91	0,78	0,69	0,92	0,92	0,45	0,79	0,73	0,47	0,74	0,75	0,43	0,97	0,90	0,79	0,94	0,90	0,67
5	France	0,64	0,41	0,64	0,95	0,91	0,79	0,61	0,55	0,42	0,75	0,64	0,53	0,82	0,78	0,67	0,73	0,68	0,52
6	Germany	0,89	0,83	0,68	0,91	0,96	0,77	0,65	0,48	0,41	0,66	0,69	0,40	0,89	0,72	0,65	0,85	0,59	0,46
7	Greece	0,81	0,57	0,55	0,94	0,85	0,45	0,55	0,25	0,25	0,71	0,49	0,38	0,88	0,53	0,50	0,67	0,35	0,33
8	Ireland	0,84	0,75	0,66	0,98	0,93	0,61	0,72	0,57	0,26	0,88	0,55	0,36	0,78	0,58	0,52	0,73	0,48	0,32
9	Italy	0,83	0,56	0,66	0,90	0,87	0,74	0,80	0,45	0,18	*0,67*	0,56	0,35	0,90	0,70	0,47	0,74	0,59	0,24
10	Netherlands	0,94	0,72	0,85	0,92	0,88	0,92	0,67	0,58	0,44	*0,69*	*0,82*	0,61	0,85	0,75	0,69	0,66	0,70	0,58
11	Portugal	0,93	0,47	0,76	0,97	0,88	0,84	0,55	0,64	0,44	0,91	0,65	0,83	0,94	0,87	0,78	0,85	0,65	0,56
12	Spain	0,76	0,40	0,76	0,92	0,85	0,62	0,78	0,69	0,24	0,76	0,51	0,41	0,80	0,57	0,46	0,70	0,49	0,27

Source: Calculation of DIW Berlin based on ECHP data 1995-2001; weighted observations; cursive numbers indicate less than 30 observations

Table A.3.7. Pooled shares of women between 30-44 years of age in terms of employment status and number of children (grey arrays with cursive numbers indicate less than 30 observations)

		1995/1996															
		No children				One child				Two children				Three or more children			
No.	Country	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time
1	Denmark	79,48	20,51	9,82	69,66	81,55	18,45	8,96	72,59	79,7	20,3	12,65	67,05	81,13	18,86	20,71	60,42
2	Netherlands	86,81	13,19	17,35	69,46	63,31	36,69	47,32	15,99	54,77	45,22	45,25	9,52	51,01	48,99	43,78	7,23
3	Belgium	81,54	18,46	14,53	67,01	75,81	24,19	19,32	56,49	71,53	28,47	23,46	48,07	54,34	45,65	26,7	27,64
4	France	75,78	24,22	12,03	63,75	79,13	20,87	11,76	67,37	71,06	28,94	16,18	54,88	43,89	56,11	13,9	29,99
5	Ireland	73,45	26,55	9,85	63,6	51,4	48,59	17,19	34,21	44,52	55,49	20,86	23,66	33,28	66,72	18,49	14,79
6	Italy	67,66	32,34	9,44	58,22	63,7	36,3	15,43	48,27	48,75	51,25	11,39	37,36	35,14	64,86	11,32	23,82
7	Greece	70,59	29,42	11,19	59,4	55,75	44,25	10,02	45,73	47,62	52,38	9,96	37,66	43,71	56,29	6,45	37,26
8	Spain	63,7	36,3	7,99	55,71	48,65	51,35	6,74	41,91	36,03	63,97	9,33	26,7	26,17	73,83	*4,45*	21,72
9	Portugal	77,4	22,6	*4,59*	72,81	79,68	20,33	6,85	72,83	72,7	27,3	6,49	66,21	71,94	28,06	*10,25*	61,69
10	Austria	83,04	16,96	*5,72*	77,32	76	24	22,6	53,4	65,3	34,71	28,77	36,53	53,1	46,9	22,09	31,01
11	Germany	83,43	16,57	9,73	73,7	65,71	34,29	27,55	38,16	56,07	43,93	29,66	26,41	36,81	63,2	21,18	15,63
12	UK	87,37	12,62	7,27	80,1	67,49	32,51	29,12	38,37	71,13	28,88	40,2	30,93	53,08	46,92	34,27	18,81
		1997/1998															
		No children				One child				Two children				Three or more children			
No.	Country	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time
1	Denmark	82,21	17,79	6,94	75,27	84,47	15,53	6,6	77,87	82,95	17,05	13,11	69,84	83,45	16,55	19,19	64,26
2	Netherlands	88,14	11,86	16,64	71,5	67,58	32,43	45,13	22,45	60,28	39,72	50,72	9,56	53,08	46,92	44,75	8,33
3	Belgium	83,64	16,36	9,73	73,91	72,33	27,67	18,38	53,95	72,85	27,15	22,8	50,05	55,21	44,79	27,38	27,83
4	France	74,99	25,01	12,27	62,72	74,05	25,95	8,81	65,24	65,43	34,57	14,81	50,62	36,78	63,22	12	24,78
5	Ireland	83,58	16,42	11,23	72,35	63,56	36,44	19,91	43,65	54,66	45,34	28,74	25,92	41,63	58,36	25,39	16,24
6	Italy	70,03	29,97	9,93	60,1	64,4	35,6	16,29	48,11	49,66	50,33	12,14	37,52	33,7	66,3	10,79	22,91
7	Greece	72,48	27,52	8,44	64,04	58,58	41,41	9,12	49,46	50,34	49,66	11,53	38,81	51,4	48,61	7,34	44,06
8	Spain	65,17	34,84	10,24	54,93	48,65	51,35	7,68	40,97	39,17	60,84	9,08	30,09	26,93	73,07	*5,4*	21,53
9	Portugal	77,31	22,69	*5,59*	71,72	82,48	17,52	8,58	73,9	77,98	22,02	8,1	69,88	60,6	39,4	*7,94*	52,66
10	Austria	86,95	13,06	*7,41*	79,54	71,29	28,71	24,2	47,09	67,96	32,03	31,81	36,15	56,42	43,59	20,91	35,51
11	Germany	85,68	14,32	9,29	76,39	65,22	34,78	23,66	41,56	57,44	42,55	35,48	21,96	44,42	55,58	28,68	15,74
12	UK	90,29	9,72	4,95	85,34	71,94	28,06	26,68	45,26	70,75	29,25	41,71	29,04	54	46	34,87	19,13

Source: Calculation of DIW Berlin based on ECHP data, waves 1995-2001

		1999-2001															
		No children				One child				Two children				Three or more children			
No.	Country	Working (total)	Not working	Part Time	Full Time	Working	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time	Working (total)	Not working	Part Time	Full Time
1	Denmark	79,4	20,6	6,5	72,9	87,37	12,63	4,52	82,85	88,85	11,15	8,48	80,37	86,8	13,2	19,92	66,88
2	Netherlands	90	10	15,6	74,4	70,91	29,08	48,66	22,25	68,23	31,77	54,28	13,95	56,72	43,28	48,76	7,96
3	Belgium	84,34	15,66	9,98	74,36	77,79	22,21	22,59	55,2	77,7	22,3	27,77	49,93	66,92	33,09	26,68	40,24
4	France	74,38	25,62	8,52	65,86	72,34	27,66	8,55	63,79	66,7	33,3	17,83	48,87	39,09	60,91	11,77	27,32
5	Ireland	77,58	22,42	12,52	65,06	66,21	33,79	17,8	48,41	57,8	42,2	31,1	26,7	40,72	59,28	24,88	15,84
6	Italy	69,55	30,45	9,89	59,66	62	38	16,02	45,98	48,66	51,34	14,08	34,58	39,43	60,58	11,77	27,66
7	Greece	71,28	28,72	10,97	60,31	58,84	41,16	11,36	47,48	53,79	46,22	9,2	44,59	49,59	50,42	8,84	40,75
8	Spain	71,86	28,14	7,7	64,16	49,67	50,34	11,46	38,21	42,41	57,59	9,18	33,23	39,33	60,67	*9,25*	30,08
9	Portugal	85,15	14,85	5,04	80,11	81,47	18,54	6,27	75,2	79,3	20,7	7,02	72,28	65,77	34,24	*5,75*	60,02
10	Austria	90,61	9,39	*5,58*	85,03	81,01	18,99	35,86	45,15	69,83	30,17	36,17	33,66	53,35	46,65	22,16	31,19
11	Germany	87,11	12,89	7,5	79,61	63,27	36,73	24,21	39,06	53,9	46,11	30,41	23,49	44,17	55,83	28,24	15,93
12	UK	88,35	11,64	6,68	81,67	75,09	24,91	30,66	44,43	69,98	30,02	40,33	29,65	56,47	43,52	36,22	20,25

Source: Calculation of DIW Berlin based on ECHP data, waves 1995-2001

Table A.3.8. Women before and after first childbirth by employment status and mean working hours (grey arrays indicate less than 30 observations)

				Before first childbirth					One year after				
No.	Country	Mean Age	sd	Not Working	Part Time	Full Time	Working Hours (mean)	sd	Not Working	Part Time	Full Time	Working Hours (mean)	sd
1	UK	26,65	5,33	17,26	*4,41*	78,33	39,78	8,06	40,83	18,15	41,02	33,50	11,90
2	Austria	25,92	5,43	*14,29*	*7,03*	78,68	38,05	7,11	*13,6*	*11,13*	75,27	36,86	7,30
3	Belgium	26,36	4,69	18,27	13,12	68,6	37,64	10,28	21,67	17,57	60,76	35,65	10,55
4	Denmark	26,97	4,74	22,23	*4,76*	73,01	36,21	6,50	34,99	*3,11*	61,89	36,09	5,23
5	France	26,40	5,05	27,17	14,28	58,55	36,59	8,43	38,46	12,71	48,83	35,53	8,74
6	Germany	26,34	5,31	26,9	10,01	63,09	37,47	10,45	88,15	*5,43*	6,43	31,48	14,30
7	Greece	26,14	5,71	44,99	*5,53*	49,48	39,74	9,52	47,8	*9,35*	42,85	37,47	13,66
8	Ireland	27,29	6,04	30,84	*8,42*	60,74	38,15	9,67	46,32	*13,98*	39,7	34,28	8,87
9	Italy	26,89	5,29	45,14	9,21	45,65	37,18	9,10	47,19	11,64	41,17	35,08	9,64
10	Netherlands	27,24	4,66	14,66	17,14	68,2	34,03	8,24	28,74	46,38	24,88	25,25	9,83
11	Portugal	26,37	6,00	30,21	*3,33*	66,46	39,97	7,20	25,41	9,28	65,32	36,82	10,02
12	Spain	27,37	5,48	47,87	8,62	43,51	37,73	10,98	59,69	6,75	33,56	36,16	9,14

			Two years after					Three years after				
No.	Country		Not Working	Part Time	Full Time	Working Hours (mean)	sd	Not Working	Part Time	Full Time	Working Hours (mean)	sd
1	UK		36,89	32,48	30,64	29,07	12,78	40,28	28,86	30,86	29,48	13,13
2	Austria		23,91	*16,16*	59,94	35,34	9,46	39,35	*21,31*	39,34	31,39	11,44
3	Belgium		21,48	19,83	58,69	34,63	10,86	*18,98*	*22,29*	58,72	34,78	11,84
4	Denmark		26,37	*4,8*	68,83	35,24	5,40	*12,18*	*8,43*	79,39	34,64	5,85
5	France		47,86	13,42	48,72	35,56	8,62	40,97	*10,82*	48,21	34,98	8,16
6	Germany		80,14	15,23	*4,63*	22,11	12,04	77,14	16,34	*6,52*	22,89	12,47
7	Greece		53,39	*10,52*	36,09	35,83	8,74	52,46	*11,39*	36,15	37,31	12,64
8	Ireland		40,93	*16,07*	43	34,50	10,46	41,47	*18,89*	39,64	33,11	10,13
9	Italy		46,5	14,07	39,43	34,82	9,67	49,01	14,58	36,41	34,26	9,33
10	Netherlands		27,6	58,46	13,94	21,20	9,28	30,07	57,7	12,23	21,12	9,07
11	Portugal		21,63	*3,41*	74,96	39,11	6,47	20,73	*3,55*	75,71	39,90	6,00
12	Spain		61,8	9,06	29,13	33,27	9,93	58,09	13,32	28,59	32,98	11,85

Source: Calculation of DIW Berlin based on ECHP data, waves 1995-2001

Table A.3.9. OLS – Regression (robust standard errors): Participation

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Participation (t-1)	0,562	0,758	0,779	0,725	0,759	0,839
	(35,76)***	(116,66)***	(88,68)***	(123,09)***	(97,38)***	(204,51)***
Child 0-2 years old	-0,059	-0,088	-0,029	-0,115	-0,065	-0,031
	(3,37)***	(7,40)***	(1,96)**	(9,58)***	(4,12)***	(2,99)***
Child 2-4 years old	-0,004	-0,018	-0,016	-0,013	-0,008	-0,005
	(0.27)	(1.66)*	(1.40)	(1.11)	(0.56)	(0.52)
Child 4-6 years old	-0,019	-0,016	-0,008	-0,048	-0,025	-0,012
	(1.50)	(1.66)*	(0.82)	(5.34)***	(2.29)**	(1.77)*
Child 6-8 years old	0,011	-0,034	-0,031	-0,033	-0,024	-0,004
	(1.10)	(3,50)***	(3,21)***	(3,88)***	(2,30)**	-0,69
Child 8-10 years old	0,016	-0,022	0,002	-0,031	-0,018	-0,01
	(1,76)*	(2,33)**	(0.23)	(3,85)***	(1,87)*	(1,69)*
Child 10-12 years old	0,004	-0,026	-0,011	-0,029	-0,025	-0,015
	(0.41)	(2.84)***	(1.14)	(3,52)***	(2,59)***	(2,52)**
Child 0-2 and 18-25 year old mother	-0,118	-0,047	-0,103	0,056	-0,041	-0,062
	(2,05)**	(0.75)	(2,28)**	(1,77)*	(0.67)	(2,32)**
Child 0-2 and 36-45 year old mother	0,003	0,018	-0,046	0,003	0,035	0,024
	(0.09)	(0.77)	(1.49)	(0.10)	(1.39)	(1.37)
Child 2-4 and 18-25 year old mother	-0,11	0,011	-0,055	-0,053	-0,021	-0,018
	(1.70)*	(0.18)	(0.82)	(1.34)	(0.38)	(0.69)
Child 2-4 and 36-45 year old mother	-0,031	-0,017	-0,02	0,001	-0,036	-0,001
	(1.27)	(0.98)	(0.95)	(0.02)	(1.60)	(0.10)
Observations	6811	14273	8158	16166	8679	21953
R-squared	0,4	0,63	0,69	0,57	0,63	0,73

	Greece	Spain	Portugal	Austria	Germany	UK
Participation (t-1)	0,832	0,753	0,797	0,752	0,668	0,701
	(140,63)***	(129,85)***	(135,33)***	(83,04)***	(109,98)***	(89,56)***
Child 0-2 years old	-0,012	-0,072	-0,032	0,014	-0,465	-0,131
	(0.91)	(6.52)***	(2.35)**	(0.64)	(28.74)***	(9.17)***
Child 2-4 years old	-0,014	-0,022	-0,027	-0,134	-0,05	-0,063
	(1.28)	(2.07)**	(2.33)**	(6.24)***	(3.92)***	(4.99)***
Child 4-6 years old	-0,011	-0,026	-0,02	-0,029	-0,017	-0,028
	(1.43)	(3.08)***	(2.29)**	(1.92)*	(1.70)*	(2.86)***
Child 6-8 years old	-0,008	-0,03	-0,016	-0,015	-0,025	-0,008
	(1.03)	(3.84)***	(1.83)*	(1.14)	(2.78)***	(0.87)
Child 8-10 years old	-0,01	-0,029	-0,021	-0,024	-0,036	-0,029
	(1.19)	(3.76)***	(2.63)***	(1.95)*	(4.02)***	(3.11)***
Child 10-12 years old	-0,005	-0,015	-0,01	-0,04	-0,03	-0,009
	(0.69)	(1.98)**	(1.24)	(3.35)***	(3.60)***	(1.08)
Child 0-2 and 18-25 year old mother	-0,06	-0,013	0,008	-0,01	0,045	-0,035
	(2.42)**	(0.38)	(0.28)	(0.21)	(1.32)	(1.15)
Child 0-2 and 36-45 year old mother	0,045	0,039	0,013	0,006	0,011	0,029
	(1.77)*	(1.74)*	(0.40)	(0.09)	(0.25)	(1.04)
Child 2-4 and 18-25 year old mother	-0,003	-0,03	-0,003	-0,002	-0,02	0,051
	(0.12)	(0.81)	(0.11)	(0.04)	(0.66)	(1.67)*
Child 2-4 and 36-45 year old mother	0,017	0,038	-0,017	0,043	-0,034	-0,021
	(0.82)	(2.02)**	(0.84)	(0.97)	(1.39)	(1.00)
Observations	12370	17561	13283	7404	20337	14277
R-squared	0,72	0,6	0,68	0,67	0,56	0,57

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.10. Fixed effect Regression: Participation

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Participation (t-1)	0.057	0.160	0.151	0.172	0.164	0.154
	(4.07)***	(16.84)***	(12.07)***	(19.06)***	(13.33)***	(20.62)***
Child 0-2 years old	-0.100	-0.121	-0.057	-0.144	-0.095	-0.039
	(6.10)***	(10.21)***	(3.90)***	(11.54)***	(5.35)***	(4.19)***
Child 2-4 years old	-0.032	-0.096	-0.045	-0.081	-0.081	-0.023
	(1.85)*	(7.88)***	(3.29)***	(6.21)***	(4.66)***	(2.48)**
Child 4-6 years old	-0.011	-0.059	-0.018	-0.065	-0.068	-0.017
	(0.72)	(5.51)***	(1.52)	(5.70)***	(5.03)***	(2.06)**
Child 6-8 years old	0.031	-0.058	-0.020	-0.045	-0.047	-0.004
	(2.15)**	(5.58)***	(1.74)*	(4.07)***	(3.65)***	(0.47)
Child 8-10 years old	0.038	-0.043	0.001	-0.026	-0.031	-0.008
	(2.59)***	(4.21)***	(0.11)	(2.38)**	(2.59)***	(1.08)
Child 10-12 years old	0.013	-0.041	-0.001	-0.020	-0.026	-0.009
	(0.93)	(4.26)***	(0.13)	(2.05)**	(2.35)**	(1.34)
Child 0-2 and 18-25 year old mother	-0.112	-0.038	-0.100	0.077	-0.046	-0.031
	(2.77)***	(0.98)	(2.72)***	(2.56)**	(0.87)	(1.24)
Child 0-2 and 36-45 year old mother	0.046	0.041	0.012	0.000	0.016	0.028
	(1.52)	(1.66)*	(0.43)	(0.01)	(0.57)	(1.59)
Child 2-4 and 18-25 year old mother	-0.088	0.093	0.018	0.040	0.005	-0.008
	(1.80)*	(2.09)**	(0.44)	(1.13)	(0.11)	(0.30)
Child 2-4 and 36-45 year old mother	-0.019	-0.001	-0.008	-0.021	-0.004	0.009
	(0.75)	(0.03)	(0.36)	(1.00)	(0.15)	(0.64)
Observations	6811	14273	8158	16166	8679	21953
Number of Individuals	1675	3497	1828	3729	2102	4805
R-squared	0.04	0.06	0.04	0.08	0.07	0.03

	Greece	Spain	Portugal	Austria	Germany	UK
Participation (t-1)	0.204	0.068	0.204	0.165	0.113	0.143
	(20.76)***	(8.02)***	(22.12)***	(13.05)***	(14.65)***	(15.62)***
Child 0-2 years old	-0.052	-0.111	-0.039	0.064	-0.504	-0.175
	(3.87)***	(9.67)***	(2.90)***	(3.08)***	(38.08)***	(14.73)***
Child 2-4 years old	-0.032	-0.059	-0.040	-0.180	-0.265	-0.134
	(2.61)***	(4.91)***	(2.94)***	(9.04)***	(20.78)***	(10.89)***
Child 4-6 years old	-0.015	-0.046	-0.034	-0.110	-0.103	-0.079
	(1.39)	(4.27)***	(2.86)***	(6.45)***	(9.44)***	(7.61)***
Child 6-8 years old	-0.011	-0.047	-0.016	-0.071	-0.058	-0.040
	(1.05)	(4.60)***	(1.36)	(4.35)***	(5.44)***	(3.93)***
Child 8-10 years old	-0.011	-0.045	-0.020	-0.044	-0.062	-0.035
	(1.14)	(4.83)***	(1.85)*	(2.84)***	(6.16)***	(3.51)***
Child 10-12 years old	0.004	-0.025	-0.002	-0.045	-0.040	-0.016
	(0.47)	(3.04)***	(0.23)	(3.30)***	(4.28)***	(1.68)*
Child 0-2 and 18-25 year old mother	-0.034	-0.014	-0.016	0.039	0.038	-0.010
	(1.47)	(0.46)	(0.64)	(0.97)	(1.29)	(0.38)
Child 0-2 and 36-45 year old mother	0.047	0.030	0.019	-0.001	0.050	0.027
	(1.74)*	(1.32)	(0.61)	(0.02)	(1.41)	(1.21)
Child 2-4 and 18-25 year old mother	0.007	-0.063	-0.014	0.090	-0.028	0.069
	(0.31)	(1.93)*	(0.58)	(2.28)**	(1.03)	(2.49)**
Child 2-4 and 36-45 year old mother	0.004	0.025	0.001	0.081	-0.004	-0.018
	(0.16)	(1.35)	(0.06)	(2.48)**	(0.16)	(0.99)
Observations	12370	17561	13283	7404	20337	14277
Number of Individuals	2885	4105	3042	1858	4340	3016
R-squared	0.06	0.03	0.06	0.10	0.14	0.07

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.11. GMM Estimation – Differences as instruments up to lage t-2

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Participation (t-1)	0,19886	0,38625	0,36602	0,38823	0,43744	0,31125
	(4.17)***	(13.30)***	(8.22)***	(17.07)***	(12.77)***	(10.78)***
Child 0-2 years old	-0,08722	-0,09088	-0,03863	-0,12271	-0,06704	-0,04569
	(4.15)***	(6.66)***	(2.40)**	(8.24)***	(3.45)***	(3.23)***
Child 2-4 years old	-0,01792	-0,06452	-0,04141	-0,06047	-0,00645	-0,03417
	(0.98)	(4.66)***	(2.66)***	(4.04)***	(0.32)	(2.57)**
Child 4-6 years old	-0,02158	-0,06021	-0,04010	-0,08832	-0,05561	-0,04500
	(1.54)	(4.73)***	(3.08)***	(7.90)***	(3.70)***	(3.89)***
Child 6-8 years old	0,00501	-0,07161	-0,05809	-0,07434	-0,06549	-0,03557
	(0.39)	(5.96)***	(4.59)***	(6.56)***	(4.46)***	(3.11)***
Child 8-10 years old	0,02076	-0,06448	-0,02582	-0,06281	-0,05032	-0,03489
	(1.88)*	(5.03)***	(1.92)*	(5.71)***	(3.86)***	(3.22)***
Child 10-12 years old	0,01159	-0,05488	-0,03738	-0,04908	-0,04118	-0,03439
	(1.04)	(4.89)***	(2.96)***	(4.63)***	(3.48)***	(3.69)***
Child 0-2 and 18-25 year old mother	-0,08015	-0,10655	-0,15913	0,06836	-0,11885	-0,09507
	(1.03)	(1.77)*	(1.92)*	(2.29)**	(1.48)	(2.85)***
Child 0-2 and 36-45 year old mother	0,02117	0,00593	-0,04320	0,00382	0,01579	0,03415
	(0.59)	(0.21)	(1.13)	(0.12)	(0.53)	(1.56)
Child 2-4 and 18-25 year old mother	-0,06311	0,02783	-0,04055	-0,02372	-0,04361	-0,05587
	(0.70)	(0.44)	(0.52)	(0.49)	(0.64)	(1.80)*
Child 2-4 and 36-45 year old mother	-0,04738	0,00035	-0,05354	-0,00806	-0,03983	0,01435
	(1.74)*	(0.02)	(1.84)*	(0.35)	(1.43)	(0.71)
Observations	5511	11757	6945	13725	7151	18745
Number of Individuals	945	2134	1183	2371	1253	3165
Sargan Test	**0.386**	**0.131**	*0.024*	*0.021*	*0.020*	*0.000*
Sargan Stat	10.638	15.031	20.656	21.027	21.205	43.196
Sargang DF	10	10	10	10	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.173**	*0.012*	**0.144**	**0.054**	*0.030*	*0.001*
AR 3 Test	**0.279**	**0.473**	**0.619**	**0.412**	**0.113**	**0.089**
Instruments	45	45	45	45	45	45

	Greece	Spain	Portugal	Austria	Germany	UK
Participation (t-1)	0,43733	0,33045	0,55425	0,51194	0,35083	0,40446
	(11.62)***	(13.27)***	(18.60)***	(14.75)***	(18.72)***	(15.25)***
Child 0-2 years old	-0,01319	-0,09142	-0,03264	0,05609	-0,48092	-0,16498
	(0.79)	(6.57)***	(1.97)**	(1.88)*	(24.40)***	(10.11)***
Child 2-4 years old	-0,01672	-0,06687	-0,04954	-0,15371	-0,20184	-0,13522
	(1.12)	(4.77)***	(3.22)***	(5.78)***	(11.63)***	(8.95)***
Child 4-6 years old	-0,0087	-0,06427	-0,04355	-0,07475	-0,10742	-0,08318
	(0.72)	(5.28)***	(3.63)***	(3.82)***	(8.71)***	(7.10)***
Child 6-8 years old	-0,01024	-0,07284	-0,03541	-0,04847	-0,06922	-0,05724
	(0.85)	(6.49)***	(3.03)***	(2.71)***	(6.25)***	(5.03)***
Child 8-10 years old	-0,0224	-0,05766	-0,03454	-0,04938	-0,0731	-0,06186
	(1.89)*	(5.18)***	(3.27)***	(3.25)***	(6.91)***	(5.45)***
Child 10-12 years old	0,00446	-0,0394	-0,01397	-0,05745	-0,05781	-0,03356
	(0.43)	(4.11)***	(1.43)	(4.33)***	(5.51)***	(3.08)***
Child 0-2 and 18-25 year old mother	-0,04177	-0,00254	-0,00338	0,02033	0,06654	0,01902
	(1.39)	(0.06)	(0.08)	(0.27)	(1.42)	(0.42)
Child 0-2 and 36-45 year old mother	0,09706	0,06809	0,01259	-0,07053	0,04202	0,03535
	(3.05)***	(2.43)**	(0.41)	(0.83)	(0.95)	(1.16)
Child 2-4 and 18-25 year old mother	0,00735	-0,064	0,01679	0,06195	-0,0302	0,0908
	(0.28)	(1.57)	(0.62)	(0.76)	(0.81)	(2.22)**
Child 2-4 and 36-45 year old mother	0,04278	0,07393	0,00607	0,08424	-0,01134	-0,00651
	(1.69)*	(3.70)***	(0.23)	(1.56)	(0.38)	(0.29)
Observations	10322	14618	11170	6144	17775	12503
Number of Individuals	1766	2501	1900	1166	2982	2071
Sargan Test	**0.064**	**0.507**	*0.000*	**0.370**	**0.096**	**0.118**
Sargan Stat	17.522	9.267	35.202	8.681	16.129	15.409
Sargang DF	10	10	10	8	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.689**	**0.076**	**0.085**	**0.135**	*0.016*	**0.334**
AR 3 Test	**0.171**	**0.915**	**0.642**	**0.036**	**0.671**	**0.136**
Instruments	45	45	45	43	45	45

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.12. GMM Estimation – Levels as instruments up to lag t-3

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Participation (t-1)	0,43695	0,45396	0,41479	0,4608	0,36285	0,30469
	(9.01)***	(14.09)***	(8.42)***	(16.22)***	(8.95)***	(11.18)***
Child 0-2 years old	-0,07897	-0,09854	-0,03413	-0,11415	-0,06543	-0,04709
	(3.68)***	(7.73)***	(2.38)**	(8.27)***	(3.74)***	(3.76)***
Child 2-4 years old	-0,02373	-0,06102	-0,03438	-0,05095	-0,03676	-0,04208
	(1.29)	(4.67)***	(2.38)**	(3.61)***	(1.93)*	(3.55)***
Child 4-6 years old	-0,01282	-0,05448	-0,03225	-0,07993	-0,06087	-0,0493
	(0.95)	(4.54)***	(2.64)***	(7.73)***	(4.21)***	(4.70)***
Child 6-8 years old	0,0089	-0,06189	-0,0529	-0,06842	-0,06791	-0,03775
	(0.82)	(5.35)***	(4.49)***	(6.63)***	(4.85)***	(3.58)***
Child 8-10 years old	0,01688	-0,05415	-0,02369	-0,05891	-0,05997	-0,03891
	(1.67)*	(4.47)***	(1.85)*	(5.78)***	(4.72)***	(3.85)***
Child 10-12 years old	0,00667	-0,05273	-0,03324	-0,04311	-0,04683	-0,04016
	(0.61)	(4.94)***	(2.73)***	(4.35)***	(4.01)***	(4.59)***
Child 0-2 and 18-25 year old mother	-0,11862	-0,05646	-0,13378	0,07197	-0,10221	-0,08165
	(1.70)*	(0.89)	(2.01)**	(2.67)***	(1.49)	(3.05)***
Child 0-2 and 36-45 year old mother	0,02707	0,01449	-0,04287	0,00296	0,03009	0,0353
	(0.82)	(0.54)	(1.21)	(0.10)	(1.09)	(1.70)*
Child 2-4 and 18-25 year old mother	-0,04987	0,05894	-0,06351	-0,04503	-0,0889	-0,04348
	(0.63)	(0.93)	(1.02)	(1.01)	(1.25)	(1.65)*
Child 2-4 and 36-45 year old mother	-0,02788	0,00333	-0,04691	0,0002	-0,01912	0,02123
	(1.05)	(0.18)	(1.74)*	(0.01)	(0.73)	(1.16)
Observations	6548	13802	7935	15690	8340	21458
Number of Individuals	1412	3026	1605	3253	1763	4310
Sargan Test	*0.002*	*0.018*	*0.035*	*0.000*	*0.003*	*0.000*
Sargan Stat	27.468	21.508	19.435	67.840	26.966	52.369
Sargang DF	10	10	10	10	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	*0.017*	*0.002*	**0.069**	*0.010*	*0.049*	*0.000*
AR 3 Test	**0.338**	**0.510**	**0.633**	**0.475**	**0.144**	**0.092**
Instruments	45	45	45	45	45	45

	Greece	Spain	Portugal	Austria	Germany	UK
Participation (t-1)	0,35092	0,21843	0,46087	0,46617	0,37025	0,45839
	(9.14)***	(8.02)***	(14.16)***	(11.09)***	(17.64)***	(15.84)***
Child 0-2 years old	-0,00833	-0,09981	-0,03115	0,06435	-0,48448	-0,14679
	(0.53)	(7.47)***	(2.09)**	(2.49)**	(26.36)***	(9.40)***
Child 2-4 years old	-0,03205	-0,08669	-0,05971	-0,15242	-0,19364	-0,1264
	(2.27)**	(6.20)***	(4.09)***	(6.21)***	(11.06)***	(8.66)***
Child 4-6 years old	-0,01841	-0,07317	-0,04935	-0,09201	-0,09892	-0,07156
	(1.53)	(5.89)***	(4.08)***	(4.73)***	(8.16)***	(6.17)***
Child 6-8 years old	-0,01649	-0,08568	-0,04287	-0,06287	-0,06513	-0,04868
	(1.36)	(7.45)***	(3.68)***	(3.58)***	(6.14)***	(4.49)***
Child 8-10 years old	-0,02493	-0,07509	-0,04283	-0,05689	-0,07295	-0,05479
	(2.10)**	(6.67)***	(3.95)***	(3.78)***	(7.13)***	(5.12)***
Child 10-12 years old	-0,00922	-0,04264	-0,02417	-0,06181	-0,05559	-0,02862
	(0.88)	(4.39)***	(2.44)**	(4.72)***	(5.51)***	(2.69)***
Child 0-2 and 18-25 year old mother	-0,05116	-0,02334	0,03811	0,0053	0,05592	0,02882
	(2.07)**	(0.56)	(1.20)	(0.10)	(1.38)	(0.78)
Child 0-2 and 36-45 year old mother	0,09352	0,08186	0,01453	-0,05638	0,04326	0,02956
	(3.04)***	(3.10)***	(0.50)	(0.74)	(1.00)	(1.03)
Child 2-4 and 18-25 year old mother	-0,00315	-0,0547	0,03243	0,02607	-0,02761	0,08554
	(0.14)	(1.40)	(1.22)	(0.39)	(0.81)	(2.50)**
Child 2-4 and 36-45 year old mother	0,0676	0,09509	0,00589	0,06738	-0,01867	-0,00268
	(2.73)***	(4.74)***	(0.23)	(1.35)	(0.65)	(0.12)
Observations	11980	17021	12883	7150	19894	13965
Number of Individuals	2495	3565	2642	1604	3897	2704
Sargan Test	*0.014*	**0.913**	*0.000*	*0.003*	**0.063**	**0.265**
Sargan Stat	22.141	4.650	49.062	23.250	17.566	12.301
Sargang DF	10	10	10	8	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.939**	**0.333**	**0.147**	**0.160**	*0.006*	**0.187**
AR 3 Test	**0.165**	**0.931**	**0.675**	**0.032**	**0.692**	**0.124**
Instruments	45	45	45	43	45	45

Robust z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.13. GMM Estimation – Levels and Differences as instruments up to lag t-3

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Participation (t-1)	0,32194	0,41390	0,39153	0,40671	0,42472	0,33667
	(6.59)***	(14.98)***	(9.51)***	(17.44)***	(12.49)***	(12.81)***
Child 0-2 years old	-0,07496	-0,09217	-0,04404	-0,11848	-0,06601	-0,04632
	(3.28)***	(6.82)***	(2.74)***	(7.87)***	(3.37)***	(3.31)***
Child 2-4 years old	-0,01429	-0,06558	-0,04414	-0,06016	-0,00968	-0,03079
	(0.73)	(4.72)***	(2.83)***	(4.00)***	(0.47)	(2.34)**
Child 4-6 years old	-0,01309	-0,05940	-0,03821	-0,08439	-0,05867	-0,04400
	(0.90)	(4.58)***	(2.93)***	(7.52)***	(3.82)***	(3.82)***
Child 6-8 years old	0,01043	-0,06880	-0,05668	-0,07163	-0,06800	-0,03487
	(0.81)	(5.61)***	(4.45)***	(6.27)***	(4.60)***	(3.07)***
Child 8-10 years old	0,01873	-0,06424	-0,02642	-0,06328	-0,05236	-0,03338
	(1.67)*	(4.93)***	(1.93)*	(5.65)***	(3.93)***	(3.09)***
Child 10-12 years old	0,00687	-0,05247	-0,03464	-0,04845	-0,04185	-0,03465
	(0.60)	(4.55)***	(2.68)***	(4.45)***	(3.47)***	(3.70)***
Child 0-2 and 18-25 year old mother	-0,10788	-0,10335	-0,11208	0,05879	-0,14599	-0,08452
	(1.20)	(1.69)*	(1.29)	(1.93)*	(1.81)*	(2.50)**
Child 0-2 and 36-45 year old mother	0,00154	0,00014	-0,04671	0,00735	0,01083	0,03080
	(0.04)	(0.00)	(1.22)	(0.23)	(0.36)	(1.41)
Child 2-4 and 18-25 year old mother	-0,09244	0,02387	-0,06293	-0,05735	-0,03128	-0,05259
	(0.88)	(0.37)	(0.76)	(1.13)	(0.46)	(1.64)
Child 2-4 and 36-45 year old mother	-0,04172	-0,00086	-0,04695	-0,00296	-0,03462	0,01230
	(1.52)	(0.04)	(1.61)	(0.13)	(1.22)	(0.61)
Observations	5511	11757	6945	13725	7151	18745
Number of Individuals	945	2134	1183	2371	1253	3165
Sargan Test	*0.000*	*0.002*	*0.017*	*0.000*	*0.007*	*0.000*
Sargan Stat	46.430	37.146	30.195	61.585	32.971	62.590
Sargang DF	16	16	16	16	16	16
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	*0.045*	*0.007*	**0.105**	*0.035*	*0.032*	*0.000*
AR 3 Test	**0.308**	**0.483**	**0.627**	**0.410**	**0.117**	**0.083**
Instruments	51	51	51	51	51	51

	Greece	Spain	Portugal	Austria	Germany	UK
Participation (t-1)	0,42794	0,29647	0,52211	0,50991	0,34297	0,41202
	(11.69)***	(12.20)***	(18.12)***	(14.64)***	(19.34)***	(16.69)***
Child 0-2 years old	-0,01086	-0,09209	-0,03763	0,05594	-0,48126	-0,16656
	(0.65)	(6.64)***	(2.24)**	(1.86)*	(24.72)***	(10.31)***
Child 2-4 years old	-0,01502	-0,06779	-0,04433	-0,1567	-0,20671	-0,13419
	(1.00)	(4.80)***	(2.84)***	(5.79)***	(11.98)***	(8.99)***
Child 4-6 years old	-0,00767	-0,06511	-0,04363	-0,07016	-0,11015	-0,08098
	(0.64)	(5.27)***	(3.53)***	(3.44)***	(8.99)***	(6.90)***
Child 6-8 years old	-0,01007	-0,07536	-0,03691	-0,04922	-0,07245	-0,05633
	(0.84)	(6.62)***	(3.07)***	(2.72)***	(6.56)***	(5.01)***
Child 8-10 years old	-0,02063	-0,06013	-0,03626	-0,04884	-0,07408	-0,06212
	(1.74)*	(5.31)***	(3.36)***	(3.15)***	(7.02)***	(5.51)***
Child 10-12 years old	0,00451	-0,04028	-0,01924	-0,05596	-0,05682	-0,03115
	(0.43)	(4.16)***	(1.93)*	(4.18)***	(5.42)***	(2.85)***
Child 0-2 and 18-25 year old mother	-0,03906	-0,00368	-0,00127	0,00847	0,06079	0,02216
	(1.30)	(0.09)	(0.03)	(0.12)	(1.29)	(0.48)
Child 0-2 and 36-45 year old mother	0,08802	0,07299	0,01826	-0,06878	0,04259	0,03958
	(2.80)***	(2.63)***	(0.58)	(0.75)	(0.98)	(1.30)
Child 2-4 and 18-25 year old mother	-0,00102	-0,06506	0,01456	0,05095	-0,0322	0,08683
	(0.04)	(1.55)	(0.52)	(0.63)	(0.85)	(2.11)**
Child 2-4 and 36-45 year old mother	0,04233	0,07752	0,00943	0,08477	-0,01234	-0,00754
	(1.68)*	(3.87)***	(0.35)	(1.53)	(0.41)	(0.34)
Observations	10322	14618	11170	6144	17775	12503
Number of Individuals	1766	2501	1900	1166	2982	2071
Sargan Test	**0.060**	**0.261**	0.000	0.045	**0.462**	**0.101**
Sargan Stat	25.591	19.154	43.019	22.734	15.873	23.508
Sargang DF	16	16	16	13	16	16
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.704**	**0.122**	**0.102**	**0.128**	0.017	**0.301**
AR 3 Test	**0.171**	**0.912**	**0.645**	0.036	**0.660**	**0.140**
Instruments	51	51	51	48	51	51

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.14. Long Run Effects: Participation

Model: both instruments

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Child 0-2 years old	**-0,1106**	**-0,1573**	**-0,0724**	**-0,1997**	**-0,1147**	**-0,0698**
Child 2-4 years old	-0,0211	**-0,1119**	**-0,0725**	**-0,1014**	-0,0168	**-0,0464**
Child 4-6 years old	-0,0193	**-0,1013**	**-0,0628**	**-0,1422**	**-0,1020**	**-0,0663**
Child 6-8 years old	0,0154	**-0,1174**	**-0,0932**	**-0,1207**	**-0,1182**	**-0,0526**
Child 8-10 years old	0,0276	**-0,1096**	-0,0434	**-0,1067**	**-0,0910**	**-0,0503**
Child 10-12 years old	0,0101	**-0,0895**	**-0,0569**	**-0,0817**	**-0,0727**	**-0,0522**
Child 0-2 and 18-25 year old mother	-0,1591	-0,1763	-0,1842	0,0991	-0,2538	**-0,1274**
Child 0-2 and 36-45 year old mother	0,0023	0,0002	-0,0768	0,0124	0,0188	0,0464
Child 2-4 and 18-25 year old mother	-0,1363	0,0407	-0,1034	-0,0967	-0,0544	-0,0793
Child 2-4 and 36-45 year old mother	-0,0615	-0,0015	-0,0772	-0,0050	-0,0602	0,0185
	Greece	**Spain**	Portugal	Austria	Germany	**UK**
Child 0-2 years old	-0,0190	**-0,1309**	**-0,0787**	0,1141	**-0,7325**	**-0,2833**
Child 2-4 years old	-0,0263	**-0,0964**	**-0,0928**	**-0,3197**	**-0,3146**	**-0,2282**
Child 4-6 years old	-0,0134	**-0,0925**	**-0,0913**	**-0,1432**	**-0,1676**	**-0,1377**
Child 6-8 years old	-0,0176	**-0,1071**	**-0,0772**	**-0,1004**	**-0,1103**	**-0,0958**
Child 8-10 years old	-0,0361	**-0,0855**	**-0,0759**	**-0,0997**	**-0,1127**	**-0,1056**
Child 10-12 years old	0,0079	**-0,0573**	-0,0403	**-0,1142**	**-0,0865**	**-0,0530**
Child 0-2 and 18-25 year old mother	-0,0683	-0,0052	-0,0027	0,0173	0,0925	0,0377
Child 0-2 and 36-45 year old mother	0,1539	**0,1037**	0,0382	-0,1403	0,0648	0,0673
Child 2-4 and 18-25 year old mother	-0,0018	-0,0925	0,0305	0,1040	-0,0490	**0,1477**
Child 2-4 and 36-45 year old mother	0,0740	**0,1102**	0,0197	0,1730	-0,0188	-0,0128

Model levels

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Child 0-2 years old	**-0,1403**	**-0,1805**	**-0,0583**	**-0,2117**	**-0,1027**	**-0,0677**
Child 2-4 years old	-0,0421	**-0,1118**	**-0,0587**	**-0,0945**	-0,0577	**-0,0605**
Child 4-6 years old	-0,0228	**-0,0998**	**-0,0551**	**-0,1482**	**-0,0955**	**-0,0709**
Child 6-8 years old	0,0158	**-0,1133**	**-0,0904**	**-0,1269**	**-0,1066**	**-0,0543**
Child 8-10 years old	0,0300	**-0,0992**	-0,0405	**-0,1093**	**-0,0941**	**-0,0560**
Child 10-12 years old	0,0118	**-0,0966**	**-0,0568**	**-0,0800**	**-0,0735**	**-0,0578**
Child 0-2 and 18-25 year old mother	-0,2107	-0,1034	**-0,2286**	**0,1335**	-0,1604	**-0,1174**
Child 0-2 and 36-45 year old mother	0,0481	0,0265	-0,0733	0,0055	0,0472	0,0508
Child 2-4 and 18-25 year old mother	-0,0886	0,1079	-0,1085	-0,0835	-0,1395	-0,0625
Child 2-4 and 36-45 year old mother	-0,0495	0,0061	-0,0802	0,0004	-0,0300	0,0305
	Greece	**Spain**	Portugal	Austria	Germany	**UK**
Child 0-2 years old	-0,0128	**-0,1277**	**-0,0578**	**0,1205**	**-0,7693**	**-0,2710**
Child 2-4 years old	**-0,0494**	**-0,1109**	**-0,1108**	**-0,2855**	**-0,3075**	**-0,2334**
Child 4-6 years old	-0,0284	**-0,0936**	**-0,0915**	**-0,1724**	**-0,1571**	**-0,1321**
Child 6-8 years old	-0,0254	**-0,1096**	**-0,0795**	**-0,1178**	**-0,1034**	**-0,0899**
Child 8-10 years old	**-0,0384**	**-0,0961**	**-0,0794**	**-0,1066**	**-0,1158**	**-0,1012**
Child 10-12 years old	-0,0142	**-0,0546**	**-0,0448**	**-0,1158**	**-0,0883**	**-0,0528**
Child 0-2 and 18-25 year old mother	**-0,0788**	-0,0299	0,0707	0,0099	0,0888	0,0532
Child 0-2 and 36-45 year old mother	**0,1441**	**0,1047**	0,0270	-0,1056	0,0687	0,0546
Child 2-4 and 18-25 year old mother	-0,0049	-0,0700	0,0602	0,0488	-0,0438	**0,1579**
Child 2-4 and 36-45 year old mother	**0,1041**	**0,1217**	0,0109	0,1262	-0,0296	-0,0049

Table A.3.14 (end)
Model differences

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Child 0-2 years old	**-0,1089**	**-0,1481**	**-0,0609**	**-0,2006**	**-0,1192**	**-0,0663**
Child 2-4 years old	-0,0224	**-0,1051**	**-0,0653**	**-0,0988**	-0,0115	**-0,0496**
Child 4-6 years old	-0,0269	**-0,0981**	**-0,0633**	**-0,1444**	**-0,0989**	**-0,0653**
Child 6-8 years old	0,0063	**-0,1167**	**-0,0916**	**-0,1215**	**-0,1164**	**-0,0516**
Child 8-10 years old	0,0259	**-0,1051**	-0,0407	**-0,1027**	**-0,0894**	**-0,0507**
Child 10-12 years old	0,0145	**-0,0894**	-0,0590	**-0,0802**	**-0,0732**	**-0,0499**
Child 0-2 and 18-25 year old mother	-0,1000	-0,1736	-0,2510	**0,1117**	-0,2113	**-0,1380**
Child 0-2 and 36-45 year old mother	0,0264	0,0097	-0,0681	0,0062	0,0281	0,0496
Child 2-4 and 18-25 year old mother	-0,0788	0,0453	-0,0640	-0,0388	-0,0775	-0,0811
Child 2-4 and 36-45 year old mother	-0,0591	0,0006	-0,0845	-0,0132	-0,0708	0,0208
	Greece	**Spain**	Portugal	**Austria**	Germany	**UK**
Child 0-2 years old	-0,0234	**-0,1365**	**-0,0732**	0,1149	**-0,7408**	**-0,2770**
Child 2-4 years old	-0,0297	**-0,0999**	**-0,1111**	**-0,3149**	**-0,3109**	**-0,2271**
Child 4-6 years old	-0,0155	**-0,0960**	**-0,0977**	**-0,1532**	**-0,1655**	**-0,1397**
Child 6-8 years old	-0,0182	**-0,1088**	**-0,0794**	**-0,0993**	**-0,1066**	**-0,0961**
Child 8-10 years old	-0,0398	**-0,0861**	**-0,0775**	**-0,1012**	**-0,1126**	**-0,1039**
Child 10-12 years old	0,0079	**-0,0588**	-0,0313	**-0,1177**	**-0,0891**	**-0,0564**
Child 0-2 and 18-25 year old mother	-0,0742	-0,0038	-0,0076	0,0417	0,1025	0,0319
Child 0-2 and 36-45 year old mother	**0,1725**	**0,1017**	0,0282	-0,1445	0,0647	0,0594
Child 2-4 and 18-25 year old mother	0,0131	-0,0956	0,0377	0,1269	-0,0465	**0,1525**
Child 2-4 and 36-45 year old mother	0,0760	**0,1104**	0,0136	0,1726	-0,0175	-0,0109

bold coefficients indicate siginificance on the 5% level; bold country names indicate sufficient test statistics (Sargan and AR(2))

Table A.3.15. OLS-Regression (robust standard errors): Hours

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Working hours (t-1)	0.713	0.789	0.790	0.761	0.746	0.785
	(35.91)***	(77.94)***	(58.40)***	(61.81)***	(52.01)***	(83.11)***
Child 0-2 years old	-0.851	-5.136	-1.114	-1.654	-2.002	-1.055
	(3.59)***	(14.43)***	(2.95)***	(5.63)***	(4.39)***	(3.40)***
Child 2-4 years old	-0.530	-0.653	0.215	-0.330	-1.348	-0.225
	(2.10)**	(2.13)**	(0.65)	(1.27)	(2.82)***	(0.80)
Child 4-6 years old	-0.237	-0.509	-0.724	-0.620	-1.056	-0.143
	(0.94)	(2.00)**	(2.76)***	(2.87)***	(2.92)***	(0.67)
Child 6-8 years old	0.064	-0.782	-0.184	-0.447	-0.609	-0.271
	(0.24)	(3.31)***	(0.77)	(2.27)**	(1.61)	(1.34)
Child 8-10 years old	-0.397	-0.951	-0.045	-0.210	-0.312	-0.303
	(1.62)	(3.72)***	(0.18)	(1.06)	(0.87)	(1.65)*
Child 10-12 years old	-0.471	-0.649	-0.664	-0.259	-0.816	-0.229
	(2.12)**	(2.87)***	(2.46)**	(1.32)	(2.34)**	(1.19)
Child 0-2 and 18-25 year old mother	-0.129	-1.676	-1.850	0.109	-1.476	0.402
	(0.16)	(0.98)	(1.47)	(0.15)	(0.85)	(0.29)
Child 0-2 and 36-45 year old mother	0.225	2.984	-0.147	0.320	1.776	-0.421
	(0.50)	(4.18)***	(0.13)	(0.51)	(2.45)**	(0.77)
Child 2-4 and 18-25 year old mother	0.799	-2.704	1.664	0.974	0.461	0.673
	(1.26)	(2.05)**	(0.87)	(1.22)	(0.46)	(0.31)
Child 2-4 and 36-45 year old mother	0.253	-0.466	0.721	0.082	1.057	-0.601
	(0.52)	(0.98)	(1.01)	(0.17)	(1.52)	(1.32)
Observations	5437	8910	5019	8604	3565	7429
R-squared	0.52	0.73	0.64	0.60	0.63	0.64

	Greece	Spain	Portugal	Austria	Germany	UK
Working hours (t-1)	0.678	0.694	0.739	0.769	0.801	0.783
	(31.62)***	(46.89)***	(49.35)***	(49.86)***	(95.51)***	(87.80)***
Child 0-2 years old	-1.594	-1.393	-0.404	-0.413	-5.986	-5.029
	(3.06)***	(3.66)***	(1.76)*	(0.67)	(4.23)***	(10.60)***
Child 2-4 years old	-0.602	-0.262	0.176	-2.726	-1.127	-0.880
	(1.28)	(0.60)	(0.63)	(3.76)***	(1.77)*	(2.25)**
Child 4-6 years old	-0.110	-0.157	-0.224	-0.877	-1.318	-0.787
	(0.31)	(0.45)	(0.99)	(1.75)*	(3.66)***	(2.61)***
Child 6-8 years old	-0.452	0.004	-0.198	-1.478	-1.570	-0.770
	(1.35)	(0.01)	(0.89)	(3.48)***	(5.44)***	(2.65)***
Child 8-10 years old	-0.410	-0.479	0.212	-1.009	-1.119	-0.985
	(1.14)	(1.49)	(1.04)	(2.93)***	(4.62)***	(3.31)***
Child 10-12 years old	-0.645	0.074	0.284	-0.126	-0.665	-0.537
	(1.78)*	(0.22)	(1.34)	(0.36)	(2.90)***	(1.90)*
Child 0-2 and 18-25 year old mother	2.705	-1.918	0.870	-0.808	-6.185	-0.174
	(1.14)	(1.11)	(1.45)	(0.66)	(1.12)	(0.14)
Child 0-2 and 36-45 year old mother	1.419	0.238	-1.351	1.477	-3.128	1.605
	(1.54)	(0.31)	(1.56)	(1.12)	(0.36)	(1.67)*
Child 2-4 and 18-25 year old mother	4.951	4.559	1.075	-1.073	1.308	-0.090
	(1.80)*	(1.18)	(1.49)	(0.63)	(0.80)	(0.08)
Child 2-4 and 36-45 year old mother	0.740	-0.175	-0.013	0.704	2.376	-0.081
	(1.00)	(0.27)	(0.02)	(0.54)	(1.25)	(0.15)
Observations	3408	4813	7336	3804	11250	9791
R-squared	0.50	0.52	0.58	0.65	0.71	0.66

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.16. Fixed Effect Regression: Hours

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Working hours (t-1)	0.145	0.145	0.148	0.112	0.194	0.168
	(9.16)***	(11.78)***	(9.36)***	(9.31)***	(10.43)***	(12.49)***
Child 0-2 years old	-1.110	-5.452	-1.654	-1.607	-1.212	-1.211
	(3.02)***	(18.25)***	(4.32)***	(5.17)***	(2.27)**	(3.92)***
Child 2-4 years old	-1.357	-4.606	-1.324	-1.162	-1.745	-1.405
	(3.59)***	(13.59)***	(3.53)***	(3.47)***	(3.11)***	(4.34)***
Child 4-6 years old	-1.400	-2.558	-1.081	-1.575	-1.793	-1.042
	(4.33)***	(8.39)***	(3.22)***	(5.44)***	(3.79)***	(3.62)***
Child 6-8 years old	-0.515	-2.154	-0.366	-1.500	-1.714	-0.846
	(1.65)*	(7.19)***	(1.11)	(5.39)***	(3.65)***	(3.01)***
Child 8-10 years old	-0.801	-1.698	-0.113	-1.106	-1.915	-0.639
	(2.59)***	(5.72)***	(0.35)	(4.20)***	(4.25)***	(2.43)**
Child 10-12 years old	-0.475	-1.009	-0.274	-0.753	-1.775	-0.613
	(1.67)*	(3.63)***	(0.86)	(3.21)***	(4.29)***	(2.57)**
Child 0-2 and 18-25 year old mother	0.218	-0.745	-1.784	0.856	-6.790	-0.383
	(0.18)	(0.60)	(1.48)	(1.05)	(3.14)***	(0.24)
Child 0-2 and 36-45 year old mother	0.726	2.319	1.038	-0.121	1.655	-0.094
	(1.10)	(3.78)***	(1.14)	(0.18)	(1.89)*	(0.17)
Child 2-4 and 18-25 year old mother	0.432	-2.322	1.818	1.821	-4.054	-1.263
	(0.25)	(1.23)	(1.06)	(1.52)	(2.01)**	(0.82)
Child 2-4 and 36-45 year old mother	0.136	1.470	0.837	-0.515	1.325	0.204
	(0.25)	(2.89)***	(1.23)	(0.96)	(1.73)*	(0.44)
Observations	5437	8910	5019	8604	3565	7429
Number of Individuals	1406	2483	1217	2318	1046	1891
R-squared	0.04	0.15	0.05	0.04	0.09	0.04

	Greece	Spain	Portugal	Austria	Germany	UK
Working hours (t-1)	0.002	0.025	0.144	0.071	0.075	0.189
	(0.10)	(1.50)	(11.01)***	(4.10)***	(6.94)***	(16.96)***
Child 0-2 years old	-1.458	-1.211	-0.713	1.028	-6.600	-6.455
	(2.50)**	(2.69)***	(2.11)**	(1.78)*	(7.16)***	(15.77)***
Child 2-4 years old	-0.578	-1.135	-0.453	-4.672	-6.676	-5.414
	(0.99)	(2.21)**	(1.28)	(7.94)***	(10.43)***	(12.25)***
Child 4-6 years old	-0.155	-1.062	-0.585	-3.313	-4.751	-3.690
	(0.32)	(2.41)**	(1.84)*	(6.12)***	(11.45)***	(9.80)***
Child 6-8 years old	-0.445	-1.242	-0.791	-4.005	-2.991	-3.179
	(0.94)	(2.83)***	(2.53)**	(7.77)***	(8.35)***	(9.00)***
Child 8-10 years old	-0.326	-1.291	-0.335	-2.245	-2.349	-2.812
	(0.73)	(3.24)***	(1.17)	(4.55)***	(7.42)***	(8.37)***
Child 10-12 years old	-0.237	-0.192	0.106	-1.091	-1.423	-1.608
	(0.61)	(0.55)	(0.43)	(2.70)***	(5.36)***	(5.17)***
Child 0-2 and 18-25 year old mother	-1.324	0.506	0.049	1.137	-4.494	0.116
	(0.86)	(0.20)	(0.07)	(1.06)	(1.65)*	(0.11)
Child 0-2 and 36-45 year old mother	0.512	-0.647	-1.127	0.179	-5.449	0.810
	(0.54)	(0.82)	(1.43)	(0.13)	(2.09)**	(1.05)
Child 2-4 and 18-25 year old mother	1.268	4.981	0.857	0.441	-5.363	-0.209
	(0.78)	(1.57)	(1.23)	(0.36)	(2.74)***	(0.18)
Child 2-4 and 36-45 year old mother	-0.177	-0.150	-0.176	1.632	1.282	0.095
	(0.21)	(0.21)	(0.30)	(1.41)	(1.03)	(0.14)
Observations	3408	4813	7336	3804	11250	9791
Number of Individuals	909	1474	1890	1098	2933	2310
R-squared	0.02	0.02	0.04	0.08	0.05	0.12

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.17. GNN Estimation – Differences as instruments up to lag t-2

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Working hours (t-1)	0,3023	0,3909	0,4210	0,2806	0,4428	0,3775
	(4.38)***	(7.70)***	(6.65)***	(5.91)***	(8.33)***	(7.66)***
Child 0-2 years old	-0,8958	-5,4627	-1,2123	-1,5530	-1,6393	-0,9705
	(3.66)***	(13.45)***	(2.91)***	(4.65)***	(2.88)***	(2.67)***
Child 2-4 years old	-1,0494	-3,7649	-0,6480	-0,9504	-2,0935	-0,8771
	(3.54)***	(7.24)***	(1.60)	(2.95)***	(3.52)***	(2.50)**
Child 4-6 years old	-0,9577	-2,6922	-1,2164	-1,3501	-1,7980	-0,7364
	(3.02)***	(7.11)***	(3.68)***	(4.90)***	(3.75)***	(2.61)***
Child 6-8 years old	-0,3906	-2,6689	-0,7686	-1,1574	-1,4348	-0,6725
	(1.31)	(6.65)***	(2.32)**	(4.30)***	(3.31)***	(2.63)***
Child 8-10 years old	-0,9399	-2,5521	-0,7425	-0,8195	-0,6712	-0,6416
	(3.09)***	(7.16)***	(2.06)**	(2.97)***	(1.42)	(2.53)**
Child 10-12 years old	-0,7153	-2,1991	-0,9698	-0,6687	-1,3129	-0,8103
	(2.76)***	(6.48)***	(2.83)***	(2.48)**	(3.09)***	(3.44)***
Child 0-2 and 18-25 year old mother	0,4295	-1,6568	-2,6338	0,8689	-3,5228	1,8138
	(0.31)	(1.13)	(1.42)	(0.91)	(1.34)	(1.69)*
Child 0-2 and 36-45 year old mother	0,5184	3,4312	1,1693	0,5067	2,5577	-0,7743
	(0.90)	(4.58)***	(1.00)	(0.65)	(3.09)***	(1.16)
Child 2-4 and 18-25 year old mother	1,8766	-4,5126	1,3568	0,0071	-1,0289	4,8057
	(1.66)*	(1.77)*	(0.72)	(0.01)	(1.01)	(1.56)
Child 2-4 and 36-45 year old mother	0,5818	1,8230	0,8278	0,2671	2,5351	-0,5309
	(1.33)	(2.88)***	(0.97)	(0.52)	(2.88)***	(1.01)
Observations	5214	8496	4843	8245	3356	7148
Number of Individuals	1183	2069	1041	1959	837	1610
Sargan Test	**0.209**	*0.009*	**0.304**	**0.121**	**0.085**	*0.022*
Sargan Stat	13.273	23.470	11.724	15.312	16.533	20.927
Sargang DF	10	10	10	10	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.255**	**0.194**	**0.232**	*0.010*	**0.833**	**0.311**
AR 3 Test	**0.201**	**0.382**	**0.559**	**0.268**	**0.542**	**0.658**
Instruments	45	45	45	45	45	45

	Greece	Spain	Portugal	Austria	Germany	UK
Working hours (t-1)	0,2538	0,2080	0,4154	0,4016	0,2058	0,4059
	(4.90)***	(3.86)***	(7.14)***	(6.27)***	(4.72)***	(13.08)***
Child 0-2 years old	-2,3498	-1,2547	-0,1840	0,8414	-7,6530	-4,9726
	(4.02)***	(3.20)***	(0.74)	(1.25)	(4.85)***	(9.09)***
Child 2-4 years old	-1,2503	-1,0565	0,1854	-4,1285	-7,2684	-3,5661
	(2.20)**	(2.16)**	(0.58)	(5.71)***	(8.64)***	(7.03)***
Child 4-6 years old	-0,4622	-0,6698	-0,0476	-3,1472	-6,6864	-3,2058
	(1.02)	(1.48)	(0.17)	(4.52)***	(11.01)***	(7.67)***
Child 6-8 years old	-0,6845	-0,4446	-0,2603	-3,4139	-5,9047	-3,0724
	(1.64)	(1.08)	(1.13)	(5.63)***	(11.42)***	(7.52)***
Child 8-10 years old	-0,3989	-1,1671	0,1822	-2,3303	-4,7329	-2,9062
	(1.03)	(3.27)***	(0.76)	(4.17)***	(10.69)***	(7.53)***
Child 10-12 years old	-0,4842	-0,4561	0,2775	-1,7796	-2,9463	-1,9279
	(1.31)	(1.30)	(1.13)	(3.57)***	(8.74)***	(5.22)***
Child 0-2 and 18-25 year old mother	4,8193	-0,1301	2,7982	-0,2056	-6,3619	1,4661
	(1.66)*	(0.02)	(3.03)***	(0.16)	(1.21)	(1.02)
Child 0-2 and 36-45 year old mother	2,3437	-0,1112	-1,4333	0,9407	-0,1370	1,5626
	(2.29)**	(0.14)	(1.45)	(0.67)	(0.02)	(1.54)
Child 2-4 and 18-25 year old mother	6,3213	5,4407	3,9887	-1,4227	0,5243	1,6173
	(2.64)***	(1.77)*	(3.89)***	(0.96)	(0.21)	(1.00)
Child 2-4 and 36-45 year old mother	1,4719	0,2010	-0,3939	1,7982	4,2922	0,8681
	(1.82)*	(0.27)	(0.49)	(1.65)*	(2.65)***	(1.34)
Observations	3249	4496	7005	3620	10829	9502
Number of Individuals	750	1157	1559	914	2512	2021
Sargan Test	**0.380**	**0.616**	**0.365**	*0.022*	**0.302**	*0.031*
Sargan Stat	10.711	8.135	10.906	17.960	11.757	19.842
Sargang DF	10	10	10	8	10	10
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.958**	**0.480**	**0.105**	**0.124**	*0.033*	*0.004*
AR 3 Test	**0.663**	**0.240**	*0.009*	**0.436**	**0.469**	**0.604**
Instruments	45	45	45	43	45	45

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.18. GMM Estimation – Levels as instruments up to lag t-3

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Working hours (t-1)	0,51635	0,64108	0,28595	0,28719	0,41396	0,37851
	(21.93)***	(24.41)***	(1.93)*	(1.38)	(8.80)***	(6.51)***
Child 0-2 years old	-0,8825	-5,11018	-1,24719	-1,5659	-1,90426	-1,16813
	(0.96)	(12.16)***	(2.81)***	(2.52)**	(3.39)***	(1.63)
Child 2-4 years old	-0,77597	-1,57263	-1,03214	-1,06295	-1,93013	-0,91882
	(0.65)	(3.99)***	(2.17)**	(2.01)**	(2.41)**	(1.33)
Child 4-6 years old	-0,73094	-1,45115	-1,51246	-1,39417	-1,8523	-0,7867
	(1.06)	(4.99)***	(4.06)***	(2.80)***	(3.91)***	(1.58)
Child 6-8 years old	-0,21334	-1,28633	-1,09154	-1,20376	-1,30958	-0,70218
	(0.37)	(4.58)***	(3.06)***	(4.47)***	(3.16)***	(1.71)*
Child 8-10 years old	-0,66118	-1,25266	-1,10844	-0,79722	-0,87921	-0,6313
	(1.27)	(4.20)***	(2.95)***	(2.12)**	(1.91)*	(2.17)**
Child 10-12 years old	-0,46741	-1,18719	-1,18248	-0,64313	-1,48291	-0,83523
	(0.77)	(3.58)***	(2.35)**	(2.35)**	(3.61)***	(3.25)***
Child 0-2 and 18-25 year old mother	-0,36308	-0,74519	-2,62584	0,08295	-4,09989	1,94828
	(0.20)	(0.47)	(1.46)	(0.04)	(1.03)	(0.94)
Child 0-2 and 36-45 year old mother	0,35259	2,84266	1,42735	0,52727	2,74435	-0,48089
	(0.57)	(3.72)***	(1.22)	(0.61)	(3.43)***	(0.50)
Child 2-4 and 18-25 year old mother	1,30428	-2,98709	1,35228	0,30155	-1,32628	4,03922
	(0.19)	(1.11)	(0.67)	(0.27)	(0.61)	(0.98)
Child 2-4 and 36-45 year old mother	0,45044	0,39437	1,40927	0,22405	2,34737	-0,54341
	(0.91)	(0.69)	(1.70)*	(0.38)	(2.19)**	(0.93)
Observations	5214	8496	4843	8245	3356	7148
Number of PID	1183	2069	1041	1959	837	1610
Sargan Test	*0.046*	*0.011*	**0.300**	*0.012*	**0.958**	**0.255**
Sargan Stat	18.563	22.848	11.778	22.593	3.749	12.475
Sargang DF	10	10	10	10	10	10
AR 1 Test	0.000	0.000	0.000	0.003	0.000	0.000
AR 2 Test	**0.073**	**0.061**	**0.578**	**0.185**	**0.795**	**0.273**
AR 3 Test	**0.151**	**0.364**	**0.486**	**0.275**	**0.548**	**0.690**
Instruments	45	45	45	45	45	45

	Greece	Spain	Portugal	Austria	Germany	UK
Working hours (t-1)	0,17984	0,1988	0,79357	-0,02109	0,33562	0,48457
	(0.69)	(1.34)	(2.64)***	(0.16)	(1.86)*	(4.79)***
Child 0-2 years old	-2,1932	-1,25087	-0,04325	1,19534	-7,4243	-4,90617
	(3.63)***	(1.74)*	(0.13)	(1.70)*	(4.48)***	(7.77)***
Child 2-4 years old	-1,39879	-1,03467	0,14819	-4,38127	-5,84104	-2,91979
	(1.62)	(0.71)	(0.45)	(4.78)***	(2.60)***	(3.49)***
Child 4-6 years old	-0,55506	-0,58129	-0,24531	-4,70426	-5,63311	-2,69021
	(0.72)	(0.31)	(0.89)	(5.43)***	(3.50)***	(4.02)***
Child 6-8 years old	-0,58618	-0,52636	-0,19278	-5,48032	-5,02821	-2,58125
	(0.57)	(0.45)	(0.74)	(4.89)***	(3.46)***	(4.64)***
Child 8-10 years old	-0,4139	-1,13485	0,29249	-4,42842	-3,9898	-2,41786
	(0.49)	(1.73)*	(0.61)	(5.14)***	(3.41)***	(5.52)***
Child 10-12 years old	-0,4323	-0,43931	0,30922	-2,93987	-2,51106	-1,66125
	(0.36)	(1.21)	(0.73)	(4.33)***	(3.31)***	(3.89)***
Child 0-2 and 18-25 year old mother	5,54726	-3,44045	0,69417	-0,19259	-7,68627	1,24892
	(1.88)*	(0.53)	(0.32)	(0.12)	(1.33)	(0.83)
Child 0-2 and 36-45 year old mother	2,25184	-0,02548	-1,42554	1,9014	-4,35629	1,19757
	(1.29)	(0.03)	(0.79)	(0.99)	(0.61)	(1.03)
Child 2-4 and 18-25 year old mother	5,42807	4,32597	1,55591	-2,25601	-0,25269	1,63593
	(1.28)	(0.24)	(0.67)	(1.19)	(0.11)	(0.94)
Child 2-4 and 36-45 year old mother	1,58236	0,08478	0,21836	1,05893	3,49083	0,4296
	(1.25)	(0.06)	(0.19)	(0.75)	(1.90)*	(0.60)
Observations	3249	4496	7005	3620	10829	9502
Number of PID	750	1157	1559	914	2512	2021
Sargan Test	*0.031*	**0.153**	*0.002*	**0.390**	**0.769**	*0.000*
Sargan Stat	19.864	14.454	27.226	8.459	6.528	31.688
Sargang DF	10	10	10	8	10	10
AR 1 Test	0.043	0.001	0.004	0.029	0.000	0.000
AR 2 Test	**0.782**	**0.647**	**0.423**	**0.347**	*0.104*	*0.010*
AR 3 Test	**0.706**	**0.251**	*0.026*	**0.988**	**0.572**	**0.604**
Instruments	45	45	45	43	45	45

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.19. GMM Estimation – Differences and levels as instruments up to lag t-3

	Denmark	Netherlands	Belgium	France	Ireland	Italy
Working hours (t-1)	0,3640	0,4346	0,4145	0,2870	0,4434	0,3465
	(3.83)***	(20.79)***	(10.76)***	(8.04)***	(8.94)***	(6.91)***
Child 0-2 years old	-0,9346	-5,3359	-1,2704	-1,5408	-1,7827	-1,0211
	(0.94)	(13.00)***	(2.98)***	(3.44)***	(3.16)***	(2.12)**
Child 2-4 years old	-0,9654	-3,3623	-0,6981	-1,0291	-1,8283	-0,9294
	(0.76)	(8.02)***	(1.75)*	(3.23)***	(2.82)***	(1.90)*
Child 4-6 years old	-0,9311	-2,5888	-1,3056	-1,3678	-1,8494	-0,8583
	(1.27)	(8.11)***	(3.90)***	(4.98)***	(3.81)***	(2.41)**
Child 6-8 years old	-0,3528	-2,2290	-0,8333	-1,1574	-1,3312	-0,7174
	(0.60)	(7.51)***	(2.26)**	(3.12)***	(3.18)***	(2.33)**
Child 8-10 years old	-0,8261	-2,3183	-0,8006	-0,7750	-0,6654	-0,6616
	(2.54)**	(7.18)***	(2.12)**	(2.73)***	(1.44)	(2.45)**
Child 10-12 years old	-0,6226	-2,2553	-0,9844	-0,6530	-1,4032	-0,8318
	(0.70)	(6.81)***	(2.86)***	(2.30)**	(3.31)***	(3.49)***
Child 0-2 and 18-25 year old mother	-0,2884	-1,4455	-2,7433	0,2684	-3,2678	1,5445
	(0.13)	(0.93)	(1.50)	(0.19)	(1.11)	(0.90)
Child 0-2 and 36-45 year old mother	0,4981	3,2668	1,5031	0,5609	2,6941	-0,8402
	(0.86)	(4.37)***	(1.29)	(0.70)	(3.32)***	(1.02)
Child 2-4 and 18-25 year old mother	1,3663	-4,0221	1,7779	0,1790	-1,2102	2,4247
	(0.10)	(1.51)	(0.95)	(0.15)	(0.98)	(0.55)
Child 2-4 and 36-45 year old mother	0,5344	1,4077	1,3215	0,2835	2,3066	-0,5786
	(1.24)	(2.47)**	(1.58)	(0.56)	(2.50)**	(1.08)
Observations	5214	8496	4843	8245	3356	7148
Number of Individuals	1183	2069	1041	1959	837	1610
Sargan Test	**0.070**	*0.000*	**0.472**	**0.057**	**0.471**	*0.021*
Sargan Stat	24.987	51.345	15.732	25.806	15.750	29.543
Sargang DF	16	16	16	16	16	16
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.188**	**0.135**	**0.220**	*0.006*	**0.844**	**0.401**
AR 3 Test	**0.186**	**0.376**	**0.570**	**0.276**	**0.547**	**0.657**
Instruments	51	51	51	51	51	51

	Greece	Spain	Portugal	Austria	Germany	UK
Working hours (t-1)	0,2303	0,1839	0,5222	0,3686	0,2197	0,4027
	(2.13)**	(3.43)***	(7.52)***	(5.47)***	(7.42)***	(16.46)***
Child 0-2 years old	-2,1697	-1,2576	-0,2631	1,1596	-7,5887	-5,0000
	(3.61)***	(3.01)***	(1.09)	(1.72)*	(4.76)***	(9.28)***
Child 2-4 years old	-1,2483	-1,0370	-0,0316	-4,2781	-7,1765	-3,5338
	(1.97)**	(1.77)*	(0.09)	(5.95)***	(8.43)***	(7.83)***
Child 4-6 years old	-0,4524	-0,6035	-0,4064	-3,3956	-6,5701	-3,2482
	(0.66)	(0.88)	(0.78)	(4.23)***	(12.32)***	(8.75)***
Child 6-8 years old	-0,6421	-0,5527	-0,3208	-3,6656	-5,8179	-3,0706
	(1.11)	(1.03)	(1.47)	(6.18)***	(12.85)***	(8.46)***
Child 8-10 years old	-0,3652	-1,1412	0,1627	-2,6168	-4,7213	-2,8478
	(0.67)	(2.63)***	(0.37)	(4.32)***	(11.71)***	(8.19)***
Child 10-12 years old	-0,3675	-0,4476	0,3497	-1,7166	-2,9530	-1,9943
	(0.63)	(1.24)	(0.57)	(3.31)***	(9.34)***	(5.59)***
Child 0-2 and 18-25 year old mother	5,7517	-3,1659	1,2619	-0,2125	-9,1509	1,1176
	(2.03)**	(0.46)	(0.55)	(0.13)	(1.79)*	(0.68)
Child 0-2 and 36-45 year old mother	1,9844	-0,0364	-1,6206	0,4751	-2,4449	1,2527
	(1.36)	(0.04)	(1.40)	(0.31)	(0.36)	(1.25)
Child 2-4 and 18-25 year old mother	5,3819	4,1588	2,6497	-1,7040	-0,4917	1,6761
	(1.59)	(0.59)	(1.22)	(1.12)	(0.20)	(0.95)
Child 2-4 and 36-45 year old mother	1,5556	0,0573	0,0302	1,6824	4,0883	0,7416
	(1.56)	(0.06)	(0.03)	(1.47)	(2.00)**	(1.17)
Observations	3249	4496	7005	3620	10829	9502
Number of Individuals	750	1157	1559	914	2512	2021
Sargan Test	**0.128**	**0.519**	*0.000*	*0.008*	**0.553**	*0.002*
Sargan Stat	22.487	15.071	50.176	28.403	14.616	37.203
Sargang DF	16	16	16	13	16	16
AR 1 Test	0.000	0.000	0.000	0.000	0.000	0.000
AR 2 Test	**0.829**	**0.569**	**0.185**	**0.147**	*0.019*	*0.003*
AR 3 Test	**0.637**	**0.235**	*0.009*	**0.464**	**0.486**	**0.619**
Instruments	51	51	51	48	51	51

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3.20. Long Run Effects: Hours
Model: both instruments

	Denmark	Netherlands	**Belgium**	France	**Ireland**	Italy
Child 0-2 years old	-1,4695	**-9,4377**	**-2,1699**	**-2,1610**	**-3,2027**	**-1,5625**
Child 2-4 years old	-1,5179	**-4,5789**	-2,2301	**-1,9184**	**-3,3226**	-1,3132
Child 4-6 years old	-1,4640	**-3,9425**	**-1,4233**	**-1,6233**	**-2,3915**	**-1,0977**
Child 6-8 years old	-0,5546	**-3,9425**	**-1,4233**	**-1,6233**	**-2,3915**	**-1,0977**
Child 8-10 years old	-1,2989	**-4,1004**	**-1,3674**	**-1,0869**	-1,1953	**-1,0124**
Child 10-12 years old	-0,9789	**-3,9889**	**-1,6814**	**-0,9158**	**-2,5210**	**-1,2728**
Child 0-2 and 18-25 year old mother	-0,4535	-2,5567	-4,6857	0,3764	-5,8708	2,3633
Child 0-2 and 36-45 year old mother	0,7831	**5,7781**	2,5675	0,7866	**4,8401**	-1,2856
Child 2-4 and 18-25 year old mother	2,1483	-7,1139	3,0367	0,2510	-2,1742	3,7102
Child 2-4 and 36-45 year old mother	0,8403	**2,4899**	2,2572	0,3977	**4,1440**	-0,8853
	Greece	**Spain**	Portugal	Austria	Germany	UK
Child 0-2 years old	**-2,8190**	**-1,5410**	**-0,5507**	1,8366	**-9,7248**	**-8,3712**
Child 2-4 years old	**-1,6218**	**-1,2707**	**-0,0660**	**-6,7757**	**-9,1965**	**-5,9164**
Child 4-6 years old	-0,5877	-0,7395	-0,8505	**-5,3780**	**-8,4194**	**-5,4383**
Child 6-8 years old	-0,8342	-0,6773	-0,6713	**-5,8055**	**-7,4556**	**-5,1409**
Child 8-10 years old	-0,4744	**-1,3983**	0,3404	**-4,1444**	**-6,0502**	**-4,7679**
Child 10-12 years old	-0,4774	-0,5484	0,7319	**-2,7187**	**-3,7841**	**-3,3390**
Child 0-2 and 18-25 year old mother	7,4729	-3,8794	2,6409	-0,3365	-11,7266	1,8711
Child 0-2 and 36-45 year old mother	2,5783	-0,0446	-3,3917	0,7525	-3,1331	2,0973
Child 2-4 and 18-25 year old mother	6,9925	5,0961	5,5453	-2,6989	-0,6300	2,8062
Child 2-4 and 36-45 year old mother	2,0211	0,0702	0,0632	2,6647	**5,2390**	1,2417

Model: Differences

	Denmark	Netherlands	**Belgium**	France	**Ireland**	Italy
Child 0-2 years old	**-1,2838**	**-8,9681**	**-2,0936**	**-2,1587**	**-2,9420**	**-1,5589**
Child 2-4 years old	**-1,5040**	**-6,1807**	-1,1191	**-1,3210**	**-3,7572**	**-1,4089**
Child 4-6 years old	**-1,3727**	**-4,4198**	**-2,1008**	**-1,8767**	**-3,2269**	**-1,1829**
Child 6-8 years old	-0,5599	**-4,3814**	**-1,3273**	**-1,6088**	**-2,5751**	**-1,0803**
Child 8-10 years old	**-1,3471**	**-4,1897**	**-1,2822**	**-1,1391**	**-1,2045**	**-1,0306**
Child 10-12 years old	**-1,0252**	**-3,6102**	**-1,6749**	**-0,9295**	**-2,3562**	**-1,3016**
Child 0-2 and 18-25 year old mother	0,6156	-2,7200	-4,5487	1,2078	-6,3223	2,9136
Child 0-2 and 36-45 year old mother	0,7430	**5,6330**	2,0193	0,7043	**4,5903**	-1,2437
Child 2-4 and 18-25 year old mother	2,6897	-7,4082	2,3433	0,0099	-1,8465	7,7197
Child 2-4 and 36-45 year old mother	0,8338	**2,9927**	1,4296	0,3713	**4,5497**	-0,8528
	Greece	**Spain**	**Portugal**	Austria	Germany	UK
Child 0-2 years old	**-3,1491**	**-1,5842**	-0,3148	1,4060	**-9,6361**	**-8,3699**
Child 2-4 years old	**-1,6757**	**-1,3340**	0,3171	**-6,8992**	**-9,1518**	**-6,0025**
Child 4-6 years old	-0,6194	-0,8457	-0,0814	**-5,2594**	**-8,4191**	**-5,3961**
Child 6-8 years old	-0,9173	-0,5613	-0,4452	**-5,7050**	**-7,4348**	**-5,1716**
Child 8-10 years old	-0,5345	**-1,4737**	0,3116	**-3,8942**	**-5,9593**	**-4,8917**
Child 10-12 years old	-0,6488	-0,5758	0,4746	**-2,9740**	**-3,7098**	**-3,2450**
Child 0-2 and 18-25 year old mother	6,4586	-0,1642	**4,7864**	-0,3436	-8,0105	2,4677
Child 0-2 and 36-45 year old mother	**3,1409**	-0,1404	-2,4518	1,5720	-0,1726	2,6301
Child 2-4 and 18-25 year old mother	**8,4716**	6,8696	**6,8229**	-2,3774	0,6601	2,7222
Child 2-4 and 36-45 year old mother	1,9725	0,2538	-0,6738	3,0050	**5,4045**	1,4613

Table A.3.20 (end)

Models: Levels

	Denmark	Netherlands	**Belgium**	France	**Ireland**	Italy
Child 0-2 years old	-1,8247	**-14,2377**	**-1,7466**	**-2,1968**	**-3,2494**	-1,8796
Child 2-4 years old	-1,6044	**-4,3816**	**-1,4455**	**-1,4912**	**-3,2935**	-1,4784
Child 4-6 years old	-1,5113	**-4,0431**	**-2,1181**	**-1,9559**	**-3,1607**	-1,2658
Child 6-8 years old	-0,4411	**-3,5839**	**-1,5287**	**-1,6888**	**-2,2346**	-1,1298
Child 8-10 years old	-1,3671	**-3,4901**	**-1,5523**	**-1,1184**	-1,5003	-1,0158
Child 10-12 years old	-0,9664	**-3,3077**	**-1,6560**	**-0,9022**	**-2,5304**	-1,3439
Child 0-2 and 18-25 year old mother	-0,1929	-0,1220	-1,1685	0,0323	-1,4117	0,8986
Child 0-2 and 36-45 year old mother	0,7290	**7,9200**	1,9989	0,7397	**4,6829**	-0,7738
Child 2-4 and 18-25 year old mother	2,6967	-8,3224	1,8938	0,4230	-2,2631	6,4993
Child 2-4 and 36-45 year old mother	0,9313	1,0988	1,9736	0,3143	**4,0055**	-0,8744
	Greece	**Spain**	**Portugal**	Austria	Germany	UK
Child 0-2 years old	**-2,6741**	-1,5612	-0,2095	1,1707	**-11,1748**	**-9,5186**
Child 2-4 years old	-1,7055	-1,2914	0,7179	**-4,2908**	**-8,7917**	**-5,6648**
Child 4-6 years old	-0,6768	-0,7255	-1,1883	**-4,6071**	**-8,4787**	**-5,2194**
Child 6-8 years old	-0,7147	-0,6570	-0,9339	**-5,3671**	**-7,5683**	**-5,0080**
Child 8-10 years old	-0,5047	-1,4164	1,4169	**-4,3370**	**-6,0053**	**-4,6910**
Child 10-12 years old	-0,5271	-0,5483	1,4979	**-2,8791**	**-3,7796**	**-3,2230**
Child 0-2 and 18-25 year old mother	1,7372	-1,5285	0,6654	0,9859	-0,9124	0,2115
Child 0-2 and 36-45 year old mother	2,7456	-0,0318	-6,9057	1,8621	-6,5569	2,3234
Child 2-4 and 18-25 year old mother	6,6183	5,3994	7,5372	-2,2094	-0,3803	3,1739
Child 2-4 and 36-45 year old mother	1,9293	0,1058	1,0578	1,0371	5,2543	0,8335

bold coefficients indicate siginificance on the 5% level; bold country names indicate sufficient test statistics (Sargan and AR(2))

Table A.3.21. Temporary employees as a percentage of the total number of employees 15+ in %)

No	Countries	1997	2000	2004	1997	2000	2004
		Men			Women		
1	Austria	:	8,3	9,9	:	8,9	8,7
2	Belgium	4,6	6,6	6,3	8,6	12,1	11,6
3	Denmark	10,6	8,8	9,1	11,6	11,7	10,6
4	Finland	15,3	14,5	13,3	18,9	20,9	20,9
5	France	12,0	14,6	10,8	14,2	16,4	13,9
6	Germany	11,5	12,5	12,7	12,1	13,1	12,2
7	Greece	10,2	12,2	11,0	11,9	16,3	14,5
8	Ireland	7,1	4,3	3,0	12,1	6,6	3,9
9	Italy	6,9	8,8	9,7	9,5	12,2	14,9
10	Luxembourg	1,8	2,6	4,1	2,7	4,6	6,0
11	Netherlands	8,8	11,5	13,2	14,9	17,2	16,3
12	Portugal	11,7	18,0	18,7	12,9	22,2	21,1
13	Spain	32,3	30,8	30,2	35,7	34,6	34,8
14	Sweden	10,1	12,3	13,7	14,0	16,9	17,7
15	UK	6,5	5,9	5,2	8,4	7,7	6,3
	EU 15	11,5	12,8	12,6	13,2	14,7	14,4
16	Cyprus	:	7,6	8,2	:	14,3	18,2
17	Czech Republic	7,1	7,0	8,0	8,9	9,4	11,3
18	Estonia	2,6	3,1	4,1	1,8	:	2,0
19	Hungary	7,0	7,3	7,8	6,3	6,4	6,0
20	Latvia	:	8,9	11,4	:	4,6	6,9
21	Lithuania	:	4,9	9,8	:	2,6	3,5
22	Malta	:	3,5	2,4	:	5,3	5,0
23	Poland	6,3	6,6	23,7	4,7	4,8	21,3
24	Slovakia	:	3,8	5,8	:	4,3	5,1
25	Slovenia	13,6	12,4	16,4	15,1	13,5	19,8
	NMS 10						
	EU 25	:	11,9	13,0	:	13,4	14,3
26	Bulgaria	:	:	8,5	:	:	7,5
27	Romania	3,0	3,0	3,2	3,1	2,9	2,4
28	Turkey						
	CC 3						

Source: EUROSTAT, QLFD, 2. Quater (France 1. Quater).

4. Social protection and the life course

Ulrich Schuh, Anna Ruzik, Nikolaus Graf, Stanisława Golinowska, Liliana Mateeva, Agnieszka Sowa and Iain Paterson

4.1 Highlights

- Public old-age pension expenditure has been increasing in recent decades. In 2002 it ranged from 1.6% to 11.4% for EU-15 and in 2001 from 5.4% to 8.5% in NMS-10. Similar trends can be observed for the overall pension expenditures in majority of the EU Member States.
- Population ageing will affect public finances significantly in the future as the post-war baby boom generation reaches retirement age over the next decades. There are differences across Member States as regards the timing and scale of the projected changes. Without counteracting measures population ageing would lead to an increase in public spending on pensions of between 3 and 7 percentage points of GDP in most EU Member States by 2050.
- Two factors have driven the development of time spent in retirement in the past: the general decline in the effective retirement age and increasing life expectancy. In the past the increase of time spent in retirement in EU-15 affected men to a significantly larger extent than women.
- Efforts of Member States to achieve financial sustainability of public pension systems has led to various reforms: the effective retirement age has increased, benefit levels have become more moderate, and the role of second pillar pension benefits has been strengthened.
- Overall reforms in many new Member States and Candidate Countries changed their pension systems into similar directions: defined contribution systems have been introduced, funded pension schemes have been promoted and measures to increase the effective retirement age have been established.

- Improvements in the health status of the elderly become visible in increased life expectancy. Mortality due to diseases of the circulatory system and ischaemic heart diseases declined significantly during the past 30 years. Health status and longevity are also improving in NMS-10 and Candidate Countries, however there does exist a significant gap vis-à-vis EU-15.
- Mortality of the elderly due to selected important diseases like cancer or ischaemic heart diseases, which has been declining in EU-15, is increasing in NMS-10 average or does not yet decline.
- The increase in health care costs in NMS-10 will be more determined by the increase in the share of the elderly population, as they are in a worse health status than the same age group in the EU-15. The impact of ageing on costs of health care may be stronger for long term care than for primary and hospital care.
- Total health expenditures as a percentage of GDP could increase by around one third by 2050 only due to the demographic change. About forty percent of the increase would come from increased expenditure on long-term care.
- Improving the health status of the elderly is essential to achieve the extension of the working life. Improvements with respect to several diseases which often lead to early retirement could be observed in the past. One of the areas where there is room for improvement seems to be mental health.
- An extension of working life most likely will increase the pressure on institutional or formal arrangements of care for the frail elderly.

4.2 Ageing and the pension systems in Europe

The end of the phase of the working life, retirement of an individual from the labour force, is usually accompanied by a pension entitlement, but this phase of life is also often characterised by a deteriorating health status, even disability. Many researchers (e.g. Atchley, 2000) find that views on retirement are rather positive and that the popularity of relatively early retirement is growing (Quadango and Hardy, 1996).

The age structure impacts on the "economic structure" of societies particularly with regard to the balance between economically active and non-active persons. Whereas economically active persons generally contribute to social security funds, economically non-active persons are mainly benefit recipients. As a result demographic changes influence the financing of such public expenditure related to the demographic structure by altering the balance between expenditure and income with respect to public budgets and social funds.

Old-age related expenditure includes mainly old-age pensions, but also programmes permitting early withdrawal from the labour market because of long-term unemployment, disability and early retirement, health care and long-term care for the elderly, family/child benefits and education (c.f. Thai Than Dang *et al.*, 2001, p. 7).

Between 40 and 60 per cent of total public spending is sensitive to the age structure of the population (ibid.).

Although increasing labour market participation, decreasing unemployment, and structural reforms in the field of pension systems with respect to eligibility, benefits etc. can reduce age driven pressure on costs, many public expenditure types and programmes will be affected by demographic shifts. The following section focuses mainly on old-age pension systems and related types of expenditure.

4.2.1. Trends in expenditure for public pension systems

The impact of ageing societies on old age pension expenditure

All the pension systems of the EU can be characterised by a strong public component (EPC, 2001, p. 15). Around half of the public pension systems provide a universal pension scheme, which is usually means-tested. Except for the Netherlands the systems are labour-market-based, covering workers in the private and public sector, and some of the self-employed. The financing of the public schemes is usually pay-as-you-go (PAYG). However, some schemes are fully or partially financed through transfers from the state budget.

Ageing affects the balance between economically active and non-active persons and thus the financing of public pension schemes. In many new Member States and Candidate Countries stability of these systems has been additionally influenced by phenomena that began in the first half of the 1990s. Labour market change during transformation from the centrally planned to the market economy influenced the working life of the population. Older people laid off from the companies undergoing restructuring preferred to be pensioners rather than unemployed and the generous social security system worked in favour of their outflow from the labour force at the relatively low age (see Chapter 3).

Recent development

Public old-age pension expenditure increased in recent decades. In 2002 it ranged from 1.6 to 11.4% for EU-15 and from 5.4 to 8.5% in NMS-10. Similar trends are observed for the overall pension expenditures, with some exceptions.

According to EUROSTAT[33] public spending on old-age pensions in EU-15 has increased from 8.6% of GDP in 1990 to 9.6% in 2002. The average for the enlarged European Union was almost the same (9.5% in 2001), but the numbers for the new Member States were lower. In 2002, Italy spent the highest amount (11.4% of GDP) on old-age pensions, followed by Germany (10.7%) and France (10.3%). Ireland was the country with the smallest share of GDP (1.6%) spent on old-age pensions. The share for the NMS-10 varies from 5.4% for Estonia to 8.5% for Poland (see Table 4.1).

[33] Some values, especially for the later years, are estimated or provisional.

For the EU-15 the average annual growth rate of old-age pensions expenditure, measured as a percentage of GDP, was 0.9% for the period 1990-2002. Portugal had the highest growth rate (+4.8%), however in this case the level of pension spending in relation to the GDP, as well as in relation to the population is comparatively low. The average annual growth rates above the EU-average were also for Italy (+1.5%), Austria (+1.5%), Denmark (+1.2%), UK (+1.2%), Greece (+1.2%), Finland (+1.0%) and Spain (+1.0%). For NMS-10 and Candidate Countries similar figures are not simply comparable, as they are strongly influenced by an initial decrease in GDP connected with the transition to the market economy.

Old-age pensions are the largest subset of all pension expenditures but other types of benefits (including partial pensions, disability pensions, early retirement benefits, survivors' pensions etcetera) has to be taken into account as well. In 2002 the expenditure for all kinds of EU-15 pensions amounted to 12.6% of their combined GDP. The comparative value for 1990 is 11.8%. In 2002, again Italy and Poland spent the highest share of GDP on public pensions (respectively 14.9% and 13.9%) and Ireland and Estonia the smallest share of GDP (respectively 3.6% and 6.3%) on public pensions (Table 4.2).

Although expenditure on public pensions -measured as a percentage of GDP- has increased for EU-15 at an average rate of +0.5% per year some Member States decreased expenditure on pensions relative to GDP: Ireland (-3.6%), Sweden (-1.5%),[34] the Netherlands (-1.0%), Luxembourg (-0.9%) and Belgium (-0.4%).

When total pension expenditure is measured in purchasing power parities (PPP) per inhabitant all EU-15 Member States have positive rates of change over the period of observation. This trend corresponds to an average annual growth of 4.6% for EU-15. Again the highest growth rates are registered for Portugal with +8.7% per year followed by the UK (+6.0%), Greece (5.6%) and Spain (5.5%). For NMS-10 available data for recent years show a decrease in PPP of pensions for Latvia and Estonia and an increase for other countries (Table 4.3).

Projections of future development

Population ageing in almost all EU Member States will begin to affect public finances significantly as the post-war baby boom generation reaches retirement age over the next decades (c.f. Thai Than Dang, 2001, p. 4). There are differences across Member States as regards the timing and scale of the projected changes.

The Economic Policy Committee analysis predicts, that in a no-change-to-policy-scenario population ageing will lead to an increase in public spending of between 3 and 7

[34] The growth rate for Sweden applies to the period from 1993 to 2002.

percentage points of GDP in most Member States by 2050 (EPC, 2003, p. 4).[35] Most of the projected increase in public spending in general will be on pensions, health care and long-term care whereas potential offsetting savings in terms of public spending on education and unemployment benefits are likely to be relatively small. In most countries, the budgetary impact of ageing starts as of 2010, and the largest increases are projected to take place (without any reform) between 2010 and 2030.

Public spending on pensions is projected to increase by between 3 and 5 percent GDP in the coming decades largely driven by the increase in the old-age dependency ratios (ibid.). The highest increase is projected for Greece with a total growth of expenditure for public pensions of 12.2 percentage points of GDP, followed by Spain with 7.9 percentage points. According to the projections made by the EPC only UK will be capable of decreasing public spending on pensions. Thus a reduction of 1.1 percentage points in relation to GDP is projected for the UK (see Figure 4.1 and Table 4.4).

Generally the major part of the increases will take place between 2010 and 2030 reaching a new peak around 2040 and falling somewhat thereafter.

According to a decomposition of the results four explanatory factors are crucial for the net increase in expenditure (c.f. EPC, 2001, p.14). These are the effects of population ageing, employment, eligibility and the benefit effect.

Demographic factors, in terms of increasing old-age dependency ratios, are the dominant force putting upward pressure on spending on pensions. This upward pressure is diminished by projected declines in the benefit ratio, corresponding to the average pension as a percentage of GDP per person employed. The fall in the benefit ratio reflects the effects of pensions reforms introduced in the 1990s, with the largest impact stemming from the change in the indexation of pension entitlements to inflation rather than wages (Table 4.5).

Based on simulations the EPC examined effects of certain types of reforms to pension systems. This encompassed the effects of 1) a reduction of indexation of benefits, 2) an increase of the activity rate by raising the effective retirement age and 3) an adjustment of benefits in line with the expected increase in life expectancy at retirement. In general the results (presented in details in Table 4.6) indicate that all assumed changes in the simulations had a major impact on expected pension expenditure although, as a rule, the individual reforms taken on their own would only partially absorb the expected increase in pension expenditure by 2050.

[35] This analysis covered only public pension schemes. A broad concept of pensions was used, covering not only spending on old-age, children's' and survivors' pensions, but also other income transfers to persons aged 55 and over, i.e. early retirement schemes, disability pensions and other income transfers to the elderly. The projections were based on current legislation and did not anticipate the impact of planned reforms.

Thai Than Dang *et al.* (2001) provide results on the financial impact of ageing populations similar to those of the EPC. This analysis covers all OECD-countries, including also three new EU Member States: the Czech Republic, Hungary and Poland. According to this analysis old-age pension spending will rise on average by around 3 to 4 percentage points of GDP in the period to 2050. Pension spending is projected to fall as a share of GDP over the period for the United Kingdom and remain broadly stable for Italy, partly reflecting recent reforms. In contrast, increases of more than 4 percentage points of GDP are projected for ten countries. Spending relative to GDP starts to rise quickly in the latter part of the current decade, but slowing down from around 2035-40, with declines in a few countries. Significant differences between the change to the peak and the change over the entire period are projected for Austria, Belgium, Denmark, Italy, Japan, the Netherlands, Sweden and the United Kingdom (Tables 4.7 and 4.8).

4.2.2. Trends in retirement age

In 2002 the typical official retirement age for men was 65. For women it lay between 58 years in Greece and 67 years in Denmark (see Figure 4.2 and Table 4.9). For most of the EU-15 Member States the effective retirement age for 2002 lies more or less beneath the official retirement age. This does not apply to Greece, which has the lowest official retirement ages (58 years for men and for women) but the effective retirement age lied above the official. Apart from Greece this is also the case for men in Portugal as well as for women in Ireland, Italy and the UK.

Although in recent years the effective retirement age increased for some countries (see Tables 4.10 and 4.11) the long-term general trend from 1980 to 2002 is decreasing.

With regard to men in 2002, Portugal, Denmark and Ireland are the countries with the highest effective retirement ages. Luxembourg, France and especially Belgium have the lowest. In Austria the effective retirement age decreased by 1.4 years between 1999 and 2002. Unfortunately, time series are incomplete for Austria. Overall the retirement ages decreased until the middle of the observation period and increased afterwards. On average the EU-15 retirement age for men increased from 61 years in 1997 to 61.4 years in 2002.

With regard to females in 2002, Ireland is the country with the highest effective retirement age. On average Irish women retired at 66.2 years in 2002. Again Belgium is the country with the lowest effective retirement age. On average women retired in EU-15 at 59 in 1998 and 60.5 years in 2002 (see Figure 4.3).

In contrast to the long-term trend, the 2001-2003 trend shows a rise in retirement age. According to EUROSTAT data the average exit age from the labour force for EU-15 increased by 1.0 year for men and by 1.1 years for women (see Chapter 3). However, the trend in the Netherlands, Austria, Portugal (for women), Poland, Slovakia and Finland is still decreasing.

The number of beneficiaries

The data referring to the number of beneficiaries is currently insufficient. Nonetheless EUROSTAT (2004, p. 6) has published at least some data on beneficiaries. At least for the year 2001 these data give an impression of the number of recipients of old-age pensions and the entire number of pensioners (Tables 4.12 and 4.13).

In EU-15 Italy is the country with the highest number of old-age pensioners per 1,000 inhabitants (210). With a population size of about 57 million this corresponds to about 12 million recipients of old-age pensions. The number of recipients is comparatively high also in France (198 recipients per 1,000 inhabitants), Sweden (189), Germany (187) and the UK (186). Greece is the country with the smallest number of recipients (140) per 1,000 inhabitants.

According to the total number of pension recipients (including partial pensions, disability pensions, early retirement benefits, survivors pensions), again Italy is the country with the highest number of beneficiaries (280 pensioners per 1,000 inhabitants). With respect to the comparatively high share of pension recipients in Luxembourg EUROSTAT points out that this result might be influenced by people who are not living in Luxembourg but nevertheless receive a pension because of entitlements acquired there.

GVG (2003) reports provide a general overview on the number of pension beneficiaries in NMS-10 and Candidate Countries. It turns out, that the main problem in those countries is the increasing number of beneficiaries in comparison to contributors to the pension system (system dependency ratio). In several countries e.g. in Lithuania, Romania or Poland the number of pensioners increased significantly in the second half of 1990s. In 2000 in Bulgaria the number of pensioners was for the first time higher than the number of insured persons (due to a decrease in the latter group).

4.2.3. Replacement rates in the public pension systems

Replacement rates are a method for assessing the social adequacy objective agreed at the Laeken European Council in 2001, which addresses the extent to which pension arrangements enable retirees to maintain their before retirement living standard to a reasonable degree. As there still is a lack of detailed empirical measures on actual data, the approach used is to calculate the benefits for a 'hypothetical' worker going into retirement.

OECD (2005) compares replacement rates in the mandatory pension programs for 'hypothetical' men earning respectively half, once or twice the average and retiring at 65 (see Table 4.14). The highest gross replacement rate for a relative low-earner exceeds 100% in Portugal and Luxembourg and the lowest is slightly less than 50% in Germany and the Slovak Republic. The mandatory system is strongly redistributive in the UK, Ireland, Denmark or the Czech Republic, which means that high earning people can expect lower replacement rates. In the reformed pension systems of NMS-10 the old-age benefits are the same regardless earnings level (net replacement rates differ due to the

redistributive character of the personal income taxation) but also in Greece, Italy or the Netherlands.

In another approach (only for EU-15) both statutory public (first pillar) and private occupational benefits (second pillar, where these exist) are taken into account.

The basic background stipulates that the 'hypothetical' retiree is covered by the most general pension scheme, has a career length of 40 years of full-time work, retires at age 65, has average earnings in the base case and the earnings have had a constant relation to average earnings throughout the career. Replacement rates are calculated at the moment of pension take-up by dividing the pension income during the first year of retirement by the income during the year preceding retirement. In addition to the base case further hypothetical cases are defined by a worker with a flat low earnings profile (2/3 of average earnings) and two cases of rising earnings: one starting at average earnings and rising to the double, the other with earnings rising from 80 to 120% of the average over a 40-year career.

As well as current retirement, calculations have been projected for hypothetical retirees in 2010, 2030 and 2050, in order to asses the change in outcomes of particular countries' pension systems, under the assumption that the current state of legislation/reforms is maintained. Also a '10-years indexed replacement rate' is calculated, i.e. the pension in the tenth year after take-up divided by earnings during the ninth year after retirement.

Gross replacement rates are gross earnings in the year before retirement divided by the sum of gross pension entitlements in the first year after retirement (from first, second or third pillars). Net replacement rates are gross earnings minus the retiree's contribution to pension schemes, other social insurance contributions, and taxes, plus means-tested benefits divided by the sum of similar net pension benefits.

The Indicators Sub-group of the EU Social Protection Committee issued a caveat about cross-country comparisons, due to inconsistencies in reporting. Nevertheless, we are presenting the results at this stage of gross replacement rates, broken down into pillars for countries (see Table 4.15, as reported for 2002, but 2003 for Denmark, Germany, France, Italy, Austria, Portugal and Sweden). It should be noted that pensions from private schemes are mandatory in three countries (Denmark, the Netherlands and Sweden), and voluntary in five further Member States (Belgium, Germany, Ireland, Italy and the UK).

In the Appendix a brief commentary follows concerning each EU-15 Member State, plus a brief, incomplete, overview of each system.[36]

[36] cf. OECD Policy Brief, March 2005.

Time spent in retirement

Since the mid 1980s the time spent in retirement is growing, up until 2002. Moreover, this growth is higher for men for almost all EU-15 Member States. However, if considering only the period 1995-2002, the increase in time spent in retirement is observed in the majority of the Member States, however with great gender variation.

These developments are influenced by two main interacting factors, i.e. the rise of the general life expectancy at retirement (see Figures 4.4 and 4.5) and the raising of the retirement age. In order to ensure the sustainability of pension systems and to reduce the tendency of shrinking labour market participation, policy measures towards increasing the official retirement age are in the process of implementation in the EU Member States. Such policies promote raising the average effective retirement age and reducing the time spent in retirement, respectively.

The repercussions of these reforms on the time spent in retirement as a whole and specifically for men and women differ across countries. With respect to the whole period 1986-2002 it seems that the reforms of the pension programs affect women to a greater extent than men. Considering only 1995-2002, the increase in the time spent in retirement is in some cases higher for women. This is most likely due to the smaller increase in the average effective retirement age for women than for men (see Figures 4.6 and 4.7).

However, because of lack of data and the short time period since the introduction of policy reforms, a stable clustering of countries with specific patterns regarding the time spent in retirement could not be identified.

The present section aims at highlighting the changes in time spent in retirement over time and by gender in the EU-15 Member States. As measure of the time spent in retirement a proxy is used — the life expectancy at the average effective retirement age in each EU-15 Member State.

The development of time spent in retirement is influenced by two main factors: first, by the growth in life expectancy at retirement for men and for women and secondly, by the increase in the average effective retirement age. The latter is a result of the introduction of policy measures towards increasing the official retirement age. The rise in the life expectancy at retirement prolongs the time spent in retirement, while the increase of the official retirement age is a policy measure introduced in the face of population ageing and to ensure the sustainability of the pension systems.

Life expectancy at 60 years grew in the period 1986-2002 and this trend is clearly observed for both men and women. The life expectancy of women is higher than that of men in each country (see Chapter 2 on Demography).

According to the OECD methodology the average effective age at retirement is derived from observed changes in participation rates (in the labour market) over a 5-year period for successive cohorts of workers (by 5-year age groups) aged 40 and over. The level of the average effective retirement age depends on the participation rate. It is influenced also by the official level of the age at retirement in the various countries (see Chapter 3).

A trend towards a slight decrease in the average effective retirement age is observed from 1986 to 1995 followed by a slight increase from 1996 to 2002. This trend is more pronounced for men than for women. The average effective retirement age for women fluctuates to a higher extent than for men. This is most likely related to the widening of the types of atypical and flexible employment, which are especially taken up by women.

The observed slight decline of the average effective retirement age is likely due to the shift in participation rates in employment. At the same time the slow increase after 1995 could be the result of the upward movement of the official retirement age.

In general, regarding the countries and gender differences during the whole observed period and without considering the fluctuations over time, the average effective retirement age is relatively high in Portugal, Ireland, Greece and Sweden for men and women, in Denmark for men and in Spain for women. In the period after 1995 it is relatively low in Belgium, Luxembourg, Italy and Finland for men and in Belgium, Italy and Luxembourg for women.

The above mentioned increasing trend in the average effective retirement age after 1995 is observed in the majority of the EU-15 Member States and, with some exceptions, for both men and women (see Figure 4.8). This increase, which results from the policy of raising the level of the official retirement age, targets a reduction in the time spent in retirement. These measures have, however, different repercussions on the extent and development of the time spent in retirement by men and by women.

Life expectancy at the average effective retirement age

Life expectancy at the average effective retirement age is used as a proxy for the time spent in retirement. A clear growing trend in this indicator is observed for men and women (although with some fluctuations) within the period from 1986 to 2002. This increase is, however, not as high as that for the general life expectancy at age 60, which is most likely due to the rise of the average effective retirement age after 1995.

The time men spent in retirement in the observed period is relatively high in Belgium, France and Italy. This is due to the relatively high general life expectancy at 60 years and the relatively low average effective retirement age in France and Italy. In Belgium, although life expectancy at 60 is at a medium level compared with other countries, the average effective retirement age is the lowest and this induces an increase in the time spent in retirement. In Ireland, Denmark and Portugal the time men spent in retirement in the observed period is relatively low, because of the comparatively lower life expectancy at age 60 and the higher average effective retirement age.

For women similar patterns are observed. The time spent in retirement is relatively high in Belgium, France and Italy, due to the fact that the general life expectancy at age 60 is relatively high in France and Italy while the average effective retirement age is low. In Belgium life expectancy at 60 is at a medium level, but the average effective retirement age is the lowest compared with other countries and this induces an increase in the time spent in retirement. In Ireland, Denmark, Portugal and Spain the time women spent in retirement is relatively low, because of the comparatively lower life expectancy at 60 and the higher average effective retirement age. This is observed in Spain and Denmark especially at the beginning of the period.

The average annual growth rate in the life expectancy at the average effective retirement age during the period 1986-2002 is higher for men than for women in the majority of the observed countries. This is likely due to the fact that the rise of the retirement age affects women to a larger extent, given the fact that at the same time the development of the general life expectancy at 60 follows similar trends for both genders. However, an exception to this trend is visible in Spain and Portugal, where the average annual increase of the time spent in retirement is higher for women than for men (see Figures 4.6 and 4.8).

Focusing on the period 1995-2002, the time spent in retirement shows an increase in the majority of the EU Member States both for men and women, while in some cases a decline is observed. Moreover, the average annual growth rate of the time spent in retirement is higher for men than for women in some countries, while it is lower in other. It is important to compare the patterns of the average annual increase/decline of the time spent in retirement with those of the average effective retirement age (see Figures 4.7 and 4.8). A lack of data for some years in some countries should also be taken into account.

There is a close correlation between the evolution of the effective retirement age and time spent in retirement: if the average effective retirement age increases much more for women than for men, the average annual growth in time spent in retirement is less for women than for men, or even a decline is observed for women. This trend is observed in Luxembourg, Denmark, Italy, Germany, Belgium and Greece.

Likewise, in countries where the average annual growth of the average effective retirement age is less for women than for men, or where even a higher decline for women than for men is observed, the average annual growth in the time spent in retirement rises to a greater extent for women than for men (Ireland, Portugal, Sweden and Spain and to some extent in France and Finland).

4.2.4. Pension reforms in NMS-10 and Candidate Countries and their expected impact on the length of working life

In the second half of the 1990s and beginning of the current decade many of the NMS-10 Member States introduced considerable changes in their pension design, usually

changing the philosophy of this part of social security. They did so at different points of time, according to political agendas and consensus building processes (see Scheme 4.1).

Some countries have diversified their pension schemes by improving and sometimes diminishing the PAYG component (1st pillar) and creating an obligatory privately-funded module with contributions invested in financial markets via pension funds (2nd pillar). Two countries have changed the mandatory public PAYG scheme (1st pillar) into a *defined contribution scheme* (Latvia and Poland but with various transition rules). Other 'reformers' did not shift the first public tier from defined benefit to defined contribution, and only added the funded pillar.

The countries that have reformed their pension systems are: Hungary (reformed system implemented in 1998), Latvia (2001), Poland (1999), Estonia (2002), Bulgaria (2002), Croatia (2002), Slovak Republic (2001), Lithuania (2004), and Romania (2005).

By now, the following countries do not have a mandatory 2nd pillar: Slovenia (obligatory only for certain professions), the Czech Republic, Malta, Turkey, and Cyprus (where it is mandatory only in the public sector). Slovenia, Malta and the Czech Republic have done only small 'parametric' changes.

The Czech Republic implemented incremental reforms, after which employment rates among older workers have been rising. The possibility for the unemployed to get two years of early retirement pension was removed and rules that allow invalidity pensions to be converted to unconditional early retirement pensions will be phased out. In Turkey, 1999 reforms have been effective to some extent, but a new reform has been proposed and legal acts discussed in the parliament. The government is committed under the IMF programme to enact a pension reform law in 2006.

The voluntary supplementary pension funds —where they exist— do not as yet play an important role for providing income in old age. In some countries (like Lithuania, Slovakia, Poland) these supplementary pension systems include certain tax incentives.

The described pension reforms in Eastern Europe made the PAYG system more transparent by introducing a closer link between contributions and pensions. This modification gives people a strong incentive to work longer by higher financial rewards to longer work. However, due to long transition periods, no one retired in the new system yet, so it is not possible to judge correctly, what will be its impact.

To avoid myopia and poverty in old age, minimum retirement ages have been introduced and in several countries they are being increased gradually (see Scheme 4.1). In many countries the standard retirement age is gradually raised to the same level both for men and women.

To counterbalance the options of earlier retirement, several countries introduced actuarial deductions for early retirement and bonuses for deferred retirement. There exist

temporarily reduced and permanently reduced early pensions in the Czech Republic and Estonia. In Estonia since 2002 a pension benefit raises by 0.9 per cent per each month of postponed retirement. A financial incentive to postpone retirement was introduced also in Latvia, Lithuania, Slovenia and Romania. However, the possibility to postpone retirement does not affect the real retirement age significantly yet.

In some Member States (for example the Czech Republic, Hungary, Poland) special rules exist for unemployed older workers. They can receive a benefit treated as a substitute of early retirement in many of the described countries.

To sum up, there is some evidence that the pension systems in NMS-10 and the Candidate Countries change into similar direction. Many of them replaced defined benefit systems with the defined contribution ones, introduced funded pension schemes (obligatory or voluntary), disincentives to early retirement and raised the standard retirement age. Reformed systems provide financial incentives for longer work, but we do not know much about individual future preferences for leisure which could also influence retirement behaviour.

Reforms discussed in the Member States that still have old-type PAYG social security schemes are generally in line with these already implemented in other countries of the described region. Another challenge is how to raise the age at retirement in certain professions or for women (Cyprus, Bulgaria or Poland). In Bulgaria, Lithuania or Poland farmers are still exempted from the reformed social security system, which is mentioned as a potential field of future reforms. In Malta and the Czech Republic the pension reform has been postponed. Discussion about the overall pension reform did not bring any results due to lack of political consensus. The second phase of the reform programme in Turkey foresees among others: the introduction of supplementary and voluntary private pension schemes, an increase in insurance coverage, and integration of three separate public pension systems.

4.3 Impacts of population ageing on health care systems

In virtually all of the former and most of the new Member States the ageing process is accompanied by improving living conditions and health status of citizens, including the elderly population. Health status improvement is reflected in decreasing mortality, especially mortality caused by circulatory system diseases. However, the health gap between the new Member States, Candidate Countries and the EU-15 is still wide.

In recent years, EU-15 Member States predominantly emphasised reforms to achieve sustainable financing of their health care systems, and recently started to increasingly emphasise quality of care issues. Challenges for the Candidate Countries include more public health actions, improvement of funding of health care systems, quality and accessibility of health care services. Health policy of transition countries within NMS-10

has been oriented towards these objectives for the past decades, and that overshadowed the analysis of effects of the demographic and epidemiological transformation.

The increase in health care costs in NMS-10 will be determined by the increase in the share of elderly population, being in worse health there than in EU-15. The health status of the elderly, although improving, is not satisfactory. In communist countries the elderly grew up in the period of late industrialisation and poor nutrition, which strongly influences the health outcomes. Next to demographic changes, the increasing health care costs are to a large extent driven by institutional factors, including accessibility to and level of utilisation of pharmaceuticals and the on-going process of health care system reforms. The impact of other than demographic factors on health care costs in EU-15, like medical-technical progress and its diffusion is confirmed by the OECD analysis (Bjornerud *et al.*, 2005). Such analyses indicate that the use of primary and hospital care depends on factors other than the phase of life, while long term care utilisation is strongly related to age. Thus, the impact of ageing on costs of health care may be stronger for long term care than for primary and hospital care.

4.3.1. Health situation in EU-15 and NMS-10

Trends in the health situation of the elderly

Recent improvements in the health status of the elderly are visible via the increasing life expectancy (see Chapter 2). More specifically, this improvement is reflected in declining mortality due to some (but not all of the) 'major killers' like diseases of the circulatory system or ischaemic heart diseases. Averaged over all EU-15 Member States, mortality due to those diseases fell to 51% and 57% of its 1975 level, respectively. Figures 4.9-4.14 display this trend via standardised death rates (SDR) for the population 65+. Almost all EU-15 Member States succeeded in improving mortality due to diseases of the circulatory system (except Greece). Even though mortality due to diseases of the circulatory system in NMS-10 also improved, mortality there is on average almost twice as high as in EU-15 (SDRs of 3300 and 1800, respectively).

Health status and longevity of the elderly in NMS-10 and the Candidate Countries is improving. This is not directly related to health care system improvements, but to changes in food and alcohol consumption, availability of drugs and promotion of healthier life styles. Self-assessed health status becomes worse with age, although strong cross-country variation in the share of elderly reporting poor health is observed.[37] Despite health status improvement, NMS-10 is still in the process of catching up with EU-15. Epidemiological research (Wojtyniak and Goryński, 2003) indicates that, despite rapid increases in the life expectancy of the elderly, their health status in NMS-10 and the Candidate Countries will not be as good as the health status of the elderly population in EU-15 for at least another two decades.

[37] In Slovakia only 26.5% of the 60+ population assesses its health status as 'poor' or 'very poor' while in Poland and Estonia the share is over 50%.

Mortality due to different circulatory system diseases is significantly higher in NMS-10 than in EU-15. However, in some countries (including Malta, Slovenia, Poland and the Czech Republic) the level of mortality caused by circulatory system diseases has decreased systematically since the 1990s. Only in Bulgaria and Romania the mortality caused by circulatory system diseases has not began to decrease. Most of the countries would need more than 30 years to reach the mortality levels due to circulatory system diseases of the current, average EU-15 level (Wojtyniak and Goryński, 2003).

With respect to mortality due to ischaemic heart diseases, on the other hand, we can distinguish two groups of countries: Sweden, Denmark, Finland, Ireland, UK and Austria started at a considerably high level, and succeeded in reducing this mortality remarkably. The Netherlands, starting from a medium level, even 'switched' into the low-mortality group, which otherwise mainly consists of Mediterranean countries. As NMS-10 on average did not improve, the gap between EU-15 and NMS-10 averages has been widening.

With respect to deaths due to cancer, the picture is less clear. Some countries like Finland and Austria started from relatively high levels during the 1970s, and are now among the countries with rather low cancer mortality. A second group of Member States (Portugal, Greece, Spain) started at favourable levels, but experienced an increase in cancer mortality. Some other countries do not show a uniform time trend throughout the time period presented.

On average, mortality caused by cancers in NMS-10 is slightly lower than in EU-15. This is mainly due to the low mortality levels in Bulgaria and Romania. However, the trend of mortality due to cancer is different. While in EU-15 mortality of the elderly is decreasing, it is rapidly increasing in NMS-10. This may be explained by a lack of adequate public health activities in these countries, including raising awareness on the incidence of cancers, lower access to medical services and prevention activities.

Mortality due to external causes is higher in NMS-10 than in EU-15. Only exception is the lower mortality related to mental disorders (suicides) and road accidents. However, these trends are not strongly marked among the elderly population. Mortality caused by injuries and poisoning among the elderly is on average close to EU-15 level (the SDR varies between 280 per 100,000 population in Hungary and 100 in Bulgaria). Similarly, mortality caused by suicides and self-inflicted injuries is stable at very low levels (SDR up to 50 per 100,000 population) (Figure 4.15). In Hungary, where mortality due to external causes was the highest, a decreasing trend is visible since 1990.

While data on mortality are available in a fairly standardised way for many countries, availability of data on morbidity is less frequent and less standardised. Most EU-15 countries participated in the European Community Household Panel (ECHP), a survey aiming at the production of comparable data on a series of topics including self-assessed health status. The health information contained in this survey has been analysed already

by a number of projects.[38] However, comparable panel data are not available for NMS-10. Studies in some of these countries allow only for partial analysis of self-assessed health status.

Based on ECHP[39] data for 11 EU Member States, the results from the AGIR project confirm that self-assessed health status becomes worse with age by a similar gradient across countries. But there are large differences in the health status for given ages among the countries. For most age groups, Denmark and Ireland report the best health status while Portugal, Italy and Spain report a much worse status. The proportion of participants with good or very good health varies substantially between the countries even among the young population and the differences widen with age.

As expected, ECHP evaluations show older people to suffer more often from disability than younger persons. But cross-country differences are somewhat smaller than in the case of the general health status. Nevertheless, the differences between countries are again large enough to raise reluctance in accepting them as genuine differences across countries. Among the population aged 55-59 the disability rate is less than 25% in Ireland and Greece while it is almost 40% in Germany and Portugal. Cross-country differences in severe disability are proportionally larger, especially among the elderly population. Here, France stands out for its high prevalence. Moreover, the country ranking by disability is widely different from that by the general health status. Even though a part of the cross-country differences at old ages may be due to differences in the proportion of the institutionalised population —institutionalised persons are not included in the ECHP— it is not yet clear why countries display such distinct levels of self-assessed health.[40]

[38] The results in this section are taken from Ahn *et al.* (2003), Chapter 5 and Chapter 6.

[39] The European Community Household Survey (ECHP) includes two questions regarding the health status. One is "How is your health in general?" with possible answers "very good", "good", "fair", "bad" and "very bad". The second question addresses chronic illness or disability by asking "Are you hampered in your daily activities by any chronic physical or mental health problem?" with possible answers "Yes, severely", "Yes, to some extent", and "No". The general health status question is based entirely on respondents' own perception. The question asked is not concrete in terms of reference time period or in the description of each category of the health status, therefore leaving large room for interpretation variability by interviewees.

[40] Ordered logit regressions for health status indicate that the calendar month of the interview cannot contribute to explain the observed cross-country differences in self-assessed health status. Larger national health surveys from Italy and Spain, countries which share similar cultural and demographic regimes and a similar language, also exhibit substantial differences in health status, see Ahn *et al.* (2003, p.33) for details.

Over the period 1994-2001 the average health status stayed almost at the same level.[41] This is especially true for the proportions in good health. On the other hand, the proportion in bad health among the population older than 54 years slightly decreased. The maximal change is observed for bad health in the age group 55-64 with a drop of 3 percentage points over the six-year period. For the age groups below 54 almost no change was observed.

The tentative conclusion is that there has been almost no change or, if at all, only a slight improvement for those aged 55 and over in health and disability status over the observed period.

As better educated younger generations replace older generations with lower levels of education, the health status of the population will improve in the future. The magnitude of the improvement will be related to differences in education levels between generations and differences in health status by education levels. Calculations based upon ECHP data show that the potential health improvement owing to educational composition is highest among the 55-64 age group and lowest among the 75-84 age group, irrespective of the country considered. But variation between countries is substantial. For example, the proportion of the population aged 55-64 in good health is expected to increase from 54% (1994) to 63% (2014) in Greece, from 60% to 63% in Belgium, and from 30% to 33% in Portugal. Analogous calculations show a decreasing proportion of the population with disabilities, with Ireland (1994: 26%, 2014: 23%) reaching the lowest level in the age group 55-64 and Portugal (1994: 42%, 2014: 40%) presenting the opposite extreme.

Institutional health care use in EU-15[42]

Long-term care-giving in institutions and professional care-giving at home is related to the oldest old. The prevalence rates (the share of long-term care recipients within the population of the same age) increase sharply from the age of 70 onwards. In the oldest age group (90+) the prevalence rates are between 20% for France and over 50% in the Netherlands. Of five countries with sufficient data available, the highest prevalence for people receiving long-term care in institutions is observed for the Netherlands and Belgium is second. People receiving professional long-term care at home are on average younger than institutionalised persons. Women have a higher probability of being in need of long-term care than men, mainly because of the higher proportion of widowed women in the oldest age groups. The prevalence rates show no clear time trend: in Denmark the prevalence rates decreased, while they increased in Belgium, Finland and Germany, especially among the oldest age groups.

[41] To disentangle shifts in the health status from demographic shifts, population weights (by country and age group) in 1995 were applied for all the 1994-2001 survey.

[42] Information for this Chapter is mainly from Schulz (2004), who had to restrict most of the analysis to Germany, Finland, Belgium, the Netherlands, and France due to data availability.

Improvements in life expectancy do not seem to be directly connected with long-term care-giving in institutions. This could be caused by political decisions. In most countries there are waiting lists for nursing homes and there is a de-institutionalisation strategy. Therefore, an improvement of life expectancy is only one of several factors that influence institutionalisation. The prevalence rates for long-term care-giving at home by professional caregivers are stable in most countries. This could be related to two contrary effects: the de-institutionalisation strategy, which prefers care-giving at home over care-giving in institutions, and improvements in life expectancy.

Data on both, institutional care and care-giving within the household or family, is by far less frequently available and often not very well comparable between countries.

Data on the supply of beds for long-term care in institutions are somewhat more readily available. Even though the delineation between inpatient acute and long-term care does not follow a common definition in all countries, apparently there is a trade-off between long-term and acute care beds (see Hofmarcher *et al.*, 2004). The Scandinavian countries have relatively few acute care beds and twice as many long-term care beds. Some new Member States, but also Austria and Belgium, have a high number of acute care beds and a markedly lower number of long-term care beds. In the "corporate" welfare state model of these countries the family has a greater importance than in the Nordic countries, where this role is largely taken by the state. Luxembourg and Germany are outliers in this pattern: these rich social security countries afford a comparably high number of beds, with especially Germany having a high number of acute care beds. We may expect the delineation between the two fields of care to remain to a certain extent quite blurred. Nevertheless, the allocation of resources between these fields seems inefficient in some countries.

Institutional health care use in NMS-10 and the Candidate Countries

Use of institutional care, especially hospitalisation, varies significantly between NMS-10 and the Candidate Countries and is strongly influenced not only by epidemiological factors and the population age structure, but also by reforms of the sector, availability of hospital services and care as well as incentives created by different payment mechanisms. Results of the analysis for several countries[43] indicate that ageing is an important factor for primary care utilisation; however, while controlling for demographic and health care system factors, it turns out not to be crucial to increase the utilisation of specialists and hospital care. Thus, hospital care costs in NMS-10 and the Candidate Countries are to lesser extent driven by age than by other factors, including health status, accessibility of hospital care and incentives created by the health care systems. An important driver of increasing health care costs is the growing pharmaceuticals utilisation.

[43] The impact of population ageing on medical services utilisation and demographically induced costs of health system are subject of the AHEAD Project implemented by the ENEPRI network (www.enepri.org) within the 6th Framework Programme. Analysis covers 5 new Member States and Candidate Countries.

In all the countries in this region long term care is not strongly institutionalised. Traditionally, spouses and families provide care, and not institutions, including hospitals, GP or social assistance. Only for the immediate period before death, patients may turn to a hospital or other institution. Thus, expenditures for long term care are very low (for example 0.1% of GDP in 2002 in Hungary). Therefore, it is foreseen that long term care costs in NMS-10 and the Candidate Countries will not grow as strongly as hospital and primary care costs.

Demographically induced costs of health care

Using a common methodology and time-invariant expenditure age-profiles, projections on future public expenditures for acute health care and long-term care in 14 EU Member States were carried out in 2001.[44] The project covered the likely impact of demographic changes on health expenditure, but by and large did not account for likely future changes in the provision of health care and long-term care or medical-technological changes.

Throughout the EU expenditures for health care and long-term care are rising as a consequence of population ageing, reaching on average a value of 6.6% of GDP in 2050 (Table 4.16). Ireland, France, and Germany will have the highest expenditure rates for acute health care, amounting to more than 7.0% of GDP. Note however that these countries top the ranking already in 2000. In the 2000 bottom end countries (United Kingdom, Finland and the Netherlands) the expenditure increase is below average, leading to acute care expenditure of less than 6% of GDP and roughly 8%, if also long-term care is included. From 2000 to 2050 the growth of public expenditure for acute care in the EU ranges from 0.7% (Denmark) to 2.3% (Ireland) of GDP with an EU-average of 2.2%.

The consequences of demographically caused changes on public expenditure for long-term care lead to an increase of 0.2% (Ireland) to 2.2% (the Netherlands) of GDP. High-expenditure countries also experience the highest future increase, and vice versa expenditures rise least in low-expenditure countries (Table 4.17).

When it comes to public health care expenditure on long-term care in 2000, the Member States can generally be divided into two groups: On the one hand those countries that spend less than one percent of GDP for long-term care (like Austria, Belgium, France, Ireland and Italy) and, on the other hand, the countries that traditionally provide a lot for care to the elderly, like Sweden and Denmark as well as the Netherlands, with expenditure rates of 2.5% to 3.0% of GDP. With 1.6% and 1.7% of GDP, respectively, Finland and the United Kingdom are exceptions to this dichotomy, ranking somewhere in the middle. According to the forecasts, the level of expenditure on long-term care in 2050 will amount to 0.9% of GDP in Ireland and 5.1% of GDP in Denmark.

[44] For definitions of the public expenditure referred to see the EU paper EPC/ECFIN/630-EN-final, October 2001. Due to different limitations variation in the levels is only partly comparable.

Up to date, population ageing driven comparative projections of the health care level expenditures in NMS-10 and Candidate Countries have not been performed. However, based on simple relations between increases in medical services utilisation at older ages and the increasing share of the elderly in the population, basic projections are prepared within the AHEAD project. At the current stage only results for Poland are available, indicating trends of expenditure increases in other countries of the region. Projections cover public insurance expenditures on in-patient and out-patient care and forecast trends that countries of the region will face in the next decades. Poland is the largest country of the region, with 38 million inhabitants and a dynamically ageing process. The results show rapid expenditure increases after 2007 and high public health insurance system deficits (Figure 4.16).

Health care expenditures are not high priority expenditures in the CEE, what leads to low levels of funding. Generally, the level of health care funding in the NMS-10 and the Candidate Countries is more than 2 percent points of GDP lower than on average in EU-15, with dominance of public expenditures. Only in Malta and Slovenia the level of health care funding is close to the EU-15 average. Mediterranean countries (Cyprus, Malta and Turkey) strongly differ from the transition countries in Central and Eastern Europe in terms of mechanisms of health care funding. Firstly, the level of private provision of care is significantly higher. Secondly, public care tends to be funded from general taxation. Only in Cyprus the introduction of a national health insurance is planned in the near future (2006). Transition countries within NMS-10 and the Candidate Countries have undergone reforms in the 1990s shifting from state funded systems to contribution based systems (see Scheme 4.2.). Successful implementation of reforms, sustainable insurance budgets, better administration of the health care system, and creation of new purchaser institutions was the main priority of the health care systems in these countries. Other activities of governments and health ministries target towards improving the health status of the population, mainly by introducing public health activities at the central and local level. Health promotion and prevention, leading to further health status improvement, may have a positive impact on the demand side of health care systems by extending working life and the amount of health insurance contributions paid.

Health care systems and the extension of working life

If (early) retirement is to be reduced in order to extend the average working life, the question of the interrelationship between (early) retirement and health status arises. To our knowledge, no study comparing experiences in several EU Member States exists today. But a number of academic studies cover this topic using data from single EU countries.

Using data from a Dutch survey on the period 1993-1995, Kerkhofs *et al.* (1999) provide evidence that health and retirement are endogenously related. Health matters but the size of the health effect crucially depends on the health measure used. They find that subjective health measures overstate the effect of health on retirement and that endogeneity of health suppresses the health effect. Incentive effects of the pension

system are relatively insensitive to alternative specifications for health. The Dutch study can distinguish different routes into retirement and finds variation in the relative importance of health and financial effects. While financial incentives are the most important when applying for early retirement, health is dominant in explaining transitions into disability insurance and retirement via unemployment insurance.

The seminal article by Bound *et al*. (1999) analyses the dynamic relationship between health and alternative labour force transitions. The evidence suggests that not just poor health, but health declines help explain retirement behaviour.

Disney *et al*. (2003) find the deterioration in individual health to be strongly positively associated with moving out of work. Sensitivity analyses, however, raise doubts whether the respective effects of health deterioration and improvement on the transition to and from 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 there does exist a connection between poor or deteriorating health and (early) transitions into retirement. Estimates 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. Even though data from the ECHP cannot confirm overall improvements in health status, partly because of the short time span of the data coverage, we have some indications for improvements in health, also among the elderly. Some recent evidence points to maximal changes towards bad health in the age group 55-64, i.e. a decreasing share of bad health (Ahn *et al*., 2003). A rising share of elderly persons with higher levels of education should also contribute to improving health status. There is no reason to believe that such improvements will come to a halt in the near future. The thus expected health gains among the elderly should help to enable strategies which prolong working careers and reduce early health-related retirement.

With respect to several diseases like muscosceletal diseases which often are leading to early retirement, we observe declines in the number of early retirement. Perhaps those effects are at least partly due to programs promoting healthy workplaces. But one of the areas where much work still remains to be done seems to be mental health. The occurrence of mental health problems in the European population displays a clear age pattern, with the age group 65+ years showing the highest prevalence (27.2%) (EORG 2003). Furthermore, we have evidence that in some countries disability pensions are quite often awarded for mental ill health (for example 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 was 40% (Prinz, 2003). Even though the rising (measured) prevalence of mental illness cannot be taken at face value —awareness for mental health is rising, the stigma-effect is slowly being reduced— measures to improve the mental health situation in the workforce might contribute significantly to an extension of the working life.

While most of this Chapter is devoted to the issue of improving health as a means to shift retirement into higher age, we must be aware that we face also opposite effects. Informal care by —mostly female— family members is still the predominant form of care in many EU Member States, and even more so in countries with some kind of Bismarckian health care system 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.

4.4 Discussion

Population ageing has a significant impact on the public provision of social security services. This Chapter monitors developments in the social protection systems, their costs, adequacy in providing income for the old age and their impact on prolonging individual working life. Additionally, the possible impact of demographic processes on social protection systems, mainly European pension systems and health care systems, is discussed.

The marked increase in the old-age dependency ratio constitutes a fundamental challenge for the public pension systems within the European Union. Evidence for past developments points to rather unfavourable trends that have aggravated the problem for public pension schemes in Europe. Within the past twenty years time spent in retirement has increased significantly, which is partly explained by increasing life expectancy. However, reductions in the effective retirement age have also played their role in extending the time spent in retirement. The lengthening of time spent in retirement arises as a new problem within the context of the demographic change in Europe. It is related to population ageing and the needs of new policies within the pension programmes in the EU Member States. Moreover, gender differences in time spent in retirement reveal the need for specific policy measures for women in old age.

Only in recent years Member States took action to reverse the trend towards early retirement. Various measures were introduced in order to extend working life. First positive results of the reforms have become visible — in many countries the long term trend towards early retirement came to a halt. If Member States succeed in increasing the time span citizens remain active at the labour market it will be possible to provide for adequate public pensions in the Union.

However, pension reforms are only one measure to apply. At the beginning of the 20th century, terminating work was connected mainly with health status — workers could not work, even if they wanted to. Today, there exist wider possibilities of choosing the age of

leaving the labour force without the risk of a too large income deterioration. Additionally, next to health issues or economic incentives provided by the pension system, also cultural or family factors can be important for choosing a low retirement age,[45] making this an interesting field for further research.

Population is ageing all over the EU. The share of the elderly population increases constantly. Even though the overall health situation of the elderly is improving in NMS-10 as well as in EU-15, we must expect that a health gap favouring citizens in EU-15 countries will be prevailing in the near future. Even more worrisome is the observation that elderly mortality due to selected important diseases like cancer or ischaemic heart diseases, declining in EU-15, is increasing in NMS-10 or does not yet decline there.

Currently, the share of GDP that NMS-10 countries spend on health is approximately two thirds of the respective share in EU-15 countries, with a comparable share of public expenditure in total expenditure on health. Measured as expenditure per capita, the difference in spending is even larger. This difference in funding is especially problematic when we consider funding for health goods or services traded at international prices.

Projections for future public expenditure on health predict an increase of the GDP share spent on health by more than 2 percentage points in EU-15 due to population ageing. Expenditures for long-term care are likely to contribute more than proportionately to this increase. As it is not yet clear which impact price changes, medical-technical progress and technology diffusion will have on health care expenditure, such projection results however have to be interpreted with caution.

[45] Gustman *et al.* (1994) underlined also the spouse's activity, as well as consumption and saving patterns of the society an individual belongs to.

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Table 4.1. Old-age pension expenditure as a percentage of GDP, 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
EU 15	*8.6*	*8.7*	*9.1*	*9.5*	*9.5*	*9.5*	*9.6*	*9.6*	*9.5*	*9.5*	*9.6*	*9.6*	*9.6*
EU25											*9.5*	*9.5*	
Italy	9.5	9.7	10.4	10.8	10.8	10.6	10.7	11.2	11.1	11.3	11.1	11.2	11.4
Germany	9.7	9.3	9.5	9.8	9.9	10.1	10.2	10.2	10.2	10.3	10.3	10.5	10.7
France	9.3	9.5	9.8	10.3	10.4	10.5	10.7	10.7	10.6	10.7	10.5	10.5	10.3
United Kingdom	8.2	8.8	9.3	9.5	9.3	9.2	9.3	9.4	9.1	9.3	9.9	9.6	9.5
Austria	7.8	7.9	8.0	8.7	8.7	8.7	8.7	8.8	8.7	8.7	8.7	9.1	9.3
Sweden				10.1	9.8	9.4	9.5	9.4	9.3	9.0	8.7	8.7	8.9
Greece	7.3	6.8	6.8	7.1	7.2	7.4	7.6	7.7	8.3	8.3	8.1	8.6	8.4
Netherlands	8.2	8.1	8.3	8.4	8.0	7.7	7.9	7.8	7.9	8.0	8.0	8.0	8.1
Portugal	4.5	4.9	5.3	5.8	5.9	6.5	6.7	6.6	6.7	7.0	7.3	7.7	7.9
Spain	6.6	6.8	7.1	7.6	7.6	7.6	7.8	7.7	7.6	7.5	7.6	7.5	7.4
Belgium	7.0	7.3	7.5	8.0	7.9	7.5	7.6	7.5	7.5	7.4	7.2	7.3	7.3
Denmark	6.0	6.1	6.1	6.3	7.4	7.3	7.1	6.9	6.9	6.8	6.7	6.8	6.9
Finland	6.0	6.9	7.7	7.9	7.7	7.4	7.4	7.0	6.6	6.7	6.4	6.6	6.8
Luxembourg	8.1	8.7	8.8	8.8	8.8	9.0	8.9	8.5	7.9	7.6	7.0	4.2	4.4
Ireland	3.1	3.1	3.1	3.0	2.8	2.5	2.2	2.0	1.9	1.8	1.7	1.7	1.6
Czech Republic						6.1	6.3	7.0	6.8	6.9	6.7	6.6	6.6
Cyprus*						4.2	4.5	4.7	4.7	4.8			
Estonia											5.9	5.4	
Latvia											7.8	7.0	
Lithuania											6.7	6.2	
Hungary										7.0	6.7	6.7	6.8
Malta										5.7	5.5	6.1	6.1
Poland											7.9	8.5	
Slovenia							7.4	7.5	7.7	7.3	7.6	7.6	7.8
Slovakia						6.1	6.1	6.1	6.2	6.2	6.2	6.3	6.4

Source: EUROSTAT, * for Cyprus GVG (2003).

Table 4.2. Total pension expenditure as a percentage of GDP, 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
EU 15	*11.8*	*12.0*	*12.4*	*12.9*	*12.9*	*12.8*	*12.9*	*12.9*	*12.7*	*12.7*	*12.6*	*12.6*	*12.6*
EU25											*12.6*	*12.5*	
Italy	13.4	13.6	14.5	14.9	15.0	14.5	14.8	15.3	14.8	15.1	14.7	14.7	14.9
Austria	13.2	13.3	13.3	14.1	14.1	14.3	14.4	14.5	14.4	14.4	14.2	14.5	14.6
Germany	12.0	11.7	12.0	12.5	12.6	12.8	12.9	13.0	12.9	13.0	13.1	13.2	13.4
France	12.5	12.7	12.9	13.4	13.4	13.5	13.7	13.7	13.5	13.5	13.2	13.2	13.2
Netherlands	14.7	14.7	15.0	15.0	14.4	14.1	14.0	13.7	13.1	13.2	13.0	12.9	13.1
Greece	11.9	11.1	10.8	11.3	11.1	11.2	11.7	11.7	12.4	12.6	12.5	13.2	13.0
Sweden				13.8	13.5	12.8	12.8	12.5	12.3	12.1	11.7	11.7	12.0
Portugal	7.7	8.2	8.7	9.6	9.9	10.2	10.4	10.4	10.6	10.7	11.1	11.5	11.9
United Kingdom	10.2	11.2	11.9	12.2	12.0	11.9	11.9	12.0	11.5	11.6	12.3	11.8	11.7
Belgium	11.8	12.2	12.3	13.0	12.8	12.1	12.1	11.8	11.7	11.5	11.1	11.3	11.2
Finland	10.4	12.0	13.3	13.8	13.4	12.8	12.7	12.0	11.2	11.3	10.7	10.9	11.2
Denmark	9.6	9.7	9.8	10.1	11.5	11.5	11.5	11.2	11.1	10.9	10.6	10.7	10.8
Luxembourg	11.8	12.6	12.5	12.5	12.3	12.7	12.5	12.0	11.1	10.7	9.7	10.1	10.6
Spain	9.2	9.4	9.8	10.3	10.4	10.3	10.5	10.3	10.1	9.9	10.0	9.7	9.7
Ireland	5.6	5.8	5.8	5.6	5.4	5.1	4.7	4.3	4.1	3.8	3.7	3.7	3.6
Czech Republic						7.3	7.6	8.5	8.5	8.8	8.8	8.7	8.9
Estonia											6.9	6.3	
Latvia											9.6	8.6	
Lithuania											7.9	7.3	
Hungary										9.1	8.7	8.9	9.1
Malta										8.4	8.1	8.9	9.0
Poland											13.0	13.9	
Slovenia							11.4	11.3	11.3	11.4	11.5	11.6	11.8
Slovakia						7.4	7.3	7.3	7.4	7.5	7.5	7.5	7.5

Source: EUROSTAT

Table 4.3. Total pension expenditure in PPPs per inhabitant 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
EU 15	*1779.7*	*1885.0*	*2029.2*	*2100.0*	*2193.8*	*2262.3*	*2392.9*	*2509.5*	*2568.6*	*2697.2*	*2857.8*	*2931.9*	*3045.9*
EU25											*2477.6*	*2557.4*	
Luxembourg	2629.1	3157.2	3249.6	3354.5	3449.8	3617.2	3733.8	3916.5	3966.3	4312.3	4390.9	4589.1	4898.2
Austria	2262.7	2451.3	2562.7	2715.1	2839.4	2951.9	3141.4	3234.9	3331.1	3544.0	3758.0	3834.1	3941.7
Italy	2074.2	2243.8	2469.4	2538.7	2653.6	2676.9	2847.2	3047.0	3103.1	3285.4	3375.6	3434.2	3588.8
Netherlands	2336.2	2495.4	2628.1	2659.6	2650.3	2704.6	2831.7	2928.4	2942.1	3100.2	3263.6	3412.8	3504.7
France	1978.3	2110.6	2240.4	2302.2	2393.0	2483.0	2624.9	2768.0	2866.6	2990.4	3110.8	3234.2	3321.6
Germany	2076.8	2008.3	2165.1	2228.6	2337.0	2442.2	2561.7	2649.5	2729.6	2851.0	3019.8	3091.8	3213.6
Sweden				2342.2	2419.3	2418.4	2520.8	2576.1	2613.6	2791.2	2884.8	2906.1	3022.8
United Kingdom	1479.4	1671.5	1824.9	1926.0	2018.6	2078.9	2204.5	2380.8	2370.7	2496.8	2831.3	2848.4	2976.5
Denmark	1559.1	1676.1	1743.8	1810.6	2206.0	2283.8	2422.8	2483.5	2549.7	2688.0	2775.9	2882.3	2930.0
Belgium	1752.6	2084.0	2181.3	2300.1	2364.6	2324.9	2412.8	2454.1	2506.4	2575.2	2683.7	2811.8	2866.3
Finland	1666.3	1881.9	2060.0	2111.3	2168.3	2162.4	2263.4	2354.3	2356.7	2442.8	2527.9	2657.1	2753.5
Greece	1193.1	1194.2	1201.8	1233.5	1257.6	1311.8	1430.5	1531.4	1691.4	1817.4	1924.9	2148.3	2295.1
Portugal	739.2	859.7	952.2	1033.7	1097.5	1188.5	1279.2	1366.0	1475.6	1595.3	1768.1	1884.9	2016.4
Spain	1053.3	1159.2	1250.1	1308.4	1371.7	1442.1	1547.0	1603.8	1668.7	1757.2	1881.6	1912.5	2007.3
Ireland	645.6	706.3	743.4	746.9	777.3	804.1	818.0	862.7	883.3	900.4	956.7	1024.5	1094.3
Czech Republic						819.6	922.4	1049.6	1056.7	1119.4	1172.1	1231.5	1327.0
Estonia											594.3	575.6	
Latvia											704.6	688.8	
Lithuania											626.3	638.1	
Hungary										925.9	955.8	1069.9	1172.4
Malta										1292.0	1330.0	1422.5	1462.1
Poland											1224.3	1349.3	
Slovenia							1329.7	1426.4	1505.1	1630.2	1741.4	1851.4	1970.7
Slovakia						523.0	570.0	609.1	657.6	687.6	743.4	781.3	847.0

Source: EUROSTAT

Table 4.4. Projections for spending on public pension as a share of GDP (current policy scenario 2000-2050)

	2000	2005	2010	2020	2030	2040	2050	Change 2000-50
EL	12.6	12.4	12.6	15.4	19.6	23.8	24.8	12.2
E	9.4	8.8	8.9	9.9	12.6	16.0	17.3	7.9
NL	7.9	8.3	9.1	11.1	13.1	14.1	13.6	5.7
D	11.8	11.4	11.2	12.6	15.5	16.6	16.9	5.0
FIN	11.3	10.9	11.6	12.9	14.9	16.0	15.9	4.7
IRL	4.6	4.5	5.0	6.7	7.6	8.3	9.0	4.4
P	9.8	10.9	11.8	13.1	13.6	13.8	13.2	3.4
B	10.0	9.5	9.9	11.4	13.3	13.7	13.3	3.3
DK	10.5	11.3	12.5	13.8	14.5	14.0	13.3	2.9
EU 15	*10.7*	*10.5*	*10.8*	*12.0*	*13.6*	*14.2*	*13.6**	*2.9**
A	14.5	14.5	14.9	16.0	18.1	18.3	17.0	2.5
L	7.4	7.4	7.5	8.2	9.2	9.5	9.3	1.9
S	9.0	9.2	9.6	10.7	11.4	11.4	10.7	1.7
I	13.8	13.8	13.9	14.8	15.7	15.7	14.1	0.3
UK	5.5	5.3	5.1	4.9	5.2	5.0	4.4	-1.1
F	12.1	12.2	13.1	15.0	16.0	15.8		

Source: EPC (2001), IHS * without France

Table 4.5. Decomposing pension spending as a percentage of GDP between 2000 and 2050

	Depen-dency	Employ-ment	Eligibility	Benefit	Total	Residual
BE	5.2	-0.9	0.9	-2.0	3.3	0.0
DK	4.1	-0.2	0.5	-1.7	2.7	0.1
DE	6.2	-0.7	2.0	-2.7	4.8	0.2
EL	9.9	-3.6	1.4	4.0	11.7	0.5
ES	8.2	-2.4	2.0	-0.3	7.5	0.5
FR	7.7	-0.9	0.7	-3.6	3.9	-0.1
IE	4.5	-0.9	1.4	-0.7	4.3	0.1
IT	9.5	-3.1	-1.4	-4.9	0.2	0.0
LU	NA	NA	NA	NA	NA	NA
NL	5.4	-0.6	0.5	0.2	5.5	0.2
AT	10.5	-2.2	-3.0	-2.9	2.4	0.1
PT	6.7	-1.1	-2.4	0.1	3.3	0.1
FI	6.6	-0.1	-1.3	-0.1	5.0	-0.3
SE	3.9	-0.5	0.8	-2.6	1.7	0.0
UK	2.4	0.0	-0.1	-3.4	-1.0	-0.1
EU	6.4	-1.1	0.6	-2.8	3.1	-0.2

Notes:
- Dependency ratio is population aged 55+ as % of population aged 15 to 64
- Employment (inverse) ratio is population aged 15-64 as % of persons employed
- Benefit ratio is average pension as % of GDP per person employed
- Eligibility ratio is number of pension beneficiaries as % of persons aged 55+

Source: EPC (2001).

Table 4.6. Illustrative simulations (EPC) on the impact of certain parametric reforms

	Increase in pension expenditure as a share of GDP from 2000 to 2050 (baseline projection) (1)	Illustrative impact of certain parametric reforms as a share of GDP in 2050 (2)		
		Half a percentage point change in the indexation of pensions	Raising the effective retirement age by one year	Reducing benefits in line with increase in life expectancy
Flat-rate systems				
DK	2.8%	2.7	-1.0	-1.7
IRL	4.4%	1.6	-0.4	-
NL	5.7%	2.7	-1.1	-
UK	0.0%	0.6	-0.2	-0.5
Earnings-related systems				
A	2.5%	1.0	-	-
B	3.3%	0.5	-	-
FIN	4.6%	0.9	-0.6	-1.5
F	3.7%	-	-0.9	-
D	5.0%	-	-0.7	-1.6
I	0.3%	1.2	-0.1	-0.4
P	3.4%	2.0	-0.3	-1.9
E	7.9%	1.9	-	-
S	1.7%	-	-0.3	1.1

Notes:

(1) See EPC (2001). For several countries the peak change from 2000-2050 will occur before 2050 and exceed the 2050 figure: DK: 4.1%; IRL: 4.4%; NL: 6.2%; UK: -1.1%; A: 4.2%; B: 3.7%; FIN: 4.7%; IT: 2.1%; PT: 4.1%; ES: 7.9%. The present figures do not take account of future changes in tax revenue. For some countries the second tier is quite well developed. Taxes on future pension benefits (which are drawn from the private funds) are expected to be quite high and may to some extent counterbalance the rise in public pension expenditure. As noted in the original report, higher levels of inward migration could offset the projected decline of the total and working age opulations projected, but would have to reach levels far above those experienced in the past to have a significant impact on the pressure for increased spending on public pensions. The baseline projections for age related public expenditures of Spain are based on national population data of 1995 (Eurostat data of 1999). Upcoming revisions may lead to improved results.

(2) The calculation used: % deviation of GDP in 2050 from the baseline divided by the baseline in 2050 in % of GDP. Luxembourg and Greece did not participate in the exercise. For most Member States, these projections include the major public pension schemes. Note that the coverage is not fully comparable across countries.
For the first simulation, some countries raised their indexation, while others lowered it. For the second simulation, some countries allowed the pension level to increase following an increase in the number of contribution years and higher ransformation coefficients under the contribution-based system. The third simulation estimates the impact of increased lifetime expectancy on pension expenditure (as Sweden has a notional definedcontribution system which takes into account changes in life expectancy, it was asked to undertake a projection where increases in life expectancy are not taken into account).

Source: EPC (2002)

Table 4.7. Age-related spending - OECD

	Total age-related spending Panel A			Old-age pension Panel B			"Early retirement" programmes Panel C			Health care and long-term care Panel D			Child / Family benefits and eduoation Panel E		
	level 2000	change 2000-peak[a]	change 2000-50	level 2000	change 2000-peak[b]	change 2000-50	level 2000	change 2000-peak[c]	change 2000-50	level 2000	change 2000-peak[d]	change 2000-50	level 2000	change 2000-peak[e]	change 2000-50
Australia	16.7	5.6	5.6	3.0	1.6	1.6	0.9	0.2	0.2	6.8	6.2	6.2	6.1	0.0	-2.3
Austria[f]	10.4	4.6	2.3	9.5	4.3	2.2	..	..	..	..	..	..	..	..	..
Belgium	22.1	5.4	5.2	8.8	3.7	3.3	1.1	0.1	0.1	6.2	3.0	3.0	6.0	0.0	-1.3
Canada	17.9	8.7	8.7	5.1	5.8	5.8	..	..	..	6.3	4.2	4.2	6.4	0.0	-1.3
Czech Republic	23.1	6.9	6.9	7.8	6.8	6.8	1.8	-0.7	-0.7	7.5	2.0	2.0	6.0	..	-1.2
Denmark[g]	29.3	7.3	5.7	6.1	3.6	2.7	4.0	0.8	0.2	6.6	2.7	2.7	6.3	0.3	0.0
Finland	19.4	8.5	8.5	8.1	4.8	4.8	3.1	-0.1	-0.1	8.1	3.8	3.8	..	..	..
France[h]	..	..	..	12.1	4.0	3.8	..	..	..	..	..	..	..	..	..
Germany	..	..	..	11.8	5.0	5.0	..	..	..	..	..	..	..	..	..
Hungary[i]	7.1	1.6	1.6	6.0	1.2	1.2	1.2	0.3	0.3	..	..	..	..	..	..
Italy	..	..	..	14.2	1.7	-0.3	..	..	..	..	..	..	..	..	..
Japan	13.7	3.0	3.0	7.9	1.0	0.6	..	..	..	5.8	2.4	2.4	..	..	..
Korea	3.1	8.5	8.5	2.1	6.0	6.0	0.3	0.0	0.0	0.7	0.8	0.5	..	..	..
Netherlands[j]	19.1	10.1	9.9	5.2	5.3	4.8	1.2	0.4	0.4	7.2	4.8	4.8	5.4	0.1	0.0
New Zealand	16.7	8.4	8.4	4.8	5.7	5.7	..	..	..	6.7	4.0	4.0	7.2	0.0	-1.3
Norway	17.9	13.7	13.4	4.9	8.2	8.0	2.4	1.6	1.6	5.2	3.5	3.2	5.5	0.5	0.5
Poland[f]	12.2	-2.6	-2.6	10.8	-2.5	-2.5	1.4	0.2	-0.1	..	..	..	..	..	..
Spain	..	..	..	9.4	8.0	8.0	..	..	..	..	..	..	..	..	..
Sweden	29.0	3.4	3.2	9.2	2.2	1.6	1.9	-0.2	-0.4	8.1	3.2	3.2	9.8	0.0	-1.2
United Kingdom	15.6	0.8	0.2	4.3	0.0	-0.7	..	..	..	5.6	1.8	1.7	5.7	0.0	-0.9
United States	11.2	5.5	5.5	4.4	1.8	1.8	0.2	0.3	0.3	2.6	4.4	4.4	3.9	0.0	-1.0
Average of countries above[k]	**16.9**	**5.9**	**5.5**	**7.4**	**3.8**	**3.4**	**1.6**	**0.3**	**0.2**	**6.0**	**3.3**	**3.3**	**6.2**	**..**	**-0.9**
Average of countries which provide all or nearly all spending components	**18.7**	**7.2**	**6.9**												
Portugal[l]	*15.6*	*0.6*	*4.3*	*8.0*	*4.5*	*4.5*	*2.5*	*0.4*	*-0.4*	..		..	..		..

a) The peak values are in 2050 except for Denmark (2030), Sweden and the United Kingdom (2035), and Belgium, Norway, the Netherlands and Korea (2040).
b) The peak values are in 2050 except for Japan (2015), the United Kingdom and Italy (2030), the United States, Sweden, Austria, Denmark and France (2035), and the Netherlands, Norway and Belgium (2040).
c) The peak values are in 2050 except for Belgium and Denmark (2025), Finland (2010), the Netherlands (2020), Poland (2035) and Sweden (2005). For Czech Republic the highest level is in 2000.
d) The peak values are in 2050 except for Denmark and Korea (2035), Norway and the United Kingdom (2040).
e) 0.0 indicates the highest level is in 2000. The peak values are in 2035 for Denmark and in 2040 for Norway and the Netherlands.
f) Total pension spending includes other age-related spending which does not fall within the difinition in Panels B to E. This represents 0.9 per cent of GDP in 2000 and rises by 0.1 percentage point in the period to 2050.
g) Total includes other age-related spending not classifyable under the other headings. This represents 6.3 per cent of GDP in 2000 and increases by 0.2 percentage points from 2000 to 2050.
h) For France, the latest available year is 2040.
i) Total includes old-age pension spending and "early retirement" programmes only.
j) "Early retirement" programmes only include spending on persons 55+.
k) OECD average excludes countries where information is not available and Portugal which is less comparable than other countries.
l) Portugal provided an estimate for total age-related spending but did not provide expenditure for all of the spending components.
Source : OECD.

Table 4.8. Decomposition of changes in old-age spending - OECD

	Total old-age pension spending, level in 2000	Total old-age pension spending, change from 2000 to 2050	Contributions of :			
			Old-age dependency ratio	Employment ratio	Benefit ratio[b]	Eligibility ratio
Australia	3.0	1.6	2.5	-0.1	-0.5	-0.2
Austria	9.5	2.2	7.6	-1.9	-1.1	-2.4
Belgium	8.8	3.3	4.7	-0.7	-1.6	1.0
Canada	5.1	5.8	5.1	0.0	-0.6	1.3
Czech Republic	7.8	6.8	8.2	-0.8	-0.1	-0.1
Denmark	6.1	2.7	2.7	-0.3	-1.5	1.7
Finland	8.1	4.8	5.2	-0.1	-0.2	0.0
France[c]	12.1	3.8	7.6	-0.5	-3.4	0.4
Germany	11.8	5.0	6.4	-0.7	-2.7	2.1
Hungary	6.0	1.2	2.9	-1.0	-0.3	-0.4
Italy[d]	14.2	-0.3	10.1	-3.2	-5.5	-1.5
Japan[d]	7.9	0.6	5.1	-1.2	-3.9	0.9
Korea	2.1	8.0	4.8	-1.0	0.2	5.0
Netherlands	5.2	4.8	3.8	-0.5	0.2	1.4
New Zealand	4.8	5.7	4.7	-0.1	1.0	0.0
Norway	4.9	8.0	3.0	0.1	3.9	1.2
Poland	10.8	-2.5	7.3	-1.3	-5.9	-2.1
Spain	9.4	8.0	8.6	-2.6	0.0	2.0
Sweden[d]	9.2	1.6	3.9	-0.5	-2.1	0.4
United Kingdom[d]	4.3	-0.7	1.7	0.1	-2.5	0.1
United States	4.4	1.8	2.4	-0.1	-0.2	-0.3
Average of countries abov	**7.4**	**3.4**	**5.2**	**-0.8**	**-1.3**	**0.5**
Portugal	*8.0*	*4.5*	*6.1*	*-1.0*	*-2.7*	*1.1*

a) See Annex for methodology and detailed information on the time profile. Columns do not add up because linear approximations are used.

b) The associated percent declines in average benefits relative to average productivity over the period 2000 to 2050 is particularly important in the following countries: Belgium (-16%), Denmark (-11%), France (-21%), Germany (-20%), Italy (-30%), Japan (-38%), Poland (-51%), Sweden (-22%) and the United Kingdom (-47%). All other countries are under are under 10 per cent except Norway where the average benefit is projected to rise by 53.6 per cent.

c) For France, data are available for 2040.

d) For these countries information on the number of pension recipients and average pensions was not available. These variables were estimated by the OECD Secretariat except for Italy, where data refer to the number of pensions and not the number of pensioner

e) Average excludes countries where national information is not available and Portugal which is less comparable than other countries.

Source : OECD.

Table 4.9. Effective and legal retirement ages 2002

	Men		Women		Difference Eff. - Off.	
	Effective	Official	Effective	Official	Men	Women
Austria	59.6	65	58.9	60	5.4	1.1
Belgium	58.5	65	56.8	62	6.5	5.2
Denmark	65.3	67	62.1	67	1.7	4.9
Finland	60.8	65	59.8	65	4.2	5.2
France	59.3	60	59.4	60	0.7	0.6
Germany	60.9	65	60.2	65	4.1	4.8
Greece	62.4	58	60.9	58	-4.4	-2.9
Ireland	65.2	66	66.2	66	0.8	-0.2
Italy	61.2	65	60.5	60	3.8	-0.5
Luxembourg	59.8	65	59.8	65	5.2	5.2
Netherlands	61.0	65	59.1	65	4.0	5.9
Portugal	65.8	65	63.5	65	-0.8	1.5
Spain	61.6	65	61.3	65	3.4	3.7
Sweden	63.5	65	62.0	65	1.5	3.0
United Kingdom	63.1	65	61.2	60	1.9	-1.2

Source: OECD

Table 4.10. Development of effective retirement age – males 1990–2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Austria	60.9	60.9	60.9	61.4	61.1	60.7	60.8	61.0	60.8	61.0	60.4	59.6	59.6
Belgium	58.5	58.8	58.0	57.9	58.0	58.3	57.9	58.5	58.5	58.1	58.5	58.5	58.5
Denmark	65.5	65.3	65.1	65.0	64.6	64.7	64.1	64.1	64.3	64.4	64.3	65.1	65.3
Finland	61.7	61.2	61.2	60.5	60.4	59.9	60.7	59.4	60.1	59.5	60.1	60.3	60.8
France	61.0	60.7	60.6	60.2	60.5	60.2	60.2	60.3	60.3	59.9	59.6	59.5	59.3
Germany							60.5	60.7	60.8	60.8	61.0	61.2	60.9
Greece	63.7	63.7	63.5	63.7	63.0	63.2	63.4	63.8	62.6	62.8	63.2	63.1	62.4
Ireland	64.0	65.2	63.3	64.2	64.0	63.2	63.4	64.4	64.3	64.5	65.3	65.0	65.2
Italy	61.5	61.9	61.2	60.2	60.0	59.4	59.5	59.1	60.0	60.0	60.2	60.2	61.2
Luxembourg	60.3	58.7	58.1	58.8	59.2	59.3	58.0	58.3	58.8	58.4	59.7	59.1	59.8
Netherlands	61.1	61.3	60.7	60.3	60.5	61.3	60.5	61.0	61.6	61.0	60.4	61.4	61.0
Portugal	65.3	64.3	64.1	63.9	63.5	63.0	63.5	63.6	65.0	64.5	64.8	65.4	65.8
Spain	62.9	62.4	61.7	61.3	61.1	60.8	60.9	61.4	61.5	61.5	61.7	61.7	61.6
Sweden	64.3	63.8	63.6	63.9	63.3	62.7	63.9	63.8	64.1	64.6	63.8	63.6	63.5
UK	62.8	62.7	62.5	62.4	62.5	62.0	61.9	62.3	61.7	62.3	62.4	62.7	63.1
*EU 15**	*62.2*	*62.0*	*61.6*	*61.3*	*61.2*	*60.9*	*60.8*	*61.0*	*59.8*	*61.1*	*61.1*	*61.3*	*61.4*

*ages weighted by population size
Source: OECD, IHS

Table 4.11. Development of effective retirement age – females 1990–2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Austria	60.0	60.1	59.8	60.3	59.5	59.1	59.1	59.2	59.1	59.1	58.9	58.3	58.9
Belgium	56.1	56.5	55.4	56.8	56.8	56.4	55.5	56.8	56.8	57.6	57.1	57.0	56.8
Denmark	62.2	61.9	61.8	61.7	61.5	61.4	60.3	60.1	60.3	60.4	60.6	61.8	62.1
Finland	61.0	60.7	59.9	60.0	59.7	60.0	60.3	59.8	59.5	59.2	59.7	60.0	59.8
France	61.0	61.0	60.8	60.6	60.9	60.8	60.8	60.4	60.2	60.1	59.7	59.4	59.4
Germany							59.3	59.6	59.7	59.8	60.3	60.2	60.2
Greece	60.9	60.3	60.7	60.6	59.8	60.8	63.5	61.4	61.6	62.8	62.4	61.2	60.9
Ireland	63.8	64.9	63.3	64.4	65.6	64.5	64.9	64.4	64.2	65.6	66.0	65.4	66.2
Italy	59.0	58.9	58.7	57.1	56.9	57.1	57.2	57.1	58.4	58.1	58.8	59.6	60.5
Luxembourg	60.1	57.8	58.7	60.4	58.5	58.5	58.3	57.6	58.3	59.6	60.3	58.9	59.8
Netherlands	59.4	58.9	58.9	58.8	59.8	60.1	59.8	59.6	59.6	59.3	58.6	58.8	59.1
Portugal	64.0	66.3	63.3	62.8	63.7	62.5	61.2	64.6	61.2	61.0	62.3	63.3	63.5
Spain	64.9	64.5	64.4	63.1	63.2	63.1	62.9	63.1	63.2	61.7	61.9	61.9	61.3
Sweden	62.6	62.5	62.2	62.1	62.2	61.7	62.0	62.2	62.1	62.5	62.5	62.2	62.0
UK	60.7	60.3	60.2	60.5	61.0	60.7	60.8	60.6	60.7	60.6	60.9	60.8	61.2
*EU 15**	*61.0*	*60.9*	*60.6*	*60.2*	*60.4*	*60.3*	*60.1*	*60.1*	*59.0*	*60.1*	*60.3*	*60.3*	*60.5*

*ages weighted by population size
Source: OECD, IHS

Table 4.12. Recipients of old-age pensions 2001

2001	Old-age pensions per 1,000 inhabitants	Inhabitants	Old-age pensions total
IT	210	56,967,735	11,963,224
FR	198	59,042,661	11,690,447
SE	189	8,882,792	1,678,848
DE	187	82,259,540	15,382,534
UK	186	59,862,820	11,134,485
AT	160	8,020,946	1,283,351
FI	159	5,181,115	823,797
DK	154	5,349,212	823,779
BE	153	10,263,414	1,570,302
LU	148	439,000	64,972
NL	148	15,987,075	2,366,087
EL	140	10,931,206	1,530,369
ES		40,376,384	
IE		3,832,973	
PT		10,256,658	

Source: EUROSTAT

Table 4.13. Recipients of all types of pensions, 2001

2001	Total pensions per 1,000 inhabitants	Inhabitants	Total pensions
IT	280	56,967,735	15,950,966
LU	260	439,000	114,140
SE	252	8,882,792	2,238,464
FI	250	5,181,115	1,295,279
DK	236	5,349,212	1,262,414
DE	234	82,259,540	19,248,732
EL	195	10,931,206	2,131,585
BE		10,263,414	
ES		40,376,384	
FR		59,042,661	
IE		3,832,973	
NL		15,987,075	
AT		8,020,946	
PT		10,256,658	
UK		59,862,820	

Source: EUROSTAT

Table 4.14. Replacement rates in Mandatory Pension Progams, men

	Gross replacement rates			Net replacement rates		
	Individual pension entitlement as a percentage of individual pre-retirement gross earnings			Individual pension entitlement net of taxes and contributions as a percentage of individual pre-retirement earnings net of taxes and contributions		
	Individual earnings, multiple of average			Individual earnings, multiple of average		
	0.5	*1*	*2*	*0.5*	*1*	*2*
OECD average	**73.2**	**57.2**	**47.8**	**84.9**	**69.1**	**61.4**
Belgium	61.6	40.7	26.2	82.7	63.1	42.7
Czech Rep.	70.5	44.4	25.4	88.3	58.2	35.3
Denmark	82.4	43.3	23.8	95.6	54.1	35.5
Finland	75.9	63.3	63.3	87.3	71.5	123.1
France	84.2	52.9	47.4	98.0	68.8	59.2
Germany	47.3	45.8	37.6	61.7	71.8	67.0
Greece	84.0	84.0	84.0	99.9	99.9	99.9
Hungary	75.4	75.4	75.4	86.6	90.5	92.6
Ireland	61.3	30.6	15.3	63.0	36.6	21.9
Italy	78.8	78.8	78.8	89.3	88.8	89.1
Luxembourg	115.5	101.9	95.2	125.0	109.8	104.2
Netherlands	68.7	68.3	68.3	82.5	84.1	83.8
Poland	56.9	56.9	56.9	69.6	69.7	70.5
Portugal	103.1	66.7	65.5	115.9	79.8	86.3
Slovak Rep.	48.6	48.6	48.6	58.2	60.2	65.7
Spain	81.2	81.2	76.7	88.7	88.3	83.4
Sweden	87.8	64.8	66.2	90.2	68.2	74.3
Turkey	96.2	87.2	71.9	113.2	103.3	84.3
United Kingdom	67.4	37.1	22.5	78.4	47.6	29.8
Women, where different						
Austria	74.0	69.4	57.0	86.1	84.6	72.5
Poland	48.4	41.4	41.4	62.1	48.7	48.8
Turkey	94.2	85.2	70.2	111.0	101.1	82.4

Source: OECD(2005), Pensions at a Glance: Public Policies Across OECD Countries, 2005 Edition

(**www.oecd.org/els/social/ageing/PAG**)

Table 4.15. Gross Projected Replacement Rates

		100% of average earnings (last column: 10 years after retirement, relative to projected average earnings					2/3 of average earnings		Rising earnings from 100-200% of average		Rising earnings from 80-120% of average	
		2002/3	2010	2030	2050	in 10 yrs	2002/3	2050	2002/3	2050	2002/3	2050
Gross replacement rate	B	40.0	43.2	49.0	48.4	33.8	45.6	52.6	27.7	31.1	34.6	4.5
from 1st pillar		36.5	37.1	36.8	36.6	31.4	42.1	40.8	24.4	22.6	31.3	30.8
from 2nd pillar		3.5	6.1	12.2	11.8	2.4	3.5	11.8	3.2	8.5	3.3	9.7
Gross replacement rate	DK	45.1	52.0	63.7	68.9		66.1					
from 1st pillar		41.7	41.8	36.1	33.6		62.8					
from 2nd pillar		3.4	10.2	27.6	35.3		3.4					
Gross replacement rate	D	50.1	48.5	49.5	50.5	46.9	48.6	49.9	40.1	39.0	41.8	42.1
from 1st pillar		44.6	42.3	39.2	37.8	42.1	45.0	38.1	33.4	28.3	37.2	31.6
from 2nd pillar		5.5	6.2	10.3	12.8	4.8	3.6	11.8	6.8	10.7	4.6	10.6
Gross replacement rate	GR	108.0	106.2	108.2	94.7	101.0	112.0	94.7	92.0	64.9	105.0	92.5
from 1st pillar		108.0	106.2	108.2	94.7	101.0	112.0	94.7	92.0	64.9	105.0	92.5
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	E	88.6	85.8	83.0	83.0	77.3	68.6	83.0	66.6	62.5	83.2	78.0
from 1st pillar		88.6	85.8	83.0	83.0	77.3	68.6	83.0	66.6	62.5	83.2	78.0
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	F	65.0	61.9	57.4	56.8	42.6	67.2	56.7	50.6	42.7	55.0	49.2
from 1st pillar		65.0	61.9	57.4	56.8	42.6	67.2	56.7	50.6	42.7	55.0	49.2
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	IRL	66.7	66.7	66.7	66.7	64.0	66.7	66.7	66.7	66.7	66.7	66.7
from 1st pillar		31.4	34.0	34.0	34.0	34.7	47.0	51.0	15.7	17.0	26.1	28.3
from 2nd pillar		35.3	32.7	32.7	32.7	29.3	19.6	15.7	51.0	49.7	40.5	38.3
Gross replacement rate	I	79.6	82.6	84.1	84.1	65.4	79.6	64.6	74.5	63.5	77.8	70.4
from 1st pillar		79.6	77.6	69.2	64.6	65.4	79.6	45.1	74.5	48.9	77.8	54.2
from 2nd pillar		0.0	5.0	14.9	19.5	0.0	0.0	19.5	0.0	14.6	0.0	16.2
Gross replacement rate	L	89.5	89.5	89.5	89.5	89.5	94.7	94.7	64.4	64.4	74.5	74.5
from 1st pillar		89.5	89.5	89.5	89.5	89.5	94.7	94.7	64.4	64.4	74.5	74.5
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	NL	70.0	70.0	70.0	70.0	67.9	70.0	70.0	70.0	59.9	70.0	66.5
from 1st pillar		32.6	32.6	32.6	32.6	32.6	48.9	48.9	16.3	16.3	27.2	27.2
from 2nd pillar		37.4	37.4	37.4	37.4	35.3	21.1	21.1	53.7	43.5	42.8	39.3
Gross replacement rate	A	74.3	66.9	66.9	66.9	63.7	74.3	66.9	67.8	61.0	70.0	63.6
from 1st pillar		74.3	66.9	66.9	66.9	63.7	74.3	66.9	67.8	61.0	70.0	63.6
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	P	72.3	74.7	67.8	64.9	61.6	72.3	65.3	68.2	50.3	69.5	55.4
from 1st pillar		72.3	74.7	67.8	64.9	61.6	72.3	65.3	68.2	50.3	69.5	55.4
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	FIN	57.6	63.2	58.1	53.8	49.5	63.7	65.4	56.0	39.4	57.0	44.0
from 1st pillar		57.6	63.2	58.1	53.8	49.5	63.7	65.4	56.0	39.4	57.0	44.0
from 2nd pillar		na	na	na	na	na	na	na	na	na	na	na
Gross replacement rate	S	70.9	63.8	57.2	54.4	60.2	80.9	54.4	71.7	58.5	65.5	47.0
from 1st pillar		57.0	49.7	42.7	40.1	48.6	67.1	40.1	39.3	25.5	52.1	33.4
from 2nd pillar		13.9	14.2	14.5	14.2	11.6	13.9	14.2	32.4	33.0	13.4	13.6
Gross replacement rate	UK	66.6	66.1	63.9	61.4	56.7	74.4	66.1	58.3	55.7	63.7	59.3
from 1st pillar		16.6	16.1	13.9	11.4	14.1	24.4	16.1	8.3	5.7	13.7	9.3
from 2nd pillar		50.0	50.0	50.0	50.0	42.6	50.0	50.0	50.0	50.0	50.0	50.0

Table 4.16. Total and public expenditure on health

	Expenditure on health					Public expenditure on health				
	% GDP	Average change in %				% THE	Average change in %			
	2002	90-95	95-00	00-02	90-02	2002	90-95	95-00	00-02	90-02
Austria	7.5	2.5	-1.5	0.0	0.5	67.8	-0.6	-0.7	-0.2	-0.7
Belgium	9.1	2.8	0.2	1.1	1.7	71.2	n.v.	0.2	0.3	n.v.
Denmark	8.8	-0.6	0.4	1.6	0.3	83.1	0.0	0.0	0.2	0.0
Germany	10.9	3.8	0.0	0.9	2.1	78.5	0.9	-0.4	-0.1	0.2
Finland	7.3	-0.7	-1.9	2.9	-0.6	75.7	-1.1	-0.1	0.3	-0.6
France	9.7	1.7	-0.4	1.4	1.0	76.0	-0.1	-0.1	0.1	-0.1
Greece	9.5	4.5	0.2	-0.7	2.1	52.9	-0.5	0.6	-0.6	-0.1
Ireland	7.3	1.9	-1.0	4.5	1.5	75.2	-0.1	0.4	0.9	0.4
Italy	8.5	-1.3	1.5	1.6	0.5	75.6	-1.6	0.4	0.9	-0.4
Luxembourg	6.2	0.8	-2.5	4.1	0.1	85.4	-0.1	-0.5	-1.6	-0.7
Netherlands	9.1	0.8	-0.4	3.5	1.1	n.v.	1.0	-1.9	n.v.	n.v.
Poland	6.1	2.3	0.3	2.3	1.8	72.4	-3.8	-0.7	1.1	-2.0
Portugal	9.3	4.9	2.0	0.4	3.4	70.5	-0.8	1.8	0.5	0.6
Sweden	9.2	-0.6	0.6	3.1	0.8	85.3	-0.6	-0.3	0.2	-0.4
Spain	7.6	2.2	-0.2	0.4	1.1	71.4	-1.5	-0.2	0.0	-0.8
UK	7.7	2.7	0.7	1.8	2.1	83.4	0.1	-0.6	1.0	0.0
EU15*	9.1	1.9	0.1	1.3	1.3	76.8	-0.2	-0.2	0.5	-0.1
Euro zone	9.3	1.9	0.0	1.2	1.3	75.1	-0.2	-0.2	0.4	-0.1

* left panel weighted with GDP, right panel weighted with total expenditure for health;
THE .... Total expenditure for health
Source: WHO Health for all database, January 2005; Statistiek Austria for Austria
HIS HealthEcon calculations 2005.

Table 4.17. Projections for public expenditure on acute and long term care

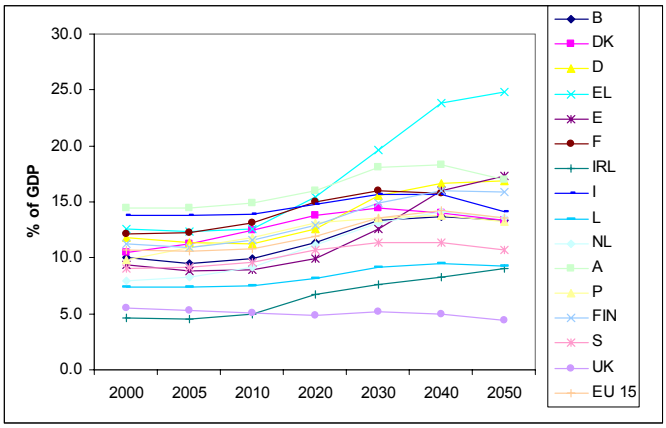
	Total health and long-term care		Health care		Long-Term Care	
	Expenditure as a share of GDP in 2000 as a share of GDP in 2000	Increase in expenditure in per cent of GDP between 2000 and 2050 expenditure in in percent of GDP between 2000 and 2005	Expenditure as a share of GDP in 2000 share of GDP in 2000	Increase in expenditure in per cent of GDP between 2000 and 2050 Expenditure in percent of GDP between 2000 and 2005	Expenditure as a share of GDP in 2000 share of GDP in 2000	Increase in expenditure in per cent of GDP between 2000 and 2050 expenditure in in percent of GDP between 2000 and 2005
B	6.1%	**+2.1**	5.3%	**+1.3**	0.8%	**+0.8**
DK	8.0%	**+2.7**	5.1%	**+0.7**	3.0%	**+2.1**
D (1)			5.7%	**+1.4**		
EL (1)			4.8%	**+1.7**		
E (1)			5.0%	**+1.7**		
F	6.9%	**+1.7**	6.2%	**+1.2**	0.7%	**+0.5**
IRL	6.6%	**+2.5**	5.9%	**+2.3**	0.7%	**+0.2**
I	5.5%	**+1.9**	4.9%	**+1.5**	0.6%	**+0.4**
NL	7.2%	**+3.2**	4.7%	**+1.0**	2.5%	**+2.2**
A	5.8%	**+2.8**	5.1%	**+1.7**	0.7%	**+1.0**
P (1)			5.4%	**+0.8**		
FIN	6.2%	**+2.8**	4.6%	**+1.2**	1.6%	**+1.7**
S	8.8%	**+3.0**	6.0%	**+1.0**	2.8%	**+2.0**
UK	6.3%	**+1.8**	4.6%	**+1.0**	1.7%	**+0.8**
EU (2)	6.6%	**+2.2**	5.3%	**+1.3**	1.3%	**+0.9**

Notes: (1) There are no results for long-term care for these Member States.

(2) Weighted average calculated according to available results, therefore EU-14 for health care, and EU-10 for long-term care and total expenditure on health.

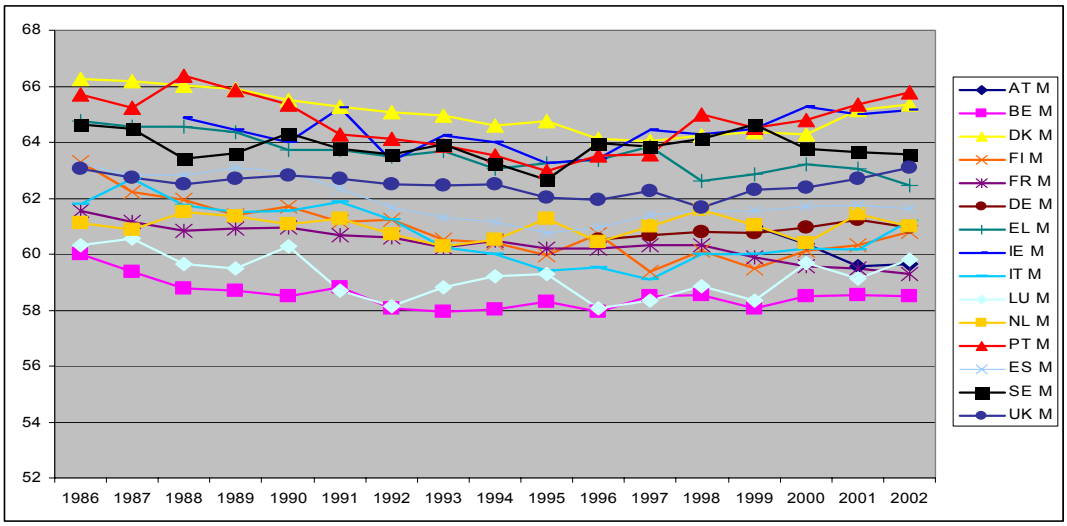
Source: EPC 2001.

Figure 4.1. Projections for spending on public pension as a share of GDP (current policy scenario 2000-2050)



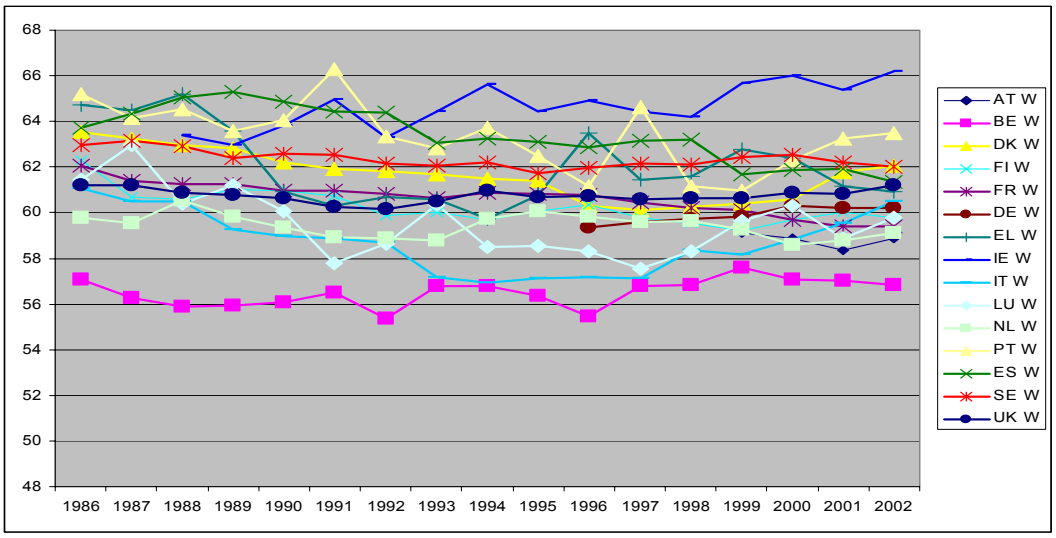
Source: EUROSTAT.

Figure 4.2. Average effective age of retirement, male



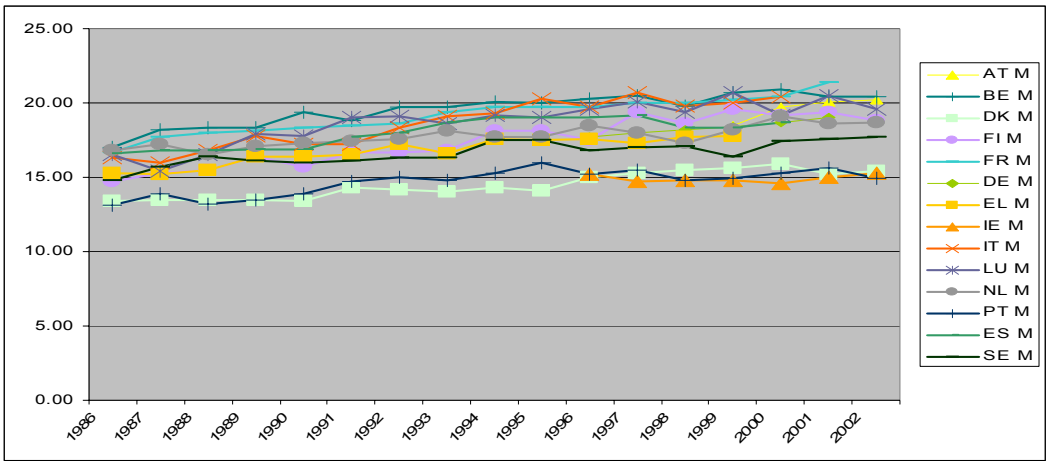
Source: OECD estimates derived from the European and national labour force surveys.

Figure 4.3. Average effective age of retirement, female



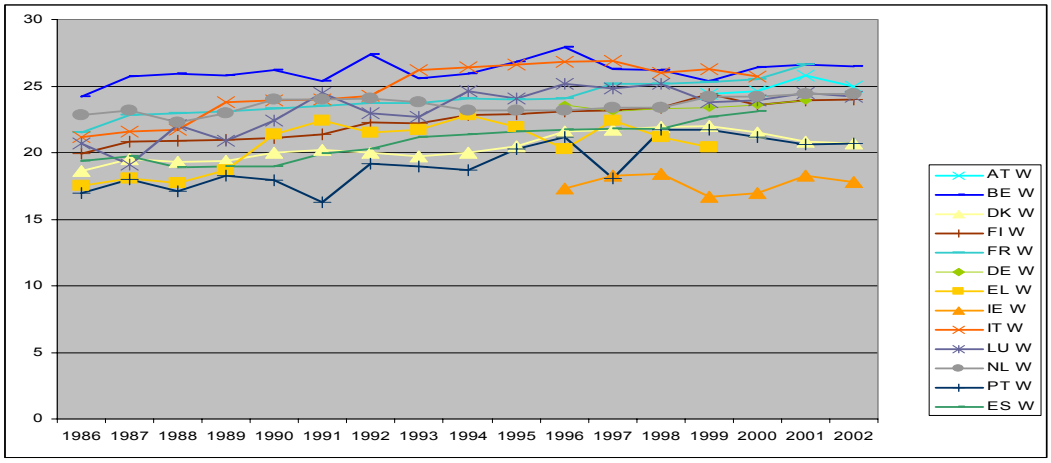
Source: OECD estimates derived from the European and national labour force surveys.

Figure 4.4. Life expectancy at average effective retirement age, i.e. time spent in retirement, male



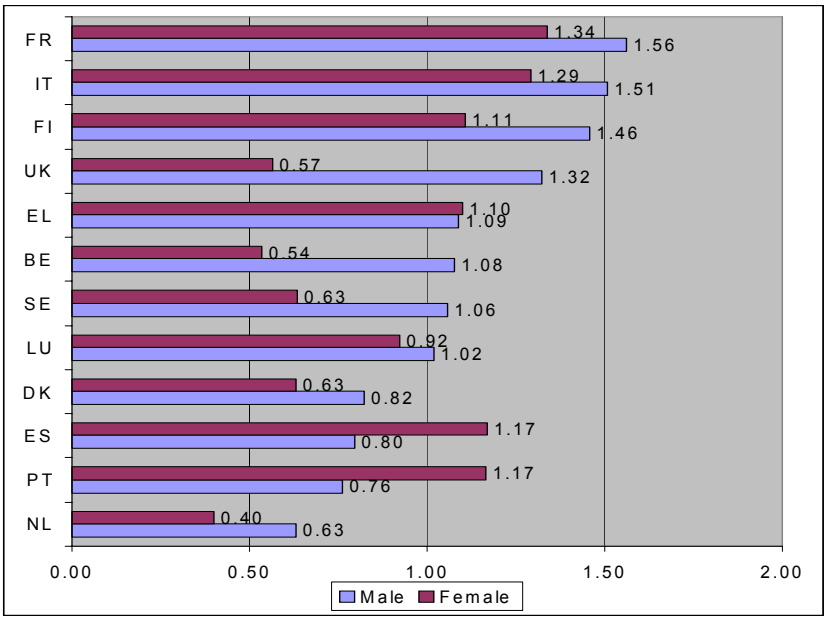
Source: EUROSTAT

Figure 4.5. Life expectancy at average effective retirement age, i.e. time spent in retirement, female



Source: EUROSTAT

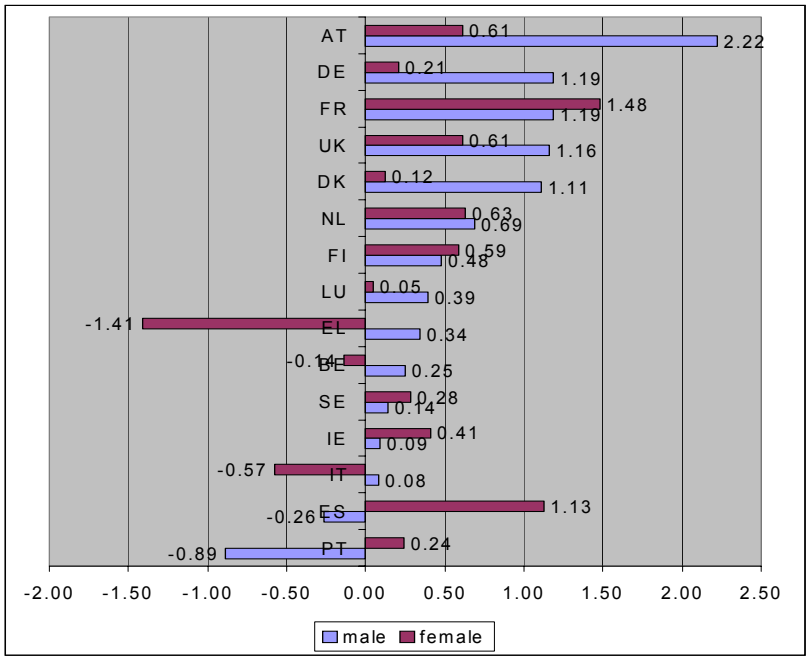
Figure 4.6. Average annual growth rate in life expectancy at average effective retirement age, percentage, 1986–2002 (or latest available)



Source: EUROSTAT, own calculations

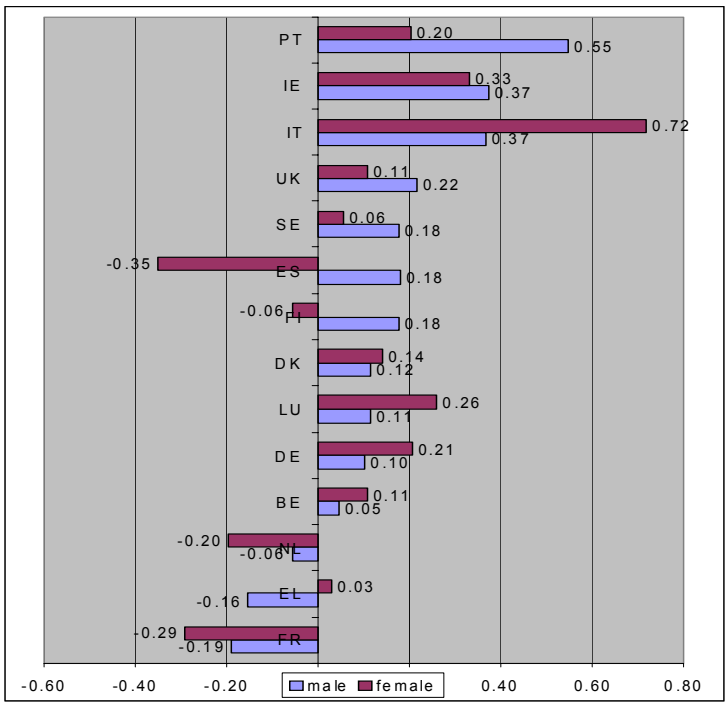
Note: latest available–FR and DE–2001; EL–1999; IT and ES and UK–2000.F

Figure 4.7. Average annual growth/decline rate in life expectancy at average effective retirement age, percentage, 1995-2002 (or available beginning and end dates)



Source: EUROSTAT, own calculations
Note: AT-1999-2002; FR-1995-2001; DE-1996-2001; EL-1995-1999; IE-1996-2002;
IT-1995-2000; ES-1995-2000; UK-1995-2000.

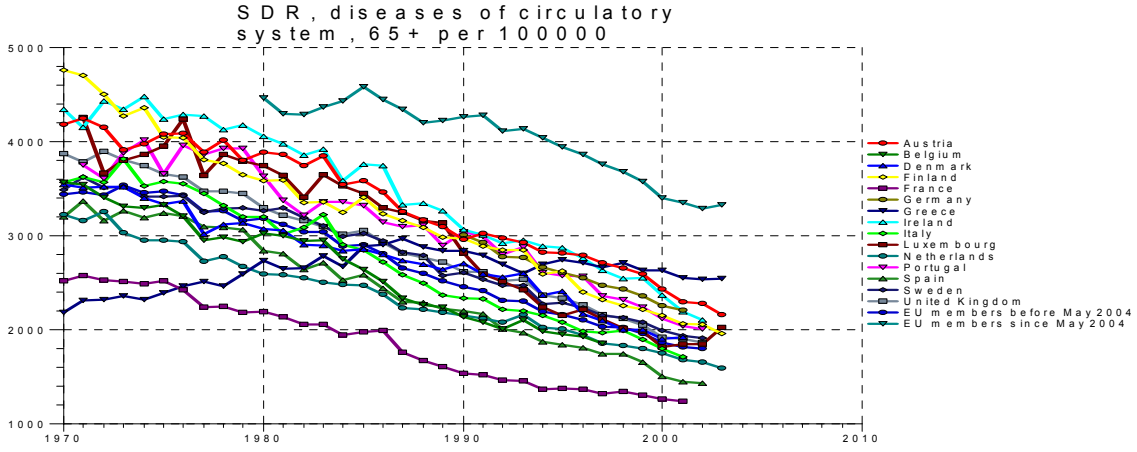
Figure 4.8. Average annual growth/decline rate in the average effective retirement age, percentage, 1995-2002 (or available beginning and end dates)



Source: OECD estimates derived from the European and national labour force surveys, own calculations

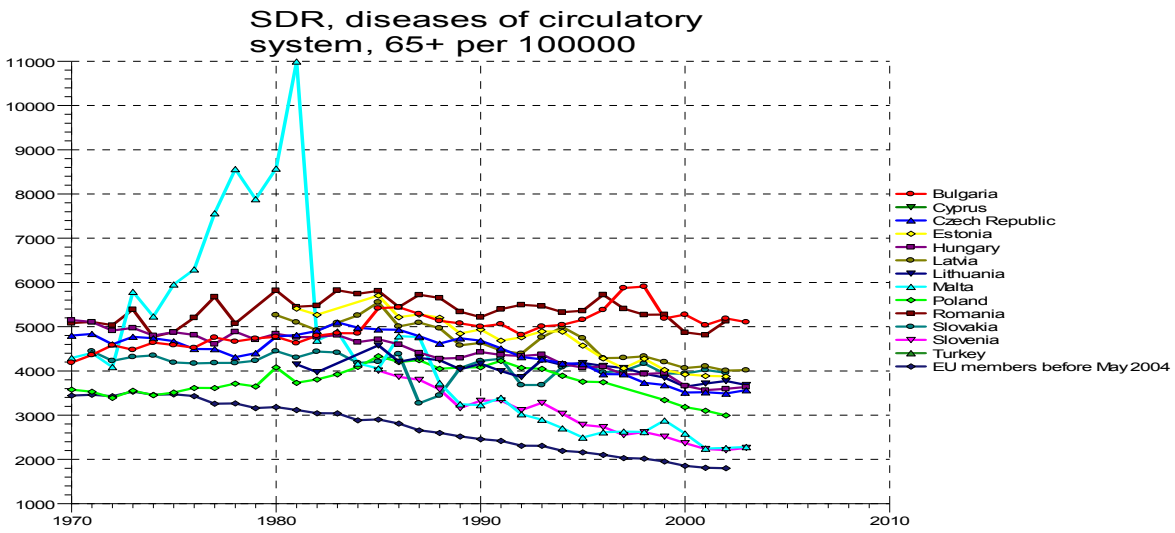
Note: Austria is not included, because data are available only for the period from 1999-2002.

Figure 4.9.



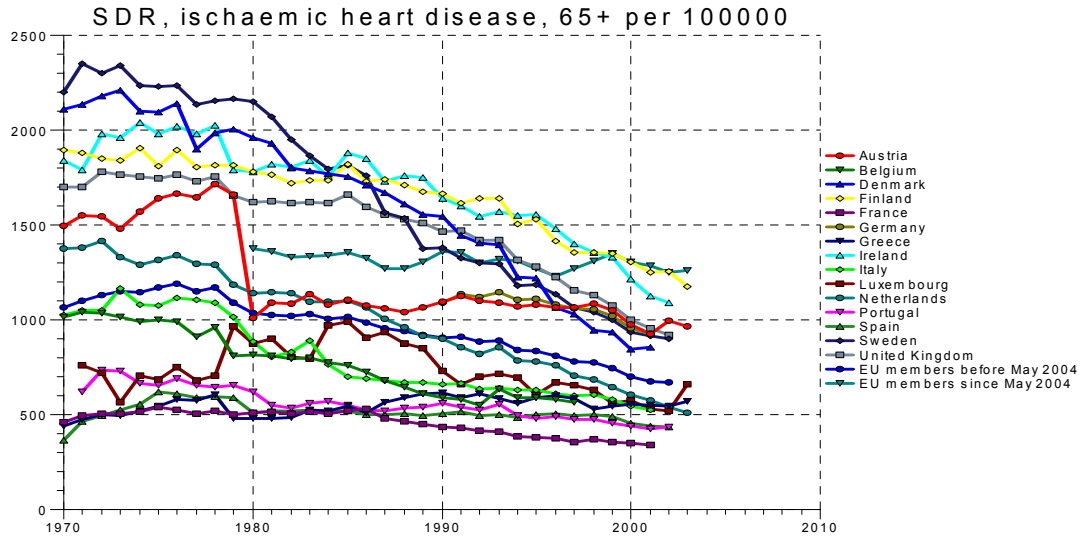
Source: World Health Organization, Health for All database 2005.

Figure 4.10.



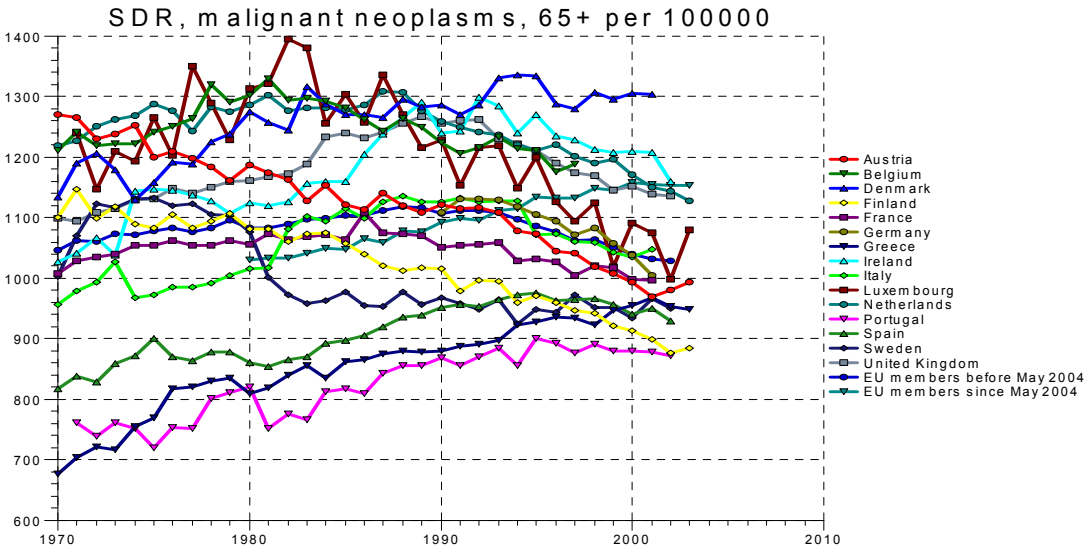
Source: World Health Organization, Health for All database 2005.

Figure 4.11.



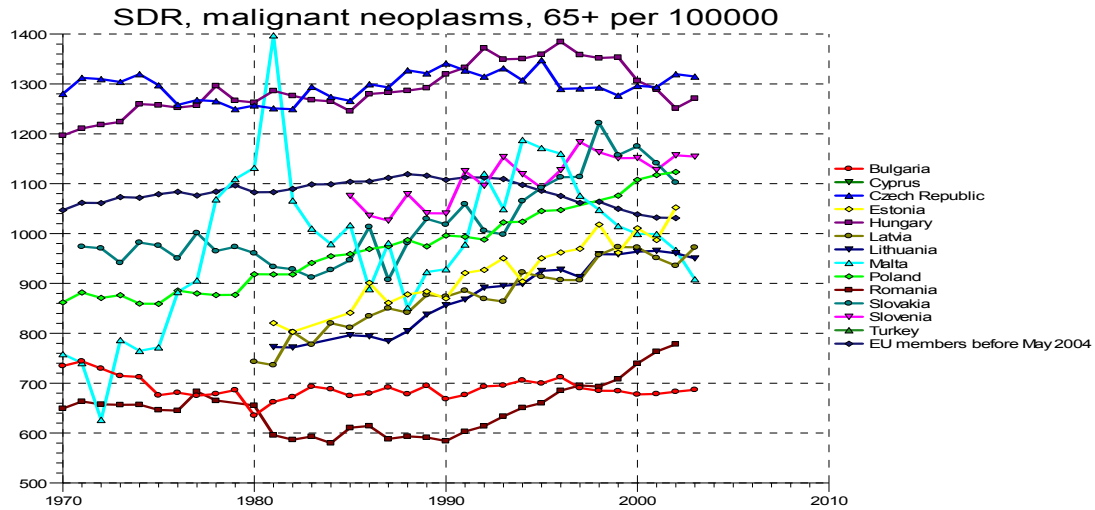
Source: World Health Organization, Health for All database 2005.

Figure 4.12



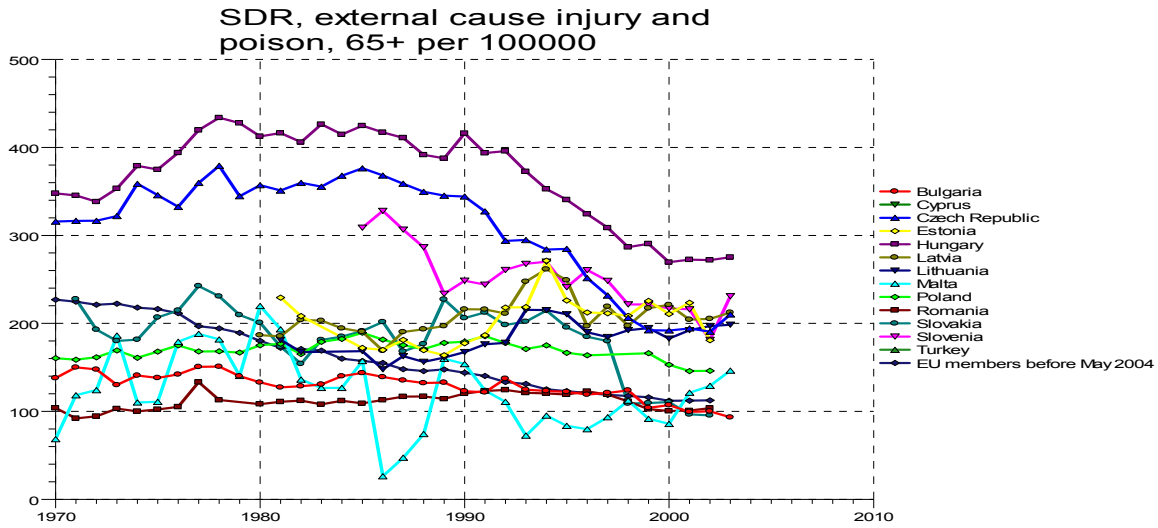
Source: World Health Organization, Health for All database 2005.

Figure 4.13.



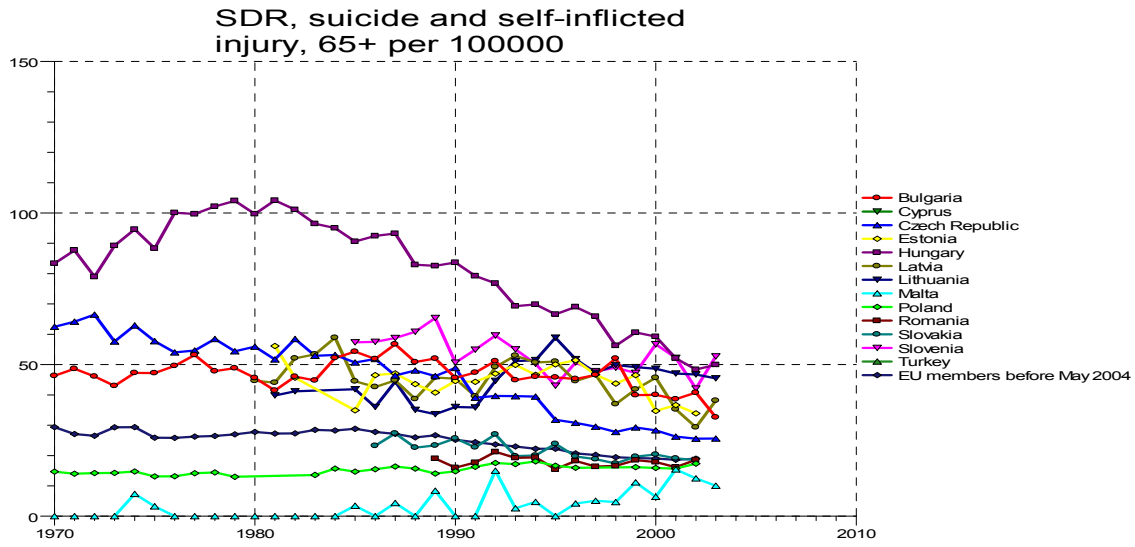
Source: World Health Organization, Health for All database 2005.

Figure 4.14.



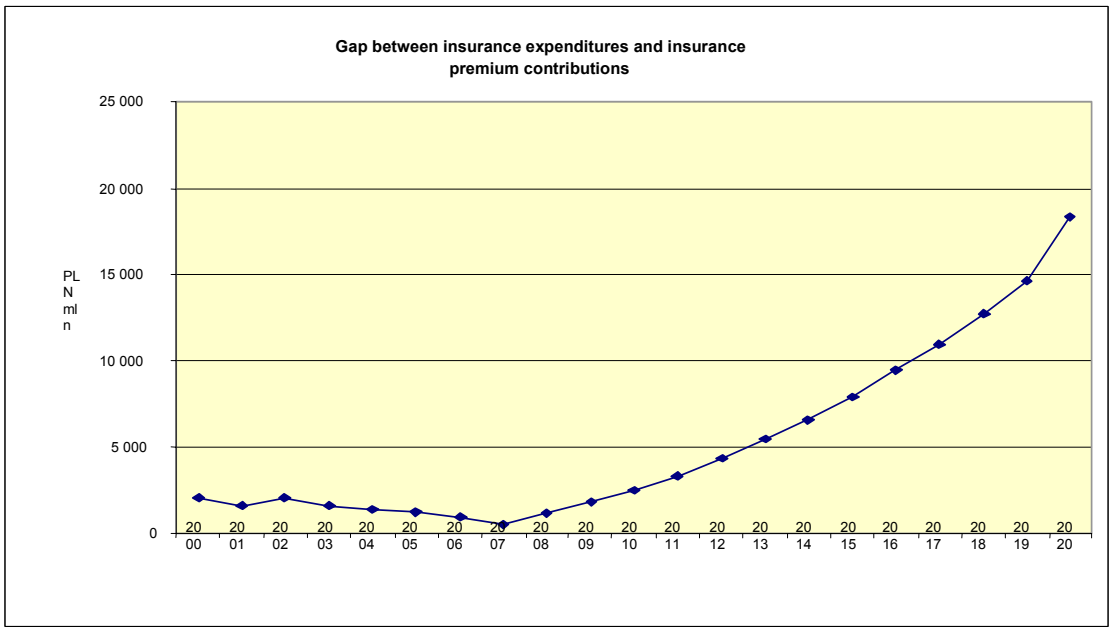
Source: World Health Organization, Health for All database 2005.

Figure 4.15.



Source: World Health Organization, Health for All database 2005.

Figure 4.16.



Source: Health Care Financing in Poland — The Green Book

Appendix to Chapter 4: EU-15 country background information for replacement rates in public pension systems

Belgium: Replacement rates for the first pillar around and below 40% are low for an earnings related scheme; second pillar contributions are currently small, but due to rise. Total gross replacement rates will rise for all earnings profiles by between 7 and 10 percentage points by 2050. There is a definite redistributive effect built into gross replacement rates.

Denmark: The Danish system is a universal, residence-based and non-contributory statutory old-age pension scheme that is financed from general taxation. Replacement rates for the first pillar are expected to decline significantly (8 percentage points) by 2050. Second pillar contributions are currently small, but due to rise sharply by 2050. Total gross replacement rates will rise steeply for the average earning profile by between 23 percentage points by 2050. There is a very strong redistributive effect built into gross replacement rates.

Germany: The general pay-as-you-go, earnings-related pension scheme covers around 82% of the employed population. Replacement rates for the first pillar are expected to decline significantly (5 to 7 percentage points) by 2050; second pillar contributions will rise by 2050. Total gross replacement rates will be maintained at current levels (+/- 1 percentage point) by 2050. There is an inverse redistributive effect built into gross replacement rates (which are thus higher for higher earnings profiles).

Greece: There are several pension schemes — that of employees is of the defined-benefit type, based on length of contribution periods and earnings of the final five years of the career. Although the replacement rates for the first pillar are high (over 100% of average earnings), and are expected to fall below 10% only after 2030, actual pensions are low due to generally much lower numbers of contribution years than the base cased use, contribution evasion, and often incomplete insurance of an individuals earnings. The legal framework for the establishment of second pillar schemes was set up in 2002/3 and is not included in the calculations. There is a redistributive effect built into gross replacement rates.

Spain: The first pillar for private sector workers is a general earnings-related scheme. Replacement rates for the first pillar are high at just under 90% and are expected to fall by about 5 percentage points by 2050. Although second pillar schemes cover nearly six million people, only 10% of these are in schemes established by collective agreement. The current inverse redistributive effect (cf. replacement rates on average earnings with rates on 2/3 of average earnings), will be smoothed out by 2050.

France: The pension system is a mandatory pay-as-you-go earnings-related scheme. There is a basic state pension plus two mandatory supplementary pay-as-you-go

schemes. The results presented do not yet take account of the latest pension reform. Replacement rates for the first pillar of 65% for the average earnings profile are expected to fall by about 9 percentage points by 2050. The replacement rate falls after 10 years of pension by more percentage points than in any other EU member state. There is a redistributive effect built into gross replacement rates.

Ireland: Flat rate payments of the first pillar, currently over 30% for the average earnings profile, are financed by pay related contributions. There are substantial non-cash benefits in kind for people of pension age, such as free travel. Free healthcare, telephone rental, TV license, energy consumption are offered to those over 70 and subject to a means-test before that age. The gross replacement rate will remain constant at 66.7% but the composition will change by a small increase of about 2-4 percentage points in the first pillar, and a corresponding decrease in the second pillar, by 2050. Ireland is the only member state where the replacement rate will rise after 10 years of pension.

Italy: The defined-benefit system was reformed in 1995 – the new system will be applied to an increasing proportion of working life. The gross replacement rate on the first pillar is nearly 80% currently for the average earnings profile, but will fall by 15 percentage points by 2050. Compensating second pillar schemes will rise to a gross replacement rate of nearly 20% by 2050, from zero currently. The total gross replacement rate will thus rise to 84% by 2050 for the average earnings profile. There is little redistributive effects in the pension system.

Luxembourg: The replacement rates are the highest of all OECD countries. Gross replacement rates are currently at nearly 90% for the average earnings profile. Second pillar schemes are not included, as these started in 1999, are voluntary, and there is no reliable data available. There is also a strong redistributive effect on the gross replacement rate.

Netherlands: The first pillar of the Dutch pension system provides flat-rate benefits to all residents over the age of 65. The second pillar of occupational schemes is the most developed in the EU. It is assumed in the data that gross replacement rate of 70% of earnings are achieved at present, and that these will be maintained for a worker with an average earnings profile. For people with a rising earnings profile, the gross replacement rate will decrease by 2050 by up to 10 percentage points. For these persons, the second pillar dominates, whereas for low earners the state pension contributes more.

Austria: The first pillar consists of compulsory schemes. The pension depends on length of insurance career and level of insured earnings, up to a ceiling level. A full pension is 80% of the assessment base required previously 40 insurance years, but this will rise to 45 years under the 2003 pension reform. Second pillar contributions are voluntary and are still relatively low in total contribution to the pension system. As a result of the reform the gross replacement rate for the average earnings profile will fall from 74% currently by

nearly 8 percentage points by 2010, but thereafter level out. There is little redistributive effect of replacement rates.

Portugal: The first pillar is a mandatory earnings-related for all workers in the private sector. Occupational second pillar schemes are not common. Currently, new pensioners retire with a contribution of just under 28 years. Thus the theoretical replacement rates are much higher than current actual pensions would show. The gross replacement rate would, in the base case used in the calculations, provide for over 70% of average earnings profile. This will fall 9 percentage points by 2050. There is little redistributive effect of replacement rates.

Finland: The mandatory statutory pension provides a minimum basic pension and an earnings related scheme. Due to the comprehensive coverage of the first pillar there is little demand for voluntary supplementary schemes of the second pillar. For the average earnings profile the gross replacement rate will only fall from over 57% currently after 2030. Changes in the assessment base from 2005 imply that replacement rates will rise by 2010 before falling slowly again. There is a strong redistributive effect built into gross replacement rates.

Sweden: A new first pillar scheme introduced in 1999 consists of a guaranteed pension and an earnings-related scheme, and is gradually replacing the old defined-benefit pay-as-you-go system. The gross replacement rate of the first pillar is expected to fall from about 57% currently to around 40% by 2050 for the average earnings profile. As the uptake of second pillar schemes is projected to stay around the current level of around 14%, the total gross replacement rate will fall from 70% to under 55% by 2050. There is a strong redistributive effect built into gross replacement rates.

UK: The first pillar consists of a flat-rate basic pension and an earnings-related additional pension. A unique feature is the possibility of contracting out of the earnings-related pay-as-you-go financed scheme, if an occupational or private pension scheme provides better benefits. In the gross replacement rates it is assumed that the benefits from contracting out would amount to 50%. The first pillar replacement rates are thus also uniquely low, at currently under 17%. These are also expected to fall to around 11% by 2050. Thus the total gross replacement rate will fall from around 67% at present by about five percentage points by 2050. There is a strong redistributive effect built into gross replacement rates.

5. Time use over the life course in selected European countries

Christoph Schwierz

5.1 Highlights

- Throughout the last 35 years the most striking feature of time use patterns is the declining gender-difference in time devoted to different activities. Men spend less time on paid and more on homework, with the opposite being true for women. However, men still spent on average considerably more time on paid work and less time on homework than women.
- Significant cross-country differences in time use trends reveal scope for policy measures, such as taxation, parental leave policies and the availability of formal childcare capacities as well as part-time employment, to shape time allocations. Typically, these policies have a stronger impact on the female than on the male allocation of time. In countries with lower compatibility of work and family life, upon childbirth men (women) decrease (increase) their homework duties and take on more (less) paid work. The simultaneous availability of part-time work for women and childcare arrangements is often crucial to reconcile motherhood and paid work.
- Trends in time use allocations are triggered by broad economic and social changes, such as economic growth, changing labour market conditions, demographic changes, an increasing diversity in family and household structures and increasing gender equality.
- Across European countries, the variance of time devoted to paid and unpaid work, personal care and leisure is relatively small.
- Typically, men and women make different trade-offs between broad categories of time use such as paid work, homework, childcare and leisure. Women (Men) tend to substitute between market work and homework (leisure).

- Economic conditions influence time allocations. As such, higher economic growth contributes to more time spent on paid and homework and less time spent on leisure. Moreover, lower own-sex unemployment rates are related to more time spent on paid employment, while the converse is true for time spent on homework. Furthermore, opposite-sex unemployment rates increase own-sex time in paid work and decrease time devoted to homework.
- Time allocations differ widely throughout the life course, which is characterized by

age, parenthood, employment decisions and different living arrangements.
- Typically, individuals experience a hump-shaped pattern of labour supply that first increases until a certain age and then starts to decrease.
- Relative to women the variance of time spent on paid and unpaid work throughout the life course is small for men.
- The presence of a young child in a household gives rise to specialization. However, later entry into parenthood, rising educational attainment of mothers and positive correlations between employment, marriage and motherhood point into the direction of more equal time use allocations between parents.
- Singles face different time constraints than cohabiting couples. An increasing number of single persons (older and parents) will increase the importance of analysis of differences in time allocations across different living arrangements.

5.2 Life course perspective and time use

- In contrast to the bulk of analytical literature which focuses mainly on a particular aspect of time use in one particular country, this section delivers a rather generic insight into the allocation of time by the use of cross-country time use data covering a period of 35 years and combining several analytical approaches.

40,000,000 minutes. This is the average time that a European can expect to spend on different activities during his life.[46] How is this time spent? Are there differences over the life course, across the sexes, countries and through time how individuals use their time? What determines the use of time?

The individual allocation of time is driven by a mix of contemporaneous changes in cultural perceptions, demographic and economic trends and social policies, which shape and constrain individual preferences for the use of time. The comprehensiveness of the topic of time allocation requires thus a broad analytical approach in order to grasp some possible answers. In contrast to the bulk of analytical literature which focuses mainly on a particular aspect of time use in one particular country, this paper delivers a rather generic

[46] That corresponds to a life expectancy of 75 years, based on 365 days a year.

insight into the allocation of time by the use of cross-country time use data covering a period of 40 years and combining several analytical approaches.

Individuals face different, often interdependent decisions over the life course, such as marriage, parenthood and employment (Willekens, 1999; Elder, 1994). Given constraints affect them differently during their life course and have varying impacts on the allocation of time to various activities. These constraints might be individual or societal and might change over time. Broad societal developments in the form of social and institutional change and economic conditions, like economic growth and unemployment, constitute the broad framework within witch individuals pursue life courses. Putting these developments into perspective with the allocation of time is a way of understanding not only the former and current allocation of time in European countries, but also the ensuing sex-specific trade-offs between different time use activities (Section 5.3).

The course of life is marked by many phases, out of which employment, parenthood and changes in the living arrangements are the prominent ones. Our ageing European societies with below replacement fertility levels, relative low female labour force participation ratios in many European countries show the importance of focusing on policies of work-family life reconciliation, which mitigate these problems. Unveiling cross-country differences in the allocation of time throughout the life course and with reference to the compatibility of work and family life is thus the focus of Section 5.4.

The current analysis is based on harmonized statistics from the most recent time use data available from Eurostat and a large cross-sectional MTUS data set with 11 European countries and covering a period of 35 years.[47] The analysis is based on descriptive and econometric methods, where the importance of econometric analysis lies within the control and advancements in given findings. Emphasis is put on analyzing the probabilities of participation in and the amount of time used in different time-use activities, such as paid work, homework, childcare and leisure. To this aim the influence of macroeconomic conditions, like economic growth and unemployment levels, as well as those capturing institutional differences across Europe is analyzed. Moreover, the interrelatedness of employment, marriage and parenthood decisions is estimated separately.

[47] A description of the main characteristics of time use budget surveys and the current data set is to be found in Chapter 5.2.

5.3 Daily time use patterns

5.3.1. Daily use of time of time by activity type and country

- Across European countries, the variance of time devoted to paid and unpaid work, personal care and leisure is relatively small.
- Typically, men and women make different trade-offs between broad categories of time use such as paid work, homework, childcare and leisure. Women substitute stronger between market work and homework, whereas men shift more between market work and leisure.

An introductory picture of time allocation in Europe is interesting by itself. First, it shows how much time people spent on average on various activities. Second, it helps to understand between which categories of time-use people trade-off time.

Based on the most recent time use data available and comparable across European countries the following picture arises (Figure 5.1 and Table 5.1): [48]

- When averaging over the whole population, i.e. employed and non-employed individuals and the whole year including weekends and holidays, then total time spent on gainful work, study and domestic work varies between 6 and 7 hours per day. The time is lowest in Belgium and Norway and highest in Slovenia and Denmark.
- On average people spent 8 to 9 hours sleeping each day. People sleep longest in France (9 hours) and shortest in Denmark (7.8 hours). Once time spent for meals and personal care is added, then around half of each day's time is devoted to these basic activities. There is a trade-off between time spent on gainful employment and time spent sleeping.
- Typically, men and women make different trade-offs between broad categories of time use such as paid work, homework, childcare and leisure. These trade-offs can be characterized by correlations between time use categories (Table 5.1). There is a stronger negative correlation between market work and housework/childcare for

[48] Several European countries have recently conducted time use studies following the HETUS guidelines as proposed by Eurostat. HETUS sets standards for the design of time use surveys and coding activities, which makes the data more easily comparable across countries. Eurostat (2003) presents averages of time use in different activities for several European countries. For a description of the data set see the Appendix. Figure 5.1 describes the average time use by activity type for 10 European countries. The results present the distribution of averaged daily time, where the average is taken over the whole year that an individual spends on several broad categories of activities.

women than for men (Table 5.1). The substitution between market work and leisure is more relevant to men (Freeman and Schettkat, 2005).

As the correlations in Table 5.1 reveal, there are trade-offs between different time-use categories, which could in principle shift the population wide distribution of time. As will be shown later, especially the negative correlation between market- and homework is of interest for policy makers. Preferences for shifts in time between these categories can be partly shaped by policies, which ease the reconciliation of family and work and which make the participation of men and women in the labour market more accessible.

5.3.2. Trends and factors triggering changes in time use allocations

5.3.2.1. Changing time use patterns over the last 40 years

- The most striking feature of time use patterns is the declining difference in time use within sex groups. Men spend less time on paid and more on unpaid work, with the opposite being true for women.
- Significant cross-country differences in time use trends reveal scope for policy measures, such as taxation, parental leave policies and the availability of formal childcare capacities as well as part-time employment, to shape time allocations.

The population wide time allocations, as described in the preceding section, are not static through time, i.e. they are changing. When observing changes in time use in broad categories, such as paid and home work, childcare and leisure, the following trends emerge (Figure 5.2):[49]

- Falling time use in paid work for men.
- Increasing time use in homework for men and decreasing for women.
- Falling total work load (paid and home-work) for both sexes.
- Decreasing time use in childcare for women.
- Increasing leisure time for both sexes.

The most striking feature of time use patterns is the declining difference in time use within sex groups. Men spend less time on paid and more on unpaid work, with the opposite being true for women (Table 5.9). This is true of Norway, France, Italy, UK, the

[49] The samples are based on MTUS time use budgets with 30 country-year observations for each sex. They consist of sex- and nation-specific averages of time use for all employed and non-employed individuals older than 15 years. Thus, Figure 5.2 captures the broad picture of the allocation of time, not being standardized by age, sex, marital composition etc. The straight lines in Figure 5.2 result from simple OLS regressions of a year variable and a constant on the respective time use activity. The coefficient numbers and t-values given in Figure 5.2 relate to the year variable.

Netherlands and Italy — countries from different parts of Europe in terms of location, welfare state and cultural history. This fundamental trend was often being observed in the literature and documents partly changes in cultural perceptions of gender roles in society that manifests itself visibly in changing employment patterns.

Trends in these activities seem to be robust and find confirmation in related literature (Gershuny and Sullivan, 2000). They are in line with the observed correlations in section 5.3.1, in that also over time men shift stronger between market work and leisure and women between market work and homework.

The changes in population wide time allocations result from a myriad of factors some of which can be shaped actively by policy measures. Changing demand and supply for paid labour due to macroeconomic and demographic changes, shifting cultural perceptions in gender related work-ethics, changing incentives for the take-up of paid work through a different setup of welfare states provisions impact in different ways on these trends in time use.

As these conditions and developments differ across countries, important cross-country differences in these trends appear (Table 5.8 and Table 5.9). Thus, the amount of paid work in the Netherlands increased contrary to the overall trend of decreasing time spent on paid work such as in Norway or France. For women the time spent on paid work decreased in France, while it increased in Norway, the UK and the Netherlands. France experienced a relative large decrease in time spent on childcare for both sexes, while there is a visible increase in the UK. Also gains and losses in leisure time vary strongly between the countries. Norway substantially increased leisure time for both sexes, with no visible trend for the Netherlands or the UK.

5.3.2.2. Social changes

- Trends in time use allocations are triggered by broad social changes, such as demographic changes, an increasing diversity in family and household structures and increasing gender equality.

New time use allocations are already in themselves signs of social change (Gershuny and Sullivan, 2000; Ausubel and Grübler, 1995). But rather than being a cause they may be triggered by fundamental social changes in the background. Three different developments seem particularly important in the context of time use allocations (Naegele *et al.*, 2003):

- Demographic change. Demographic change in the form of rising life expectancy and declining birth rates is a universal phenomenon in Europe (European Commission, 2004a). A rising life expectancy with unchanged retirement age means that individuals remain longer in retirement, so that the overall time in paid work decreases with longer life expectancy. This trend is enhanced by a higher proportion of individuals using the possibility of early retirement, especially in the last decade (Börsch-Supan,

1996). Overall, longer life expectancy contributes to the trends of decreasing time in paid work and increased time in unpaid work and leisure.

The relationship between fertility changes and time allocation is more complex. This has to do with a changing relationship between fertility and female employment. While up to the 1970s, the level of completed fertility was negatively correlated to the level of women's labour force participation, now completed family size is lowest in countries with lowest female labour force participation rates (OECD, 2001). Fertility in countries with low female participation has reached lower levels than in high female participation countries (Ferrari and Villota, 2001). The changing correlation between fertility and female employment implies that decreases in fertility can result either in decreases or increases in time allocated to paid work.

However, considering the situation from the 1970s onwards decreasing fertility rates seem thus to contribute to more time allocated to paid work by women. On the individual level results from the econometric analysis confirm this (Section 5.1). Thus, for women the presence of children in the household decreases the probability of participation and the amount of time spent on paid work and leisure, and increases the time in unpaid work.[50]

- Increasing diversity in family and household structures. Nowadays the traditional two-adult two-child household fits only a minority of European households (OECD, 2001). Trends in family and household structure in the forms of a growing solitarization for younger people and elderly persons, more unmarried cohabitation among young adults, higher rates of divorce and remarriage, increased childbearing outside marriage and rising numbers of families without children, contribute all to this situation. Typically different family and household structures bring variation in time allocations. Lone-parent families, mainly women headed, are characterized by low time allocations to paid work and more homework including childcare (OECD, 2001). Married couples still experience unequally shared duties in childcare and unpaid homework, even when mothers are fully employed (Schwierz, 2003).

- Increasing gender equality. Policies to promote gender equality are high on the European Agenda. They find expression in the Rome Treaty in 1957 in the directive of equal pay for both sexes as well as in the Lisbon Strategy Agenda 2000 of promoting female employment.[51] The convergence of female and male wage levels, higher educational attainment of women and policies to promote female employment are expressions of approaching gender equality. The move of women for equal rights and their often desired liberation from traditional roles as child-bearers and house wives

[50] For a discussion of more detailed results on the impact of children on female employment see Chapter 3.

[51] http://europa.eu.int/comm/lisbon_strategy/reports/index_en.html.

have been the impetus for their increased participation in paid work, with its consequent lags in the onset of marriage and childbearing (Robinson, 1985).

Perhaps the most prominent sign of gender equality in time use is the converging time allocated to homework by both sexes, although a huge gap between them remains (Table 5.2). However, cultural patterns are remaining obstacles to gender equality. Fifty percent of European public opinion considers the reconciliation of mother's work outside the home negative to the welfare of children (European Commission, 1998a). Surprisingly, southern countries of the European Union —Greece, Spain and Italy— do consider more its positive effects. Cultural trends, like those in West Germany and France, make family and professional life more incompatible (European Commission, 1998b). Kalmijn *et al*. (2003), find that still a substantial part of the variation in child effects between welfare states can be attributed to differences in gender norms and values. Apparently, husbands do relatively little household work, unless both husband and wife believe in egalitarian work roles (Greenstein, 1996).

5.3.2.3. Institutional changes

- Changes in a broad area of policies, such as taxation, passive and active labour market policies and social security policies influence individual time budgets. The impact of these policies had presumably stronger consequences for the female than for the male allocation of time.

The institutionalized context creates formal and informal barriers for the individual use of time. The barriers may come in form of rules that regulate claims to social security benefits (Naegele, 2003). Barriers may also be erected at the level of everyday work, such as possibilities to work full- or part-time, which are differently developed across European countries.

Changes in the institutional setup of policies which determine individual time budgets occurred frequently in the last 30 years and encompass a broad area of policies, such as taxation, passive and active labour market policies and social security policies (OECD, 2001). Without laying the claim on completeness, some policies which are believed to impact especially on the observed changes in female time allocation, are selected in this study and the main changes through time presented. Those are changes in:

- Taxation. Most OECD countries have moved towards systems of separate taxation for earnings of couples. Separate taxation partly reduces disincentives to work for partners in couple families and has positive impacts on women's allocation of time to paid work (OECD, 2001). However, part of this change has been offset by tax relieves and benefits granted on a family basis. Moreover, upward trends in the marginal tax rates on labour income until the 1990s discouraged participation in and the amount of paid work done especially by women (Freeman and Schettkat, 2005). Recent decreases in marginal tax rates encourage the substitution of market work to household work

especially for women, who have higher wage elasticities with respect to the marginal tax rate (Schwierz, 2003).

- Parental leave policies. Entitlement to maternity and childcare leave has increased in almost all countries, with the maximum leave now available exceeding one year in at least eighteen countries (OECD, 2005).[52] Variations between countries are large, however, and refer to the duration of benefits and the degree of remuneration of maternity leave (Gauthier, 2000). Paternity leave and childcare leave reserved for fathers have been introduced in a number of countries in the past decade. The idea of the provision of parental leave was to promote the labour market participation of women with young children and to make the system more attractive for men as well. However, due to financial incentives as provided by better provision of parental leave, withdrawal from paid work is enhanced. Moreover, long periods without paid work damage often future employment prospects and lead to lower labour market participation rates, and consequently to less time allocated to paid work. Thus, due to the ambiguous incentives of parental leave a broad conclusion for the allocation of time between paid and unpaid work cannot be drawn.[53]

- Formal childcare capacities. With rising employment rates for mothers with young children and a higher education and trends towards dual job holding, the demand for childcare services grows. Delivery of childcare services varies in European countries and reflects different attempts how to reconcile family and work life in the context of different welfare systems and different family traditions. For many families, the lack of viable childcare options is a major barrier to work. Couples increasingly postpone having children because they perceive that childcare facilities are insufficiently available while they want to continue dual job holding. Especially for families, where informal care (for example provided by relatives and neighbors) is lacking or which have a low family income, formal childcare is crucial for the reconciliation of family and work. Matters are complicated by school hours that are often poorly synchronized with parents' working hours.

[52] Some countries have long periods of paid leave for parents – up to 3 years or more in Austria, Finland, France and Germany.

[53] According to evaluation results in Austria longer maternity leave periods lead to an even longer withdrawal of women from the labour market. Moreover, they do not cause fathers to get more involved in the care of young children (Lutz, 2004).

5.3.2.4. Changes in macroeconomic conditions

- The achievement of higher economic growth contributes thus to more time spent on both paid and unpaid work. It is, however, negatively related to time spent on leisure.
- For both sexes lower own-sex unemployment rates are related to more time spent on paid employment, while the converse is true for time spent on homework.
- An increase in the female unemployment rate increases men's time in paid work and decreases their time allocation to homework. The same cross-effect is found for women.

Macroeconomic conditions, such as economic growth, unemployment rates and labour force participation rates have an impact on the allocation of time. With high economic growth, low unemployment rates and high labour force participation rates the society allocates more time to paid work. In contrast, low economic growth with high unemployment rates and low labour force participation rates result in less time allocated to paid work, more work done at home and more leisure.

There does not exist a straightforward relationship between paid/unpaid work and economic growth/unemployment rates for men and women respectively (Figure 5.3 and Figure 5.4).[54] This is not surprising, since economic growth does not automatically imply the creation of new jobs and the extension of working hours for existing jobs. On the contrary, it can come in the form zero job growth (Topel, 1999). However, on the individual level own econometric estimations show that in our sample economic growth is positively related to the participation in and the amount of paid and unpaid work and childcare for both sexes. The achievement of higher economic growth contributes thus to more time spent on both paid and unpaid work. It is, however, negatively related to time spent on leisure.

A better relation of time allocation in paid/unpaid work is to be found when looking at unemployment rates. For both sexes lower own-sex unemployment rates are related to more time spent on paid employment, while the converse is true for time spent on homework (Figure 5.3 and Figure 5.4). Econometric estimations confirm this relationship on the individual level (Table 5.9 to Table 5.13).

For both sexes higher own unemployment rates reduce (increase) the participation and the amount of time spent on paid work (unpaid work). In addition to own-sex unemployment rates, cross-sex unemployment rates have an impact on the allocation of time (Table 5.10 to Table 5.13). As such an increase in the female unemployment rate

[54] No statistically significant linear relationship between economic growth and nationwide changes in the allocation of time to paid and unpaid work can be discovered for either sex. The data for paid/unpaid work was constructed as previously, i.e. it is sex-nation-specific averages of time use for the whole population above the age of 15.

increases men's time in paid work and decreases their time allocation to homework. The same cross-effect is found for women.

5.4 Time use over life course phases

- Time devoted to studies exhibits a spike at the age lower than 25, dropping substantially thereafter, irrespective of living arrangement and parenthood.
- In all life course phases the amount of time spent on paid work is higher for men than women, while the inverse is true when unpaid work is considered.
- For men the variance of time spent on paid work across the life course phases is relatively small, while it is relatively high for women when considering unpaid work.
- Time spent on unpaid work is highest for women living in a couple with a child at the age of 0-6 years.
- For both genders the amount of paid work drops significantly for those older than 65 years.

The allocation of time to different activities varies not only over time and between sexes, as shown in previous sections, but also over the life course. At different ages individuals pursue different careers that vary in their time intensity devoted to specific activities. Changes in time use patterns over the life course follow as a consequence from this behaviour. Dual-earner households with young children spent a lot of time with both paid and unpaid work, experiencing the peak time of work. They have little in common in terms of time use with a pre-retired 55 years old man. Thus, time use is unequally distributed across the life course of individuals.

The unequal distribution of time across the life course follows partly from differences in gender, age, employment status and family arrangement. These characteristics can be used as defining features of life course phases (Table 5.7). Based on a given definition of life course phases the following picture of differences in time use over the life course emerges:

- Time devoted to studies exhibits a spike at the age lower than 25, dropping substantially thereafter, irrespective of living arrangement and parenthood.
- In all life course phases the amount of time spent on paid work is higher for men than women, while the inverse is true when unpaid work is considered. This is true for both samples of employed and non-employed and employed individuals only.
- For men the variance of time spent on paid work across the life course phases is relatively small (mean being 4.6 hours with a standard deviation of 1.0 hours), while it is relatively high for women (mean 3.6, standard deviation 1.3) when considering unpaid work.
- Time spent on unpaid work is highest for women living in a couple with a child at the age of 0-6 years (life course 5). The spike in unpaid work during this life course phase corresponds to a (less than equal) drop in paid work.

- The peak time devoted to work is highest for persons with a child at the age of 0-6 (life course phase 5). Total time devoted to work is higher for women in all life course phases except 1 and 2.
- Both sexes experience a hump-shaped life-cycle pattern of labour supply that first increases until a certain age and then starts to decrease (the two lower graphs of Figure 5.5).[55]
- When isolated, age does not influence the distribution of time allocated to childcare. As discussed in the following sections, other factors have a more decisive impact on these activities. Leisure seems to be more unequally distributed over the life course for women than for men. At midlife women experience the least amount of leisure.
- For both genders the amount of paid work drops significantly, when entering life course phase 8, i.e. for those older than 65 years.

Overall, these observations confirm the unequal distribution of time devoted to productive and non-productive activities over the life time. The relatively high variance of time spent on homework for women points to the fact, that it is rather women than men, who adapt more strongly to changes in the life course. These changes are connected to changes in the living arrangement, employment and parenthood, which will be analysed later in the text. While men usually enter the labour market after finishing their studies and remain there without interruptions (unless unemployment is imposed), women often leave when they marry, and in a number of European countries, when they have children. They do not always return to do paid labour (Ferrari and Villota, 2001). The fact that women have a higher total workload than men over nearly the entire life course strengthens the necessity of time use analysis, as data measuring the average hours spent in the formal labour market shows that men work more, thus skewing the perception of gender related commitment to work.

5.5 Time use and specific life course phases

5.5.1. Parenthood

- The presence of a young child in a household gives rise to specialization. However, later entry into parenthood, rising educational attainment of mothers and positive correlations between employment, marriage and motherhood point into the direction of more equal time use allocations between parents.

Despite the convergence of time use patterns between men and women there is still a large gap to fill in order to equalize gender-specific time uses, once a child enters the

[55] The two lower panels in Figure 5.5 result from the truncated regression results, as discussed in the Appendix and shown in Table 5.12 and Table 5.13. They show the pure, isolated age effect on the amounts of paid work, homework, childcare and leisure done for both men and women.

household.[56] Comparisons of time allocations in different parenthood situations reveal that the biggest change comes upon the arrival of the first child, and there in its early ages (Lippe, 1992). The arrival of children in a household gives rise to specialization (Becker, 1993). With a child between the age of 0-5 women spent considerably less time on paid work and leisure, which they largely shift towards homework. For men there is no effect on the participation in homework, a slight positive effect for the participation in childcare, and a rather large increase in the probability of participation in paid work. This also holds for a child of age 6-15, although with lower time effects (Table 5.10 to Table 5.13). These time effects of young children are also lower for older parents (variable: Kids 0-5 times and age). Thus later entry into parenthood brings about less time reallocation towards specialization of men in paid and women in homework activities.

A similar effect is found for better educated parents. Rising educational attainments of women and rising income opportunities in the formal labour market give rise to more labour market participation by women (Mincer, 1974), with the consequences of less time spent on homework by women and more by men, as was visible by the converging trend in homework done by both sexes throughout the last 40 years. The changing pattern of female employment gives rise to the positive correlation between higher fertility and female employment (Chapter 3.2.2).

Additional children bring only slight changes in increases (decreases) of paid work for men (women) (Figure 5.6).[57] In general, the amount of homework done by men does not vary significantly with child-characteristics of the household. This is not true for women, who slightly increase the amount of homework done with each additional child. Overall more children signify more total workload for both sexes.

Parental decisions are often interrelated with changes in employment and marriage status. Typically, marriage, employment and parenthood are positively correlated for men, whereas parenthood and marriage meant for women a lower probability of being employed (Table 5.14 and Table 5.15). Married men\fathers spend more time on paid work and less time on homework, married women\mothers commit more time to homework and less time to paid work (see also "Kids 0-5 and married" variable in Table 5.10-Table 5.13). These correlations lead thus to more gender-specific task specialization within the household and to more differences in sex-specific time uses for parents.

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[56] Not only the birth of children, but also their timing (Berinde, 1999; Alich 2004), the number of children (Kravdal, 1990), the age and the educational attainment of the children's parents (Gustafson and Wetzels, 2001) were shown in the literature to matter for outcomes in time allocation.

[57] Figure 5.6 includes data for married couples between the age of 18 and 75 living only with their children, i.e. without other household members. It is based on the same country-years as Figure 5.9.

However, when correlations between employment, parenthood and marriage are analyzed in each decade from 1961 to 2000 one can see that the negative correlations between employment-parenthood and employment-marriage change the sign.[58] Overall the correlations for women match more closely those of men.

Changes in the correlations are important as they alleviate the specialization once a child enters the household. This means that becoming mother is not associated necessarily with a dropout from paid work, but on the contrary with a stronger attachment to the formal labour market, which fits well the observation of a positive relationship between fertility and female labour force participation (Chapter 3.2.2). It is also backed by an increasing probability of women for being employed now than in earlier decades, and decreases in the probability of being mother or married (longitudinal dummies in Table 5.14 and Table 5.15). Overall, later entry into parenthood, rising educational attainment of mothers and positive correlations between employment, marriage and motherhood point into the direction of more equal time use allocations between parents.

5.5.2. Employment

- In countries with lower compatibility of work and family life, upon childbirth men (women) decrease (increase) their homework duties and take on more (less) paid work.
- The simultaneous availability of part-time work for women and childcare arrangements is often crucial to reconcile motherhood and paid work.

Changes in the employment status of men and women bring about sex-specific changes in time allocations. As such changes in the own employment status go along with the already described sex-specific substitution effects between home- and paid work for women and paid work and leisure for men (Figure 5.7). However, neither for men nor for women does there seem to be a systematic effect of changes in time allocation depending on the spouse's employment status (Figure 5.8).[59]

[58] It has to be kept in mind that the correlations between the periods are not directly comparable to each other, since they are based on different country-samples.

[59] Figure 5.7 and Figure 5.8 depict the time allocation of married couples without or with a young child depending on their own and their spouse's employment status. They are based on a sub-sample of all married individuals within two (couple without children) or three person (couple with one child) households, for whom detailed information from MTUS data on the couples' employment status, the number of children in the household and the number of household members was available. It includes in total 20025 observations from the surveys Norway 1971, 1981 and 1990, Netherlands 1975, 1980, 1985, 1990 and 1995, UK 1975, Germany 1992, France 1998 and Slovenia 2000.

As already shown in the previous sections, time devoted to paid work fluctuates more strongly over the life course for women than for men, one crucial reason being changes in family responsibilities, e.g. due to childbirth (Drobnic *et al.*, 1999). Cross-country variations between mother's labour market participation reveal differences between countries, which are based on the easiness of work-family reconciliation. Women in Austria, France, Italy, Germany, the UK and the Netherlands reduce their participation in the labour market and the amount of paid work done, when having a child. In these countries with lower compatibility of work and family life, men decrease their homework duties and take on more paid work (child-country dummies in Table 5.10-Table 5.13). These findings are largely corroborated by Ferrari and Villota (2001).

In contrast to that a reduction in labour market attachment of women due to childbirth can not be found in Scandinavian countries, where young mothers increase their labour market presence. Obviously, Scandinavian countries allow for better work-family reconciliation than other European countries. The OECD (1999) justifies these differences on specific characteristics of the welfare state, such as the social security system, expenditures on labour market programmes, parental leave arrangements, and entry conditions to the labour market and pension schemes.

One factor identified as responsible for the above mentioned differences between the countries in the compatibility of work and family life is the availability of part-time work and childcare arrangements. In the European Union around half of mothers in employment with a child aged under 6 works part-time. Most, but not all, of those not working would like to move into employment and work part-time (OECD, 2001; Drobnic *et al.*, 1999).

The compatibility of work and family life can be tested by comparing time spent on childcare between non-employed and employed mothers for different countries. Where childcare facilities and part-time work are largely available, time spent on childcare should not vary largely as in countries where these factors are not as widely developed. While in Germany women spent less time with childcare when being employed, this does not happen in France, where the availability of part-time work for women and childcare facilities is universal (Table 5.3).[60] Also in Italy, Norway and the UK women spent less time with their children after being employed, but this refers only to 1971-1990, when part-time jobs were not yet as widely available as nowadays. These findings are confirmed by Ichino and Galdeano (2005), who find the availability of part-time employment and childcare facilities to be crucial to reconcile motherhood and work. In more detail, they find that in Sweden this reconciliation takes place, but not in Germany and Italy, which confirms a part of the results from this study.

[60] In Table 5.3 mother's time devoted to childcare is shown in relation to the mother being employed or not. The table is based on MTUS data for married women of age 18-50 in a three head household including a child of age 0-5.

Obviously, the general finding that changes in the employment status of men and women bring about sex-specific changes in time allocations is not necessarily connected to childbirth. This depends rather on the country-specific possibilities of work-family reconciliation, which might favour traditional patterns of gender specialization or a better integration of mothers into the formal labour market. Where childcare facilities and part-time work are largely available, it is easier for mothers to engage in paid work.

5.5.3. Living arrangement

- Singles face different time constraints than cohabiting couples. An increasing number of single persons (older and parents) will increase the differences in time allocations across different living arrangements.

The allocation of time depends partly on the type of living arrangement. Typically, singles face different time constraints than cohabiting couples. Couples can distribute homework (and childcare) among each other and bargain over intrahousehold time allocations (Beblo, 2001), facing problems of time togetherness (Hamermesh, 2002), while singles do not face these intrahousehold time allocation issues.

Tendencies to marry less and later, an increasing importance of consensual unions, implying a rise in out-of wedlock fertility and divorce rates, make the analysis of differences in time use between single parent and cohabitating or married couples of paramount interest.[61] Single fathers spend less time on paid and more on unpaid work than men living in a couple with children. In contrast women slightly decrease time spent on paid work and increase time spent on unpaid work when changing from single to living in a couple (Figure 5.9).

The amount of childcare does not differ between cohabiting, married and single parents (Kalekonski *et al.*, 2002). While some authors (McLanahan and Booth, 1989; Rowland *et al.*, 1986) claim that single-parent mothers show heavier workloads and lack of sleep and leisure than married mothers, such evidence is not found in the current data set. According to Figure 5.9 single parents' total workload does not exceed that of married and cohabiting parents.

Current EU household scenarios show that the number of retired persons living alone will increase (Alders and Manting, 1999). Retirement brings a significant drop in the amount of paid work done, which is partly compensated by an increase in homework and partly by an increase in leisure (Figure 5.9). In fact, leisure is relatively equally distributed throughout all living arrangements except retirement, where it increases substantially. Married retired couples differ from retired singles (after divorce or widowhood) by a more

[61] See Carr (2001), Ghysels (2002) and Poortman (2005) for effects of divorce on time allocations.

unequal distribution of time between leisure and homework. In retired couples men consume significantly more leisure time and do less homework than when being alone.

Differences in time allocation among living arrangements exist and become more important in Europe, as the number of one person and single parent households is growing faster than that of cohabitating couples. In view of conflicting results, further research especially into the effects of childbirth on cohabitating/married couples and singles is important, as living arrangements are becoming more diverse in Europe.

5.6 Discussion

The analysis of time use over the life course in European countries brings forward a versatile and rich picture of contemporary and past societies. It helps to unveil the shaping of cultural, economic and institutional forces which guide the individual's choice of how to allocate time during the life course.

As the individual's life time is naturally restricted, time use is characterized by trade-offs. Pursuing one activity implies forgoing another. Given preferences, the individual has to choose the time use most suitable for him. His choice, however, is restricted by various individual, cultural, economic and institutional forces, which give rise to significant differences in the use of time over the life course.

While at young ages significant amounts of time are devoted to studies, time for education is negligible at middle-ages and paid work dominates the field until retirement, where leisure and homework are traded-off against paid work. This implies a hump-shaped life course pattern of labour supply that increases until the mid-ages and then starts to decrease. Both genders experience a peak time of work, which is especially distinctive for persons with a young child. Childbirth contributes thus to a more unequal distribution of the work load over life time.

On average men spent more time than women on paid work over all life course phases; the inverse is true when unpaid work in considered. While many factors are responsible for the inequality in time use over the life course, gender and childbirth have decisive impacts. Women take mostly the responsibility of childcare and additional homework after childbirth, while men commit stronger to paid work. These issues show that the central goals of the redistribution of lifetime working hours and of the reconciliation of work and family life strived for by the adherents of the life course literature is far from being achieved.

Due to changes in various constraints, the distribution of time to different activities changed through the last 35 years. The most striking feature of changing time use patterns is the declining difference in time use within sex groups. Over the last 35 years gender equality expresses itself visibly in the convergence of time spent on paid and

unpaid work between the sexes. But although equality in sex-specific time use is on the rise, considerable gaps remain. Men still pursue a rather stable and durable commitment to paid work, in the sense of not being largely driven in their allocation of time by individual level events such as marriage and childbirth. Women, on the other hand, substitute much stronger between paid work and homework, especially when becoming mothers. Thus, to date, these life events impact on the sexes mostly in the direction of a traditional breadwinner model.

However, broad societal trends blur this simple conclusion. Demographic change in the form of lower fertility levels frees women from family obligations and opens their labour force to paid work. An increasing diversity in family and household structures adds to the diversity of time allocations. It breaks the dominant position of a two-adult two-child household and its resulting traditional work specialization of men and women. Shifting cultural perceptions towards equal rights between the sexes are a long-term impetus towards more diverse and individual ways of time allocation. As such the correlations between employment and marriage or childbirth, which are traditionally positive for men and negative for women are changing. They are becoming less pronounced for men and positive for women. Thus, family, marriage and paid work are becoming more compatible for women.

European countries have dealt differently with these developments. Whereas women in Scandinavian countries have the least difficulties to reconcile work with family life, women in Germany and the Netherlands typically experience a drop out or a substantial reduction of their paid working time after childbirth. This, of course, has considerable consequences for the allocation of time.

The reconciliation of work and family is a key issue in the life course discourse. Family building reshapes life courses in a significant way and changes the time use of women starkly. The family is policy relevant. Policy reforms shaping the institutional and economic context can and do impact on work/family decisions and thus on time use. Changes in taxation, parental leave policies and the availability of part-time employment and formal childcare capacities have been shown to impact on time use. The shape of these policies is crucial for women, who feel the impact of family-related policies more strongly than men and who dependent more than men on the institutionalized context of the individual use of time. Reforms in the direction of more family-friendly policies lead on average to equal opportunities and to a more equal distribution of time between the sexes. They can bring about increases in female labour force participation. With an ageing and possibly declining labour force in Europe and an increasing burden of social security costs, family-friendly policies can thus play a key role in shaping a sustainable economic future of Europe.

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Table 5.1. Correlations between time use activities

	Market	Household	Childcare	Leisure
Women				
Market	1.00			
	-0.35	1.00		
Household				
Childcare	-0.15	0.14	1.00	
Leisure	-0.49	-0.1	-0.17	1.00
Men				
Market	1.00			
	-0.26	1.00		
Household				
Childcare	-0.04	0.08	1.00	
Leisure	-0.66	0.06	-0.07	1.00

Note: The correlations are based on the whole sample of employed and non-employed individuals from the MTUS data set as described in Annex 5.2.

Table 5.2. Changing correlations between employment, marriage and parenthood

	1961-1970	1971-1980	1981-1990	1991-2000
			Men	
Employment - Parenthood	0.07	0.27	0.33	0.29
Employment - Marriage	0.03	0.23	0.21	0.15
Parenthood - Marriage	0.28	0.37	0.45	0.28
			Women	
Employment - Parenthood	-0.22	-0.13	0.07	0.15
Employment - Marriage	-0.28	-0.10	0.05	0.07
Parenthood - Marriage	0.25	0.31	0.39	0.22

Note: Results all significant on 1% significance level. For details see Table 14 and Table 15.

Table 5.3. Maternal employment and mother's time devoted to childcare (in minutes)

Country	1971–1980		1981–1990		1991–2000	
	Not employed	Employed	Not employed	Employed	Not employed	Employed
France					110	103
Germany					178	138
Italy	108	99	116	97		
Norway	116	83	166	135		
UK	101	48	151	124		

Note: The lowest number of observations for an individual cell exceeded 100.

Table 5.4. Country-years included in the study

	MTUS country code	Period 1 1961–70	Period 2 1971–80	Period 3 1981–90	Period 4 1991–2000
Austria	23				1992
Belgium	11	1965			
Denmark	2			1987	
France	3	1965	1974		1998
Germany	9 (West)	1965 (West)			1992
	22				2000[1]
Italy	18		1980	1989	
Netherlands	4		1975, 1980	985, 1990	1995
Norway	5		1971	981, 1990	2000[2]
Slovenia	34				2000
Sweden	36				1991, 2000
UK	6		1975	983, 1987	1995
Surveys per period		3	6	8	7–10

Note: The basic data comes from the MTUS World File as described in Appendix;
[1] German time use study; [2] Norwegian time use study included into the data set; Underlined surveys to be included yet into the data set.

Table 5.5. Descriptive statistics

	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Time use category (in min.)				
Paid work	274.00	283.99	136.07	216.78
Homework	32.58	58.82	181.31	137.76
Childcare	9.89	33.53	30.00	67.69
Leisure	361.03	190.70	336.88	162.86
Macroeconomic				
GDP growth	2.37	1.32	2.41	1.30
Female unemployment rate	8.70	5.46	8.70	5.38
Male unemployment rate	6.25	3.13	6.36	3.24
Country level				
Kids 0–16 and Scandinavia	0.06	0.23	0.06	0.24
Kids 0–16 and France or Italy	0.11	0.32	0.11	0.31
Kids 0–16 and Germany, UK or Austria	0.15	0.36	0.15	0.36
Kids 0–16 and Netherlands	0.03	0.16	0.04	0.19
Kids 0–16 and Slovenia	0.02	0.15	0.02	0.15
Individual				
Age	39.73	18.06	40.48	18.39
Age (squared)	1904.53	1546.73	1977.05	1633.11
Educational Level	1.66	0.75	1.59	0.72
In paid work	0.65	0.48	0.43	0.49
Married	0.65	0.48	0.61	0.49
Kids 0–5	0.13	0.33	0.13	0.33
Kids 6–15	0.26	0.44	0.27	0.44
Older no kids	0.46	0.50	0.47	0.50
Kids 0–5 times and age	4.28	11.64	3.96	10.74
Kids 0–5 and married	0.12	0.32	0.1	0.31
Longitudinal (Number of observations per period)				
1961–70	3004		3196	

1971–80	15072	16492
1981–1990	35403	40828
1991–2000	42160	47414
Total	95639	107930

Table 5.6. Coding of variables

Time use activity (in min.)	
Paid work	Paid Work + Paid Work At Home (AV1–AV2)
Homework	Homework + Cooking/Washing Up (AV6–AV7)
Childcare	Childcare (AV11)
Leisure	Leisure, but not personal care and sleep (Av10, AV17–AVAV25, AV29–AV41)
Macroeconomic	
GDP growth	In percent
Female unemployment rate	In percent
Male unemployment rate	In percent
Country level	
Kids 0–16 and Scandinavia or France and Italy or Germany, UK and Austria or Netherlands or Slovenia	Interaction variables: Dummy variable for children under the age of 18 multiplied by dummy variables for a) Scandinavian countries: Norway, Sweden, b) France, Italy c)Germany, UK, d) The Netherlands
Country dummy	Coded as in 0
Individual	
Age	16–75
Educational Level	Educational level coded in 3 levels: (as in MTUS)
In paid work	0= Not in paid work, 1=In paid work
Married	0= Not living with a spouse/partner, 1=Married/Cohabitating
Kids 0–5	Dummy for the presence of children in the household below the age of 5
Kids 6–15	Dummy for the presence of children in the household between the age of 5 and 15
Kids 0–5 times and age	Interaction variable: Dummy (Child under the age of 5) multiplied by age
Kids 0–5 and married	Interaction variable: Dummy (Child under the age of 5) multiplied by married
Longitudinal	
1961–70, 1971–80, 1981–1990	

Table 5.7. Definition of life course phases

Life course	Definition
1	Person<25, no children<18, living with parents
2	Person 25-44, no children<18, living with parents
3	Person<45, living in couple, no children<18
4	Single parent (all ages), youngest child,18
5	Person (all ages) living in couple, youngest child 0-6
6	Person (all ages) living in couple, youngest child 7-17
7	Person 45-64, living in couple, no children<18
8	Person 65 and above, living in couple, no children<18

Note: Eurostat (2003) provides also information on three additional life courses. These are characterized inter alia by the fact that the person fitting into this category is "living in other arrangement". Since this status is not defined in more detailed, it is excluded from this study. Moreover, Eurostat (2003) provided information on Portugal and Sweden, which were excluded from this study due to data deficiencies.

Table 5.8. Changes in time use over time, employed and non-employed (in minutes)

	Men					Women				
	Paid work	Homework	Paid + Homework	Childcare	Leisure	Paid work	Homework	Paid + Homework	Childcare	Leisure
Norway										
1971-80	344	37	381	10	291	123	256	379	38	283
1981-90	277	44	321	15	360	157	159	316	40	360
1991-2000	262	53	315	7	392	176	123	299	19	380
France										
1961-70	442	24	466	13	207	157	250	407	73	209
1971-80	332	38	370	12	298	166	216	382	51	257
1991-2000	219	47	266	7	357	132	170	302	24	327
Netherlands										
1971-80	210	34	244	12	410	59	172	331	41	395
1981-90	211	45	256	12	407	80	152	232	37	403
1991-2000	248	45	293	14	380	119	126	245	37	386
UK										
1971-80	250	16	266	3	376	116	139	255	13	379
1981-90	241	53	294	10	404	123	176	299	33	382
1991-2000	.	49		15	399	.	147		39	391
Hungary										
1961-70	501	25	526	25	178	277	260	537	45	141
1971-80	395	40	435	12	205	259	218	477	31	176
Italy										
1971-80	380	17	397	12	337	142	268	410	28	306
1981-90	.	17		7	402	.	214		19	339

Note: Source: Own calculations based on MTUS data as described in the Appendix.

Table 5.9. Changes in time use over time, employed (in minutes)

	Men					Women				
	Paid work	Homework	Paid + Homework	Childcare	Leisure	Paid work	Homework	Paid + Homework	Childcare	Leisure
Norway										
1971-80	393	34	427	11	274	275	196	471	18	258
1981-90	349	39	388	18	327	245	141	386	35	328
1991-2000	341	46	387	8	352	267	112	379	14	340
France										
1961-70	454	22	476	14	204	351	172	523	32	157
1971-80	352	37	389	13	289	271	177	448	34	230
1991-2000	373	40	413	9	280	295	146	441	27	245
Netherlands										
1971-80	329	28	357	17	358	190	141	331	26	355
1981-90	335	37	372	16	349	208	125	333	29	360
1991-2000	365	39	404	19	327	218	112	330	37	342
UK										
1971-80	394	15	409	5	337	270	143	413	9	329
1981-90	369	36	405	12	334	269	140	409	21	319
1991-2000	.	36		20	322	.	124		39	310
Hungary										
1961-70	516	23	539	24	175	432	214	646	40	121
1971-80	417	38	455	13	199	345	175	520	20	166
Italy										
1971-80	417	17	434	13	316	303	176	479	26	265
1981-90	.	17		12	345	.	207		26	266

Note: Source: Own calculations based on MTUS data as described in the Appendix..

Table 5.10. Multivariate probit regression results for the participation of men in time use activities

	Paid work	Homework	Childcare	Leisure
Homework (predicted)	0.03**			
	(3.51)			
Paid work (predicted)		-0.01**	-0.00**	0.00
		(18.28)	(3.68)	(0.40)
Macroeconomic				
GDP growth	0.11**	0.14**	0.09**	-0.06**
	(2.66)	(23.60)	(11.49)	(3.14)
Female unemployment rate	0.08**	-0.06**	0.02~	0.06**
	(2.98)	(8.36)	(1.75)	(2.71)
Male unemployment rate	-0.06*	0.02**	-0.04**	-0.02~
	(2.57)	(3.48)	(6.52)	(1.72)
Country level				
Kids 0-16 and Scandinavia	0.91**	0.87**	0.66**	0.13
	(3.46)	(13.84)	(8.83)	(0.84)
Kids 0-16 and France or Italy	-0.19*	1.12**	0.49**	-0.38
	(2.22)	(13.32)	(4.60)	(1.53)
Kids 0-16 and Germany, UK or Austria	0.43**	0.62**	0.54**	0.01
	(5.85)	(11.01)	(7.92)	(0.04)
Kids 0-16 and Netherlands	0.85**	-0.84**	0.91**	0.63~
	(5.51)	(8.08)	(6.90)	(1.80)
Kids 0-16 and Slovenia	0.05	0.92**	0.04	-0.01
	(0.47)	(13.23)	(0.46)	(0.06)
Country dummy	-0.05**	-0.01**	0.01**	0.01**
	(3.38)	(13.69)	(6.79)	(2.85)
Individual				
Age	-0.42**	0.12**	0.04**	-0.04*
	(3.52)	(27.48)	(6.67)	(2.46)
Age (squared)	0.00**	-0.00**	-0.00**	0.00*
	(3.36)	(24.40)	(8.00)	(2.54)
Educational Level	0.93**	0.15**	0.08**	0.07**
	(3.62)	(18.48)	(7.63)	(2.88)
In paid work	1.85**	-0.52**	1.02**	-0.69
	(5.14)	(17.06)	(2.89)	(0.79)
Married	1.75**	-0.34**	0.62**	0.07

	(3.43)	(18.38)	(17.59)	(1.29)
Kids 0-5	1.24**	-0.03	1.38**	-0.34
	(4.08)	(0.30)	(12.96)	(1.27)
Kids 6-15	0.81**	-0.37	0.33**	-0.17~
	(4.07)	(7.55)	(5.69)	(1.65)

Table 5.10 (end)

Kids 0-5 times and age	0.09**	-0.01**	-0.00	0.01
	(3.99)	(3.11)	(1.06)	(1.14)
Kids 0-5 and married	0.06	0.12~	-0.05	-0.04
	(0.80)	(1.90)	(0.66)	(0.26)
Longitudinal				
1961-70	-1.48**	-0.74**	-0.00	0.07
	(3.17)	(19.31)	(0.07)	(0.73)
1971-80	-0.82**	-0.62**	-0.07	0.74**
	(3.81)	(12.59)	(1.07)	(4.62)
1981-1990	-0.78**	-0.34**	-0.08~	0.25*
	(3.54)	(10.51)	(1.82)	(2.45)
Constant	4.74**	-1.06**	-2.57**	2.41**
	(3.51)	(18.55)	(28.94)	(13.10)

Correlations

Paid work - Homework	-.17**	Paid work - Childcare	-.07**
	-25.37)		(-8.38)
Homework - Childcare	.22**	Paid work - Leisure	-.18**
	(27.75)		(-9.68)
Homework - Leisure	.42**	Childcare - Leisure	.12**
	(12.74)		(5.89)

Note:~ significant at 10%; * significant at 5%; ** significant at 1%; The Likelihood ratio test of rho21 = rho31 = rho32 = 0 rejects the null hypothesis of non-correlation of the error terms on 1% significance level: chi2(6) = 1842.6 Prob > chi2 = 0.0000.

Table 5.11. Multivariate probit regression results for the participation of women in time use activities

	Paid work	Homework	Childcare	Leisure
Homework (predicted)	0.04**			
	(5.35)			
Paid work (predicted)		−0.01**	−0.01**	−0.00
		(10.39)	(10.20)	(1.23)
Macroeconomic				
GDP growth	0.20**	0.09**	0.09**	−0.02
	(4.90)	(8.02)	(12.03)	(0.86)
Female unemployment rate	−0.10**	0.04**	0.03**	0.02
	(4.23)	(3.79)	(3.85)	(0.76)
Male unemployment rate	0.09**	−0.02**	−0.01~	−0.01
	(3.88)	(2.97)	(1.87)	(0.57)
Country level				
Kids 0−16 and Scandinavia	1.11**	0.42**	0.60**	0.66**
	(4.38)	(3.54)	(8.24)	(3.06)
Kids 0−16 and France or Italy	−0.61**	0.87**	1.06**	−0.01
	(7.07)	(6.07)	(10.42)	(0.03)
Kids 0−16 and Germany, UK or Austria	−0.17*	0.45**	0.70**	0.12
	(2.33)	(4.26)	(9.95)	(0.83)
Kids 0−16 and Netherlands	−3.16**	1.08**	0.23~	0.60
	(6.32)	(5.67)	(1.82)	(1.47)
Kids 0−16 and Slovenia	0.11	0.34**	−0.06	0.12
	(1.09)	(2.71)	(0.69)	(0.60)
Country dummy	−0.08**	0.00	0.01**	0.01**
	(5.32)	(1.38)	(6.12)	(2.77)
Individual				
Age	−0.62**	0.15**	0.08**	0.02
	(5.46)	(22.22)	(16.10)	(1.23)
Age (squared)	0.01**	−0.00**	−0.00**	−0.00
	(5.30)	(18.09)	(17.47)	(1.09)
Educational Level	1.35**	−0.04**	−0.02*	0.18**
	(5.46)	(3.04)	(2.24)	(6.32)

In paid work	1.31**	-0.03**	-0.79**	0.64
	(7.36)	(9.62)	(8.91)	(0.70)
Married	-2.76**	0.38**	0.26**	-0.09~
	(5.63)	(14.91)	(12.93)	(1.75)
Kids 0-5	-9.21**	0.56**	2.44**	-0.29
	(6.26)	(3.47)	(21.18)	(1.12)

Table 5.11. (end)

Kids 6-15	-3.85**	0.14	0.91**	-0.16
	(5.80)	(1.41)	(12.92)	(1.28)
Kids 0-5 times and age	0.14**	-0.01**	-0.01**	-0.00
	(6.21)	(2.62)	(6.10)	(0.67)
Kids 0-5 and married	-0.12*	0.04	0.24**	0.21
	(2.41)	(0.66)	(4.75)	(1.64)
Longitudinal				
1961-70	-2.73**	-0.27**	0.01	0.06
	(6.06)	(3.79)	(0.18)	(0.65)
1971-80	-1.23**	-0.30**	-0.36**	0.33~
	(5.95)	(4.04)	(6.11)	(1.95)
1981-1990	-1.12**	-0.26**	-0.39**	0.41**
	(5.32)	(4.99)	(9.85)	(3.50)
Constant	9.71**	-1.83**	-2.73**	1.85**
	(5.39)	(16.76)	(33.89)	(8.61)
Correlations				
Paid work - Homework	-.16**	Paid work - Childcare		-.06**
	(-15.66)			(-8.46)
Homework - Childcare	.14**	Paid work - Leisure		-.19**
	(14.42)			(-9.76)
Homework - Leisure	.21**	Childcare - Leisure		.04**
	(12.74)			(2.31)

Note:~ significant at 10%; * significant at 5%; ** significant at 1%; The Likelihood ratio test of rho21 = rho31 = rho32 = 0 rejects the null hypothesis on 1% significance level: chi2(6) = 798.956 Prob > chi2 = 0.0000

Table 5.12. Truncated regression results for men

	Paid work	Homework	Childcare	Leisure
Homework (predicted)	0.32**			
	(3.82)			
Paid work (predicted)		1.83**	2.93**	0.21**
		(3.95)	(8.20)	(7.84)
Macroeconomic				
GDP growth	28.37**	−18.27	44.89**	−28.99**
	(10.13)	(0.75)	(2.79)	(16.00)
Female unemployment rate	14.10**	−10.82*	−21.50**	1.90**
	(15.63)	(2.23)	(4.84)	(6.12)
Male unemployment rate	−9.37**	28.31**	−1.16	−0.04
	(9.96)	(3.57)	(0.24)	(0.08)
Country level				
Kids 0–16 and Scandinavia	85.01**	82.91**	83.27	14.74
	(4.65)	(2.65)	(1.63)	(0.89)
Kids 0–16 and France or Italy	23.89**	93.59*	68.95*	−9.77
	(7.15)	(1.98)	(2.54)	(0.63)
Kids 0–16 and Germany, UK or Austria	93.67**	51.66	46.90**	−31.18*
	(5.59)	(1.33)	(3.41)	(2.03)
Kids 0–16 and Netherlands	26.13	−33.73	37.99**	1.36
	(1.52)	(0.17)	(6.92)	(0.08)
Kids 0–16 and Slovenia	78.33**	82.90**	99.60**	33.35*
	(4.38)	(4.29)	(3.74)	(2.11)
Country dummy	0.25	−8.03**	2.90~	−1.23**
	(1.09)	(3.41)	(1.67)	(7.88)
Individual				
Age	14.73**	2.72**	0.52**	−0.43**
	(2.94)	(6.18)	(5.14)	(3.82)
Age (squared)	−0.17**	−0.02**	−0.00**	0.00**
	(4.76)	(5.92)	(4.72)	(5.31)
Educational Level	−7.63*	−65.72**	48.75**	15.72**
	(2.53)	(3.33)	(5.08)	(12.93)
In paid work	205.94**	−41.17**	−2.59**	−141.40**
	(43.91)	(5.39)	(8.59)	(19.98)
Married	13.40~	−49.37**	−53.13~	−27.28**
	(1.96)	(6.24)	(1.75)	(10.48)

Kids 0–5	67.00*	–80.21**	2.27*	–6.07
	(2.28)	(2.82)	(2.28)	(0.30)
Kids 6–15	56.88**	38.04	3.53**	–17.86
	(3.25)	(0.23)	(4.15)	(1.21)
Kids 0–5 times and age	0.37	–24.02**	1.51	–1.21**
	(0.69)	(4.17)	(0.94)	(3.62)

Table 5.12 (end).

Kids 0-5 and married	7.99	-27.92*	10.59*	5.91
	(0.61)	(2.15)	(1.98)	(0.58)
Longitudinal				
1961-70	214.25**	-105.60**	-93.92**	-48.50**
	(15.36)	(3.18)	(3.74)	(13.40)
1971-80	99.81**	-99.98*	-2.17	-70.24**
	(12.06)	(2.44)	(0.05)	(11.69)
1981-1990	40.49**	-76.27*	-54.19**	-17.46**
	(5.29)	(2.21)	(3.11)	(2.90)
Constant	263.63**	-372.59**	200.69~	350.29**
	(6.52)	(5.98)	(1.77)	(31.97)
Observations	31537	36284	11620	66848

Table 5.13. Trucated regression results for women

	Paid work	Homework	Childcare	Leisure
Homework (predicted)	0.79**			
	(7.70)			
Paid work (predicted)		0.53**	0.99**	-0.18**
		(27.70)	(11.51)	(8.99)
Macroeconomic				
GDP growth	22.80**	-1.50	34.25**	-16.38**
	(6.59)	(1.11)	(6.33)	(12.26)
Female unemployment rate	-14.69**	5.14**	18.13**	-1.98**
	(13.21)	(22.67)	(11.55)	(8.64)
Male unemployment rate	13.69**	-3.98**	-2.42	2.82**
	(11.50)	(10.95)	(1.50)	(7.88)
Country level				
Kids 0-16 and Scandinavia	72.52**	63.86**	11.12**	55.77**
	(3.20)	(4.86)	(4.63)	(4.41)
Kids 0-16 and France or Italy	-93.91**	70.76**	65.94**	0.72
	(4.37)	(5.71)	(8.45)	(0.06)
Kids 0-16 and Germany, UK or Austria	10.11	96.82**	393.67**	3.65
	(0.49)	(7.87)	(9.56)	(0.31)
Kids 0-16 and Netherlands	-96.72**	50.14**	31.75**	-5.60
	(8.95)	(11.73)	(16.33)	(0.45)
Kids 0-16 and Slovenia	122.35**	76.88**	109.81**	39.19**
	(5.55)	(6.11)	(9.68)	(3.21)
Country dummy	-0.43	1.48**	0.52	-1.78**
	(1.50)	(12.62)	(0.84)	(15.23)
Individual				
Age	7.86**	12.11**	0.85**	-2.53**
	(4.43)	(40.10)	(17.04)	(8.53)
Age (squared)	-0.10*	-0.10**	-0.01**	0.03**
	(2.13)	(29.92)	(13.29)	(8.92)
Educational Level	34.90**	-30.86**	42.40**	14.71**
	(9.68)	(34.20)	(13.34)	(15.62)
In paid work	139.56**	-	-49.78**	-12.72

		114.28**		
	(46.10)	(37.05)	(14.39)	(1.48)
Married	–	90.71**	38.13**	-47.23**
	101.51**			
	(12.82)	(57.50)	(4.53)	(29.49)
Kids 0-5	–	111.65**	79.99*	-61.05**
	249.27**			
	(6.57)	(7.86)	(2.10)	(4.22)
Kids 6-15	-69.76**	-17.86	51.11**	-33.14**
	(3.23)	(1.56)	(6.36)	(2.91)
Kids 0-5 times and age	4.07**	-2.93**	3.24**	-0.26
	(5.35)	(13.45)	(5.67)	(1.06)
Kids 0-5 and married	5.70	22.76**	3.49	9.61~
	(0.46)	(4.40)	(0.30)	(1.85)
Longitudinal				
1961-70	–	65.69**	-03.39**	38.27**
	196.53**			
	(10.47)	(8.46)	(6.67)	(4.91)
1971-80	-76.78**	24.34**	21.09	24.30**
	(7.59)	(5.69)	(1.37)	(5.69)
1981-1990	-1.60	-8.59~	-18.36	1.20
	(0.17)	(1.95)	(1.12)	(0.28)
Constant	156.73**	–	80.25**	95.88**
		190.95**		
	(6.43)	(21.48)	(11.42)	(50.34)
Observations	25639	72741	24574	76667

Table 5.14. Life course states – Multivariate probit regression results for men

	Employed	Kids	Married
Macroeconomic			
GDP growth	0.10**	0.03**	-0.01*
	(14.73)	(6.21)	(2.14)
Female unemployment. rate	-0.03	0.01**	0.00*
	(0.63)	(4.32)	(2.23)
Male unemployment rate	-0.02**	0.00	0.02**
	(7.88)	(1.22)	(8.81)
Country dummy	0.00**	-0.00	0.01**
	(5.23)	(0.21)	(8.68)
Individual			
Age	0.31**	0.25**	0.26**
	(119.74)	(84.67)	(124.56)
Age (squared)	-0.00**	-0.00**	-0.00**
	(121.58)	(83.12)	(105.95)
Educational Level	0.08**	0.03**	0.06**
	(9.61)	(3.90)	(7.38)
Longitudinal			
1961-70	0.88**	0.38**	1.13**
	(14.26)	(11.95)	(20.27)
1971-80	0.32**	0.28**	0.67**
	(12.04)	(13.03)	(25.83)
1981-1990	0.28**	0.05**	0.14**
	(17.22)	(3.88)	(8.98)
Constant	-4.25**	-4.83**	-5.85**
	(83.45)	(81.54)	(114.02)
*Correlation*s			
Employed - Kids	.09**		
	(12.52)		
Employed - Married	.19**		
	(24.52)		
Kids - Married	.54**		
	(85.36)		

Note: ~ significant at 10%; * significant at 5%; ** significant at 1%; The correlations between employment, marriage and parenthood are all statistically significant. A likelihood-ratio test of common significance of these interrelations confirms the necessity to model these decisions in a multivariate probit framework. The Likelihood ratio test of rho21 = rho31 = rho32 = 0 rejects the null hypothesis on 1% significance level: chi2(3) = 7280.14 Prob > chi2 = 0.0000.

Table 5.15. Life course stages – Multivariate probit regression results for women

	Employed	Kids	Married
Macroeconomic			
GDP growth	0.04**	0.04**	−0.05**
	(8.13)	(7.86)	(9.07)
Female unemployment rate	−0.03**	0.00	0.00
	(27.33)	(0.42)	(1.11)
Male unemployment rate	0.00	0.00	0.01**
	(0.86)	(0.11)	(6.06)
Country dummy	−0.00~	−0.01**	−0.00
	(1.76)	(9.96)	(0.46)
Individual			
Age	0.17**	0.25**	0.24**
	(87.84)	(68.00)	(135.96)
Age (squared)	−0.00**	−0.00**	−0.00**
	(95.33)	(67.83)	(127.87)
Educational Level	0.31**	−0.03**	−0.08**
	(45.66)	(5.00)	(11.39)
Longitudinal			
1961-70	−0.52**	0.13**	0.51**
	(16.70)	(4.32)	(13.15)
1971-80	−0.22**	0.11**	0.31**
	(11.04)	(5.50)	(14.12)
1981-1990	0.04**	0.01	0.08**
	(2.91)	(1.06)	(5.96)
Constant	−2.83**	−4.04**	−4.33**
	(65.26)	(61.88)	(101.80)
Correlations			
Employed – Kids	−.22**		
	(−39.12)		
Employed – Married	−.13**		
	(−22.08)		
Kids – Married	.33**		
	(58.61)		

Note: ~ significant at 10%; * significant at 5%; ** significant at 1%; The correlations between employment, marriage and parenthood are all statistically significant. A likelihood-ratio test of common significance of these interrelations confirms the necessity to model these decisions in a multivariate probit framework. The Likelihood ratio test of rho21 = rho31 = rho32 = 0 rejects the null hypothesis on 1% significance level: chi2(3) = 7280.14 Prob > chi2 = 0.0000.

Figure 5.1. Average time use by activity and country

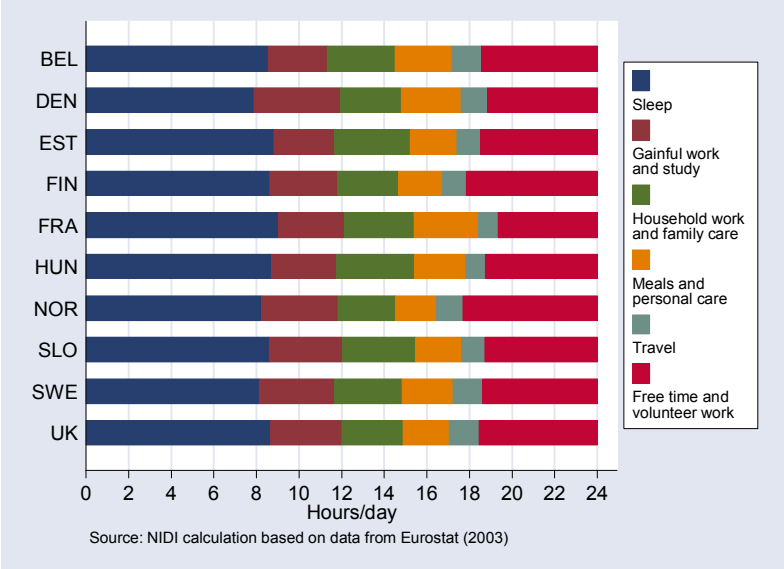


Figure 5.2. Changing time use allocations through the last 35 years

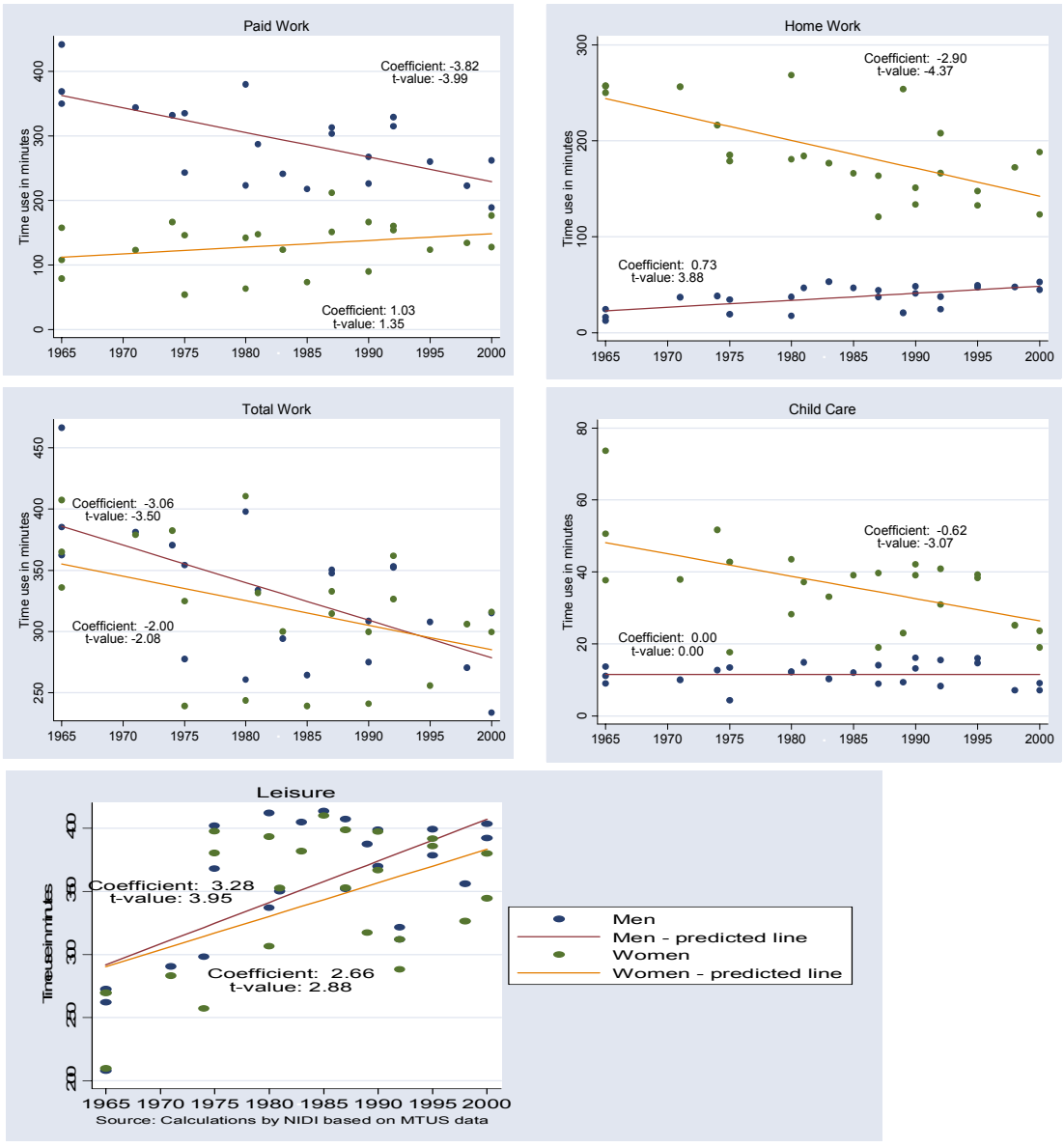


Figure 5.3. Linear regressions of paid and unpaid work on economic growth and unemployment rates (men)

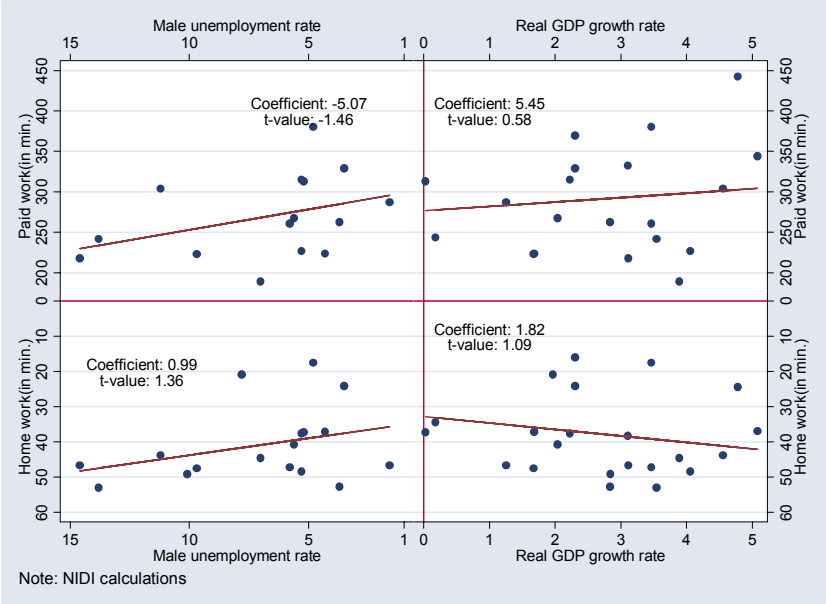


Figure 5.4. Linear regressions of paid and unpaid work on economic growth and unemployment rates (women)

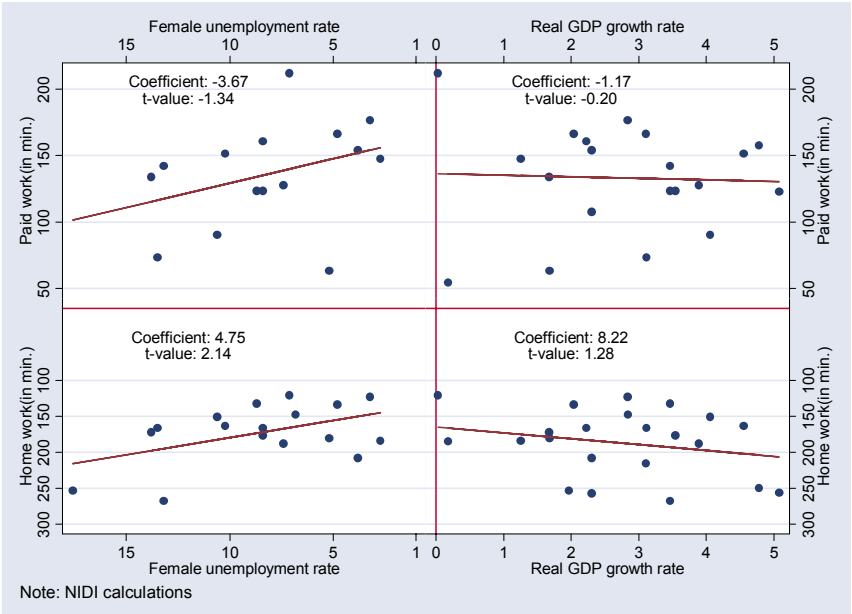


Figure 5.5. Gender differences in time allocated to paid/unpaid work and studies over 8 life course phases (Avg. in hours over 11 European Countries)

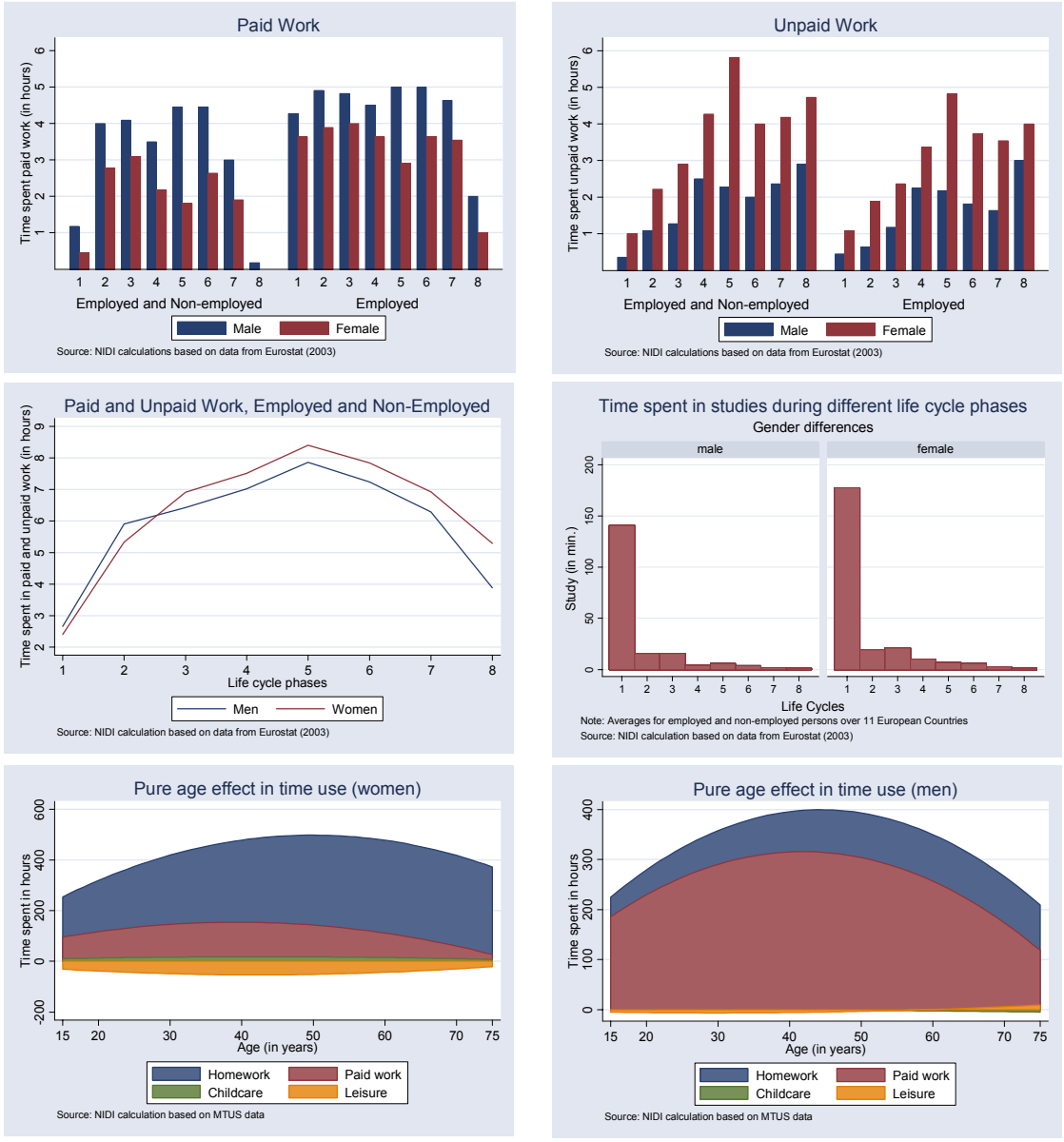


Figure 5.6. Time allocation in parenthood (by gender)

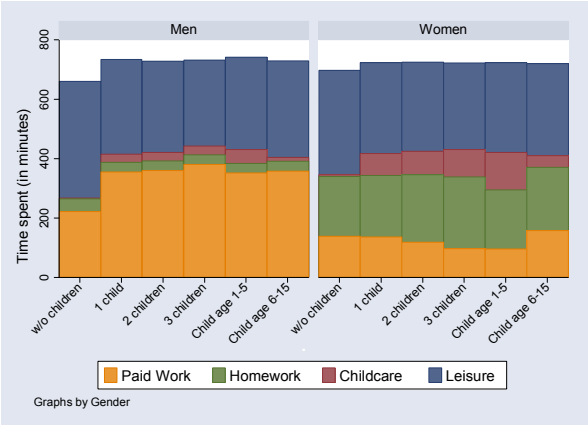
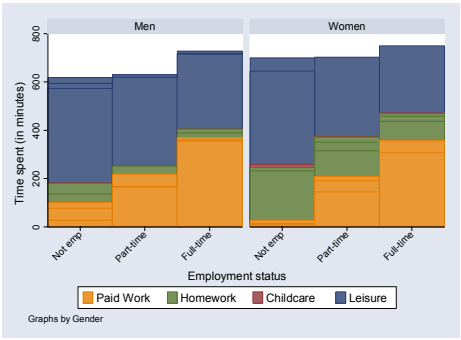


Figure 5.7. Time allocation of married couples depending on their own employment status

Without children



With one child of age 1-5

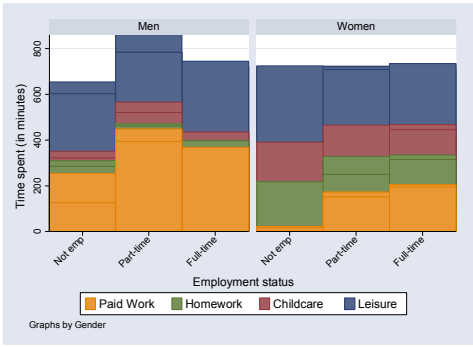


Figure 5.8. Time allocation of married couples depending on spouse's employment status

Without children

With one child of age 1-5

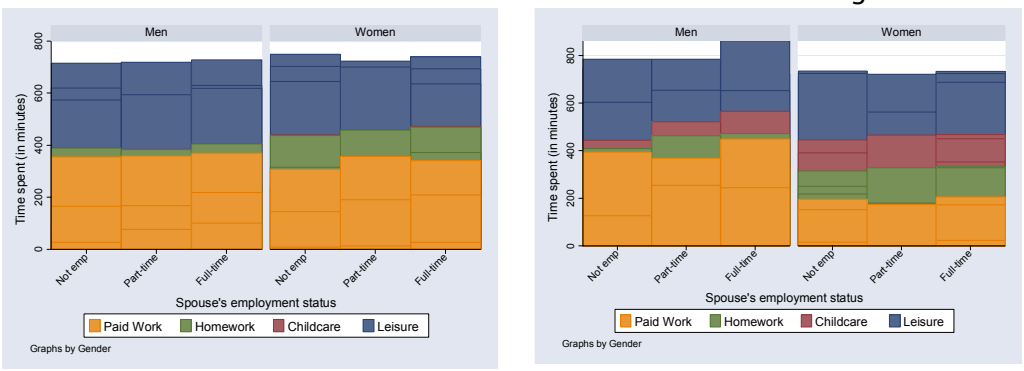
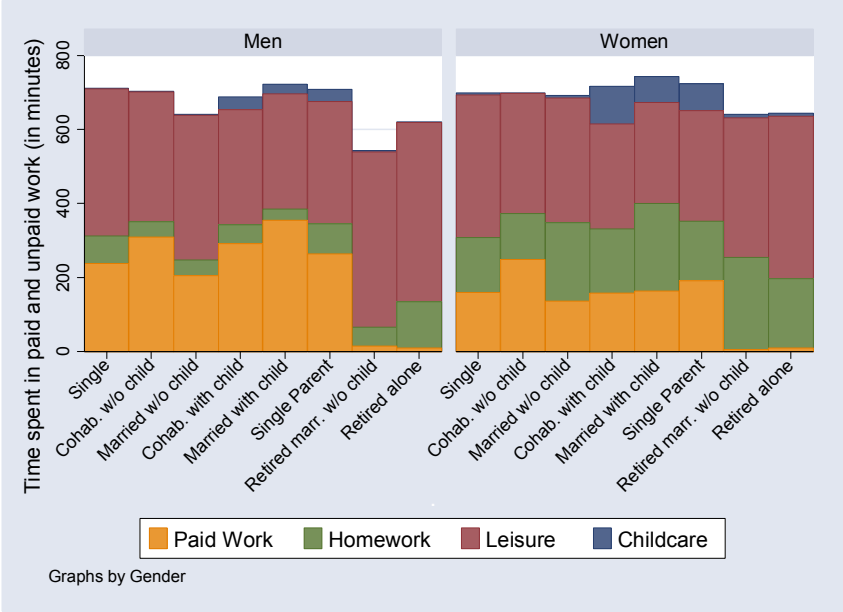


Figure 5.9. Time allocation in different living arrangements (by gender)



Appendix to Chapter 5

5.7 Methodology

The empirical analysis explores the effects of several variables on the participation decision and the actual amount of time invested in certain activities. I estimate reduced-form models and use econometric techniques which allow for the integration of the time and the cross-section dimension over the period 1965-2000. I use four sets of explanatory variables for the estimations: macroeconomic, country-level, longitudinal and individual variables. Due to the availability of sufficient observations the inclusion of this extensive set of variables is feasible and gives information on various factors underlying time use activities.

The above mentioned set of explanatory variables does not exhaust the entire set of all possible determinants of the participation in time use activities. Thus, it is not possible to exclude differences in time use activities which also captured by the heterogeneity of excluded variables. Moreover, the time dimension of the data set may be insufficiently captured by the estimation strategy. Unfortunately, due to the cross-sectional nature of time use data it is not possible to employ panel data estimation techniques.[62]

The estimation framework is divided into two parts. First, the probabilities of participation and the amount of time invested in the respective time use activities are estimated with respect to the explanatory variables. This is done with the use of a double-hurdle model which discriminates between the participation and the time amount decision in a time use activity. The use of the double-hurdle model is necessary due to the typical censoring of time use data at zero. The estimation framework is explained in Section 5.1.1. Second, after confirmation of the statistical significance of the double-hurdle model a multivariate-probit model is estimated for the time use activities and the probabilities of being married, employed and having children. This concept is introduced in Section 5.1.2.

5.7.1. The double-hurdle model

The problem that time use data often exhibit censoring at zero has to be considered in the empirical specification of the model. Usually this obstacle is handled with a Tobit

[62] Panel data captures a sample of the same individuals over a certain time period, usually several years. Econometric techniques based on panel data can take into account the effects of variables not taken explicitly into account and that tend to vary over time and/or over each individual units (Greene, 2003).

model.[63] The basic assumption in this model is that observed zeros are all the outcome of optimal choice, meaning that they can only arise, if the individual decides not to participate in the labour market or in a certain household activity. However, as already described earlier, time use data may also report "wrong" zeros that had to be considered in further estimation. Formally the Tobit model can be written as

$$y_i^* = x_i \beta_1 + \varepsilon_1$$
$$y_i = \begin{cases} y_i^* & \text{if } y_i^* > 0 \\ 0 & \text{else} \end{cases}$$
$$\varepsilon_1 \sim N(0, \sigma^2)$$

where y_i^* is the unobserved latent value, i.e. desired hours of work, y_i is the actual observed outcome, x_i is a vector of explanatory variables which is assumed to be uncorrelated with the error term ε_1 and β_1 is a vector of unknown parameters.
The log likelihood function for the Tobit model is

$$\ln L = \sum_{y_i>0} -\frac{1}{2} + \left[\ln(2\pi) + \ln \sigma^2 + \frac{(y_i \beta_1' x_i)}{\sigma^2} \right] + \sum_{y_i=0} \ln \left[1 - \Phi\left(\frac{\beta_1' x_i}{\sigma^2} \right) \right]$$

where Φ is the probability density function of the standard normal distribution. The two parts of the log likelihood correspond to the classical regression for the nonlimit observations and the relevant probabilities for the limit observations.
Since this model does not separate an individual's participation decision from the decision of the amount of time to be invested in a particular activity, it might be considered as rather restricted due to the particular data-collection method with time use data. In order to distinguish between the true zeros of deliberate choice and false zeros due to the data collection method, Cragg's (1971) double-hurdle model will be introduced, which might be seen as an extension of the Tobit model.
Formally it is represented in the following way:[64]

1. Participation equation:

$$\text{Prob}[y_i^* > 0] = \Phi(\lambda' x_i)$$

[63] For the original formulation see Tobin (1958).

[64] See e.g. Greene (2003), pp. 764-768.

$$\mathrm{Prob}\left[y_i^* \le 0\right] = 1 - \Phi\left(\lambda' x_i\right)$$

$$d_i = \begin{cases} 1 \text{ if } y_i^* > 0 \\ 0 \text{ if } y_i^* \le 0 \end{cases}$$

2. Structural equation, which is the regression equation for the nonzero observations:

$$E\left[y_i \middle| d_i = 1\right] = \beta' x_i + \sigma\lambda_i$$

As can be seen, the model specifies two steps in order to observe a positive y_i. First, a positive amount of hours worked has to be desired ($y_i^* > 0$). Second, the person must be observed working on the interview day ($E\left[y_i \middle| d_i = 1\right]$). This is a combination of a truncated regression model and a univariate probit model. The Tobit model, as presented above, arises if $\lambda = \beta/\sigma$. The parameters of the participation equation can be estimated independently using a truncated regression model.[65]

Now there exists a simple test for the double-hurdle model against the Tobit model. It can be shown, that the Tobit log-likelihood is the sum of the log-likelihoods of the truncated and the probit models. Therefore, one simply has to estimate the truncated regression model, the Tobit model and the probit model separately and use a likelihood ratio (LR) test. The LR statistic can be computed using

$$\Gamma = -2\left[\ln L_T - \left(\ln L_P + \ln L_{TR}\right)\right] \sim \chi^2{}_k$$

where

L_T = likelihood for the Tobit model
L_P = likelihood for the probit model
L_{TR} =likelihood for the truncated regression model

[65] The assumption of independency between the participation and the structural equation is only one variant of a possible extension of the Tobit model. For specifications where this assumption has been dropped see, e.g. Carlin and Flood (1997).

and k is the number of independent variables in the equations. If the test hypothesis is written as

$$H_0 : \lambda = \beta/\sigma \qquad\qquad H_1 : \lambda \neq \beta/\sigma ,$$

then H_0 will be rejected on a pre specified significance level, if $\Gamma > \chi^2{}_k$.

There have already been several applications of the double-hurdle model and some modifications of it. Deaton and Irish (1984) used the model in a consumption study, where it was hypothesized that too many people reported zero expenditures for liquor and tobacco in fear of being stigmatized. But the model has also been used to labour supply studies, e.g. in Carlin and Flood (1997) or Daunfeldt (2001). In all cases the double-hurdle model was preferred over the more restrictive Tobit model, which corroborates the fact that many of the reported zeros in time use data stem from the method of data collection and not from deliberate individual choice.

In a first step the restriction imposed by the Tobit model has been tested against the double-hurdle model. This has been done by performing LR-Tests described earlier in the text. Comparing the LR-statistics with the critical value at the 1% level, the restrictive Tobit model could be rejected in all cases.

Due to the strong rejection of the Tobit model in all cases, the observed zeros can not be regarded as the outcome of deliberate choice, so that the specification in the form of the double-hurdle model seems to be more correct. Because time use activities are often substitutes, it is to be expected that they are related to each other. Disregarding the interrelatedness of time use activities can be an additional source of bias and has to be considered. It can be done so by the use of a multivariate probit model, which is introduced in the following section.

5.7.2. Multivariate probit model

An extension of the univariate probit model, as introduced in form of the probit equation in section 5.1.1, is the multivariate probit model. A multivariate probit model allows for correlation of the error terms between multiple equations, i.e. of the unexplained variance of the dependent variable which is not captured by the explanatory variables (Greene, 2003, p. 710). The multivariate model itself is an extension of the bivariate probit model, which is explained shortly in the following.

The specification of the two-equation model is

$$y_1^* = x_1\beta_1 + \varepsilon_1, \qquad y_1 = 1 \quad \text{if} \quad y_1^* > 0 \text{ , 0 otherwise,}$$
$$y_2^* = x_2\beta_2 + \varepsilon_2, \qquad y_2 = 1 \quad \text{if} \quad y_2^* > 0 \text{ , 0 otherwise,}$$
$$E[\varepsilon_1 \mid x_1, x_2] = E[\varepsilon_2 \mid x_1, x_2] = 0,$$
$$Var[\varepsilon_1 \mid x_1, x_2] = Var[\varepsilon_2 \mid x_1, x_2] = 1,$$
$$Cov[\varepsilon_1, \varepsilon_2 \mid x_1, x_2] = \rho$$

The probabilities that enter the likelihood function are

$$\Pr ob[y_1 = 1, y_2 = 1 \mid x_1, x_2] = \Phi_2(x_1\beta_1, x_2\beta_2, \rho),$$

Where Φ_2 is the likelihood function.[66] The dependent variables in the model are

y_1 = status of an individual of a career type or participation in a time use activity
y_2 = status of individual, such as being married or not, being employed or not, having children or not etcetera.
x_1 and x_2 are regressor vectors containing the independent variables in the model. The multivariate model is an extension by adding more than two outcomes (Greene, 2003, p. 714).

In the context of the estimation of the determinants of time use activities and the interrelatedness of life course stages, the multivariate model has the following advantages:

1. Time use activities are interrelated. More time spent in one activity implies necessarily less time spent in other activities. Thus, the probabilities to participate in different activities may be correlated. This can be captured directly by a multivariate model.
2. Different life course phases are likely to be correlated. The decision to marry will often go along with a wish for children; the decision to retire can correlate with a transition to an empty nest. Multivariate models account for these correlations through correlated disturbances. This effect is not captured in single equation models and can be a source of model misspecification and biased estimation results.
3. The correlation of life course stages can be tested formally in the multivariate model. If the correlation coefficient ρ estimated within the model turns out to be zero, then there is evidence of non-correlation of life course decisions.

[66] On a more detailed description of bivariate probit model see Greene (2003), pp. 710-719.

4. Often a life course stage can be dependent on the outcome of another decision, e.g. people often commit to having children only after having secured their future earnings, i.e. after having entered employment. The fact that one decision is endogenous to the other can be easily accounted for in a multivariate model.

These advantages justify the use of a multivariate model in the present framework. The estimation technique follows the mvprobit command, as explained in Stata 8. For the time use activities, the tetravariate model is used with paid work, homework, childcare and leisure as the dependent variables and independent variables as shown in Table 5.10 to Table 5.13. The life course stages employment, marriage and parenthood are estimated in a trivariate model and explained by the regressors as shown in Table 5.14 and Table 5.15. The LR-test results show that the non-correlation of the disturbances across the equations is rejected for both the time use activities and the life course stages. Thus, the use of the multivariate model is justified on statistical grounds.

In addition to the regressor used, non-linearities and interaction variables of the macroeconomic variables were tested for statistical significance, but rejected. Moreover, period-specific child, employment and marriage dummies were used. Although statistically significant in some cases, a comparison with non-period-specific dummies yielded no qualitative difference in results and added thus not more useful information.

5.8 Data

In the following the main characteristics of time use data as well as the two data sets used in this study are presented.

The design of time use surveys varies substantially across countries and through time and makes their comparisons difficult. First, some countries collect data only during specific months and days, while others try to collect data which represents the distribution of time use through the working days and weekends as well as through the different months of the year in order to distribute the days during which the time diaries were completed evenly. Second, there exist differences in the coding of activities and individual characteristics. Third, only few surveys collect data on secondary activities. Secondary activities are pursued simultaneously with primary activities, such as doing childcare and watching TV at the same time. The exclusion of secondary activities from data collection leads to more arbitrary decisions, as to what individuals regard as the primary activity, leading to problems in data analysis.

These difficulties led to strengthened efforts of data harmonization on the European level. Eurostat established the HETUS guidelines for the harmonization of time use surveys across the members of the European Union. These guidelines prescribe methods of data collection that make time use data easily comparable across European countries. Based on recent time use surveys which followed the HETUS guidelines, the first European time use data set is expected to be ready in June 2006. Up to now, Eurostat offers a publication that documents time use at different stages of life for 13 European countries (European Commission, 2003). Descriptive statistics form this publication are used in this study to document the most recent time use situation in Europe.

Further analysis is based on the Multinational Time Use Study (MTUS) data developed by the Essex University in the UK (http://www.iser.essex.ac.uk/mtus/index.php). For the moment being the MTUS is the best harmonised cross-national time use data. The MTUS has harmonised data from 44 studies conducted in 21 countries from the 1960s through the 1990s into a single data set (Fisher and Layte, 2004). The major advantage of the data set is the possibility to use it for cross-country and longitudinal comparisons of time use. Its major disadvantage is the relative scarce availability of individual and household background variables. In order to achieve comparability across studies only some basic characteristics remained restricting the scope of analysis.

In this study the MTUS World 5.5.2 file is used as the basic time use data set. It is supplemented by the German time use survey from the year 2000, as well as by the Swedish time use surveys from the years 1991 and 2000. Overall, the data set comprises of more than 200000 observations from 27 surveys conducted in 11 European countries. The first studies included were conducted in the year 1965 and the last ones in the year 2000, covering a period of 35 years. The number of studies available for each country differs from one (e.g. Denmark) to five (the Netherlands). For the country-years included in the data see Table 5.4. For descriptive statistics of the data set see Table 5.5.

Four main categories of time use are being distinguished in this study: paid work, homework, childcare and leisure. These are the main categories where substitution of time is found according to changes in the life course phases, such as marriage or child birth. Paid work includes time used in paid work at the working place as well as at home, breaks at work as well as other work-related activities. Homework is comprised of all regular homework activities, such as washing dishes, laundering, cooking and other manual work. Childcare includes all activities related to taking care of babies and children. Finally, leisure includes all activities related to leisure, but not coded as sleeping or personal time. For an exact coding of the activities see Table 5.6.

For the econometric regressions various individual characteristics were included: the individuals' sex, age, educational level and the civil status. On the household level information on the presence of children in different age brackets was available. Unfortunately, information on the income of the individuals was available only for a subsample of surveys and only in broad income categories. Since income is usually bound to several measurement errors, it was excluded from this study.

In addition to individual and household variables, variables capturing the macroeconomic impact on time use decisions are included. These are the real economic growth rate, the unemployment rates of males of females as well as the level of GDP per capita. Variables on unemployment stem from official statistics provided by ILO (http://laboursta.ilo.org/). Data on economic growth is from IFS 2003 statistics.

6. Population related policies and implications

6.1 Highlights

- Practically all Member States have major concerns about population ageing.
- As the future pension systems may not be sustainable, labour market participation rates should increase, especially for persons of 50 years or over. Therefore early retirement schemes are reduced and the age at retirement is rising.
- Concerns also exist about low population growth and low fertility levels. However policy measures to directly influence the fertility level do hardly exist.
- Work-family policies are high on the political agendas, mainly to try to have more women (mothers) participate on the labour market, and to increase gender equality.
- Child care policies as well as elderly care policies are under revision.
- Time use data show that there still is a strong gender divide in family and household work which continues to be mainly women's business.

This Chapter reviews relationships between population issues and policies. The emphasis lies on population issues that are concerns to Member States and that may be translated into concrete (population-related) policy measures. Section 6.2 focuses on the official governmental perceptions with respect to specific population issues, based on UN reports. Sections 6.3 to 6.9 result from consultations with the Network of Experts. This Network was specifically designed to gain insights in national policy reactions to population-related issues.

The Chapter indicates that practically all Member States have concerns about the ongoing process of population ageing and the future sustainability of the pension system, as well as about low population growth and low fertility. In many countries work-family policies are on the political agenda, while gender equality issues and issues around care for older people are gaining importance.

6.2 Trends in population policy perceptions (Gijs Beets)

- Recently more than half of all EU governments made changes in their judgements (19 countries) on population issues.
- Currently they are mainly concerned about population size and growth (15 countries) ('too low'), population ageing (major concern) (26), the fertility level ('too low') (20).
- A majority of them wants the fertility level to be raised (17).
- A 'too high' immigration level is only a concern in 10 countries.

Contrasted to the developing world, where high mortality stands out as the most significant population issue, the developed countries including those in Europe are mainly concerned about low fertility, population ageing, and migration.

For the year 2003 the United Nations presented another overview of the official governmental perceptions in all world nations with respect to specific population policy issues. The initiative to monitor population policies originated at the World Population Plan of Action adopted at the 1974 UN World Population Conference in Bucharest.

Table 6.1 gives an overview of the views in Europe, and for the EU-15 and NMS-10 separately. Percentages of 50 and over are highlighted. In Annex A6 the perception in the various individual EU Member States with respect to population size and growth, population ageing, fertility, mortality and migration is given. If available the previous views since 1976 are added as well (UN, World Population Policies, 2003).

In the EU-25 and the four Candidate countries (Bulgaria, Croatia, and Romania) + Turkey the majority of countries was satisfied with their population size and growth, but a recent shift is visible toward concerns about a too low rate of population increase, most specifically in the NMS-10. It means that, in 2003, 15 countries have concerns on a 'too low' population size and growth. Turkey is the only European country to express its concern about a too high population size and growth.

As most member States were satisfied it does not surprise that the majority also opted for a policy of non-intervention with respect to population size and growth. However also here the NMS-10 shifted more recently towards policies aiming at raising the population size and growth.

Population ageing is a major concern to most European governments, to most EU-15 Member States, and to all NMS-10 countries. The level of concern about the size of the working-age population is only slightly lower.

The fertility level was judged satisfactory but more recently there is concern about the too low level, most specifically again in the NMS-10 countries. Turkey is concerned about the 'too high' fertility. If we look at the Member States that are satisfied with the fertility level and at the current ranking of countries from high to low fertility (in Chapter 2, Figure 6) (excluding Turkey) then we see that the Member States that are still satisfied all are

located in the high fertility top and that, surprisingly, France and Luxembourg are not satisfied although their fertility rates are among the fairly high rates as well.

If the fertility level is judged too low, most governments want the level to be raised, except for Italy, Portugal and Spain who do not opt for an intervention. Most specifically again the NMS-10 Member States opt for an intervention to raise the fertility level.

A small majority of the European countries, as well as within the EU-15 and NMS-10 provide direct support in order to give the population access to contraceptive methods. However, the NMS-10 shifted recently towards indirect support.

The level of concern about (young) adolescent fertility is low, and most Member States have programmes addressing this issue.

Several Member States, most particularly in the NMS-10 express that the mortality level is unacceptable. If we look to Figure 8 in Chapter 2 with a ranking of countries from high to low life expectancies it may surprise that the UK is among the countries that say 'unacceptable' to the mortality level, while Estonia and Lithuania are not.

The EU-governments also have major and increasing concerns about the HIV/AIDS epidemic.
Relatively more NMS-10 than EU-15 countries have concerns about the under-five mortality and the maternal mortality levels.

The spatial distribution of the population is judged, in general, as satisfactory or governments indicate that minor changes are desired. Major changes are only opted for in a few Member States, most notably in Greece, Latvia, Luxemburg and Portugal. Policies on internal migration towards metropolitan areas do not meet much support. Currently 'no intervention' is the answer most governments give, although the EU-15 previously had a preference to lower this migratory flow, while the NMS-10 had, in the 1970s, an aim to raise the flow.

The majority of governments are satisfied with the level of immigration, although to a lesser extend in the EU-15. In 2003, the immigration levels are a concern in Cyprus, Denmark, France, Hungary, Italy, Latvia, the Netherlands, Portugal, Spain, and Turkey (all 'too high levels) and in the Czech Republic, Germany and the UK ('too low'). The other countries are satisfied. One decade ago policies to lower immigration were present in a majority of countries, most specifically in the EU-15, more recently six of the ten NMS countries have such policies, while the majority of EU-15 countries wants to maintain the immigration flows.

Also emigration is mainly judged as satisfactory. However Bulgaria, Croatia, the Czech Republic, Ireland, Latvia, and Romania all express that the level is too high. Remarkably Latvia switched from a 'too low' emigration attitude in 1996 to 'too high' in 2003. Most

countries opt for no intervention; Bulgaria, Croatia, Cyprus, the Czech Republic, Latvia and Romania wish to lower the level, while France and Turkey wish to raise it.

Finally, when comparing 1996 and 2003, ten countries (Denmark, France, Germany, Ireland, Malta, the Netherlands, Romania, Slovakia, Slovenia, and Sweden) turn out to have not made any fundamental change in their perception of population issues. The other 19 countries made changes in their perceptions.

These judgements are of course the result of the EU being confronted with one, two or even more decades of below-replacement fertility. And, as also life expectancy has risen, population ageing has been the result. Moreover international migration, both legal and illegal, has become more prominent. Policy reforms towards an easy incorporation of a growing economically dependent old age population are thus called for, as well as measures "that help childbearing and labour force participation to be more compatible". However Demeny (2005, p. 6) wonders whether they prevent countries to go "a path of ongoing population decline?" Demeny (2005, p. 7) also foresees continued "very strong and increasing migratory pressure" from Africa to the EU-25 since population sizes in both geographical entities are changing in such diverse pathways (in 1950 Africa had 224 million inhabitants, the EU-25 had 350 million, i.e the EU had 1.5 more people than Africa. By 2050 Africa is expected to have 1937 million inhabitants, as against 449 million in the EU-25, i.e only 23% of the number in Africa). Demeny states that it is in our mutual interest to stabilise the EU-25 and the African population size and structure in the coming century. He continues by saying (p. 8) that "demographic 'regime change' becomes a condition for long-term international peace and stability." He also explains that "it would be foolish arrogance on the part of governments to assume that they can set some population size as the optimum and try to achieve it through appropriate policy measures." "If the aggregate of individual fertility choices (the key variable in the growth equation) results in a *slow* demographic decline in modern affluent societies, such societies should be capable of making the necessary adjustments to a declining population size. Such adjustments could be consistent with maintaining and indeed raising the already high material standards of living, and, if collectively so desired, exercising strict control over immigration: limiting it to modest numbers, or even closing the borders to permanent migration entirely." "Liberal immigration policies could temporarily alleviate the distortion in the age distribution that results from such a pattern of fertility, but possibly only at the price of a thorough transformation in the cultural and ethnic make-up of the receiving society."

Are policies effective to redress demographic trends, or are demographic forces so powerful that we have to learn to live with their mostly autonomous character? Recently Gauthier (2005) reviewed the recommendations at the 1993 European Population Conference: "the promotion of a more child-friendly and family-friendly environment; the support of parents in their combination of professional life and parental roles; the financial support of families, particularly those with limited resources; and the promotion of equality between men and women, including equal opportunities for employment and

equality if family responsibilities." These recommendations are relate to the ICPD Programme of Action: "programmes and policies to enable employees of both sexes to harmonise their family and work responsibilities; promotion of equal participation of women and men in all areas of family and household responsibilities, including, among others, responsible parenthood, (...) and shared control in, and contribution to, family income and children's welfare; provision and promotion of means to make participation in the labour force more compatible with parental responsibilities; formulation of policies which are sensitive and supportive of the family."

However, how to assess "the extent to which UNECE member states have moved closer to creating a child and family friendly society"? By analysing the effect of cash benefits Gauthier concludes that "empirical data show that in some countries the current systems of cash transfers to families are indeed significantly reducing child poverty" (examples of Poland, Hungary, Czech Republic), but also that "child poverty remains high in several countries even after cash transfers" (examples from Italy, Turkey, UK and USA) (pp. 103-104).

According to Gauthier the effects of fertility are small (pp. 105-106): "there does indeed appear to be a positive —albeit very small— impact of cash benefits on fertility, when the analysis is carried out at the aggregate level." (…) "On the other hand mixed results are found when the analysis is carried out at the micro-level." Gauthier also stresses that there is "a need to distinguish between the short-term impacts of benefits (on the timing of births) and the long-term impact (on cohort fertility).

Finally Gauthier concludes that "there is no way of measuring the degree of child- and family friendliness in countries. However it is clear that the majority of countries have been devoting resources to improving the well-being of families and children." "Secondly, with regard to the financial support of families (…), the available data do not allow one to fully assess the extent to which programmes are successful in lifting families out of poverty." "Thirdly, with regard to the support of parents in their combination of professional life and parental roles (…), and the promotion of equality between men and women, including equal opportunities for employment and equality in family responsibilities (…), most countries have been devoting efforts to this field. (…) However, two points emerge from this analysis. First, it is clear that the provisions vary enormously across countries both in terms of duration of maternity, parental and child care leave, and in terms of cash benefits. (..) Secondly, it is also clear that different countries have not endorsed the issue of gender equality to the same extent" (pp. 106-107).

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6.3 Nordic countries (Marit Rønsen)

- Concern about the future sustainability of the pension system has led to the planning and implementation of reforms in most Nordic countries. New pension- and/or early retirement legislation has been implemented in Sweden (1998), Denmark (1999) and Finland (2005). Recently (May 2005) the Norwegian Parliament also reached consensus on the main principles of a reform.
- Work-family policies are still high up on the political agenda. Today most countries in the region have a paid parental leave period of about one year – in Sweden even longer (69 weeks). A novelty of the 1990s has been the introduction of a special "daddy's quota" in the parental leave system, reserving parts of the leave for the father (at present 4 weeks in Norway, 2 months in Sweden and 1/3 of the total length in Iceland).
- A disputed family policy issue in the Nordic countries is the conflict between the commitments to gender equality versus the emphasis on parental choice. Policies are intrinsically gender neutral, but are usually taken up by mothers, and therefore result in very unequal gender practices. Policies directed explicitly at fathers may thus be more effective in reaching the stated goal of gender equality of outcome.
- Within elderly care a worrying staff situation has lead to various action plans to improve current quality and efficiency, such as replacement of traditional institutions with more modern forms of housing and services that are better suited to the wishes of the elderly. There is also a significant tendency towards increased privatisation of elderly care.
- Although the gap in time-use between men and women has been narrowing, the old pattern of more household time among women and more market time among men is very resistant. The pattern is especially prevalent among parents of small children, but is observed at all ages, and even among adolescents. Leisure time has increased in all age- groups, but most for people aged 60 and above, and especially for men.

6.3.1. Early retirement policies and policies related to the extension of working life

A common feature of the pension systems of the Nordic countries since the 1960s is that all citizens have a statutory right to a certain minimum subsistence amount when they reach retirement age, the so-called minimum pension. For those who have been active in the labour market there is a supplementary public earnings-related component, and in addition there are occupational private pension schemes. The public schemes are normally funded on a pay-as-you-go basis.

In 1998, public pension spending amounted to 8.8% of GDP in Denmark, 5.7% in Finland, 3.3% in Iceland, 7.8% in Norway, and 10.7% in Sweden (Herbertsson *et al.*, 2000).[67] The ageing of the population will increase these costs significantly over time. By 2030 e.g., the elderly population is estimated to exceed 15% in all the Nordic countries, in spite of a relatively high fertility level. Governments and politicians are therefore very concerned about the future sustainability of the pension system. This has led to a review of the countries' pension schemes and to subsequent reforms that have either recently been or are in the process of being introduced.

The increased withdrawal of older workers from the labour force causes an increased burden on pension and fiscal systems. In the Nordic countries, early retirement is most common in Denmark and Finland. These countries also have the most comprehensive public retirement schemes, and the unemployment rate has been relatively high for a long period of time. Early retirement is least common in Norway and especially in Iceland, where there are no other public retirement schemes other than health-related disability pension and also a very limited unemployment problem. Sweden holds a position in the middle, both in respect of public retirement schemes and the extent of unemployment (Nordic Social-Statistical Committee, 2004).

The economic costs of early retirement are substantial. Herbertsson *et al.* (2000) estimate for example that output losses from early retirement constitute more than 3% of GDP in all the Nordic countries except Iceland. Despite the political unpopularity of reforming early retirement systems, a tightening of eligibility rules and strengthening of incentives to retire later are thus intrinsic parts of a pension reform.

The first country to undertake a fundamental restructuring of its pension system was Sweden, when in June 1994 the Parliament adopted guidelines for pension reform. The legislation was implemented four years later, and in November 2001 the first benefits generated under the new systems were paid out. In the new system pensions are financed by a fixed contribution of 18.5% of earnings. 16% is used to finance the pay-as-you-go system, but 2.5% accrue interest in fully funded individual accounts. There is no fixed retirement age, but pension cannot be drawn before the age of 61. As future

[67] Including spending on old age, early retirement, and disability pension, but excluding public sector pension expenditure.

pensions are based on lifetime earnings, there is a clear incentive to delay retirement [68] (Palme, 2003).

In Finland, a new legislation on private sector state pensions has come into force in 2005, and similar amendments will follow for public sector pensions in the near future. The primary objective of the reform is to increase the average retirement age. The general retirement age of 65 has been abolished, and workers may instead receive an ordinary old age pension any time they choose between age 63 and 68. Further the qualifying age for an early old-age pension has been raised from 60 to 62 years. The size of the pension will be determined by the employee's whole working career, and not by the last ten years of employment as in the former scheme (Kuusisto, 2004). Financial incentives for continuing at work after the age of 63 will be considerable, as pension accrual more than doubles after that age.

In Norway, a pension committee was set up in March 2001 with the mandate to consider "the main objectives and principles of an integrated future pension system". The committee announced its recommendations for a reform in January 2004. As in Sweden and Finland the main objectives are to encourage older employees to stay longer in employment and to establish a closer link between life-time income and future pensions. Parts of the proposal have met with strong criticism from the trade unions, but in May 2005 the Norwegian Parliament reached a consensus on the main principles of the reform, upon which the government will work out a detailed proposal for the new scheme. Among others the agreement obliges employers to set up supplementary pension schemes for all employees, and a longer employment career will result in higher pension.

Denmark has not had any major pension reforms, but there have been several smaller changes that have changed the constitution of the system from purely public to partly private (Abrahamson and Wehner, 2003). The most recent major reform is the introduction of occupational pensions to the remaining two-thirds of the labour market in the beginning of the 1990s. The early retirement scheme has been one of the hottest topics in the welfare debate in Denmark, as it is very expensive, entitling almost all employees to retire at age 60 instead of at the official retirement age of 65. In April 1999, the Danish Parliament adopted several changes to the early retirement scheme in order to increase the labour supply (Herbertsson *et al.*, 2000). The new scheme has more flexibility, as it allows people to retire gradually from the labour market, combining pension with an unlimited number of working hours against a deduction from the early retirement pay. There are more favourable deductions for pensions if one retires after age 62, and there are also other components in the new scheme that makes it more advantageous to postpone early retirement.

[68] Income from social insurance is also included in lifetime earnings. In addition there are special credits for child rearing, engaging in tertiary education and doing national service.

Iceland's pension system is one of the more privately oriented among the Nordic countries, and because of its relatively favourable demographic profile and high labour force participation among the elderly, Iceland faces fewer public social security challenges than the other Nordic countries (Herbertsson *et al.*, 2000). There is a prevalence of occupational schemes, and only a modest degree of earnings-related benefits. To further encourage private provision, the government has recently set up optional individual accounts. Except for sailors, early retirement is not possible in the public pension system, and no extra benefits accrue by postponing retirement.

Since most of the reforms of the pension systems in the Nordic countries are very recent or still in the process of being implemented, it is too early to evaluate their full impacts. Sweden has, however, experienced a change of trend in the employment activity of older people since the implementation of their major reform in 1998. During the 1990s the employment rate among people aged 60-64 declined rapidly. In 1999, it was 52% among men and 45% among women. But since the turn of the millennium there has been a rapid increase to 61 and 55%, respectively, in 2004. Increasing employment activity among older men can be ascribed to postponed retirement, but it is questionable whether this can be seen as an effect of the pension reform, as these are birth cohorts that only to a limited extent are affected by the reform (Nygren, 2005).

In Denmark, however, there is some evidence that the 1999 changes in the early retirement scheme have had the intended effect. Based on two representative sample surveys in 2001 and 2003, the average age of withdrawal from the labour market is estimated to have increased with 0.4 years for men and 0.3 years for women, resulting in an average retirement age of 61.2 and 60.3, respectively (Jørgensen, 2004). For Finland, a survey carried out by the Finnish Centre for Pensions (Eläketurvakeskus, EKT) likewise suggests that the financial incentives introduced in their 2005 reform are likely to be effective. In the survey, private sector workers were asked at what age they plan to retire, given the changes in the pension legislation. Based on this survey, it is estimated that the pension reform will raise the average retirement age with about three years in the long run (Kuusisto, 2004).

6.3.2. Work-family related policies

Work-family policies have long been high up on the Nordic political agenda, and recent reforms have mainly expanded on the core programs established in previous decades. In all Nordic countries, compensation is granted to cover loss of income in connection with childbirth (and adoption), and compensation is based on previous earnings. Except for Denmark, mothers who are not affiliated with the labour market also receive economic support, in the form of a lump sum at birth in Norway and as a fixed, small daily allowance in Finland, Iceland and Sweden, for a period corresponding to the length of the statutory parental leave period.

Traditionally, Sweden has had the most generous parental leave scheme of the Nordic countries with a full year of paid leave since 1980 and about 15 months since 1989. In

2002 another 30 days were added, resulting in a total leave period of approximately 69 weeks. This keeps Sweden in the clear lead in the Nordic parental leave division. Finland has also had a leave close to one year (10-11 months) since the 1980s, and the length today remains about the same: 44 weeks. In Norway, the main expansion of the parental leave system took place in the late 1980s and early 1990s, resulting in a full year with 80% earnings compensation or 42 weeks with full compensation in 1993. In Denmark, the paid parental leave period was prolonged to one year as from 2002 and made more flexible, allowing parents to prolong the leave with another 8 or 14 weeks. The total earnings compensation remains the same, however. Iceland is the country with the shortest leave, 35 weeks as per December 2002, but with four more weeks to be implemented shortly according to an amendment in 2001. The replacement rate (benefits-to-earnings ratio) is lowest in Finland (normally 70%), followed by Sweden and Iceland (80%, but in Sweden only SEK 60/day for the last 90 days), and highest in Denmark and Norway (up to 100%) (Nordic Social-Statistical Committee, 2004).

A novelty of the 1990s has been the introduction of special 'daddy's quota' in the parental leave system to promote the fathers' involvement in childcare. Norway was the first country to do so, designating 4 weeks of the latest extension in 1993 to fathers. Sweden followed suit in 1994, also reserving 4 weeks for fathers, but without extending the total leave period. At the latest extension in 2002, Swedish fathers got another month added to their 'daddy quota', and at the same time mothers got a similar quota of 2 months reserved for them. This makes the Swedish system fully gender symmetric — 8 weeks are reserved for each parent, while the rest can be shared as they like.

Iceland has recently introduced an even more radical 'daddy quota', reserving 1/3 of the total leave period for fathers, 1/3 for mothers and the rest to be shared equally between the parents. Once the scheme is fully developed, fathers and mothers will get 13 weeks each exclusively and 13 weeks in common (Nordic Social-Statistical Committee, 2004).

Another special feature of the 1990s has been the introduction of a cash benefit for the care of young children in Finland and Norway. The Finnish scheme was fully implemented in 1990 and gave parents the right to choose between a place in a public day-care institution and an extra income transfer to make their own child-care arrangements. The allowance may be granted either as a supplement towards child minding in the home or as payment for private child minding. The former is the largest (€ 252 versus € 50 in 2002) and is payable only if a family has a child under the age of three. The benefit consists of a basic amount plus a means-tested supplement and is taxable. Parents who work part-time and have a child under three may receive a partial home-care allowance, but this is a very rare arrangement. In Norway, a similar reform was introduced in 1998, granting a cash benefit of NOK 3657 (about € 450) to parents of 1-2 years olds who do not use subsidised day-care on a full-time basis. Parents of children that attend part time may receive a reduced benefit proportional to weekly attendance. Contrary to the Finnish scheme, the benefit is not taxable and there is no means-tested supplement.

A disputed family policy issue in the Nordic countries recently is the conflict between the commitments to gender equality versus the emphasis on parental choice. Apparently, Nordic work-family policies reflect and support both similar and different models of gender equality and family ideals. It has e.g. been argued that Denmark and Sweden are more on a gender equality track, while a neo-familist development is depicted in Finland, and Norway has been described as a mix of the two (Mahon, 2002 and Ellingsæter and Leira, 2005). There is for example considerable variation in the extent to which the dual breadwinner model is presented as a norm or as an option. Here Norway is often portrayed as having the most 'double-track' oriented policy regime, while Sweden is seen as the most pronounced normative supporter of the dual-breadwinner model (Kjeldstad, 2001 and Korpi, 2000). A common experience of all Nordic countries, however, is that policies that are intrinsically gender neutral, like common parental leave and cash benefits for child-care, are usually taken up by mothers, and therefore result in very unequal gender practices. A policy directed explicitly at fathers may thus be more effective in reaching the goal of gender equality as outcome, as stated as an ambition of the Nordic Council of Ministers (1995).

Another general issue is whether the generosity of the Nordic family policy programs has helped to keep fertility at a reasonably high level. While commonly agreed that there is a certain positive effect (Hoem, 1993; Kravdal, 1996 and Rønsen, 2004), a recent concern is that the present pattern may not be sustainable, as there is an apparent 'gender equality deficit' in fertility behaviour. The good recuperation record of younger cohorts has e.g. been viewed to be associated with a more differential fertility pattern, where women in the female-dominated sectors of the labour market with large shares of part-time work have contributed with higher levels of fertility than women in the less segregated or male dominated sectors (Lappegård, 2005). The positive cohort trend with stable fertility close to the replacement level is thus sometimes described as collecting the "low-hanging fruits" of generous family policies in a gender segregated labour market. Given the goals of gender equality both in the labour market and in the parental share of child care, these elements of the present pattern give reason to question the future sustainability of Nordic fertility trends (Rønsen and Skrede, 2005).

6.3.3. Elderly care and intergenerational support policies

Services for the elderly are part of the municipal responsibility in the Nordic countries. They are mainly financed by taxes and are in principle available to all needing citizens independently of their individual economic situation. A feature that distinguishes Nordic elderly care from many continental countries is the fact that adult children have no statutory responsibility to care for their parents. Nevertheless, relative care is substantial, but less prevalent than in other countries.

Services from municipalities to the elderly are manifold and include home help, home nursing, day care, special housing and institutional care (nursing homes), and care allowances for relatives. The demographic pressure creates a higher concentration of cases that demand more care, and nursing becomes increasingly important in services for

the elderly. All the Nordic countries are characterised by concerns about the number of staff within services for the elderly. This has led to various action plans for the services of elderly, initiated for example in Norway in 1998 and in Sweden in 2002. In all countries, policies are discussed and implemented to improve the current quality and efficiency of the services for the elderly, such as replacement of traditional institutions with more modern forms of old age housing or the creation of systems that better adapt the services for the elderly to the wishes of the elderly.

There is a significant tendency towards increased privatisation of elderly care in the Nordic countries. User-choice systems have also been discussed and in some cases introduced. Some Swedish municipalities were pioneers in this field in the early 1990s, but Denmark has gone furthest in this direction with the recent introduction of a general user-choice system. Denmark also has far more extensive home services than the other Nordic countries. Almost one in four old-age pensioners in Denmark receives home help compared to e.g. 8% in Sweden. However, recipients in Denmark receive relatively few hours compared to Sweden. Furthermore, home help is free of charge in Denmark, which is not the case in the other countries (Nordic Social-Statistical Committee, 2004).

6.3.4. Time use over the life-course

Time use surveys have been conducted in several Nordic countries each decade since 1970, but comparative studies are hard to find. One exception is Kitterød (1995) who compared time use and division of household labour among Norwegian and Swedish parents. On the whole she found quite similar time use patterns in the two countries, although Swedish parents worked somewhat longer hours in the labour market and used slightly less time on leisure than Norwegian parents. Time used on domestic work and personal needs was, however, very similar. In the following, data from Norway will therefore be used to illustrate how time use has developed over the last decades and how time use evolves over the life course.

A general trend since the 1970s has been that men spend less time on gainful work and somewhat more time on domestic work, while the opposite is true for women. Women's average hours on gainful employment has increased more than the corresponding decrease among men, by almost two and less than one hours, respectively. In 2000, Norwegian men used 6.4 hours and Norwegian women 4.2 hours in the labour market per day, computed as an average over the weekdays (Monday-Friday). The decline among men is primarily a result of a lower proportion of men employed now than before, and the increase among women is primarily due to the fact that a larger proportion is employed today. When domestic work is concerned, women have reduced their time more than men have increased theirs, by almost 2½ and less than ¼ hours, respectively. In 2002, women spent about 4 hours and men 2¼ hours on household work per day. The total time on work in the labour market and at home has thus declined for both men and women, but it is still highest for men (9.1 versus 8.2 hours) (Vaage, 2005).

Although time-use data show a narrowing of the gap between men and women, the old patterns are very resistant, and questions related to gender equality in paid and unpaid work over the life course remain high on the public and political agenda. This is especially true of time use patterns among parents of small children, where the gender differences are even more marked than in the total population. This is because women more than men cut back on employment activity when they have children. Mothers of small children spend less than half of the time that fathers spend on gainful employment, and fathers with small children spend even less time on household chores relative to mothers than men in other couples (Kitterød and Vaage, 2002). The total time use on market work and domestic work is, however, greater among parents with small children than among other men and women, and in particular childcare constitutes a large part of the domestic time use at this stage of life.

An analysis of time use among adolescents (12-15 years) based on the 1990 and 2000 Norwegian surveys shows that the way they use their leisure time is changing (Vaage, 2003). In total, leisure time has increased by about 20 minutes to about 5½ hours on an average school day. Watching TV or video, playing games, using the computer and surfing on the Internet have increased, and reading has decreased. Time used on physical and social activities did, on the other hand, not change. The same is true for time spent with friends, which constitutes 6½ hours per day. Time spent with parents has, however, declined and time alone (excluding sleep) has increased. In 1990, both boys and girls spent about 20 minutes on paid work. Ten years later the situation was unchanged for girls, while boys had increased their time on paid work by ten minutes. Boys on the other hand used ten minutes less on domestic work, while girls' time use had not changed in this field. Consequently, the gap between boys and girls in time on domestic work has widened.

At the other end of the age range, among 62-66 year olds, time spent on paid work has decreased by almost 40% over the last 30 years. Looking at men only, the decline is even bigger, 60%. This implies that there has been an increase in time spent on paid work among women at this stage of life. On average 62-66 year olds used a little less than 2 hours daily in the labour market in 2000 (counting also Sundays and holidays). The decrease in working hours is fully due to the fact that a smaller proportion is active in the labour market — among those who are at work, there has been no reduction in working hours. Time for domestic work has decreased somewhat also among 60-66 year olds, but leisure time has increased significantly, from about 5 hours in 1970 to about 7½ hours in 2002. This is for example about 30% more leisure time than among 30-39 year olds, which may indicate that there is considerable scope for intergenerational support between these cohorts.

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6.4 United Kingdom (Lynda Clarke)

- The combined effect of low fertility and prolonged longevity will lead to substantial population ageing in the coming decades and make pension costs and the health care burden acute. There are limits to solving pensioner income issues solely via increased retirement ages. Suggestions are for making changes in the state pension system and for revitalising saving systems.
- Priorities are for achieving higher employment rates, and to enable older people to enjoy an active role with adequate and independent housing, even if experiencing health problems.
- The peak ages of care giving are between 50 and 59 years (20% provides care) and more women than men are caregivers. High proportions of caregivers live in areas with high levels of deprivation and may be in poor health themselves.
- Britain has a history of non-interference in low fertility decisions. Although the age at first birth is rising Britain remains to have substantial teenage pregnancy rates. Birth rates outside marriage are high as well. Many children live in lone parent families, the majority in disadvantaged circumstances.
- Recently commitments to increase support for families strengthened: to lower teenage pregnancies, alleviate child poverty and social exclusion, and towards better balancing family life and work. Childcare will be extended.

- The Labour Government undoubtedly challenged the traditional British distinction between public policy and the 'private' family.
- People are spending less time on obligatory tasks and more on discretionary recreational activities, but more time is spent on travel to work.

6.4.1. Ageing and policy developments

Increasing life expectancy and a low birth rate are projected to continue which means that the percentage of the adult population over the age of 65 will increase significantly in the next 50 years. Forecasting future population is an uncertain science as both the increase in life expectancy and future birth rates are difficult to predict.

The birth rate in the UK has been below replacement level since 1972 and is now about 1.7 children per woman and, despite a slight increase in 2003, shows no substantial increase (*Figure 6.1*). The official population projections assume a small rise over the next 17 years, leveling off at 1.75 after 2022 (Government Actuary's Department).
Average male life expectancy at age 65 has increased from 12 years in 1950 to an estimated 19 years today and it is expected to reach 21 years in 2030 and 21.7 years in 2050. The proportion of men reaching 65 will also increase given lower middle age mortality which will further raise the number of pensioners. Female life expectancy is currently higher and increasing but at a slightly slower rate. If life expectancy at 65 years continues to increase in line with the past 50 years' trend then average male life expectancy will reach 24.4 years by 2050 and if it rises in line with the 1980-2000 trend then it will reach 27.7 years by 2050. By 2051, people over the age of 65 will comprise over one quarter of the population compared to 12% at present and, in addition, the proportion of people who are very elderly will also increase. People over the age of 85 years are now 2% of the population but this is projected to increase to 6% of the population and will represent 4 in 10 of the over-65 population.

The combined effects of fertility and longevity are that the age distribution of the UK's population will change dramatically over the next 50 years. There will be a negligible increase in the working age population (aged 20-64) but a 78% increase in the population over the age of 65. *Figure 6.2* shows that over the last 20 years there has been a significant fall in the ratio of children to working age people and, as a result, the dependency ratio (defined as the number of people under age 20 or above age 65 divided by the number aged 20-64 years) has fallen. The Government Actuary's Department (GAD) estimate that the dependency ratio (of people aged 65 and over to people aged 20 to 64) will increase from 27 to 48% by 2050, in contrast to the last 20 years which has witnessed a very slow increase.

This means the projections anticipate a doubling in the percentage of the population aged 65 years and over between now and 2050, with further increases thereafter. Even this 'principal' projection by GAD assumes a large decline in the rate of increase of longevity which is very optimistic and so dependency ratios are likely to be higher than the official projections suggest (see Figure 6.2). Further, the post-war baby boom has delayed the effect of underlying long-term trends but will now produce very rapid increases in the dependency ratio over the next 30 years as these cohorts enter retirement. Although other scenarios might produce lower life expectancy (for example, increased mortality due to obesity or higher birth rates) these are unlikely to have any major favourable impacts on the dependency ratio. It is more likely that the ratio will be less favourable than estimated. The only other unknown factor is immigration but this is unlikely to have anything but a minimal effect on dependency ratios over the next 50 years.

The establishment of a Pensions Commission in 2002 to review the UK pensions systems bears witness to the perceived urgency of this demographic challenge. The Commission has published a first report (2004) and is currently undertaking a consultation process and will publish its second report with recommendations for pension policies in Autumn 2005. There are unavoidable choices created by these inevitable developments: poorer pensioners, higher taxes or savings or later retirement. As poorer pensioners is unlikely to be considered acceptable to the large cohorts entering retirement and the Pension Commission has stated that there are considerable barriers to solving the problem through any one of the other three options alone and, therefore, a combination of higher taxes / national insurance contributions, higher savings and later average retirement is being examined. The retirement age for women is due to rise from 60 years to 65 years after April 2010 to match the current age for men, as a result of gender discrimination legislation. This will create an immediate lowering of the dependency ratio.

The Pension Commission has estimated that the present level of pension right accrual is both deficient and increasingly unequal and left to voluntary action will not improve. The implications for pensioner income will be more serious in 20-25 years time rather than in the next 10 years. It is considered that there are limits to solving the problem solely via increased retirement ages. The suggestions are for a major revitalisation of the voluntary pension saving systems, significant changes to the state pension system and/or an increased level of compulsory private pension saving beyond that already implicit within the UK system. Policy debates have included discussion of labour policies for longer working lives and recent suggestions reported in the media include an increase in pension age to age 67 for people born after 1955 and differential systems of retirement with graduates working to age 70.

The health care burden and pension costs are becoming acute. A Department of Work and Pensions report 'Opportunity Age' (2005) documents planned Government strategy over the next 10 to 15 years to address the ageing population. The three areas cited as priorities for action are:

- to achieve higher employment rates overall and greater flexibility for the over 50s;
- to enable older people to enjoy an active role in society with adequate income and housing;
- to allow older people to maintain independence, even if experiencing health problems.

The specific proposals include achieving an 80% employment rate for people of working ages, encouraging more people to work beyond retirement age and working while drawing an occupational pension or a higher state pension if a person works longer. Age discrimination in employment and other areas will be tackled through an independent Commission for Equality and Human Rights (CEHR), active living will be encouraged through such measures as healthy living, access to leisure facilities and volunteering. Older people will be supported to remain in their own homes as long as possible and be involved in 'buying' their own care packages. The stated aims are to avoid social exclusion and facilitate an active old age. There are also obvious financial challenges to be faced by the Government and delegation to local authorities for many of these initiatives means they can be audited for performance.

6.4.2. Intergenerational support

Elder care and support in the past were considered a private matter not subject to state intervention but recently this has changed and there have been a number of interventions to support disabled, elderly people and their carers. These actions include the policies directed towards relieving the pension crisis outlined above but also more focussed support for carers of older people.

The latest figures on cares, from the 2001 Census (ONS 2001), showed 6 million carers throughout the UK, in other words 10% of the population or 12% of the adult population. The previous estimate and details of caring came from the General Household Study (GHS) in 2000 (Maher and Green, 2000). There is a high turnover in people caring, it has been estimated that one third of carers start or cease caring in any one year and there is a 6.6% chance of anyone becoming a carer (Hirst, 1999). The number of carers providing support for 20 or more hours per week has increased, from 1.5 million in 1990 to 1.9 million in 2001. The Census also indicates that the number of heavy-end carer, providing over 50 hours of care per week, has increased to 1.25 million, double the proportion of these carers estimated in the 2000 GHS.

The peak age for caring is between 50 an 59 years, with more than one in five people of these ages providing care. Women are more likely to be carers than men; one in 4 women in their fifties is providing some care compared with 18% of men. The 2000 GHS revealed that one in three carers (38%) were caring for a parent and 18% for a spouse. Most carers look after elderly people: 70% of those cared for are 65 years of older, and nearly two-thirds of carers look after someone with only a physical disability (62%) but 18% have both a mental and physical disability and 6% only a mental disability. The type of care

provided is usually physical help (57% helped getting in and out of bed and getting up or down stairs), personal care (51% provided bathing, washing, dressing etcetera) or giving some other practical help (75%).

Recent evidence shows that the highest proportions of people providing informal, unpaid care live in areas with higher than average levels of deprivation and long-term illness. Also, carers in such areas were more likely to be in poor health themselves.

Key legislation aimed to support carers are centred around the Carers (Equal Opportunities) Act 2004. This aims to ensure that work, learning and leisure are considered when carers are assessed and gives local authorities powers to help with housing, health, education and other support for carers.

There has also been some interest in grandparents, mainly for childcare and for security after family breakdown (Supporting Families, 1998). However, grandparental access to grandchildren after family breakdown has not been addressed separately and they are obliged to seek access from the courts if this is not agreed informally. The court will decide what is in the best interest of the child under the provisions of the Children Act 2004 (Department for Education and Skills).

6.4.3. Fertility and policies concerning families and work

Britain has a history of non-interference where low fertility decisions are concerned and the birth rate is not as low as in most other EU countries. In 2003 the total fertility rate (TFR) in the UK was 1.71 children per woman which was a slight increase from the record low of 1.63 in 2001. Figure 6.1 shows the long term trend.

As well as falling fertility rates, over the last 30 years there has also been a rising mean age at first birth and higher levels of childlessness. In 2003, the mean age of women having their first birth was 26.9 years, an increase of 3.2 years from 1971. However, Britain also has the highest European level of teenage pregnancy with a birth rate of 29 per 1000 girls aged 15-19. Around one in five women currently reaching the end of their fertile life are childless, compared with one in ten women born in the mid-1940s.These patterns are creating a divergence between a minority of very young parents and more affluent and qualified people either remaining childless or embarking on parenthood in their late twenties or thirties. One other important feature of family formation is the growing incidence of births outside marriage. In 2001 the majority of children were still born to a married couple but 40% were born outside marriage. Recent results from the Millennium Cohort Study of babies born in 2000/1 have shown marked ethnic group differences in the family circumstances of new mothers. Asian mothers are most likely to be married with Black mothers being the most likely to be living alone and White mothers the most likely to be cohabiting outside marriage (Kiernan and Smith, 2003).

These family formation trends, together with the increase in family break-up, have meant that the proportion of children living in lone parent families tripled between 1972 and

2004 to reach 24%. This has repercussions for children's well-being as, on average, these families are more likely to be disadvantaged and their children experience health problems and under-achieve (Botting *et al.,* 1998; Clarke and Joshi, 2003).

Historically, the UK has not had one government department with responsibility for family policy. However, when the current Labour Government came to office one of its manifesto commitments was to increase support for families. The first policies were mainly directed to lowering teenage pregnancy, alleviating child poverty, social exclusion and more recently directed towards addressing the balance between family life and work.

Initially, a Ministerial Group on the Family was created, chaired by the Home Secretary, which launched the first consultation paper ever on the family in the UK (Home Office, 1998). In 2003 the responsibility for such policies passed from the Home Office, where it was felt there was too much emphasis on falling families, to the Department for Education and Skills, who were given an enormous budget for a programme directed towards early year's education and a major initiative for the early years of disadvantaged children called *Surestart*. The new Children and Families Directorate was set up with a Minister responsible for children's services, childcare and the provision for under-five year olds as well as family policy. A new reform agenda was set out in the Green Paper. *Every Child Matters* (2003) and in the Children Act 2004 which aims to provide universal service support for children and families, including education, health and income.

The strategy for supporting working parents with childcare (mainly designed for lone parent or poor families) were set out in the Green Paper *Meeting the Childcare Challenge* (1998) and a current consultation is underway on a new Childcare Bill, which will make local authorities responsible for delivering childcare and improving the outcomes for children in the early years, especially for poor families or those with disabled children.

Various European Union directives have resulted in better provision for parents attempting to reconcile work and family life. The *Employment Act,* 2001, gave all mothers improved rights to maternity leave including an increase in Statutory Maternity Pay, and for the first time ever fathers were eligible for two weeks of paid paternity leave, though capped at a low wage level from Spring 2003. Parents were able to make a written request for flexible working, and employers were obliged to explain why it cannot be accepted. In October 2005 a new Work and Families Bill was announced which will extend maternity leave to 9 months (later one year) and father will be able to take any of this allowance as paternity leave if mothers return to work early.

The increase in cohabitation and lone parenthood had attracted policy intervention directed to link fathers into these families and take responsibility for children. The Adoption and Children Act 2002 gave unmarried fathers who jointly register the birth of their baby with its mother and whose name is on the birth certificate the same legal rights as married fathers automatically acquire. They have been granted rights over

children after separation but there is a growing lobby of separated fathers taking direct action and demanding further policy reform.

6.4.4. Time use evidence

There have been national studies of time use carried out at Essex University and by the Office of National Statistics. These include evidence on trends and differentials in economic activity and domestic activity (between mothers and fathers, different family types and between generations). A recent book has summarised much of the evidence on the balance between work and family life (Gershuny, 2003).

Results from the UK 2000-01 Time Use Survey (TUS) have been used to examine the work life balance of men of different ages (Fisher and Layte, 2003) and have also shown age differentials in aspects of social capital: time spent volunteering, helping others and providing informal care and social time with family and friends (Ruston, D.). An ongoing project *Time Use and the Life course* is experimenting with data fusion methods (time diary data to non-diary panel data) to investigate daily activity patterns and the effect on subsequent life course events.

One study reports relative stability from the 1960s to the 1990s in the balance of time spent on work and leisure (Sullivan, 2000). However, the importance of socio-demographic characteristics in how different social groups allocate time to activities and the structural shifts in the organisation of daily life are also demonstrated (Warde *et al.*, 2004). People are spending less time on obligatory tasks (as cooking, work) and more on discretionary recreational activities. Travel is one of the most important changes, with everyone spending a greater proportion of their day travelling, either for work or leisure.

6.4.5. Conclusion

The Labour Government elected in 1997 has undoubtedly challenged the traditional British distinction between public policy and the 'private' world of the family. An extensive range of policies designed to provide for the ageing population and poor or disadvantaged families have been, or are being, introduced. While this has attracted criticism from being too interventionist to not going far enough to succeed, it is clear that family policy is now regarded as a topic of import. Decisions about child-bearing, however, are still not seen as appropriate for state comment.

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6.5 Poland (Irena Kotowska)

The recent population-related policy debates in Poland are dominated by:

- lowest-low fertility and the changes in family structures, for example the increase in the number of one-parent families
- the ageing process mostly considered in terms of the pension system, early retirement and, more recently, in terms of older workers and elderly care policies
- the labour market situation of different population groups (young persons, older workers, women). Special attention is paid to difficulties young persons face when starting employment as these affect family related behaviour significantly.

6.5.1. Brief evaluation of the main population issues in Poland

Rapid changes in the process of family formation in the 1990s resulted in considerable changes in living arrangements, illustrated extensively by data from the population census of 2002. Their importance is not adequately reflected in public debates at least from two points of view: the shifts in household structures show how significant the changes in family related behaviour are and give indications of possible effects in the policy debate. For instance, the growing number and share of one-parent families (from 15% in 1988 to 19 in 2002; 90% of them headed by women) was reflected in some measures introduced under the family policy reforms in 2004. On the contrary, changes in living arrangements of the elderly did not get proper attention. That population issue seems to be of rising importance due to arrears in services and care for the elderly.

In brief, and taking into account the different dynamics in urban and rural areas, the changes in living arrangements can be characterised as follows:

- The share of one-family households declined (from 75 in 1988 to 69% in 2002) while that of non-family households, mainly consisting of one-person households, increased (from 20 in 1988 to 24% in 2002); these trends are more evident in urban than in rural regions (see *Table 6.2*).
- The number of one-person households increased by 51%, and more so in urban (56%) than rural areas (38%). Another important change concerns the age composition of one-person households: in 1988 about 52% of them were aged 60 years or over, in 2002 that percentage went down to 46%. The majority of the one-person households were formed by women (59% in 2002), more than one third of them aged 60 or over (36%). Among one-person households of males nearly 40% of them were aged up to 40 years, and around 25% were aged 60 or over. Female one-person households were mainly formed by women aged 60 or over (61%), only 16% by women aged up to 40 (see *Table 6.3*).
- The number of one-parent families increased by 29% (30 in urban areas and 27 in rural areas). The majority of them is located in urban regions (around 68%) (see *Table 6.4*).
- Marked improvements in mortality (between 1990 and 2003 life expectancy at birth increased by 4 years for males and 3 years for females) are reflected in the shifts of

the elderly population by living arrangements: the percentage of males aged 65 or over living in a couple without children increased from 45 to 50%, the percentage of females from 19 to 23%. One may expect a further rise in the share of the elderly people in one-person households, especially for elderly women (see *Table 6.5*). Moreover, an assessment of the health status of the elderly, based on the Population Census data, showed that nearly 30% of the elderly females who were completely limited in their basic activities of daily living formed one-person households. Since most of the dependent elderly live either in multi-person households or in single households both families and institutional services providing care to those living alone seem to be a necessary development beside extended care institutions, currently available only on a marginal scale (see *Figure 6.4*).

Since 2002 natural population increase is negative in Poland, despite declining mortality. The low fertility rates and their determinants are attracting increasingly more attention in public debates. Also more often they are subjects of interest in newspapers. Low fertility levels, obstacles to start a family, and ageing have been included in public debates on the national development strategy in 2004 and 2005 since the first draft of that strategy did not pay adequate attention to these issues.

International migration is mostly perceived in public discussions in terms of young persons willing to leave Poland due to difficulties in the labour market. Immigration still does not receive adequate attention.

Survey based studies show that on average one fifth of the respondents expressed their readiness to migrate to the EU-15 for work, both among employed and unemployed persons. The majority prefers to use official labour agencies to look for employment abroad. The fact that young persons are facing more difficulties in finding a job is reflected in higher propensities to leave the country: 40% of those aged 18-24 and almost 37% of those aged 25-34 expressed their wish to look for a job elsewhere in the EU; these percentages were even higher among the unemployed. Popular countries are Germany, Great Britain and Ireland (Kotowska *et al.*, 2005b).

6.5.2. Family related policies

Family related behaviour is strongly affected by the labour market situation, which is one of the worst in the EU. Poland has an exceptionally low employment rate for both men (57% in 2003) and women (46%) as compared to the EU-25 average (71 versus 55%); next to that the unemployment rates are the highest in the EU. The most distinctive feature of the labour market in Poland is the extremely high unemployment among young persons. Therefore, the declining inclination to start a family and have children is greatly related to difficulties young generations are facing in the labour market. Moreover, the rising competition between work and family also contributes to such family behaviour.

Rising employment rates for both men and women are among the policy priorities. However one may expect that they will not lead to higher fertility levels since

reconciliation measures are not well developed and implemented. Another important issue is the rising costs of children. Evaluation of family related policies focuses on these two issues.

Rising costs of children
Since the beginning of the 1990s the state reduced its support to families both in terms of financial measures and provision of services.

Changes in family related benefits and allowances resulted, on the one hand, from a pressure to cut overall social spending and, on the other hand, from a necessity to implement anti-poverty measures. The major changes in the family benefits implemented until 2003 could be characterised as follows:

- some benefits linked previously to employment were transferred to the state budget or the local governments;
- a new type of social assistance was introduced to address rising poverty;
- the financial support for multi-children families was expanded;
- universal benefits were converted into income testing;
- wage indexing was replaced by price indexing;
- more restrictive eligibility conditions were introduced;
- the majority of benefits decreased in real terms.

The state delegated the responsibility for running childcare institutions to the local authorities. Due to financial shortages, they moved some costs of running the public childcare institutions (around 30-40%) to parents (a higher fee for meals, charges for services beyond the minimum educational program, contributions to parent's committee funds) (Balcerzak-Paradowska *et al.,* 2003). Additional educational and recreations services (foreign languages, music lessons, swimming lessons, sports activities, etcetera) have to be paid by parents as well. Also in primary schools specific care services for small children are not free of charge. Summing up, the institutional care for children aged 0-6 years and also for children of primary school age was radically reduced, costs of services were increased while their accessibility declined. Between 1989 and 2003 the number of places in crèches declined by 76% and in nursery schools by 25%. In Poland the percentage of children aged 0-2 years attending crèches (2%) and children aged from 3 years up to the compulsory school age attending nursery schools (39%) is one of the lowest compared to other EU countries (Matysiak, 2005b).

New arrangements for financial support have been defined by a reform in November 2003, becoming effective in May 2004. In my opinion, they will result in reducing the financial support for families in general, but they may have some effects for low income families, especially for those with three or more children.

The income criterion for the basic family allowance is lower now than previously (the household income per person should not exceed 504 PLN (=€ 126)). The basic allowance

is dependent on the number of children (the monthly amount equals 43 PLN for the first and the second child, 53 PLN for the third child and 66 PLN for the fourth and subsequent child. Both the income limit and the amount of the allowance will be verified every three years.

The basic family allowance is supplemented by financial additions, granted under special circumstances related to care and child-rearing. They may concern: lone mothers, lone mothers who lost their entitlement to an unemployment benefit, persons on parental leave, parents of disable children, and/or nursing allowances. Educational supplements also exist: for children attending a school outside the place of residence and lump sums paid once a year at the start of the school year for children from low income families. Since most of them are income-tested they mostly support low income families.

In 2004 the number of persons with family allowances was 5,547 million, i.e. about 7% lower than in 2003.[69] The average family allowance amounted to 46 PLN (=€ 11.50), the average supplement to 58 PLN (=€ 14.50).

In April 2005 a new supplement to the basic family allowance was introduced to support families with three or more children. Poverty risks are increasing with the number of children. Families entitled to this allowance will receive an additional 50 PLN for the third and each subsequent child.

This system of financial assistance mainly supports low income families with children. Other families do not have any reasonable state assistance. Therefore, the increasing costs of children are viewed as one of main reasons to reduce the number of children, especially among persons of 20-29 years and among the lower educated (Kotowska *et al.,* 2004). This finding is widely confirmed by other studies and opinion polls.

Selected measures for reconciliation of work and family

Rising labour market competition has been accompanied by 'unfortunate' changes in the institutional stetting which makes it more difficult for women to be flexible and mobile. The reductions in the provision of childcare facilities, underdeveloped flexibility in work patterns, and discriminatory practices made the compatibility of paid work and family commitments more difficult. The presence of children greatly reduces the labour market participation of mothers. The most prevailing practice of work-family arrangements is the two-income family, but this is less common when children are aged 0-12 years. When children are small (0-3 years) women withdraw from the labour market (Kotowska *et al.*, 2005a). Part-time employment is only available on a limited scale and more women than men are part-time employed (13 versus 8% in 2004 (LFS data)).[70] Higher educated women

[69] ` The Ministry of Social Policy reported in 2004 on the implementation of the law on family allowances (preliminary estimates): www.mps.gov.pl

[70] The analyses conducted by Matysiak (2005a) for the years 1993, 1997 and 2002 showed very low interest in part-time employment. Nearly one third of the part-timers

rarely opt for part-time jobs. Also the lowest educated groups do not perceive part-time work as a measure to combine work and family, probably due to the low pay (World Bank, 2004). Continuous full-time employment versus inactivity is the bipolar female employment pattern in Poland.

Another reconciliation measure is parental leave. It may be taken for 36 months, at most in four pieces, for a child up to the age of four by employees who are working for at least 6 months. An extension for another 36 months is possible if the employee is raising a child requiring care because of being disabled, chronically ill, or mentally retarded, but no longer than up to the child's age of 18. The leave (36 months as a standard) is totally assigned to the parents (or to the person who takes care of the child), and either the mother or the father may take the leave. The parents can jointly be on leave for three months at the maximum. There are gender equality guarantees for the employment status, return to work and pension rights. Additionally, there is the possibility to combine work, training, education and parental leave if these activities allow to take care for a child.

Since 2004 persons who start a job while on parental leave loose the parental allowance irrespectively of the income criterion. The parental allowance is means-tested — the monthly household income per capita cannot exceed 504 PLN (=€ 126) (or 583 PLN (=€ 146) if the child is disabled). Previously, it was possible to work and have a parental allowance when the total income of the parent on leave did not exceed 60% of the monthly average remuneration in the national economy.

The parental leave scheme in Poland has been subjected to some criticism for its inflexibility (Matysiak, 2005b), recently moderated by the possibility to replace parental leave by part-time employment. However, its moderate use is mainly related to drops in family incomes since the income criterion for the parental allowance is rather tight. One can also argue that a rigid regulation of parental allowances may affect the leave use by fathers — since father's income is usually higher than their wife's, and would affect the family welfare more heavily.

Summing up, inflexible working hours which are not compatible with care responsibilities due to insufficient child care provision, rigid regulations on parental leave and parental allowance bring employment and child care in competition.

Increasing the accessibility of childcare services (nurseries and kindergartens) in terms of places and costs as well as development of care activities for school children are normally

was employed part-time involuntarily and less than 10% had chosen part-time work for family reasons. Those, who worked part-time voluntarily (about 30%), mainly belonged to the pre-retirement age groups.

mentioned as basic measures for reconciling work and family (e.g. Balcerzak-Paradowska *et al.*, 2003 and World Bank, 2004). Good quality childcare facilities, available at a reasonable price can also be considered as a policy measure aimed at decreasing both costs of children at the family level and educational inequalities which are rising steadily in Poland.

6.5.3. Responses to ageing

Despite the fact that Poland currently is less advanced in population ageing than other EU Member States, the number of pensioners recently grew rapidly also due to labour market policies (a relatively easy access to early retirement reduced the labour supply and diminished unemployment). In 2004 the number of old-age and disability pensioners amounted 7.2 million. Expenditures related to old-age pensions and disability benefits accounted for 9.2% of the GDP.

Rising numbers of persons aged 55-64, their low employment rates (35% for men and 20% for women while the EU-25 average is 49 and 29% respectively), increasing unemployment rates (11% for men and 10% for women in 2003) as well as deficits in their human capital recently became a policy concern. Policies towards removing incentives to early retirement on one hand, and aimed at increasing the employment ability of older workers on the other hand are a main response to that aspect of ageing.

Policies towards removing incentives to early retirement

The pension system reform, implemented in 1999, reflects the expected acceleration in ageing after 2010. Early retirement is gradually reduced — from January 2007 onwards old regulations will be not valid anymore. However, persons expecting to retire earlier due to difficult working conditions will be covered by a government proposal of a bridge-pension plus financial support which will be passed to the parliamentary debates. The parliament decided to continue early retirement in some branches. That issue will be discussed again in the new parliament elected in September 2005.

Other policies aimed at removing incentives to early retirement refer either to limitations in combining old-age pensions with income from employment or to rewarding longer stay in the labour market. If early retired persons take up again any job before the standard age of retirement, their old-age pensions are paid upon some requirements related to the level of income from work. On the contrary, those who stay in employment after getting a right to retire will receive higher old-age pensions.

Measures to increase the employment ability of the older workers

Recent changes in the labour market policy give more emphasis to active labour market policies at regional and local levels, supported by the implementation of some sectoral and regional operational programs. The Act on Employment Promotion and Labour Market Institutions of April 2004 gives a special focus to active labour market measures, training institutions and incentives for employers to financially support training of employees. More attention is paid to occupational activation of persons disadvantaged in

the labour market, also for older workers. Long-life learning is clearly recognised as an instrument to increase the adaptability of the labour force. The newly drafted '50+ programme' is supposed to activate older workers. The act on pre-retirement benefits (2004) reduced eligibility for them.

Efforts aimed at reducing early withdrawals from the labour market seem to have some effect already: the effective age at retirement increased from 55.5 in 2001 to 56.4 years in 2003 for women (the standard age is 60) and from 57.8 to 59.8 years for men (the standard age is 65).

Elderly care policies are not yet well developed. Most of the financial responsibility for public care and services has been delegated to the local levels. However, scarcity of resources affects their provision markedly. Currently, there is a considerable shortage in the provision of care and services for the elderly in terms of supporting them to continue living at home, to support families to take care of them, and to extending institutional care.

6.5.4. Conclusions and future prospects

The main issues listed in the beginning of this report will remain in debate in the coming period. Since low fertility, population ageing and population decline are in public debate one may expect rising social recognition of demographic changes and their consequences. Increasingly arguments are voiced publicly for family policy measures, but these should be coherent and stable in time with a special focus on reconciliation, and interrelated with gender inequality. The 1999 pension reform raises questions on gender differences in work careers, wages and age of retirement and their effects for future old-age pensions.

Recent debates on national development strategies also highlighted the relevance of demographic challenges, their interrelations with the labour market, and the needs to respond. The strategies will remain under revision and that will bring space to include population issues in the debates. Reforms of the social security system are among the policy priorities. A new draft of the pension strategy has recently been prepared by the Ministry of Social Policy. It follows recommendations by the European Commission to continue the modernisation of the pension system.

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6.6 Portugal and Spain (Pau Baizán)

- Structural changes in pension reform proceeds to counter future long-term changes in the ageing of the population.
- The expansion of pre-school and day-care services does not meet the fast increase in demand.
- 691 thousand applications in the 4th extraordinary wave of legalization of foreign nationals of 2005 in Spain.
- Time use surveys reveal that the division of paid and unpaid labour strongly differs between men and women, especially when children are present in the household.

6.6.1. Ageing and social security reform

The pension systems of Portugal and Spain face the challenge of providing a sufficient income to the elderly population and to ensure their future financial sustainability. Both systems are mainly based on Social Security contributions, which also provide a means-tested basic pension (or complements) financed with taxes; private pension founds play a relatively minor role (Council of the European Union, 2003; Ministerio de Trabajo y Asuntos Sociales, 2005; Ministério do Trabalho e da Solidariedade Social, 2005). In theory, each of the systems provides a high level of substitution of previous income to pensioners. However, due to low incomes and to short or insufficient career records, especially for women, the standard of living is low for an important proportion of the elderly population.[71] In this context several increases of minimum-level pensions have taken place in recent years, as part of a general reform of the system. This type of measures is clearly limited by budgetary constraints and by the effort to decrease the accumulated debt of the State, which should also contribute to the sustainability of the Social Security. This is in particular the case in Portugal, where in the last three years economic growth has been very slow or negative and the government budget deficit has soared.

A parallel strategy adopted in both countries is the establishment[72] and the expansion of a pension found, run by the Social Security, that explicitly accounts for future declining numbers of employed persons and an increase in the number of pensioners. The deterioration of the dependency ratios is not expected to lead to a deficit in the Social Security before 2015-20. A number of factors are involved here, including the fact that the 'baby boom' took place a decade later than in most western European countries[73] and that very low fertility levels were not reached before the mid 1980s.

Several measures have been taken directed to provide incentives to postpone the end of working life and to facilitate a more flexible access to retirement. In both countries the 'normal' age at retirement is 65 years.[74] This legal reference can not be afforded by a significant proportion of the elderly in Portugal, which has the highest employment rates of older individuals in the European Union: 45% in the age group 60-64, 28% for the 65-69, and 20% for the 70-74 years old (Eurostat: Labour Force Survey, 2001). The situation is completely different in Spain, where early retirement was used systematically during the industrial crises in the 1980s (although this policy was later reversed). Furthermore, the employment rate of women (15-64) is much higher in Portugal (61) than in Spain (47), resulting in an overall employment rate that in Spain is much lower.[75](OECD, 2004).

[71] In Spain the average income of the elderly (65 or over) is close to the average of the whole population and severe poverty among the elderly has practically disappeared. However, many of them have incomes very close to the poverty threshold (Ministerio de Trabajo y Asuntos Sociales, 2005).
[72] In 1989 in Portugal and in 1997 in Spain.
[73] The highest number of births took place in the 1960s and the 1970s.
[74] In Portugal since 2000.
[75] This also implies an important potential for expansion of employment.

Keeping in mind these different proportions of labour force participation, one can interpret the average age at retirement, that was 60.6 in Spain and 62.2 in Portugal in 2001, as against an average of 59.9 for the EU-15, according to a study carried out by the European Commission and the Council of the European Union (2003).[76]

Among the measures recently adopted in Spain to provide incentives for later retirement stands the increase in the period in which individual pension level is calculated (currently 15 years); discussions are taking place to further increase this period. In Portugal, according to the Social Security reform of 2000, that period will progressively increase until it covers the whole period of contribution (up to a maximum of 40 years) in 2016. Flexibilisation measures taken in 1999 in Portugal include the possibility to retire from the age of 55 onwards with a reduced pension for individuals with at least 15 years of contribution, or 60 years otherwise. Postponement of retirement up to the age of 70 gives right to a higher pension. Retirement pensions are compatible with paid work, including part-time work. Also in Spain, from the reform of 2002, it is now possible to receive a (partial) retirement pension and to work (part-time) after the age of 65, giving right to an increase in its amount. Early retirement is possible from the age of 61 (or 60 according to special conditions), giving right to a reduced pension. Furthermore, employment of older workers is promoted by providing substantial reductions in Social Security contributions to enterprises hiring individuals over the age of 45.

Both Iberian countries have a system of care to dependent elderly in which the lion share of responsibility rests on families, mainly on women, and increasingly on immigrant workers. The public systems of care and social services can be characterised as underdeveloped: they lack resources, focus mainly on the very poor, and their provisions are dispersed geographically uneven (Jacobzone and Pacolet, 1998 and Rodríguez Cabrero and Wall, 2004). The process of modernisation of social services in the last decade with programmes like the *National Plan for Inclusion 2001 and of 2003* (Portugal) and the *Plan Gerontológico Estatal 1991-2000* and the *Plan de Acción para las Personas Mayores 2003-2007* (Spain), is still very limited and clearly lags behind most western European countries in terms of provision. Furthermore, there is a still a low political and social perception of the problem of dependency. This situation openly clashes with the intensity of the socio-demographic changes that are taken place. The traditional care model is being redefined by the growing proportion of women in the labour market, the increasing gender equality aspirations, and the decreasing proportion of elderly co-residing with relatives (Baizán, 1995; Wall *et al.*, 2001; Aboim, 2003 and Vasconcelos, 2002).

A political and scientific debate has taken place in Spain concerning the models and the strategies of provision for dependants (e.g. Defensor del Pueblo, 2000; Sarasa, 2003 and Rodríguez Cabrero, 2004). In this context the Government of Spain has announced the

[76] The methodology for the calculation of the average age at retirement is explained in the report.

establishment of a new 'Dependency Insurance' for elderly care, in the framework of the Social Security (IMSERSO, 2005). Although not all aspects of the insurance have been defined yet, it will probably consist of a benefit for the payment of care services, complemented with a co-payment by beneficiaries according to their income level, directed to all residing persons in need (IMSERSO, 2005). In Portugal the current Plan for Inclusion (2003-2005) established as target an increase in the number of persons receiving home care and created fiscal incentives for families who take elderly persons in house.

6.6.2. Family policies and the labour market

Pre-school attendance for children of 3-5 years was 78% in Portugal and above 95% in practically all Spanish regions (school term 2003/2004). For the age range 0-2 considerably less is developed in both countries and coverage is very uneven (Ministério da Educação, 2004; Ministerio de Educación y Ciencia, 2004 and Eurostat, 2002). There has been sizeable increases in the coverage in Portugal and in several Spanish[77] regions (in particular, Basque Country, Catalonia, Madrid and Galicia). However, these increases have not met the fast expansion in demand, which were determined by weakening family networks, increases in female labour force participation, expansion of the educational system for the age range 3-6 years, and the increase of infants due to international migration (González, 2003). In Spain education and infant care are the responsibility of the regions, in collaboration with municipalities. More than two thirds of the children attend public centres, and most of the pre-school private centres (age 3-5) are subsidised with public founds. After-school and meal facilities in public centres are often organised by parents' associations, while private centres organised these themselves. Such services are fundamental to achieve compatibility with parents' paid work, given the predominant time table in public centres (9-12:30 and 15-17 h.). In Portugal child care services, including after-school facilities, are mainly in the hands of the Ministry of Labour and Social Solidarity, with an important presence of private and non-profit institutions. Opening hours generally suit better to working hours (from 4 to up 11 hours per day, five days a week). Pre-schools are run by the Ministry of Education (Jardins de Imfância).

Maternity leave regulations for individuals in the labour force establish a period of 17 weeks in Portugal and 16 weeks in Spain, with a wage compensation of 100%. In Spain this period can be taken by the father or by the mother[78] of the new born or adopted infant, although a period of 6 weeks following delivery are reserved to the mother. In Portugal fathers have a right to five days of paternity leave following the birth of a child; paternity leave is obligatory since 2003. Unpaid parental leave is also possible in both

[77] According to provisional data for 2004-05 the proportion of children enrolled in day care centres / pre-schools in Spain was 13.5 for children under three, 96.7 for three years olds and 100% for four and five years olds (Ministerio de Educación y Ciencia, 2005).

[78] The total period of leave taken by both parents can not exceed 16 weeks.

countries, with the right to return to the same workplace. This parental leave may last up to 3 years in Spain (or up to 6 years for civil servants in part-time) and 6 months in Portugal (12 months in part-time); this parental leave can also be taken by fathers.

An important reform of the child benefit system took place in Portugal in 2003. The reform increased the progressivity of the system with respect to income (e.g. elimination of the entitlement for well-off households) and emphasised the need to support families with three or more children. In Spain, benefits targeted to children under 3 years (or under 6 in some cases) were recently introduced, adding to the existing benefits for very low income families.

The protracted pattern of family and household formation by young adults (Billari, 2004) has been the subject of some debate, both among researchers and in public. The pattern has been related, among other factors, to the way labour market reforms were conducted in Spain and Portugal, as these resulted in the highest proportion across EU countries in the proportion of temporary contracts and the concentration of unemployment among young people. In addition, housing market developments have also contributed to increased difficulties in starting a household (Martins and Villanueva, 2003). Several authors emphasised the important impact the labour market has on delaying family building and household formation (Golsh, 2004; Baizán, 2004 and Gutiérrez-Domènech, 2005). Specifically postponement has a major impact on fertility decline in Spain (Ortega and Kohler, 2001).

Other relevant family policies adopted in Spain include the recent law establishing the marriage of homosexual couples (2005), with the same rights as granted to heterosexual couples, including the right to adopt children. This law has encountered the opposition of the Catholic Church and the main opposition party (Popular Party). An issue that furthermore attracted considerable attention from public opinion and the media was domestic violence, in particular violence against women, which was the object of a specific law (*Ley de Protección Integral Contra la Violencia de Género*, 2004). Also in Portugal the protection of children's rights and the prevention of violence between partners attracted considerable public attention.

6.6.3. Immigration and accommodation policies in Spain

During January-May 2005 the Ministry of Labour conducted a process of 'normalisation' of foreign-national workers residing illegally in Spain. It resulted in 691 thousand applications to legally work and reside in Spain (not counting family dependants). According to the Government more than 90% of them have been accepted. It is the fourth extraordinary wave of legalisation of foreign nationals that took place in Spain (previously in 1991, 2000 and 2001), and the one involving by far the highest number of admissions. One of the main objectives of the process has been to fight underground labour relationships (Ministerio de Trabajo y Asuntos Sociales, 2005). The newly legalized immigrants have a relatively young age structure: 19% of them are in the age range 16-24, 60% between 25 and 39, and 21% are 40 to 64 years old. They concentrate in certain

work sectors: domestic service (35%), building (19%), agriculture (14%), hotel and catering (10%).

Over the last five years immigration to Spain has been exceptionally high. As a result, the number of foreign nationals registered as residents in the municipal registers[79] increased from 1.5 million at the end of 2000 to 3.7 million at 1 January 2005 (Instituto Nacional de Estadística, 2005). This increase does not necessarily imply an equivalent increase in net immigration, as registration does not closely follow migration events (e.g. under-registration of emigration and recent arrivals; naturalisation). However, municipal registers offer the best estimation of the resident population and its characteristics (Izquierdo and López, 2003 and Domingo, 2004). The countries of origin with the highest numbers of residents in Spain are Ecuador, Morocco, Colombia, United Kingdom and Romania.

Such sudden increases of the foreign population trigger changes in the range of social policies at various state levels (municipalities and 'autonomous communities'; regions are responsible for education, social services, health, housing) (Colectivo IOE, 2002 and Zapata, 2004).

[79] Registration in a municipality does not imply legal residence. The main purpose of registration is to identify the population to be supplied with education, health, or social services. Foreign citizens are required to register in order to have access to these services in a particular municipality; furthermore, registration is a 'proof' of residence required for obtaining a residence permit (in the event of a 'normalisation').

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6.6.4. Review of time-use data

Only one survey with *time use diaries* is available for Spain and two for Portugal covering the whole population (both conducted the same year). No detailed information can be provided with respect to *trends* in time use. This is because there are no periodical surveys on the subject, except for the Basque Country (surveys of 1993, 1998, and 2003), and labour force surveys, that provide data only on paid work. The European Community Household Panel covers the period 1993-2000, with a monthly calendar of activities (that gives priority to paid activity over other activities) and a few questions on other aspects (such as care for dependants).

These time use data are cross sectional (except ECHP). This survey design does not allow making any inference on the (mutual) impact of different events in the life course and time use. It is however possible to relate different household and labour force positions with different patterns of time use, according to age group and sex. For instance, in Portugal, men work on average 9:02 hours in paid work and 1:54 in unpaid work in the household (including childcare), as against 7:49 and 5 hours respectively for women (Perista, 2002, p. 451). When a child with less than 7 years is present in the household, the division of labour between the partners radically differs between them: men devote 42% of their total time on an average day to paid work, 5% to child care and 5% to domestic chores; women devote 25% to paid work, 12% to child care and 19% to domestic chores (Cardoso Torres, 2004, p. 118). In Spain, according to data provided by the National Institute of Statistics, on average 43% of men participate in paid work with an average duration of this activity of 8:22 hours, and 25% of women participate in paid work with 6:51 hours of duration. 70% of men participate in family and domestic activities, with an average duration of 3:39 hours, while 93% of women participate in this kind of activities with an average duration of 4:45 hours. If one turns to the situation of a household with two adults with dependent children the picture is as follows: 48% of men and 25% of women participate in paid work, with an average duration of 8:29 and 6:28 hours respectively. 75% of men devote time to family and household activities, as against 92% of women, with an average duration of 2:11 and 5:05 hours respectively.

The Portuguese Time Use Survey 1999

The National Institute of Statistics participated in the development of the harmonised European time use survey, co-ordinated by Eurostat. This participation was essential with respect to methodological aspects, the classifications and concepts used. Nevertheless, some of these recommendations were not followed in the survey design: the surveyed time period, the number of diary days, as well as some variables (Correia, 2005). 8133 individuals of at least 6 years of age living in private households were interviewed. The data was collected through personal interviews. The respondents were asked to answer

some questions and to fill a time use diary broken in 10 minutes blocks, covering the 24 hours of a working day as well as a weekend day.

The Spanish Time Use Survey 2002-03

A pilot study, conducted in 1997 and the recommendations from Eurostat were the basis for this survey (INE, 2004). Nearly 24 thousand households were contacted in order to get information on daily activities through time use diaries and household and individual questionnaires. The sample is distributed evenly throughout the year. The time use diary is the central piece of information. Each member of the household older than 10, should fill the questionnaire the assigned day. The day is distributed in periods of 10 minutes each, in which the individual registers the main and the secondary activity. 63% out of the original sample provided an answer to the interview. Refusals, absent households, and errors in the sample, each accounted for approximately a third of non interviewed households.

Time-use data:

- *Encuesta de Empleo del Tiempo 2002-03,* Instituto Nacional de Estadística (Spain), (Microdata, questionnaire, methodological information and results available at: http://www.ine.es/inebase/cgi/um?M=%2Ft25%2Fe447&O=inebase&N=&L=1)
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6.7 Italy (Rossella Palomba)

- Italy is heavily affected by population ageing, which challenges the national generous pension system. Up until recently the pension system was not homogeneous across working sectors.
- The most recent pension reforms aim at raising labour market participation rates of older workers and at postponement of the age at retirement.
- Families, in particular women, remain the most important provider of direct care. New measures aim at supporting families with dependent children and/or dependent elderly, to better reconcile work commitments and family life, but not necessarily to raise the birth rate.
- The lack of policies supporting families with children, sustaining young adults who want to start a family and encouraging mothers to continue work, creates a negative mix of constraints that result in low fertility and low female employment.
- Female labour market participation has traditionally been low. Young female cohorts are well educated. Part time jobs are rare. Even married women who do not work limit their family size, since the period for caring for children is extremely long in Italy, due

to the fact that children stay at home very long as finding a job and starting an independent living is hard. Child care facilities are lacking.
- Time use is a gender sensitive issue: The presence of children heavily affects the time use of mothers, not of fathers. Men's contribution to family work is so small that his absence actually alleviates the total amount of house work for a woman: She is better off in a lone mother family.
- Home care measures for dependent elderly are extended.

6.7.1. Italy's road to welfare reform

Of all industrialised countries, Italy is one of the most heavily affected by population ageing. With low birth rates and increasing life expectancy more and more Italians are entering the national generous pension system. More than 40% of Italian income tax revenues is currently spent on sustaining pension costs and pension spending is currently 16% of GDP (INPS, 2004) and could reach 20% by 2030 (Paci, 2003). The recent reforms undertaken by the Italian government from the mid-1990s aimed at lessening the pension burden by raising the effective retirement age and linking retirement benefits to yearly contributions by workers entering labour force. Until the mid-1990s the Italian pension system was still characterised by heterogeneity: though all citizens were covered by the social security system, eligibility rules for a State pension, contributions to the schemes, and formulas to compute the value of the benefit were not homogeneous across working sectors. After 1992 the overall system began to change. The reforms enforced the principle that the dynamic of the pension burden should be consistent with economic growth and it made the retirement age and eligibility criteria more restrictive, eliminating for example early retirement schemes (the so called 'baby pensions'). The 1995 and 2004 reforms gave further strength to the process: they changed the rules for retirement pensions, started the harmonisation across different pension funds, and introduced a contribution system for new employees.

Welfare reforms were also undertaken to change measures aimed at supporting families with dependent children and/or dependent elderly. From the point of view of elderly care, in fact, the family remains the most important provider of direct care and specific support actions were implemented at the local/municipality level to sustain families — economically or not— in caring of elderly people. With regard to child care recent policies do not seem to contribute to increasing fertility but to facilitate economic support particularly to poor families. Since Italian women move increasingly to the labour market, the question is who has to care for dependent persons and how work and family commitments are compatible. A new parental leave policy has been introduced and attempts are made to increase the supply of part-time jobs to better reconcile family and worker roles.

6.7.2. Targeting Italian style ageing population

Whatever measurement of population ageing we take, Italy shows values of high concern. The Italian population has aged rapidly over the last 20-30 years. The percentage of old people (over the age of 65) has already reached 18% of the total population, 22% of these being very old, and the percentage of people aged 65 or over is expected to increase up to 27% by 2025. While in Italy there are more old people than in the past, the elderly who work are few and decreasing in number. The labour force participation of older age groups and the ratio of workers to retirees is in fact very low. Traditionally the low activity rate in the old age was due to the marginal position of women in the labour market, but now the phenomenon also affects the male population. According to the *Istat* Labour Force Survey, 2002 average, 31% of men aged 60-64 years, 11% of 65-69-year-olds, and 5% of the 70-74-year-olds are still active, while for women the percentages decreased from 9% of 60-64 year-olds to less than 2% of the over 65 years old. In the previous age group (55-59) 54% of men and 23% of women were active.

Problems to be faced with

Policy-makers, industrial associations, trade unions, media and general public perceive the elderly more as beneficiaries of welfare provisions / pensions than as potential workers. The political and public concern is thus more focussed on the medium- and long-term financial sustainability of the public pension system than, for example, on unemployment rates of older people. Unemployment decreases almost consistently with increasing age, with the exception of a moderate increase —only for men— in the 55-59 age group (passing from 3.1% in the 50-54 to 4.1% in the 55-59 age group). One of the main factors underlying the general concern on pension system sustainability is the increasing life expectancy, which also involves a longer period of being retired, for men and even more so for women.

It is self-evident that an increase in the number of older people leads to an increase in pension costs which affects the sustainability of public finances. As a results the main questions addressed by the most recent pension reforms (in 1992, 1995 and 2004) are postponement of the age at retirement and a rise in the labour market participation rates of older workers.

Another important social and political aspect of the ageing process is the increase in health and care costs. Italy has a specific situation concerning elderly care, as family networks are very active here. With regard to support the elderly may rely on in case of need, the *Istat* Survey on Family Networks (2002)[80] shows that more than half of the over-64-year-old parents live within 1 km from their son or daughter, and quite a few even live in the same apartment building. Cohabitation in the same home remains limited but is not unimportant (around 12% of the parents aged over 74 years). Only 1% of the sons / daughters state that they have entrusted their parents to welfare or health-care

[80] The sample of the survey size was 20,153 households.

institutions. Therefore the main issues addressed by policies in the field of elderly care are related to support families who provide elderly care.

Recent policies aimed at extending active life

Since 1995 the Italian Government put priority on ensuring the extension of working lives. The minimum age at retirement was progressively raised. The 1995 pension reform radically changed the mechanism for calculating pensions: the amount depends more strictly on the contributions actually paid, and also on the average life expectancy at the time of retirement. Concerning the age at retirement, workers can choose to retire between the age of 57 and 65 with economic incentives to remain working up to 65. From 2002, Italians may retire at 57 years of age if they have contributed 35 years to the social security system or, independently from age, with 37 years of contributions paid; from 2008 onwards one must have paid contributions to the social security system for 40 years or be older than 60 with 35 years of contributions to social security in order to get a full pension after retirement.

As for the public pension system, also the 2001 Budget Law introduced incentives to retire later: the so called *super-bonus.* Workers eligible for pension may opt for postponing their pension for at least two years with the social contribution exemption, thus obtaining —for the additional working period— a wage increase (the *super-bonus*) of more than 30% of their salary. Pension rights matured up to the moment of the option are guaranteed. Similar incentives are envisaged for those who decide to continue working even after reaching the age at retirement (65 for men, 60 for women). Civil servants are not eligible for a super-bonus.

Recent policies for elderly care

Caring for dependent elderly is largely left to the family and in particular to women (Fondazione Brodolini, 2003). Italian social policies particularly focus on encouraging the permanence of the elderly in the family through improving home-services. Caring for older people at home leads to a substantial change in perspective, i.e. moving from a model in which the older person revolves around structures providing services (s)he requires to a model in which institutions and professionals interact and focus on older people in need. Due to the fact that during the 1990s Italy experienced a push towards decentralisation and privatisation of elderly care, the administrative responsibilities for elderly home-care services have been transferred to local authorities. Private and / or non-profit organisations are now increasingly participating in care provision. As a result, local authorities are considered the real providers of elderly social and welfare services and this fact makes it impossible to sketch an in-depth national panorama.
In general terms, Italy has:

- Home care that consists in care and / or health services (i.e. delivery of food and non food assistance but also medical and / or rehabilitative assistance); On average 2% of the 65+ population benefits from this type of assistance;

- 'Attendance benefit' that is the most important cash transfer for individuals with permanent disabilities. It is not mean-tested and amounts to about € 426 per month. It is granted to some 7% of the 65+ population;
- 'Service vouchers' which are provided by local authorities for various kinds of economic transfers that elderly could use to purchase services from a pre-determined number of providers, mainly non-profit organisations. However, these vouchers are actually provided by only a small minority (10%) of all Italian municipalities.

Relevant differences between northern and southern municipalities do exist and the Italian governments did not make real efforts to overcome the fragmentation of elderly care. Various initiatives exists especially in the North of Italy to support families that take care of their elderly members. Since services are still so underdeveloped many older persons and their families are forced to purchase services in the private market, mainly from immigrant female workers.

6.7.3. Targeting Italian style family and fertility

In Italy low birth rates (the current period TFR is around 1.26; for birth cohort 1965 the cohort TFR is 1.49) are observed together with low labour market participation rates of married women. The explanation for this apparent anomaly goes to the Italian institutional structure, particularly as reflected in rigidities and imperfections of the labour market and characteristics of the publicly-funded child care system. These rigidities tend to increase simultaneously the costs of having children and to discourage the labour market participation of married women.

The Italian female labour market participation rate has traditionally been low compared to other European countries. As an example, the labour force participation rate of women was 42% in the 1990s, more than 7 points below the European Union average. In recent years, Italy experiences a fairly steady influx of women into the labour market. By 2002, 48% of women aged 15-64 were in the labour force. Young Italian women now have higher average levels of educational attainment than young men do. Does this suggest that they expect to be actively employed most of their lives? A higher proportion of women is working full-time compared to other countries. Part-time work is not as common or available to Italian women as in central or northern Europe. The fact that part-time employment is still rare in Italy (10% of total employment) is an important factor in accounting for the low employment rates of married women, particularly those with children. As a consequence, married women are forced to choose between no work and full-time work, neither of which probably is what they prefer.

Married women who choose to work tend to have full-time work commitments, which is not compatible with having large numbers of (small) children. Moreover, even married women who do not work tend to limit their family size, due to the characteristics of the Italian family, and this depends to some extent on the labour market. Because it is hard to find a job many young people live at the parental home until they find their first 'stable' employment and then get married. This makes the period of 'caring' for children

extremely long in Italy. The number of children staying in the parental home is rapidly increasing, even among over-30-year-old persons. Actually, one third of the 30-34 years young adults are still living with their parents as compared to 14% in 1990. This delay in entering adulthood affects the age at marriage, postpones family formation and limits young couples' reproductive behaviour.

Thus the labour market indirectly imposes large fertility costs on families, even when the mother does not work: the structure of the Italian labour market both directly and indirectly discourages fertility (Del Boca, 2002). The lack of policies effectively supporting families with children, sustaining young adults who want to start a family, and encouraging mothers to work creates a negative mix of constraints and conflicts which results in low fertility and low female employment.

Last but not least, child care publicly-funded services for children under 3 years are largely insufficient though less expensive as compared to private sector alternatives. Private childcare costs are on average much higher than comparable public ones. According to data from the Bank of Italy Survey on Income and Wealth, the monthly costs for private childcare for children under 3 are € 228 for private care and only € 102 for public care. The number of children under 3 who attend —public or private— childcare services is quite small (6% of all children aged 0-3 years) (Del Boca, 2002).

Problems to be faced with

While there is a significant generosity in the transfer of central government funds to older people, there are serious drawbacks in the support and encouragement of younger families for whom it is often difficult to reconcile employment and childrearing. This is also highlighted by the fact that there is more poverty in families with dependent children than in those of older people (Saraceno, 2004). The poverty rate is, in fact, very high in families with three or more minor children and in lone parent families. In 2002, for example, 25% of the families with three or more dependent children were below the poverty threshold as compared to a national average of 11%, while 9% of the one-person households, mainly consisting of elderly people, were below this poverty line (ISTAT, 2004). Recent policies were therefore aimed at supporting large families with dependent children, mainly through increasing tax deductions and family allowances.

As said before, Italian women often do not have the opportunity to use part-time work for solving work-family conflicts. The slow progression towards a more flexible system of working hours in Italy has two main reasons. On the one hand, trade unions have traditionally opposed part-time employment fearing that potential splits in the work force (in terms of working arrangements, demographic characteristics, etcetera) could reduce workers' cohesion. On the other hand, under current regulations social contributions paid by employers are strictly proportional to the number of employees, not to their hours worked, which makes the employment of two part-time employees more costly than one full-time employee (Del Boca, 2002). Recent policies aimed at reforming the labour

market (the so called *Biagi* reform) were introduced, though their effects cannot be measured yet in terms of increasing part-time posts.
Finally, there is tremendous regional variation in the Italian social policies, but, in general, childcare remained a very important but informal, normative function of the family. State policies reflect this perspective by encouraging women and more recently also men to care for their children. Parental leave is in fact quite generous, as it lasts up to the child is eight years.

Recent policies related to family and fertility
The following policies have recently been introduced in the field of family and fertility:

- *Biagi reform*: a recent law on employment and labour market reforms (2003). It introduces new forms of flexibility which may, among others, allow a better reconciliation between family responsibilities and work commitments, in particular for women. In order to encourage firms to use part-time work, and to facilitate the labour-market entry of people who need to reconcile work with family responsibilities, education or other commitments, the law tries to foster the use of part-time work, both 'vertical' (i.e. a reduced number of working days per week), and 'horizontal' (i.e. a reduced number of working hours per day);
- *Family allowances:* grants to low incomes families. The amount varies in relation to the size and income of the family from € 10 to € 965 for up to seven children. Supplements for larger families: an extra 10% and € 54 for each additional child. Income ceilings are increased for single-parent families and for families with at least one totally disabled family member;
- *Tax deductibility*: the amount of tax deductions for families with children under 3 has been increased in 2000;
- *Bonus for the second/third child*: Children represent additional costs for families and recent policy measures tried to alleviate families from this extra economic burden. A baby bonus has been introduced in 2004 amounting to € 1,000 at the birth of a child. The bonus went to those who already had at least one child and had a second/third child by the end of 2004. The baby bonus has not been reintroduced in 2005;
- *Parental leave*: Italian families are organised very traditionally. Fathers should be encouraged to take over part of the tasks of rearing children. After several years of political debate, a parental leave policy became effective early 2000 that entitles either parent to take up to 10 months leave at any time until the child is eight years old, following mandatory maternity leave for five months around childbirth. The 10-month parental leave is extended by an additional month if the father takes at least three months of this leave. Only 7% of fathers took parental leave (ISTAT, 2004). During parental leave, parents receive a benefit equivalent to 30% of earnings until the child is three years old. Employers receive state incentives to offer part-time employment opportunities to parents after the leave. Small firms, having to replace workers temporarily, may receive tax benefits.

6.7.4. Time use by family phases: a gender related issue

Recent (2002-2003) time use data for men and women aged 25-44 and living as partner in a couple versus those of the same age group living as parent in a one-parent family show that the presence of children heavily affects time use of mothers while father's time use does not vary much according to these forms of family life (ISTAT, 2005). Therefore, time use is a gender sensitive issue.

For women, after time for basic needs (i.e. sleeping, eating, personal hygiene, etcetera) it is activities for the family (whilst for men it is their job) that take up the major part of the time. All women spend some of their daily time on family commitments, but women who live in a couple with children have the heaviest load (6h 47'). Men use more time for their work, leaving themselves a large space for leisure activities (3h 23'). Only childless women manage to have free time close to that of men (3h 15'), while mothers reduce free time to about 2h per day (some of them declared to have less than 10 minutes free time per day).

The birth of a child means that the mother has to reorganize her time and dedicate more of it to her family. Mothers spend about 3 hours more than childless married women on the family, time that is usually taken from leisure hours (*Figure 6.5*). Also time spent on paid work is reduced by almost one hour (from 7h 30' to 6h 15' per day). When children are small, apart from time needed for child caring, it is mainly time spent on domestic housework which increases markedly for mothers.

And what about men? The number of men participating in family activities increases by 4% when children are around, and fathers' time use does not vary much: their contribution in terms of time spent at home increases by about 20 minutes a day. Fathers' time use does not show significant variation neither in terms of free time nor in time for paid work, which passes from 8h 24' to 8h 14' per day. Men's free time always exceeds the time spent on the family, as opposed to women.

Comparing 2002-2003 time use data with data from a 1988-1989 survey, we see that in 14 years things did not change much. The gender divide did not reduce. Currently both men and women devote less time to family commitments, probably because the number of children has declined, and spend more time on paid work but from the point of view of daily time use by gender, the pattern remained almost stable (ISTAT, 2005 and Palomba and Sabbadini, 1995).

It is interesting to note that lone mothers do not seem to be at any particular disadvantage due to the absence of a male partner with regard to running the household. Men's contribution to housework and care for children is so small that his absence actually reduces the total amount of housework to be done by the woman overall. In fact, in the case of a married couple, it is the woman who also has to take care of the man (washing, ironing, cleaning the house, preparing meals, etcetera). This takes up a lot of her time and that time is saved in one-parent families. If we compare mothers living in

married couples and lone mothers with the same number of children and a similar working situation, we see that lone mothers spend on average 2 hours less on housework than married mothers. In the 1988-1989 survey the results pointed in the same direction.

6.7.5. To conclude

In Italy, the process of reforming welfare and coping with recent demographic trends is not yet complete and in the coming years further financial investments, fresh political and public debates as well as attention in the media are needed. Up to now Italy mainly attempted to find solutions for issues related to population ageing in terms of the sustainability of pension system.

A decision to combine work and family commitments is influenced by the available supply of public child care as well as part-time jobs. By increasing flexibility in employment relationships, as foreseen in the recent Italian reform on employment and the labour market, more women may be inclined to work and find more easily a job. It is too early to evaluate whether the new reforms will really produce new part-time posts, and their possible effect on both the fertility and female participation rates. Indeed, the reorganisation of other related issues, notably children and family care, may create positive synergies in this respect.

A major, hidden problem is the need for women to reorganise their daily time use when children are born. When a child is born Italian women have to spend more time on family and housework, even though they continue their paid job, while Italian men are still released from substantially contributing to running the family. The new law on parental leave will probably not alter this gender-related aspect of Italians' behaviour too much. New ways of creating an innovative cultural change should be found, in Italy as well as probably elsewhere.

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6.8 Slovenia and the Balkans (Nada Stropnik; assistant: Blaž Pečaver)

- In Slovenia and many Balkan countries early retirement schemes are discouraged. Some initiatives to extend working life have recently been introduced by raising the age at retirement, allowing flexible retirement and the introduction of financial benefits for employment beyond the standard age at retirement.
- Pension reforms are introduced to increase the sustainability of pension systems.
- Female labour market participation is high and low fertility has now been a concern for some time. Increasingly families with children are supported. Maternity and parental leave facilities are normally generous. Child benefits are an important instrument to fight child poverty.
- Institutional care services for older persons do not meet demand. Other care services for the elderly are generally underdeveloped. Some home care is available, but mainly after all other sources available to the person in need and his/her family are exhausted.

6.8.1. Early retirement policies

Up to 1999, the Slovenian pension system allowed for early retirement under very generous conditions, i.e. with only temporary reductions in pensions until the early retiree reached the required age limit (58 years for men, 53 for women). Early retirement was conditional on the insured person reaching a minimum age (55 for men, 50 for women), minimum pension qualifying period (35 for men, 30 for women) and other conditions, such as bankruptcy of the firm or long-term unemployment, etcetera. According to the 1999 Pension and Disability Insurance Act (PDIA – Zakon o pokojninskem in invalidskem zavarovanju, 1999), early retirement without penalties is

only possible for persons who are unemployed or disabled, aged 58, and with a pension qualifying period of 40 years (men) or 38 years (women). The 1999 PDIA introduced disincentives for retirement before the full pensionable age is reached; these are permanent penalties (i.e. negative accrual rates) (Stropnik *et al.*, 2003). The expected and observed result is a gradual increase in effective retirement age.

Before 1999, early retirement in **Croatia** was possible for men at age 55 with a pension qualifying period of 35 years, and for women at age 50 with a pension qualifying period of 30 years. The reduction was by 0.11% of the pension for every month of early retirement and was applied only temporary until the pensioner attained the required retirement age (U.S. Social Security Administration, 2005). The new legislation increased the age for early retirement to 60 for men and 55 for women. In the transition period that started in 1999, the age limit has been increased by 6 moths per year. Between 1999 and 2002, the pension was lowered by 0.3% for every month of early retirement, and since 2002 the reduction has been by 0.34% per month. The reduction is permanent (Bagarić and Marušić, 2004).

In **Bosnia and Herzegovina**, early retirement is possible at any age, conditional on a 40 year pension qualifying period (Zakon o penzijskom i invalidskom osiguranju, 1998).

In 2000, The Law on Effectuating Early Pensions came into force in **FYR Macedonia**. It has established early retirement for men at the age of 63 years and for women at age 58.5 years with 20 years of pension qualifying period. Early retirement is also possible at any age if the person has completed 35 years of pension qualifying period. The insured person with less than 20 years (and with a minimum of 15 years) of pension qualifying period acquires the right to old age pension when turning 65 years (men) and 63 years (women). The early pension amounts to 55% of the pension base for men and 57.5% for women, and is increased by 1.67% for men and 1.5% for women for every additional year of work. However, it cannot be higher than 80% of the pension base (Gjurčilova). In order to reduce unemployment, starting from 2001, employers are allowed to encourage early retirement of workers who otherwise might be rendered technologically redundant (Vaknin, 2001).

Early retirement is allowed in **Bulgaria** till the end of 2009 for persons employed at 1st and 2nd category of work (30% of workplaces). The required age is eight and three years lower, respectively, than the standard one (European Commission, 2002a).[81] According to the pension act introduced in 2000, early retirement results in actuarial reductions in pensions (UNICEF, 1995).
In **Romania**, full retirement is possible 5 years before the legal retirement age if the pension qualifying period exceeds the standard one (35 years for men and 30 years for

[81] Military officers and related occupations retire after 25 contribution years (2/3 of them in military service), and military pilots and submarine personnel after 15 years of working record irrespective of age (European Commission, 2002a)

women) by at least 10 years (Manea, 2004). In 2000, partial early retirement was established. One can partially early retire at age 50 if one's pension qualifying period exceeds the standard one by less than 10 years (European Commission, 2002a). The pension is reduced.

6.8.2. Labour policies related to extension of working life

In **Slovenia**, there are no other explicit labour policies aimed at extending working lives than those focused on the unemployed. However, the 1999 PDIA introduced incentives (bonuses for each additional month of service) for retirement after the standard age (63 for men, 61 for women). The 2000 **Romanian** pension act introduced flexibility in retirement conditions by creating incentives for insured persons to remain in the labour market. It also established the right for those old-age pensioners still employed to receive old-age pension and a salary at the same time (Vilnoiu and Abagiu, 2003).

6.8.3. Intergenerational policies

Retirement age

In the framework of the 1999 pension system reform in **Croatia**, the retirement age increased from 60 to 65 years for men, and from 55 to 60 years for women, to be achieved gradually by 2008 (Vlada Republike Hrvatske, 2005). Also in Serbia, the 2003 Law on Pension and Disability Insurance raised the age for retirement from 60 to 63 years for men, and from 55 to 58 years for women (Turner, 2004). In the period 2004-2013, the retirement age in **Montenegro** is raised by 6 months every year, reaching 65 years for men in 2014, and 60 years for women (Stijepović, 2003). In 1995 in **FYR Macedonia**, the retirement age was 61 years for men and 56 years for women. Accordingly to the 1993 Pension and Disability Compensation Insurance Law (with several revisions after 1993), the standard retirement age was raised by 6 months each year, for men until 2001 (to age 64), and for women until 2007 (to age 62). For women it will rise further to 63 years by 2009 (Gjurčilova). The retirement age in **Bulgaria** used to be similarly low: 60 years for men and 55 years for women (Shopov, 2002). According to the 2000 new law, the retirement age increases 6 months every beginning of the year until 2009, to reach 65 years for men then and 60 years for women (Noncheva and Satcheva, 2003). Also in **Romania**, the retirement age increases periodically since 2001. In 13 years time it will go from 62 years for men and 57 years for women to 65 and 60 years respectively (Vilnoiu and Abagiu, 2003).

Other features of pension reforms

The pension reform in **Slovenia**, implemented in December 1999 (Zakon o pokojninskem in invalidskem zavarovanju), lowered pension rights within the first pillar. Voluntary collective or individual pension schemes were introduced (Stropnik *et al.*, 2003). The act introduced a number of elements that improved the system in terms of horizontal equity. The gender gap regarding eligibility and benefits was considerably narrowed. Not only were accrual rates equalized, but also are eligibility criteria for women now very similar to those for men. Actuarial fairness is also being more closely observed, since there are

penalties for retirement prior to and bonuses for retirement after the so-called full pensionable age of 63 for men and 61 for women. The period for calculating the pension base has been extended to the best eighteen years. Benefit levels were considerably reduced. Provided an insured person is not subject to penalties, his or her pension will be 72.5% of the pension base after 40 years of work. This compares to 85% under the 1992 PDIA. Taking into consideration further that the pension base in the 1999 PDIA is the best 18-year average wage (instead of the 10-year average under the 1992 PDIA), the reduction in pensions is even greater than the ratio of 72.5% to 85% might imply. Somewhat paradoxically, an even greater emphasis was laid on the principle of vertical equity (solidarity). Thus, the ratio between two comparable pensions (i.e. for two persons entering the pension system under similar conditions, where both have met the pension qualifying period) cannot exceed 4:1. This is a considerably narrower spread than the previous 4.8:1. A further redistribution element lies in the fact that social security contributions are not capped (Stropnik and Stanovnik, 2002). Taking into account (1) a fairly stable replacement rate, and (2) measures introduced in the 1999 PDIA, one can, with a certain degree of confidence, state that the Slovenian pension system is adequately performing one of its important functions, that is providing income security in old age and reducing poverty among the elderly. This is confirmed in studies on pensioners well being, based on household expenditure surveys.

The pension systems have been reformed in **Croatia** (1999), **Bulgaria** (2000), **Serbia** (Law on Pension and Disability Insurance, 2003) as well as in **Montenegro** (2003). In **FYR Macedonia** the process has been going on since 1996. In 2002 a Law on Mandatory Funded Pension Insurance was adopted (with revisions in 2003 and 2004). A Pension Fund was introduced as an open-end investment fund (http://www.mapas.gov.mk/zakoni/Revised version of the Law on Mandatory Fully Funded Pension Insurance-unofficial version.doc). A two-pillar system is expected to be launched in June 2005. The first pillar will be financed on a PAYG basis while the second pillar will be financed through capitalization. Persons who have contributed at least once to the mono-pillar system will have the option either to remain in the mono-pillar system or switch to the new two-pillar system (http://www.mapas.gov.mk/en/index.asp?page=overview1). The **Romanian** social security system also has two pillars; it consists of collective social security at the national level and individual security. The new pension act was passed in 2000. By the full implementation of the law in 2014 (1) the standard retirement will be 60 years for women and 65 for men, (2) the minimum contribution period will have risen from 10 to 15 years, and (3) the full contribution period will have increased to 35 years for men and 30 for women (Manea, 2004).

6.8.4. Child care policies and parental leave policies

Childcare policies

Childcare services in **Slovenia** are widely affordable due to high subsidies from public sources. Not much has changed in the size of subsidies during the transition period.

While the average subsidy amounted to 75% of the costs per child in 1990, it decreased to about 69% in 1998. All approved programmes of public and private day-care centres/providers are entitled to subsidy. Since January 1998, at least 20% of the price — including costs of education, care and meals, and excluding investments and maintenance costs— has been covered by local communities; this is a basic subsidy. The parent fee amounting to 80% of the costs is thus considered as full payment; it is paid by parents of about 4% of children. In these families, the gross monthly income per family member is over 110% of the average gross salary in Slovenia. Additional subsidy amounts to 10-70% of the price, depending on the income per family member as compared to the average salary. If more than one child from a family attends subsidised childcare programmes, the fee for older children is decreased by one income group. Families on social assistance and those with income per family member below 25% of the average salary are exempt from paying fees altogether (about 4% of all children attending organised childcare). If a local community decides to allocate more funds to childcare, it may lower parental fees.

Pre-school childcare steadily deteriorated in **Romania** after 1989 while parental fees rose continually. Public childcare for children up to age 3 was decentralized. Crèches were neglected as a consequence of extending maternity leave until children were 2 years. Many children up to 3 years are cared for at home by mothers or female relatives. Public childcare availability is different for 3-6 years olds: around 65% of them are cared for in kindergartens. The system gets very low financial support from the state or other public funds. Parents are entitled to cost deduction for pre-school childcare based on their monthly income (Fodor *et al.*, 2002 and Manea, 2004) but nevertheless organised childcare does not reach many families.

Parental leave policies

Till the end of 2001, parental leave in **Slovenia** was normally one year, of which three months could be used exclusively by the mother. Either the mother or the father could use the rest of the nine months, either as 260 days of full-time leave or as 520 days of a half-time leave combined with part-time work (half of the normal working hours per day). After parental leave, return to the former job was guaranteed. The Act on Parenthood Protection and Family Benefits (Zakon o starševskem varstvu in družinskih prejemkih; adopted in December 2001) extended the parental leave by 30 days if at birth of a child parents already are caring for at least two children below 8 years, by 60 days in case of three children, and by 90 days in case of four or more children. Parents are now allowed to use part of the leave (up to 75 days) until the child is 8 years. If the parental leave is not fully used, one may obtain the non-received amount of wage compensation (up to 5 monthly amounts) through payment of childcare services, payment of housing rent or for a housing purchase (Stropnik, 2003). Another novelty is the right to paternity leave for 90 days. Fathers are obliged to take at least 15 days during the maternal leave, and can take the rest of 75 days before the child is 8.

Wage compensation during maternity leave, parental leave and the first 15 days of the paternal leave amounts to 100% of the average monthly gross wage of the entitled person during the 12 months prior to the leave. For the rest of the 75 days the father is only paid the social security contributions based on the minimum wage. In 1995, the wage compensation was extended to mothers whose permanent employment was terminated without their violation or fault during pregnancy and maternity leave (Stropnik, 2003).

In **Croatia**, maternity leave lasts till the child is six months. After that the parents are normally entitled to six months of paid parental leave. The National Demographic Development Programme, adopted by the Croatian Parliament in January 1996, envisaged a series of measures to help families have the desired number of children. The most important measure may have been the 1996 extension of parental leave from the first to the third birthday of the child for families with twins or three or more children (Križić, 1999 and Puljiz and Zrinščak, 2002). Employed and self-employed parents hold the right. However, by late 2001 this leave was shortened to age 2 of the child, and only available for multiple births. Since 1996, also other parents may opt for unpaid leave if they have a child between 1 and 3 years. However, social security is not paid to the person on leave from the state budget, and a return to the former job is not guaranteed (it has to be agreed upon with an employer) (Stropnik, 2003). The parents may work part-time till the child is 1. By the end of 2001, the amount of parental benefits was lowered by approximately one-third. The new level is quite low, so that many women opt for a return to their jobs after maternity leave. The second factor negatively influencing the use of this leave is the danger of becoming unemployed (Stropnik, 2003).

According to the 2001 Labour Law in **Serbia and Montenegro**, a woman is entitled to 365 days of maternity leave (first three months) and leave for nursing the child, 100% compensated during the whole leave (Jovanović and Vukotić, 2005).

The 1999 Law on Principles of Social Protection, Protection of Civil Victims of War, and Protection of Families with Children regulates maternity leave and benefits in **Bosnia and Herzegovina**. Women are entitled to 12 months of maternity leave and may opt to work no more than 4 hours per day until the child is 3 years. However, women encounter problems with regard to the non-payment of maternity benefits and the unwarranted dismissal of pregnant women and new mothers (U.S. Department of State, 2001).

In **FYR Macedonia**, women normally are entitled to nine months of maternity leave. Maternity benefits are equal to sick pay (Labour Relations Law, 1993). Women also have the right to return to their jobs within 2 years after birth (U.S. Department of State, 2001). Women may even opt for return to work before the maternity leave ends. They are entitled then to a salary and a 50% maternity allowance (Labour Relations Law, 1993). The law does not permit overtime work nor night shifts during pregnancy or up until the child is 2. After the child turns 1 mothers may work night shifts, but only if they agree. Self-supporting parents may work longer than full-time or in night shifts but only on the basis

of their written consent. Single mothers have the right to permanent financial assistance in the last month of pregnancy and as long as the child is under 3 years old.

In 1995, the duration of maternity leave in **Bulgaria** was 120-180 days, dependent on the number of children. Insured mothers were entitled to 100% of their last wage, uninsured mothers to the minimum wage (UNICEF, 1997). In December 1999, the Compulsory Public Insurance Code defined new principles for maternity benefits insurance, their calculation and payment. Maternity leave was shortened to 135 days, the wage compensation rate decreased to 90% and equals sick pay now. The benefit is between the minimum wage and the individual's average income in the last 6 months (European Commission, 2002a and 2002b). The 3-year parental leave was shortened by one year in 1999. However, as the standard of living is declining for many families, many parents shortened their parental leave and used it only till the child turned 1 year (Stropnik, 2003). The 2002 Family Benefits Act reduced the parental leave further. It is now income tested, and the eligibility is defined by the State Budget Law (Noncheva and Satcheva, 2003). The Labour Code, amended in 2001, eliminated all reasons to lay-off pregnant workers other than redundancy (European Commission, 2002b).

In 2002, maternity leave in **Romania** was extended from 112 to 126 days (UNICEF, 1997; European Commission, 2002a). The benefit used to be 50-85% of the last wage, depending on the employment record, but was higher for third and following children. Since 2002 women are entitled to 85% of the individual average monthly income received in the last 6 months before the leave (Manea, 2004). Childcare leave was implemented in 1990 for working mothers with children up to 1 year. The wage compensation rate was 65%. In 1997 the leave was extended to 20 months (Bodnárová *et al.*, 2001). The 2001 reforms introduced an even longer parental leave[82] (till the child is 2). The wage replacement rate was changed to 85% of the average gross national wage. Fathers are entitled to a paternity leave of 5 working days during the first eight weeks after birth.

6.8.5. Family policies

In 1993, a clearly defined, comprehensive and integrated family policy was accepted in **Slovenia**, consisting of social, economic, legal, educational, health care, fiscal and other measures. Different from most transition countries, Slovenia managed to preserve family benefits available in the socialist period. Some benefits were improved, new rights were introduced. The negative issue was that the real values were not properly indexed.

In 1996, a National Programme for Demographic Development was passed in **Croatia**.

Child benefit

Child benefit is income tested in **Slovenia**. The income threshold for entitlement was raised in 1996 (to 110% of the national average gross wage per family member), so that

[82] The possibility for either parent to take parental leave was introduced in 2000 (Manea, 2004).

70% of the children were receiving benefits. In 1999, the income threshold for entitlement was lowered (to 99% of the average wage) (Zakon o družinskih prejemkih). Child benefits progressive with birth order (up to the 3rd child) were introduced. Benefit levels were raised, particularly for children in families with low income. The variation by income was increased. The importance of child benefits increased: in 2000 they formed the largest family cash transfer. Their share in GDP was 0.6% in 1995 and around 1% in the early 2000s (Stropnik, 2003).

The 2001 Act on Parenthood Protection and Family Benefits introduced several novelties. The right to child benefit now continues till the child turns 18 years, and may even last till 26 as long as the child follows full-time education. If the child follows a university study or did not complete regular schooling within the prescribed period due to illness, injury, or military service, the right to the benefit may be extended by the length of the additional periods.

Since January 2003 child benefits for pre-school children not included in subsidized childcare programmes are 20% higher than for other children. This measure tries to compensate part of the costs of informal childcare arrangements or part of the opportunity costs for a parent that cares for the child at home. Since January 2004, child benefits for children in single parent families are 10% higher than for other children (Stropnik, 2004a).

In **Croatia**, the eligibility to child benefit was in 2000 extended to all parents irrespective of the employment status. Prior to that, eligibility was based on employment or social insurance record (Stropnik, 2004b). Targeting criteria were loosened in 2000, but were made somewhat stricter again in 2002 when also higher benefits for twins, third and higher order children were abandoned (Puljiz and Zrinščak, 2002).

The 2002 Law on Financial Support to Families with Children introduced some changes in **Serbia**. The right to child benefit became means tested rather than wage tested, and that led to a lower number of recipients. All children are entitled to the same benefit level regardless of birth order. The family is entitled to a benefit for only four children (Jovanović and Vukotić, 2005).

In 2001, the conditions for receiving child benefits changed in **Montenegro** (Jovanović and Vukotić, 2005), recently regulated by a new act (Zakon o socijalnoj i dječjoj zaštiti, 2004).

The 1999 Law on Principles of Social Protection, Protection of Civil Victims of War, and Protection of Families with Children regulates income tested child benefits in **Bosnia and Herzegovina**. Child benefits are decentralised. In 2000, only 2 out of the 10 cantons paid any child benefits at all, even though all children were legally entitled (UNICEF, 2004).

According to the Labour Relations Law, child benefits in **FYR Macedonia** are dependent on family income and the age of the child. Only insurance-based child benefits are available.

Severe delays in receiving child benefits (up to three months) were reported in the late 1990s (Suzor, 1999). The share of children receiving family allowances fell from 30% of the total number of children in 1991 to 13% in 1999 (UNICEF, 2001).

Child benefits remained part of the social insurance package in **Bulgaria** till 2002.[83] Both insured and uninsured parents were entitled (Noncheva and Satcheva, 2003). Child benefits were paid irrespective of the economic position of a family and were of particular relevance for families with children. The average benefit per child was equal to a (considerably) lower percentage of the national average wage in 1999 (4.2%) as compared to 1991 (13.2%) (UNICEF, 2001). During the high inflation in the 1990s supplements were added to the basic amount (Suzor, 1999). The 2002 new Family Benefits Act raised the benefits; however the income test considerably restricted entitlement (European Commission, 2002b).

Due to inadequate uprating in the 1990s the real value of child benefits eroded and even became modest in **Romania**. If before 1989 the benefit equalled about 10% of the average wage, it represented barely 3% of a substantially lower wage in 2000 (Manea, 2004). Nevertheless child benefits have been an important instrument to fight poverty. A supplementary benefit for families with two or more children (progressive with the number of children) was introduced in 1997 as the country's economy aggravated considerably (Vilnoiu and Abagiu, 2003).

Other family benefits

The flat rate parental allowance for non-insured parents in **Slovenia** was increased in 2002.[84] Based on a written agreement with the mother, after 105 days of maternity leave, an unemployed[85] father of a child may now obtain the right under similar conditions.

A universal flat rate large-family supplement has been paid once a year since 2002 to families with three or more children (Stropnik, 2003). The 2001 Act on Parenthood Protection and Family Benefits introduced the right of either of the parents with a child up to 3 and working at least half-time to have social security contributions up to full working time (based on minimum wage) paid from the state budget. The act also introduced the right to partial payment of foregone earnings to the parent that left the labour market or diminished working hours in order to take care of a handicapped child up to 18. The payment is equal to the minimum wage, or proportional to it in case of part-time employment. In 1999 an Alimony Fund was founded, in 2002 a new Act on Foster Care was accepted.

[83] Up till then, assistance-based child benefits paid by the municipalities covered the gaps (i.e. families with both parents unemployed or uninsured) (Suzor, 1999).

[84] The duration of entitlement is the same as for paid maternity/parental leave for insured persons, i.e. 365 days.

[85] But not of his own volition or through his own fault.

In the period 1996-2001 non-insured mothers in **Croatia** were entitled to an equally long paid parental leave as the insured ones (till the child is 3) in case of twins, or three or more children. By the end of 2001, maternity leave up to the child's age of six month was introduced for non-insured mothers available for each birth (Puljiz and Zrinščak, 2002). The benefit level was decreased, but the coverage was extended considerably (Stropnik, 2003).
In **Serbia**, the 2002 Law on Financial Support to Families with Children replaced several previously existing allowances of relatively small value by a one-time parental allowance paid after the birth of the 2nd, 3rd and 4th child. Only very wealthy citizens and parents who neglect their children do not have the right to such allowances (Jovanović and Vukotić, 2005).

In **Bosnia and Herzegovina**, the 1999 Law on Principles of Social Protection, Protection of Civil Victims of War, and Protection of Families with Children regulates an allowance during pregnancy and childbirth for unemployed women, a birth grant, support in feeding children up to 6 months and additional food supply for nursing mothers, and the placement of children in pre-school day-care centres with provided meals.

Since 2002, eligibility to a non-insurance based parental benefit has covered all non-insured mothers in **Bulgaria**. Prior to that, only full-time student, unemployed or non-insured single mothers were eligible. The entitlement also became income tested. The flat rate benefit level is the same as the one for insured persons on parental leave. The period of receiving a benefit was shortened from two to one year in 2000 (Noncheva and Satcheva, 2003).

Child tax allowances
Till 2004, tax allowances for the first child in **Slovenia** amounted to 10% of the average wage. For each subsequent child this amount was raised by an additional 5% of the average wage. According to the 2004 Income Tax Act (Zakon o dohodnini) the child tax allowance is fixed at the level of the child's minimum costs of living and is higher than before. It increases with the child's birth order.

Child tax allowances were introduced in **Croatia** in 1994, but changed in 1995, 1999, and 2000 (Stropnik, 2003). The allowances increases with the child's birth order (Puljiz and Zrinščak, 2002).

Child tax allowances are the same for all children in **Romania**. The total amount of personal allowances and allowances for dependents is limited; the maximum amount was increased in 2002 to three times the personal tax allowance, i.e. by allowance for one dependant (Kesti and Balle, 2000 and Kesti, 2002).

6.8.6. Elderly care policies
The demand for places in old people's homes has been unmet in **Slovenia**. Current policies supporting elderly people still living at home include an income tested allowance

(for recipients of any kind of pension or social assistance who are incapable of work due to old age, disease or disability and thus need help in everyday living) and assistance at home (subsidized by some local communities, even free of charge; income tested in some local communities). There is no special long-term care insurance. The long-term care services are mostly paid for individually by people who receive care (46% of sources in long-term care); specialist medical services are paid by health insurance (38% of sources), while 13% of all sources are paid by local communities for poor people who are unable to pay the fee themselves. A Long-term Care Insurance Act, covering health, social and other services for the elderly, disabled persons and other persons in need, as well as allowances related to these services, is envisaged in Slovenia in the near future. It will be necessary to establish a uniform compulsory public insurance for long-term care (Stropnik *et al.*, 2003).

In addition to institutional care, old people's homes in **Croatia** organise the provision of services of assistance and care at home. The system of social welfare builds on within-family care: care is taken over by the community only after all other sources available to the individual and his/her family are exhausted (Vidovic, 2002). Old people in need of permanent help and care in everyday living are entitled to attendance benefit (Državni zavod ..., 2002).

According to the Labour Relations Law, the elderly in **FYR Macedonia** who are not able to look after themselves and thus need help have rights to home care. It is provided also to persons living within a family.

Until 2001, the services for the elderly in **Romania** were limited to institutions; these are generally underdeveloped. In 2000, a new law on the social protection of the elderly was passed, stipulating the right to receive medical services/care at home, household help and even a companion, depending on their needs. The implementation is slow and difficult to be accomplished since the services were transferred to local budgets that lack resources and are confronted with ever increasing financial problems. There are no policies to support families providing elderly care (Manea, 2004).

6.8.7. Review of time-use data

In 2000/2001 a Slovenian Survey on Time Use was carried out among persons of 10 years and over (Statistical Office …, 2004). On average, as compared to women, men use 60 minutes per day more for employment but also 23 minutes more for culture, sport and hobbies. By contrast, women use 101 minutes more than men for household care and informal help to other households and 66 minutes more for family care. Even if only full-time employed persons are taken into account, gender differences remain considerable: women use 67 minutes more than men for household care and informal help to other households and 27 minutes more for family care; men use 39 minutes more for employment and 36 minutes more for culture, sport and hobbies. The same patterns were found among students aged 15 and over and among pensioners.

Employment is very time-consuming in the age 25-54: almost 5 hours per day. Time used for household care and informal help to other households increases continuously during the life course till age 55-64 (where it takes 5 hours per day); it decreases afterwards. Family care takes somewhat less than one hour per day in the age group 25-34; for other age groups, except 35-44, it is almost negligible.

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6.9 Turkey (Banu Ergöçmen and Erhan Özdemir)

- As fertility levels are dropping population ageing is also changing the Turkish society. Several population groups already have below replacement fertility.
- Despite convergence in recent demographic trends there are significant differences between urban and rural areas; the eastern region being the least advantageous in terms of vital rates.
- The retirement system in Turkey consists of public institutions and private establishments, covering issues related to retirement, ageing and disability.
- Conditions to retire have recently changed; the age has increased to 58 for women and 60 for men. Under conditions early retirement is possible.
- Politicians' attitudes are to improve conditions of employees and increase standards up to ILO and EU levels. There is positive discrimination towards women, disabled people and children. More prevention and flexibility are characteristic for the labour market as well as a more effective age policy.
- Childcare and parental leave policies are further developed and improved as well as pre-school educational programs.
- The Turkish society is based on the family. Spouses have equal rights. Family laws are reorganised as to extra underpin gender equality.
- Reproductive health issues get increasingly more attention; the official HIV/AIDS numbers indicate that this epidemic is still relatively small.
- Elderly care policies are gradually getting more attention. However basic information on older persons and their living conditions is lacking.

6.9.1. Introduction: demographic structure of Turkey

The demographic structure of Turkey underwent substantial changes in the 20th century. Past demographic developments, the causes and consequences of population trends and the future prospects have brought population issues of Turkey in a challenging status in many aspects. Currently population size stands at about 70 million and contrary to most other European countries Turkey has a young age structure: half of the population is under age 25. The total dependency ratio is 55%, in which the share of young-age dependency is 46 and old-age dependency is 9.

Fertility rates in Turkey have gradually declined mainly in the last quarter of the 20th century from almost 5 births per woman in the early 1970s to 2.2 births more recently, i.e. the total fertility rate (TFR) halved in the past three decades. According to the results of the 2003 Turkey Demographic and Health Survey (TDHS-2003), the TFR is 2.23 indicating the average number of children a woman would have if she were to bear children at the observed rates (HUIPS, 2004). The TDHS-2003 results also indicate that a large segment of the population has below-replacement fertility levels.

Life expectancy at birth has steadily improved and reached 67 years for males and 71 for females. The increases in recent decades have been predominated by improvements in the survival of children, although improvements in survival of the adult population have also been substantial. Specifically post-neonatal and neonatal mortality improved structurally. Recent findings show a 38% decline in the survival chances of children in the last ten years. The estimated infant mortality rate for the most recent period (0-4 years preceding the TDHS-2003) is 29 per 1000 live births.

As a consequence of changes in fertility and mortality rates, the age composition of the population has gained the potential for rapid ageing. Within the next 30 years, the number of children aged 0-14 will stabilize, the size of the so-called economically productive age group, ages 20-54, will increase rapidly, and almost double; the number of today's elderly (3.6 million) will increase to 10 million in 2030 and 15 million in 2050. The 'demographic window of opportunities' is likely to bring about radical changes, not only in social and economic development trends, but also in the vital rates and population structure (Hancıoğlu *et al.*, 2004).

Household sizes are also affected by the fertility decline, as well as by urbanisation and modernisation of the Turkish society. The average household size is 4.1 persons according to the TDHS-2003 findings (HUIPS, 2004).

Changes in population trends have not been uniform throughout the country. Despite the convergence in recent years, there are significant differences in demographic trends and population structures between urban and rural settlements and across geographical regions of Turkey. The Eastern region of the country is the least advantageous in terms of number of children per woman and infant and child mortality.

Internal and international migrations are two other important demographic issues. With respect to internal migration Western Turkey in general and Istanbul in particular are receiving regions and the Black Sea area and the eastern regions of Anatolia are sending regions. Urbanisation has been the main motive for internal migration since the 1950s. The share of urban population increased from 60 to 65% between the years 1990 and 2000. A quarter of the total population lives in five cities (İstanbul, Ankara, İzmir, Bursa, Adana), each of which has over 1 million inhabitants (SIS, 2003). İstanbul has almost 10 million inhabitants.

In the past the direction and magnitude of emigration from Turkey was related to labour demands of foreign countries. For instance, 810 thousand people migrated from Turkey to European countries, especially to Germany, to fulfil labour demands of European countries in the 1960s. The number fell to 105 thousand in 1975-1980 because these countries restricted their immigration policies. The direction of Turkish emigration has shifted from West to East in the 1980s: 778 thousand people migrated to the Middle East or to former Soviet Union countries between 1981 and 1995 (İçduygu and Sirkeci, 1998). Legal immigration to Turkey has increased in the past decade, and next to that Turkey also recorded an inflow of ethnic Turkish migrants, often included in the asylum seeker and refugee categories, so-called transit migrants and foreign workers (OECD, 2004).

Current retirement policies and early age at retirement in Turkey

The retirement system in Turkey consists of public institutions and private establishments.

Public Sector

a. *Turkish Republic Retirement Fund:* This institution was founded in 1950 according to the Law on Foundation of State Economic Enterprises acted in 1938. The facilities and activities of the Fund cover the employees of governmental institutions, provinces, local administration and municipality staff, employees of state banks and persons under the care of these employees (i.e. husband, wife, children, parents, and etcetera). The revenue sources of the Fund are formed by the fees from the employees, and profits gained by the management of the revenues. Half of the revenues are gained as a result of the sale of tickets, stamps (excluding expenditure stamps) and other aid receipts, donors and other resources (http://www.emekli.gov.tr).

b. *Social Insurances Institute (SSK):* This institution was founded in 1945 and the field of activities was re-arranged in 1964. SSK activities are relevant for the private and public sector employees that have contracts with an employer and the persons under the care of these employees. The system is based on the revenues gained by the payments of employers and employees.

c. *Trades and Craftsmen and Other Independent Workers Social Insurances Institute (Bağ-Kur)*: This establishment was founded in 1972 for people that are not covered by the Retirement Fund and SSK and for self-employed persons (Öztürk, 2002).

These institutions provide social insurance guarantees related to retirement, ageing, and disability. The same services are also available for the dependents of those covered by the institutions.

Private sector

a. According to the Social Security Reform, the *private insurance establishments* were introduced into the retirement system in Turkey in 2003. The name of the network of

private insurances is *Individual Retirement System*. The reform is based on experiences in Latin American countries in recent decades. The Government has made several fiscal and legal arrangements to support employers and employees for using the private insurance system. The Individual retirement system covers the issues related to retirement, ageing and disability of individuals (http://www.besonline.net).

b. *Army Assistance Institute (OYAK):* It was founded in 1961 in order to provide services related to retirement, disability, death of military officials, and other services like housing credits and payments for social needs of OYAK members. The system is based on payments of military staff and revenues from dividends and interests of the establishment (Buzlupınar, 1996).

The major retirement system used in Turkey is the one provided by the public sector. The public institutions of retirement and social insurances were affected by the economic instability in the last two decades; therefore governments started to reform the social security system. Until the year 1999, persons under the service of the Retirement Fund, SSK and Bağ-Kur were able to get retired after they completed service for 20 (women) or 25 years (men). However, according to the new Social Security Law acted in 1999 (Code 4447 for amendment of Code 5434), the retirement age increased to 58 for women and to 60 for men and the number of years spent in service was fixed to 25 years.
The purposes of the reform are to overcome public debts related to the public social security system, to prevent the informal sector by pulling unregistered employees into the formal sector, to diminish the effects of uneven income distribution and to support economic developments of the country via new financial resources for private entrepreneurs from the private social security establishments (Akalın, 1999).

Early age retirement is only applicable under the following circumstances:

- *Usual Disability:* For persons who are in need of help from others due to a disease or accidence. The person must have spent at least 10 years (5 years in special circumstances) in service and s/he is paid a pension like disabled persons that have spent 15 years in service.
- *Employment Disability:* For persons who become disabled while at work. The law excludes those who get disabled during work because of unlawful acts, alcohol or drug use, or acts that are only to provide benefits for these person's or their dependent's interests; these disabilities are classified in the 'usual disability' category.
- *War Disability:* For persons with disabilities due to war operations, military operations and disabilities of air force and navy staff during their services in piece time (Law on Retirement upon physical disability).

According to 2003 figures, there were 977 thousand retired individuals in the Retirement Fund and 2.8 million retired persons in the SSK. The majority of the retirees in both institutions got retired by usual procedures (age and years worked), only 2% of the SSK

and 3% of the Retirement Fund people retired because of usual or employment disability (www.emekli.gov.tr, www.ssk.gov.tr).

Moreover, a special group of employees, who were in service at least for 20 to 25 years when the Social Security Reform was enacted in 1999, got the right of early age retirement by a decision of the Constitutional Court. According to this decision (provisional article 205 of Law 5434), persons that completed service or were less than 0 to 15 years away from completion could apply for early retirement. Normal retirement is now set at 60 for men and at 58 for women.

Another significant issue in the Turkish labour market is the system of syndicates and worker unions. There are trade unions for both blue and white collars in Turkey, but these organisations do not cover all employees. For instance, among blue-collar trade unions, the unionisation rate decreased from 68 to 58% in 1996-2004. The number of registered workers increased by 884 thousand in the same period and only 111 thousand of them have become trade union members. This means that the unionisation rate for newcomers in the same period is merely 11% (www.calisma.gov.tr). It should be noted that the majority of trade union members are employed in the public sector, the unionisation in the private sector is either too low or non-existing. Unemployment rates for 2003 are given in Table 6.6.

According to the 8th 5-year Development Plan, the attitude of policy makers is to improve the conditions of the employees and increase the standards up to ILO and EU levels (SPO, 2000). Positive discrimination towards women, disabled people and children is the main purpose and it is planned to strengthen the dialog and consultation mechanisms. In addition, the informal sector plans to act more preventive and flexible on the labour market as well as more effective in wage policies. Health and job security are other issues of the working life to be improved. Moreover, support of trade unions for training and research activities, and reconstruction and institutionalisation of the labour market are also included in governmental plans. The non-agricultural sectors are given priority. Another policy is to diversify the agricultural production and so to increase employment and productivity there. Furthermore, small businesses are supported. Necessary legal and bureaucratic arrangements were recently implemented and other measures will be introduced in the near future (SPO, 2000).

Childcare policies and parental leave policies

Childcare and parental leave policies need special attention due to the important direct effect they have on social, psychological and educational aspects of children's well-being as well as on decreasing the burden of work of mothers at home, which hinder women to work and participate in public affairs. 10% of the ever-married women aged 15-49 years are combining work and rearing children up to 5 years.

There is lack of pre-school education services in Turkey; currently only 440 thousand (of in total about 2.9 million) children attend pre-school education (about 15%)

(http://www.egitimportali.com). The share of pre-school education services in the budget of Ministry of National Education is only 1% (TÜSİAD, 2005). Institutions responsible for these services are mainly private crèches and pre-school classes of schools under the Ministry of National Education. The 3-5 year age group is the major target population of pre-school services. Pre-schooling of children is more prevalent in western regions and urban settlements. Absence of a standard curriculum of pre-school services, lack of personnel, and reliable statistical knowledge about the issue are the topics which obscure the services to respond the country's needs (http://www.acev.org).

Research and projects have been started by governmental and non-governmental organisations to improve childcare policies in Turkey. The Ministry of National Education started "Pre-school Education for Parents and Children", "Early Childhood Grow-up and Education Project", "Support of Primary Education", all of which are projects in the frame of EU MEDA; "Support and Spread of Pre-school Education" is a recent project of the World Bank. The Ministry also started "Mobile Pre-school Classes" (http://ooegm.meb.gov.tr).

The Mother and Child Education Fund (ACEV) is the most influential civil society organisation in Turkey in terms of improvement of pre-school education. The project titled "7 is Too Late" aims to make pre-school education compulsory, take early childhood education into preventive intervention programs, take all pre-school education methods into action, have early childhood education on TV, spread and accredit preschool services, reduce inadequacies related to the personnel, obtain more statistical data on pre-schooling, and coordinate and cooperate with national and international organizations (http://www.acev.org).

Moreover, the Turkish Association of Industrialists and Businessmen (TÜSİAD) prepared a report entitled "True Start: Pre-school Education in Turkey" aimed at increasing public awareness about pre-school issues in the country, determining problem areas, and suggesting ways for solutions and recommendations for re-organizing and improving policies (TÜSİAD, 2005).

Furthermore, there are several other projects and policies introduced by Social Services and Child Protection Institution, UNICEF, and the Ministry of Health to increase the quality, effectiveness, availability and coverage of pre-school education in Turkey.

Family policies

Article 41 (amended on October 17, 2001) of the Constitution of the Republic of Turkey is concerned with the protection of the family and stated that "The family is the foundation of the Turkish society and based on the equality between the spouses. The state shall take the necessary measures and establish the necessary organisations to ensure peace and welfare of the family, especially where the protection of the mother and children is involved, and recognises the need for education in the practical application of family planning".

Turkey does not have sexual discrimination in terms of legal and political rights, family relations and other public and private affairs including economic activity, education and the like. Moreover, new amendments recently made in the Civil Code aimed at improving gender equality by reorganising laws related to marriage, divorce and decision making in the family. For instance, the new Turkish Civil Code, effective since 1 January 2002, strengthens gender equality and equality between the spouses and considers women totally equal to men in family and society. Some of the main provisions of the new law are as follows: since there is no longer a head of the family, spouses are to care jointly for the proper maintenance of the family and each spouse represents the conjugal union. Women have the right to use their former surname in front of the husband's surname. Each spouse has the freedom to choose a job and profession without permission of the partner. The previous Civil Code stated that women needed their husband's permission to enter a job or profession. This article has been considered void by the Constitutional court in 1990. The new Turkish Civil Code accepted "participation in acquisitions" as the regular matrimonial property regime. Under this regular regime, unless the spouses agree on a different regime, property which each spouse acquires during marriage is shared equally when the marriage comes to an end. Each spouse takes his or her own property.

Upon the enactment of the New Civil Code, it became a necessity to establish specialized courts to settle conflicts arising from the Family Law. For this purpose, the Act on Establishment, Jurisdiction and Trial Procedures of Family Courts was prepared (effective as of 18 January 2003). Furthermore, if there is a serious threat for life, for the economic well-being and/or unity of the family, couples have the right to separate without getting divorced, under the control of the court decision. Another improvement by the new amendments is the removal of the 'household head' status of the husband from the Civil Law and the introduction of equal rights of husband and wife in representing the family (http://www.tbmm.gov.tr; http://www.kssgm.gov.tr).

Reproductive health is another issue directly related to both health and sexual well-being issues of individuals as well as family planning. The rapid fertility decline in Turkey is related to a number of factors such as marriage, contraceptive use but also the economic development and urbanisation of the country. Recently marriages are being delayed, which directly affect women's exposure to pregnancies. For instance, the median age at marriage for 25-49 women increased one year in only 10 years time (HUIPS, 1994; and HUIPS, 2004).

Contraceptive use is important both for family planning and safe sexual practices. According to the TDHS-2003 results the knowledge of contraceptive methods is almost universal throughout the country; overall, 71% of currently married women use contraception, 43% even depends on modern methods. In Turkey, the right of couples to choose the number and timing of their children is recognized. The principally antinatalist Population Planning Law (1965), legalising contraception and emphasising public education to avoid unwanted pregnancies, was revised into a more liberal and

comprehensive law in 1983 by legalizing abortions up to the tenth week of pregnancy and voluntary surgical contraception.

Safe motherhood is another issue directly related to both mother and child health. Giving birth at younger and older ages, birth intervals less than 24 months and large families are seen as high-risk fertility behaviour. The proportion of women in any risk category decreased from 44 to 39% in 1993-2003. Moreover, teenage childbearing decreased from 9 to 7.5% in the same period.

Antenatal care, place of delivery and the person assisting with a delivery are other significant indicators for determining the level of reproductive health services of the country. The proportion of women receiving antenatal care increased from 43 to 81% in 1988-2003 and antenatal care services from a doctor increased from 81 to 93% in the same period. The proportion of adequate health facilities at the place of delivery was 78% in TDHS-2003, as against 60% in 1988 (HUIPS, 1989, HUIPS, 2004).

HIV/AIDS and other sexually transmitted diseases (STD) are seriously threatening individual and public health issues in the contemporary world. In Turkey, the officially reported HIV/AIDS cases by the end of 2004 (http://www.hatam.hacettepe.edu.tr) was 1922, 69% of them males. Despite this low number, the prevalence of this epidemic has increased gradually, since the 1980s. Most of the HIV/AIDS patients caught the disease through homosexual or heterosexual intercourse and in relative young age groups.
In the 8th 5-year Development Plan the aim was to increase the effectiveness of health register systems in order to improve information on and planning for population and health issues, to determine primary groups and fields for reproductive health services, to sustain related services, to increase the quality of reproductive health services and increase the level of coordination and corporation of relevant institutions and other establishments in the field.

Elderly care policies
In Turkey, the proportion of elderly in the total population never exceeded 5% until the end of 20th century. However, the 2000 General Population Census showed that there are 3.9 million people above the age of 65 years, i.e. 6% of the population. Due to the sex differential in mortality the elderly population is a female dominant population: 55% is female. Resulting from declining fertility and mortality the age structure changes significantly and the proportion of elderly will rise. The population of 65+ is expected to reach 10 million in 2030 and 15 million in 2050 (i.e. 19% in total population in 2050, exceeding the world average).

Turkey has to prepare itself, both intellectually and operationally, for such a fast growth of the elderly population. It is now clear from the projections that the increase is significant and inevitable. It would be safe to expect that the elderly demands will also increase and intensify, for example on the health system, the social security system, on the inter-generational equilibrium of power and on elderly care systems. Beyond basic

census information little is known, currently, on the characteristics of today's elderly, or of tomorrow's elderly. There is almost no information on their living arrangements, their aspirations, their attitudes toward other generations. Little planning is undertaken to get prepared for such a profound change of the Turkish population. Two Demographic and Health Surveys (TDHS-1998 and 2003) present limited information on elderly living conditions and living arrangements since they include short modules in the household questionnaires on elderly.

The survey results indicate that traditional family bonds prevail and that institutionalisation of elderly is limited. However, there is an important inadequacy of public and private elderly care institutions. Males provide care to themselves and their spouse at earlier ages, however, children are the main providers of elderly care especially for women at higher ages (Hancıoğlu and Ergöçmen, 2001).

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Table 6.1. European Governments, EU-15 and NMS-10 (percentages; in yellow percentages of 50 or over; in between brackets number of countries):

1. Views on the rate of population growth, 1976-2003

		Too low	Satisfactory	Too high	Total
1976	Europe	38	62		100 (29)
	EU-15	36	64		100 (14)
	NMS-10		100		100 (4)
1986	Europe	21	79		100 (29)
	EU-15	14	86		100 (14)
	NMS-10	50	50		100 (4)
1996	Europe	30	67	2	100 (43)
	EU-15	13	87		100 (15)
	NMS-10	50	50		100 (10)
2003	Europe	51	47	2	100 (43)
	EU-15	27	73		100 (15)
	NMS-10	90	10		100 (10)

2. Policies on the rate of population growth, 1976-2003

		Raise	Maintain	Lower	No intervention	Total
1976	Europe	28			72	00 (29)
	EU-15	21			79	00 (14)
	NMS-10				100	100 (4)
1986	Europe	28	21		52	00 (29)
	EU-15	21	14		65	00 (14)
	NMS-10	50			50	100 (4)
1996	Europe	26	14	2	58	00 (43)
	EU-15	13	13		74	00 (15)
	NMS-10	50			50	00 (10)
2003	Europe	40	12	2	47	00 (43)
	EU-15	13	13		74	00 (15)
	NMS-10	80			20	00 (10)

3. Level of concern about the ageing of the population, 2003

		Major concern	Minor concern	Not a concern	Total
2003	Europe	78	22		100 (40)
	EU-15	87	13		100 (15)
	NMS-10	100			100 (10)

4. Level of concern about the size of the working-age population, 2003

		Major concern	Minor concern	Not a concern	Total
2003	Europe	60	34	6	100 (35)
	EU-15	57	43		100 (14)
	NMS-10	60	40		100 (10)

5. Views on the level of fertility, 1976-2003

		Too low	Satisfactory	Too high	Total
1976	Europe	24	76		100 (29)
	EU-15	29	71		100 (14)
	NMS-10		100		100 (4)
1986	Europe	31	69		100 (29)
	EU-15	29	71		100 (14)
	NMS-10	50	50		100 (4)
1996	Europe	42	56	2	100 (43)
	EU-15	33	67		100 (15)
	NMS-10	60	40		100 (10)
2003	Europe	63	37		100 (43)
	EU-15	53	47		100 (15)
	NMS-10	90	10		100 (10)

6. Policies on the level of fertility, 1976–2003

		Raise	Maintain	Lower	No intervention	Total
1976	Europe	24	24		52	100 (29)
	EU-15	29	7		64	100 (14)
	NMS-10		50		50	100 (4)
1986	Europe	28	21		52	100 (29)
	EU-15	21	14		64	100 (14)
	NMS-10	50	25		25	100 (4)
1996	Europe	37	9	2	51	100 (43)
	EU-15	27	7		67	100 (15)
	NMS-10	70			30	100 (10)
2003	Europe	47	9		44	100 (43)
	EU-15	27	7		67	100 (15)
	NMS-10	90			10	100 (10)

7. Policies on the providing access to contraceptive methods, 1976–2003

		Limits	No support	Indirect support	Direct support	Total
1976	Europe	10	14	17	59	100 (29)
	EU-15	14	7	28	50	100 (14)
	NMS-10		50		50	100 (4)
1986	Europe	10	14	21	55	100 (29)
	EU-15	7	7	35	50	100 (14)
	NMS-10		25		75	100 (4)
1996	Europe	2	28	14	56	100 (43)
	EU-15		20	20	60	100 (15)
	NMS-10		20	20	50	100 (10)
2003	Europe	2	14	33	51	100 (43)
	EU-15		7	43	50	100 (14)
	NMS-10		10	60	30	100 (10)

8. Level of concern about adolescent fertility, 1996–2003

		Major concern	Minor concern	Not a concern	Total
1996	Europe	25	32	43	100 (28)
	EU-15	36	36	27	100 (11)
	NMS-10		43	57	100 (7)
2003	Europe	30	49	22	100 (37)
	EU-15	33	47	20	100 (15)
	NMS-10	30	40	30	100 (10)

9. Policies and programmes addressing adolescent fertility, 1996–2003

		Yes	No	Total
1996	Europe	46	54	100 (28)
	EU-15	63	37	100 (11)
	NMS-10		100	100 (8)
2003	Europe	64	36	100 (39)
	EU-15	73	27	100 (15)
	NMS-10	60	40	100 (10)

10. Views on the acceptability of the mortality level, 1976–2003

		Acceptable	Unacceptable	Total
1976	Europe	76	24	100 (29)
	EU-15	71	29	100 (14)
	NMS-10	100		100 (4)
1986	Europe	76	24	100 (29)
	EU-15	71	29	100 (14)
	NMS-10	75	25	100 (4)
1996	Europe	65	35	100 (43)
	EU-15	87	13	100 (15)
	NMS-10	50	50	100 (10)
2003	Europe	67	33	100 (43)
	EU-15	93	7	100 (15)
	NMS-10	60	40	100 (10)

11. Level of concern about HIV/AIDS, 1996–2003

		Major concern	Minor concern	Not a concern	Total
1996	Europe	61	39		100 (28)
	EU-15	75	25		100 (12)
	NMS-10	50	50		100 (6)
2003	Europe	71	29		100 (41)
	EU-15	67	33		100 (15)
	NMS-10	70	30		100 (10)

12. Views on the acceptability of the level of under-five mortality, 1996–2003

		Acceptable	Unacceptable	Total
1996	Europe	54	46	100 (24)
	EU-15	92	8	100 (13)
	NMS-10	60	40	100 (5)
2003	Europe	71	29	100 (42)
	EU-15	93	7	100 (15)
	NMS-10	70	30	100 (10)

13. Views on the acceptability of the level of maternal mortality, 2003

		Acceptable	Unacceptable	Total
2003	Europe	76	24	100 (42)
	EU-15	92	8	100 (13)
	NMS-10	80	20	100 (10)

14. Views on the spatial distribution of the population, 1976-2003

		Major change desired	Minor change desired	Satisfactory	Total
1976	Europe	7	59	34	100 (29)
	EU-15	14	57	28	100 (14)
	NMS-10		50	50	100 (4)
1986	Europe	7	52	41	100 (29)
	EU-15	14	57	28	100 (14)
	NMS-10	25	25	50	100 (4)
1996	Europe	23	30	47	100 (43)
	EU-15	20	33	47	100 (15)
	NMS-10	20	30	50	100 (10)
2003	Europe	23	42	35	100 (43)
	EU-15	20	40	40	100 (15)
	NMS-10	10	50	40	100 (10)

15. Policies on internal migration into metropolitan areas, 1976-2003

		Raise	Maintain	Lower	No intervention	Total
1976	Europe	11		58	32	00 (19)
	EU-15	9		72	18	00 (11)
	NMS-10	67		33		100 (3)
1986	Europe	6	6	50	38	00 (16)
	EU-15	13		50	37	100 (8)
	NMS-10			25	75	100 (4)
1996	Europe	12	12	27	50	00 (26)
	EU-15	20	20	10	50	00 (10)
	NMS-10			60	40	100 (5)
2003	Europe	6	9	14	71	00 (35)
	EU-15	8	8	8	77	00 (13)
	NMS-10			10	90	00 (10)

16. Views on the level of immigration, 1976–2003

		Too low	Satisfactory	Too high	Total
1976	Europe		83	17	100 (29)
	EU–15		79	21	100 (14)
	NMS–10		100		100 (4)
1986	Europe		76	24	100 (29)
	EU–15		57	43	100 (14)
	NMS–10		100		100 (4)
1996	Europe		63	37	100 (43)
	EU–15		40	60	100 (15)
	NMS–10		80	20	100 (10)
2003	Europe	9	67	23	100 (43)
	EU–15	13	47	40	100 (15)
	NMS–10	10	60	30	100 (10)

17. Policies on immigration, 1976–2003

		Raise	Maintain	Lower	No intervention	Total
1976	Europe		83	17		100 (29)
	EU–15		79	21		100 (14)
	NMS–10		100			100 (4)
1986	Europe		55	45		100 (29)
	EU–15		36	64		100 (14)
	NMS–10		100			100 (4)
1996	Europe		35	65		100 (43)
	EU–15		7	93		100 (15)
	NMS–10		30	70		100 (10)
2003	Europe	7	56	37		100 (43)
	EU–15	7	53	40		100 (15)
	NMS–10	10	40	60		100 (10)

18. Views on the level of emigration, 1976–2003

		Too low	Satisfactory	Too high	Total
1976	Europe	3	79	17	100 (29)
	EU–15	7	57	36	100 (14)
	NMS–10		75	25	100 (4)
1986	Europe	3	90	7	100 (29)
	EU–15	7	79	14	100 (14)
	NMS–10		100		100 (4)
1996	Europe	2	72	26	100 (43)
	EU–15		93	7	100 (15)
	NMS–10	10	80	10	100 (10)
2003	Europe		74	26	100 (43)
	EU–15		93	7	100 (15)
	NMS–10		80	20	100 (10)

19. Policies on emigration, 1976–2003

		Raise	Maintain	Lower	No intervention	Total
1976	Europe	3	79	17		100 (29)
	EU-15	7	57	36		100 (14)
	NMS-10		75	25		100 (4)
1986	Europe	3	83	14		100 (29)
	EU-15	7	64	29		100 (14)
	NMS-10		100			100 (4)
1996	Europe	2	70	28		100 (43)
	EU-15		13	20	67	100 (15)
	NMS-10	10	20	10	60	100 (10)
2003	Europe	2	70	28		100 (43)
	EU-15	7	7		87	100 (15)
	NMS-10		10	30	60	100 (10)

Source: UN (2005), *World Population Policies 2003*. Population Division, DESA. New York: United Nations.

Table 6.2. Households by the family number in 1970–2002, Poland

Households	1970			1978			1988			2002		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Total (thousands) (=100%)	9,376	5,390	3,986	0,948	6,790	4,158	1,970	7,864	4,106	3,337	8,965	4,373
One-family	77.8	76.1	80.0	77.9	75.7	81.3	75.0	75.1	74.8	69.0	67.6	71.9
Two-family	4.6	2.3	7.9	3.8	2.4	6.1	4.9	2.8	9.1	4.4	2.8	7.6
Three-family and more	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4	0.2	0.1	0.4
Non-family	17.5	21.5	12.0	18.2	21.8	12.4	19.9	22.0	15.7	26.4	29.5	20.1

Source: Own calculations based on Population Censuses of 1970, 1978, 1988 and 2002.

Table 6.3. One-person households by sex, age and place of residence, Poland, Population Census 2002

Age	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total (in thousands) (=100%)	3,307	1,353	1,953	2,487	996	1,491	820	358	463
Up to 29 years	14.9	19.8	11.5	16.9	22.1	13.5	8.8	13.4	5.3
30-39	11.0	18.2	6.0	11.8	19.3	6.7	8.6	15.1	3.5
40-49	13.2	21.0	7.8	13.5	20.5	8.9	12.2	22.4	4.4
50-59	14.7	16.3	13.6	15.2	15.6	14.9	13.1	18.3	9.1
60-69	17.3	11.6	21.3	17.1	10.9	21.2	18.1	13.6	21.5
70+	29.0	13.2	39.9	25.6	11.7	34.8	39.2	17.2	56.3

Source: own calculations based on the Population Census 2002

Table 6.4. Families by type, 1970–2002, Poland

	1970			1978			1988			2002		
Family type	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Married couple without children *	20.5	20.2	21.0	22.3	21.7	23.3	22.8	22.3	23.6	22.7	23.4	21.4
Unmarried couple without children	–	–	–	–	–	–	–	–	–	0.8	1.1	0.4
Married couple with children *	66.8	65.9	67.7	64.3	63.4	65.5	61.8	60.9	63.4	56.0	53.2	60.9
Unmarried couple with children	–	–	–	–	–	–	–	–	–	1.1	1.2	0.9
Mothers with children	11.3	12.5	9.9	11.9	13.3	9.8	13.6	15.0	11.3	17.2	18.8	14.4
Fathers with children	1.4	1.4	1.4	1.5	1.6	1.4	1.8	1.8	1.7	2.2	2.3	2.0

* Until 2002 married and unmarried couples were jointly included into that category.
According to the Population Census 2002 the percentage of persons in cohabitation and other informal relationships was 1.6% for men and 1.9% for women.
Source: own calculations based on the Population Census 2002.

Table 6.5. Population by age, sex and household position, 1988 and 2002, Poland

Age	Child in two-parent family	Child in one-parent family	One-person household	Childless couple	Couple with children	Lone parent	Non-family related members	Other	Total
				Males 1988					
0-19	80.6	7.5	0.1	0.0	0.1	0.0	0.5	11.2	100
0-19	80.6	7.5	0.1	0.0	0.1	0.0	0.5	11.2	100
20-64	12.5	5.3	4.4	10.6	52.8	0.8	1.0	12.7	100
65+	0.0	0.1	10.1	45.1	17.0	2.8	8.1	17.0	100
Total	35.1	5.6	3.4	9.5	31.8	0.7	1.4	12.5	100
				2002					
0-19	75.7	12.4	0.3	0.0	0.0	0.0	0.8	10.8	100
20-64	15.1	7.4	9.6	10.3	45.5	1.3	0.8	10.0	100
65+	0.0	0.1	13.9	49.7	16.4	3.3	4.6	12.0	100
Total	30.7	8.1	7.4	11.3	29.7	1.1	1.2	10.4	100
				Females 1988					
0-19	78.8	7.7	0.1	0.2	0.3	0.0	0.8	12.	100

								1	
20-64	5.9	2.1	5.3	11.8	52.1	7.1	1.8	13.8	100
65+	0.0	0.2	28.5	19.4	5.6	9.9	21.8	14.6	100
Total	28.1	3.6	6.4	9.1	30.3	5.2	3.9	13.4	100
				2002					
0-19	75.0	12.4	0.4	0.1	0.1	0.1	0.9	11.1	100
20-64	9.1	3.6	7.9	11.9	45.4	9.7	1.4	11.0	100
65+	0.0	0.2	34.1	23.2	6.0	11.9	14.2	10.3	100
Total	24.4	5.3	10.0	10.6	27.9	7.6	3.2	11.0	100

Source: own calculations based on the Household Demographic Survey 1991 and the Population Census 2002;
In calculations based on the census data persons with an unknown age are excluded.
Household positions: except for the category Other they refer to the household position of members of one-family households and one-person households, the category Other includes persons living in multi-family households and in non-family, multi-person households. A family comprises a couple without children, or a couple with one or more children, or a lone parent with one or more children.

Table 6.6. Sex and age specific unemployment rates, 2003, Turkey

Age	Men	Women
15–19	18.7	16.3
20–24	23.1	20.4
25–29	12.6	13.2
30–34	8.7	9.8
35–39	7.6	6.9
40–44	7.1	5.0
45–49	7.4	3.9
50–54	7.2	2.6
55–59	6.1	1.1
60–64	3.2	1.2
65+	0.8	0.5
Total	10.7	10.1

Source: State Institute of Statistics (http://www.die.gov.tr).

Figure 6.1. Fertility in England and Wales

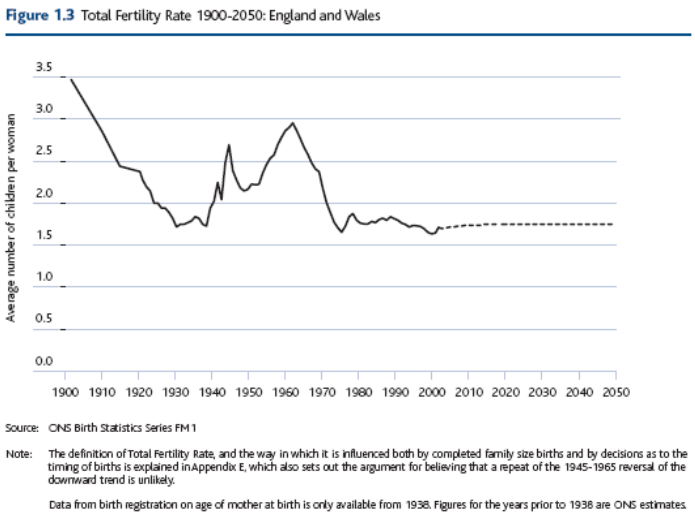
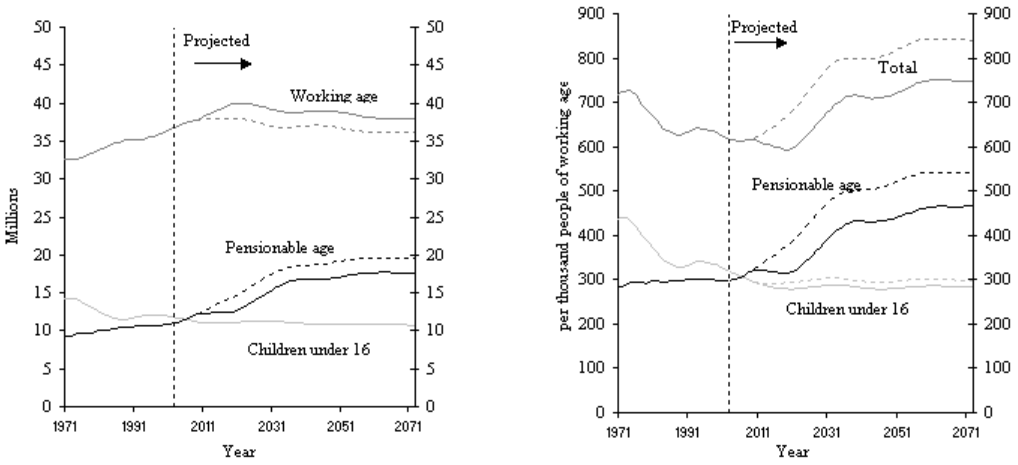


Figure 6.2. Actual and projected number of children, populations of working and pensionable ages, and dependency ratios, United Kingdom, 1971-2073



Note: The 'working age' population is that aged between 16 and state pension age. Between April 2010 and March 2020, state pension age will change from 65 years for men and 60 years for women, to 65 years for both sexes. The dotted lines show what the projected population at working age and pensionable age (and the resulting dependency ratios) would have been, had the present pension age applied throughout.

Updated for 2003-based population projections

Figure 6.3. Population pyramid, United Kingdom, 2005-2051

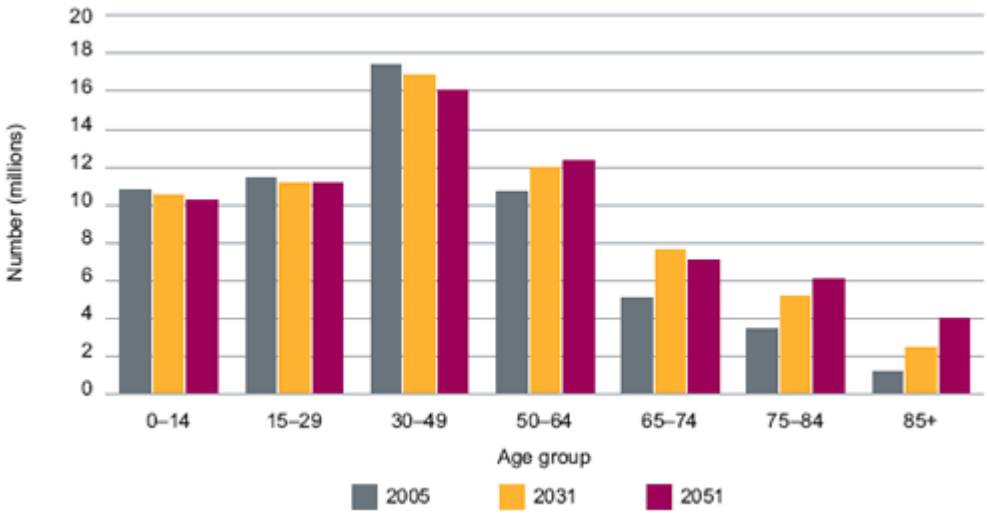
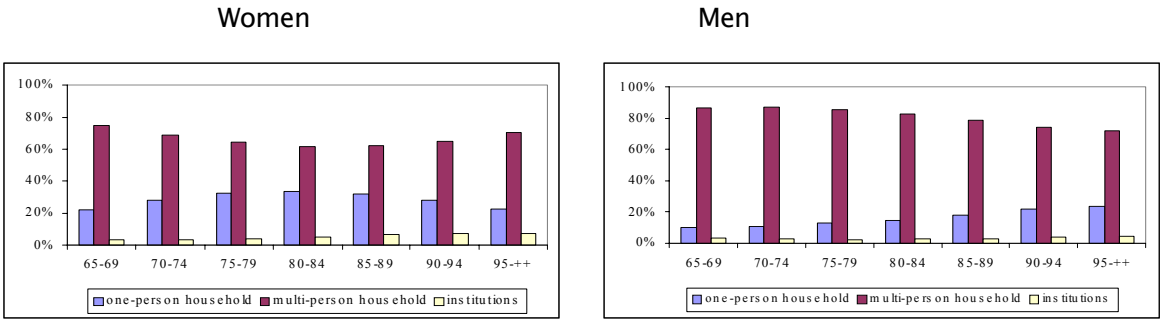


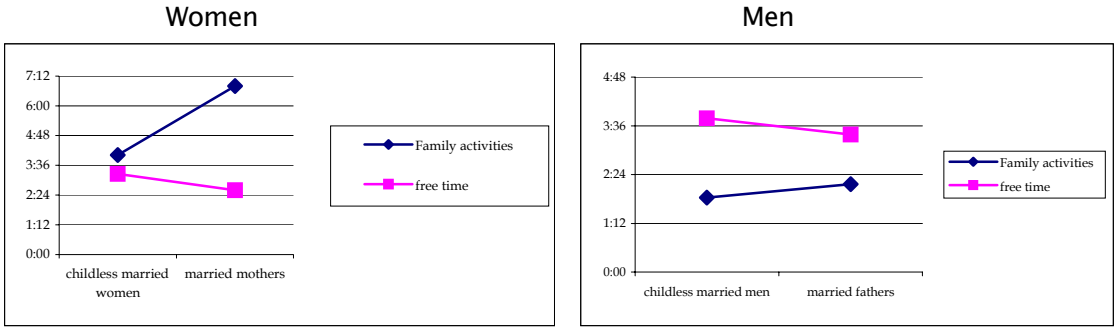
Figure 6.4. Dependent persons by sex, age and living arrangements, Poland*



* Persons completely limited in basic activity of daily living.

Source: A. Abramowska, Projections of the dependent elderly population by age, sex, and living arrangements in Poland. Paper presented at the IUSSP general Population Conference, 18-23 July 2005, Tours.

Figure 6.5. Time spent on family activities and free time by married men and women with and without children, 2002–2003, Italy



7. Global ageing and convergence

Harry van Dalen and Jørgen Mortensen

7.1 Highlights

- Both the developing and developed world will be characterized for the coming decades up to 2050 by ageing populations. Population ageing will not be a typical Western phenomenon.
- Driving forces behind the ageing process are declining fertility and increased longevity, although the biggest increases in life expectancy have been tracked in the past. Future increases in developed countries are expected to be small.
- The developing world has added years of to the productive stage of the human life course whereas in the developed world the additional years were predominantly to be found in the retirement stage.
- Population growth neither systematically impedes nor promotes economic growth directly. The most important growth effects from non-stationary population growth work in an indirect manner. Changes in *the age distribution* of a population are an important determinant of economic performance as it affects changes in wealth accumulation and dependency burdens, yielding a temporary demographic dividend.
- During the twenty years from 1975 to 2005 the EU has benefited from a strong demographic dividend. However, in the decades to come the benefits of a growing work force will dissipate and the driving force behind the wealth of nations has to be sought elsewhere. Only Africa might benefit from the demographic dividend. However, the demographic dividend is only a *potential* growth phase may well disappear if supporting conditions for growth are absent.

- Large-scale migration is not expected to be a sustainable solution to unbalanced global economic developments.
- Remittances, Foreign Direct Investment (FDI) and Official Development Assistance (ODA) will remain necessary capital flows for neighboring countries and the developing world for the near future. Remittances by far surpass the amounts which OECD/DAC members generate in terms of ODA. Undoubtedly remittances have their beneficial effects on reducing poverty, but it is too early to say that remittances (and thereby migration) offers a superior means of offering development assistance. Remittances flow to a selective group of families and one can question the benefits that flow from remittances for the population at large as the allocation of these funds flow more to consumption than to investment purposes (cf. Chami *et al*. 2005).
- For the EU the most important policy issue will be to define the most important balance between policies to *assist development* in the European neighbourhood and Sub-Saharan countries and policies to *manage immigration and integration of migrants*. The recognition that emigration and development in the source countries, in particular in the ENP and Sub-Saharan Africa, are related should constitute a starting point for the formulation of more concrete policies in both fields.

7.2 Introduction

Understanding the nexus between population and development is almost like the quest for the Holy Grail for both academic scholars and policy makers. In more developed countries, ageing populations put welfare states to the test as many social security and pension arrangements are built on the principle of pay-as-you-go. Politicians are facing the challenge to build a new welfare state that is both 'ageing'-proof and that offers the incentives to increase productivity and welfare. On the other side of the world —in the developing countries— it are the high rates of fertility, the relatively rapid increase in life expectancy, together with the threat of an AIDS-pandemic that offer the biggest challenge for those societies. High rates of fertility could threaten sustainable development and the AIDS-pandemic is a catastrophe that also destroys human capital, capital that is essential for developing countries to escape from the poverty trap. Many western countries are aware that demographic developments both at home and in neighbouring countries or regions have become of major importance for the welfare of citizens. A global view on demographic developments is slowly replacing the more common autarkic view on demographic developments. The presence of communicable diseases, the large-scale legal and illegal migration flows, the changing division of labour

in the world all make one wary of the fact that views of 'splendid isolation' will not suffice and in this particular sense the world has become a 'smaller place'. This process has of course been stimulated by the internationalization and integration of markets for goods, labour, capital and ideas and the increasing recognition of the importance of global public goods (see Kaul *et al.*, 2003) but disentangling the consequences of demographic transitions and ageing processes and their impact on policy remains a difficult task as unambiguous and universal conclusions and policy advice are hard to reach.

This essay sheds light on the issues at hand by first presenting some relevant stylized facts and forecasts of population growth and ageing up to 2050 around the world. Next we will focus on three pertinent issues: (1) do global demographic developments lead to a convergence or divergence of economic development?; (2) how does migration affect the process of convergence?; and (3) what role is there for development assistance amidst other international capital flows?

The main insight provided in this paper is that although a convergence in demographic developments is expected to become visible across the world, a convergence of economic development is still doubtful as the social infrastructure, human capital and R&D are of more importance to the convergence of welfare than demography. Furthermore, the difference in timing makes absolute convergence of fertility movements and changes in life expectancy not a very likely event. Especially (Sub-Saharan) Africa is a continent that is in dire need of attention. For a European Neighbourhood Policy this would, for instance, imply that a common EU immigration policy will not be sufficient and has to be accompanied by a view on development in countries of emigration in a world characterized by global ageing. It also entails a view on what role development assistance can play in bringing about development in neighbouring regions, especially Africa.

7.3 Stylized facts of global ageing and convergence

During the course of the latter half of the 20th century two salient features have determined global demographic developments: the increase in life expectancy and the sharp drop in fertility. To start with the first element of demographic change, the increase in life expectancy has occurred both in the North and the South. The most notable element of this development is the pronounced reduction in the gap between the most developed and the less developed countries. For instance, male life expectancy for the period 1950-2000 increased by 7 years in the more developed countries and a staggering 20 years in the less developed countries. What lies behind this strong catch up in increased life expectancy is the improvement of reproductive health, thereby lowering the infant mortality rate and the mortality rate of women who gave birth to a child. This

development is in marked contrast with the developed world where the increased life expectancy is primarily concentrated at the end of the human life span. For an understanding of economic and social consequences this is an important development as the developing world has added years of to the productive stage of the human life course whereas in the developed world the additional years were predominantly to be found in the retirement stage.
For the next fifty years life expectancy gains are predicted to be small (see Figure 7.1), but again the less developed world is expected to catch up with the more developed world and in that respect population ageing will not be a typical Western phenomenon but will occur in both developing and developed countries.

The perspective of an ageing world will be even more pronounced if we take a look at fertility developments over the past years and cast an eye to decades to come. Fertility started to drop sharply around 1970 (see Figure 7.2) in both more developed and less developed countries but with a sharper drop in the latter group, presumably attributable to a wider knowledge and distribution of contraceptive means. The only exception to this rule is Africa, a continent that is expected to maintain a level of fertility above the level compatible with a stable population. As shown in Figure 7.2, fertility in Africa although converging towards that of other regions in the world, is projected nevertheless to remain at some 2.5 even in 2050 while in Asia, the Americas and Europe fertility is projected to converge towards 1.9, corresponding to a falling population in the long run (assuming a gradual levelling off of life expectancy). There are, however, provisos which could shed a different light on this long term convergence process. As Bongaarts (2003) shows, based on a set of demographic health surveys, the level of education matters considerably in attaining levels of fertility and if the educational composition of developing countries does not change the transition as depicted in developing countries may come to a halt.

Despite a decline during the last decade or so (no doubt due to the AIDS epidemic) life expectancy in Africa is by the UN projected to resume its rise during the coming decades. In response to both a maintained high level of fertility and some improvement in life expectancy, the Sub-Saharan Africa's population is projected to substantially increase its share in the world population, from about 12.5 percent in 2000, to 17 per cent in 2025 and to 23 per cent in 2050. In other words, while in 1950 only eight persons out of one hundred were living in Sub-Saharan Africa, almost a quarter of the world's population will, according to the UN's projections, live in Sub-Saharan Africa.

It should be stressed, furthermore, that as a result of the high (albeit declining) fertility, Sub-Saharan Africa will account for an even higher share of the world's population of children and youngsters: in the age groups 0-14 and 15-24 almost 30 percent of the world population is expected to live in Sub-Saharan Africa and this is also expected to be

the case for the age group 25-64 whose share will be catching up with the share of the younger age groups, mainly due to the gradual stagnation of the number of persons in the active age groups in the rest of the world.

For the world as a whole, the most striking feature of future population trends will be the quasi-stagnation of the number of young people in the world coupled with a continued rise in the people in working age and, notably, the number of elderly (see Table 7.1). Thus, the number of children (0-14 years old) which rose by more than 600 million between 1950 and 1975 (the baby boom) and by 330 million from 1975 to 2000, is projected to rise by only some 80 million between 2000 and 2025 and then, a remarkable evolution in demographic developments during the last couple of centuries at least, to actually decline by close to 80 million over the following twenty-five years. Consequently, in 2050 the total number of children in the world is expected to be practically the same as in year 2000, that is, about 1.8 billion.

7.4 Demography, economic growth and convergence

How do these two dominant trends —a decline in fertility and an increase in life expectancy— affect the world economy? The views concerning the effect of population growth and the age distribution of the population on economic growth vary over a large spectrum of economic theory and analysis. It is often argued that the rapid population growth has a negative effect on economic growth, but compelling evidence on this point has, according to Bloom and Canning (2004), been rather elusive and subject to an abundance of counterarguments.

Since the early 1980s the dominant view has been that population growth neither systematically impedes nor promotes economic growth. More recently, however, evidence has emerged suggesting that changes in *the age distribution* of a population may be an important determinant of economic performance (Lee *et al.*, 2003; Bloom and Canning, 2003). In particular, the pattern of saving and consumption may vary over the life cycle and it is the relative size of young, working-age and retired persons which determine aggregate saving and consumption of a population. Demographic transitions can affect economic growth by various phases. The age distribution effect of a decline in fertility (frequently termed the second demographic transition) will operate first to lower, then to raise, then to lower again the ratio of the economically active population to the total population. The first effect is called the 'burden' phase of a typical demographic transition, whereas the 'gift' phase represents the phase covering the interval during which dependency ratio is lower than the new stationary state. The latter effect is better known the 'demographic dividend'. Given that the age distribution is determined by

fluctuations in fertility, mortality and migration it may consequently be desirable to take account of these factors in an analysis of the effects on economic growth of demographic change.

An excellent example of an analysis of the effects on economic growth (defined as the growth of income per capita) of the key demographic variables is found in the paper by Bloom and Canning (2004). In a study using data for a panel of countries obtained from the Penn World Tables they find growth of working-age to total population to have a positive sign and in fact being close to one. They consider this effect to be essentially equivalent to a supply-side boost to the economy.

However, Bloom and Canning stress that the condition for this effect to be felt is that the economy is in a position to effectively adapt the demand for labour (and employment) to the fluctuations in supply. In fact, they find that a completely open economy will enjoy nearly twice the growth impact of demographic change as the average country. In addition their results indicate that a country with a closed economy will have no gain from demographic change. Consequently, "the impact of demographic change may be to increase labour supply but how well this extra supply of workers is put to productive employment depends on the economic system and policies being used" (Bloom and Canning, 2004, p. 29).

Bloom and Canning underline that the age composition of the population is only one of the determinants of economic growth. In addition to the demographic factor and openness, they test the role of such factors as institutional quality, ethno-linguistic fractionalization, initial average years of schooling, initial life expectancy and initial income per capita plus dummies for whether the country is landlocked or tropical. They find significant positive coefficients for initial life expectancy and significant negative coefficients for initial income per capita. Coefficients for institutional quality are positive but less significant while coefficients for ethno-linguistic fractionalization and tropical area are negative but also less significant.

If we apply these research findings to the case of Europe the demographic projections for the next 50 years are not too encouraging. As shown in Figure 7.3, EU25 on average has during the latter half of the 20th century experienced first a certain decline, then, from about 1975 to 1995 a rather pronounced increase, followed by stagnation of the share of working-age population in the total. Consequently, during the twenty years from 1975 to 2005 the EU has benefited from a strong demographic dividend. However, in the decades to come the benefits of a growing work force will dissipate and the driving force behind the wealth of nations has to be sought elsewhere.

As far as East Asia is concerned, the demographic dividend over the same period may have been even larger, with the ratio of working-age to dependent population rising from 1.4 to 2.5 or by almost 80 percent, corresponding to some two percentage points per year.

According to the United Nations' demographic projections, both Europe and East Asia can be expected to experience a pronounced decline in the ratio of working-age to total population over the coming decades, from 2.25 to 1.4 for the former and from 2.5 to 1.5 for the latter zone or in both cases a decline of some 40 percent. In contrast, South Asia and Sub-Saharan Africa are now expected— alone among the large regions of the world —to experience an increase in the ratio of working-age to total population, with the transition starting already around year 2000 in the former and somewhat later in the latter region.

In their study Bloom and Canning define working-age population as the sum of the number of persons in the age groups from 15-64. At stake in this process is, however, also whether Europe and East Asia will be in a position to compensate the decline in the ratio to working-age to total population by increasing the effective retirement age and the employment ratio in those age classes. If the past is to offer some guidance then the increase in life expectancy will trigger an increase in savings as Bloom *et al*. (2003) show for a cross-country panel data set. If the increase in life expectancy in the past would have led to an extension of working life then the increase in savings rates would not be visible.

The purely demographic development therefore provides only a broad indication of the potential developments while the actual outcome will result from the interaction of those factors with economic and social policy. It should be underlined, nevertheless, that based on a rigorous application of the findings of Bloom the mere demographic trends would warrant a difference between the growth rate of GDP of Africa and Europe of some 2.5 to 3 percentage points between now and 2050. At stake is, however, also whether, in addition to benefiting from the strong growth of the working population (notwithstanding emigration!), Africa would be in a position to diminish the gap vis-à-vis Europe with respect to productivity (say GDP) per person employed or in working age.

One should not fall prone to the idea that demography is the sole driving force of economic growth and in that respect a long-term perspective may help. Bloom and Williamson (1998) already showed how demographic transition leads to speeding up and slowing down of economic growth, but in the end the fundamental driving forces underneath the wealth of nations are determined by (human and physical) capital accumulation, international trade and technical progress. And on that count, the empirics

of economic growth do not seem to lead on to think that in the long run economies will converge. Sala-i-Martin (1996) shows that the cross-country distribution of global GDP between 1960 and 1990 did not shrink, and that poor countries have not grown faster than rich countries. The best description of global economy seems to be a process of club convergence: within clubs of relatively homogenous countries there is a process of convergence, but between the clubs the process is marked by a process of divergence. A similar interpretation but with a far longer time horizon is provided by Maddison (2005). Table 7.2 presents evidence that over 500 years time where most Western continents seem to converge and follow a similar growth pattern. Regions such as Latin America, Eastern Europe and notably Africa are structurally lagging behind. The lessons of economic growth suggest that this divergence is not to be ascribed to different demographic developments but are much more in line with differences in technological progress, international specialization, capital accumulation and social infrastructure.

7.5 Migration and convergence

So far we have left out of our analysis of global ageing the third element of demographic accounting: migration. Migration is and always has been the most difficult element of population growth to predict. UN projections (2000) on this point are in that respect not very illuminating as they offer a mechanical projection exercise and ignore social or economic mechanisms that drive migration. Furthermore, migration is sometimes presented as the cure-all for ageing populations. For the European Union these calculations show that almost a million immigrants per year would be required to keep the EU-15 population constant over the period up to 2050, 1.6 million per year to maintain the working population size. The latter figure corresponds to about five times the level of annual net immigration assumed in Eurostat's 2004 baseline projection. If EU plans on keeping its old age dependency ratio constant the EU would have to 'import' a staggering 13.5 million per year. Consequently, only an unlikely level of immigration could thus fill the demographic gap caused by the ageing of the EU population.

Migration is potentially a strong force but not for the mechanical reasons of attaining a constant population or age structure. Migration could potentially speed up the economic convergence process. In standard migration theory people will move to take advantage of wage differences across countries or regions. The inflow of people will affect relative returns in destination and source regions and hence bring about a convergence of living standards. In principle, mobility of labour can bring about the same effect as mobility of capital. The main difference is of course, that whenever people move and settle permanently in another country their financial assets will move as well and thereby affect the capital-labour ratio in both the country of destination and source. There are two reasons why migration did not have this beneficial effect.

First of all, with hindsight we have to face the fact that most migration occurs close to home. Migrants are not the globetrotters textbooks lead us to believe. The UN reported in 2000 that 175 million people live in a country other than where they were born. Of these 175 million migrants some 15 million are refugees, 14 million acquired citizenship of their new country of residence and of 8.5 million people their country of origin is unknown. For the remaining migrants the OECD has information and this is compressed in Table 7.3 where it is shown that for each continent migrants stay mostly within their continent of birth. The only exception to this rule is Latin America where the bulk of emigrants (primarily from Mexico and the Caribbean) move to the United States.

A second reason which has to be kept in mind, is that the quality of migrants in terms of human capital has been constantly falling and developed countries in particular Europe

and the United States have encountered an increase in unskilled immigrants (Hatton and Williamson, 2004). In the recent past the composition of immigrants was primarily European, but due to changing immigration policies the composition of immigrants leads to a growing group of people who do not catch up in terms of wage income (Borjas, 1999). Indeed, migration is not a smooth process: people do not immediately adjust to their new surroundings. For a long time the process seemed to work, but the early immigrants in Western Europe were either immigrants from old colonies or immigrants from Mediterranean side of Europe (Spain, Portugal, Greece, Italy) who shared the same European values. The current immigration flow within Europe triggers anti-immigration sentiments which hinder immigration policy reforms. Such sentiments are in line with the labour market position people have: the higher skilled or educated are generally pro-immigration in high income countries, whereas the lower educated are more averse (Mayda, 2004, Chiswick and Hatton, 2002).

The future of migration from Africa

As suggested in Table 7.3 migration flows have mainly been concentrated within the continent of birth. The ultimate question for the future is whether this pattern will change. There are sufficient reasons to expect that the future will differ and we see three major reasons:

1. Great expectations

The biggest driving force behind migration is traditionally the size of wage gaps between sending and receiving countries. Hatton and Williamson (2003) see parallels in fundamental driving forces between Europe of the nineteenth century and Africa today. Especially for Sub-Saharan Africa the effects are strong because of the poor economic conditions of the countries in question. Hatton and Williamson (2003) note a striking resemblance: earlier estimates for European countries before World War I showed that a rise in the foreign to home wage ratio by 10 percent raised gross European emigration in the late nineteenth century by 0.7 per thousand in the short run and 1.3 per thousand in the long run. For a set of African countries a similar increase of 10 percent would lead to an out-migration of nearly 1 per thousand. Although African international migration is mostly within low-wage Africa rather than from Africa to the high waged developed world they acknowledge the possibility that the demographic and economic pressure will mount leading more and more to intercontinental emigration. The same phenomenon is acknowledged by Van Dalen *et al.* (2005b) who use emigration survey data to see how large emigration intentions are and what drives these intentions. Emigration intentions are high, oriented towards countries outside Africa, and the most important driving force is the expectation of economic improvement. The only way in which this force can be offset is by catching up. According to Hatton and Williamson (2002, p. 560) emigration follows a life-cyle: as industrial and demographic revolutions take place emigration often

rises to a peak before declining. The main driving force behind this life cycle is the wage rate and the easing of the poverty constraint: as real wages increase from a low level at home, emigration rises; but with further wage growth the poverty constraint is no longer of prime importance and the catching up between source and destination begins to cause emigration to decline.

2. Age composition in Africa

The age structure of the African population will be 'young' for decades to come. It is well known from migration research that emigration from developing countries is mainly initiated by young man, primarily single. The prospect of a growing and young population puts extra pressure on the level of emigration as there are more eligible candidates. Hatton and Williamson (2003) predict that an increase of the share of the young by 5 percentage points increases net emigration by 1.3 per thousand.

3. Lower transaction costs

Finally, we should mention the fact that transaction costs tied to moving abroad are far lower today than they were a century ago (Chiswick and Hatton, 2002). Moving across boundaries not only costs less, staying in contact with the home country is easier through internet and other telecommunication technologies. Existing networks of migrants will also enable migrants to move internationally as the costs of gathering information on a country of destination, settling and finding work will be lower when family and friends are already there. It is well-known how migrant networks exert a strong influence on international migration flows. There is however, a substantial side effect as such networks can also lead migrants to choose a destination without considering the fact that the country of destination may be ill-suited for their capabilities or values. Furthermore, networks may make migrants vulnerable to labour market shocks as they often find work through their own limited network. This may be one of the reasons why immigrants in Western Europe rely more on social welfare than migrants in traditional immigrant countries such as Canada, New Zealand and Australia.

In short, the pressure to migrate from Africa is already real and will be hard to redress. Migration flows have a life cycle of their own and only if the source country catches up with the country of destination can one hope for stable and low migration flows (Hatton and Williamson (2002a). They conclude in a separate paper (Hatton and Williamson, 2002b), in which they review the migration forces in our world of today, by making the following telling statement: "if OECD countries think they have an immigration problem now, they are going to find the future even more challenging." The ultimate question is, of course, whether the prime forces that trigger emigration (and the underlying intentions) might also diminish this pressure in the near future. Immigration countries — both the traditional immigration countries like USA and Australia, but also countries in

Europe— are grappling with the consequences of immigration and a slower pace of immigration would seem more desirable as the institutions and citizens in most of these countries can adjust to accommodate the inflow of immigrants. As far as one can rely on intentions as predictors of future behaviour, the estimation results do make clear that the emigration pressure will not subside for a considerable time. First of all, it takes time for economic prospects in these African countries to improve and once they have improved closing the gap between African and Western standards of living will be difficult if not impossible. And secondly, we know from actual migration experience that the transnational networks turn out to have an important effect on emigration decisions. In short, it is these forces (great expectations about economic gains, poverty, a relatively young age structure and social networks) that will stimulate emigration out of Africa for years if not decades to come, whereas the most important countervailing force (strong catching up processes in the African economies) lacks credibility and will probably not affect the expectations of populations in a significant manner for years to come.[86]

It would nevertheless seem appropriate to stress at this point the uncertainties surrounding the demographic projections over a longer time span and perhaps in particular the projections concerning fertility and life expectancy in Africa. As regards the latter, in particular, the average level in 2000–2005 is actually estimated to be lower than on average for 1985 to 1990. The reasons for this decline in African life expectancy are well known: the AIDS epidemic, civil wars and poverty all have operated to provoke a halt to the rise in life expectancy during the three decades after the Second World War. The UN demographic projections assume that the improvement in life expectancy will resume from now on. However, this projection clearly also assumes that the African countries will be in a position to more efficiently fight the plagues, including also bad governance, which have stuck in a number of countries in recent decades. Whether these plagues can actually be controlled and rolled back will probably also to a large extent depend on the assistance provided from outside and in particular from the European Union.

However, whether the pressure for migration between Africa and Europe will build up further during coming decades in response to the demographic changes will also depend upon the scope for reviving the African economy so as to enhance the domestic employment and income prospects for the young, active and mobile population. The interaction between demography and economic growth in both Africa and Europe may, consequently become a key public policy issue for both regions.

[86] For further considerations concerning migration see also Coppel *et al*. (2001).

7.6 Whither development assistance?

Considering the divergence in economic development across the world it is hard to believe that this divergence can be resolved by means of migration flows. The logical alternative for labour flows between regions is capital flows. Only by investment in human capital, physical capital and social infrastructure can one hope for a convergence of economic development. Of course, this insight has been shared by many before us. A divergence of economic development has often been a strong stimulus for countries to offer development assistance. With respect to global demographic developments numerous population conferences have been held to diminish rapid population growth and demographic divergence. The early population conferences in Bucharest and Mexico were very much inspired by the population explosion and a concomitant 'tragedy of the commons' (Hardin, 1968). Current issues in development aid are more diverse than ever, as development experiences have been quite diverse and the idea has grown that development aid is no longer an affair which can be dealt with on a bilateral scale, but which entails a coordinated global perspective. However, coordination of collective action is also hindered by the counterproductive behavioural responses of organizing such an effort: countries may save and invest less in the case they are assured of foreign assistance. The continuous reflection on the efficiency of multilateral organizations is in that respect a tell-tale sign how difficult the organization of development assistance actually is. In case of population assistance the same themes resound.

The agenda of the International Conference on Population and Development (ICPD), signed by 179 governments in 1994 in Cairo was such an initiative and the Millennium Development Goals (MDG) designed in 2000 represent more recent initiatives on a global scale. At present population assistance programs are dominated by US donor contributions allocated to HIV/AIDS projects and the US President's Emergency Plan for AIDS Relief (PEPFAR) to combat HIV/AIDS has led to a strong upsurge in donor funds in recent years (see Figure 7.4).[87]

With respect to foreign aid, and population assistance programs in particular, there are three issues which will be the focus of attention in the coming decades in relation to global ageing and population growth:

- The provision of global public goods and the rationale of foreign aid.

[87] The steep increase in the years around 1994 is the result of an expanding definition of population assistance: at the ICPD in Cairo it was decided to include reproductive health programs.

- Development assistance in a shrinking developed world.
- Effectiveness of private capital flows in generating growth and reducing poverty.

Global public goods and foreign aid

At the most fundamental level of analyzing foreign aid, one has to address the question of the optimal allocation of donor funds. In the past foreign aid was seen as a moral obligation of the West towards the developing world. Foreign aid stems from a solidarity or altruistic motive. Over time observers with a more analytical point of view have stressed the fact that in a globalizing world human action creates cross-border externalities. As Jayaraman and Kanbur (1999: 419) point out "[This view] rests much more on the direct spillovers of the lack of development in poor countries on to the well-being of rich countries." These externalities are most visible in questions of environment and global warming, population, migration and refugees, defence spending, terrorism, drugs and crime and communicable diseases like HIV/AIDS. In particular the HIV/AIDS epidemic brings policy dilemmas to the fore which were largely absent in debates about foreign aid. The toll of the disease is high and is expected to remain so, despite projected reductions in prevalence. Given the ongoing efforts to find treatments the 2004 World Population Prospects assume a longer average survivorship for people living with HIV than in previous revisions and therefore somewhat lower future mortality levels in HIV-affected countries (United Nations, 2005, p. 5).

The reason why one has to focus on transfers (such as conventional foreign aid flows) as well as global externalities is that the presence of global externalities implies a set of *implicit* transfers which may well replace or neutralize the *explicit* transfers of donor countries. To do good for the developing world, e.g. combating global warming, may well imply to start corrective actions in the developed world instead of transferring income to the developing world for taking actions there. In a world where global public goods are important it matters much what type of good we are dealing with (pure or imperfect public good), what type of technology is used to produce the public good in question, and which country is most efficient in providing the good. Take the case of HIV/AIDS. The development of an effective vaccine and the fundamental research how HIV/AIDS develops is a 'best-shot technology': resources are best accumulated at the point where discovery is likely to occur with the maximum of effort. However, discovery of a cure for HIV/AIDS also meets the practical side. When a cure has to be implemented the implementation technology is probably a 'weakest link technology': only the smallest provision level determines the public good level. In other words, the level of immunization of the recipient country will determine the global level of infection. The focus of development policy should thus be on improving the recipient's capacity and willingness to implement HIV/AIDS programs. Parallel issues arise in the case of family planning, which comprises a mixture of the research technology of designing better and

cost-effective contraceptives (best-shot technology) together the practical side of implementing such 'technologies' (weakest link technology). Investments in human capital may prove to be a double-edged sword as education not only increases the productivity of manpower, but it also increases receptivity for reproductive health programs and a convergence to fertility levels that offer a more sustainable world economy.

Foreign aid in a shrinking world

Foreign aid is in a now-or-never situation because the share of 'helping hands' is becoming smaller and smaller if the less developed countries do not catch up with the developed world. The heart of the problem is economic and demographic. A smaller Europe is no problem if the developing world experiences a productivity growth miracle. However, growth miracles on such a large scale are not within the bounds of imagination. The demographic problem of a shrinking developed world, or conversely a growing developing world, is more in line with current expectations. The balance of population numbers will shift dramatically the next fifty years. At the start of the third millennium just over 6 billion people inhabited the earth, more than ever before. In the past century population size increased at a high speed, and also in the near future one has to face further population increases, despite declining fertility rates. By 2005 the world had 6.4 billion inhabitants and by 2050 the world population is expected (according to the UN medium variant) to reach 9.1 billion persons.

While the more developed regions will continue to have low, and after 2030 even negative population growth, the less developed regions and even more so the least developed regions are expected to continue to grow. This also leads to significant changes in the shares of the population per region. Currently only 19 percent of the world population lives in the more developed world (in 1950 that was 32 percent), and by 2050 that share will be 14 percent. The share of the population in the 50 least developed countries was 8 percent in 1950, is 12 percent now (2005) and will rise to 19 percent (2050). Most of the least developed countries are in Africa. There, population size has increased fourfold in the past 50 years and it is expected to double again up to 2050. The other continents have much slower population growth, and only Europe will be confronted with negative rates.[88] Neighbouring to Europe are Northern Africa and Western Asia (Middle East). In

[88] Europe's share (UN figures, which includes the complete Russian Federation (with its Asian part) and excludes Turkey) in the world population will therefor drop from 11 percent now to 7 percent by 2050. Within Europe we see that the Eastern part is the first one to face negative population growth (since 1990-1995), while Southern and Western Europe will follow (in 2015-2020 and 2030-2035 respectively). Only Northern Europe will continue to grow (although very modestly) up until 2050.

1950 their population sizes were almost equal, but currently Western Asia is more populated (4 times the number of inhabitants in 1950 as against 3.5 times for Northern Africa). Population increase is expected to remain higher in Western Asia than in Northern Africa, and for both regions we see much higher increases than wherever in the European areas.

Effectiveness of capital flows

The developing countries receive foreign capital flows from a number of sources. Foreign direct investment (FDI) and private (non FDI) capital flows are traditionally the most important private transactions together with official development assistance (ODA) coming from OECD/DAC members. Private non-FDI capital flows are highly volatile and cyclical and can on that count not be a stable factor in development policy. FDI is a more stable factor but this is hardly a factor that will help countries with a poor social infrastructure[89] and weak physical public infrastructure (roads, sewerage, electricity networks). Ideally, development assistance or ODA should fill the gap where market failures appear. At present the number of studies which shed serious doubts about the effectiveness of foreign aid are too large to ignore. The collective action problems of foreign aid (allocating funds, organizing assistance, counterproductive behavioural responses) are fickle and the search for silver bullet solutions is bound to be misleading. Either complete decentralization or centralization of aid will run into trouble as both options have their specific transaction costs which make the choice between bilateral and multilateral aid or the choice of delivering aid through an NGO or a government department a pragmatic one (i.e. it depends on the costs and benefits of these institutions). A drawback of ODA or for that matter population assistance is its cyclicality: its tight connection with changes in GDP (IMF, 2005; Van Dalen and Reuser, 2005b). Remittances are sometimes seen as a substitute for ODA. As one can see from Figure 7.5 remittances from migrants have over time become a dominating flow of resources that tops ODA and that is almost at the same level as FDI. According to the World Bank (2004), remittances received by less developed countries totalled 93 billion US dollars in 2002. Although the size of remittance flows is undoubtedly large, evidence of their beneficial effects on development and economic growth is neither substantial nor unambiguous. In a comparative study of 74 less developed countries, Adams and Page (2003) found that remittances have a strong impact on reducing poverty. Similar findings are reported in

[89] Social infrastructure denotes the "institutions and government policies that determine the economic environment within which individuals accumulate skills, and firms accumulate capital and produce output" (Hall and Jones, 1999). In other words, this applies to institutions such as law and order, norms and values, etcetera.

IMF (2005) where remittances significantly reduce poverty and volatility in output, consumption and investment in the recipient countries.

However, Chami *et al*. (2005), using panel data from 113 less developed countries, show that remittances have a negative effect on economic growth. These authors suggest that adverse effects on the behaviour of those receiving remittances from migrants may be the key to understanding why this form of help hinders economic performance. The effects may be one or more of the following: to work less, save less, restrict efforts to find work, make riskier investments, and, perhaps, signal to other family members staying behind that it would be worthwhile to move abroad and join the remitter. Survey data in African countries (Schoorl *et al*., 2000) suggest that the allocation of remittances to productive investments is very small. Most of the remittances are allocated to daily needs and in that respect one can understand why remittances offer assistance in poverty reduction but are less successful in generating growth. Furthermore, there are signs noted by Van Dalen *et al*. (2005a) that remittances can trigger new emigration flows either by financing emigration or by signalling to those staying behind that emigration is a profitable undertaking.

Furthermore, we should be wary of the fact that migrants stay at present mostly within their continent of birth (see Table 7.2) and remittances generally follow this trend (see Table 7.6). As one can see the remittances that go to Africa constitute 11 percent of the total amount of 91 billion US dollars that annually crosses borders from migrants to their family and friends. The bulk of remittances goes to people living in Asian countries, but these money transfers also stem from migrants residing in Asian countries.

Demographic change and European Neighbourhood policy issues

Ageing of the European population during the coming decades, although with some diversity within the area, and notably the sustainability and adequacy of health and long-term care and the systems of old-age income maintenance, have for some time already been high on the policy agenda of the EU and member states. The connected policy issues are discussed in the international arena. Within the EU, the Ageing Working Group of the Economic Policy Committee has undertaken important and authoritative analytical work on the various parametric changes required for ensuring the financial sustainability of the systems.

However, the pronounced demographic changes looming on the horizon will have implications not only within the EU but also, as outlined above, significantly alter the distribution of the population within the Wider Europe (ranging from Russia in the East to Morocco in the West and, even more importantly between the Wider Europe and the more distant neighbourhood, including Sub-Saharan Africa to the South and the Crescent

countries to the East (Iraq, Iran, Saudi-Arabia and the other Arabic countries in the Middle East. Figure 7.6 gives an impression of how the future of the European population and its neighbouring countries will look like. Eastern Europe and Russia (not shown) are by and large characterized by a shrinking population and the neighbouring countries in Africa and Turkey are still increasing in size.

Two policy areas warrant some further discussion in the light of the ENP: migration and its connection with development aid.

Migration policy

Migration policy is still largely within the sphere of competence of the member states. However, as underlined in the January 2005 Green Paper[90], the Commission considers the admission of economic migrants to be the cornerstone of any immigration policy. Furthermore, the Commission argues that it is necessary to address this issue at the European level and is therefore aiming at establishing a coherent Community immigration policy. It therefore invited all interested parties to comment on the Green Paper in writing no later than 15 April, 2005. Following this consultation, the Commission held a public hearing on 14 June, 2005 and expressed at this meeting the commitment to present, at the end of 2005, a concrete policy plan on legal migration. During the course of the coming years there may thus become visible an approach providing, hopefully, a framework for coping with potential migration flows, notably from the neighbouring countries, including also Sub-Saharan Africa, which can be expected to be an important source of pressure for immigration during coming decades.

Migration from European Neighbourhood countries

The 2004 enlargement of the European Union, including ten new member states involved an expansion of the EU's population and closer neighbourhood relations to a large population to the East and South. As outlined in the European Commission's 2003 communications on the Wider Europe and the European Neighbourhood Policy (ENP)[91] the goal of this policy will be to work with partner countries to foster the political and economic reforms process, promote closer economic integration and sustainable development and provide political support and assistance. The approach of the EU will, as expressed in the 2003 communication, involve the formulation of policies over a broad

[90] "Green Paper on an EU approach to managed economic migration", COM(2004)811 Final, 11.1.2005.

[91] "Wider Europe- Neighbourhood: A New Framework for Relations with our Eastern and Southern Neighbours" (COM(2003) 104 Final, and "European Neighbourhood Policy: Strategy Paper" (COM(2004) 373 Final.

front ranging over: extension of the internal market and regulatory structures, preferential trading relations and market openings, perspectives for migration and the movement of persons, intensified cooperation to prevent and combat common security threats, greater EU political involvement in conflict prevention and crisis management, greater efforts to promote human rights, further cultural cooperation and enhancement of mutual understanding, integration into transport, energy and telecommunication networks and the European Research Area, new instruments for investment promotion and protection, support for integration into the global trading system, enhanced assistance and the design of new sources of finance.

Migration is thus only one of a number of fields covered by the Neighbourhood Policy and probably not among the most important items in the first phase. However, in view of the geographical proximity and the likely enhancement of interfacing between the EU and the proximity, incentives to movement of people and notably workers across the frontiers (and the Mediterranean) will probably be considerably enhanced.

The pressure for emigration from the European Neighbourhood countries is also likely to rise as a result of the demographic developments. As illustrated in Figure 7.7, the EU25 countries still in 2000 counted for just below half the working age population (here defined as the 25-64 year old persons) of the "Wider Europe" while the rest of Europe and the ENP countries (including Russia) in 2000 counting for the remainder. In 2050 the share of the present EU25 countries is projected to have fallen to less than 40 percent and the ENP countries alone will count for 36 percent or almost the same as the EU25. The share of the present candidate countries will also have increased, essentially due to a rise in the Turkish working-age population.

Global collective action

Migration has been seen by some as the solution to many problems. Movement of human capital is in this view a substitute for movement of physical capital and by the same logic of capital movements reaping the benefits of diverging returns on investment so can labour movement reap the benefits of diverging wages. However, the circumstances under which everyone —the country of destination and source and the migrant himself or herself— will benefit from migration are rare. Much depends on initial circumstances in both the source and destination country. Furthermore, migration generates multifaceted problems and opportunities that transcend the simple economics of migration as it involves the movement of persons who have their own norms and values. Adapting to new circumstances is a difficult and long-lasting process, which could take many generations.

The importance of catching up in 'emigration' countries or regions is therefore of interest to both destination and source countries. A convergence of economic development is not within reach for a number of decades as the less developed countries lack the social infrastructure to prosper and catch up with OECD countries. One cannot expect capital to flow from rich countries to poor countries as long as the real engines of growth are not in place (cf. Lucas, 1990). To attain this process one cannot put one's sole hope on remittances as these are not primarily used for the finance of public goods on a national scale. ODA and FDI may offer more hope in principle. ODA has, however, in the recent past not proven to be the silver bullet for developing countries. The organization of global collective action needs to be taken seriously (see Sandler, 2004). Foreign aid is at the moment tangled up with too many moral hazard problems to make it a credible long-run solution. At the same time one has to realize that one has to act in order to alleviate pressing problems of hunger and the destructive forces of nature and man (terrorism, global warming).

Perhaps, the most sustainable solution is to offer capital flows in which the developed world participates directly in the interests of the developing world, in other words besides investing in private ventures there should also be financial participation in public goods.

7.7 Conclusions

In a globalizing world, no country is an island and the demographic developments outside a country can be just as important as the local developments. Population ageing is a global phenomenon, however the differences in speed of ageing are of importance in economic development. Europe and Japan are the 'leaders' in terms of population ageing. All other continents will follow but may not reach the levels of Europe and Japan the next few decades. African population ageing will mainly occur after 2050. This set of circumstances can have substantial consequences. In this final section we will summarize the most prominent consequences of an ageing world:

- Demographic factors offer a potential for catching up, whereby Africa can benefit from the demographic dividend implied by the demographic transition and the developed world can potentially experience the loss of this dividend. However, the demographic dividend offers only a growth potential. Whether these gains and losses are realized depends very much on the level capital accumulation, innovation and social infrastructure.
- Migration offers no structural solution to ageing populations or the economic convergence process. To stop the population ageing process countries would need excessively high levels of immigration which will in due time make integration of

immigrants difficult and also increase the population density in host countries substantially. Migration can at most dampen the transitional effects of ageing. The pressure of migration to the EU from Neighbourhood countries and from Sub-Saharan Africa can be expected to increase substantially and will be felt in particular in Germany and the Mediterranean EU member states.

- The potential of the developed world to help the developing world will shrink as the share of people living in the developed world will decrease as a consequence of divergent ageing speeds. In 2005 19 percent of the world population lives in the more developed world (in 1950 that was 32 percent), and by 2050 that share will be 14 percent. The share of the population in the 50 least developed countries was 8 percent in 1950, is 12 percent now (2005) and will rise to 19 percent (2050). Of course, development assistance does not only depend on relative population sizes, but it is a troubling prospect.
- Remittances, FDI and ODA will remain necessary capital flows for neighbouring countries and the developing world for the near future, but only FDI together with a breakdown of trade barriers can offer a sustainable world economy in the long run. Remittances by far surpass the amounts which OECD/DAC members generate in terms of Official Development Assistance. Undoubtedly remittances have their beneficial effects on reducing poverty, but it is too early to say that remittances (and thereby migration) offers a superior means of offering development assistance. Remittances flow to a selective group of families and one can question the benefits that flow from remittances for the population at large as the allocation of these funds flow more to consumption than to investment purposes (cf. Chami *et al*. 2005).
- For the EU the most important policy issue will be to define the most important balance between policies to *assist development* in the European neighbourhood and Sub-Saharan countries and policies to *manage immigration and integration of migrants*. The recognition that emigration and development in the source countries, in particular in the ENP and Sub-Saharan Africa, are related should constitute a starting point for the formulation of more concrete policies in both fields.

There are, however, uncertainties and gaps in knowledge which need to be explored more in full before firm policy conclusions can be reached:

- The benefits and losses of the brain drain. The fact that such knowledge is imperfect is perhaps obvious because the gains and losses of migration of skilled people will depend on the initial conditions of both the source and destination country and the size of the migration flow. Beine *et al*. (2003) show that a brain drain can have negative growth effects in countries where the migration rate is substantial and/or the proportion of higher educated is above 5 percent. By contrast, countries with low level of highly skilled and low migration rates benefit from a brain drain.

- The organization and provision of ODA. The effectiveness of development assistance has already engendered a debate among academics and policy makers about the future course of ODA and alternative capital flows. But it would seem that this is only the beginning as the size of flows is growing (not in the least helped by large AIDS funds) and governance of these flows is essential for donors to keep on giving funds.
- The social and economic consequences of the HIV/AIDS pandemic. At this moment in time it is hard to predict the course which the AIDS pandemic will take and how it will affect the inner workings of societies.
- The expected decline of fertility in the developing world. The interaction of fertility and education is close and in predicting the future course of fertility understanding this nexus better is of importance as it could destroy the supposed convergence of demographic developments.
- The consequences of ethnic heterogeneity. Ethnic heterogeneity plays a role at two level: migration and economic growth. Immigration is often seen as the silver bullet for ageing countries, but in the process advocates have forgotten how ethnic diversity can hamper integration of immigrants. Furthermore, ethnic diversity is pinpointed by some (see, e.g., Easterly and Levine, 1997) as the prime reason why Africa's growth record is so poor. Ethnic diversity makes cooperation more difficult and in turn leads to worse policies.

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Table 7.1: World population by main age groups, absolute change (in 1000) over 25 year periods

	Time period			
Age groups	1950–1975	1975–2000	2000–2025	2025–2050
0–14	633,426	330,337	81,347	–76,676
15–24	297,769	313,570	139,922	13,856
25–64	522,291	1178,234	1187,597	600,696
65–74	65,797	111,436	248,050	260,866
75+	34,987	78,255	162,749	371,922
Total	1554,270	2011,832	1819,665	1170,664

Source: UN (2004) population prospects.

Table 7.2: GDP per capita in the world and major regions, 1500–2001 (in 1990 international dollars)

	1500	1820	1870	1913	1950	1973	2001
Western Europe	771	1204	1960	3458	4579	11416	19256
US, Canada, Australia and New Zealand	400	1202	2419	5233	9268	16179	26943
Japan	500	669	737	1387	1921	11434	20683
West	702	1109	1882	3672	5649	13082	22509
Asia (excl. Japan)	572	577	550	658	634	1226	3256
Latin America	416	692	681	1481	2506	4504	5811
Eastern Europe and Russia	498	686	941	1558	2602	5731	5038
Africa	414	420	500	637	894	1410	1489
Rest	538	578	606	860	1091	2072	3377
World	566	667	875	1525	2111	4091	6049
Ratio West/Africa	1.7	2.6	3.8	5.8	6.3	9.3	15.1
Ratio West/Rest	1.3	1.9	3.1	4.3	5.2	6.3	6.7

Source: Maddison (2005: 11).

Table 7.3: Pattern of migration flows in the world (in million persons), 2000

	Migrants coming from						
Going to:	Africa	Asia	Europe	Latin America *	North America	Oceania	Total
Africa	11.5	0.4	0.2	0.0	0.0	0.0	12.2
Asia	2.0	34.9	3.2	0.4	0.3	0.1	40.8
Europe	2.3	4.1	34.9	0.4	0.4	0.1	42.1
Latin America*	0.0	0.1	1.7	2.9	0.4	0.0	5.2
North America	0.7	8.3	6.2	14.7	1.0	0.1	31.0
Oceania	0.3	1.5	2.7	0.0	0.2	0.7	5.3
Total	16.8	49.3	48.9	18.3	2.3	1.0	36.7

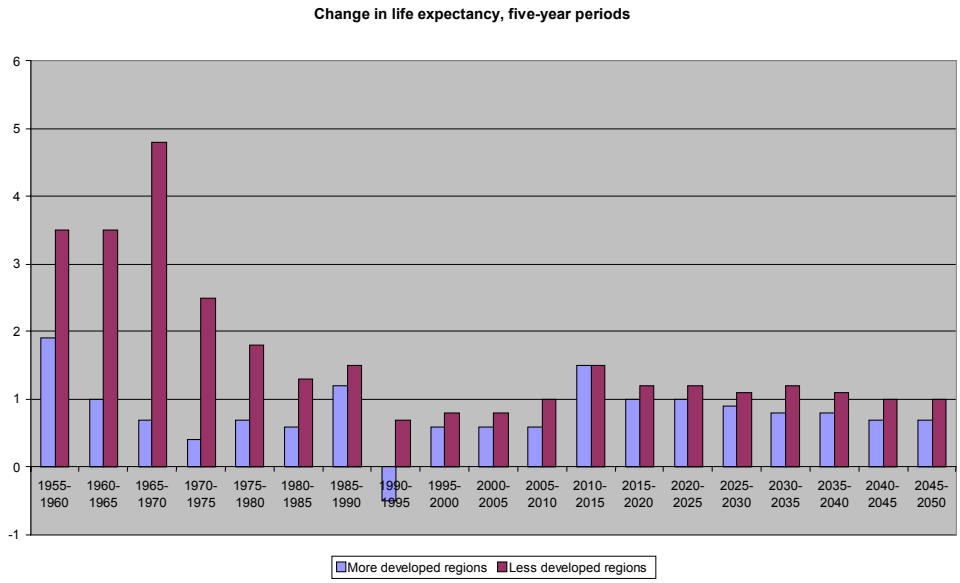
* Latin America includes the Caribbean
Source: Harrison (2004).

Table 7.4: Pattern of remittance flows in the world (in billion US dollars), 2000

	Remittances going to						
Coming from:	Africa	Asia	Europe	Latin America	North America	Oceania	Total
Africa	3.7	0.5	0.1	0.0	0.0	0.0	4.2
Asia	3.4	31.5	3.4	0.5	0.2	0.0	39.0
Europe	2.6	3.2	9.5	0.4	0.4	0.1	16.2
Latin America	0.0	0.1	0.6	1.1	0.1	0.0	1.8
North America	0.7	7.9	5.7	14.2	0.9	0.1	29.6
Oceania	0.0	0.2	0.4	0.0	0.0	0.1	0.8
Total	10.4	43.4	19.6	16.2	1.6	0.3	91.5

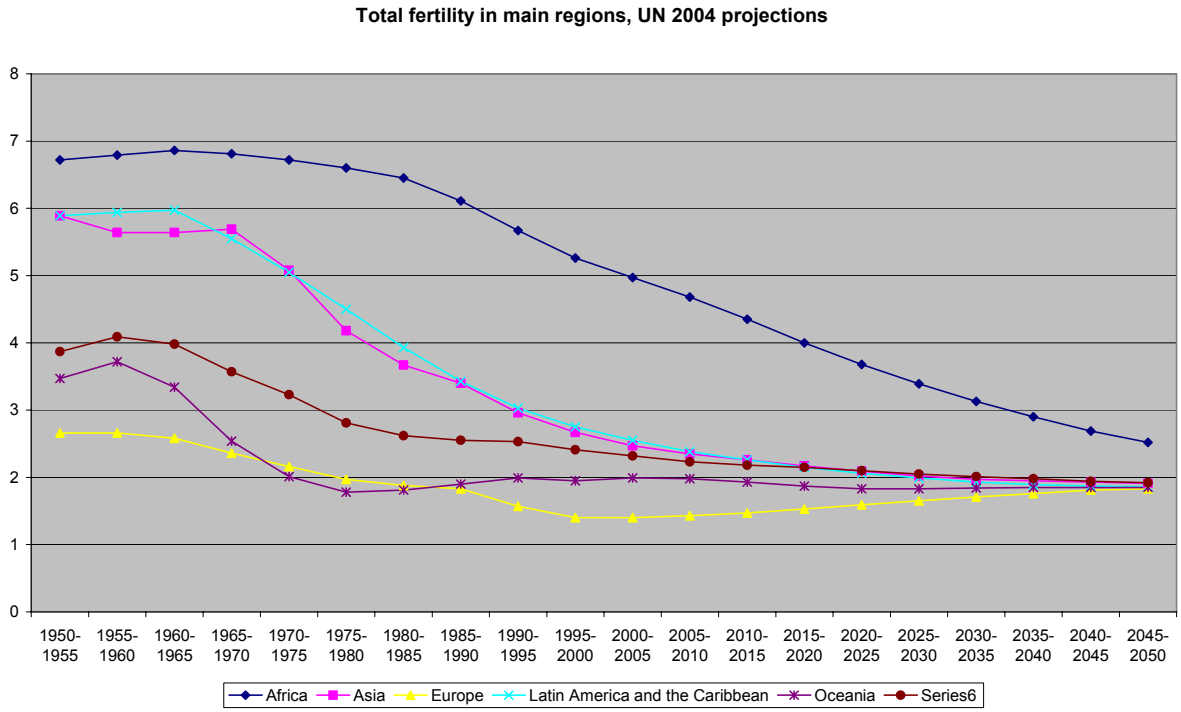
* This table excludes $24.1 billion for European border workers.
Source: Harrison (2004).

Figure 7.1. Change in life expectancy, 1950-2050



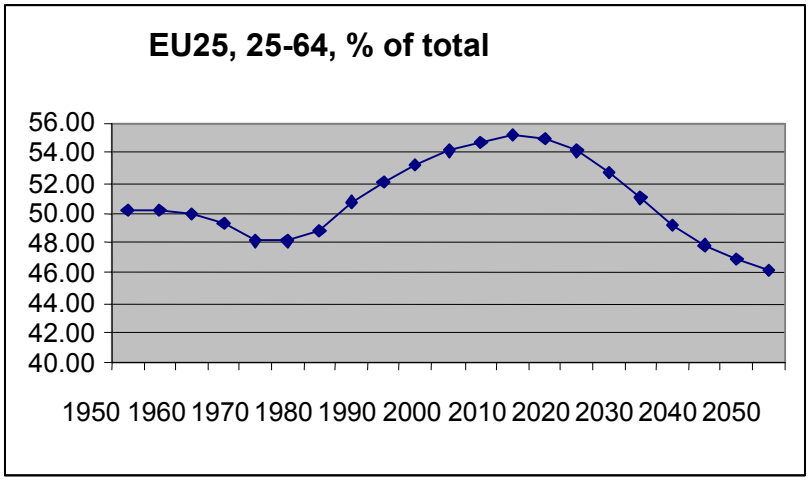
Source: UN (2004) population prospects.

Figure 7.2. Total fertility in main regions of the world



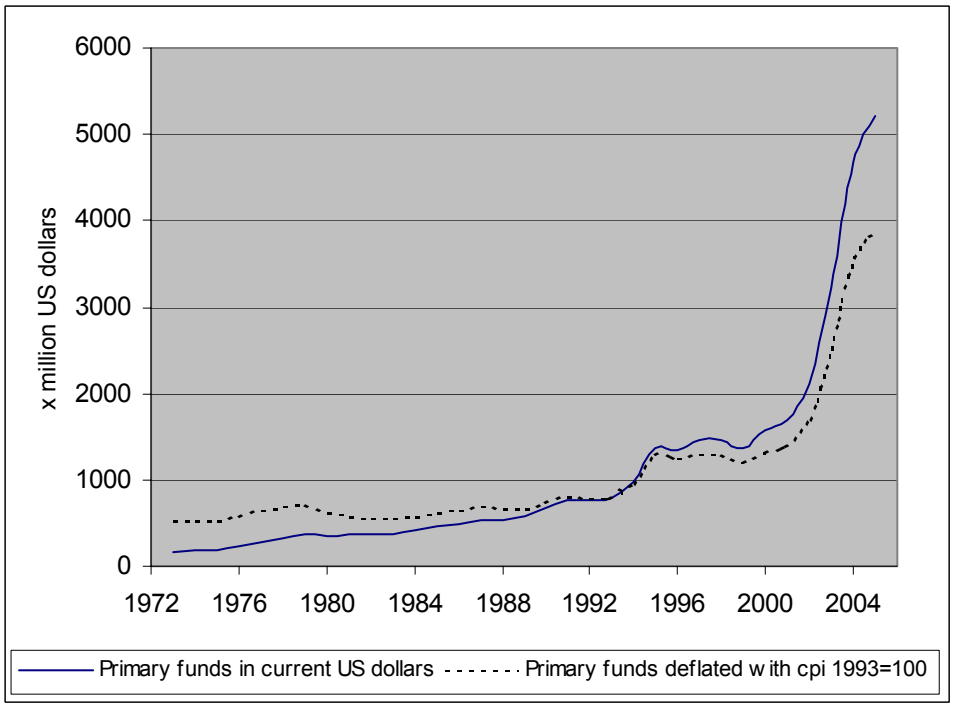
Source: UN (2004) population prospects.

Figure 7.3. Working-age population, EU25 (percentage of total)



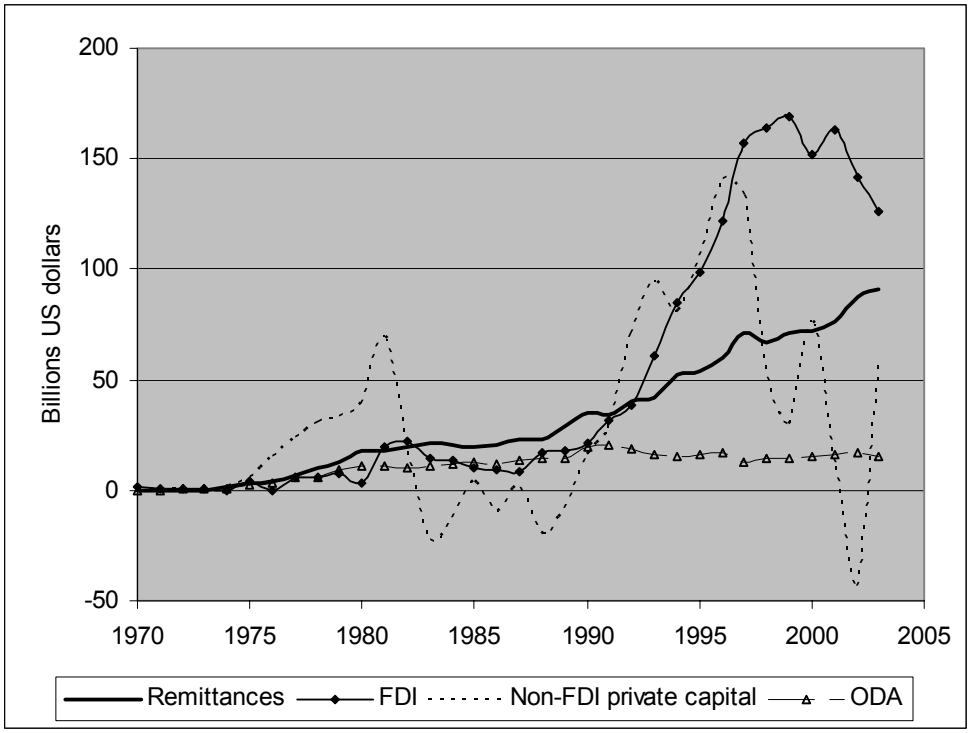
Source: UN (2004) population prospects.

Figure 7.4. Development of primary funds on population assistance programs, 1970-2005 (million US dollars)



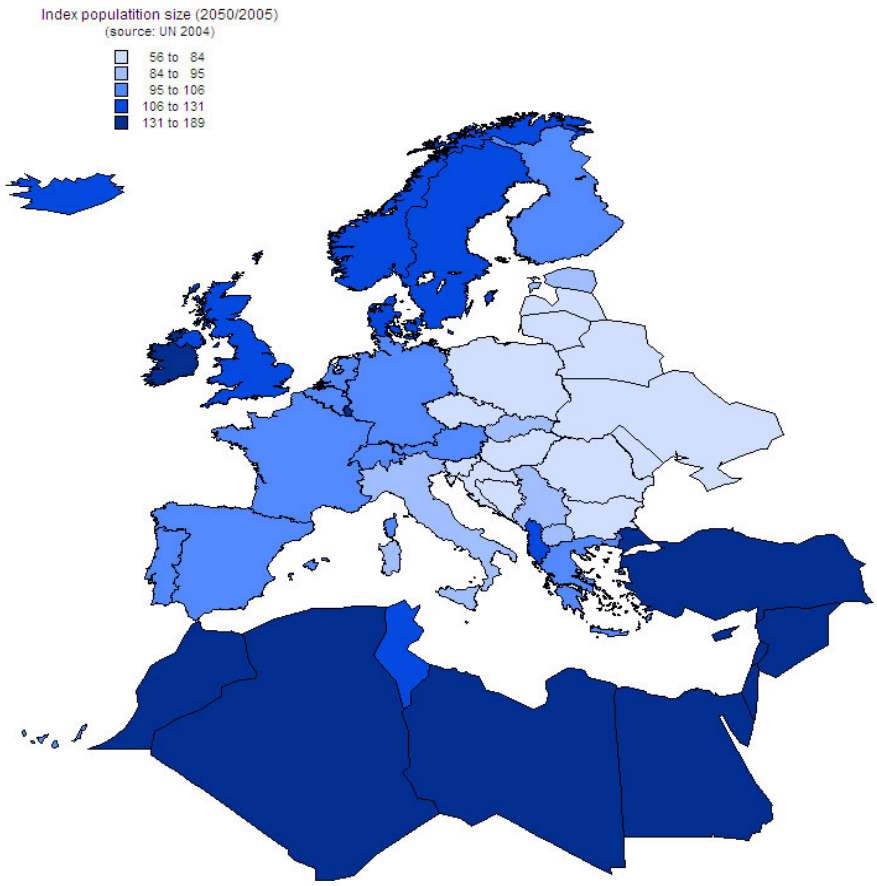
Source: Van Dalen and Reuser (2005a).

Figure 7.5. Workers' remittances and other capital flows to developing countries, 1970–2003



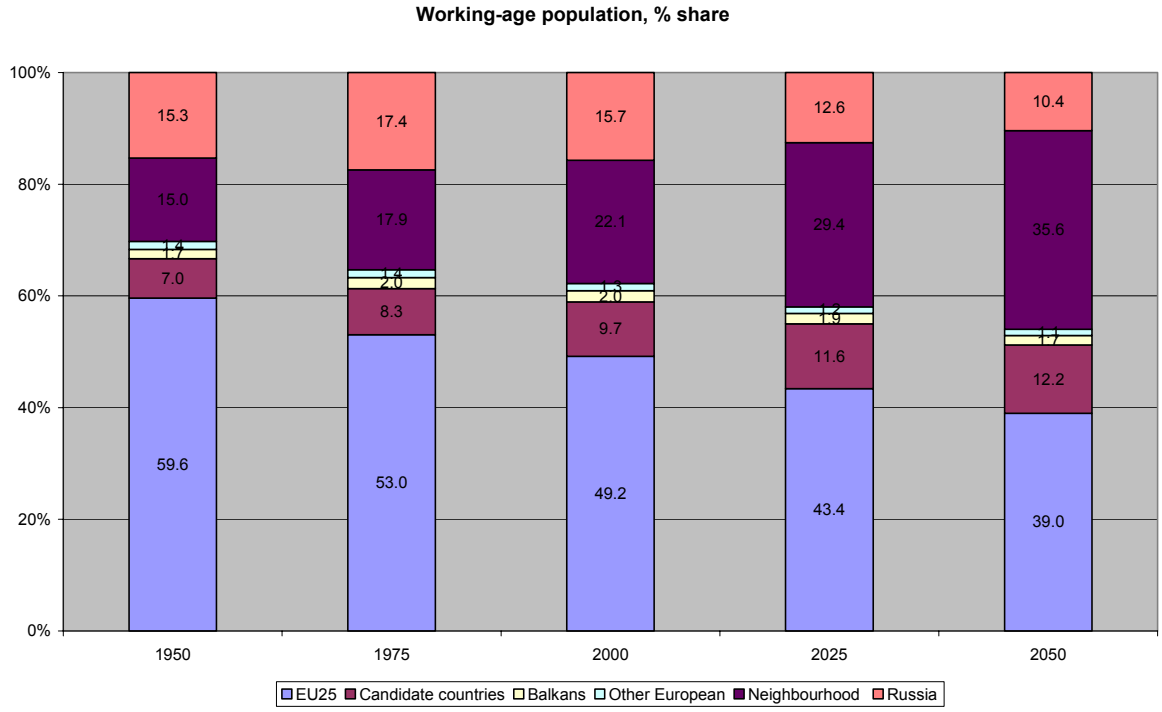
Source: IMF, World Economic Outlook (2005, p. 70).

Figure 7.6. Future of population size in Europe and Wider Europe, 2005-2050



Source: UN (2004) population prospects.

Figure 7.7. Working-age population in EU and neighboring countries (25-64 percent of total)



Source: UN (2004) population prospects.

8. A comparison of Europop1999 and Europop 2004

Nicole van der Gaag

8.1 Highlights

- The baseline scenario of EUROPOP2004 seems to be a 'sound successor' to the previous Eurostat population scenarios. Differences between EUROPOP1999 and EUROPOP2004 may be attributed to differences between the expected patterns according to EUROPOP1999 and the observed figures for the period 1999-2003.
- Only for mortality, the baseline assumption of EUROPOP1999 was for most countries below the low scenario of EUROPOP2004. This may be the result of the small differences that were assumed between the low and high mortality scenarios, but may also be interpreted as a somewhat more optimistic view towards long term developments in life expectancy.
- Under EUROPOP2004, higher population growth, or less decline, is expected compared to EUROPOP1999. This is partly due to the adjustments in the assumptions, and partly to the more sizeable base populations. As a consequence a slight postponement is expected of the onset of population decline.
- Due to higher expected net migration, somewhat higher levels of the working age population are foreseen. Given the lower fertility assumptions, however, an earlier start of the decline of the working age population is expected, resulting in an acceleration o ageing.
- The lack of a story behind the alternative scenarios makes it difficult to assess the plausibility of the different variants. Nevertheless, the alternative scenarios give some impression of alternative demographic developments. Although the expected size and composition of the population will differ across the different scenarios, the prospects in terms of dejuvenation and ageing will be more or less similar in all scenarios: no appreciable difference in the young age dependency ratio together with a considerable increase in the old age dependency ratio.

8.2 Introduction

Since the 1980s, under the authority of the European Commission, six sets of internationally consistent population projections for the countries and the regions of the European Union (EU) have been compiled: projections with base year 1980, 1985, 1990, 1995, 1999 and 2004. Contrary to population projections compiled by the National Statistical Institutes (NSIs), these projections are based on harmonized data, a common model and common assumptions as far as possible. Internationally consistent population projections are essential elements in policy making and medium and long-term planning. They are used for the preparation of European policies, regulations, directives and recommendations on various economic and social issues.

Each successive projection round can be seen as an update of the previous one, mostly with improvements on the models and assumptions used. An evaluation of the first four rounds of projections was made by Rees *et al*. (2001). In principle, the fifth round of projections, also called EUROPOP1999, was a 'real update' of the 1995 round (EUROPOP1995), i.e. with only a few exceptions the same philosophy, methodology and assumptions are used in both projections, but with a different base year (1999 instead of 1995). Although the philosophy behind the projections was kept largely the same, the assumptions used in the latest projections, EUROPOP2004, were updated, taking into account the latest demographic developments and the demographic data series collected in the latest population census round of 2000/2001. Moreover, EUROPOP2004 concerns for the first time in addition to the EU15 also the ten new EU Member States[92].

In the present paper we compare the input as well as the outcomes of the last two rounds of projections: EUROPOP1999 and EUROPOP2004.

8.3 Methodology and assumptions

In order to get a better understanding of the differences between and similarities across the different sets of projections we start with a comparison of the methodology and assumptions of EUROPOP1999 and EUROPOP2004. As both sets of scenarios follow on EUROPOP1995, however, we first give a short description of the philosophy behind EUROPOP1995.

EUROPOP1995

Eurostat's long-term national population scenarios EUROPOP1995 were compiled in 1996-1997. They concern the 18 countries of the European Economic Area (EEA) at that time and cover the period 1995-2050. Acknowledging that the future is inherently unpredictable, five scenarios were prepared: a baseline, low, high, young and old

[92] Scenarios were also compiled for Bulgaria and Romania; these scenarios, however, are not taken into account in this paper.

scenario. All scenarios project the population at 1 January by sex and single years of age up to the age group of 90+.

The low and high scenarios describe contrasting variants of population growth. The low scenario describes a demographic future in which low fertility levels of around 1.45 children per woman will persist, life expectancies will hardly increase and total net migration will drop by 50 percent compared to the high levels observed in the beginning of the 1990s (a drop of net immigration for the EEA of 600,000 to 400,000). Contrary, the high scenario assumes a recovery of fertility to levels of around 1.95 children per woman, strongly increasing life expectancies and an increasing net inflow of migrants (to 800,000 thousand for the EEA).

The baseline scenario describes the 'average development', i.e. the outcome of a continuation of current trends. In the long run, for most countries, this scenario coincides closely with the by then latest population forecasts made by the national statistical institutes (NSIs).

The young and old scenarios describe contrasting variants of ageing. Under the young scenario, high fertility and high net migration are combined with low life expectancies, whereas under the old scenario high life expectancies are combined with low fertility and low net migration.

Demographic projections are related with economic parameters on the one hand and demographic processes on the other hand. In making the scenarios it was assumed that economic growth is positively related to fertility, life expectancy and migration. Strong economic growth, however, was not assumed to be a sufficient condition for the realization of the high scenario. Changes in values, life styles and the political context are also important. The high scenario, however, was assumed to be less likely in an unfavorable economic climate than in times of economic prosperity. The low scenario, on the other hand, was assumed to be most likely when economic growth is lagging behind.

The main assumptions and results of EUROPOP1995 were published in Demographic Statistics 1996 (Eurostat, 1996), De Beer and De Jong (1996), Statistics in Focus, Population and social conditions, 1997/7 (Eurostat, 1997) and Eurostat's Working Paper 3/1999/E/no. 8 (Van der Gaag *et al.*, 1999). More detailed descriptions of the analysis applied and the assumptions used can be found in Eurostat's Working Papers E4/1997-6 (De Jong and Visser, 1997, on international migration), 3/1998/E/no. 8 (Van Hoorn and De Beer, 1998, on mortality), and 3/1998/E/no. 17 (De Jong, 1998, on fertility).

EUROPOP1999

In principle, for the baseline scenario of EUROPOP1999 the same assumptions were used as for EUROPOP1995. There are a few exceptions, however. Table 8.1 presents the assumptions on the total fertility rate, life expectancy at birth for males and females and net migration for the last year of the projection period (2050). If assumptions were

changed compared to EUROPOP1995, the 1995 value is added between brackets. In that case, both values are presented in bold.

In table 8.1 we can see that for Greece, Austria, Finland and Sweden the TFR was adjusted slightly downwards, while for Germany, Italy, Austria and Finland (only for males), the life expectancy at birth was slightly adjusted upwards. The assumptions for net migration were adjusted for Ireland, Austria and the United Kingdom. For Ireland, in the 1995 scenarios the negative net migration trend of the 1980s and 1990s was assumed to persist until 2050. Based on the observed positive net migration of the second half of the 1990s, this was changed to small positive values in the 1999 scenarios. For Austria, a somewhat lower level of net migration was expected, while for the United Kingdom a much higher level was assumed.

EUROPOP2004

Eurostat's latest long-term national population scenarios EUROPOP2004 were compiled in 2004-2005. For the first time, they concern projections for all Member States of the EU25. Until now, five scenarios were prepared: a baseline, low, high, no migration and high fertility scenario. As for EUROPOP1995 and EUROPOP1999, the assumptions for the baseline scenario follow most closely a continuation of the past. For the new Member States, except Cyprus and Malta, a slightly different approach was adopted as for those countries recent demographic patterns were highly influenced by the turbulent years after the fall of the communism. Substantial shifts in the timing of fertility for instance, severely depressed period fertility measures and in several countries life expectancies dropped significantly, especially for males. The new Member States of Eastern and Central Europe, however, do not constitute one homogeneous group. Some of the countries undergo a relative successful transition from a planned to a free market economy (the Czech Republic, Hungary, Poland, Slovakia and Slovenia), while other countries still are in crisis (the Baltic States). In general, for the transition countries a process of convergence to western patterns of behaviour is assumed. The level of convergence and the path towards it, however, depend on country-specific developments.

All scenarios project the population at 1 January by sex and single years of age. In principle, the population was projected up to the age group of 100+. Due to missing or unreliable data, however, for some countries a different (lower) upper age was used. For this reason, Eurostat decided to publish the outcomes of the projections up to the age of 80+ only. The projections cover the period 2004-2070. From 2050 onwards, the projections are merely 'mechanical calculations' of which the outcomes are not published in Eurostat's database New Cronos.

Table 8.2 presents the values of the assumptions used in EUROPOP2004 for the baseline scenario for 2050. The assumptions for the new Member States are represented in italics. For the EU15, the 1999 value is added between brackets. As almost all assumptions were changed compared to EUROPOP1999, in this case bold values indicate similar assumptions to the 1999 projections (fertility assumptions for Denmark, Ireland and Luxembourg only).

The methodology for drafting the (preliminary) assumptions for the EU15 is described in Sartori (2004, for fertility), Giannakouris (2004, for mortality) and Lanzieri (2004, for international migration). For the new Member States, the methodology is published in Cruijsen and Tsvetarsky (2004, for fertility), Cruijsen and Ekamper (2004, for mortality) and Bijak *et al*. (2004, for international migration).

In the following sections comparisons will be made of the fertility, mortality and migration assumptions. Annex 8.1 presents country-specific graphs for the period 1960-2050 (including observations for the years 1960-2003, baseline, low and high assumptions for EUROPOP2004 and baseline assumptions for EUROPOP1999; four graphs for each country).

A comparison of fertility assumptions

With respect to the observed fertility patterns and the assumptions used under the last three rounds of projections, we may conclude for the EU15 that generally the patterns from the beginning of the 1990s onwards are rather stable and that no major changes were made to the assumptions. Only for Sweden, there was a strong decline in fertility in the early 1990s, from levels of about 2 children per woman to 1.5. Under all three scenarios fertility levels in Sweden are expected to return to higher levels than in the second half of the 1990s, but not as high as in the first half of the 1990s. Taking into account the rise in fertility in the first years of the current century, higher fertility levels are expected under EUROPOP2004 than under EUROPOP1999 for the period up to 2035; the level in 2050, on the other hand, is almost identical (see Annex 8.1). Also for France and Finland, slightly higher TFRs are expected under EUROPOP2004 compared to EUROPOP1999, but the trend towards the end levels is highly similar. Note that for Finland and Sweden, the fertility assumptions were put back to the values of EUROPOP1995. For Denmark, Ireland and Luxembourg on the other hand, the same baseline assumption was used under all three scenarios. For the remaining five countries, fertility levels were slightly decreased. For Greece this means a further decline, from 1.7 in EUROPOP1995, through 1.6 in EUROPOP1999 to 1.5 in EUROPOP2004.

In general, somewhat more diversity across and slightly larger differences between countries were assumed in EUROPOP2004 (TFR varying from 1.40 in Spain and Italy to 1.85 in France and Sweden), than in EUROPOP1999 (TFR varying from 1.50 in Germany, Spain, Italy and Austria, to 1.80 in the majority of the remaining countries). End levels of total fertility for the new Member States are assumed to be somewhere in between, either 1.5 or 1.6 children per woman.

A comparison of mortality assumptions

Life expectancies at birth in the EU15 have been increasing ever since the 1960s, and are expected to continue to increase under all sets of scenarios. With the exception of Greece for males and the Netherlands for females, for all countries some further improvements are assumed under the latest baseline scenario. These further improvements are mainly based on the observed country-specific trends in the recent past. Life expectancy for

males for Portugal, for instance, was substantially underestimated under the baseline scenario of EUROPOP1999.

Except for Cyprus and Malta, assumptions on life expectancy for the new Member States are systematically lower than for the countries of the EU15. Since the late 1960s the gap between life expectancies of inhabitants of these countries and those of people living in the EU15 have increased initially slowly, but have accelerated in the early 1990s. Especially in the Baltic States, life expectancy of males dropped sharply. Although the differences between the new Member States and the EU15 are expected to decrease, it is assumed that they will not have been disappeared by 2050.

A comparison of net migration assumptions

International migration is the component of population growth, which is the most difficult to predict as it depends heavily on socio-economic and historical events, as well as policy decisions. Observed trends in net migration are often very volatile. Moreover, the quality of data leaves often much to be desired. According to EUROPOP2004 for the EU15, international migration assumptions are based on a three-way approach, taking into account extrapolation of trends, analysis of the determinants of migration and assumptions used in the national forecasts. For EUROPOP1999, in principle target values of the national forecasts were used, while the past trends were expected to influence the short-term prediction. This resulted in differences between expected net migration values in 2050 of about +150 per cent for Ireland (12.4 thousand in EUROPOP2004 compared to 5 thousand in EUROPOP1999) to -40 per cent for Portugal (14.9 instead of 25 thousand). In absolute numbers, the largest upward adjustments are assumed for Spain, Italy and the United Kingdom (+41.6, +33.8 and +28.5 thousand, respectively).

International migration assumptions for the new Member States are based on two pillars: the expected socio-economic situation of the countries under study, as well as the anticipated migration policy developments. In setting the assumptions, the gradual opening of labour markets of the EU15 countries was taken into consideration. For the short term a strong pull factor to emigrate was assumed, together with smaller numbers of immigrants due to more hermetic eastern borders of the EU. As a result, a decrease of net migration is expected, to reach a minimum after the final opening of the western European labour markets to the new Member States in 2011. For the mid term, emigration is still expected to be a major factor shaping the migratory movements of the new EU members, but yet with an increasing role of the immigration flows. As a result, net migration is assumed to start to increase. For the long term, immigration is expected to become a more important factor of population growth than emigration. In the end, under the baseline scenarios, positive values of net migration are expected for all countries.

8.4 Outcomes of the projections

To what extent do differences in the assumptions affect the outcomes of the projections? In the current section we compare the outcomes of the baseline scenarios of EUROPOP1999 and EUROPOP2004. Similar to the Green paper "Confronting demographic change: a new solidarity between the generations" (European Commission, 2005), we focus on developments in the following age groups: children (0-14), young people (15-24), young adults (25-39), adults (40-54), older workers (55-64), elderly people (65-79) and very elderly people (80+). Furthermore, we look at differences in the base population (2004), and at short term (2010), mid term (2025) and long term (2050) differences. Annex 8.2 presents for all countries of the EU15 and the EU15 as a whole, the absolute numbers and proportions of the different age groups (eight graphs per country). In addition to the different age groups and the total population, we also pay attention to developments in the overall working-age group (15-64) and to the age dependency ratios.

Base population

Table 8.3 presents the total population for 2004 as predicted under the baseline scenario of EUROPOP1999, the base population for EUROPOP2004, as well as the percentage difference between both numbers.

Annex 8.2 presents the absolute number of persons in each of the different age groups for the EU15 as a whole as well as the proportion of the different age groups in the total population. From both Table 8.3 and Annex 8.2 we may conclude that differences in the total population in 2004 and the number of persons in the different age groups are negligible. This is not the case, however, for some of the countries. Especially for Spain a substantial difference is observed, mainly for the age groups 25-39 and 40-54, and to a lesser extent for Greece, Portugal and Ireland. The considerable increase in population for Spain was mainly the result of the high net immigration of the late 1990s and the first years of the current century, which was to a large extent the result of regularisation programmes. Not surprisingly, such unexpected figures were not foreseen in the EUROPOP1999 scenarios.

For most of the countries, the population in 2004 outnumbered the expected population according to the baseline scenario of EUROPOP1999. Only for Denmark, Germany, France and the United Kingdom, the population of 2004 was slightly less than expected (in all cases less than one per cent).

Short term developments

Table 8.4 presents the total population for 2010 as predicted under the baseline scenarios of EUROPOP1999 and EUROPOP2004. In addition to the difference in predicted population in 2010, in the last two columns the percentage difference in population between 2004 and 2010 is given.

As for the population in 2004, also for 2010 not much differences can be observed in the predicted absolute number of persons, as well as in the proportions of the different age groups for the EU15 as a whole. Under EUROPOP2004, for the short term a slightly higher population growth is foreseen than under EUROPOP1999 (2.1 per cent and 1.0 per cent, respectively). As might be expected, the largest differences between both rounds of projections are foreseen for those countries with the largest differences in the base population: Spain, Greece, Ireland and Portugal. However, also for Italy and Sweden, the population expected under the latest scenario, outnumbers the one predicted by the previous scenario by more than two per cent. For Italy, this is mainly the result of the higher expected levels of international migration (somewhat higher numbers of persons in the age groups of the young adults and the children), while for Sweden, this is related to the higher expected fertility levels (higher numbers of children). For most of the countries the difference between the size of the population in 2010 and 2004 is slightly higher for EUROPOP2004 compared to EUROPOP1999.

Medium term developments

Table 8.5 presents the mid term developments with respect to population growth in the EU (period 2004-2025).

For the EU15 as a whole, in 2025 slightly more differences will become visible between both sets of scenarios, especially in the age groups 40-54 (absolute numbers) and 80+ (absolute numbers as well as proportions).

For Spain, Ireland and Greece, both scenarios differ more widely compared to 2010, but for Portugal the outcomes of both scenarios grow towards one another. By 2025, the differences in assumptions clearly counterbalance the initial difference in population, resulting in lower numbers of people in the age groups up to 40 and higher numbers in the age groups over 55+. Overall, EUROPOP2004 still predicts a slightly higher total population for Portugal than EUROPOP1999.

Long term developments

Long term developments with respect to population growth in the EU (period 2004-2050) are presented in Table 8.6.

From table 8.6 we may conclude that under EUROPOP1999 a less numerous population by almost 4 per cent was expected in 2050 compared to 2004, while under EUROPOP2004 still slightly more people are expected in 2050 compared to 2004.

Due to these higher population numbers, the absolute numbers of persons in the working age (age 15-64) will be somewhat higher than under the previous round of projections. Ageing, however, will be sligthly increased: lower proportions of the young, together with higher proportions of the old.

Differences in the outcomes with respect to total population are (still) very large for Spain, Ireland, Luxembourg and Sweden (EUROPOP2004 outnumbers EUROPOP1999 by more

than ten per cent). Remarkably, for Portugal more than six per cent difference was found in favour of EUROPOP1999. On the long term, therefore, differences in assumptions do not only counterbalance the difference in the base population, but even reverse the trend.

Also for Denmark a relatively high difference was found in favour of EUROPOP1999 (more than two per cent). Contrary to Portugal, for which lower numbers were expected in the younger age groups and higher numbers in the oldest resulting in a relatively stronger level of ageing, for Denmark slightly lower numbers are expected in almost all age groups and differences in the proportions of the age groups are almost nihil.

Population growth versus population decline

European population growth in the last decades has been moderate to slow and future growth will probably be even slower than in the past, eventually leading to population decline. Whereas in the EU15 countries population growth is assumed to continue at least another ten years, most of the new Member States already entered the stage of negative population growth (see Table 8.7). Under EUROPOP2004, for five countries only a continuous growth is foreseen (Ireland, Cyprus, Luxembourg, Malta and Sweden).

For most countries of the EU15, the onset of population decline is more or less similar under both scenarios (generally a slight postponement with a couple of years). Spain and Italy, however, are granted some respite compared to EUROPOP1999, while the pace of population decline has been somewhat increased in Denmark and the Netherlands.

Contrary to EUROPOP1999, Sweden will not experience population decline before 2050. Only for Portugal a considerable speeding up is expected. While under EUROPOP1999 the Portuguese population was not expected to decline before the mid 2040s, under EUROPOP2004 it is expected to be among the forerunners of population decline (first year of decline 2018).

Developments of the working-age population

In general in Europe, the number of people of working age (approximated by the population aged 15-64) has been growing for the past 50 years. In the near future a slightly further growth is expected, but after 2011 a long period of decline will start (see Table 8.8). All countries except Luxembourg will sooner or later be confronted with a declining potential labour force.

Although for most countries a persistent decline is expected until the end of the projection period, for some countries, for instance the Netherlands and Sweden, an alternating pattern is foreseen of growth and decline.

Like for the total population, only for Portugal there is a huge difference between the two scenarios. While under EUROPOP1999 the decline set in 2030, under EUROPOP2004 Portugal will be already affected by this downward trend in 2008.

For the size of the population of working age, international migration is very important as by far most migrants belong to this age category. For Portugal, the lower net immigration together with the effect of smaller birth generations may have resulted in the accelerated decline of the potential labour force. For Spain and Italy, on the other hand, the increase in expected migration levels may compensate to some extent the declining size of young generations.

Even though for most countries under EUROPOP2004 a slightly more sizeable working-age population is expected for 2050, the size of this age group will be considerably less than it was in 2004, except for Ireland, Cyprus, Luxembourg, Malta and Sweden.

Age dependency ratios

Due to declining fertility levels on the one hand and increasing life expectancies on the other, the age structure of Europe has changed significantly. Today, in all countries the base of the age pyramid is smaller than the middle part and in the future the widest part will shift further upwards. Roughly similar ageing trends are visible in all countries. Age dependency ratios serve as an indicator of the pressure placed on the working-age population (the number of people aged 15-64) to take care of the young (the number of people younger than 15) and the old (the number of people aged 65+).

In Table 8.9 the young age dependency ratios for 2004 and 2050 are given.

In the past, dejuvenation has taken place in all European countries. In the EU15, dejuvenation was especially strong in the 1970s and 1980s, when the baby-boom generations entered the working-age, leaving the smaller baby-bust generations in the younger age groups. Under both scenarios, by now in most European countries the process of dejuvenation has come to an end, resulting in more or less stable young age dependency ratios between 2004 and 2050. Only the population of Cyprus is expected to continue to dejuvenate to some extent in the period to come (a drop in the young age dependency ratio from 0.29 to 0.22).

Table 8.10 presents the old age dependency ratios. The old age dependency ratio is a measure for the 'burden" on the working age population of caring for the old generations.

Currently, old-age dependency ratios vary from 0.16 in Slovakia to 0.29 in Italy, with an overall ratio of 0.25 for the EU25, 0.26 for the EU15 and 0.20 for the NMS10. Under both scenarios the old-age dependency ratio will rise significantly as a result of an increase in the number of retired persons combined with a decline in the working-age population. Therefore, the population of the EU will age, more or less independent of the future developments in fertility, mortality and migration. The pace of ageing, however, will be influenced by the assumptions.

Although developments are similar in all countries, the rate of change and the levels of dependency differ. By 2050 old-age dependency ratios are expected to vary from 0.36 in

Luxembourg to 0.67 in Spain. For most countries a further increase in the old-age dependency is foreseen in the latest scenario. Only for Luxembourg, the Netherlands and Sweden slightly lower ratios are expected.

8.5 Alternative scenarios

In EUROPOP2004 four alternative scenarios have been prepared to show the consequences of different developments in fertility, life expectancy and net migration: a high, low, no migration and high fertility scenario. While the baseline variant projects a continuation of past trends, the low and high scenarios can be interpreted as two contrasting variants that assume low and high values of fertility, life expectancy and net migration, respectively. In the no migration scenario baseline assumptions on fertility and life expectancy are combined with zero migration, while in the high fertility scenario baseline assumptions on life expectancy and net migration are combined with high fertility. The aim of producing alternative scenarios is not to show upper and lower limits of future demographic behaviour, but mainly to present plausible alternatives to the principal assumptions.

From a first look at the low and high assumptions for the three components of population change we may conclude that the alternative assumptions for fertility seem to be reasonable, although the differences across the countries are not always clear, for mortality remarkable small margins are assumed and for international migration some striking differences are found across the countries. Why, for instance, should we assume only a very small difference in international migration for France between the low and baseline scenario (difference of 8.6 thousand persons) compared to a huge difference between the high and baseline scenario (difference of 50.5 thousand persons), while at the same time we assume for Sweden a much larger lower limit compared to the higher limit (a difference of 12.6 thousand persons versus 3.5 thousands)? The lack of a story behind the alternative scenarios makes it difficult to assess the plausibility of the different variants. Nevertheless, the different scenarios can give some impression of how the size and composition of the population may change in case different developments will take place in fertility, life expectancy and international migration instead of a continuation of past trends.

Table 8.11 shows population numbers (total population and three age groups) and age dependency ratios for the EU15 as a whole in 2050 for all five scenarios. From this table we may infer that differences in total population vary from -13 per cent in the low scenario to +16 per cent in the high scenario. In terms of total population the no migration variant equals the low scenario. The age structure, however, is different. According to the no migration variant by the time of 2050 considerably more young people and less persons of working age are expected compared to the low scenario. While the low scenario predicts the lowest young age dependency ratio, the no migration variant predicts the highest old age dependency ratio. Also in the high and high fertility scenarios a rise of the old age dependency ratio is expected (up to 0.50). While the range

for the old age dependency ratio is somewhat larger for EUROPOP2004 (from 0.50 (high) to 0.57 (low)) than for EUROPOP1999 (from 0.48 to 0.51), the range for the young age dependency ratio is the same under both sets of scenarios (from 0.20 to 0.28).

To conclude this section we may say that by the time of 2050 for the EU15 the expected size and composition of the population will differ across the different scenarios, but the prospects in terms of dejuvenation and ageing will be more or less the same. Without doubt, there will be differences across the different countries, but a more detailed country-specific discussion of the alternative scenarios is beyond the scope of this report.

8.6 Summary and conclusion

In this final section the assumptions and demographic developments discussed in the preceding sections separately, will be combined to give an overall picture of the differences and similarities of EUROPOP1999 and EUROPOP2004. Table 8.12 summarizes the results for all countries of the EU15. Empty cells in this table indicate no differences between both scenarios.

In principle, the baseline scenarios of EUROPOP1999 and EUROPOP2004 follow most closely a continuation of past trends. Therefore we might expect that differences between the two sets of assumptions may be attributed to differences between the expected patterns according to EUROPOP1999 and the observed figures for the period 1999-2003. For most of the countries this is true for fertility and net migration. In general fertility assumptions were slightly adjusted downwards, which was in line with the latest observations. Also the upward adjustment for France, Finland and Sweden can be justified in this way. For Italy, however, the observed TFRs were almost identical to the assumptions of EUROPOP1999. Nevertheless, the latest scenario assumes for the long run somewhat lower TFRs than EUROPOP1999. This might indicate a slightly changed vision on the possibilities of catching up with postponed births. For Luxembourg, on the other hand, somewhat lower observations did not give rise to lower the assumptions (see also Annex 811). For net migration striking differences were found for Luxembourg (unexpected increase) and Portugal (unexpected decline).

In all cases, the baseline assumptions of EUROPOP1999 on fertility and migration were within the boundaries of the low and high scenarios of EUROPOP2004. For mortality we found a slightly different picture. Although with the exception of Belgium and Luxembourg, the assumptions were adjusted in line with the observations, for most countries the baseline assumption of EUROPOP1999 was below the low scenario of EUROPOP2004. This may be the result of the small differences that were assumed between the low and high mortality scenario in EUROPOP2004, but may also be interpreted as a somewhat more optimistic view towards long term developments in life expectancy compared to the previous scenarios.

Not only differences in assumptions may affect the outcomes of the projections, also differences in the base population will have some impact on what will happen in the

future. After all, the size and composition of today's population will determine for a large part the population of tomorrow. In this respect we found some differences for Ireland, Portugal, Greece and especially Spain. For all these countries, the actual population outnumbered the one predicted by EUROPOP1999.

How did this affect the outcomes? First of all, as most of the adjustments in the assumptions and the differences in the base population, were in favour of higher population growth (or less decline), for most countries for the short, medium and long term a more sizeable population is expected according to EUROPOP2004 than to EUROPOP1999. Only for Denmark and Portugal in the long run a less numerous population is foreseen. For Portugal this is caused by lower fertility and lower net migration prospects, which counteract the positive difference in the base population and eventually reverse the trend of a more sizeable population to a less numerous one. For Denmark, on the other hand, somewhat lower numbers are found in all age groups mainly as a result of lower migration assumptions.

Notwithstanding the expected more sizeable populations, for most of the countries the population is still expected to decline sooner or later. Increasing life expectancies and net migration cannot alter this trend. They can, however, postpone the onset of the population decline to some extent. Although for France, Finland and Sweden all assumptions are adjusted upwards, only for Sweden this resulted in an expected continuous population growth. For Spain and Italy population decline was postponed with several years, mainly caused by the huge increase in net migration, but for Spain also by the more sizeable base population. Lower migration together with lower or stable fertility gives rise to an earlier start of the population decline in the Netherlands and Denmark. For Portugal, the combined effect of low fertility and low migration strongly reinforces the downward trend in population growth, resulting in a much earlier decrease compared to EUROPOP1999.

Several years before the countries will experience population decline, they will be confronted with a shrinking working-age population. That was the case under EUROPOP1999 and will remain so under EUROPOP2004. Due to the lower fertility assumptions for most countries this will be even sooner than under EUROPOP1999. Only Luxembourg will escape this experience. In spite of this earlier start of the drop in this age group, by 2050 most countries will have a more sizeable working-age population under the latest scenario compared to the previous one.

Related to a shrinking working-age population is the acceleration of ageing. Although for most countries, especially in the long run, a more sizeable population is expected compared to the previous projections, the level of ageing is expected to grow. This is the result of still declining TFRs together with increasingly rising life expectancies. Except for Luxembourg, the Netherlands and Sweden, for all countries the old-age dependency ratio is expected to increase further compared to EUROPOP1999.

As was the case for EUROPOP1999 also EUROPOP2004 covers several alternative scenarios. Without the story behind the different scenarios, however, it is difficult to assess the plausibility of the different variants. Nevertheless, the different scenarios give some impression of how the size and composition of the population will change in case of different developments in fertility, mortality and international migration. The results of all scenarios show that population decline and ageing will be the main demographic trends in Europe in the coming decades.

To sum up, we may conclude that in general the assumptions of the baseline scenario of EUROPOP2004 are in line with the most recent observations. Only for Luxembourg and Portugal, the adjustments in the assumptions diverge from the observations and especially the adjustments on migration have profound consequences for the outcomes. Compared to EUROPOP1999 in terms of population ageing and the prospect of a declining population, the future looks more bright for Luxembourg, while for Portugal it looks more dark. Without additional information, however, it is difficult to decide on the likeliness of both sets of scenarios. In any case we have to take into account that the future is inherently unpredictable and that the Eurostat set of projections is just one among several scenarios of population evolution based on assumptions of fertility, mortality and migration (as was stated by Eurostat in their press release on the occasion of the presentation of EUROPOP2004). Based on the results of this comparison we may endorse this point of view, with the addition that (the baseline scenario of) EUROPOP2004 seems to be of equal merit to the other scenarios.

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Table 8.1. EUROPOP1999 baseline assumptions for 2050; between brackets assumptions EUROPOP1995 (if different from EUROPOP1999)

	TFR	LE(0) males	LE(0) females	Net migration (x 1000)
Belgium	1.80	80	85	15
Denmark	1.80	79	83	10
Germany	1.50	**80 (79)**	**85 (84)**	200
Greece	**1.60 (1.7**	81	85	25
Spain	1.50	79	85	60
France	1.80	80	87	50
Ireland	1.80	79	84	**5 (–2.7)**
Italy	1.50	**81 (80)**	**86 (85)**	80
Luxembourg	1.80	80	85	2
Netherlands	1.80	80	85	35
Austria	**1.50 (1.6**	**81 (80)**	**86 (85)**	**20 (22.5)**
Portugal	1.70	78	84	25
Finland	**1.70 (1.8**	**80 (79)**	85	5
Sweden	**1.80 (1.9**	82	86	20
United Kingdom	1.80	80	85	**70 (45)**

Table 8.2. EUROPOP2004 baseline assumptions for 2050; between brackets assumptions EUROPOP1999 (if different from EUROPOP2004)

	TFR	LE(0) males	LE(0) females	Net migration (x 1000)
Belgium (BE)	1.70 (1.80)	82.3 (80)	88.3 (85)	18.5 (15)
Czech Republic (CZ)	*1.50*	*79.7*	*84.1*	*20.0*
Denmark (DK)	1.80	80.9 (79)	83.7 (83)	6.6 (10)
Germany (DE)	1.45 (1.50)	82.0 (80)	86.9 (85)	179.2 (200)
Estonia (EE)	*1.60*	*74.9*	*83.1*	*1.7*
Greece (GR)	1.50 (1.60)	80.3 (81)	85.1 (85)	34.9 (25)
Spain (ES)	1.40 (1.50)	81.4 (79)	87.9 (85)	101.6 (60)
France (FR)	1.85 (1.80)	82.7 (80)	89.1 (87)	58.7 (50)
Ireland (IE)	1.80	82.4 (79)	87.0 (84)	12.4 (5)
Italy (IT)	1.40 (1.50)	83.6 (81)	88.8 (86)	113.8 (80)
Cyprus (CY)	*1.50*	*81.9*	*85.1*	*4.9*
Latvia (LV)	*1.60*	*74.3*	*82.5*	*2.8*
Lithuania (LT)	*1.60*	*75.5*	*83.7*	*4.3*
Luxembourg (LU)	1.80	81.6 (80)	86.7 (85)	2.8 (2)
Hungary (HU)	*1.60*	*78.1*	*83.4*	*20.1*
Malta (MT)	*1.60*	*81.8*	*85.0*	*2.5*
Netherlands (NL)	1.75 (1.80)	80.2 (80)	83.6 (85)	31.1 (35)
Austria (AT)	1.45 (1.50)	83.6 (81)	87.7 (86)	20.3 (20)
Poland (PL)	*1.60*	*79.1*	*84.4*	*33.7*
Portugal (PT)	1.60 (1.70)	80.4 (78)	86.6 (84)	14.9 (25)
Slovenia (SI)	*1.50*	*79.8*	*85.2*	*6.7*
Slovakia (SK)	*1.60*	*77.7*	*83.4*	*4.7*
Finland (FI)	1.80 (1.70)	81.9 (80)	86.5 (85)	6.0 (5)
Sweden (SE)	1.85 (1.80)	83.3 (82)	86.5 (86)	21.3 (20)
United Kingdom (UK)	1.75 (1.80)	82.9 (80)	86.6 (85)	98.5 (70)

Table 8.3. Total population (x 1000) in the EU in 2004

	EUROPOP 1999	EUROPOP 2004	% difference
EU25		456815.3	
EU15	379436.0	382674.1	0.9
NMS10		74141.2	
BE	10265.9	10396.4	1.3
CZ		10211.5	
DK	5401.7	5397.6	-0.1
DE	82855.2	82531.7	-0.4
EE		1350.6	
GR	10636.3	11041.1	3.8
ES	39605.9	42345.3	6.9
FR	60098.9	59900.7	-0.3
IE	3933.2	4027.7	2.4
IT	57495.5	57888.2	0.7
CY		730.4	
LV		2319.2	
LT		3445.9	
LU	451.3	451.6	0.1
HU		10116.7	
MT		399.9	
NL	16234.1	16258.0	0.1
AT	8115.7	8114.0	0.0
PL		38190.6	
PT	10113.3	10474.7	3.6
SI		1996.4	
SK		5380.1	
FI	5217.3	5219.7	0.0
SE	8894.2	8975.7	0.9
UK	60117.5	59651.5	-0.8

Table 8.4. Total population in the EU in 2010 and population growth between 2004-2010

	Total population (x 1000)			% difference 2004-2010	
	EUROPOP 1999	EUROPOP 2004	% difference	EUROPOP 1999	EUROPOP 2004
EU25		464053.6			1.6
EU15	383397.5	390652.2	1.9	1.0	2.1
NMS10		73401.3			-1.0
BE	10352.1	10554.0	2.0	0.8	1.5
CZ		10122.1			-0.9
DK	5476.3	5465.4	-0.2	1.4	1.3
DE	83435.1	82823.7	-0.7	0.7	0.4
EE		1314.0			-2.7
GR	10768.3	11268.7	4.6	1.2	2.1
ES	39856.9	44603.3	11.9	0.6	5.3
FR	61369.1	61486.1	0.2	2.1	2.6
IE	4141.2	4322.7	4.4	5.3	7.3
IT	57276.7	58631.1	2.4	-0.4	1.3
CY		783.6			7.3
LV		2239.6			-3.4
LT		3345.4			-2.9
LU	471.1	477.4	1.3	4.4	5.7
HU		9981.9			-1.3
MT		422.6			5.7
NL	16689.9	16672.1	-0.1	2.8	2.5
AT	8148.8	8255.8	1.3	0.4	1.7
PL		37830.4			-0.9
PT	10308.7	10686.5	3.7	1.9	2.0
SI		2014.8			0.9
SK		5346.8			-0.6
FI	5267.2	5294.4	0.5	1.0	1.4
SE	8951.5	9187.5	2.6	0.6	2.4
UK	60884.6	60923.6	0.1	1.3	2.1

Table 8.5. Total population in the EU in 2025 and population growth between 2004-2025

	Total population (x 1000)			% difference 2004-2025	
	EUROPOP 1999	EUROPOP 2004	% difference	EUROPOP 1999	EUROPOP 2004
EU25		470057.3			2.9
EU15	385866.1	398779.7	3.3	1.7	4.2
NMS10		71277.5			-3.9
BE	10530.0	10898.4	3.5	2.6	4.8
CZ		9811.7			-3.9
DK	5603.0	5556.6	-0.8	3.7	2.9
DE	82817.7	82107.6	-0.9	0.0	-0.5
EE		1224.1			-9.4
GR	10761.3	11393.5	5.9	1.2	3.2
ES	39093.0	45555.5	16.5	-1.3	7.6
FR	63336.2	64392.0	1.7	5.4	7.5
IE	4533.3	4922.3	8.6	15.3	22.2
IT	55069.4	57751.0	4.9	-4.2	-0.2
CY		896.9			22.8
LV		2068.1			-10.8
LT		3133.7			-9.1
LU	514.8	544.0	5.7	14.1	20.5
HU		9588.4			-5.2
MT		467.8			17.0
NL	17519.4	17428.8	-0.5	7.9	7.2
AT	8159.0	8500.6	4.2	0.5	4.8
PL		36836.3			-3.5
PT	10602.6	10729.8	1.2	4.8	2.4
SI		2014.2			0.9
SK		5236.6			-2.7
FI	5317.5	5438.8	2.3	1.9	4.2
SE	9213.4	9768.6	6.0	3.6	8.8
UK	62795.4	63792.2	1.6	4.5	6.9

Table 8.6. Total population in the EU in 2050 and population growth between 2004–2050

	Total population (x 1000)			% difference 2004–2050	
	EUROPOP 1999	EUROPOP 2004	% difference	EUROPOP 1999	EUROPOP 2004
EU25		449831.2			-1.5
EU15	364484.9	384356.2	5.5	-3.9	0.4
NMS10		65474.9			-11.7
BE	10104.4	10905.8	7.9	-1.6	4.9
CZ		8893.5			-12.9
DK	5554.6	5430.0	-2.2	2.8	0.6
DE	76005.8	74642.4	-1.8	-8.3	-9.6
EE		1125.8			-16.6
GR	10230.9	10631.8	3.9	-3.8	-3.7
ES	35145.1	42833.8	21.9	-11.3	1.2
FR	62153.3	65703.6	5.7	3.4	9.7
IE	4756.7	5477.9	15.2	20.9	36.0
IT	48072.00	52709.2	9.6	-16.4	-8.9
CY		975.1			33.5
LV		1872.9			-19.2
LT		2881.1			-16.4
LU	559.3	642.6	14.9	23.9	42.3
HU		8914.9			-11.9
MT		508.3			27.1
NL	17679.2	17405.8	-1.5	8.9	7.1
AT	7612.4	8216.0	7.9	-6.2	1.3
PL		33665.0			-11.8
PT	10669.4	10009.0	-6.2	5.5	-4.4
SI		1900.8			-4.8
SK		4737.6			-11.9
FI	4951.2	5217.0	5.4	-5.1	-0.1
SE	9197.5	10201.5	10.9	3.4	13.7
UK	61793.2	64329.9	4.1	2.8	7.8

Table 8.7. Start of population decline in the EU

	EUROPOP 1999*	EUROPOP 2004
EU25		2025
EU15	2025	2027
NMS10		2004
BE	2035	2037
CZ		2004
DK	2040	2032
DE	2020	2014
EE		2004
GR	2020	2020
ES	2015	2022
FR	2040	2042
IE	–	–
IT	2005	2013
CY		–
LV		2004
LT		2004
LU	–	–
HU		2004
MT		–
NL	2045	2036
AT	2025	2029
PL		2004
PT	2045	2018
SI		2014
SK		2004
FI	2030	2028
SE	2035 **	–
UK	2040	2040

* For EUROPOP1999 figures were available for five year intervals only; therefore 2025 means that the population in 2025 was less numerous than in 2020, etcetera.

** The population in 2035 was smaller than that of 2030, as was the case for 2040 compared to 2035, and 2045 compared to 2040; the population of 2050, however, outnumbered the population of 2045.

Table 8.8. Working age population in the EU in 2050 and difference between 2004-2050

	Population age 15-64 (x 1000)			Percentage difference 2004-2050		Start of decline	
	EUROPOP1999	EUROPOP2004	% ifference	EUROPOP1999	EUROPOP2004	EUROPOP1999 *	EUROPOP2004
EU25		254877.8			-16.9		2011
EU15	210606.3	217075.0	3.1	-16.7	-14.9	2015	2011
NMS10		37802.8			-26.8		2009
BE	5891.4	6284.7	6.7	-12.8	-7.8	2015	2011
CZ		5022.7			-30.6		2007
DK	3392.7	3270.9	-3.6	-5.3	-8.5	2015 **	2008 **
DE	44421.8	42205.4	-5.0	-20.2	-24.0	2004 **	2004 **
EE		670.5			-26.8		2006
GR	5770.1	5870.3	1.7	-18.8	-21.4	2004	2005 **
ES	19227.4	22643.6	17.8	-28.5	-22.1	2010	2010
FR	35967.7	37425.6	4.1	-8.6	-4.0	2015	2011 **
IE	2836.0	3166.4	11.6	6.2	15.6	2040	2035
IT	26245.9	28201.4	7.5	-31.6	-26.8	2004	2005
CY		590.4			18.7		2043
LV		1107.7			-30.2		2004
LT		1716.6			-26.0		2006
LU	340.8	393.6	15.5	14.0	29.8	2020 **	-
HU		5181.8			-25.4		2004
MT		308.8			12.4		2012 **
NL	10586.9	10568.4	-0.2	-3.5	-3.8	2010 **	2011 **
AT	4421.7	4704.8	6.4	-20.3	-14.9	2004	2012
PL		19398.6			-27.2		2011
PT	6282.8	5502.0	-12.4	-7.4	-22.1	2030	2008
SI		1064.9			-24.2		2011
SK		2740.7			-28.2		2010
FI	2934.7	3013.7	2.7	-16.0	-13.6	2015 **	2010 **
SE	5479.7	6059.6	10.6	-5.5	3.8	2015	2009 **
UK	36806.6	37764.7	2.6	-7.1	-3.7	2015	2011 **

* For EUROPOP1999 figures were available for five year intervals only; therefore 2015 means that the population of 2015 was less numerous than that of 2010, etc.

** A general declining trend with for some years growth or an alternating pattern of growth and decline

Table 8.9. Young age dependency ratios in the EU, 2004 and 2050

	2004			2050		
	EUROPOP 1999	EUROPOP 2004	% difference	EUROPOP 1999	EUROPOP 2004	% difference
EU25		0.24			0.24	
EU15	0.25	0.24	-0.6	0.24	0.24	-1.8
NMS10		0.24			0.23	
BE	0.26	0.26	2.2	0.26	0.25	-3.1
CZ		0.21			0.22	
DK	0.28	0.28	0.1	0.26	0.26	0.7
DE	0.22	0.22	-2.2	0.22	0.21	-4.3
EE		0.24			0.25	
GR	0.22	0.21	-3.8	0.24	0.22	-5.6
ES	0.22	0.21	-1.9	0.23	0.22	-3.8
FR	0.28	0.29	2.7	0.27	0.28	3.6
IE	0.31	0.31	-0.5	0.28	0.28	0.2
IT	0.21	0.21	0.6	0.22	0.21	-4.0
CY		0.29			0.22	
LV		0.22			0.25	
LT		0.26			0.23	
LU	0.29	0.28	-2.7	0.26	0.27	3.3
HU		0.23			0.24	
MT		0.27			0.24	
NL	0.27	0.27	0.0	0.26	0.26	-1.2
AT	0.23	0.24	2.3	0.22	0.21	-0.5
PL		0.25			0.23	
PT	0.25	0.23	-8.2	0.26	0.24	-7.0
SI		0.21			0.23	
SK		0.25			0.22	
FI	0.26	0.26	0.4	0.25	0.26	6.4
SE	0.27	0.27	2.0	0.26	0.27	6.8
UK	0.28	0.28	-1.3	0.26	0.25	-3.7

Table 8.10. Old age dependency ratios in the EU, 2004 and 2050

	2004			2050		
	EUROPOP1999	EUROPOP2004	% difference	EUROPOP1999	EUROPOP2004	% difference
EU25		0.25			0.53	
EU15		0.26	0.6	0.49	0.53	9.1
NMS10	0.25	0.20			0.50	
BE		0.26	-0.4	0.45	0.48	6.3
CZ	0.26	0.20			0.55	
DK		0.23	0.4	0.38	0.40	5.6
DE	0.22	0.27	1.4	0.49	0.56	13.7
EE	0.26	0.24			0.43	
GR		0.26	-4.2	0.54	0.59	9.5
ES	0.28	0.25	-4.1	0.60	0.67	12.0
FR	0.26	0.25	0.9	0.46	0.48	3.9
IE	0.25	0.16	-0.4	0.40	0.45	13.1
IT	0.16	0.29	1.0	0.61	0.66	7.5
CY	0.29	0.17			0.43	
LV		0.24			0.44	
LT		0.22			0.45	
LU		0.21	-5.6	0.38	0.36	-4.5
HU	0.22	0.23			0.48	
MT		0.19			0.41	
NL		0.20	-0.5	0.41	0.39	-4.9
AT	0.21	0.23	-0.4	0.51	0.53	5.1
PL	0.23	0.19			0.51	
PT		0.25	5.3	0.44	0.58	31.4
SI	0.24	0.21			0.56	
SK		0.16			0.51	
FI		0.23	1.1	0.44	0.47	6.4
SE	0.23	0.26	-0.5	0.42	0.41	-3.0
UK	0.27	0.24	2.9	0.42	0.45	8.1

Table 8.11. Results alternative scenarios EUROPOP2004, EU15, 2050

	Low	Base	High	No migration	High Fertility
Total population (x 1000)	334753	384356	445499	336358	413585
Age group 0-14 (x 1000)	37769	51792	70366	43499	65402
Age group 15-64 (x 1000)	189019	217075	250118	183924	232695
Age group 65+ (x 1000)	107965	115489	125015	108935	115489
Young age dependency ratio	0.20	0.24	0.28	0.24	0.28
Old age dependency ratio	0.57	0.53	0.50	0.59	0.50

Table 8.12. Summary of comparisons

	Assumptions [1]					Outcomes [3]			
		Mortality							
	Fertility	F	M	Net migration	Base population [2]	Total population	Population decline	Working-age population	Age dependency ratios
EU15	n.a.	n.a.	n.a.	n.a.		m,L		+	O
Belgium	–	+	+	+		m,L		++	–y,O
Denmark		+	+	–		–l	←	–	O
Germany	–	+	+	–				–	–y,**O**
Greece	–	+	–	+	+	s,M,l			–Y,O
Spain	–	+	+	+	++	**S,M,L**	→	+++	–y,**O**
France	+	+	+	+		L		+	y,o
Ireland		+	+	+	+	s,M,**L**	n	**+++**	**O**
Italy	**–**	+	+	+		s,m,L	→	++	–y,O
Luxembourg		+	+	+		M,**L**	n	**+++**	y,–o
Netherlands	–	–	+	–			←		–o
Austria	–	+	+	+		m,L		++	O
Portugal	–	+	+	**–**	+	s,–l	⇐	---	–Y,**O**
Finland	+	+	+	+		M,**L**		+	Y,O
Sweden	+	+	+	+		s,M,**L**	N	**+++**	Y,–o
United Kingdom	–	+	+	+		L		+	–y,O

[1] n.a. : not applicable;
− / + : assumption EUROPOP2004 lower (−) or higher (+) compared to EUROPOP1999 in line with most recent observations
− / **+** : assumption EUROPOP2004 lower (−) or higher (+) compared to EUROPOP1999 **NOT** in line with most recent observations
[2] + , ++ : total population base year EUROPOP2004 outnumbers population 2004 according to EUROPOP1999 by 2 to 5 per cent (+) or by 5 to 10 per cent (++)
[3] s,m,l` : population EUROPOP2004 outnumbers population EUROPOP1999 by 2 to 5 per cent for the short (s), medium (m) or long (l) term; by 5 to 10 per cent (S, M, L); or by more than 10 per cent (**S**, **M, L**)
−l : population EUROPOP2004 is less than population EUROPOP1999 by 2 to 5 per cent for the long (−l) term
← , ⇐ : slightly (←) or much (⇐) earlier population decline in EUROPOP2004 than in EUROPOP1999
: slightly later population decline in EUROPOP2004 than in EUROPOP1999
n / N : no decline in EUROPOP1999 and EUROPOP2004 (n); decline in EUROPOP1999, but NO decline in EUROPOP2004 (N)
+ / − : working-age population EUROPOP2004 larger (+) or smaller (−) than working-age population EUROPOP1999 by 2 to 5 per cent (+/−); by 5 to 10 per cent (++ / −−); or by more than 10 per cent (+++ / −−−); bold symbols: size working-age population 2050 outnumbers 2004
y , o : young (y) and old (o) age dependency ratio EUROPOP2004 is larger or smaller (−) than EUROPOP1999 by 2 to 5 per cent (y,-y, o, -o); by 5 to 10 per cent (Y, -Y, O); or by more than 10 per cent (**O**)