Population studies, No. 50

Population ageing and its challenges to social policy

Study prepared for the European Population Conference 2005

Ronald Schoenmaeckers, Irena Kotowska

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Foreword

Policy challenges posed by major demographic developments and possible responses to them were debated at the European Population Conference which took place at the Council of Europe in Strasbourg on 7-8 April 2005. The Conference was organised by the European Population Committee in cooperation with the Parliamentary Assembly and the Congress of Local and Regional Authorities of the Council of Europe. The discussions at the Conference centred on four key demographic issues:

- Policy implications of changing family formation;
- Population ageing and its challenges to social policies;
- Impacts of migration on society and policies and
- Vulnerable population groups and social policies.

In preparation for the Conference, the European Population Committee commissioned a number of background papers for each of the key topics, which were later assembled into thematic population reports.

This volume reviews the major demographic challenges posed by population ageing and its impact on policies, such as health policies, employment, public expenditure and social relationships. It contains two studies written by Ronald Schoenmaeckers and Irena Kotowska. The introduction is based on Ronald Schoenmaeckers' presentation at the conference as the keynote speaker for the session on population ageing.

The Action Plan of the Third Summit of Heads of State and Government of the member States of the Council of Europe mentions ageing as a major challenge to social cohesion. Population ageing is indeed a global phenomenon which affects European countries in particular, putting increased pressure on the financial sustainability of current European social systems. This is an outstanding and a very visible feature of European societies caused by the structural changes in fertility and mortality.

Faced with the shrinking working-age population, policy-makers are, or shortly will be, facing the need to review their policies towards older workers. Policies should be developed to improve the employment prospects of older workers and create a favourable environment and institutional framework for active ageing. While at the international and national levels

increased attention to these issues can be observed, this change is less obvious at the individual and corporate level. To be effective, the concept of active ageing has to be accompanied by a set of comprehensive measures in the areas of education, social policy, pension reform, employment and the working environment. The debate during the Conference showed that governments have an important part to play and can no longer be content with a "laissez-faire" approach.

I would like to thank the authors of this publication, Ronald Schoenmaeckers and Irena Kotowska for their contribution towards the success of the European Population Conference and it is with great pleasure that I present here the product of their work.

The European Population Committee through its population studies has long contributed to a better understanding of population trends, in response to a growing demand from policy-makers for demographic analysis. I would also like to pay tribute to the high quality and clear policy relevance of the work carried out by this Committee and to express my gratitude to all its members.

Alexander Vladychenko
Director General of Social Cohesion

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I. Synopsis:[1] disaster scenario or success story?

Ronald C. Schoenmaeckers

This synopsis offers an overview and summary of the main findings of the report on "Population Ageing and its Challenges on Social Policies" presented in Part II of this volume. Both reports were prepared for the European Population Committee to be presented at the European Population Conference which took place on 7-8 April 2005.

The phenomenon of population ageing is regarded with much distrust as it is generally believed that older population structures would be bad for our economies, and consequently a danger to the existing social security systems. Among other things, we are afraid that in the future it will become difficult, or even impossible, to have our pensions paid out.

However, at an already early stage in the analysis it became clear that there are reasons to be optimistic. Hence the subtitle: "Disaster scenario or success story". I hope that I will be able to share with you some of my optimism. However, let me immediately add that optimism should not be confused with over-confidence. As we will see, there are some serious problems, but these can be overcome on the condition that we identify and implement the right policy measures. This will also require much inventiveness, perseverance, and very likely, much political courage and will.

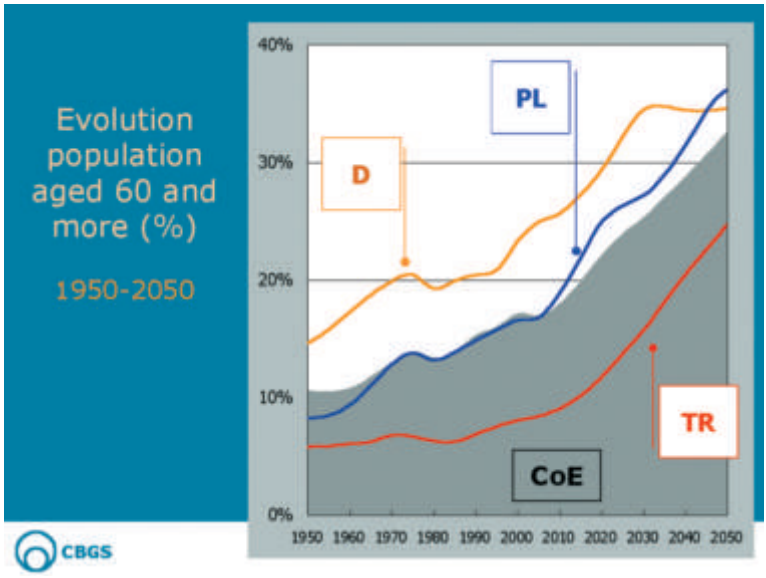
This paper concentrates on two issues:

- The economic and financial impact of population ageing, more specifically the question of whether rising GDP-levels can keep pace with the negative effect of the shrinking work force; This is illustrated by some results based on simulation exercises.
- The age profile for public health expenditures, more specifically the question of whether an older population structure necessarily implies higher expenditures. Some points of discussion on this issue are presented.

1. This synopsis is based on the keynote speech presented by the author at the European Population Conference 2005, Strasbourg, 7-8 April 2005.

Before dealing with these points in more detail, let us first present some demographics. Population ageing is the phenomenon associated with the process that populations are increasingly growing older. It is the consequence of changing fertility and changing mortality levels. It is the combined consequence of declining fertility at low and extremely low levels (at below or around replacement level) and of increased chances of survival at old ages. At the first stages of the process, declining fertility is the dominant factor; but gradually low mortality at older ages is becoming the driving force of the process. The importance of this can be illustrated with some statistics which are presented in Figure 1.

Figure 1 – Evolution of the population aged 60 and more (%) 1950-2050



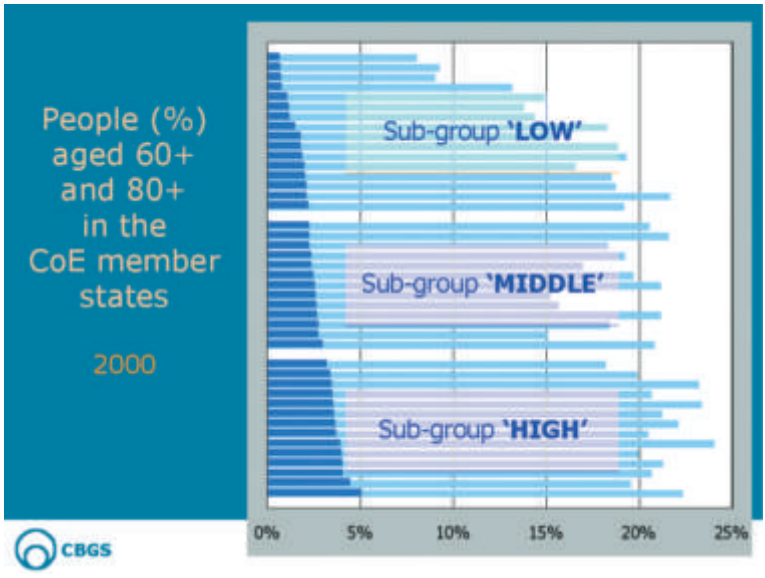
Over a period of 100 years, the proportion of people aged 60 and more will triple, from a mere 11% in 1950 to no less than 33% in 2050. These are astonishing figures. However, it should be said that population ageing is not exclusively a European phenomenon. Population ageing affects the entire world population. Also at world level one can observe a sharp increase in the proportion of older people. The greatest difference is that the proportions are higher in the European countries than in the rest of the world. The difference is between 5% and 9%, with maximum values at around 11%.

There is a lot of heterogeneity among the member states. The proportions of people aged 60 and more for Germany, Poland, and Turkey illustrate this.

Germany, with a current population size of some 82 million inhabitants, is one of the countries with the highest proportions; Poland, with a population size of 38 million shows moderate proportions; Turkey, with 70 million inhabitants is one of the countries with the lowest proportions. The differences are the result of different demographic histories. Nevertheless, as the data show, by 2050 Turkey too can expect to have one quarter of its population to be aged 60 and more.

The heterogeneity in the proportions of older people among the member states is also illustrated in Figure 2. Here the member states are ranked by the proportion of oldest old, i.e. of those aged 80 and more. The countries with the lowest proportions are at the top. The proportions oldest old is represented by the dark blue bars, while the light blue bars represent the proportions of people aged 60 and more in the population. All values refer to the situation in 2000.

Figure 2 – People (%) aged 60 and more and 80 and more in the Council of Europe member States, 20002

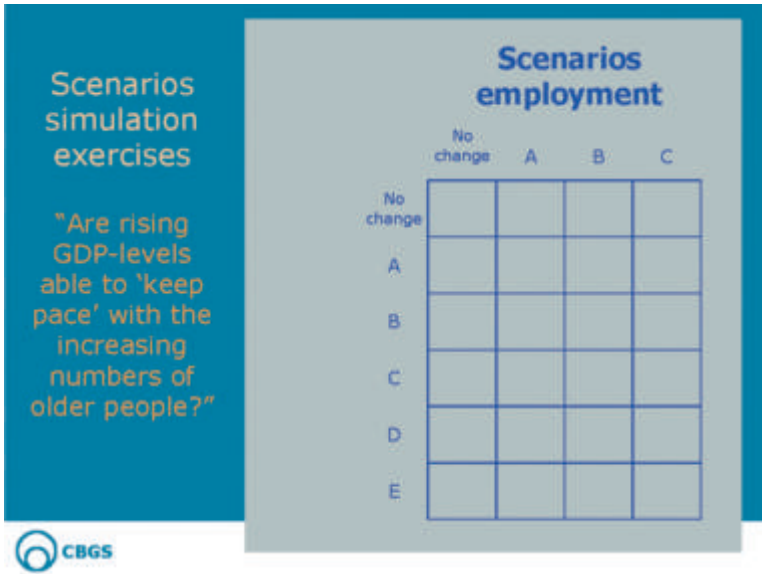


2. For individual country identification see figure 2.3 in part II of this volume.

The member states are divided into three sub-groups; this is the result of a statistical exercise that in fact was made in a former analysis and the categorisation is considered useful for analytical purposes. The three sub-groups have been called 'LOW', 'MIDDLE', and 'HIGH', with the denominations referring to the relative importance of older people in each group of countries.

The main concern of this presentation is the question "Are rising Gross Domestic Product (GDP) levels able to keep pace with the increasing numbers of older people?" To answer this question, we have made use of some simple simulation exercises as outlined in Figure 3. In its essence the GDP is a function of, on the one hand a mixture of demographics – the number of people at working-age – and of activity – the number among those at working-age in employment – and, on the other hand, of productivity – the added-value produced by each worker. Consequently, the scenarios are related to both levels of employment and levels of productivity.

Figure 3 – Scenarios underlying the simulation exercises ("Are rising GDP-levels able to keep pace with the increasing numbers of older people?")



For levels of employment we have retained 4 scenarios: 'No change', and scenarios A, B, and C. For levels of productivity we have retained 6 scenarios: 'No change', scenarios A, B, C, D, and E. For obvious reasons, the scenarios related to employment assume increased levels of employment; and those related to productivity assume increased levels of productivity.

We will start by showing the effects of assuming increased levels of employment. But first, let us have a look at the specificity of each scenario. The scenarios have been derived from actual employment rates for some 28 European countries as collected during the last round of censuses. They are as follows:

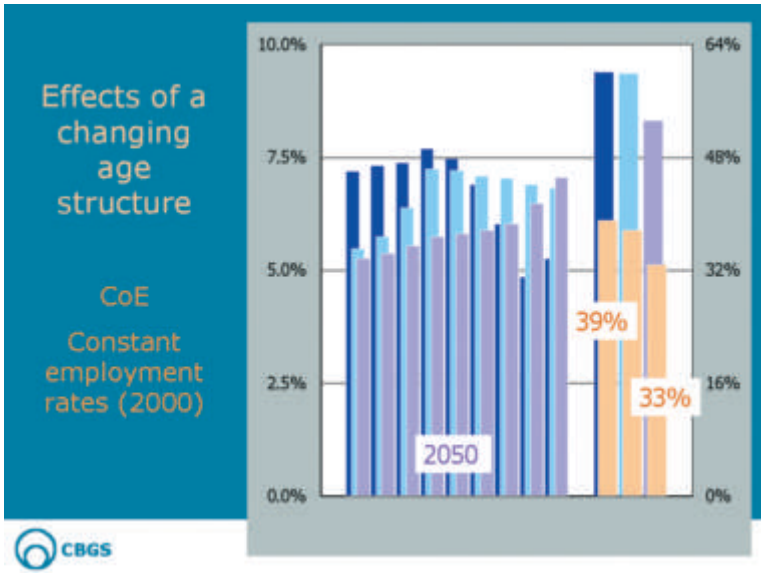
- 'No change' – Constant employment rates, equal to those observed in 2000;
- Scenario A – Employment rates (for both men and women) equal to those of the Scandinavian model. Denmark, Finland and Sweden are the countries showing the highest employment rates overall. They also show relatively high rates for employment after age 50. And in all three countries women show relatively high employment rates;
- Scenario B – Rates of scenario A, but reduced drop-off after age 50;
- Scenario C – Rates of scenario B but increased at all ages by 2.5% for men and by 5% for women;

It should be noted that the scenarios have cumulative effects. Preliminary analyses reveal that:

- the patterns and levels of employment differ greatly among member states;
- there is a sharp drop-off in employment after age 50;
- employment levels are lower for women than for men.

Before turning to the results as such, let us see what the effects are of a changing age structure on the level of employment. The results give the global effect that can be expected for all member states of the Council of Europe. We focus on the changes in the age structure for ages 20-64, i.e., the ages corresponding to the working-age. Figure 4 shows the situation in 2000, 2025, and 2050.

Figure 4 – Effects of a changing age structure in employment, 2000, 2025, and 2050



The bars on the left give the proportions by 5-year age group; the bar on the right gives the corresponding proportion of people aged 20-64 in the population; as is shown, in 2000 this age segment represented 60% of the total population. Finally, linking the age structure to the employment rates as observed around 2000 gives an overall employment level of 39%.

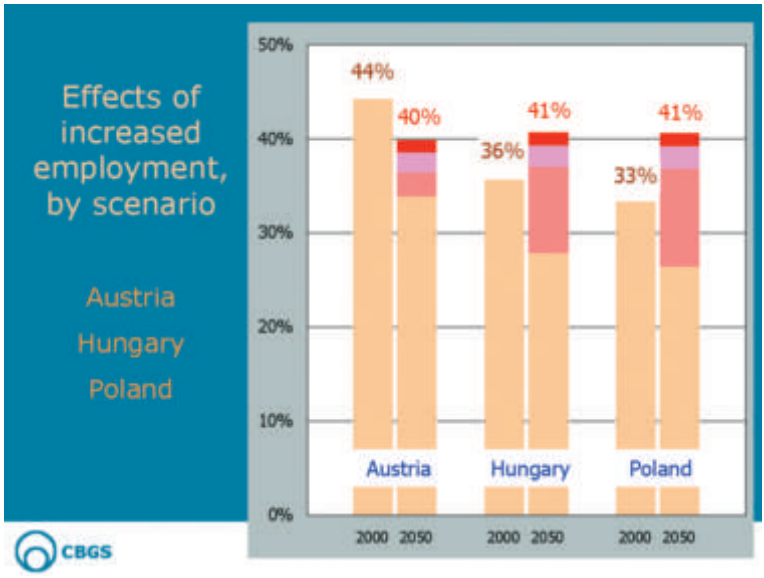
Figure 4 furthermore shows that between 2000 and 2025 there is only a relatively small decline in the percentage of people aged 20-64, associated however with a somewhat greater decline of the overall employment level.

The differences are greater for 2050. It is clear that the age structure is shifting toward the 'right'. There is an increasingly high proportion of people in the older age groups. Since in these age groups employment rates are smaller this has a rather important effect on the employment rate overall, which is now only 33% – or 6 percentage points less than the rate in 2000 (or a drop by 15%).

What now are the effects of increased employment rates? More precisely, to what extent may increased employment be able to compensate for the adverse effect of an older population structure on the proportion of people at working-age? We show the results for just three countries: Austria,

Hungary, and Poland (see Figure 5) Austria is a country with relatively high proportions of older people; Hungary has intermediate proportions and Poland is a country with, so far, relatively low proportions of older people.

Figure 5 – Effects of increased employment by scenario, comparison situation 2000 and 2050, for three countries (Austria, Hungary, Poland)



Keeping employment rates equal to those that could be observed around 2000, the changes in the age structure would bring overall employment level down to 34% in Austria – a whole 10 percentage points less than the level in 2000 (effects shown in yellow). Hungary would experience a decrease by 8 percentage points, from 36% to 28% and Poland would experience a decrease by 7 percentage points, from 33% to 26%.

Let us see now to what extent increased employment would compensate for these declines occasioned by demographic change.

Increasing the employment rates according to scenario A certainly increases overall employment in all three countries (effects shown in light red). However, the effect is not the same in all countries. The effect of scenario A (Scandinavian model) is much greater in Hungary and in Poland than it is in Austria. Indeed, in both countries the effect is to push employment to levels that are higher than the level in 2000. The most important characteristic of

the Scandinavian model is the relatively high employment for women. The small effect that is observed for Austria indicates that employment patterns in Austria must be fairly close to the ones observed in the Scandinavian countries.

We next see the effects of scenario B, rates of scenario A, but reduced drop-off after age 50 (shown in pink) and finally also the impact of scenario C (shown in red). Eventually, for both Hungary and Poland, the cumulated effect of all scenarios would bring employment in 2050 up to a much higher level than the one that was experienced in 2000: higher by 5 percentage points in the case of Hungary and higher by no less than 8 percentage points in the case of Poland. The cumulated effect is clearly smaller in the case of Austria. Here, the employment level in 2050 would remain 4 percentage points short of the level observed in 2000. Note also that neither Hungary nor Poland reaches this level of 44%.

The next step of the exercise is to combine the results of increased employment with those of increased productivity and to measure the impact on GDP. The scenarios for increased productivity were somewhat arbitrarily fixed at annual increases of 1.5%, 1.75%, 2%, 2.5%, and 3% (see Figure 6). Note, however, that they are in line with the assumptions of national planning offices. The Belgian Planning Office, for example, assumes an annual growth rate of 1.75% in its forecasting exercise of economic growth.

This presentation is not able to show all the results of the combined effects of increased employment and increased productivity. As is indicated in Figure 7 the presentation is limited to the results of the combined effects of 'No change' – both employment and productivity are being kept constant at the levels of 2000 –; of scenarios 'A'; and of scenarios 'B'. In other words, only the combinations resulting in the smallest effects are shown.

For employment, scenario 'B' corresponds to the rates of the Scandinavian model with a somewhat smaller drop-off after age 50; and for productivity scenario 'B' corresponds to a growth rate of not more than 1.75% annually.

It should also be noted that the basic idea was to check to what extent increasing GDP levels could keep pace with the increasing proportions of older people in the populations. We therefore start by showing the increase of those aged 65 and more. Figure 8 presents the increase in the proportion from 2000 to 2050 by sub-groups 'HIGH', 'MIDDLE' and 'LOW', with the sub-groups based on a ranking of the number of older people in the population. Sub-group 'HIGH' includes the member states with relatively high proportions of older people; sub-group 'LOW' with relatively low proportions of older people.

Figure 6 – Scenarios underlying assumptions for increased productivity

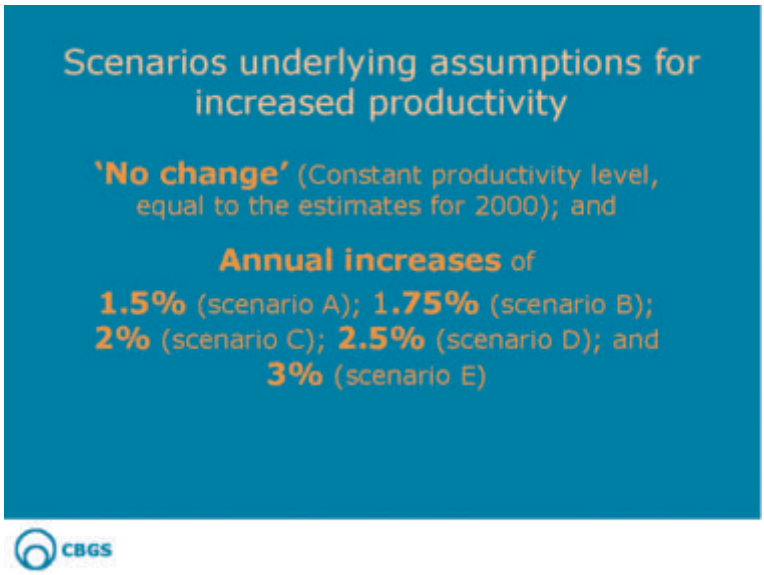


Figure 7 – Shown combinations of scenarios employment and productivity

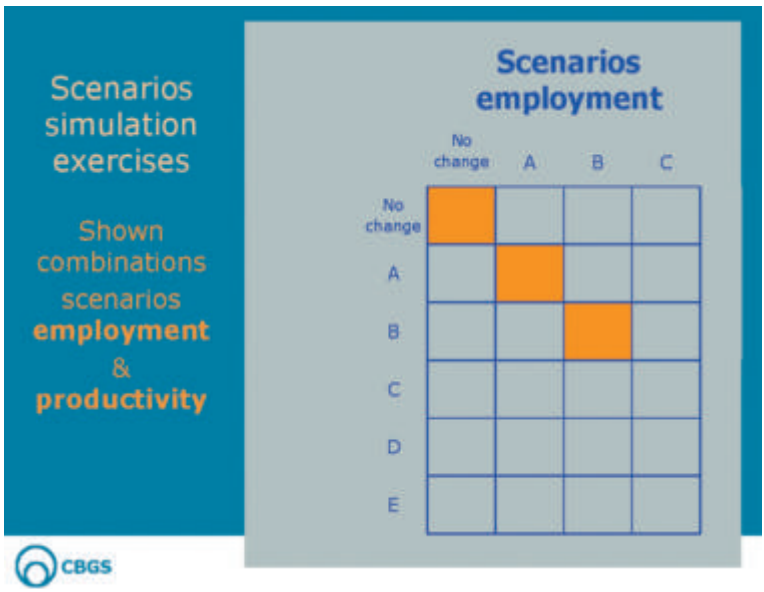
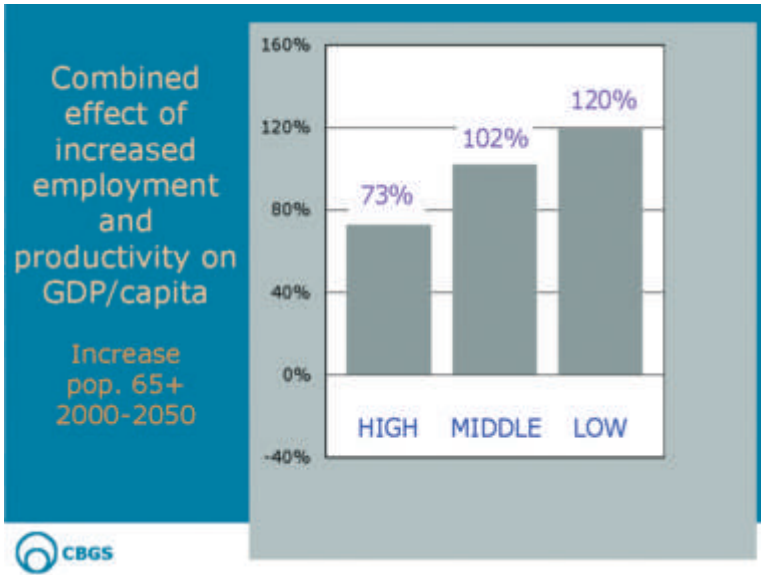


Figure 8 – Increases in the proportion aged 65 and more, sub-groups HIGH, MIDDLE, and LOW



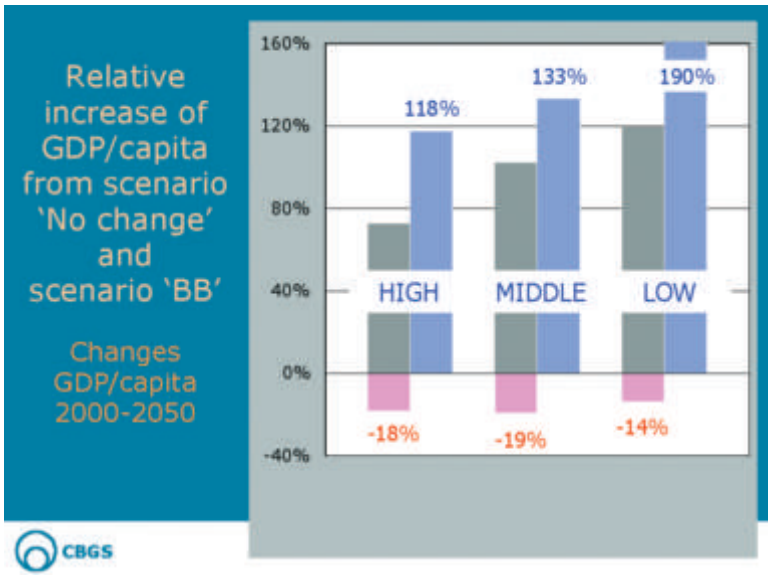
As can be seen, between 2000 and 2050 in sub-group HIGH the proportion of aged 65 and more is expected to increase by 73%; in sub-group MIDDLE by 102%; and in sub-group LOW by 120%.

Let us now turn to the increases in GDP per capita that can be expected from the basic scenarios (Figure 9). Not surprisingly, because of the demographic change, more specifically the shrinking of the labour force, the 'No change' or constant scenario would result in a lowering of the GDP per capita, and this in all three sub-groups.

The relative increases that result from scenario 'AA' (not shown in Figure 9) keep pace more or less with the increase in the proportion of people aged 65 and over; and clearly with scenario 'BB' the increases in GDP per capita far exceed the increase in the proportion of people aged 65 and over. In the case of sub-group LOW the increase would be as high as 190% – or 1.5 times more than the increase in the proportion of people aged 65 and more.

According to these results, fairly modest increases in employment and in productivity would result in increases in economic output that should compensate for the negative effect of an increasing older population structure on the labour force. This is far from a disaster scenario. However, one should not be

Figure 9 – Relative increase in GDP per capita from scenario 'No change' and scenario 'BB', by sub-group

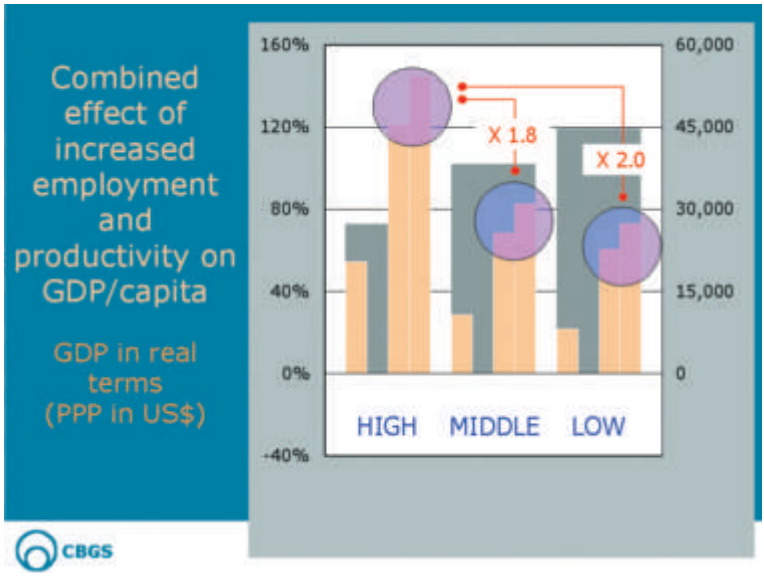


too optimistic, these results also point to a different problem which might be the real challenge that member states could be facing in the next decades. The nature of the problem becomes obvious when the real terms of GDP levels are taken into account. This is presented in Figure 10.

GDP-levels in real terms correspond to the yellow bars, and their values can be read from the y-axis on the right. Let us forget about the relative increases in GDP and concentrate on their levels in real terms. There is no doubt that increased employment and increased productivity will produce important increases of GDP-levels per capita in all countries. The important observation however is that the levels are much higher among the member states in sub-group HIGH than among the member states in the other sub-groups – in both instances about twice as high.

This points to the major challenge that lies ahead. In order to be able to provide similar services to their senior citizens as those enjoyed by the populations in the member states in sub-group HIGH, member states in sub-groups MIDDLE and LOW will need to make much greater efforts. Strictly speaking, this is not an issue of population ageing. This is a general issue that concerns all citizens, regardless of their age.

Figure 10 – Increase in GDP per capita in real terms from scenarios 'AA' and 'BB', by sub-group



To obtain similar levels of GDP per capita as those of the member states in sub-group HIGH, the countries of sub-groups MIDDLE and LOW will need to achieve higher employment and especially much higher increases in productivity, of no less than 3% per annum.

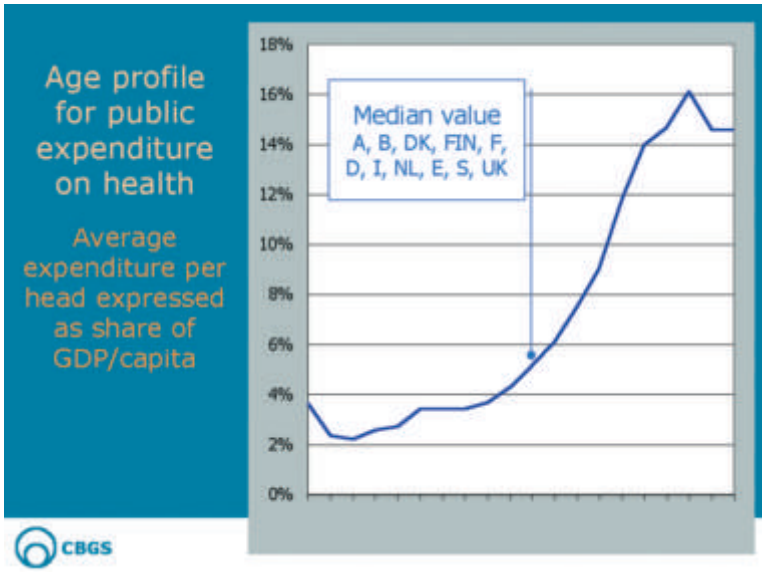
Should this come as a surprise? Not really, because sub-group HIGH is constituted by the wealthy western European, whereas sub-groups MIDDLE and LOW are mainly the countries with economies in transition from central and eastern Europe.

Is the goal of catching up unrealistic? We do not believe so. In the past other countries have been able to become strong economies within a couple of decades. However, what makes the situation specific is, to paraphrase Andras Klinger,[3] "that transition economies do not just need sustained high economic growth needs for the sake of *economic development and catch up*. In addition, they need to make an extra effort in order to meet the challenge of population ageing".

3. Klinger, A. (2002), 'Labour Market Responses to Population Ageing and Other Socio-Demographic Change', *Issue Paper*, UNECE (afternoon session, 7 May 2002).

Let us now turn to the issue of public expenditure on health care. The interest of this issue in a discussion on population ageing stems from the general belief that an older population will push expenditures upwards, to probably unsustainable levels. At first sight, there are indeed indications that health expenditures are age-related. Figure 11 shows the age profile for public expenditures on health care expressed as the average expenditure per head expressed as share of GDP per capita. The data stem from a report of the Economic Policy Committee of the DG for Economic and Financial Affairs of the European Commission.

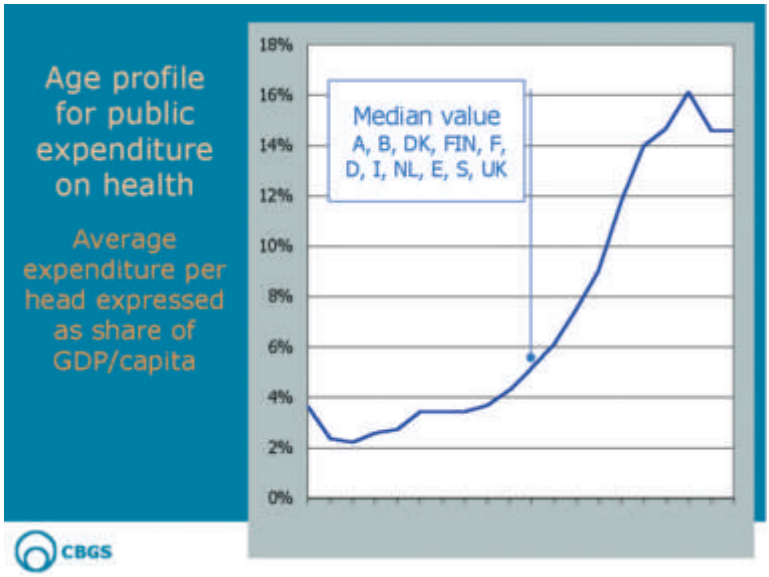
Figure 11 – Age profile for public expenditure on health



The graph corresponds to the median value for 11 countries: Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, and the UK. All countries show relatively high proportions of older people in their population and all are part of sub-group HIGH. The graph suggests a clear positive relation between health and age.

Figure 12 shows basically the same graph. However, this time expenditure-values are weighted by the number of persons in each 5-year age interval. Initially, the graph refers to the situation in 2000 for countries in sub-group HIGH (graph in yellow). The next two graphs takes into account the prospected population age structures for 2025 (pink) and 2050 (red).

Figure 12 – Age profile for public expenditure on health weighted by population numbers: situation in 2000, 2025, and 2050



One can observe a clear increase of expenditures for the oldest age groups. This change would imply – the result is not shown in the graph – an overall increase of public health expenditures by some 22% between 2000 and 2050. Seen from this angle, it appears that older population structures would indeed push expenditures on health care severely upwards.

However, we wonder whether the used statistics are not seriously misleading. Kieffer[4] has come to the conclusion that the observed age profile for public expenditure on health care closely resembles ... the average expenditure on health care during the last 48 months of life. In other words, the graph would not so much reflect the deterioration of health with increasing age, but rather of the age pattern of mortality – and of the effort made by the medical profession to postpone the event of death as much as possible.

4. Kieffer, R. (2004), *L'impact du vieillissement démographique sur les dépenses de santé* (The impact of population ageing on health expenditures). Paper presented at the Colloquium *Les changements démographiques et leurs répercussions sur les différentes parties de la Grande Région*, Luxembourg, 21-22 October 2004 (see www.demographie.forum-europa.lu for more info on the colloquium).

This is a puzzling idea. At any rate, one must acknowledge that not everything is known regarding health status and age and its effect on the cost of health care.

There are serious indications that increasing life expectancies would go together with an increase in the number of years in good health (Lutz & Scherbov, 2003).[5] This implies that the need for health care is not necessarily rising with rising proportions of older people. The reverse could be true.

Furthermore, American studies indicate that better health care has made it more likely that those born with developmental disabilities will enjoy life expectancies comparable to those without disabilities (Doka & Lavin, 2003).[6] Most likely that this not only applies to people born with developmental disabilities. Improved – and more costly – health care is probably the key factor for explaining the increases in life expectancy. Heart diseases, blood pressure or diabetes are, for example, no longer deadly with the right treatment. Recent statistics illustrate this point. How else can one explain the rise in the UK of the proportion of older persons with limiting long-term illness between 1990 and 2000?

Finally, health costs are also largely determined by non-demographic factors such as the consumption pattern of patients (and the prescription pattern of doctors) and the price of drugs. All these points need to be understood before concluding that it is an older population structure that is responsible for the rise of public expenditures on health care.

5. Lutz, W. and S. Scherbov (2003), Will population ageing necessarily lead to an increase in the number of persons with disabilities? Alternative scenarios for the European Union, *European Demographic Research Papers*, 2003, no. 3, Vienna Institute of Demography
6. Doka, K.J. and C. Lavin (2003), The paradox of ageing with developmental disabilities: Increasing needs, declining resources, *Ageing International*, Vol. 28 (2): 135-154.

II. Population ageing and its economic and financial implications

Ronald C. Schoenmaeckers

> *"Viewed as a whole the problem of ageing is no problem at all. It is only the pessimistic way of looking at a great triumph of civilization."*
> Frank Notestein (1954)

Preface

The world population is increasingly getting older. Population ageing can be considered to be the last leg of what is commonly known as the demographic transition - the transition of demographic regimes characterised by high fertility and mortality to regimes characterised by (very) low fertility and mortality.

Not all countries in the world have reached the same stage in the demographic transition. The European countries (as well as other industrialised countries) have reached an advanced stage in the transition trajectory. This explains why the highest proportions of older people are observed in these countries. The fact that not all countries have reached the same stage in the trajectory also explains the differences in the proportions of older people that can be observed between countries of the European area.

Population ageing implies that people live longer than ever before. As such, the phenomenon should be considered, to use the wording of Frank Notestein, an American demographer, as "a great triumph of civilization". All people in the world, regardless of their background, religion or civilisation strive to reach an old age. It is therefore rather remarkable that in general population ageing is described as being a rather catastrophic phenomenon, as a demographic process that will make impossible the payment of pensions as well as of public expenditures on health care, as a phenomenon that, in short, would destroy the sustainability of existing social policies.

There is no doubt that population ageing will have far reaching consequences on society. One may however wonder whether the greatest consequences will be of economic or financial nature. Most likely the greatest consequences will concern social relationships. Population ageing will lead to entirely new social fabrics: more generations will survive next to each other

than ever before; intergenerational solidarity will take a different nature; individual life courses will change, both professionally and personally; in short, the entire societal structure and organisation will change – will need to change – to keep up with the new demographic reality.

However, the topic that today has the clearest attention of policy makers, the media and the public at large are the economic and financial impact of population ageing.

The purpose of this study is to indicate that the economic and financial problems that are associated with the phenomenon are not unavoidable – or can at least be attenuated to a great extent when taking into account the likely industrial evolution of our societies. This is not to say that things will be easy. The needed changes, for example increased labour force participation will be profound and their realisation will probably not happen without appropriate policy measures. But the results below indicate that the future is far from catastrophic (although let it be clear from the start that the member states of the Council of Europe with the weakest economies are likely to face serious problems).

How did we proceed in showing the financial and economic impact of population ageing? Both will be explained in detail in the introductory lines. Suffice to say at this point that, having a formal training in demography, our starting point was the demographic evolution. The next step was to make the linkage with two economic parameters: labour force participation and productivity level, both crucial factors in determining the GDP-level. The second and final step was to make assumptions regarding the evolution of these economic parameters and to assess their impact on GDP-levels. According to these results, with these future GDP-levels it seems possible to cope with the expected effects of the demographic change.

1. Introduction

1.1. Scope and limitations of the study

To some extent the present study is the continuation of a previous analysis by the same author, on the subject.[1] One of its major results, the breakdown all Council of Europe member states into three broad statistical groupings, will be used throughout the present analysis. The breakdown consists of cat-

1. Schoenmaeckers, R.C., 'Demographic characteristics of the oldest old', Population Studies, No. 47, (Council of Europe Press, Strasbourg, 2004).

egorising the member states according to their proportion of oldest old, i.e. of persons aged 80 and more. The breakdown will be explained into more detail in figures 2.3 and 2.4 below.

The previous study focused on explaining the differences in the proportions of older persons in the member states; on the changing age and sex structures among older persons; on their living arrangements; and finally on some results regarding their health status and disabilities.

The present study rather focuses on the financial and economic implications of population ageing. It will be shown that, *ceteris paribus*, the increasing numbers of older persons in the populations put a severe strain on the existing social systems. To the extent that older persons are in need of more health care it is feared that their increased number may provoke an explosion of the public expenditures on health care.

Furthermore, the declining numbers of persons of working-age (those aged 20-64)[2] who constitute the adult population to support the young (0-19) and the old (65 and more) are considered a threat for economic performance, and as such may, among others, undermine the sustainability of the existing pension systems.

The main objective of the present study will be to show that demographic change is indeed an important determinant for economic performance but that it would be wrong not to take into account other factors and developments when discussing the future of our societies. As will be seen, increased labour force participation (of both men and women) and increased labour productivity, both of which can be considered to be realistic future developments, could ease the demographic strain to a great extent. Both will be demonstrated by using simple simulation models in which demographic forecasts are linked to assumptions regarding labour force participation and labour productivity (and hence GDP output per capita).

However, it is not within the scope of the study to present detailed simulation results for each individual member state. Although the study does include the results for some individual countries (mainly selected on the basis of data availability), this is merely done to illustrate the differences between

2. Ages 20-64 are the age boundaries used in the present study to determine the 'working-age' population or the population that is 'economically active'. The socio-economic significance of these boundaries is function of the average age young people finish their studies and of the legal age of retirement, and as such may vary between countries. Their use is however justified within the context of an international comparison.

member states, and to indicate the reasons thereof. The nature of the simulation exercises is in no way comparable to those applied by the national planning offices or planning ministries, which main task is to enhance and forecast economic development, thereby using many more complex models. As such, the results presented below are no substitute for national economic forecasts (although, eventually, both seem to lead to similar conclusions).

Finally, although the study suggests ways to cope with the impact of population ageing, it in no way presents guidelines for their implementation. This is the work and responsibility of policy makers. Our goal is limited to contributing to the political and social debate.

1.2. Sources and used data sets

The main specificity of the present study is to link economic parameters to available demographic forecasts. The demographic forecasts used stem from the *Population Prospects* that are elaborated by the United Nations Population Division. The *Population Prospects* is a biannual exercise and the results used here are those from *The 2002 Revision* (UN, 2003a).

As is common with population projections, the *UN Population Prospects* are also based on several variants regarding the future evolution of fertility and mortality. The results used here all correspond to the medium variant or to the outcome that appears to be most plausible.[3] In some instances the results of *The 2002 Revision* (in which the projections are limited until 2050) are complemented with results of long-range population projections (UN, 2003c, 2004).

3. The assumptions used in population projections are always subject to criticism. In the case of the medium variant fertility levels of low-fertility countries — mainly the European countries with fertility levels far below replacement fertility (2.1 children per woman) at the turn of the century — are assumed to increase after 2000 reaching 1.85 children per women by 2045-2050. To many demographers this is a rather optimistic outlook to the extent that so far there are no signs of a sustained increase of completed fertility in the European area; at best, there could be a stabilisation of fertility, as, for example, in Belgium, at around 1.8 children for completed fertility (see Council of Europe, 2003). As such, the medium variant is likely to produce (slightly) underestimated values for the proportions of older people (slightly, since the margin in which fertility may vary is at any rate rather small). However, as we will see in further detail below, in the long-run, the main demographic parameter determining population ageing is not fertility but rather mortality. The documentation note accompanying The 2002 Revision stipulates that "mortality is projected on the basis of the models of change of life expectancy produced by the United Nations Population Division. A medium pace of mortality decline is generally used to project future mortality levels." For Europe this corresponds to an increase of life expectancy at birth (both sexes combined) from 74.2 years (for 2000-2005) to 80.5 years (for 2045-2050). In some figures, countries are identified by their abbreviation. The abbreviation is the one used in the publications of the Council of Europe.

One particular attraction of using the *UN Population Prospects* is that it comprises data on 43 member states of the Council of Europe.[4]

The second important data set used stems from Eurostat and concerns the *Community Programme of Population and Housing Censuses in 2001* (Eurostat, 2004a). Contrary to *the UN Population Prospects*, the *Community Programme of Population and Housing Censuses in 2001* of Eurostat is a new initiative bringing together for the first time census results of in total 28 European countries.[5] As the title suggests, the data set stems from the 2001 round of censuses.

The *Community Programme of Population and Housing Censuses in 2001* is the source for the economic activity and employment rates (section 3) and for living arrangements of older persons (section 5) at the turn of the 20th century.

A third important source of information has been the *Human Development Reports* (HDR) of the United Nations Development Programme (UNDP). The HDR-reports are an annual publication, which started at the beginning of the 1990s. The HDR-reports include a series of economic, social and demographic indicators. As such it also provides information on GDP (Gross Domestic Product) and GDP per capita by country. Their use for the present study was justified because the GDP-estimates are expressed in US Dollar

4. Anno 2003 the Council of Europe comprises in total 45 member states. The present study only comprises data on 43 member states. Andorra, Liechtenstein and San Marino are not included. The UN Population Prospects only provides information on demographic parameters of countries of 100,000 inhabitants and more (for countries with fewer inhabitants the data set only includes the population total). The combined population of Andorra, Liechtenstein and San Marino is less than 0.02% of the total population of all member states. It was however decided also to include, when appropriate, the data for Belarus (see, for example, figures 2.3 and 2.4). See also footnote 1 on page 16 of Schoenmaeckers (2004b).

5. By and large the countries included correspond to the 25 EU member states. Of the EU member states the data of Spain and Malta are missing; on the other hand, the data set also includes results for Bulgaria, Liechtenstein, Norway, Romania, and Switzerland. (The documentation map accompanying the data set is entitled 'Documentation of the 2000 Round of Population and Housing Censuses in the EU, EFTA and Candidate Countries'.)
The Community Programme of Population and Housing Censuses in 2001 is the end result of a joint initiative between Eurostat and the UNECE Statistics Division that started with the preparation of recommendations for the 2000 Round of censuses of population and housing in the ECE region. The data set that has been made available on CD-Rom is a provisional data set and is so far incomplete (for some countries, such as Belgium, some tables show missing data). As one can read in the introductory notes, Eurostat is still waiting for data from several countries. According to Eurostat this is the result of late censuses in some countries. A second, more complete edition is expected in the beginning of 2005.

terms and of the availability of GDP-estimates for 2000 in PPP US Dollar equivalents (Purchase Power Parity[6]), which provides the basis for an international comparison as foreseen here. The information of the HDP-reports is used in combination with the data of the *Community Programme of Population and Housing Censuses in 2001* in section 3.

Finally, use is also made of some scant and first results of the DIALOG-project (section 3) and of information drawn from an EPC-report (European Policy Committee) (section 4.2).

The DIALOG-project consists of several attitude surveys implemented in the beginning of the 21st century in some 13 European countries. The project is carried out under the auspices of the 5th Framework Programme of the European Commission.[7] One module of the questionnaire deals with attitudes and opinions regarding population ageing and the place of older persons in society.[8]

The EPC-report is in fact a report of the Working Group on Ageing of the Economic Policy Committee of the European Commission on the specific topic of 'Budgetary challenges posed by ageing populations: the impact on public spending on pensions, health and long-term care for the elderly and possible indicators of the long-term sustainability of public finances' (EPC, 2000). The EPC working group was composed of representatives from several national planning offices and ministries of economic affairs, as well as of representatives of the European Commission and the OECD. The information on public health expenditure on health care (figure 5.4) is directly derived from data of this report.[9]

1.3. Outline of the study

The first part of the study (section 2) will deal with the evolution of the proportions of older people in the world and in Europe. One particular item will

6. "At the PPP rate, one dollar has the same purchasing power over domestic GDP that the US dollar has over the US GDP. [...] PPP rates allow a standard comparison of real price levels between countries, just as conventional price indexes allow comparison of real values over time; otherwise, normal exchange rates may over- or undervalue purchasing power" (UNDP, 1999: 255).
7. The 13 participating countries can be taken as a fairly representative sample of the member states of the Council of Europe. They are: Austria, Belgium (or more precisely the Flemish Region in Belgium), the Czech Republic, Estonia, Finland, Germany, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, and Slovenia. At the time of writing, also Cyprus (Greek part) had joined the project, but data were not yet available.
8. In the present study use is made of only two questions (see figures 3.9 and 3.10).
9. We are especially thankful to Mr. Howard Oxley and Stephane Jacobzone from the OECD for having made available the individual country data that constitute the basis of figure 5.4.

be to indicate the heterogeneity between the member states of the Council of Europe with respect to the proportion aged 60 and over and aged 80 and over.

Section 3 addresses how population ageing may have an economic and financial impact among member states in the next 50 years. The methodology for this is to link population prospects to assumptions regarding employment and growth of GDP (Gross Domestic Product). In the text the main outcomes of the simulations are given; the actual assumptions and the corresponding parameters are explained in more details in the Annex.

Section 4 deals with two specific societal challenges: living arrangements and health expenditures. Neither topic has been analysed in depth. The reason for their inclusion was to illustrate that the effects of population ageing on society largely encompass other domains than economy or finance.

Section 5 is entitled 'Some final comments and considerations'. As announced above, the objective of the study is not to present solutions to the problems related to population ageing. (This would have been an impossible task to the extent that, as will become clear further below, solutions at the individual country level need to be tailor-made). The objective of the study is to give food for thought and as such contribute to the debate.

2. Population ageing: a global phenomenon

2.1. Changes at world level and the specific position of Europe

The world population is steadily getting older. In 1950 the number of persons in the world aged 60 and more was a mere 8 percent; by 2000 this value has grown to 10 percent and by 2050 it will be 21 percent (figure 2.1 and table 2.1). By 2200 close to one third (30.4%) of the world population at that time (8.97 billion[10]), corresponding to roughly 2.7 billion persons, will be 60 and more.

Population ageing is indeed a global phenomenon. The trend has set in all over the world and there is no return. Very rightly, one of the chapters of the publication of the UN Population Division dealing with the long-range projections is entitled 'The unavoidable ageing of the population'. There are however striking differences in the proportions of older persons between major regions. Clearly, Europe (and also Japan) shows much higher proportions than those observed in the rest of the world. Around the turn of the century, the proportion of people aged 60 and more in Europe was about double that of the world average (20.2% vs. 10.0%). Although in relative terms

10. Note that the projected 2200 estimate of 8.97 billion is hardly more than the world population estimate for 2050 of 8.92 billion (+0.06%).

the differences do get smaller, Europe is likely to continue having an older population structure during the next 100-200 years than the world average (figure 2.1 and table 2.1). To understand these differences one must go back in time and review the main characteristics of the demographic transition.

In short, the demographic transition refers to the transition of demographic regimes characterised by high fertility and mortality to regimes characterised by (very) low fertility and mortality. The first signs of changes in demographic regimes date from the second part of the 18th century and were observed in northern and western European countries (table 2.2). According to the theory birth rates started to decline following lower mortality rates, the latter being the result of better living conditions. The successive decline of mortality and birth rates resulted in a new demographic equilibrium characterised by low to moderate growth rates.

So far for the theory. A closer look at the historical patterns reveals that the decline in fertility levels must certainly have had other causes next to the lower mortality rates; there are indeed but a few countries where the changes show a pattern that may be interpreted as a form of causality. In his study on the Belgian fertility decline – Belgium was, next to France, the first country on the European continent to show a decline of marital fertility – Lesthaeghe (1977) came to the conclusion that the secularisation of society must have played a crucial role in bringing changes in fertility behaviour.[11]

In the beginning of the 20th century there was the general belief that also the less-developed regions would in their turn experience some sort of demographic transition. Because of colonisation, societies had become more modern, there was better hygiene and medical treatment so that mortality rates would fall and hence – still according to the theory – fertility would also decline. In general, life expectancy levels indeed increase – at least this is what can be derived from census results in the second part of the century (see, for example, Schoenmaeckers and Adognon, 1988) – but fertility levels did not decline, on the contrary they increased to levels never heard of before. Demographers and the public at large were no longer concerned with the processes known as the demographic transition but tried to grasp the importance of the population explosion (see, for example, the publication 'The Limits to Growth' of the Club of Rome, Meadows et al, 1972). The highest fertility levels were recorded in eastern Africa. In the 1960s and 1970s Kenya showed the highest fertility levels ever recorded, a total fertility rate of 8.12 children (UN, 2003), or a marital fertility of no less than 10 (Schoenmaeckers, 1984).

11. The use of marital fertility as an indicator is of great significance in this respect because any change can be interpreted as a conscious change of individual fertility behaviour.

As was the case to explain the changes that were observed nearly two centuries earlier in Europe, one may seriously have underestimated the importance of the human factor in trying to understand and forecast the demographic changes in less developed countries. We more specifically refer to the impact that modernity may have had on existing traditions and practices (Page and Lesthaeghe, 1981).

In Asia, Latin America and the Caribbean, fertility levels gradually started to decline in the 1960s; for Africa indications for a sustained fertility decline were not observed until the 1990s. During the same years, the demographic regimes in European countries also underwent serious changes. Until the 1960s, Europe experienced a fertility of no less than 2.6 children per woman. These relative high levels (although only a fraction of those recorded in the less-developed regions at that time) were related to the baby-boom following the Second World War. Many countries experienced a sudden drop in fertility. The drop was associated with – and in most cases the result of – the postponement of childbearing. The causes for the decline are several. One key element however is the changing position of women in society, more particularly longer schooling and higher labour force participation.

The behavioural changes did not only affect fertility. There were new forms of partnerships; people postponed marriage and married less; there was an increase in divorce rates; and in re-marriage rates; there was an increasing number of reconstituted families; and also of single mothers. The behavioural and societal changes were that profound that Lesthaeghe and Van de Kaa thought it justified to refer to them as the second demographic transition (Lesthaeghe and Van de Kaa, 1986; van de Kaa, 1987; Lesthaeghe, 1995).[12]

In both the less-developed regions as in Europe the fertility decline has provoked the phenomenon that is now generally known as population ageing. The fewer number of births has had as automatic effect to increase the relative importance of the people at older ages in the population structure. However, the areas show serious differences in actual proportions of older persons. The reasons are the differences in demographic history between countries. Furthermore, declines in fertility are only part of the explanation. The other part concerns the differences in mortality levels.

Although life expectancy at birth increases in all countries, current levels are much higher in Europe (and in all industrialised countries in general) than in less-developed regions. The major cause for the increase is however not the same as some 150-200 years ago at the beginning of the (first) demographic

12. A quite comprehensive account of the changes can be found in Coleman (1998 and 2004); for an overview (partly based on Coleman, 1998), see Schoenmaeckers (2000).

transition. At that time, the major cause of the lowering of mortality rates was the decline of child and infant mortality – the risk for a new-born to die before ages 5 and 1, respectively. The major cause for the current (and future) increase in life expectancy is no longer lower rates of child mortality – although one continues to observe a sustained decline in especially infant mortality, also in the countries with the lowest rates[13] – but has rather become increased survival at older ages (ages beyond age 60). Clearly, the latter must have the greatest effect on the proportions of oldest old in the population – those aged 80 years and more.

It is precisely the lowering of mortality at older ages that makes population ageing – to repeat once more the words of the UN Population Division – unavoidable. In the population projections it is hypothesised that eventually, in all countries fertility will stabilise at around replacement level (2.1 children per women). This implies that in the long-run fertility will play no role in population ageing. On the other hand, although the actual limits are not known, and although one may question the validity of the levels used in the population prospects, based on recent trends one can accept the validity to assume a continued increase in life expectancy in the future.[14]

Calot and Sardon (1999) have demonstrated the fact that in the long-run mortality becomes the determining factor of population ageing on the basis of demographic analysis. Using a less sophisticated methodology, Schoenmaeckers (2004b) has illustrated that the differences that are observed mainly in the proportions of oldest old among the Council of Europe member states are the result of persisting differences with respect to life expectancy. With the exception of Turkey, Albania, Azerbaijan, and Armenia – and also in these countries fertility is declining rapidly –, all mem-

13. For example, in Belgium, Denmark, France, and Germany infant mortality decreased between 1990 and 2002 from 7.5 (median value) to 4.3 (idem) deaths per 1,000 live births. During the same period, in Iceland, Norway, and Sweden — the countries showing the lowest rates — infant mortality decreased from 6.0 to 3.3 deaths (median values) per 1,000 live births (Council of Europe, 2003).
By contrast, in spite of some improvements during the last decade, in 2003, less-developed regions still experience on average an infant mortality rate of no less than 61 deaths per 1,000 live births (UNFPA, 2003). In recent years, some African countries have even experienced an increase due to the AIDS-epidemic.
14. Regarding the long-range projections (UN, 2004: 2): "Life expectancy is assumed to rise continuously, with no upper limit, though at a slowing pace dictated by recent country trends. By 2100, life expectancy is expected to vary across countries from 66 to 97 years, and by 2300 from 87 to 106." Note that around 2000 life expectancy varied across countries from 34 to 81 years, and is in 2050 expected to vary across countries from 43 to 88 years (UN, 2003a). This implies from 2000 to 2300 an increase by 256% and 131% for the highest and lowest values, respectively, corresponding to diminishing the relative difference by 2 over the same period.

ber states experience low to very low fertility levels, in most cases below replacement level (Schoenmaeckers, 2004b: figure 4.4). Around 2000, the highest life expectancy recorded (both sexes) among the member states was 80 years (Iceland, Sweden); the lowest 66 years (Russian Federation), a relative difference of 20 percent between the lowest and the highest value.

In summary, the differences in the proportions of older people that are observed between the European countries on the one hand and the less-developed countries on the other hand are in fact the result of different demographic trajectories in the past and of reaching different stages in the demographic transition. To a certain extent the same reasons explain the differences that can be observed between European countries, more particularly among the member states of the Council of Europe (we will come back to this in more detail in sub-section 2.3). It should however be kept in mind that, as outlined above, the differences between European countries are not that much the result of differences in fertility (this is, at least for the time being, the major source for the differences between more- and less-developed regions), but rather in mortality.

Looking at the issue from another angle, one may say that most less-developed countries have just recently started to show the changes related with the first demographic transition. On the other hand, all European countries, also those with emerging new economies, have characteristics associated with the second demographic transition to the extent that all with few exceptions (see above) show very low fertility levels. However, there are still large differences with respect to mortality. Only the western European countries – grossly that are part of sub-group HIGH (see below) – have so far experienced significant improvements in survival rates above age 60. As we have argued elsewhere (Schoenmaeckers, 2004a), in formulating the theoretical framework of the second demographic transition one has overlooked the significance of lower mortality.[15] To stress the latter a rephrased definition of the first and second demographic transition could be that the first is

15. It must be recognised however that at the time that Lesthaeghe and Van de Kaa formulated their new theoretical framework (by the end of the 1980s), the research community had not yet completely grasped the far-reaching importance of the decreasing mortality rates at older ages. It was only some years later that longevity and the subsequent question on the theoretical life span got the full attention from the research community; see, for example, the works of Vallin (1989) and Vaupel and Lundström (1994). In his comprehensive work on "Longevity" Smith (1993) starts with the observation that during the 20th century, 25 years have been added to the mean life expectancy at birth in the United States.
One early and practical implication of taking into account the continuously increasing numbers of older people (including the number of centenarians) was to adapt the last and open-ended age interval in demographic tables, by replacing the category '85+' with '100+'. In the Population Prospects, this change was first made in the 1998 Revision.

the transition of demographic regimes from high levels of mortality and fertility to *low to moderate* levels of mortality and fertility whereas the second is the continued transition to *very low* mortality and *very low* fertility levels. Current rates show that so far only few European countries have reached very low fertility *and* very low mortality levels.

2.2. Changes in the age structure in Europe, periods 1950-2000 and 2000-2050

Before turning to the differences between Council of Europe member states, we will first have a look at the changing age structure in Europe. This is done with the use of two classical age pyramids as shown in figure 2.2. The first age pyramid (A) reveals the changes by age group as observed from 1950 to 2000; the second one (B) those as projected from 2000 to 2050. Pyramid A clearly shows the effects of the declining birth rates during the period. From 1950 to 2000 the relative weight of those in age interval 0-4 decreases from 4.70 percent to 2.60 percent for men and from 4.50 percent to 2.46 percent for women.[16] This decrease in percentage values can be observed until age interval 20-24. In other words, there is a clear narrowing of the base of the age pyramid between 1950 and 2000. At the same time, one observes a widening of the top. For age interval 70-74, for example, percentages increase from 0.98 percent to 1.70 percent for men and from 1.43 percent to 2.51 percent for women.

The higher percentages for women reflect that fact that women indeed outlive men. In 2000, European women had a life expectancy at birth of 77.8 years and men of 69.6 years – a difference of a full 8 years. However, as discussed in Schoenmaeckers (2004b: 38), there are indications that the gap between women and men may be narrowing. So far, the number of countries showing the pattern is rather small: Denmark, Finland, Ireland, the Netherlands and the UK. Recently a similar pattern can also be observed for the Flemish Region in Belgium.[17] The reasons for the change remain unclear. They may be related to the fact that more and more women have taken over the unhealthy life style of men.

Pyramid B shows the continued narrowing of the base. The greatest differences are this time not at the youngest age interval (the fertility decline has

16. Given percentages indicate the relative weight with respect to the entire population. Consequently the number of persons both sexes combined in age interval 0-4 represents 9.20% and 5.06% of the total population in 1950 and 2000, respectively.
17. Since 1993 a reduction in the difference in life expectancy between men and women is also observed for Belgium. Between 1993 and 2002 the difference has been reduced from 6.8 to 6.1 years (personal communication Paul Willems, CBGS).

come to an end), but rather at the working-ages; the greatest decrease is observed for age interval 35-39 (percentage point difference of 1.0 for men and 1.1 for women).

However, the most importance changes are at the top; the top of the age pyramid clearly broadens further, the result of increased survival at older ages. The pyramid is increasingly becoming a rectangular.

A population age pyramid reflects past and current trends in fertility and mortality (as well as migration, but for all European countries combined this effect appears negligible). With the stabilisation of fertility levels (or at any rate with fertility fluctuating in the narrow range between 1.6 and 2.1 children) the effect of fertility – or rather the effect of the *changes* in fertility – also gradually disappear. Eventually, the shape of the age pyramid will be determined completely by the survival curve of the life table.

2.3. Differences in the proportions of older persons in the member states of the Council of Europe

Figure 2.3 gives the proportions aged 60 and over and aged 80 and over in 2000 for all member states of the Council of Europe. The countries are divided into three sub-groups: 'LOW', 'MIDDLE' and 'HIGH'. The designation refers to the relative importance of the number of oldest old. The categorisation has been worked out in Schoenmaeckers (2004b). It has been achieved using straightforward EDA-techniques (Exploratory Data Analysis; Turkey, 1977).[18]

As stated in the introductory section, the scope of the study is not to present individual country results. The availability of three sub-groups helps however to indicate the heterogeneity between member states and to better assess the economic and financial impact of population ageing relative to the actual proportion of older persons in the population.

The member state with the lowest proportion of individuals aged 60 and over is Turkey (8.04%) and the country with the highest proportion is Italy (24.06%). Concerning the proportion of those aged 80 and over, the ranking can be derived directly from figure 2.2: the lowest value is observed for

18. When the categorisation was made (Schoenmaeckers, 2004b) Belarus was not included in the analysis. As stated in, for example, the annual publication of the Council of Europe "Recent Demographic Developments in Europe" Belarus is a 'non-member state'. It was however decided to include it here (it is part of the sub-group 'LOW'). Its inclusion would likely have lead to a somewhat different composition of sub-groups (Slovenia may have become part of sub-group 'MIDDLE'). Since such changes appear irrelevant in the light of the purpose of creating sub-groups (see text), we decided not to repeat the exercise but to simply use the categorisation as it was obtained in Schoenmaeckers (2004b).

Turkey (0.67%) and the highest value for Sweden (5.07%). In relative terms, the variation is much more important for the share concerning those aged 80 and more in the population (a ratio of 12 to 1 between the maximum and the minimum value) than for the share concerning those aged 60 and more (a ratio of 4.7 to 1). As said before, the main differences between member states concern mortality (and not fertility), more particularly with respect to differences in survival rates at older ages. The proportion aged 80 and over is a much more sensitive indicator to this than the proportion aged 60 and over.

Figure 2.4 presents the life expectancy at ages 60 and 80, respectively. The member states are regrouped by sub-group and ranked in the same way as in figure 2.3. As could be expected, the highest number of years of life expectancy at age 80 is observed for sub-group HIGH (a median value of 8.1 years). Also the highest life expectancy at age 60 is observed for sub-group HIGH (median value of 21.8 years). As was the case for the proportion aged 80 and over and 60 and over also here the most important relative differences are observed for the highest age.

The most remarkable observation that can be made from figure 2.4 is the low variation within the sub-group for the life expectancy at age 80. The range between the lowest and the highest number is hardly one year (7.74 vs. 8.68 years). The countries of the sub-group HIGH also show a low variation in the years of life expectancy at age 60.

The categorisation into sub-groups is made on the basis of statistical criteria only. However, it cannot be denied that the sub-groups greatly coincide with specific socio-economic characteristics (Schoenmaeckers, 2004b, pp. 16-19). It is moreover clear that there is a great overlap with political entities. Sub-group HIGH greatly encompasses the former 15 EU-member States plus Switzerland and Norway. Of the former EU-15 only Ireland, Luxembourg and Portugal are missing. All three are included in sub-group MIDDLE. For Ireland and Portugal the reasons probably lie in the fact that both countries have merely reached the early stages of the second demographic transition. In both countries the fertility decline started relatively late and life expectancy is relatively low compared to the other countries in sub-group HIGH.[19] The specific position of Luxembourg is possibly due to the high percentage of the population of foreign citizenship, more than 30 percent since beginning of the

19. In 1995 life expectancy at birth was in Ireland 72.8 years for men and 78.3 years for women; in Portugal the figures were 71.6 and 78.7 years, respectively. This is, in the case of men, 3.4 to 4.06 years less than the highest value recorded (in Sweden, 76.2 years) and in the case of women, 3.1 to 3.5 years less than the highest value recorded for women (in France, 81.8 years); in both cases they are about 1/2 to 2 years lower than the median value for the 15 EU member states (Council of Europe, 2003).

1990s.[20] Sub-group MIDDLE comprises 7 of the 10 new EU member States. Finally, sub-group LOW is the group with a majority of countries (10 out of 16) that is neither a member of the EU nor a candidate for membership.

Figure 2.5 represents the prospected values from 2000 to 2050 of the proportion people aged 60 and more and aged 80 and more by sub-group. In all countries the proportions will clearly be on the rise. As in figures 2.3 and 2.4 one can observe the close pattern between the countries in sub-group HIGH (as well as between those in sub-group MIDDLE). The greatest heterogeneity is observed for sub-group LOW.

By 2050 for half of the countries in each sub-group at least one-third of their population will be aged 60 and more. There are however small differences between sub-groups. The highest share is recorded for sub-group LOW: a full 35 percent. In the two other sub-groups the proportion is 33 percent, but only sub-group HIGH shows signs of attenuation in the increase. As stated above, the proportion aged 60 and more in the population is related to earlier changes in fertility. The decline in fertility follows different patterns in each sub-group.[21] For example, the attenuation effect observed in sub-group HIGH is the result of relatively small changes since the 1980s (at least in absolute terms). The proportions of people aged 60 and more and the pattern of change in these proportions not only reflects the magnitude of the decline - which could be referred to as the intensity – but also its duration.

Things are different with respect to the proportions of people aged 80 and more. In this case one observes a steady increase for all countries, also in sub-group HIGH. The proportion of the oldest old is sensitive to the changes in mortality at older ages. The *Population Prospects* foresee a steady and continued increase of the chances for survival after age 60, and this for all countries. Note however, that also by 2050 there will still be relatively large differences between countries. By 2050, on average the share in the population of people aged 80 and more of sub-group HIGH will be 10.8 percent (median value); for sub-group MIDDLE the share will be 8.4 percent; and for sub-group LOW 7.0 percent.

In the long-run, mortality becomes the determining factor indeed in the process of population ageing.

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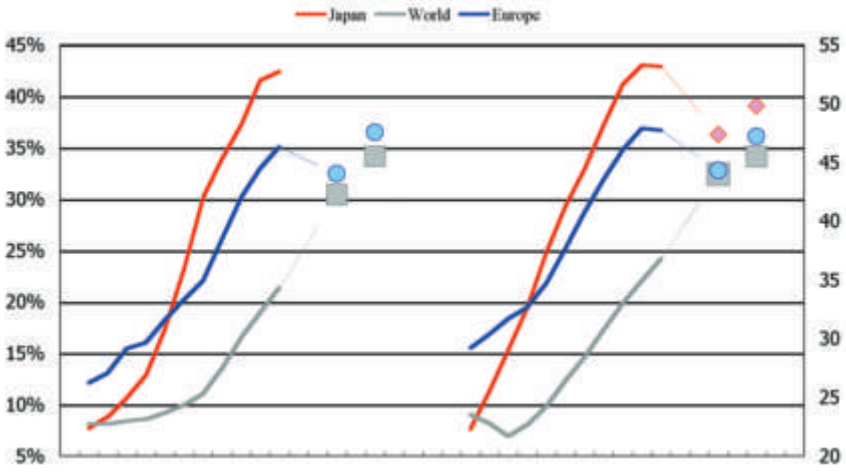
20. In the other 15 EU member states the percentage of the population of foreign citizenship is around 5 to 9 percent; the only country in the European area with a higher percentage is Switzerland with close to 20 percent.

21. A more detailed account of the changes is given in annex on the basis of figure A1. The different patterns of change in fertility (and mortality) have also been commented in Schoenmaeckers (2004b); see more particularly figures 4.3 and 4.4).

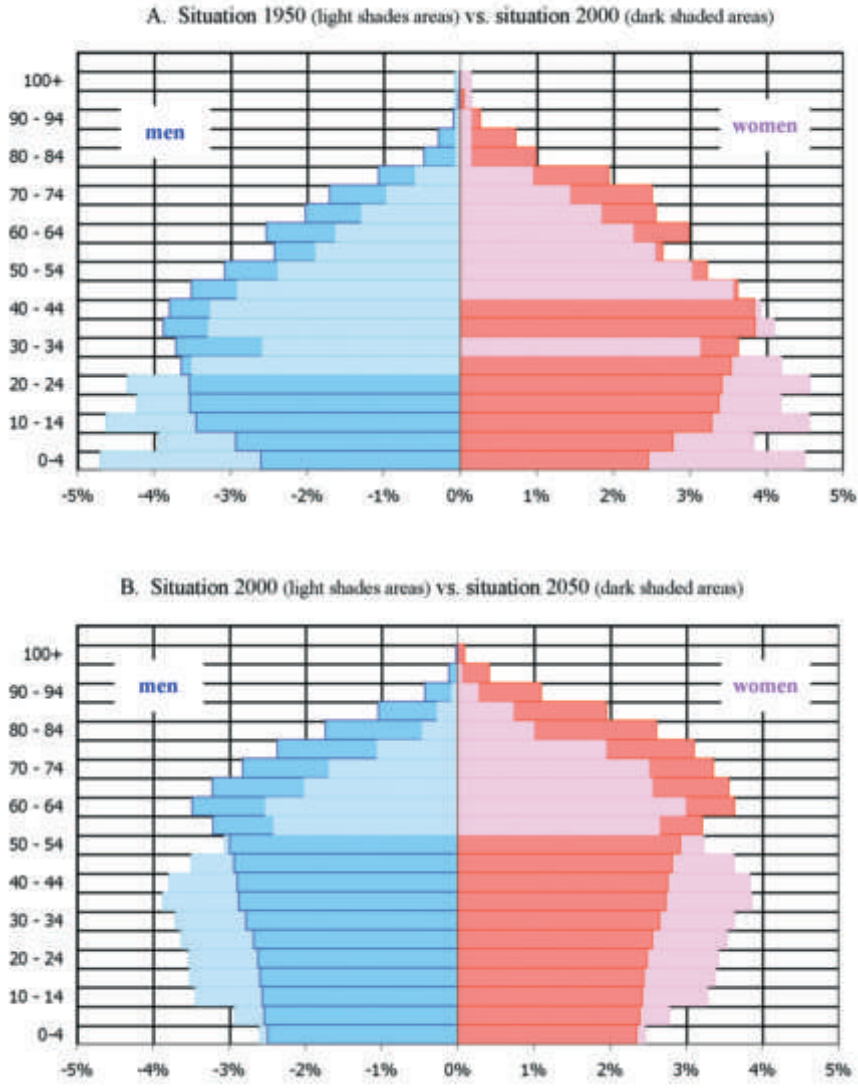
Figure 2.1 – Percentage of population aged 60 and over (left scale) and of the median age (right scale) in the world, Europe, and Japan. Estimates of the biannual prospects for years 1950-2050 and long-range projections for 2100 and 2200



Source: UN (2003a, 2003c, 2004)

Notes: ☐ Europe defined according to the UN classification (total of 47 countries); ☐ Long-range projections do not provide an estimate for the proportion 60 and over in Japan

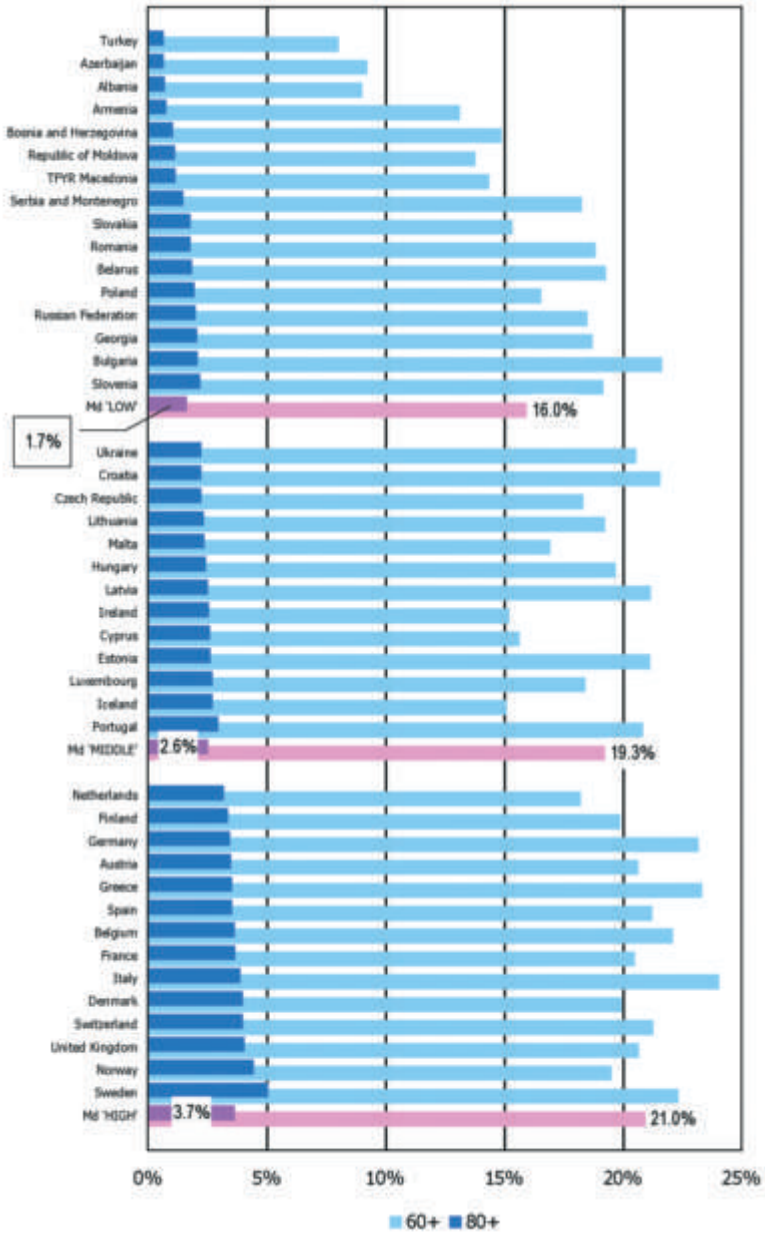
Figure 2.2 – Changes in the age pyramids of the European population, from 1950 to 2000 (panel A) and from 2000 to 2050 (panel B)



Source: UN (2003a)

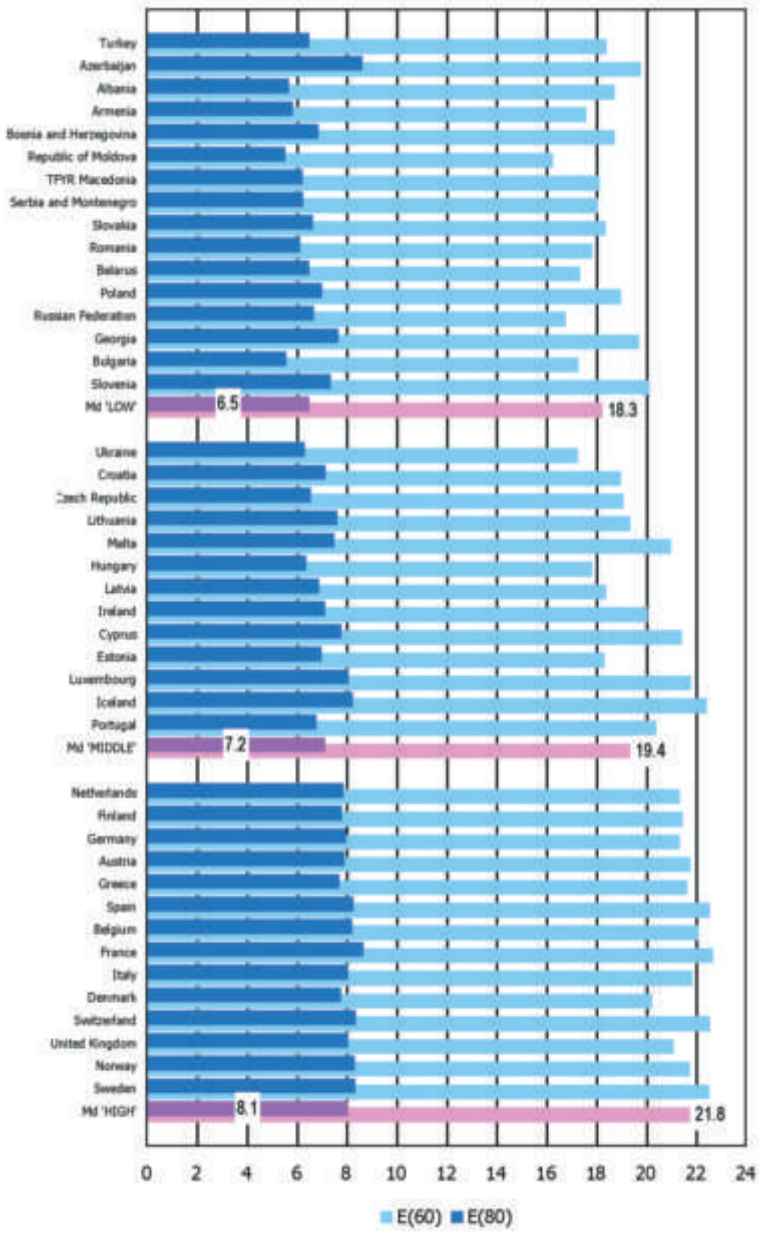
Note: Europe defined according to the UN classification (total of 47 countries)

Figure 2.3 – Percentage of persons aged 60 and over and of persons aged 80 and over in the member states of the Council of Europe, by sub-group, 2000



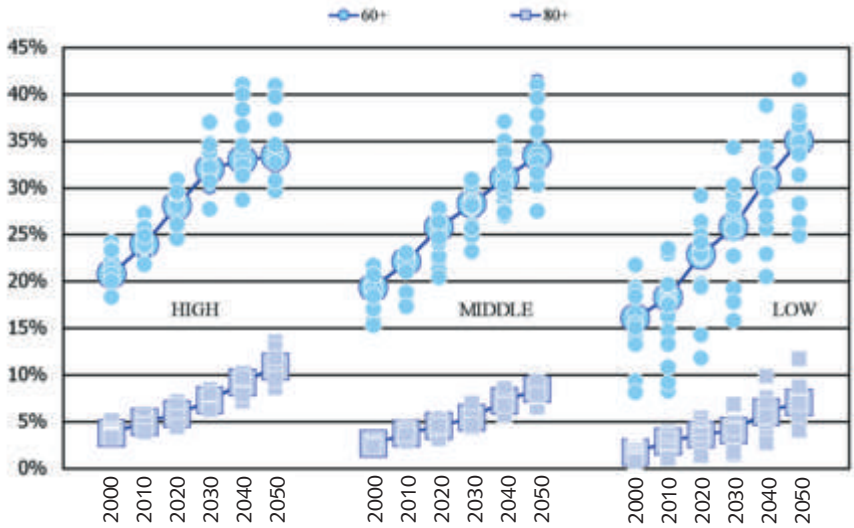
Source: UN (2003a)

Figure 2.4 – Life expectancy at age 60 and at age 80 in the member states of the Council of Europe, by sub-group, 2000



Source: UN (2003a)

Figure 2.5 – Prospected percentages of people aged 60 and over and aged 80 and over, by sub-group, period 2000-2050



Source: UN (2003a)

Note: Dots represent individual country values; ☐ Oversized dots and curves indicate median value for each sub-group

Table 2.1 – Median age and percentage of people aged 60, and annual rate of change, in the world, Europe, and Japan, for selected years

A. Median age

Region/ country	1950	2000	2050	2100	2200	2300	annual rate of change 1950-2000	2000-2050	2050-2100	2100-2200	2200-2300
World	23.6	26.4	36.8	44.0	45.5	48.0	23.0%	66.4%	35.5%	3.4%	5.4%
Europe	29.2	37.7	47.7	44.3	47.2	50.3	50.8%	47.4%	-14.9%	6.3%	6.3%
Japan	22.3	41.3	53.2	47.4	49.8	53.0	123.3%	50.7%	-23.1%	5.0%	6.2%

B. Percentage of population aged 60 and over

Region/ country	1950	2000	2050	2100	2200	2300	percentage point difference 1950-2000	2000-2050	2050-2100	2100-2200	2200-2300
World	8.2%	10.0%	21.4%	30.4%	30.4%	30.4%	1.8	11.4	9.0	0.0	0.0
Europe	12.1%	20.2%	35.1%	32.5%	36.5%	40.4%	8.1	14.8	-2.6	4.0	3.9
Japan	7.7%	23.3%	42.4%	n/a	n/a	n/a	15.6	19.2	---	---	---

Source: UN (2003a, 2003c)

Table 2.2 – Crude death and crude birth rates in northern and western European countries, around 1750 and 1800, and in years 1950 and 2000

A. Crude death rate

± 1750	± 1800	1950	2000	annual rate of change (%) 1750-1800	1800-1950	1950-2000
27.0 [1]	21.2 [2]	11.3 [5]	10 [5]	-48.4%	-41.9%	-16.6%

B. Crude birth rate

± 1750	± 1800	1950	2000	annual rate of change (%) 1750-1800	1800-1950	1950-2000
38.7 [3]	32.7 [4]	17.2 [5]	11 [5]	-33.7%	-42.8%	-82.3%

1/ Median value for England and Wales, France, Finland, Norway, and Sweden;
2/ Median value: as 1, plus Belgium, Denmark, Germany, and the Netherlands;
3/ Median value for England and Wales, France, Finland, Norway, and Sweden;
4/ Median value: as 3, plus Austria, Belgium, Denmark, Germany, and the Netherlands

Source: Chesnais (1986) for 1-4 and UN (2003a) for 5

3. The economic and financial impact of population ageing

The key issue in the discussion on population ageing is the fear that the shift in the number of economically active – roughly the adult population providing the goods and services in a society – with respect to the economically non-active – the young (who are at school) and the old (who are retired) – will undermine the sustainability of the existing social systems – the payment of family allocations, pensions, and health care services.

Demographic textbooks suggest capturing this shift by one single indicator, the so-called dependency ratio. Its formula is as follows:

$$\text{Dependency ratio} = [\ N(0\text{-}19) + N(65+)\ ] \ /\ [\ N(20\text{-}64)\ ]$$

The nominator represents the number of persons at non-working age and the denominator those at working ages. The suggested age limits may be subject to criticism. Depending on the actual situation in the country it may be more appropriate to define, for example, the young as those aged 0-14 years. The age limits indicated above are those that are commonly used for international comparative purposes.

At any rate, the dependency ratio is a strict demographic indicator. It does capture the changes in the age structure of a population. It is a poor measure to capturing the changes in the ratio of the economically non-active with respect to the economically active persons in a population. We return to this in section 3.2 with the use of employment rates. But let us start by having a look at the changes in the age structure by broad age groups and the evolution of the dependency ratio.

3.1. Evolution of the dependency ratio

Figure 3.1 presents for each of the three sub-groups the changes in the age structure by broad age groups (0-19, 20-64, and 65 and more) and the corresponding dependency ratio, in 1950 and between 2000 and 2050.

In all sub-groups one observes a narrowing of the age segment that is associated with the working ages. In for example sub-group HIGH, in 1950 persons aged 20-64 represented 58 percent of the total population; by 2000 their relative share had slightly increased to 61 percent, but by 2050 they will hardly represent one half of the total population (52%). The actual values differ, but the patterns of change are similar in the other sub-groups.

Concurrently with the diminishing share of the working age population one observes the increase in the dependency ratio, reaching by 2050 values that

are close to one in all sub-groups (and of more than one if one restricts the upper age limit to 60). The precise values are given in table 3.1 for a selected number of years.

The values illustrate the far-reaching consequences that population ageing may have on the economic and financial structures of society. Between 2000 and 2050 in the countries of sub-groups HIGH and MIDDLE per 100 persons at non-working age the number at working age will reduce by no less than one third; in the case of sub-group HIGH the number decreases from 156 to 106 (and to only 83 if one restricts the upper working age to 60).

The situation appears less serious for the countries in sub-group LOW. However, a closer look at table 3.1 reveals that here the greatest changes will occur after 2025. For the time being, the countries in sub-group LOW have slightly higher proportions of their population at working age, which is the result of higher fertility until recently (reflected in figure 3.1 by the higher proportions aged 0-19 in the beginning of the century).

Based on these results, population ageing can be feared to pose a serious economic and financial threat and the future looks quite worrisome indeed. But, as said, the dependency ratio (and the other indicators that can be derived from it) only reflects demographic changes. What is the outlook if more economic parameters such as employment rates (and the changes therein) are also taken into account? This will be addressed in the next section.

3.2. A more realistic outlook by using employment rates

Figure 3.2 presents the percentage of persons who are economically active (or the labour participation rate, comprising employed and non-employed) by 5-year age group for men and women. The data are based on the *Community Programme of Population and Housing Censuses in 2001* (Eurostat, 2004a). As said in the introductory notes, the data set does not cover all member states of the Council of Europe. However, the countries that are included can be regarded as representative samples for each sub-group.[22]

On average, the rates are higher for men than for women. The large variation is also quite clear between countries – and the fact that there is more heterogeneity among women than among men. Age patterns vary among countries. For example, Sweden has relatively high labour force participation

22. See footnote 4 in section 1.2. The complete list of countries is given in the explanatory note with figure 3.2.

(for both men and women) at higher ages (age 50 and beyond), but shows low rates at young ages. Poland on the other hand has relatively low participation rates. This is at least the case for men, much less so for women.

Swedish men show much lower labour force participation at a young age than Polish men. In age group 15-19, in Sweden only 17.5 percent of men identify themselves[23] as economically active. In Poland, 37.0 percent of men state being active. For women one can observe the reverse pattern: labour force participation of young women is less in Poland than in Sweden (although the difference is much smaller: 13% vs. 20%). However, more important in the light of the following lines, more particularly the assumptions regarding increased employment rates, is the observation that in Sweden male-female differences are relatively small. This is not only true for just age interval 15-19 but also for more adult ages.

Other countries such as France and Switzerland (not identified) show relative high participation rates for men, but only at middle ages; on the other hand – this is especially the case for Switzerland – participation rates for women are much lower than average.

The results also show that in general women enter the labour market at a later age than men. For men, the highest labour force participation (median value of 92%) is recorded for ages 30 to 40; for women not before ages 40-44 (81%).

Figure 3.3 allows a closer look at basically the same data. The figure does not display individual country values but only median values, but patterns are displayed for each sub-group. Moreover, the information is not limited to labour force participation, but also comprises employment.[24] Finally, figure 3.3 gives a summary measure for the rates for ages 50 to 65.

There are important differences between sub-groups. The differences are greatest for women and in general they concern differences in employment rates. The gap between labour force rates and employment is especially obvious for sub-group LOW and in all sub-groups, the gap is greater for women than for men.

23. The Eurostat data base stems from census data.

24. For reasons that will be detailed further below (and already in figure 3.3), the concept of employment rate used here does not correspond to the conventional definition, i.e. the proportion of employed among those who are economically active. Employment rate is here calculated as the number of persons effectively employed over the total number of persons, irrespective of labour force participation, i.e. irrespective of whether the person is categorised as economically active or not.

Although actual levels differ seriously, all sub-groups show relative low rates for labour force participation and employment for ages 50 to 65. Although in most countries the standard retirement age is 60-65 years (OECD, 1998), on average, close to one third (sub-group HIGH) to more than half (sub-group LOW) of the men do not have a job in the 10-15 years before reaching age 65. For women, the number without a job is much higher: half (HIGH) to three-quarters (LOW) of women aged 50-64 are without employment. It would however be wrong to interpret these figures as particularly high rates of unemployment. This is denied by the close correspondence between the curves of labour force participation and employment. The explanation is rather that many people have stopped being economically active long before they reach retirement age. The reasons for leaving the job market may be manifold. In some countries the dominant reason may be the hardship of working conditions; in others it may be health conditions. The reasons must differ between countries.

According to the OECD (1998: 14, 43), the current trend and desire to early retirement must be in part a reflection of a rising demand for leisure as societies become more prosperous but could also be interpreted as a response to existing early-retirement benefit schemes. In many western European countries old-age pension schemes, in conjunction with disability benefits, actually discourage work at older ages. Most of the early-retirement and disability schemes have been developed in the 1970s and 1980s as a response to high and persistent unemployment among younger workers.

The effect of increased employment rates

In the following lines the effect of increased employment rates will be measured. The basic idea is to assess to what extent increased employment rates would be able to offset the negative effects of the decreased numbers of people at working-age (as shown in figure 3.1, by the evolution in the dependency ratio).

The simulations as such did not constitute a serious problem, but the difficulty was how to decide on the underlying assumptions, more particularly on the level of the increases of employment? One easy solution was to assume full employment but such an approach would have been criticised (for good reasons) as being totally unrealistic. It was decided to choose the countries with the highest employment rates as references. It turned out that these were observed for Denmark, Finland and Sweden. Besides the fact that activity and employment rates needed to be higher-than-average overall,

25. The percentage values that are given in figure 3.3 correspond to the median for values for all countries as observed in age intervals 50-54, 55-59, and 60-64.

the guiding principles for the selection were also (a) relatively high rates beyond age 50; and (b) relatively high rates for women.

As a result, eventually the Scandinavian model was chosen as a reference.[26] There are in total four scenarios, the assumptions of each are given in table 3.2. One particularity of the assumptions is that their effects are cumulative. The objective of the simulation exercises is to assess to what extent increased employment rates may be able to offset the effects of decreasing proportions of the population at working-age. Figure 3.4 gives by way of illustration the changes in the age structure for the countries of sub-group HIGH. The figure presents the proportions in the population by 5-year age interval (limited to the working-ages, 20-64, left panel) in 2000, 2025 and 2050; and the corresponding total percentage for age 20-64 (right panel).

The changes in the age structure can be observed from the percentages by 5-year age interval. Clearly, the percentages for the younger age intervals (ages 20 up to 45) were much higher in 2000 than they will be in 2025 and 2050. At the same time one observes that the highest percentages for the oldest age intervals (ages 50 and more) are observed in 2025. The lower percentages in 2050 are related to the attenuation in the increase of older persons already observed earlier (cf. figure 3.1). Finally, one observes that the percentages by 5-year age interval increasingly show a smoother age pattern. It has already been stated earlier (see comments regarding the changes in the age pyramids, figure 2.2) that in the long-run the age structure of the European population will increasingly be in line with the survival curve of the life table.

In 2000, the proportion of people at working-age accounted for 60.1 percent of the total population. The implication of these changes is a steady decrease of the overall proportion of the population at working-age: from 60.9 percent to 57.9 percent between 2000 and 2025 and to just 51.7 percent by 2050. One and the other correspond to an overall decrease by over 15 percent (see table 3.3) between 2000 and 2050 of the working-age population.

As already known from the evolution of the dependency ratio (figure 3.1) the changes are somewhat different for the countries in the other sub-

26. It is likely that also Norway may have fitted these criteria, but unfortunately Norway is not included in the Eurostat data set (cf. the speech of Arni Hole (2004), Director General of the Norwegian Ministry of Children and Family Affairs, given at the European Population Forum, 12-14 January 2004 in Geneva). The actual steps of the selection are explained in more detail in Annex.

groups. This can also be observed from the results summarised in table 3.3. In all countries the greatest decrease in the working-age population can be expected to occur between 2025 and 2050. This is however especially the case for the countries in sub-groups MIDDLE and LOW. In fact, between 2000 and 2025 both will even experience a (slight) increase in the proportion at working-age (of 0.5% and 4.8%, respectively).[27]

But what are eventually the results from assuming increased employment rates, more particularly of the scenarios described above (cf. table 3.2)? The results for each sub-group are shown in figure 3.5. which is constructed on the same basis as figure 3.4. The left panel shows the percentages by 5-year age interval for 2000, 2025, and 2050. The right panel however does not show the corresponding percentage of the population at working-age but the proportions employed for the same age range as implied by the changes in the age structure and the increases in employment as assumed in the scenarios.[28]

Let us start with the results for sub-group HIGH. In 2000, the average employment rate[29] of the population in the countries of sub-group HIGH was 43 percent. Assuming constant employment rates (i.e. equal to those observed in 2000), the percentage of people employed will, *on the basis of the demographic changes alone*, decrease to 39 percent and to 35 percent by 2025 and 2050, respectively. However, assuming increased employment rates, for 2050 the percentage would, according to scenario C, be increased to 41 percent – a value much closer to the initial 43 percent. Depending on one's outlook, one may state that the increase of employment would limit the loss in employment to 2 percentage points or would provide a compensatory effect of 75 percent.[30]

The results are different for sub-groups MIDDLE and LOW. They can in fact be considered much more optimistic to the effect that increased employment would generate *higher* rates in 2025 and 2050 than the one observed for 2000. For sub-group MIDDLE, the changes in the age structure would lower

27. One and the other are perfectly in line with the changes in figure 3.1.
28. Equal to the sum of multiplying employment rate by the percentage by 5-year age interval.
29. The term 'average' refers to the fact that the result is based on the combined data for countries in sub-group HIGH, with, however, the restriction (contrary to figure 3.4) that not all countries are included, but only those for which information is available on the number of 'economically active' and 'employed' (see list in note figure 3.2). The same remark applies to the results for sub-groups MIDDLE and LOW.
Let us also remember that 'employment rate' does not correspond to the conventional definition but refers to the number of employed with respect to, the total population.
30. Calculated as 100 * [(0.41-0.35) / (0.43-0.35)].

the percentage of people in employment from 40 percent in 2000 to 33 percent in 2050. Applying the rates of scenario C would however bring employment to 41 percent. The effect is much greater for sub-group LOW. On average, for these countries the effect of scenario C would be to boost employment in 2050 to a full 43 percent – no less than 9 percentage points more than the value observed in 2000 (34%).

In a way, these results are related to the relatively low employment in 2000 for sub-groups MIDDLE and LOW compared to the value for sub-group HIGH: 40 percent and 34 percent, respectively, as compared to 43 percent. But the main effect stems from applying the Scandinavian model, more particularly the implication of higher labour force participation of women. The effect of scenario A alone is an increase of employment by 4.2 percentage points for sub-group MIDDLE and by 9.6 percentage points for sub-group LOW. The mere application of scenario A is sufficient for obtaining employment rates in 2025 and 2050 that are significantly higher than the one observed in 2000 for sub-group LOW.

The effects are far from homogeneous among countries of each sub-group. In Austria, for example, even in the case of the most optimistic scenario (C), the employment rate in 2050 would be four percentage points less than in 2000 (40% vs. 44%). On the other hand, for Greece it would mean four percentage points more (38% vs. 34%). The extent to which increased employment may compensate for the older population structure largely depends on the magnitude of the demographic change and on the initial patterns of employment (compared to the Scandinavian model, Greece experienced low female labour participation in 2000).[31]

Both scenarios imply that the strategies for offsetting the negative effects of an older population on economic output will need to be tailor-made. One will not only need to take into account the specific demographic situation of the country, but also the local conditions regarding labour force participation, in particular the situation of women in this respect.

The wealth of a country does not only depend on the share of its population at working-age. Another determining factor is labour productivity – its technical level for producing goods, or in a more general way the added value to the goods and services it produces. This is the subject of the following section.

31. Individual country effects of increased employment are shown for a selected number of countries in figure A4 in Annex.

3.3. The (in)compatibility of future GDP-levels with increasingly older population structures

Basic textbooks on economy will tell us that the Gross Domestic Product (GDP) per capita is a function of the proportion in the population at working-age, the number of those at working age being effectively employed, and the labour productivity or the average wealth generated by one person at work. Both are captured in the formula below:

GDP / inhabitant = [GDP / (proportion population employed)
X [(population employed) / (population at working age)]
X [(population at working age) / (total population)]

= [labour productivity] X [proportion population employed]
X [proportion population at working age]

As suggested by the title – *The (in)compatibility of future GDP-levels with increasingly older population structures* – the objective of the present section is to assess to what extent the increase in GDP-levels can keep pace with population ageing. Or, using more down-to-earth terms, to what extent would societies be able to pay for the extra financial burden occasioned by older populations?

Future GDP-levels can be estimated with the use of the formula above. Some of its parameters are known. The demographic parameters (population at working-age) can be derived from the UN *Population Prospects* (UN, 2003a). Estimates of employment are available on the basis of the simulation results realised in the preceding section. Several estimates for future productivity can be obtained by assuming different levels of growth derived from past trends (a standard practice of national planning offices). One practical problem however with the latter was that starting levels are readily not available. The *Human Development Reports* of UNDP (e.g., UNDP, 2000) provide information on levels of GDP and on GDP per capita, but not on labour productivity. The first step of the exercise therefore consisted in estimating productivity levels for 2000. This was achieved using the basic formula above.

The estimation procedure and the actual calculations are given in table A2 in the Annex. The obtained estimates are given in table 3.4 for each sub-group. It is important to note that the estimates are given in 2000 USD PPP equivalents,[32] making estimates comparable between sub-groups and allowing fixed-cost estimates in the future.

32. Made possible by the fact that the 2000 edition of the Human Development Report (UNDP, 2000) provides estimates of the GDP per capita in 2000 USD PPP equivalents.

Table 3.4 points at the important differences between sub-groups. The average productivity rate for sub-group MIDDLE is below 60 percent of the average for sub-group HIGH (57%); and with 47 percent the average of sub-group LOW is not even half of it. These differences have partly determined the assumptions regarding future growth rates of productivity.[33] Eventually, growth rates for productivity encompass a range with a minimum of 1.5 percent and a maximum growth rate of 3 percent per annum (see table A3 for the intermediate values).[34]

The results of the simulation exercises are presented in figure 3.6. Some preliminary remarks are needed before their interpretation.

Figure 3.6 does not include all the results (these can be found in table A3 in Annex). Next to the assumption that employment and productivity will remain unchanged (identified on the x-axis as Constant), figure 3.6 only shows the estimated resulting from three combinations of scenarios regarding employment and growth of productivity ('AA', 'BB', 'CC', the letters referring to the scenario used for each parameter). Moreover, figure 3.6 does not show the estimates as such for GDP per capita but their relative increases in 2025 and 2050 with respect to the situation in 2000. One relative value refers to the increase with respect to the initial value in 2000; another one is with respect to the value obtained for sub-group HIGH (in case of panel sub-group HIGH, the latter value is equal to 100%). Finally, figure 3.6 shows the relative increase of the people aged 65 and more in the population with respect to, the situation in 2000.

The underlying justification for showing relative values is that the estimates of GDP per capita are meaningless unless their relative increase can be judged against the increase of the higher number of older persons. The inclusion of the relative value with respect to the GDP per capita obtained for sub-group HIGH permits to have a measure of absolute wealth; for the countries in sub-group MIDDLE and LOW, even (very) important increases of GDP does not automatically imply reaching a similar level as the one estimated for sub-group HIGH.

33. Both will become clearer in discussing the results of figure 3.6. Let it already be said that the underlying reasoning is that in the case of sub-groups MIDDLE and LOW the only objective can not be assessing to what extent growth in productivity (and hence GDP per capita) would make it possible to keep pace with increasingly older population structures, but also to catch up with the more affluent countries of sub-group HIGH.
34. Note that the economic perspectives of the Belgian Planning Office are based on an annual growth of 1.75% (personal communication Michel Englert, Federal Bureau du Plan).

What are the conclusions that can be drawn from figure 3.6? At constant employment and at constant productivity in 2050 GDP per capita will be less than in 2000 for all sub-groups (for sub-group HIGH GDP per capita will already in 2025 be lower than in 2000). However, even at the most moderate levels of growth[35] for both employment and productivity all countries would experience relative increases of GDP per capita that are greater than the relative increase in the population aged 65.

The only exception when the most moderate levels of growth are assumed would be the countries of sub-group HIGH in 2025, staying two percentage points short for breaking even (+37% vs. +39%). However, in all other cases increases in GDP per capita would largely exceed the ones in the number of older people in the population. By 2050, on the basis of scenario 'CC'[36] the increase in GDP per capita may be twice as important as the increase in the numbers aged 65 and more (+156% vs. +73%).

The same scenario would imply similar results for the countries of sub-groups MIDDLE and LOW. By 2050, scenario 'CC' would imply increases of GDP per capita of 174 percent in sub-group MIDDLE and of no less than 241 percent in sub-group LOW. However, although more important, these increases would compensate any better for the demographic changes (+102% for sub-group MIDDLE and +120% for sub-group LOW). More worrisome however is the observation that, in spite of their important increases, in both sub-groups GDP per capita will remain far below the estimate for sub-group HIGH. In sub-group MIDDLE GDP per capita will represent not more than 57 percent; and in sub-group LOW not more than 51 percent.

This is not to say that it is impossible for countries of sub-groups MIDDLE and LOW to attain levels of GDP per capita equivalent at those obtained by countries in sub-group HIGH. This will however need some extra effort. According to the results in table A3 in Annex the level will always remain below the one that is estimated with scenario 'CC'. It should however be possible to arrive at the level of sub-group HIGH in 2050 that is attained with scenario 'BB' (54,245). But for countries of sub-group MIDDLE this will need a steady growth rate of a full 3 percent per annum – a much higher increase than the 1.75 percent assumed for sub-group HIGH. Sub-group LOW will need an even greater extra effort. To come to a GDP per capita that is equivalent to the one obtained in sub-group HIGH, countries of sub-group LOW not only

35. Scenario 'AA', implying the basic Scandinavian model for employment and a modest growth of productivity of just 1.5% per annum.
36. Corresponding to the highest levels of employment (cf. table 3.2) and an annual growth rate of 2% for labour productivity.

need productivity to grow annually by a full 3 percent but in addition need to arrive at the highest level for employment (scenario C) – a pattern that some may even consider hard to reach for countries of sub-group HIGH.[38]

A reliability test

A haunting idea with simulation exercises is that their outcomes are not at all realistic. The assumptions might look credible on paper but there is no way that they will be realised in the future. And since, by definition, the future is unknown, tests are rather difficult.

One way however is to see to what extent the outcomes are in line with past trends. The results of such an exercise are given in figure 3.8. The starting point of the exercise are the values of GDP per capita for the years 1975, 1980, 1985, 1990, and 1998 (the latter not shown in figure 3.8) observed for the countries of sub-group HIGH (UNDP, 2000). Depending on the number of data points used[39] in the calculation HGDP per capita would increase at an annual rate of 1.30 percent or 1.64 percent. Applying such growth rates to the median value of the values of GDP per capita observed in 2000 (UNDP, 2002) gives trend lines corresponding to the red curves in figure 3.8. (the one corresponding to an annual growth of 1.30% is indicated in bold, being the most conservative estimate).

The red curves indicate for 2025 estimates of GDP per capita that are very close to the estimate based on scenario BB. As can be expected, the gap between both curves widens towards 2050 but both estimates remain consistent with those of the simulation exercises. One may assume that the increases in GDP per capita as implied by the scenarios are in line with the increase that is observed on past values. The differences between the estimated and observed values in the years 1975 to 1990 must be attributed to the fact that the latter are given in 1995 USD, whereas the former are derived from the 2000 value that is expressed in PPP 2000 USD.

The test has been realised only for the countries of sub-group HIGH. It should be clear from the results in figure 3.7 that for the other countries any test based on past trends would be unreasonable (and should be hoped not to give consistent results).

38. Scenario C assumes increased employment by 2.5% for men and by 5% for women at all age intervals: see table 3.2.
39. From 1975 through 2000, or from 1975 through 2050, the values themselves being obtained with the SPSS-function 'TREND'.

It should also be noted that the conclusions drawn from the simulations above are rather similar to those of other more specialised studies. For example, both the report prepared by the Economic Policy Committee of the European Commission (EPC, 2001) and the 2004 Report of the Belgian Study Commission on Ageing (Studiecommissie voor de vergrijzing, 2004)[40] underline the importance of higher productivity – and therefore increased GDP – and of higher labour force participation of women.

Finally, one should also keep in mind that the increase of employment rates as implied in the different scenarios (cf. table 3.2) "[...] would address many social problems as well as helping to meet workforce needs" (Coleman, 2004: 36; see also Punch and Pearce, 2000). We will return to this in the section on *Final comments and considerations*.

3.4. The unpopularity of some suggested changes: some results of the DIALOG project

The simulation results shown above indicate that increasing employment after age 50 (scenario B: cf. table 3.2) would in most countries (at least partially) compensate for the unfavourable changes in the age structure. This measure would imply forsaking existing early retirement schemes and that, on average, people would need work longer. However, according to some results of the DIALOG-project (DIALOG, *on-going activity*), an attitude survey, this could constitute a highly unpopular measure.

The module on older people includes two relevant questions in this respect: on the expected age of retirement and on the *preferred age* of retirement. The answers to both questions are given in figures 3.9 and 3.10 for each of the participating countries.[41] According to the results, on average 59 percent (median value) of the persons interviewed in the western European countries do expect to retire before age 65. The two exceptions are west and east Germany,[42]

40. The Economic Policy Committee acts under the guidance of the Directorate General for Economic and Financial Affairs of the European Commission. The report brings together the work undertaken by a group on ageing populations attached to the EPC. Chairperson of the Group on Ageing Populations is Henri Bogaert (Commissioner of the federal Planning Office in Belgium) and chairperson of the EPC is Jean-Philippe Cotis (Chief Economist at the OECD).
The [Belgian] Study Commission on Ageing acts under the auspices of the Hoge Raad van Financiën (Conseil Supérieur des Finances/ High Council of Finance). The High Council of Finance is an advisory body to the Minister of Finances that has been established in 1936; its members include renowned specialists in matters of finance and economics.

41. The limited number is the result of the fact that modules and questions vary between the partner countries.

42. The original reason to distinguish 'west' from 'east' Germany is made on technical grounds. The data stem from two separate samples of equal size. Presenting results for 'Germany' would have needed the use of weights, which we preferred to avoid in this case. However, as the results in figure 3.9 indicate, 'west' and 'east' Germany are sociologically still two different entities.

showing values of 32 percent and 41 percent. On average, only 34 percent of the interviewees expect to retire at the legal age of 65 years and only a minority (less than 10%) at an older age. In the eastern European countries the percentage expecting to retire before age 65 is no less than three-quarters.

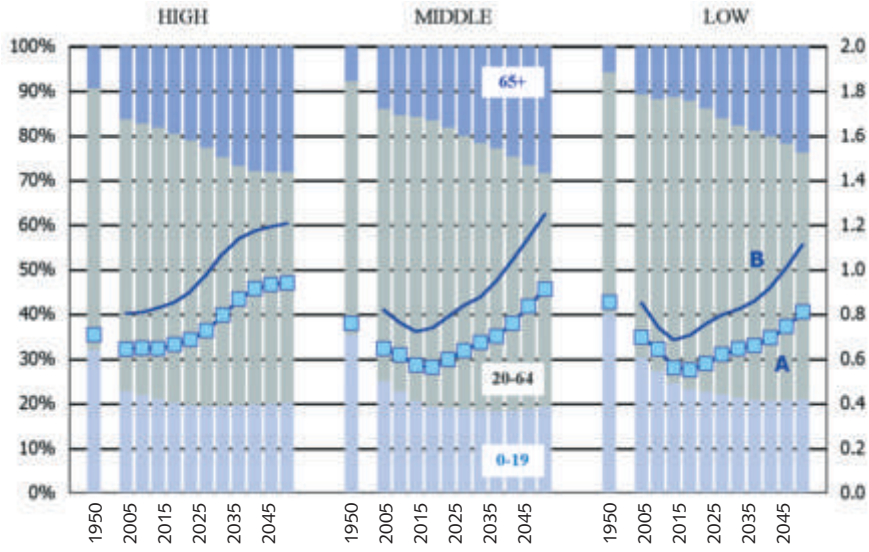
It is very likely that the differences can be partly explained by the differences in job opportunity. The data of the *Community Programme* show for the western European countries[43] between ages 25 and 50 an unemployment level of 6.5 percent (median value between age intervals), but of 9.9 percent for the eastern European countries (Eurostat, 2004a).[44] Poor job opportunities might be an even more forceful consideration for leaving the work force than are attractive early retirement schemes (which are mainly found in the western European countries).

When asked about the *preferred* age of retirement the great majority (more than 85%) of persons interviewed answered before 65. The small variation between countries (or between both groups of countries) is remarkable: the observed percentages vary between 84.1 percent (the Netherlands) and 95.9 percent (Slovenia). Very few people (hardly 10%) wish to retire at age 65: and the number prepared to work until after age 65 is negligible, the highest percentage is 5% and is observed for the Netherlands).

It has already been suggested above that the desire to early retirement could be related to more prosperity (OECD, 1998). This is possibly a valid explanation for the more affluent western European countries. However, other causes – and these would apply to all countries – could be job insecurity and, in a more general way, job satisfaction. It is perhaps not so much the risk of losing one's job – this is generally not the case for civil servants – but the fact that career opportunities have become less clear than in the past. The length of service has become less and less the sole or major criterion for promotion. Promotion is more and more granted on the basis of individual skills and on job devotion. These characteristics are closely related to the aptitude (and willingness) for continued learning. The latter may indeed be a key factor in the pursuit to maintain competitiveness, but may appear to workers as a rather menacing perspective.[45]

43. No distinction made in this case between 'west' and 'east' Germany.
44. With minimum and maximum values of 2.2% and 11.7% for the 'west' and of 2.5% and 23.4% for the 'east'.
45. Other researchers have reached similar conclusions. For example, Bernard Fusulier, sociologist, researcher FNRS (Fonds National de la Recherche Scientifique) at the Université Catholique de Louvain (UCL), and Thibauld Moulaert, researcher at the UCL, suggest that the desire for early retirement could be related to increased job insecurity (cf. the position paper in the Belgian weekly Le Vif / L'Express of 17 December 2004).

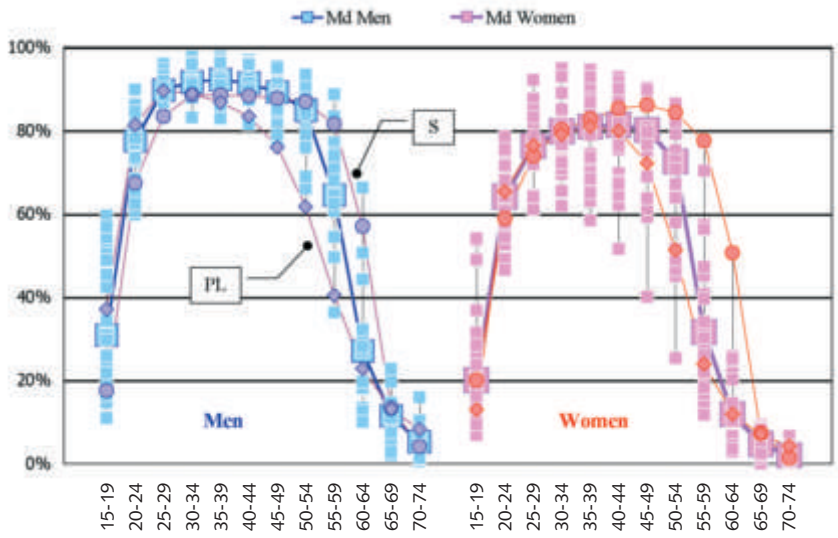
Figure 3.1 – Evolution of the proportions of people in the population aged 0-19 years, aged 20-64 years, and aged 65 years and over (left scale) and of the dependency ratio (right scale), for sub-groups LOW, MIDDLE and HIGH, in 1950 and years 2000-2050



Source: UN (2003a)

Note: Next to the common definition using for working ages age limits 20-64 (A) the figure also shows the dependency ratio corresponding to age limits 20-59 (B)

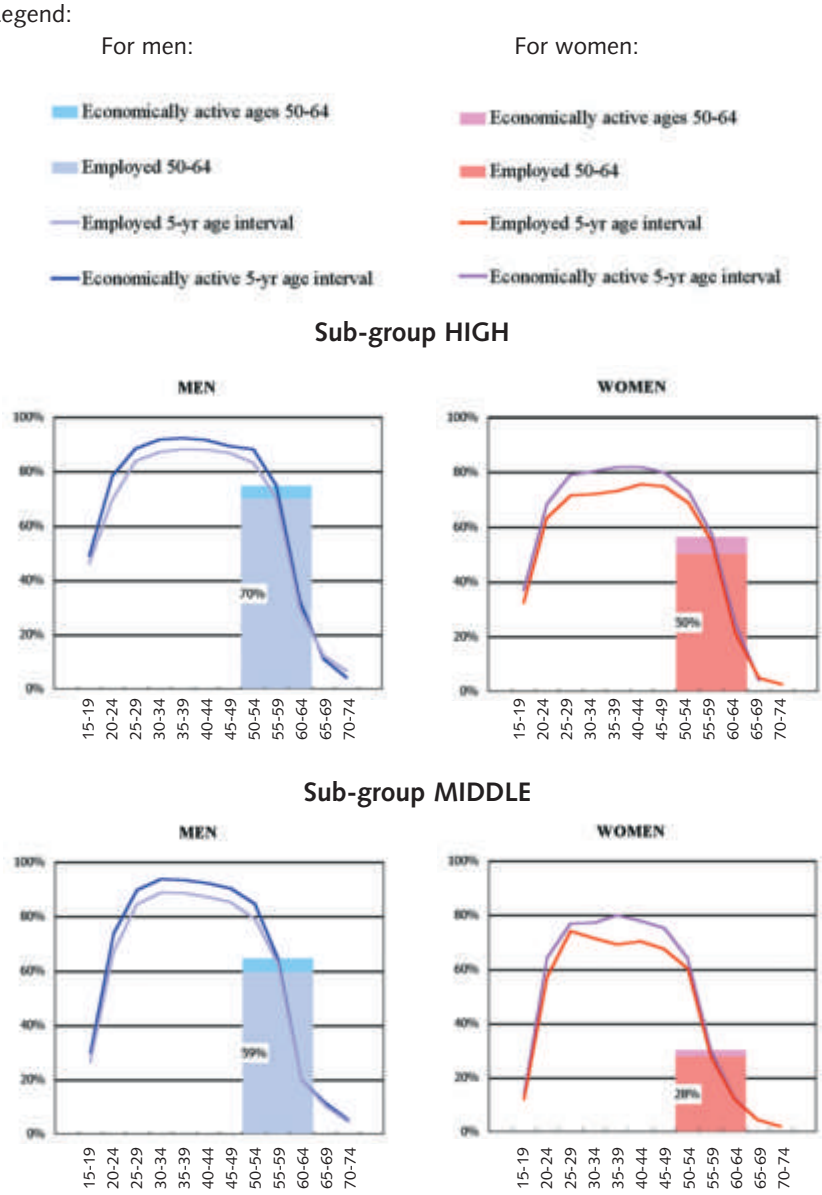
Figure 3.2 – Percentages economically active, by 5-year age interval and by sex, individual country estimates (dots) and median value between countries (solid graph line), circa 2000



Source: Eurostat (2004)

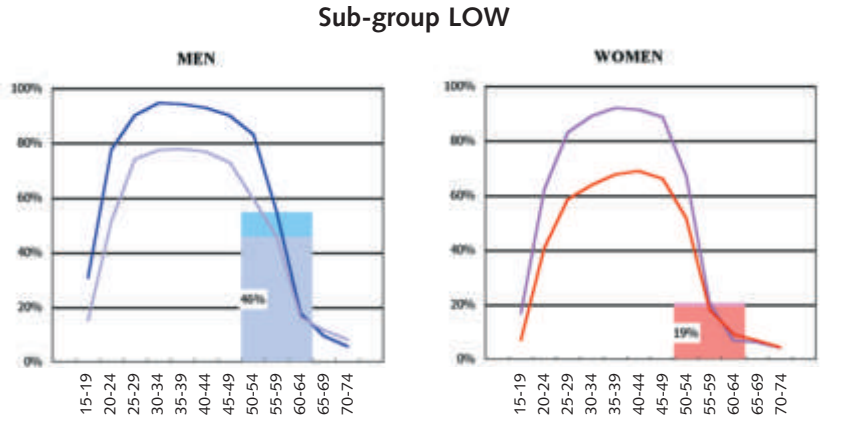
Note: The results in figure 3.2 (and the figures below) stem from the data set *Community Programme of Population and Housing Censuses in 2001* (Eurostat, 2004a). The data set does not include information for all member states of the Council of Europe (cf. footnote 4). For sub-group HIGH, the countries included are: Austria, Denmark, France, Finland, Germany, Netherlands, Sweden (S), Switzerland, and the UK; for sub-group MIDDLE: Estonia, Czech Republic, Cyprus, Portugal, Ireland, Hungary, Luxembourg, Latvia, and Lithuania; for sub-group LOW: Bulgaria, Poland (PL), Romania, Slovenia, and Slovak Republic

Figure 3.3 – Percentages economically active (median values between countries) and percentages employed (idem), by 5-year age interval and average for age group 50-64, for men and for women, by sub-group, circa 2000



Note: Results are based on the data of the following countries: see list figure 3.2.

Figure 3.3 – continued



Source: Eurostat (2004)

Figure 3.4 – Changes in the age structure between 2000 and 2050. Percentage of the population per 5-year age group (left scale) and percentage of population at working age (ages 20-64, right scale) in 2000, 2025, and 2050, countries of sub-group HIGH

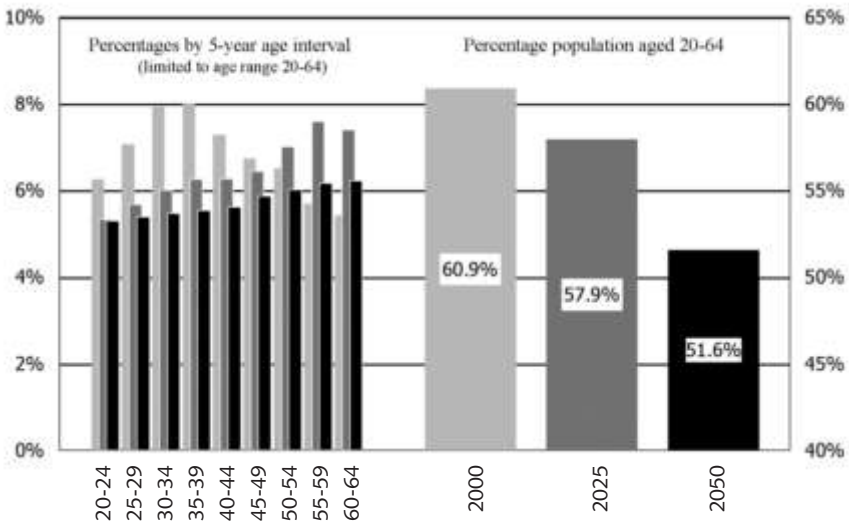


Figure 3.5 – Changes in the age structure by 5-year age interval between 2000 and 2050 (left scale) and percentages employed age group 20-64 (right scale), as observed in 2000 and as estimated in 2025 and 2050 according to scenario (see assumptions table3.2), by sub-group

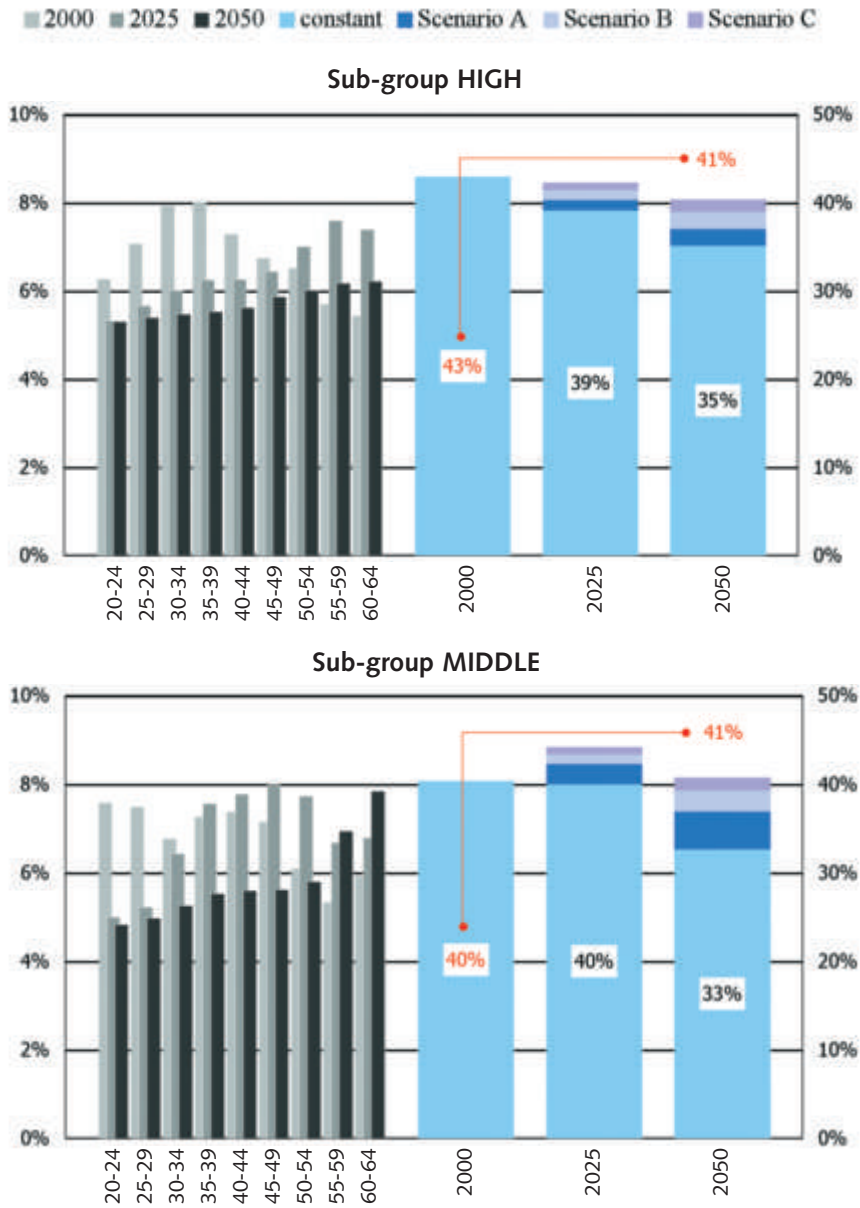


Figure 3.5 – continued

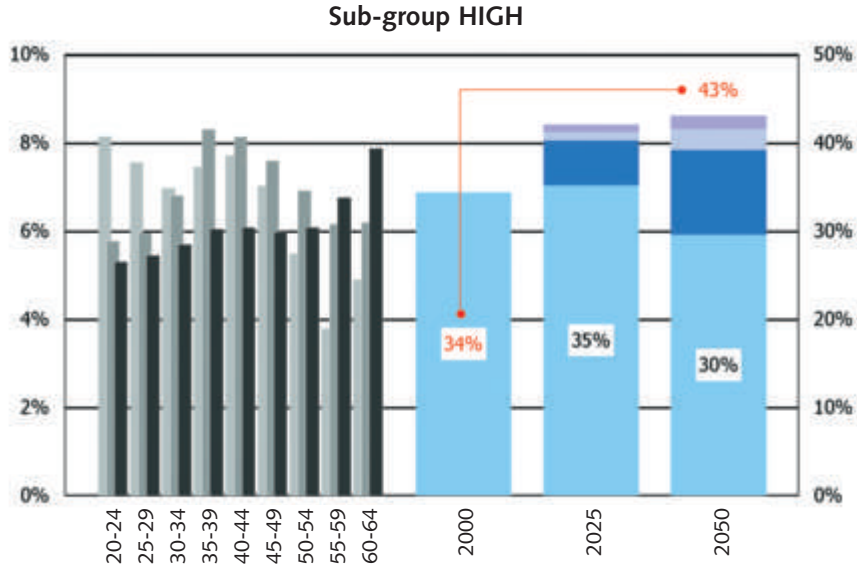


Figure 3.6 – Relative increases of GDP per capita in 2025 and 2050 with respect to observed 2000-estimates, according to scenarios concerning increases in employment and productivity, by sub-group

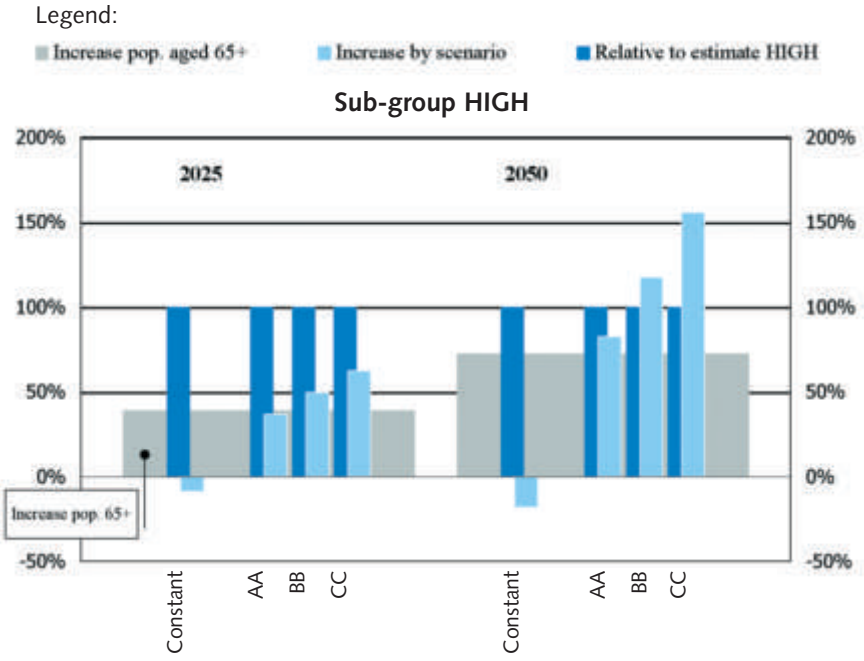
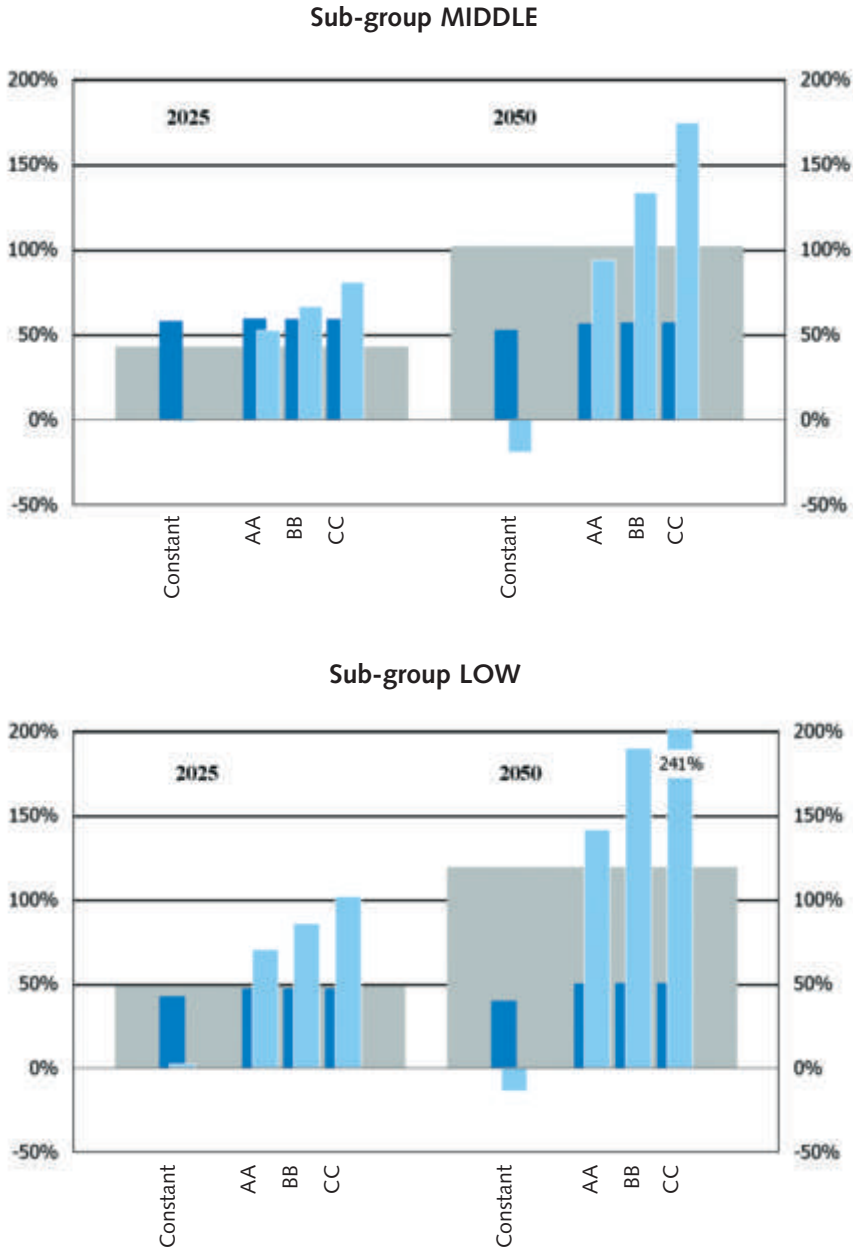
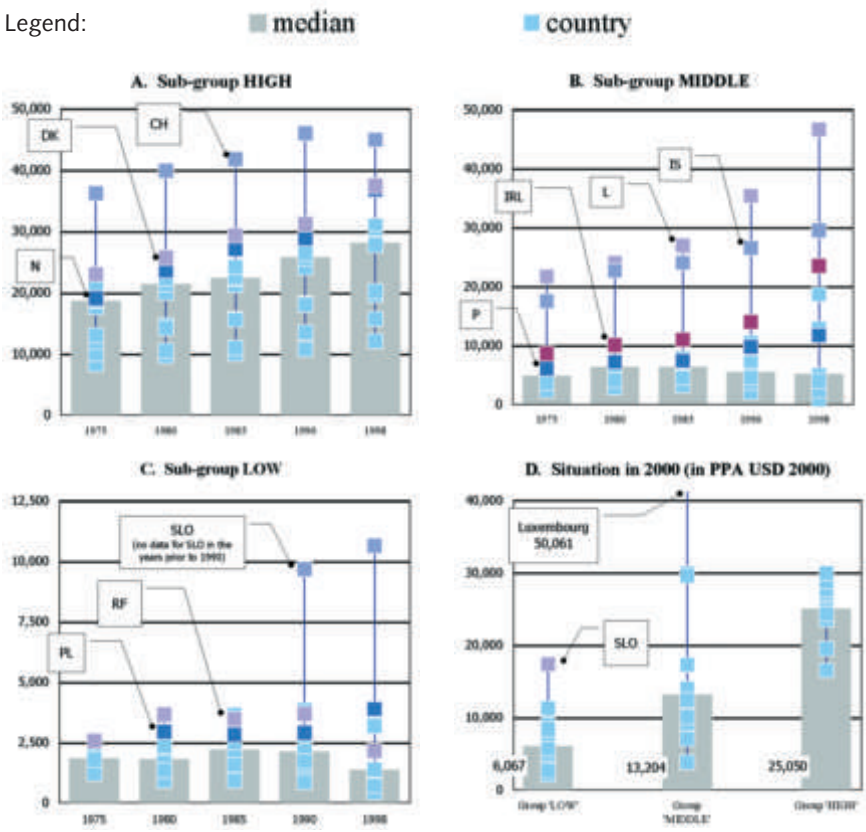


Figure 3.6 – continued



Source: UN (2003)

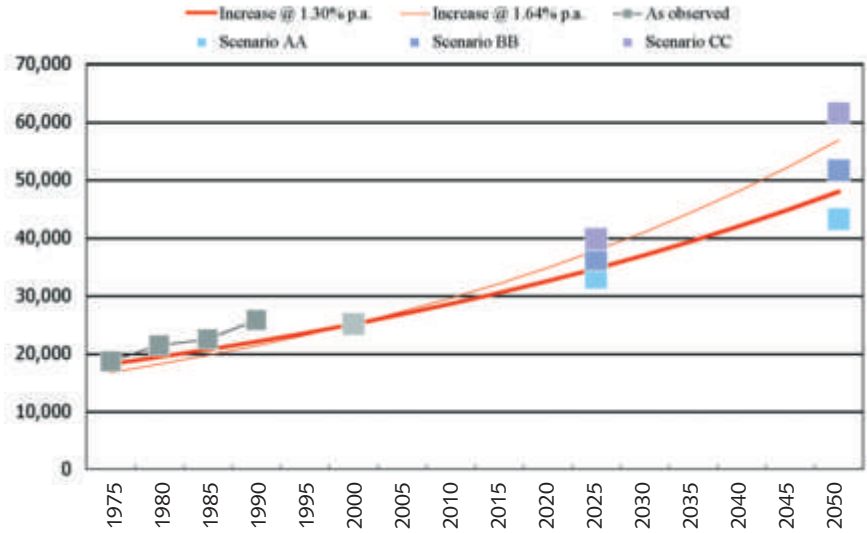
Figure 3.7 – Trend of GDP per capita during the years 1975 through 1998, by sub-group



Source: UNDP (2000) for data panels A-C; UNDP (2002) for data panel D

Notes: ☐ In panels A, B, and C, GDP is expressed in 1995 USD equivalents; in panel D are used PPP-values in 2000 USD; ☐ List of abbreviations: Norway (N), Denmark (DK), Switzerland (CH), Portugal (P), Ireland (IRL), Luxembourg (L), Iceland (IS), Poland (PL), Russian Federation (RF), Slovenia (SLO)

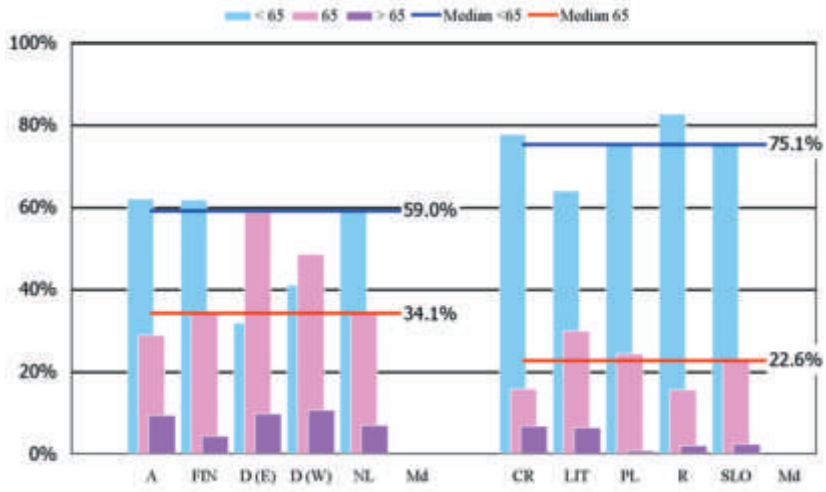
Figure 3.8 – Observed (1975-2000) and estimated (2000 and beyond) values of GDP per capita for sub-group HIGH



Source (observed values only): UNDP (2000)

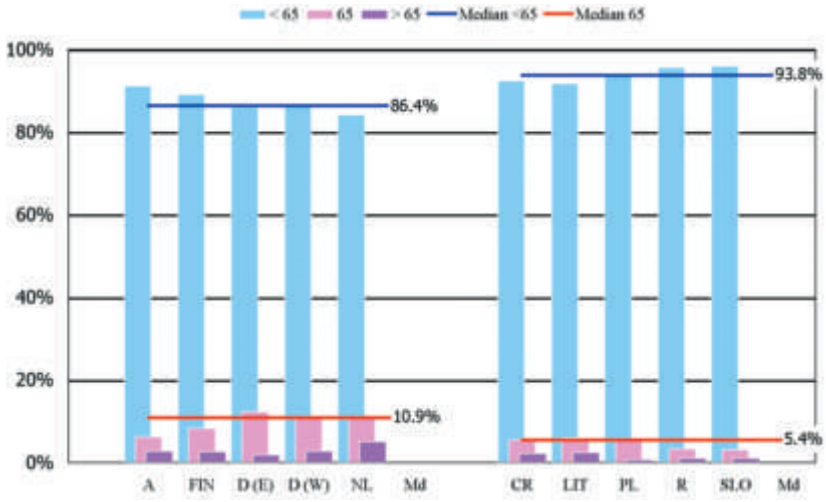
Notes: ☐ GDP--values as observed for years 1975-1990 are expressed in 1995 USD equivalents; ☐ GDP-value observed in 2000 is expressed in PPP 2000 USD equivalents; ☐ Increase of 1.3% per annum is derived from the observed increase during the years 1975-1990; ☐ For Scenarios and assumptions, see tables 3.2 and A3;

Figure 3.9 – Expected age of retirement (%), selected number of countries, circa 2003



Note: List of abbreviations: Austria (A), Finland (FIN), Germany (D), Netherlands (NL), Czech Republic (CR), Lithuania (LIT), Poland (PL), Romania (R), Slovenia (SLO)

Figure 3.10 – Preferred age of retirement (%), selected number of countries, circa 2003



Source: DIALOG (2004)

Note: List of abbreviations: Austria (A), Finland (FIN), Germany (D), Netherlands (NL), Czech Republic (CR), Lithuania (LIT), Poland (PL), Romania (R), Slovenia (SLO)

Table 3.1 – Dependency ratio and corresponding number of persons at working age per 100 persons at non working age, by sub-group, for selected years

					nb. of persons at working age per 100 at non-working age					
	working	dependency ratio			value			relative change (%)		
Sub-group	age	2000	2025	2050	2000	2025	2050	2000-2050	2000-2025	2025-2050
HIGH	20-64	0.642	0.726	0.940	156	138	106	-31.7%	-11.6%	-22.7%
	20-59	0.803	0.978	1.205	125	102	83	-33.4%	-18.0%	-18.8%
MIDDLE	20-64	0.643	0.635	0.910	156	157	110	-29.4%	1.2%	-30.2%
	20-59	0.820	0.839	1.246	122	119	80	-34.2%	-2.3%	-32.7%
LOW	20-64	0.696	0.618	0.810	144	162	124	-14.0%	12.6%	-23.7%
	20-59	0.850	0.798	1.110	118	125	90	-23.5%	6.5%	-28.1%

Table 3.2 – Scenarios regarding increased employment rates and underlying assumptions

Scenario	Underlying assumptions
Constant	Employment rates are kept constant and identical to those observed around 2000
Scenario 'A'	Employment rates (for both men and women) are equal to those of the Scandinavian model (i.e., averages of those observed for Denmark, Finland, and Sweden around 2000)
Scenario 'B'	Rates of scenario 'A', but decrease beyond age 50 follows a fixed but sex-specific pattern, equal to the decrease observed age interval 45-49 to 50-54
Scenario 'C'	Rates of scenario 'B' but increased for all age intervals by 2.5% for men and by 5% for women

Table 3.3 – Percentage of people in total population at working-age in 2000, 2025, and 2050 and relative change, by sub-group

	Percentage of people in the population at working-age (ages 20-64)					
	value			relative change (%)		
Sub-group	2000	2025	2050	2000-2050	2000-2025	2025-2050
HIGH	60.90%	57.94%	51.56%	-15.3%	-4.9%	-11.0%
MIDDLE	60.87%	61.15%	52.35%	-14.0%	0.5%	-14.4%
LOW	58.96%	61.81%	55.26%	-6.3%	4.8%	-10.6%

Note: Results are based on all countries in each sub-group, irrespective of data availability or not with respect to employment

Table 3.4 – 2000-estimates for labour productivity by sub-group

	Sub-group		
Absolute and relative value	HIGH	MIDDLE	LOW
Value (in 2000 USD PPA)	58,115.9	32,946.6	27,564.2
Relative (%) to value sub-group HIGH	---	56.7%	47.4%

Note: Estimate of sub-group corresponds to the median value between country estimates. The latter are shown in table A2.

4. Two specific societal challenges: living arrangements and health expenditures

It would be a mistake to only focus on the economical and financial implications of population ageing. Older populations will have an immense impact on *all* aspects of society. Most of them may so far not even be recognised.

The fact that population ageing affects all aspects of society is the direct result that age (and its derivative: the life course) is a major determinant for individual behaviour – whether it be social behaviour, partnership behaviour or economic behaviour (Riley, 1986).[46]

46. Matilda White Riley can be considered one of the pioneers on the subject of 'age'. The cited reference is her presidential address to the American Sociological Association and can be consulted by way of introduction to her work.

The following sections – dealing with living arrangements of older people and health – are nothing more than an introduction to the vast area of societal issues. However, as we will see, also in these cases, the implied financial implications – more precisely the fear for higher costs – are an important part of the discussion.

4.1. Living arrangements among older people at the turn of the 20th century

Living arrangements covers a wide variety of specific topics such as marital status, household composition, the presence or not of children in the household, single mother households, households composed of partners of different or same sex, the presence or not of other family members in addition to the nuclear family, sharing the home with a non-relative etc. In this study the data are limited to the distribution of the population by marital status, the percentage of persons living alone, and the percentage of persons living in institutions for retired persons.

The data are drawn from the *Community Programme of Population and Housing Censuses in 2001* (Eurostat, 2004a). As such, they refer to the situation at the beginning of the 21st century. The data are classified by sex and describe the situation of persons aged 65 and more.

Contrary to the preceding sections, the data are this time not presented by sub-group (HIGH, MIDDLE, LOW) but by major European region. This corresponds to the UN classification (used in the *UN Population Prospects*), and identifies four regions: east, north, south, and west.[47] The choice is based on the consideration that living arrangements are to a great extent culturally determined (see Schoenmaeckers 2004b, more particularly figures 5.4 and 5.5) and that the UN classification is more appropriate in this respect.

The results are presented in figures 4.1 to 4.3. The results are not based on all countries for each region. Their number is a function of the data availability in the Community Programme of Eurostat.[48]

Figure 4.1 presents the distribution of people aged 65 and more by marital status. As can be expected, one observes a decrease in the numbers of married people and an increase in the numbers of widowers by 5-year age inter-

47. In the UN Population Prospects, countries are classified as follows: Region 'Eastern Europe': Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine; Region 'Northern Europe': Channel Islands, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, and the UK; Region 'Southern Europe': Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Portugal, Serbia and Montenegro, Slovenia, Spain; Region 'Western Europe': Austria, Belgium, France, Germany, Luxembourg, Netherlands, and Switzerland.

48. The countries included are given in the note accompanying each figure.

val. By and large, the pattern is the same in all four groups of countries. All regions also show the same sex differences. All show lesser percentages of married women than men. A closer look at the data reveals that the differences in the percentages married between men and women are smallest for the northern European countries. In an earlier CAHP study these male-female differences were explained as follows (Schoenmaeckers, 2004b: 58): "The explanation is probably [...] a mixture of differences in life expectancy and differences between men and women,[49] but also in different societal norms with respect to re-marriage – or rather the social pressure on women not to re-marry after the death of their husband".

A somewhat intriguing pattern is the increase in the percentages single at the highest age intervals. It is generally believed that persons living alone run a higher risk of dying. The explanation would be that married couples would have a healthier life style. The reverse side of the coin would be that social isolation pushes mortality upwards. The latter would be especially true for men; according to Bobak (1999) this would explain the increased differences in life expectancy between men and women in the eastern European countries since the 1960s. The results in figure 4.1 do not seem to support these theories. It is possible that the pattern points to a selection effect. Single people – men and women alike – live longer than married couples, but this is only true at very old age. The *Community Programme* of Eurostat is one of the first data sets allowing a breakdown by age interval after age 85 (cf. footnote 14).

Figure 4.2 presents the percentage of people living alone. As is the case for marital status, there are clear differences between the sexes. In general, the proportions are higher for women than for men. On average, between ages 70 and 85, the differences are 22 percent.[50] Differences are however somewhat lower in the southern countries (17%) and higher in the western European countries (31%). In all regions, the smallest differences between men and women are observed for the oldest age groups.

The general age pattern takes the form of an inverse 'V': an increase followed by a (rather sudden) decrease. Although they both follow the same pattern, the highest proportions of people living alone are not observed at

49. As mentioned above, (see, for example, footnote 18), in general, women outlive men by a number of years. In 2000, the smallest difference in life expectancy between men and women was recorded for the 'northern' countries (5.6 years) and the greatest difference for the 'eastern' countries (10.6 years). The 'southern' and 'western' countries showed intermediate differences (6.4 and 6.5 years, respectively.)
50. Median value between differences observed in age intervals 70-74, 75-79, and 80-84 in all four regions.

the same age interval for men and women. For women, the highest proportions are observed at ages 80-84; for men, at ages 90-94 (northern and southern) or at ages 95-99 (eastern). The only exception is observed for the western European countries. Here the proportions of men who live alone steadily increases, to finally attain a median value at age 100 and more of 35 percent – 10 to 22 percentage points more than the value of the other regions (although in all regions some countries show similar proportions[51]).

An explanation for the several patterns – as well as between men and women and countries as between regions – must be multi-faceted. The higher proportions of women living alone must be linked to the observation already made above that women re-marry less than men in case of divorce or widowhood. It would be wrong to interpret the relatively high proportions of older people living alone as signs of loneliness and isolation. This might be true in some cases. But in the northern and western European countries the high proportions also certainly stem from the fact that many older people - men and women alike – would prefer to live alone, even after having started a new relationship (de Jong-Gierveld et al., 2001; de Jong-Gierveld, *forthcoming*). One and the other would be related to increased financial independence, especially in the case of women (Grundy, 1989; Palloni, 2001).

Economic considerations could also be an explanation for the proportion in the eastern European countries. But these would however be of a different kind. According to Botev (1999), they would be related to the erosion of traditional structures of extended families as the result of the ongoing economic transformations.[52] On the other hand, the relatively low values that are observed for Greece and Portugal (region southern) could be related to the survival of multi-generation households. There is only indirect proof for this assumption. It is consistent with the relative high percentages of older household members in the southern European countries that are given in table 4.1.

A last remark concerning figure 4.2.; the decline in the proportions observed at the oldest age intervals probably finds its explanation in increased frailty, i.e., problems related to disability and health, so that long-term residential care has become unavoidable, eventually forcing people to opt for a retirement home. Remarkable however is the observation that women seem to

51. The highest proportion of men living alone (46% at ages 90-94) is observed in the Slovak Republic in the 'eastern' region.
52. For more details concerning explanations on the proportions living alone, see Schoenmaeckers (2004b: 53-55).

make this decision sooner than men (see above). Could it be that women find a home for retired or older persons a more acceptable alternative than men to living alone or could it be that men become dependent at a later age? (which again could point to a selection effect). It is possible that both mechanisms intervene. Whatever the precise explanation, it appears that the changes only occur at a very late age – after 80 years of age for women and after 90 years of age for men.[53]

The last figure related to living arrangements, figure 4.3, gives the percentages of men and women who reside in an institution for retired or older persons. In general, percentages increase with age; only the eastern European countries show a decrease for the oldest age interval, but here the numbers are low in general. By and large, the proportions are higher for women than for men. The highest proportions (for both men and women) are observed in the western European region, followed by those of the northern European region. However, both regions show large variations between countries.

For several western European countries the number of women aged 100 and more who reside in retirement homes largely exceeds 40 percent. This is the case for Luxembourg (60%), Switzerland (58%), the Netherlands (56%) and France (47%).

As we have argued elsewhere (Schoenmaeckers, 2004b: 53), the numbers of elderly residing in retirement homes is not just a matter of demand but also of supply. However, the number of people in retirement homes does not only depend on supply, but is also a reflection of the social texture of society (Schoenmaeckers, 2004b: 54-55). The latter is illustrated by the regional differences that can be observed for Belgium (for which no data are included in figure 4.3). Supply is largely determined by cultural and historical differences; and demand will in turn be a function of the social climate.

It is not clear whether in Europe there could be an increase in the number of retirement homes (and of the number of residents). Jacobzone and colleagues (2000) argue that the general aim of welfare policies is to de-insti-

53. The differences between men and women could be indicative of the fact that women decide sooner than men to live in a retirement home. This is consistent with the findings of colleague Edith Lodewijckx of the CBGS. According to her analysis on the living situation of older people in the Flemish Region, the probability of moving to a retirement home is greater for women than for men, regardless of whether they are living alone or with a partner (preliminary results, final results will become available on the CBGS Web site in the beginning of 2005: www.cbgs.be).

tutionalise long-term care. Their conclusions are based on observations for six countries, of which three are European (France, Netherlands, Sweden). In other words, there is no firm ground for predicting the proportions of older people in retirement homes in the future. It is nevertheless perfectly possible to make an estimate of the *numbers* of people in retirement homes by assuming constant *levels*. In other words, making an estimate of the future numbers on the basis of demographic change alone. The results of such an exercise are given in table 4.2.

In spite of the relative low proportions of people aged 65 and more in retirement homes in the eastern European countries (less than 1% in 2000), between 2000 and 2050 these countries may face an increase in the number of residents in retirement homes of more than 50 percent (53%). The other European regions may face even higher increases, of more than 60 percent. In all regions, the greatest share of the increase would occur in the next 25 years; for the western region this would be no less than two-thirds. Unless governments are prepared to look for and find other alternatives, they must become prepared to make huge investments for the construction and maintenance of retirement homes and adequate training of personnel.

4.2. The age profile for public health expenditures and their implied cost

A summary of some earlier findings

Internationally comparable data on health status are scarce. In a previous CAHP study (Schoenmaeckers, 2004b) micro-data samples were used that have been compiled by the UNECE as part of its programme on ageing.[54] The data were limited to four countries only: Bulgaria, Finland, Hungary and the UK. What follows is a brief summary of the findings.

International comparison remains a tricky exercise because of differences in definitions on health and disability. The results show that there would be more people with a disability living in two or more generation households than in others. The explanation may be that "for a disabled person, the presence of a person in the household that can take care of him or her, is probably an important consideration to stay a member of the household (as opposed to taking up residence in a non-private household)" (Schoenmaeckers, 2004b: 73).

54. The project is carried out by the Population Activities Unit (PAU) of UNECE, and has financial assistance from the US National Institute on Aging (NIA) and the United Nations Population Fund (UNFPA). The data stem from the 1900-round of censuses. A similar project is being undertaken on the basis of the 2000-round of national population and housing censuses. For more details on the UNECE Ageing programme (and on the data set), see Botev (2000), or visit the project's www site: www.unece.org/ead/pau/age.

The findings also point at possible effects of policy measures. In Finland, for example, there is a clear increase with age of the proportions of persons with a disability in a private household. This is probably the consequence of existing social policies, which favour long-term home care which is encouraged with financial incentives.

An interesting finding was made on the basis of the UK data. The UK was the only country with data available from the 1991 census and the 2001 census. Both data sets show a gradual increase of the proportion of people with limiting long-term illness. Depending on the year of observation, in age group 65-69 the proportion is around 30%-35% and by age 85 and more the proportion is at around 60%-75%. The patterns are about similar for men and women. However a remarkable observation was that there were higher proportions of older people with long-term illness (the denomination used with the UK data) in 2001 than 10 years earlier. The difference is difficult to explain. The British colleagues themselves rule out that the explanation would be differences in the definition (Chappell, Office for National Statistics, personal communication). One hypothesis is that, because of improved treatment, disabled people simply live longer than before.

Age profile for public health expenditures on health care

Figure 4.4, presents the age profile for public expenditure on health care. It is a re-make of graph 4.1 of a report of the Working Group on Ageing of the Economic Policy Committee of the European Commission on '*Budgetary challenges posed by ageing populations: the impact on public spending on pensions, health and long-term care for the elderly and possible indicators of the long-term sustainability of public finances*' (EPC, 2000).[55] In the figure, the level that is given by age group corresponds to the average expenditure per head expressed in its percentage value of the GDP per capita. The results are based on data for 11 western European countries (see list in footnote) and refer to the situation *circa* 2000.[56]

According to figure 4.4, there is a high correlation between health expenditures and age. "Older persons tend to consume more health care than other groups – this is especially the case for the highest age groups. [...] Average

55. Members of the EPC working group include representatives from several national planning offices and ministries of economic affairs, as well as of representatives of the European Commission and of the OECD. We are especially thankful to Howard Oxley and Stepahne Jacobzone from OECD for having made available the individual country data that constitute the basis of figure 4.4.

56. The French data refer to the situation in 1997; the Belgian, Danish, Spanish and UK data to the one in 1998; Italy to the one in 1999; and Austria, Finland, Germany, the Netherlands, and Sweden to the situation in 2000.

expenditures per head on healthcare for different age groups (expressed as a share of GDP per capita) are quite similar across member States for prime-age individuals – the largest differences between member States are at the tail-end of the age-distribution. Nevertheless, in all member States, after childhood, the age-related expenditure profiles reveal increasing per capita expenditure levels with age" (EPC, 2000: 34-35).

Individual country patterns indicate the existence of national age-related policies. The UK shows especially high expenditure levels for both the very young and the very old, but has relatively low levels in between. Denmark shows relatively low expenditure levels for the oldest in the population but relatively high expenditure levels for the youngest ones (with levels quite close to the median for all other age groups); the data for France rather follow an opposite pattern. The differences that are observed for the older age groups may be the result of differences in the institutionalisation of older persons. Some studies indeed indicate that long-term residential care can have a limiting effect on public expenditures (see, for example, Jacobzone *et al.*, 2000).

In order to estimate the effect of population ageing, average expenditures per head have been weighted by the number of persons in each age group and the exercise has been repeated for the years 2000, 2025 and 2050. The numbers of persons are based on the combined population for all countries in sub-group HIGH. The value of 25,050 (in 2000 USD PPP equivalents) is taken as GDP per capita as this corresponds to the median value for sub-group HIGH (see panel D of figure 3.7). The results are shown in figure 4.5.

Assuming a constant age profile for public health expenditures, demographic changes alone could be responsible for an increase to the total cost of 17 percent between 2000 and 2025, and by an additional 5 percent between 2025 and 2050 – a total increase of 22 percent.

The exercise has been repeated for the countries of sub-groups MIDDLE and LOW. The results are presented in figure 4.6. Figure 4.6 shows two pairs of results, one is based on an unadjusted GDP per capita – corresponding to the median value as observed for 2000 –, the second one based on an adjusted value for GDP per capita, i.e., corresponding to the one observed for sub-group HIGH. The reason for using two different values for GDP per capita – one unadjusted, one adjusted – is that one cannot expect similar quality of health care unless its cost is also similar. Since the age profile for public health care is based on the average expenditure per head *expressed as share of*

GDP per capita, in to obtain comparable results it is necessary to use an identical basis in the calculations – in this case the GDP per capita as observed for sub-group HIGH.[57]

The increases that are observed for sub-groups MIDDLE and LOW on the basis of the unadjusted values are similar to the ones for sub-group HIGH. The differences reflect the differences in demographic changes. On the other hand, those based on the adjusted values show enormous increases in the cost – increases of two to four times greater than those based on the unadjusted values. As explained above (cf. footnote 56), they may be overestimated. But they also hint at the extra burden implied to assure the same quality of health care as the one provided in the wealthier western European countries.At any rate, such patterns of increase do not happen in reality. In repeating the exercise that is the basis for figure 4.5 for the years 1990 and 2000 one arrives for sub-group HIGH at an estimate of a 8 percent increased cost; likewise, for sub-groups MIDDLE and LOW the estimates are zero percent (0.5% to be precise) and 6 percent. The increases shown in figure 4.7 are however quite different.

Figure 4.7 shows public health expenditures expressed as their share of GDP for the years 1990 and 2000 by sub-group. The data come from the 2003 edition of the *Human Development Report* (UNDP, 2003). According to these data, between 1990 and 2000, on average – as is usual the case, the median value is used as reference – countries have rather experienced a *decrease* of the share of GDP on public health expenditures (-2.5%). There are, as may be expected, increases for sub-groups MIDDLE and LOW. But in the case of sub-group MIDDLE, the increase is much greater than the expected estimate (+14.6%) and in the case of sub-group LOW it is much smaller (+1.6%).

Both sets of data seem to indicate that there must be other factors besides age structure – and more particularly the changes therein – that determine the cost of health care. We will come back to this in the last section, dealing with some comments and considerations.

It is also possible that the age profile for public expenditures on health care as presented in figure 4.4 is an unreliable source for making any forecasts of

57. The applied solution is not entirely foolproof. A cost for health care can be lower because of, for example, lower wages for medical personnel. However, since the GDP per capita only represent a fraction of the one observed for the reference group (40% in the case of sub-group MIDDLE and 24% in the case of sub-group LOW), the use of unadjusted values seemed totally unjustified.

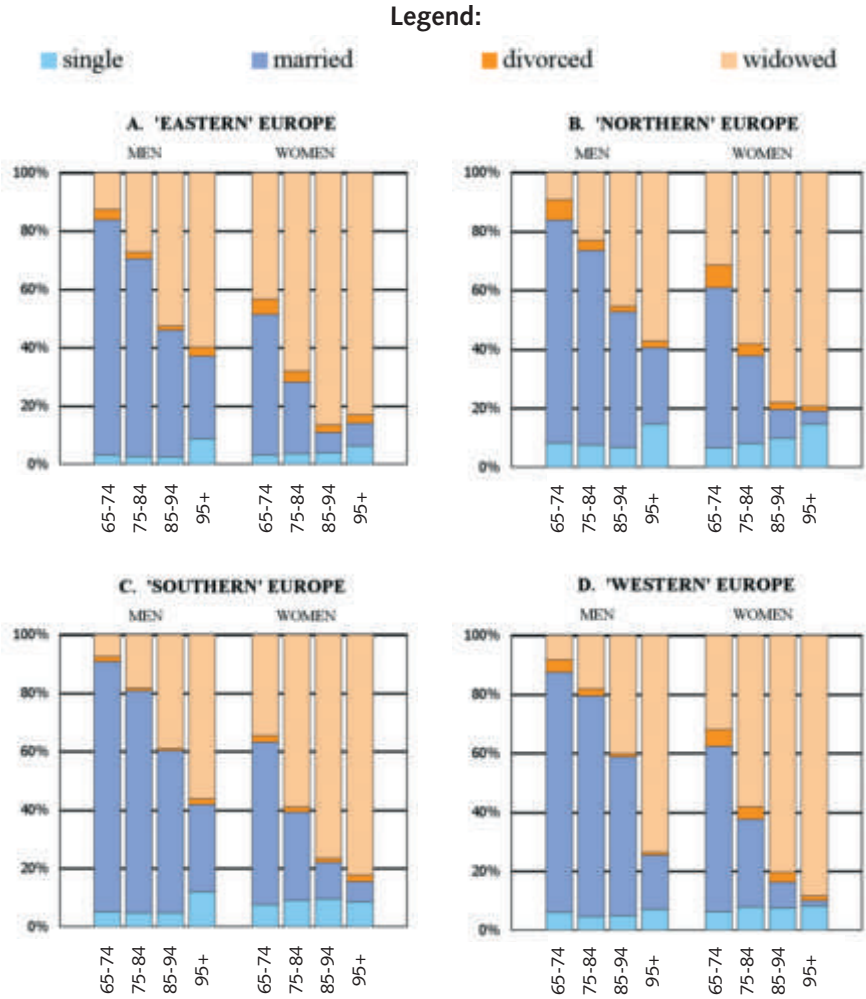
health costs linked to population prospects. This might come as a surprise but upon reflection appears quite understandable for, as Mr. Robert Kieffer (2004)[58] has shown, the age profile for public expenditures very much resembles the average expenditure on health care during the last 48 months of life, and this independent of the age at death. In other words, the cost increase by age as suggested in the age profile for health expenditures does not reflect so much that older people would need more (and more costly) health care, but rather reflects the distribution of deaths in the population. In fact, the age profile for public health expenditures is closely related to the mortality schedule (or the risk of dying at age x) in a population.

Furthermore, Mr. Kieffer shows in his interesting paper that during the last years of life persons aged 70 and more incur less health expenditures than younger people. We tend to agree with his conclusion, namely that (citing Kieffer) "the impact of population ageing on health cost is secondary compared to, for example, the increases that are induced by better health care and technological medical innovation" (own translation[59]).

58. We are grateful to colleague Louis Lohlé-Tart, Director of ADRASS (*Association pour le Développement de la Recherche Appliquée en Sciences Sociales*) for having drawn our attention to the study of Mr. Kieffer.

59. The original text is as follows: "Je suis d'avis que l'impact du vieillissement sur les dépenses de santé est plutôt secondaire par rapport à d'autres phénomènes qui influent sur les dépenses, à savoir la croissance de l'offre de soins et le développement technologique en médecine".

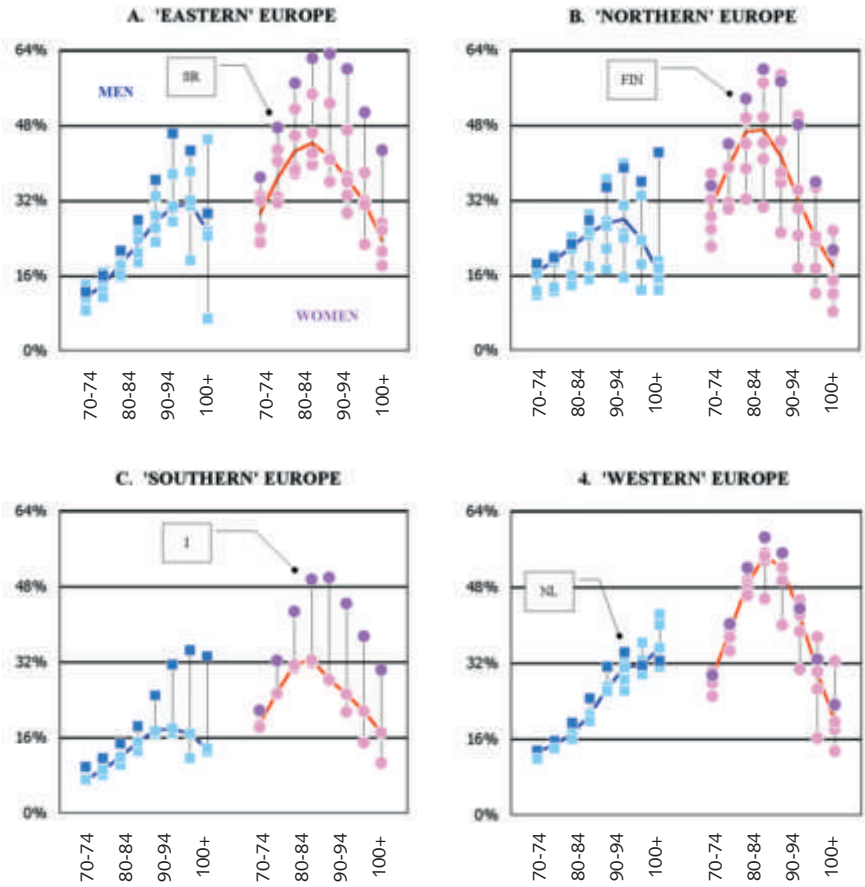
Figure 4.1 – Living arrangements of people 65 and over. Marital status (in %), by 5-year age group and by European region, circa 2000



Source: Eurostat (2004: Topic table 2)

Note: 'Group of countries' corresponds to the UN classification with the categories of eastern, northern, southern and western Europe. The Eurostat data set does not include information for all countries. Figure 5.1 is based on data of: ☐ Panel A: Bulgaria, Czech Republic, Hungary, Romania, and Slovak Republic; ☐ Panel B: Denmark, Estonia, Finland, Ireland, Lithuania, Norway and the UK; ☐ Panel C: Greece, Italy, Portugal and Slovenia; ☐ Panel D: Austria, France, Germany, Netherlands and Switzerland.

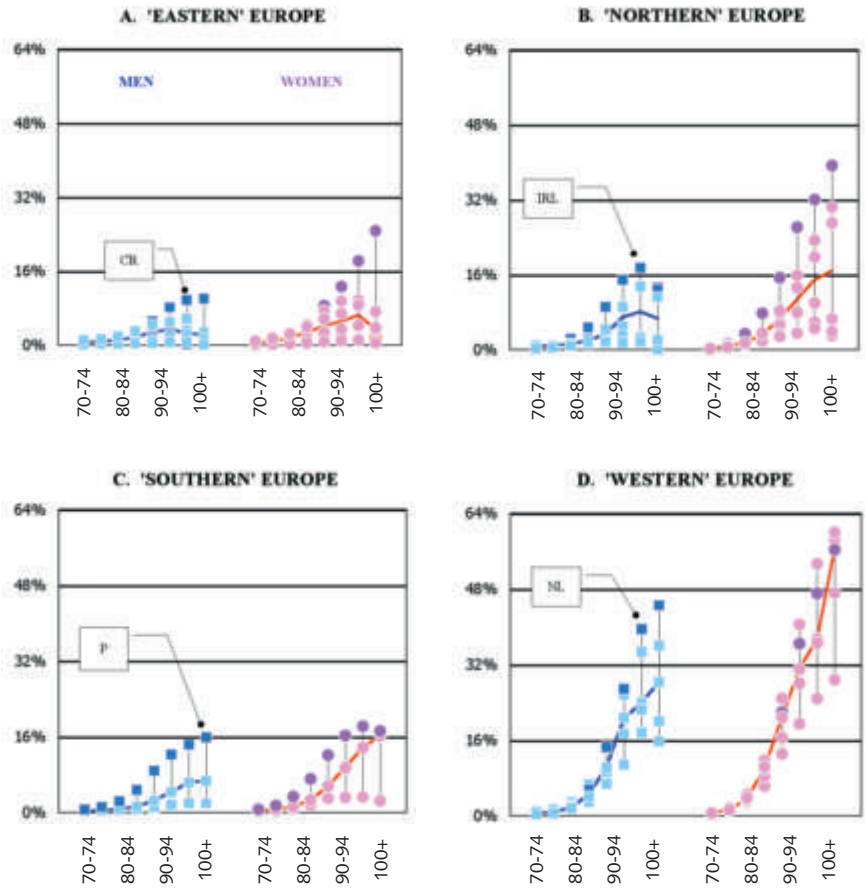
Figure 4.2 – Percentage of people living alone, by sex and by 5-year age group, by European region, circa 2000



Source: Eurostat (2004)

Notes: ☐ Dots correspond to individual country estimates and curves to median value in each data set; ☐ 'Group of countries' corresponds to the UN classification with the categories of eastern, northern, southern and western Europe. The Eurostat data set does not include information for all countries. Figure 5.2 is based on data of: Panel A: Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovak Republic (SR); Panel B: Estonia, Finland (FIN), Ireland, Latvia, Lithuania, and the UK; Panel C: Greece, Italy (I), and Portugal; Panel D: Austria, France, Netherlands (NL), Luxembourg, and Switzerland.

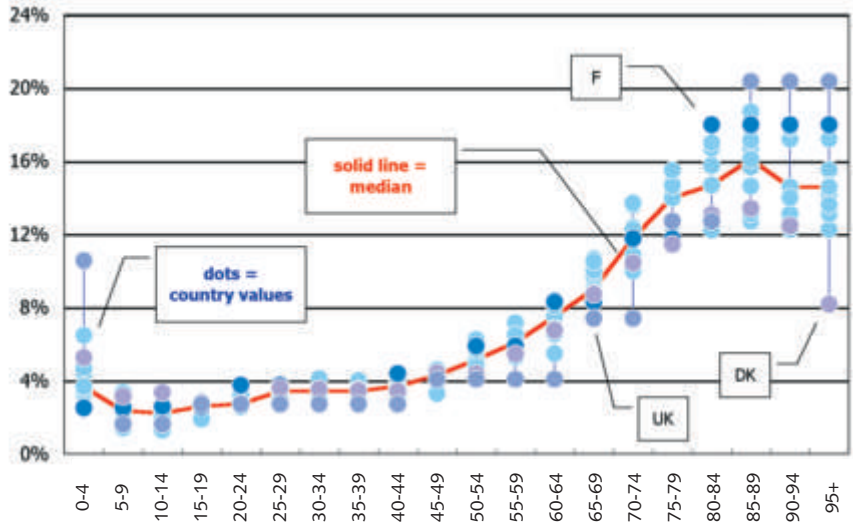
Figure 4.3 – Percentage of persons in institutions for retired or older persons, by sex and by 5-year age group, by European region, circa 2000



Source: Eurostat (2004)

Notes: ☐ Dots correspond to individual country estimates and curves to median value in each data set; ☐ 'Group of countries' corresponds to the UN classification with the categories of eastern, northern, southern and western Europe. The Eurostat data set does not include information for all countries. Figure 5.3 is based on data of: Panel A: Bulgaria, Czech Republic (CR), Hungary, Poland, Romania, and Slovak Republic; Panel B: Estonia, Finland, Ireland (IRL), Latvia, Lithuania, and the UK; Panel C: Greece, Italy, and Portugal (P); Panel D: group west for Austria, France, Netherlands (NL), Luxembourg, and Switzerland.

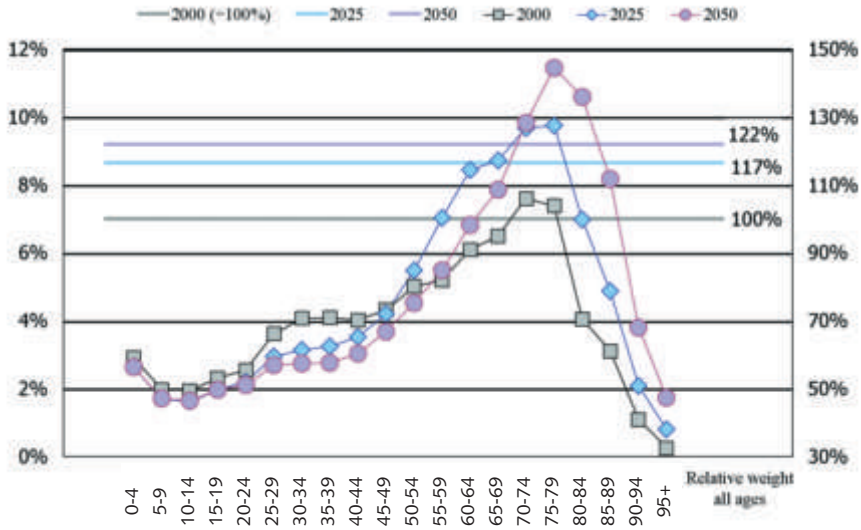
Figure 4.4 – Age profile for public expenditure on health care: average expenditure per head expressed as share (%) of GDP per capita, selected group of countries, circa 2000



Source: EPC (2001)

Note: Selected countries are: Austria, Belgium, Denmark (DK), Finland, France (F), Germany, Italy, Netherlands, Spain, Sweden, United Kingdom (UK).

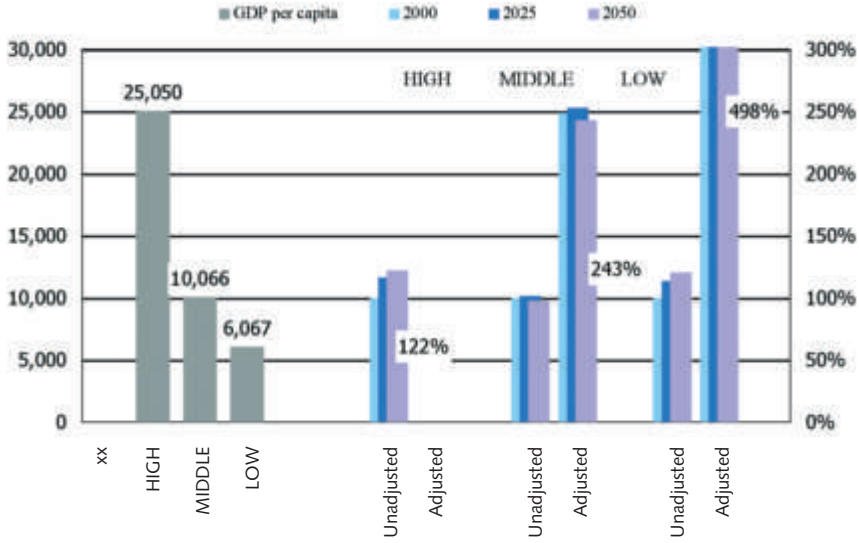
Figure 4.5 – Age profile for public expenditure on health weighted by number of persons per age interval. Percentage of total expenditure per age 5-year age interval (left scale), and relative weight of total compared to 2000-estimate (right scale), countries sub-group HIGH, years 2000, 2025, and 2050



Source: EPC (2001), UN (2003a), UNDP (2002)

Notes: □ Age profile for public expenditure on health is based on the median value between selected group of countries (see figure 5.4); □ As GDP per capita is used the median for sub-group HIGH (see figure 4.6 and also panel D in figure 3.7); ˝ For the list of countries included in sub-group HIGH, see, for example, figure 2.3)

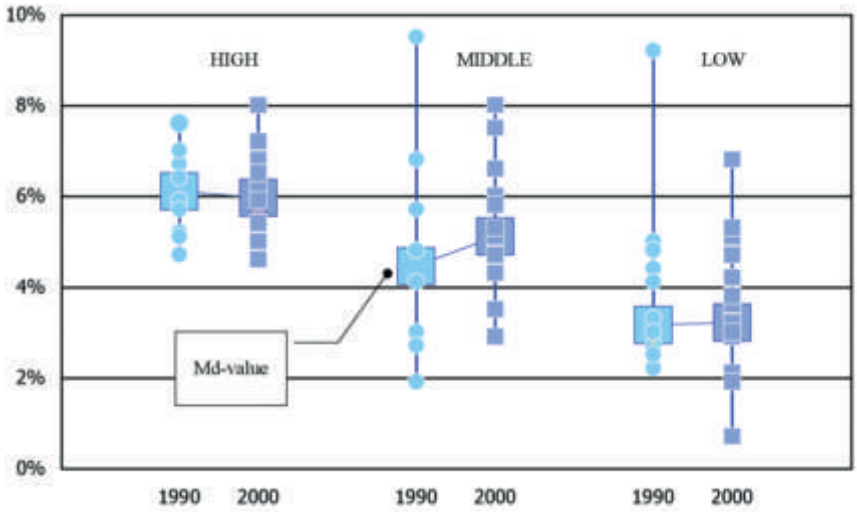
Figure 4.6 – GDP per capita in 2000 (expressed in PPP 2000 USD equivalents) (left scale) and relative increase in public health expenditure, for unadjusted and adjusted values (right scale), by sub-group, years 2000, 2025, and 2050



Source: EPC (2001), UN (2003a), UNDP (2002)

Notes: ☐ Used GDP per capita corresponds to median value between countries in sub-group; ☐ Base for unadjusted values is GDP per capita as observed; ☐ Base for unadjusted values is GDP per capita for sub-group HIGH

Figure 4.7 – Public expenditures on health care expressed as share of GDP, by sub-group, years 1990 and 2000



Source: UNDP (2003)

Note: Dots correspond to individual country estimates

Table 4.1 – Percentage of private households with an older member (at least one), by region, circa 2000

	Co-residents aged					
	65 or more			75 or more		
Region	median	minimum	maximum	median	minimum	maximum
'Eastern Europe'	28.69%	26.00%	32.14%	12.41%	11.61%	13.78%
'Northern Europe'	27.73%	24.96%	28.35%	11.61%	8.84%	13.96%
'Southern Europe'	33.76%	32.31%	35.21%	14.71%	14.51%	14.91%
'Western Europe'	24.77%	20.79%	28.51%	11.47%	9.29%	14.21%
All regions	28.28%	20.79%	35.21%	12.09%	8.84%	14.91%

Source: Eurostat (2004: Topic table 22)

Table 4.2 – Estimated number of men and women aged 65 and more in retirement homes, by region, years 2000, 2025, 2050

	Observed percentage-values in 2000			
Region	Men	Women	Both	Estimates on the basis of data for the following countries:
'Eastern Europe'	0.67%	1.09%	0.93%	Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic
'Northern' Europe	1.04%	2.60%	1.96%	Estland, Finland, Ireland, Latvia, Lituania, UK
'Southern Europe'	0.86%	1.92%	1.48%	Greece, Italy, Portugal
'Western Europe'	2.50%	5.59%	4.34%	Austria, France, Netherlands, Luxembourg, Switzerland

	Extrapolated numbers entire region								
	in 2000			in 2025			in 2050		
Region	Men	Women	Both	Men	Women	Both	Men	Women	Both
'Eastern Europe'	90,260	282,825	373,085	129,843	361,689	491,532	162,182	407,261	569,442
'Northern' Europe	63,002	224,301	287,303	90,239	300,446	390,685	110,566	355,661	466,227
'Southern Europe'	85,954	267,888	353,842	118,114	353,922	472,036	152,103	439,647	591,749
'Western Europe'	288,681	991,131	1,279,812	470,260	1,379,668	1,849,928	540,796	1,603,574	2,144,369

	Relative increases (%)								
	2000-2025			2025-2050			2000-2050		
Region	Men	Women	Both	Men	Women	Both	Men	Women	Both
'Eastern Europe'	44%	28%	32%	25%	13%	16%	80%	44%	53%
'Northern' Europe	43%	34%	36%	23%	18%	19%	75%	59%	62%
'Southern Europe'	37%	32%	33%	29%	24%	25%	77%	64%	67%
'Western Europe'	63%	39%	45%	15%	16%	16%	87%	62%	68%

Source: UN (2003), combined with results of figure 5.2

5. Some final comments and considerations

It is hoped that the present analysis convincingly demonstrates that population ageing is not just a demographic issue. According to the results of the simulations it should be possible to counterbalance most, if not all, of the negative effects related to older age structures by taking appropriate measures in the socio-economic sphere.

As announced in the introductory section, it was not the aim of this paper to make suggestions on how to implement these measures effectively. We do hope, however, that it is clear that the measures should have a long-range perspective. For the western European countries, for example, this means that they should not just be remedies against the temporary effects induced by the fact that in the coming years the children of the baby-boom will be joining the cohorts of pensioners.

It must indeed be clear that, as is shown by the intermediate (the regular *Population Prospects*) and long-range population prospects from the UN Population Division, population ageing is here to stay. The only demographic processes that are able to curb the trend in a sustainable way would be decreased life expectancy and increased fertility (at above replacement level). Concerning the first solution, one may fairly assume that it is an unacceptable alternative. Concerning the second solution, it should be clear to everyone that the prospect of a world population of more than 9 billion people is not a very promising outlook.

Finding the proper measures and how to implement them will not be an easy task. One crucial objective should be to make young and old live together harmoniously. More intergenerational solidarity is probably a key element in its implementation. This however assumes individual behaviour that is compatible with a life course perspective; and this will not happen unless every individual realises that his or her present situation not only depends on past experiences, but also determines to a great extent his or her well-being in the remaining years of life.

One obvious measure to cope with population ageing appears to be working longer. However, in spite of the knowledge that with increased life expectancy one will also spend an increasingly share of one's entire life in retirement, the public seems rather hostile to the idea of longer working. On the one hand this may appear to be paradoxical. On the other hand, as suggested by the OECD (1998), this attitude would be compatible with the existing regulations that have made early retirement particularly attractive. Changing the existing early-retirement schemes alone – an unpopular idea

not only among the public at large but also among worker's unions or syndicates – is certainly not a sufficient measure. As mentioned, more attention will need to go to the conditions at the work place itself and to job satisfaction.

In the discussion on raising the age of retirement, it would be a mistake to ignore the specific physical conditions of a profession. Likewise, those who are still in good health – and who express a willingness to do so – should be given the chance to work longer. More attention should probably also go to the number of years worked, rather than age for entering retirement. In other words, flexibility appears to be the key element in the discussion. Furthermore, "a more flexible work-retirement transition is one example of active ageing – the capacity of people, as they grow older, to lead productive lives in the society and economy" OECD (1998: 14).

An often-heard counter argument to the idea of working longer is that it needs the creation of new jobs. With unemployment rates close to 10 percent[60] for the working population aged 25-49 the idea may indeed seem unrealistic. But do these figures indicate that the idea is simply invalid in its own right, or do they rather indicate the difficulty of the task?

As said above, most of the existing early-retirement and disability schemes have been developed in the 1970s and 1980s as a response to high unemployment among younger workers. Based on the figures of some 25 years later, one can conclude that the measure has not been very successful. Also at the beginning of the twenty-first century unemployment is (much) higher among 20 to 24 year olds than among the working population aged 25 and more. On average the unemployment rate is 8.4 percent in the western European countries (as opposed to 6.5 for ages 25-49) and not less than 17.9 percent in the eastern European countries (as opposed to 9.9).[61]

Besides, the pursuit of full employment is a commendable political objective in its own right. To cite once more the OECD (2000: 121): "[...] reforms in these directions make good social and economic sense quite apart from their role in addressing age-related challenges". As indicated in figure 3.3 also among the countries with the highest employment rates – those of subgroup HIGH – they never exceed, for whatever age interval, 90 percent of the population at working-age.

60. The estimates are derived from Eurostat's (2004) *Community Programme*. See also the discussion in section 3.4, and footnote 43.
61. Cf. previous footnote.

Seen from this perspective, current rates of unemployment should not – cannot – be taken as proper guidelines for forecasting labour participation. For example, in its 1994 Report the Belgian Study Commission on Ageing recognises that unemployment (in Belgium) must currently be estimated at 14.2 percent, but decided to use a structural level of 7.5 percent for its estimates of the future cost of population ageing (Studiecommissie voor de vergrijzing, 2004: 15).[62] The Study Commission justifies its decision by referring to the structurally low level that could be observed in the period 1953-2002.

A particular concern in relation to population ageing would be the rising costs of expenditures on health care. As seen in section 4.2 on the basis of demographic change alone one may indeed fear for substantial increases (by 25% by 2050). However, as argued, there could be other factors besides age structure determining the expenditures on health care. There is even the possibility that the age profile for public expenditures on health care (figure 4.4) is misleading. It should be recognised that the subject is quite complex and not well understood. It is obvious that there is the need for more investigation.

In a recent study, Lutz and Scherbov (2003) suspect that increased life expectancy would go hand in hand with an increased number of healthy years of life. If this is the case, population ageing would not necessarily imply more people in need for more medical assistance – the contrary could be true. On the other hand, Doka and Lavin (2003: 135-136) argue that "[...] more persons with developmental disabilities are ageing [...]. In fact, with the exception of persons with Down's syndrome who have shorter life spans, most persons with developmental disabilities will have life spans similar to their peers without disabilities". The causes would be better health care, greater medical understanding and treatment of developmental disabilities (as well as the beneficial results of de-institutionalisation[63]). These conclusions seem to be in line with what was referred to in section 4.2, namely the observation of increased proportions of people with limiting long-term illness in the UK.

One and the other indicate the danger of circular reasoning. Population ageing may lead to increased health expenditures, but at the same one must

62. The cited rate of 14.5% is high compared to the European averages in the previous footnotes. The Belgian Study Commission on Ageing is using national statistics whereas the *Community Programme* is based on census results. More recent figures from Eurostat (Eurostat, 2004b) indicate for the end of 2004 an unemployment rate for Belgium of 7.9%; a relative high rate however compared to the average of 8.9% observed for the countries of the Euro-zone.
63. Which consequently should not be pursued for just economic considerations (cf. Jacobzone and colleagues, 2000, cited in section 4.1)

remain conscious of the fact that better (and more expensive) health care is most likely one of the main reasons for increased life expectancy.

It would at any rate in the debate be a serious oversight not to take into account the fact that health expenditures are determined by other factors besides the age structure. Expenditures are also determined by doctor's fees, the costs related to infrastructure of health facilities (the installation and maintenance of health equipment), the costs for the development of new equipment and treatment, for new and better drugs etc. Expenditures are also largely a function of the consumption of drugs. The latter itself depends on the prescription behaviour of the medical community and of the claims made by patients (the belief that there is no valid treatment without the intake of drugs and the desire to get well in the shortest time possible, in many cases because of job constraints). Eventually, health expenditures must largely depend on the retail price of drugs.

The arguments may seem obvious. However, in Belgium for example it took a publication by a left-wing medical practitioner[64] and much attention by the media before the matter was taken up seriously by the government. In his work on 'The cholesterol war' (free translation), Dr. Van Duppen (2004) argues that drug companies maintain artificially high prices for many drugs. He bases his arguments on the fact that prices vary between countries. Dr. Van Duppen is not alone in his fight against the excessive price policies of the pharmaceutical industry. Much of his reasoning is drawn from the findings from an American colleague, Marcia Angell, lecturer at the Harvard School on Social Medicine, published in 2004 under the title *The Truth about the drug companies*. According to Dr. Van Duppen expenditures related to drug consumption can be brought down with the use of alternative price mechanisms. His example is the situation in New Zealand where the price is the result of a public tender organised by the government. The system forces the drug companies to offer the lowest price for their products and a public health institute guarantees that only the best drugs will be selected.

This is not the place to discuss and judge the arguments of Dr. Van Duppen (or of Marcia Angell). However, one must give him the credit for having indicated an entire new window in the debate regarding expenditures and population ageing.

The simulation results indicate that the increase in the numbers of older people is likely to be offset by increases in GDP per capita. The results appear

64. Dr. Van Duppen is member of a left-wing doctor's association 'Medicine for the People'.

realistic for the countries of sub-group HIGH (cf. figure 3.8). There is no way to verify to what extent the results are equally realistic for the countries of sub-groups MIDDLE and LOW. This is due to the very low levels of GDP per capita that are currently experienced in these countries (compared to those in sub-group HIGH) and their rather erratic evolution in the past decades (cf. figure 3.7). There can however be no doubt that, in order to counterbalance the negative effects of population ageing, the countries in sub-groups MIDDLE and LOW will need to make (much) greater efforts. This will not be achieved without much greater increases in labour force participation and in productivity than those needed in the countries of sub-group HIGH.

It is from this perspective that one can grasp what Andras Klinger meant in his earlier report prepared for the UNECE, entitled *'Labour Market Responses to Population Ageing and Other Socio-Demographic Change'* (Klinger, 2002: 18): "For the transition economies of central and eastern Europe, economic growth needs to be sustained at high rates over the medium to long term, but the issues here are the more fundamental ones of economic development and catch up. Without high rates of growth in the transition economies it is difficult to see how the impoverishment of pensioners and other dependent sections of the population can be reversed".

The socio-economic differences that exist between the more and less wealthy member states of the Council of Europe should receive particular attention in the discussion on how to remedy the effects of population ageing. It stresses the importance of international co-operation for maintaining prosperity in an ageing society. The idea is not new. It can be found in an OECD study dating from 1998 (p.26, own italics): "Action at the international level can supplement national action. While specific reforms must be tailored to meet the circumstances of each country, there are many common directions and much that can be gained by international co-operation during the reform process. Areas of international co-operation include:

- collection of sharing new statistical data on *an internationally comparable basis* and exploitation of existing information;
- monitoring of reforms and *sharing of lessons in a multilateral setting*; and
- assisting emerging market economies to implement successful structural reforms and sound macroeconomic policies [...]".

Most likely that in these bullet-points the *real* challenges posed by population ageing are identified.

To my spouse and partner Eliane.
Without her, this work would never have started, let alone have been accomplished.

Also to my colleagues Marc and Lieve.
Their determination and perseverance deserve our respect.

Acknowledgments

As was the case for the previous work undertaken for the European Population Committee (CAHP) (that resulted in Population Studies No. 47) it must be acknowledged that the present analysis would not have been possible without the support of many colleagues. I will not try to give all their names. However, I feel compelled to mention some of them.

My special thanks go to Michel Englert, Advisor of the Federal Planning Office in Belgium, for his willingness to remind me of the use and interpretation of some economic indicators and for drawing my attention to some important studies. Without his kind assistance (and patience), the part of the work dealing with the economic and financial impact of population ageing would simply not have been possible (let it however be quite clear that the author is solely responsible for the nature of the simulations that eventually were used, for any possible shortcomings in their application, and for the conclusions that were drawn from the results).

I wish also like to thank François Bovagnet (ESTAT) and Georgia Karamountzou (Unit F1) of Eurostat for their understanding and help in making the data set of the *Community Programme of Population and Housing Censuses in 2001* available in due time. Without these data, sections 3 and 4 would have been only half as complete.

Also my thanks go to Charlotte Höhn, Director of the *Bundesinstitut für Bevölkerungsforschung*, and co-ordinator of the DIALOG-project, for her permission to use some preliminary results of the DIALOG-project. The data allowed to put some outcomes of the simulation exercises into perspective.

Finally, I would also like to thank the members of the CAHP for their renewed confidence and for having entrusted me with this work.

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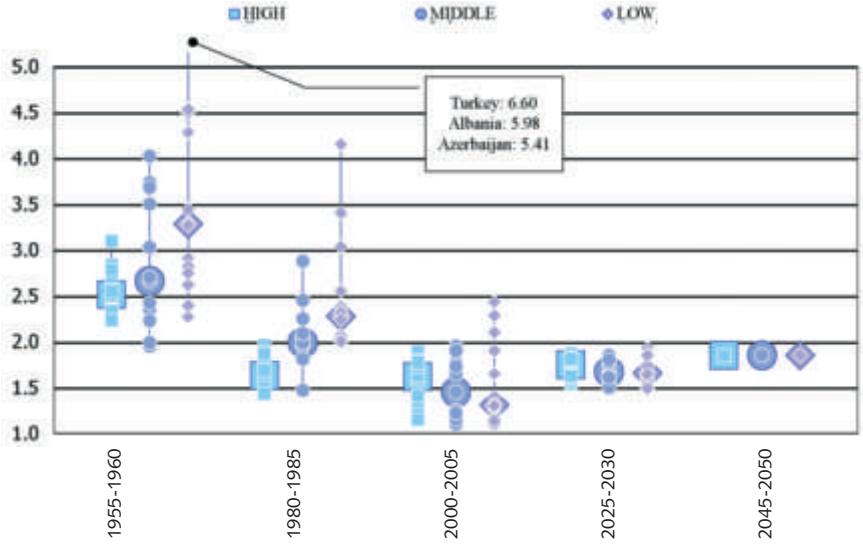
Annexes

Annex to section 2.3

Figure A1 – Total fertility (number of children per woman) among member States of the Council of Europe, ordered by sub-group (HIGH, MIDDLE, LOW), for selected years in period 1955-2050



Source: UN (2003a)

Note: ☐ Individual country values are represented by dots; ☐ Oversized dots indicate median value for each sub-group in corresponding year interval

Around the middle of the 20th century the countries of sub-group HIGH showed with a median value of 2.51 children the lowest levels of fertility. The countries in the two other sub-groups showed much higher values. Median values were 2.66 (sub-group MIDDLE) and 3.28 (sub-group LOW). In both groups, several countries experienced levels of more than 3.5 children; the greatest 'outliers' however are observed in sub-group LOW with values of more than 4 children: Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, TFYR Macedonia, and Turkey (the latter showing the highest value of 6.66 children). During the next decades in all countries fertility levels declined seriously. The most important declines (measured in absolute value) are recorded among the countries in sub-group LOW. By the turn of

the century, the lowest values are no longer observed for the countries of sub-group HIGH, but for those of sub-group LOW. Median values for each sub-group are in 2000-2005: 1.62 (HIGH), 1.45 (MIDDLE), and 1.31 (LOW). Turkey, Albania and Azerbaijan are the only countries with fertility levels above replacement level around the turn of the century. Eventually, by 2050 all countries would have a fertility level of 1.85 children (in accordance with the assumption of the medium variant).

Annex to section 3.2

Choice of base-line values for reference proportions employed and effect on reference values from scenarios with respect to increased employment

Scenario	Underlying assumptions
'Constant'	Employment rates are kept constant and identical to those observed around 2000
Scenario 'A'	Employment rates (for both men and women) are equal to those of the 'Scandinavian' model (i.e., averages of those observed for Denmark, Finland, and Sweden around 2000)
Scenario 'B'	Rates of scenario 'A', but decrease beyond age 50 follows a fixed but sex-specific pattern, equal to the decrease observed age interval 45-49 to 50-54
Scenario 'C'	Rates of scenario 'B' but increased for all age intervals by 2.5% for men and by 5% for women

This part of the Annex deals with the choice of the base-line values for the simulations of which the results are presented in the text in figure 3.5 and in figure A4 here below. The scenarios and assumptions are as follows (cf. table 3.2 in text):

The base-line values correspond to the average employment rates observed around 2000 for Denmark, Finland, and Sweden – hence the designation of Scandinavian model (cf. scenario 'A'). The steps with regard to this choice are indicated in table A1.

Table A1 presents the median values for each 5-year age interval regarding (a) the percentages 'economically active'; and (b) the percentages 'employed' (cf. remark concerning its definition in footnote 23). Next to the median values are given the percentage point differences by country. Negative values indicate that the country shows an activity or employment rate that is below average.

Table A1 – Countries sub-group HIGH. Median values and percentage point differences between median and individual country values for (A) Percentages economically active; and (B) Percentages employed, per 5-year age interval; both sexes combined, and for men and women

BOTH SEXES

	(A) Regarding percentages economically active										(B) Regarding percentages employed									
		Country										Country								
Age	Median	A	CH	D	DK	F	FIN	NL	S	UK	Median	A	CH	D	DK	F	FIN	NL	S	UK
20-24	73.2%	0.06	0.06	-0.01	0.05	-0.12	-0.13	0.04	-0.10	0.00	66.5%	0.06	0.08	0.00	0.08	-0.19	-0.15	0.09	-0.08	0.00
25-29	83.7%	0.05	0.04	-0.02	0.01	0.05	-0.02	0.00	-0.05	-0.01	77.5%	0.05	0.06	-0.02	0.03	-0.03	-0.06	0.04	-0.03	0.00
30-34	86.3%	0.04	0.00	0.00	0.02	0.03	0.00	-0.05	-0.02	-0.05	80.1%	0.05	0.03	0.00	0.04	-0.02	-0.03	0.00	0.00	-0.03
35-39	87.6%	0.02	-0.02	0.00	0.01	0.01	0.02	-0.06	-0.02	-0.06	81.4%	0.04	0.01	0.00	0.04	-0.02	-0.01	-0.04	0.00	-0.03
40-44	88.5%	0.01	-0.01	0.00	0.00	0.00	0.02	-0.10	-0.02	-0.06	82.4%	0.03	0.02	0.00	0.03	-0.02	-0.01	-0.06	0.01	-0.03
45-49	87.1%	-0.01	0.00	0.00	0.00	0.00	0.02	-0.11	0.00	-0.05	80.8%	0.01	0.03	0.00	0.04	-0.02	-0.01	-0.07	0.03	-0.02
50-54	81.8%	-0.03	0.02	0.00	0.03	0.00	0.04	-0.13	0.04	-0.04	74.5%	-0.02	0.06	0.00	0.07	-0.01	0.01	-0.08	0.08	0.00
55-59	67.2%	-0.22	0.09	0.00	0.10	-0.12	0.09	-0.14	0.12	-0.02	59.2%	-0.19	0.14	-0.01	0.12	-0.12	0.00	-0.07	0.17	0.03
60-64	27.4%	-0.18	0.20	-0.04	0.07	-0.17	0.00	-0.08	0.26	0.10	22.9%	-0.14	0.23	-0.02	0.10	-0.14	0.00	-0.04	0.25	0.13

MEN

	(A) Regarding percentages economically active										(B) Regarding percentages employed									
		Country										Country								
Age	Median	A	CH	D	DK	F	FIN	NL	S	UK	Median	A	CH	D	DK	F	FIN	NL	S	UK
20-24	78.2%	0.04	0.01	-0.01	0.03	-0.13	-0.16	0.01	-0.11	0.00	69.6%	0.06	0.05	0.00	0.08	-0.18	-0.16	0.08	-0.08	0.00
25-29	88.4%	0.04	0.04	-0.01	-0.01	0.05	-0.02	0.00	-0.05	0.02	83.8%	0.03	0.05	-0.03	0.00	-0.03	-0.06	0.03	-0.05	0.00
30-34	91.7%	0.05	0.04	0.04	-0.01	0.05	0.00	-0.01	-0.03	-0.01	87.0%	0.05	0.06	0.02	0.00	0.00	-0.05	0.01	-0.03	-0.01
35-39	92.2%	0.05	0.04	0.04	-0.02	0.04	0.00	-0.02	-0.04	-0.01	88.1%	0.05	0.06	0.02	-0.01	0.00	-0.05	0.00	-0.04	-0.02
40-44	91.4%	0.06	0.04	0.04	-0.02	0.05	0.00	-0.02	-0.03	-0.02	87.9%	0.04	0.06	0.01	-0.01	0.00	-0.06	0.00	-0.04	-0.02
45-49	89.2%	0.06	0.06	0.05	0.00	0.06	0.00	-0.01	-0.02	-0.01	86.7%	0.03	0.06	0.01	-0.01	0.00	-0.08	0.00	-0.03	-0.03
50-54	88.1%	0.01	0.05	0.02	0.00	0.03	-0.03	-0.03	-0.01	-0.04	83.1%	-0.01	0.08	0.00	0.02	0.00	-0.08	0.00	0.00	-0.03
55-59	74.6%	-0.10	0.14	0.02	0.09	-0.12	0.00	-0.03	0.07	-0.01	70.0%	-0.13	0.18	-0.03	0.09	-0.16	-0.12	0.00	0.07	0.00
60-64	32.2%	-0.18	0.34	0.00	0.12	-0.22	-0.03	-0.04	0.25	0.18	29.3%	-0.17	0.34	0.00	0.13	-0.20	-0.04	-0.02	0.21	0.18

WOMEN

	(A) Regarding percentages economically active										(B) Regarding percentages employed									
		Country										Country								
Age	Median	A	CH	D	DK	F	FIN	NL	S	UK	Median	A	CH	D	DK	F	FIN	NL	S	UK
20-24	68.2%	0.08	0.10	0.00	0.07	-0.11	-0.10	0.07	-0.09	0.00	63.3%	0.06	0.10	0.00	0.09	-0.21	-0.14	0.10	-0.08	0.00
25-29	78.8%	0.06	0.04	-0.04	0.02	0.04	-0.03	0.00	-0.05	-0.04	71.4%	0.07	0.07	-0.01	0.05	-0.04	-0.06	0.06	-0.02	0.00
30-34	80.2%	0.03	-0.03	-0.04	0.05	0.02	0.01	-0.07	0.00	-0.06	71.9%	0.07	0.00	0.00	0.06	-0.03	0.00	-0.01	0.04	-0.03
35-39	81.6%	0.00	-0.06	-0.03	0.05	0.00	0.05	-0.13	0.01	-0.08	73.0%	0.05	-0.01	0.00	0.10	-0.02	0.04	-0.07	0.05	-0.03
40-44	81.6%	0.00	-0.03	0.00	0.06	0.00	0.08	-0.14	0.04	-0.05	75.4%	0.02	-0.01	0.00	0.08	-0.03	0.05	-0.10	0.06	-0.02
45-49	79.7%	-0.02	-0.01	0.01	0.06	0.00	0.10	-0.16	0.06	-0.03	74.6%	-0.01	0.01	0.00	0.08	-0.03	0.06	-0.13	0.08	0.00
50-54	72.8%	-0.04	0.01	0.00	0.09	0.00	0.14	-0.21	0.11	-0.02	68.7%	-0.06	0.02	-0.03	0.10	-0.04	0.08	-0.19	0.13	0.00
55-59	57.3%	-0.31	0.06	0.00	0.13	-0.10	0.20	-0.23	0.20	-0.01	54.6%	-0.31	0.06	-0.06	0.10	-0.14	0.06	-0.21	0.20	0.00
60-64	24.9%	-0.19	0.06	-0.10	0.00	-0.15	0.01	-0.15	0.26	0.00	21.1%	-0.15	0.08	-0.08	0.03	-0.12	0.00	-0.11	0.25	0.04

Source: Eurostat (2004)

Note: Negative percentage point differences are indicated in grey, blue and pink, respectively.

The first panel includes the values for BOTH SEXES. The country with the best score (all percentage point differences are positive and relatively high) is Denmark. Other good performers are Switzerland (for employment rates), and also, although to a lesser extent Finland and Sweden (both show relative high values at for the oldest age intervals).

The second panel includes activity and employment rates for MEN only. Here, the best performer is undoubtedly Switzerland, followed by Germany and, taken employment into account, the Netherlands. Denmark and Sweden show positive values for the oldest age intervals. (By contrast, Austria is a good performer but shows negative values for the oldest age intervals.)

The third panel includes activity and employment rates for WOMEN. The highest (positive) values are observed for Denmark, Sweden, and also Finland; Sweden shows remarkable high values for the oldest age intervals. Especially the high scores for WOMEN were decisive to choose the Scandinavian model. Switzerland comes close, but has been eliminated because of the negative values for WOMEN at the middle ages (negative values concerning activity for the youngest age intervals as observed for Finland and Sweden, must be interpreted as the result of prolonged schooling).

Figure A2 below shows the base line values for activity and employment rates of the Scandinavian model. The rates correspond to the average of the observed values for Denmark, Finland, and Sweden.

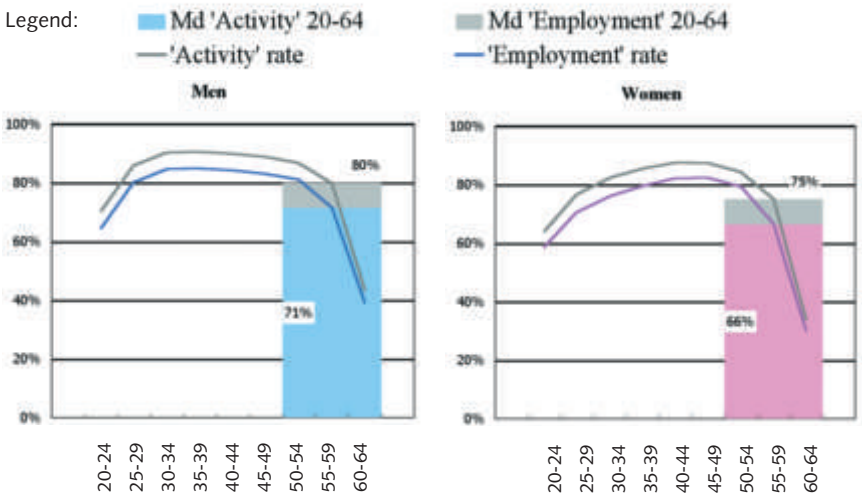
Figure A2 includes on the one hand the rates by 5-year age interval (two curves) and on the other hand the average (i.e. the median) for ages 50-64 (bar diagram).

Activity and employment rates follow near-parallel curves. The values for women are somewhat shifted to the right (i.e., toward higher ages). On average, rates are slightly lower for women than for men. The median value for activity rates at ages 50-64 is 80% for men and 75% for women; the median values for employment are 71% and 66%. In other words, 80% of the men at ages 50-64 state to be economically active, but only 71% is in active employment (which implies an unemployment rate of 11.25%).

Figure A3 presents the effects of assuming increased employment on the base-line values. Only the effect of scenario 'C' is included. As such, figure A3 allows to assess the differences between activity rates (2 & 6), employment rates as observed (1 & 4), and finally employment rates corresponding to scenario 'C' (3 & 5).

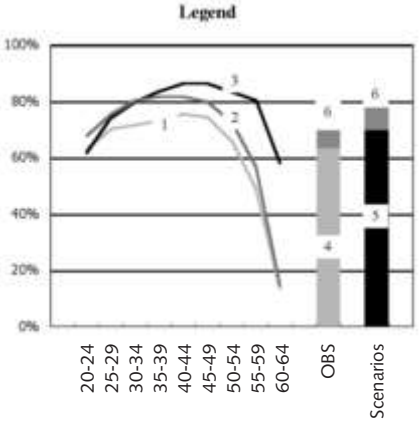
The differences between observed and scenario-based employment rates are greatest at the oldest age intervals and these are greater for women than for men – a pattern that is consistent with the expected cumulative effects of the scenarios. For women, the scenario-based employment rates are higher that the (observed) activity rates. This is consistent with the fact that the relatively low employment rates that are observed for women are to a great extent the result of low activity rates. The effect is greatest for the oldest age intervals. Scenario 'C' pushes the average employment rate for women at ages 50-64 up to 78% whereas the (observed) activity rate is 70%. In the case of men, employment rate remains slightly below activity (one may say that the effect of scenario 'C' would be to create unemployment close to zero).

Figure A2 – Base-line values of activity and employment (equal to average values for Denmark, Finland and Sweden, situation around 2000) per 5-year age interval and average for age group 50-64, for men and for women



Source: Eurostat (2004)

Figure A3 – Base line values fore the proportions active and employed of the Scandinavian model (averages of DK, FIN, and S), and proportions employed resulting from scenario 'C'



1. Percentage employed as observed
2. Percentage economically active;
3. Percentage employed according to scenario C
4. Percentage employed as observed, ages 20-64
5. Percentage employed according to scenario C, ages 20-64
6. Percentage economically active, ages 20-64

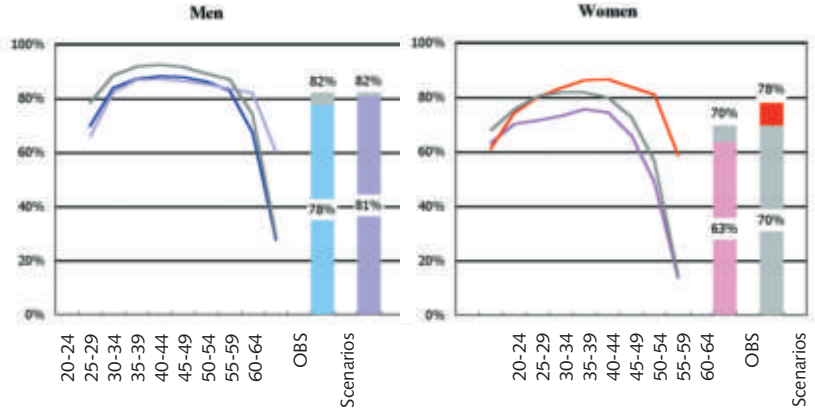


Figure A4 – Changes in the age structure by 5-year age interval between 2000 and 2050 (left scale) and percentages employed age group 20-64 (right scale), as observed in 2000 and as estimated in 2025 and 2050 according to scenario, for a selected group of countries

Legend:

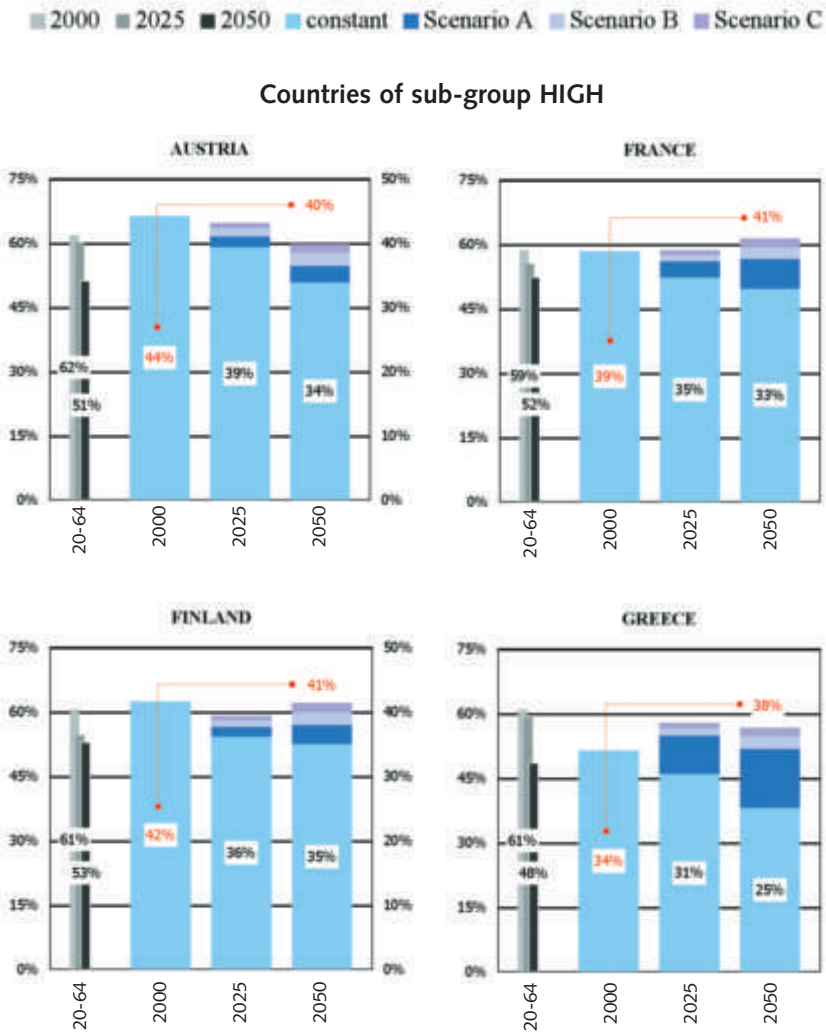


Figure A4 – continued

Countries of sub-group HIGH – continued

Countries of sub-group MIDDLE

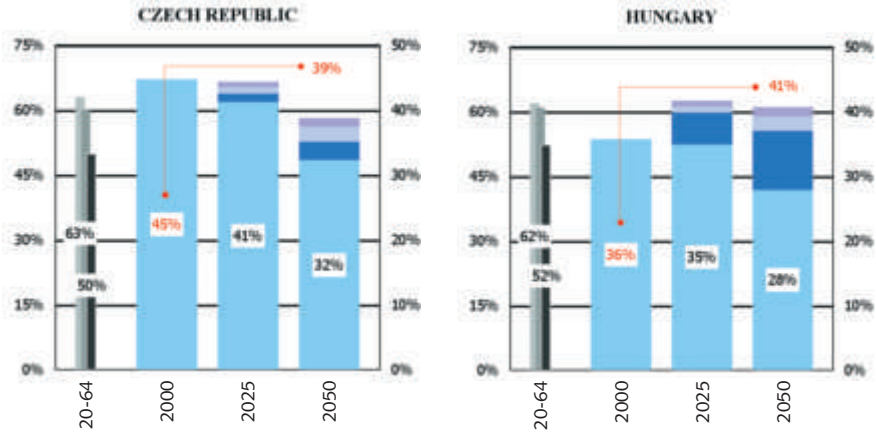
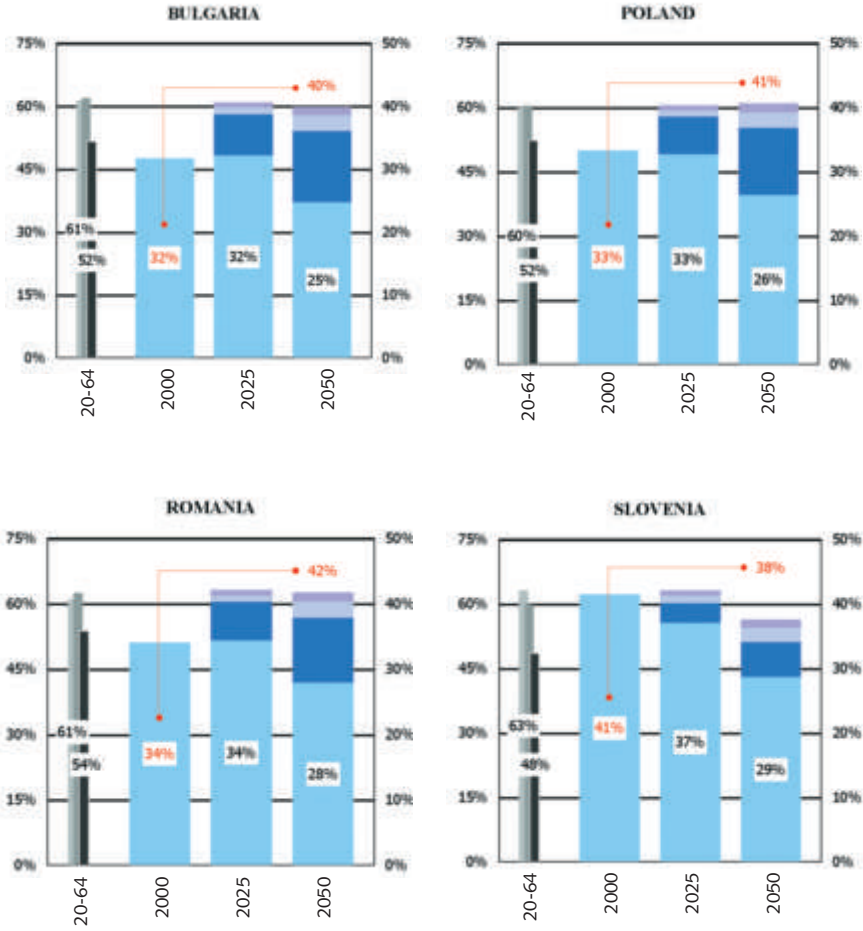


Figure A4 – continued

Countries of sub-group LOW



Annex to section 3.3

Regarding the forecast of GDP-levels per capita, assuming different growth levels for productivity and increased employment rates

This part is divided into two steps: the estimation of the level of labour productivity in 2000 (table A2); and the forecasting on GDP-levels per capita corresponding to several scenarios with respect to the growth of labour productivity and increased employment rates (the latter being the object of section 3.2).
Labour productivity can be estimated from the basic formula (presented at the start of section 3.3):

GDP / inhabitant = [GDP / (proportion population employed)
X [(population employed) / (population at working-age)]
X [(population at working-age) / (total population)]

= [labour productivity per capita]
X [proportion population employed]
X [proportion population at working-age]

So that:

[labour productivity per capita] = [GDP / inhabitant] / {[employment rate]
X [proportion pop working-age]}

The results are given in table A2. Results are given by sub-group.
As indicated, employment rate (or in a few cases GDP per capita) is not known for all countries. Table A2 includes estimates for labour productivity for all countries within each sub-group; where necessary the missing value was substituted by the median value. Eventually however, the simulation exercises themselves (see table A3) are based on the median value for labour productivity between the estimates for only those countries without missing values.
Note that the difference in the median value based on all estimates and based on only estimates for countries without missing values is small for sub-groups HIGH and MIDDLE (in both cases a difference of less than 1%). The difference is much more important for sub-group LOW: 31.7%. Somehow, poor economic performance seems to go hand in hand with poor statistics.
The use in the simulation exercises the median for labour productivity based on estimates only for countries without missing values may imply overestimating the true value (by perhaps close to 30%). Concurrently, the results

in table A3 for sub-group LOW are likely to correspond to optimistic values for the GDP per capita. In other words, the extra effort needed to reach GDP -levels similar to those obtained in the countries of sub-group HIGH (see text) could be even higher than those suggested by the simulation results.

Table A2 – Individual country estimates for labour productivity on the basis of GDP per capita, employment and the proportion of the population at working-age, by sub-group, 2000

Sub-group HIGH

Country	labour productivity	GDP/ inhabitant	employment rate	prop pop working age
Austria	60,855.7	26,765	0.7109	0.6186
Belgium	65,399.8	27,178	0.6970	0.5962
Denmark	52,844.8	25,103	0.7718	0.6155
Finland	60,055.6	24,996	0.6874	0.6055
France	62,292.3	24,223	0.6632	0.5864
Germany	58,115.9	25,103	0.6924	0.6239
Greece	47,136.2	16,501	0.5749	0.6089
Italy	54,379.5	23,626	0.6970	0.6233
Netherlands	59,223.9	25,657	0.6970	0.6216
Norway	72,848.7	29,918	0.6970	0.5892
Spain	44,921.9	19,472	0.6970	0.6219
Sweden	55,053.2	24,277	0.7525	0.5860
Switzerland	66,735.4	28,769	0.6970	0.6185
UK	55,787.0	23,509	0.7155	0.5890
Md Value between countries without missing values (in grey)	58,115.9	25,103	0.6970	0.6122
	58,669.9	(= Md All Countries)		

Source: UNDP (2002), Eurostat (2004), UN (2003a)

Note: ☐ GDP/inhabitant is given in 2000 USD PPA equivalents, hence also labour productivity correspond to 2000 USD PPA equivalents; ☐ Grey shaded cells indicate that the parameter value was missing and that the country estimate for labour productivity was calculated using the median value. Eventually, further in the analysis not the country estimates but only the sub-group estimate for productivity is used. The latter correspond to the median value between countries without missing values in the parameters; ☐ the 2000-estimate of GDP per capita results from using the basic formula presented above (and is therefore different from the value given in panel D of figure 3.7, which correspond to the median value between the observed country values).

Table A2 – continued

Sub-group MIDDLE

Country	labour productivity	GDP/ inhabitant	employment rate	prop pop working age
Croatia	19,185.1	8,091	0.6978	0.6044
Cyprus	32,975.4	13,204	0.6980	0.5736
Czech Republic	30,998.6	13,991	0.7162	0.6302
Estonia	22,759.0	10,066	0.7461	0.5928
Hungary	34,894.7	12,416	0.5742	0.6196
Iceland	73,781.4	29,581	0.6978	0.5746
Ireland	76,716.9	29,866	0.6686	0.5822
Latvia	20,766.5	7,045	0.5711	0.5941
Lithuania	17,098.3	7,106	0.7113	0.5843
Luxembourg	122,873.6	50,061	0.6605	0.6168
Malta	41,210.2	17,273	0.6978	0.6007
Portugal	40,554.7	17,290	0.6978	0.6110
Ukraine	9,001.4	3,816	0.6978	0.6075
Md Value between countries without missing values (in grey)	32,946.6	13,204	0.6978	0.6007
	32,975.4	(= Md All Countries)		

Sub-group LOW

Country	labour productivity	GDP/ inhabitant	employment rate	prop pop working age
Albania	11,285.6	3,506	0.5592	0.5555
Armenia	7,876.2	2,559	0.5592	0.5810
Azerbaijan	9,874.2	2,936	0.5592	0.5317
Belarus	22,659.3	7,544	0.5592	0.5954
Bosnia and Herzegovina	17,119.3	6,067	0.5592	0.6337
Bulgaria	18,014.4	5,710	0.5178	0.6122
Georgia	8,125.8	2,664	0.5592	0.5863
Moldova	6,469.0	2,109	0.5592	0.5830
Poland	27,564.2	9,051	0.5478	0.5994
Romania	18,825.0	6,423	0.5592	0.6101
Russian Federation	24,423.7	8,377	0.5592	0.6133
Serbia and Montenegro	18,343.0	6,067	0.5592	0.5914
Slovak Republic	26,614.7	11,243	0.6456	0.6086
Slovenia	41,882.7	17,367	0.6568	0.6314
The Former Yugoslav Republic of Macedonia	15,373.7	5,086	0.5592	0.5916
Turkey	23,664.3	6,974	0.5592	0.5270
Md Value between countries without missing values (in grey)	27,564.2	6,067	0.5592	0.5935
	18,825.0	(= Md All Countries)		

Table A3 – Estimates of GDP per capita according to the combined effect from different scenario for increased employment (constant, A, B, C) and different scenarios for growth of labour productivity (constant, A, B, C, D, E), for years 2025 and 2050, by sub-group

Sub-group HIGH

2000-Estimate GDP per capita 24,935	Tot. pop (x1,000) 374,710	Prop. working age 0.6090	Productivity 58,116	Prop. employed (ages 20-64) 0.7045

Estimates 2025

Demogr. parameters 2025		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x1,000)	380,518				
Prop. working-age	0.5794	Constant	A	B	C
		0.6749	0.6950	0.7149	0.7289
Scenario / Productivity		-4.2%	-1.3%	1.5%	3.5%
Constant	58,116	22,726	23,403	24,073	24,544
	0.0%	-8.9%	-6.1%	-3.5%	-1.6%
Scenario A	84,558	33,067	34,052	35,026	35,711
	45.5%	32.6%	36.6%	40.5%	43.2%
Scenario B	90,012	35,199	36,248	37,285	38,014
	54.9%	41.2%	45.4%	49.5%	52.5%
Scenario C	95,817	37,469	38,586	39,690	40,466
	64.9%	50.3%	54.7%	59.2%	62.3%
Scenario D	108,575	42,458	43,723	44,974	45,854
	86.8%	70.3%	75.4%	80.4%	83.9%
Scenario E	123,031	48,112	49,545	50,963	51,959
	111.7%	93.0%	98.7%	104.4%	108.4%

Estimates 2050

Demographic parameters 2050		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x1,000)	385,737				
Prop. working-age	0.5156	Constant	A	B	C
		0.6808	0.7176	0.7547	0.7826
Scenario / Productivity		-3.4%	1.9%	7.1%	11.1%
Constant	58,115.9	20,397	21,500	22,613	23,448
	0.0%	-18.2%	-13.8%	-9.3%	-6.0%
Scenario A	123,031	43,180	45,516	47,871	49,639
	111.7%	73.2%	82.5%	92.0%	99.1%
Scenario B	139,413	48,929	51,577	54,245	56,249
	139.9%	96.2%	106.8%	117.5%	125.6%
Scenario C	157,976	55,444	58,444	61,468	63,738
	171.8%	122.4%	134.4%	146.5%	155.6%
Scenario D	202,845	71,191	75,043	78,927	81,841
	249.0%	185.5%	201.0%	216.5%	228.2%
Scenario E	260,458	91,412	96,358	101,344	105,086
	348.2%	266.6%	286.4%	306.4%	321.4%

Note: ☐ Estimates for GDP per capita are in 2000 USD PPA equivalents; ☐ for the underlying assumptions regarding employment, see table 3.2; ☐ the underlying assumptions regarding annual growth of productivity are 1.50%, 1.75%, 2.00%, 2.50%, and 3.00% for scenarios A, B, C, D, and E, respectively.; ☐ the grey shaded cells in panels for sub-groups MIDDLE and LOW indicate the combinations of scenario with levels of GDP per capita that are equivalent to the one obtained for sub-group HIGH with combined scenario 'BB' in the same year (there are no equivalent levels of GDP per capita in year 2025).

Sub-group MIDDLE

2000-Estimate GDP per capita 13,292	Tot. pop (x1,000) 97,380	Prop. working age 0.6087	Productivity 32,947	Prop. employed (ages 20-64) 0.6628

Estimates 2025

Demographic parameters 2025		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x1,000)	86,160				
Prop. working-age	0.6115	Constant	A	B	C
		0.6532	0.6909	0.7081	0.7223
Scenario / Productivity		-1.4%	4.2%	6.8%	9.0%
Constant	32,947	13,162	13,920	14,267	14,554
	0.0%	-1.0%	4.7%	7.3%	9.6%
Scenario A	47,937	19,150	20,254	20,759	21,175
	45.5%	44.1%	52.4%	56.2%	59.3%
Scenario B	51,029	20,386	21,560	22,098	22,541
	54.9%	53.4%	62.2%	66.2%	69.6%
Scenario C	54,320	21,700	22,950	23,523	23,995
	64.9%	63.3%	72.7%	77.0%	80.5%
Scenario D	61,552	24,590	26,006	26,655	27,190
	86.8%	85.0%	95.7%	100.5%	104.6%
Scenario E	69,748	27,864	29,469	30,204	30,810
	111.7%	109.6%	121.7%	127.2%	131.8%

Estimates 2050

Demographic parameters 2050		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x1,000)	72,354				
Prop. working-age	0.5235	Constant	A	B	C
		0.6231	0.7048	0.7497	0.7774
Scenario / Productivity		-6.0%	6.3%	13.1%	17.3%
Constant	32,947	10,748	12,157	12,931	13,409
	0.0%	-19.1%	-8.5%	-2.7%	0.9%
Scenario A	69,748	22,754	25,737	27,374	28,387
	111.7%	71.2%	93.6%	105.9%	113.6%
Scenario B	79,035	25,783	29,164	31,019	32,167
	139.9%	94.0%	119.4%	133.4%	142.0%
Scenario C	89,558	29,216	33,047	35,149	36,450
	171.8%	119.8%	148.6%	164.4%	174.2%
Scenario D	114,995	37,514	42,433	45,133	46,803
	249.0%	182.2%	219.2%	239.5%	252.1%
Scenario E	147,657	48,170	54,485	57,952	60,096
	348.2%	262.4%	309.9%	336.0%	352.1%

Sub-group LOW

2000-Estimate GDP per capita 9,465	Tot. pop (x1,000) 341,040	Prop. working age 0.5896	Productivity 27,564	Prop. employed (ages 20-64) 0.5824

Estimates 2025

Demographic parameters 2025		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x 1,000)	336,236				
Prop. working-age	0.6181	Constant	A	B	C
		0.5687	0.6504	0.6859	0.6802
Scenario / Productivity		-2.3%	11.7%	14.3%	16.8%
Constant	27,564	9,689	11,080	11,345	11,588
	0.0%	2.4%	17.1%	19.9%	22.4%
Scenario A	40,106	14,098	16,121	16,507	16,860
	45.5%	48.9%	70.3%	74.4%	78.1%
Scenario B	42,692	15,007	17,161	17,572	17,947
	54.9%	58.5%	81.3%	85.7%	89.6%
Scenario C	45,446	15,975	18,267	18,705	19,105
	64.9%	68.8%	93.0%	97.6%	101.8%
Scenario D	51,497	18,102	20,700	21,196	21,648
	86.8%	91.2%	118.7%	123.9%	128.7%
Scenario E	58,353	20,512	23,456	24,018	24,531
	111.7%	116.7%	147.8%	153.8%	159.2%

Estimates 2050

Demographic parameters 2050		Prop. employed (ages 20-64) Scenario			
Tot. pop. (x 1,000)	308,683				
Prop. working-age	0.5526	Constant	A	B	C
		0.5352	0.7085	0.7508	0.7787
Scenario / Productivity		-8.1%	21.6%	28.9%	33.7%
Constant	27,564	8,152	10,791	11,437	11,860
	0.0%	-13.9%	14.0%	20.8%	25.3%
Scenario A	58,353	17,257	22,845	24,211	25,109
	111.7%	82.3%	141.4%	155.8%	165.3%
Scenario B	66,123	19,555	25,887	27,435	28,452
	139.9%	106.6%	173.5%	189.9%	200.6%
Scenario C	74,927	22,159	29,334	31,088	32,240
	171.8%	134.1%	209.9%	226.4%	240.6%
Scenario D	96,209	28,452	37,665	39,918	41,397
	249.0%	200.6%	297.9%	321.7%	337.4%
Scenario E	123,534	36,534	48,363	51,255	53,155
	348.2%	286.0%	411.0%	441.5%	461.6%

III. Older workers in the labour market and social policies[1]

Irena E. Kotowska

1. Introduction

Europe is currently debating policies to boost economic growth and to strengthen solidarity and social cohesion under the increasing impacts of globalisation and technological change. Adjustments to the dynamics and competitiveness of ongoing international integration processes as well as management of change are especially challenging due to the unique demographic situation of the continent. The new demography of Europe, resulting from the second demographic transition becoming an all-European phenomenon, leads not only to the rapid ageing of the population and the labour force; in Europe the working age population is predicted to decline in the coming decades. That decrease will be experienced by most countries by the years 2005-2015 and will culminate in the period 2025-2035.

Changes in the size and age structure of the working-age population are accompanied by a decline in the labour market participation of significant population groups, in particular older male workers. The clear trend towards lower labour force participation of persons aged 55 and more has been observed in European countries with developed market economies over many years. During the last decade similar changes took place in the transition countries of central and eastern Europe. Therefore, the economic and social consequences of the labour force decline and ageing, along with the population ageing are increasingly studied and debated.

A serious concern relates to the financial viability of public pension systems. These are predominantly funded on a pay-as-you-go basis, so the rising imbalance between the number of contributors to these systems and their beneficiaries will have significant implications for funding arrangements. The different interventions put in place in an increasing number of countries in the 1990s, seeking to stimulate the labour force participation of older work-

1. The paper refers to a great extent to my work on "Older workers in the labour market and retirement polices" for the European Population Committee, published in Population Studies No. 40.

ers illustrate the importance attached by governments to reversing the trend towards earlier retirement. Since the second half of the 1990s some signs of reversing that downward trend occurred in the older member States of the EU. That could reflect pension and other labour market reforms that were implemented in a number of countries.

Challenges faced by pension systems are usually considered in terms of the ageing of the population and labour force, labour market related factors, and changes in family structures. The ageing of the population and labour force is mostly exposed in public perception of issues related to pension systems. Certainly the changes in family structures receive much less attention while in recent years labour market developments seem to be more and more reflected in studies and policy recommendations. The labour market has become highly dynamic and unstable. Technological progress provokes rapid and unstable changes in the demand for labour. Quantity mismatch between labour supply and labour demand is increasingly replaced by quality mismatch. Labour supply adjustments to these demand-oriented changes result, *inter alia*, in high and persistent unemployment of several groups of population and in changing work patterns (more temporary jobs, part-time work, etc.). The low labour force participation of older workers can be attributed not only to the population's increased living standards and incentives embedded in social security systems. Under the increasingly dynamic and competitive labour market, economic skill obsolescence of the older workforce and its inadequate flexibility might be considered as an important factor in its withdrawal from the labour market.

The adaptability to labour market developments, imposed by globalisation and technological change under predicted demographic changes in Europe, is becoming a highly recognised issue in policy priorities formulated by relevant international institutions (for example: Council of Europe, Strategy for Social Cohesion, 2004; Social Policy in the EU 2004, 2004; Employment Report 2004, 2004; Economic Commission, 2004; Economic Commission, 2005). Among the key policy objectives needed to be achieved for the European Union to become more dynamic and competitive economically, those related to supply of labour and its quality have been highlighted by the European Employment Taskforce: improving the adaptability of workers, attracting more people in employment and making work a real option for all, investing more and more effectively in human capital (Kok, 2004).

This study focuses on the changes in economic activity of older workers and their determinants related to the labour market and institutional factors. Mostly supply effects are considered (the size and age composition of the labour force, old-age pensions and other non-employment related schemes).

The study starts with a brief overview of changes in the working-age population (15-64 years), which constitutes the potential labour force. Its size and ageing (raising number and share of persons aged 55-64 years) are carefully studied across countries. An evaluation of future trends refers to the UN population projections of 2002 (medium variant for the years 2003-2050). The descriptive analysis aims to present general trends and country differences as regards changes in the labour force and acceleration in the ageing of the labour force.

Then there is an examination of trends towards lower labour force participation of persons aged 55 and more. This has been observed in European countries with developed market economies for many years now. During the last decade similar changes took place in the transition countries of central and eastern Europe. The downward trend in economic activity of older workers appears to have come to a halt in the older EU member States in the 1990s. In seeking to explain these trends, some results of recent empirical studies in that field are referred to.

Up to now, older worker-oriented policies have been dominated by pension and welfare reforms. The more comprehensive approaches to prolonging people's stay in the labour market include not only measures to remove disincentives for workers to work longer and to discourage early retirement, but also those stimulating lifelong learning, improving working conditions, encouraging employers to retain and retrain older workers. These approaches have being reviewed by many researchers in the field and they are also reflected in the Lisbon Strategy established by the European Union in 2000. The recommendations of this Strategy, revised in 2005, are presented along with ongoing old-age pension system reforms.

In the last part of the study, citizen's opinions on retirement policy are presented by making use of selected results from the international project "*Population Policy Acceptance Study – The Viewpoint of Citizens and Policy Actors Regarding the Management of Population Related Change (DIALOG)*" (EC project, HPSE-CT-2002-00153). That project offers a unique opportunity to look at attitudes towards retirement and suggested policy measures from the individual perspective. Moreover, people's opinions about transition to retirement are confronted with experts' views since within the DIALOG project experts' opinions on population policy scenarios have been studied by the Delphi method.[2]

2. I would like to thank Charlotte Höhn, co-ordinator of the DIALOG project, for allowing me to use some preliminary results of the project.

Changes in the working age population and age structures are analysed for the Council of Europe countries as well as for the European Union member States (EU-25) plus Norway and Switzerland (EU-25+2). The basic country coverage includes the EU-25. Despite steadily improved labour market statistics in post-socialist countries, including the implementation of labour force surveys, there are still some obstacles to finding comparable data for all European countries, especially to study changes over time. Therefore, the scope of data on demographic trends is slightly different from that of data on labour market participation and pension reforms.

The data used in the paper come from the International Labour Organization (ILO), Eurostat, the Organisation for Economic Co-operation and Development (OECD) and the Population Division of the United Nations.

2. Demographics of the labour market

In 1950 the population of Europe was 547 million and accounted for 21.7% of the world population while in 2003 the figures were 726 million and 11.5% respectively. According to the recent UN projections of 2002 (medium variant) one can expect that Europe's population will decline to 632 million in 2050 and 7% of the world population. Population decline is predicted for the new EU member States (except for Malta and Cyprus) and for a majority of the EU-15 (excluding Netherlands, France, Norway, United Kingdom, Ireland, Luxembourg). In general, the strongest population decline is projected for Bulgaria, Estonia, Latvia, the Russian Federation, Ukraine, Georgia (by 25% to 50%), and Italy, Hungary, Slovenia, Switzerland, the Czech Republic, Poland (by 15% to 22%).

Parallel to this, the changes in the age structure manifested by a declining share of the youngest and a continuous increase of the older persons are predicted to be more intensive than expected according to previous predictions. The share of young persons (aged 0-14 years) being at 26.2% in 1950 declined to 17.5% in 2000 and is expected to drop to 14.7% in 2050. The share of persons aged 65 years and more increased from 8.2% in 1950 to 14.7% in 2000 and will reach 27.9% in 2050. However, another distinctive feature of the age structure change in Europe is the predicted decline in the size of the working age population. Persons aged 15-64 years accounted for nearly 65.6% in 1950 and 67.8 in 2000 while that percentage is expected to drop to 57.4% in 2050. Population projections show that only Europe will face with such decline.

The decline in the size of the working age population is accompanied by the increasing number and share of persons aged 55-64 years. Along with changes in the labour market participation of significant population groups

and the population ageing, this issue receives more and more attention in debates on European development perspectives. Despite regional differences in the pace of change, the phenomenon itself is becoming widespread. The discussion presented below focuses on both the main directions of change and their regional diversity across Europe, with a special attention given to the groups of the EU-25+2 countries.

2.1. The situation at the beginning of the 21st century[3]

In 2000 the working-age population in Europe accounted for nearly 68% of the total population (the highest value for any continent). Its growth in the EU-15+2 countries slowed down in the second half of the 1990s while in transition countries that population has continuously been growing. As a result of this, the share of the working-age population was slightly lower in the first group than in the second group of countries (67% vs. 69%).

All European countries are experiencing an increase in the share both of people older than 64 and of those aged 55-64, i.e. the population and labour force ageing. Due to previous changes in fertility, mortality, and migration, especially if they occurred during the second demographic transition, there are visible regional differences in the advancement of both types of ageing: in 2000 the share of people aged 55-64 in the working-age population ranged from 9% (Turkey) to 20% (Germany) while the percentage of persons aged 65 and more ranged from nearly 6% (Turkey) to 18% (Italy).

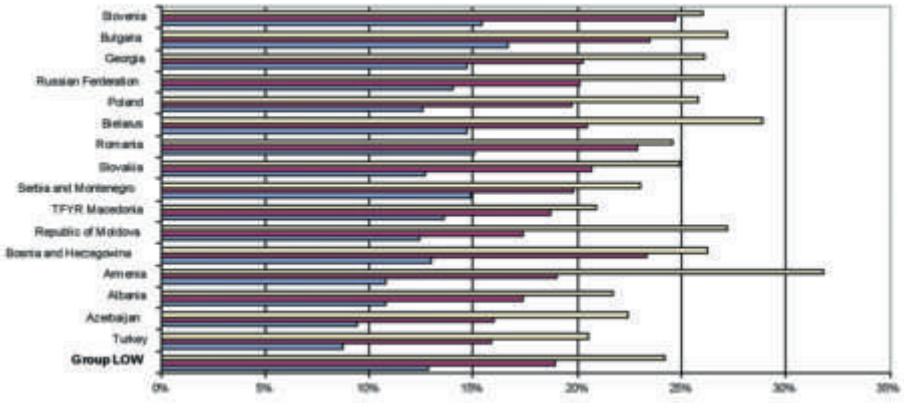
Regional differences in population ageing are discussed in depth by Ronald Schoenmaeckers in part II of this volume. Following his clustering of the member states of the Council of Europe, Figure 1 presents differences in the workforce ageing across three groups of countries: LOW, MIDDLE and HIGH.[4] The LOW group is the most heterogeneous in terms of the labour force ageing: the percentage of persons aged 55-64 varies between 9% and 17%. For the MIDDLE and HIGH groups the ranges are 12%-17% and 14%-20% respectively.

Among the EU countries the lowest values of that indicator are in Ireland, Slovakia and Poland (13%) while the highest in Germany (20%). The working-age population is older in the EU-15: the share of people aged 55-64 accounts for 13%-20% of the working-age population. In the new member States that indicator ranges between 13% and 18% (Latvia).

3. UN estimates have been used for an evaluation of the situation at the beginning of the 21st century.

4. The grouping was based on the relative importance of the number of oldest old (Schoenmaeckers, 2005, 13).

Figure 1 – The pourcentage of persons aged 55-64 in the working-age population (15-64 years), UN projections, medium variant



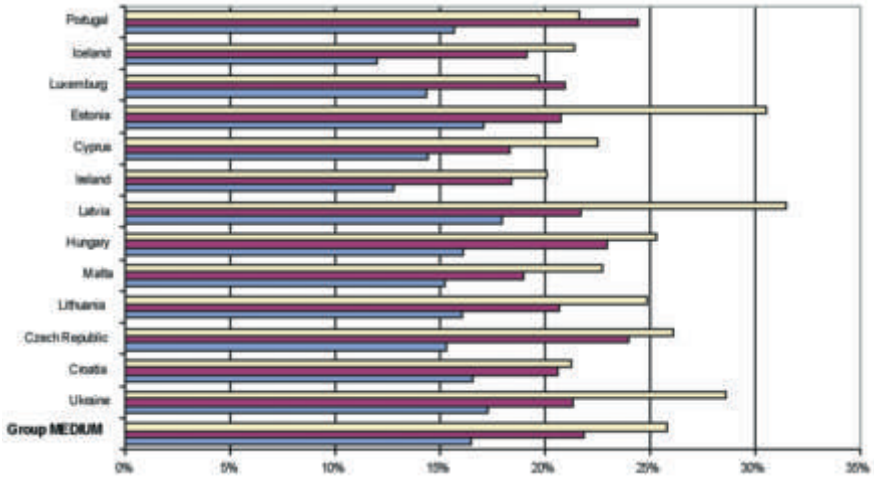
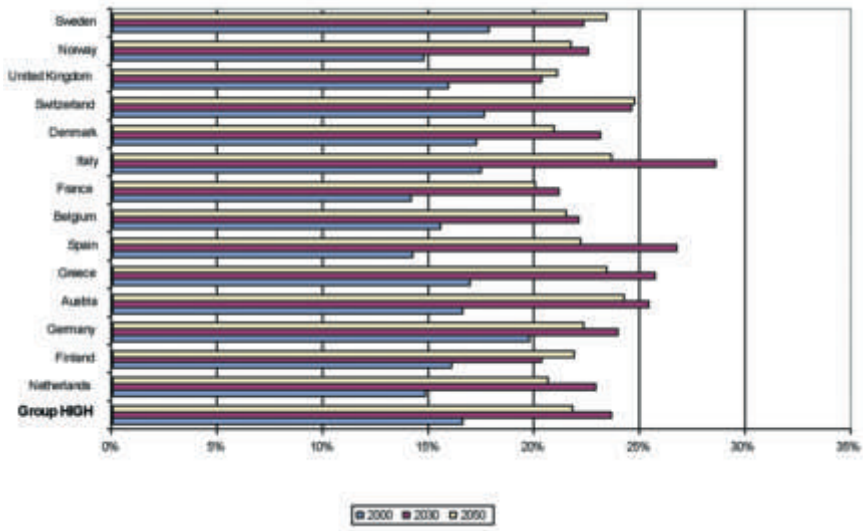


Figure 1 – continued



Source: own calculations based on UN projections (UN, 2003)

As regards population ageing, the LOW group is also the most heterogeneous: in 2000 the percentage of persons aged 65 and more ranged from nearly 6% (Turkey) to 16% (Bulgaria). That indicator for the MIDDLE group varies between 11% (Ireland) and 16% (Portugal, Croatia) and for the HIGH group the range is 14% (Netherlands) and 18% (Italy).

There is also a distinction between the new EU member states and the EU-15 in terms of ageing advancement: in the former the share of the elderly ranges from 11% (Slovakia) to 15% (Latvia), while in the majority of the latter that percentage varies between 15% and 18%.

The proportion between the working-age population and those in the non-working-age group reflects the pressure put upon the potential labour force. Because of declining fertility, persons aged up to 14 contribute less and less to that pressure. However, the elderly are increasingly exerting more pressure on the potential labour force. Furthermore, regional differences in the rise in the number of elderly persons (aged 65 and over), as well as in changes of the working-age population, mean that the elderly dependency ratio is strongly diversified across regions and countries.

Figure 2 – Elderly dependency ratio, UN projections, medium variant

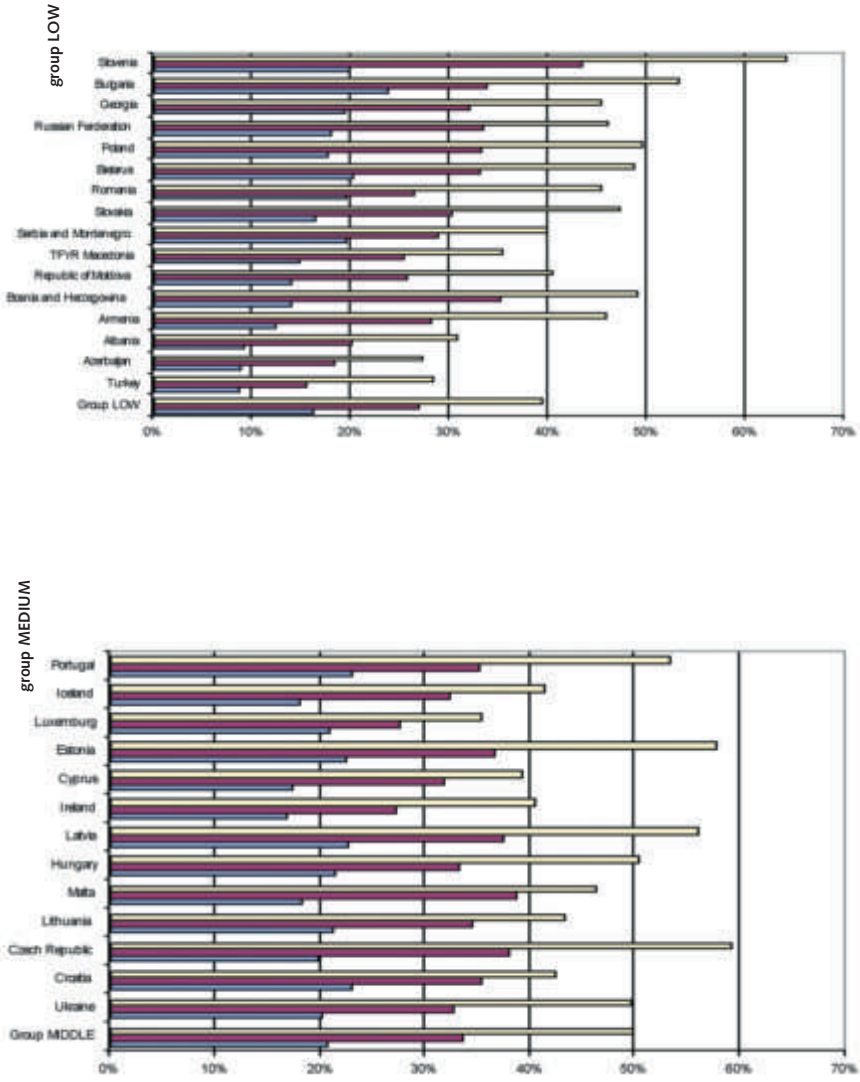
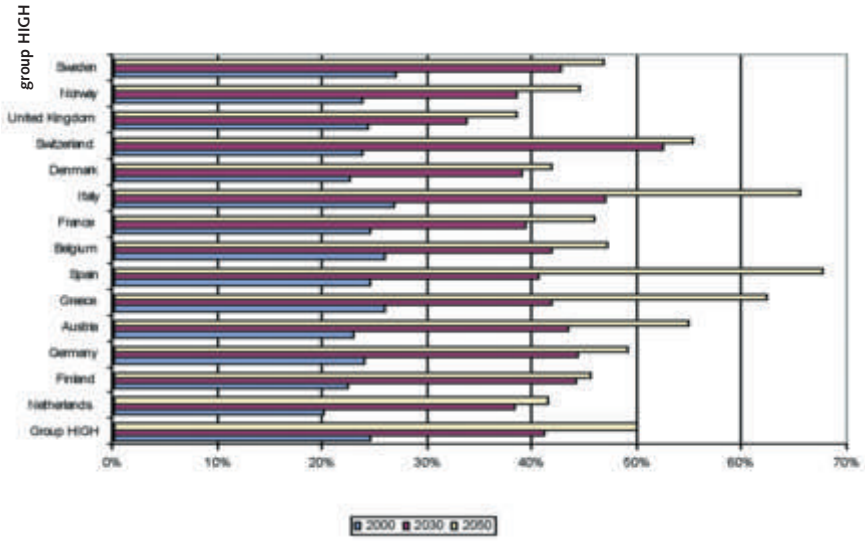


Figure 2 – continued



Source: own calculations based on UN projections (UN, 2003)

The Council of Europe member States are very diverse in the number of the elderly persons per 100 working-age people: from 9 persons in Turkey, Azerbaijan and Albania to 27 persons in Italy and Sweden. Again the LOW group is the most heterogeneous (from 9 persons to 24 persons in Bulgaria), the range for the MIDDLE group is from 17 (Ireland, Cyprus) to 23 persons (Portugal, Croatia) and for the HIGH group from 20 (Netherlands) to 27 persons (Italy, Sweden).

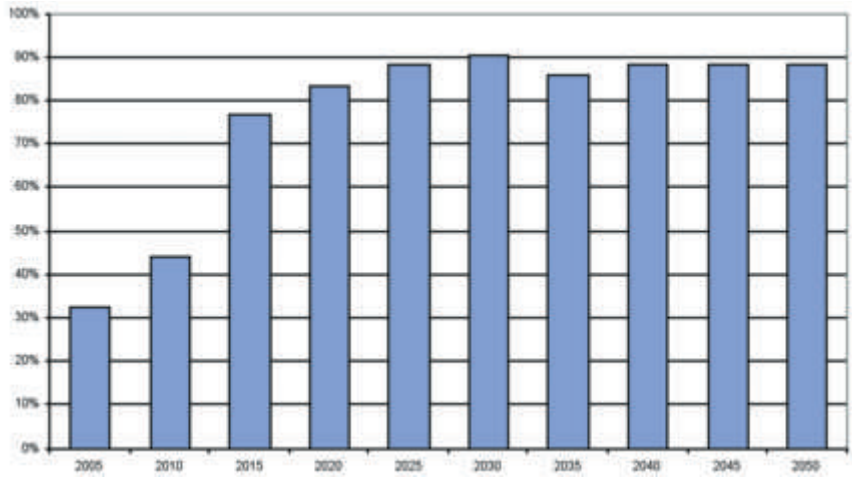
The elderly dependency ratio is visibly lower in the new EU member States: from 16 persons in Slovakia to 23 persons in Estonia and Latvia while the majority of the older member States have values of 20-27 persons, (Ireland with the value of 17 persons is an exception). Generally, southern and north-western parts of Europe have the highest values of the elderly dependency ratio.

2.2. Projected changes in the working age population

According to recent UN population projections (the 2002 revision, medium variant) the total working age population of the Council of Europe member States is expected to rise slightly until 2010 (by 1% in each five-year period). However, already in 2005 one-third of the Council of Europe member States will experience a decline of the working-age population (by no more

than 3%). That decline is becoming a widespread phenomenon in Europe. In 2015 the number of countries with a declining working-age population will account for 77% of the total number of Council of Europe member States while in 2025 they will make up 88% (Figure 3). In 2025 the working age population will be lower by 4% compared to 2000 and five years later by 8%. The continued decline shared by nearly 90% of the countries after 2030 is projected to lead to a working age population in 2050 which is 20% lower than in 2000. The decline in the working age population is predicted for Europe only.

Figure 3 – Percentage of countries with declining the working age-population, Council of Europe countries, UN projections, medium variant



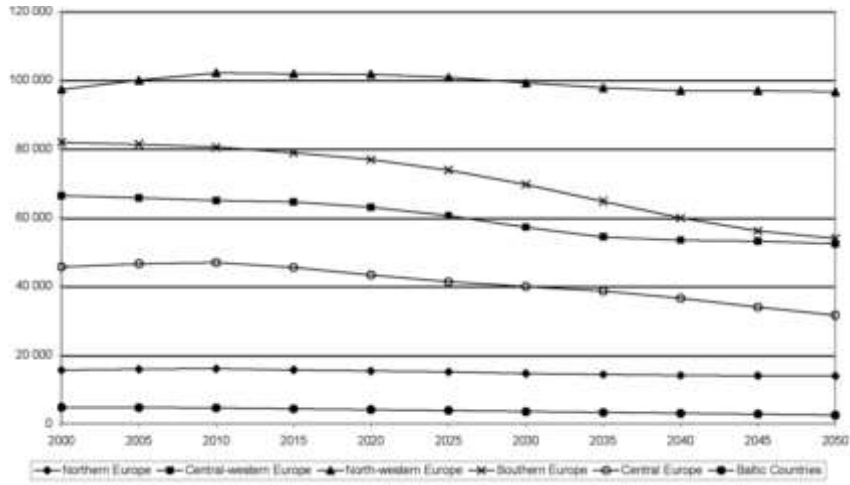
Source: own calculations based on UN projections (UN, 2003)

In the EU-15+2 countries, stabilisation around the level of 260 million in the years 2000-2010 will be followed by a decline of 4 million (1%) in 2010-2015. In transition countries, after a slight increase (of around 2%), the workforce is set to drop by 1.3 million (3%) in 2010-2015. The changes in the first decade regarding the labour force increase will be most prevalent in Slovakia and Poland, and to a lesser extent in the Czech Republic. In other countries the onset of the labour force decline is expected either in the years 2000-2005 (Hungary, Latvia, Lithuania and Estonia) or in the period 2005-2010 (Slovenia).

Northern and north-western countries are set to see the workforce increase slowly, while Germany, Switzerland, Italy, Greece, Portugal are already con-

fronted with a decline in this 2000-2005 period. In 2015 only Ireland, Norway, Cyprus and Luxembourg will not experience a decline in the labour force, and in 2030 only Ireland will still be an exception.

Figure 4 – Working age population (15-64 years) by regions of the EU-25, UN projections – medium variant, 2000-2050 (in thous.)



Source: own calculations based on UN projections (UN, 2003)

Within a thirty year period the working age population of the EU-25+2 will decline by nearly 27.4 million, that is by 9% as compared to 2000. A continuation of that trend will lead to the working-age population in 2050 being 19% lower than in 2000.

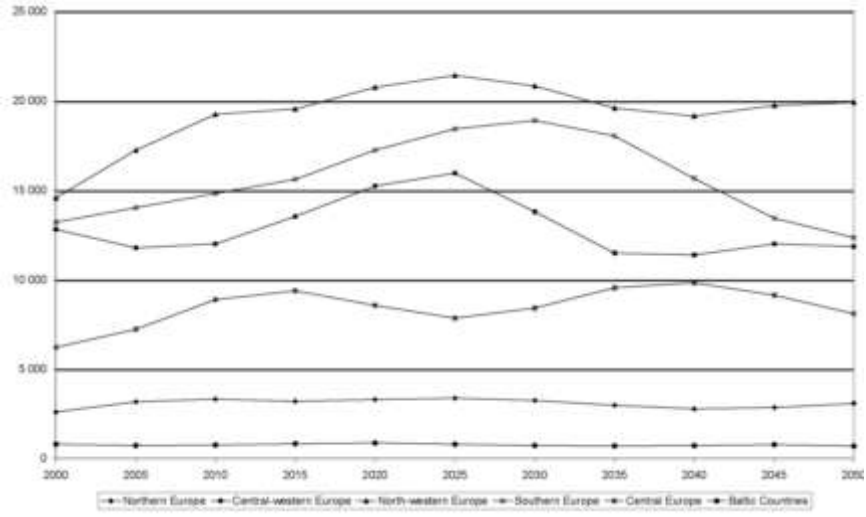
The foreseen drop in the working age population is differentiated across countries and regions. The shrinking labour force is expected to be more marked in transition countries, since the working-age population in that region will be lower in 2030 and 2050 than in 2000 by 14% and 32% respectively. These indices for the EU-15+2 countries are 8% and 17%.

Up until 2030, Bulgaria, Estonia, Latvia, Lithuania, Switzerland, Italy and Slovenia will see their labour supplies decline by at least 20% as compared to 2000. France will maintain the 2000 level, while Norway and United Kingdom will experience an increase (by 3% and 5% respectively). Overall, the Baltic states, central-western Europe and southern Europe will be most seriously affected by the decline in the working-age population (by at least 14%).

On the other hand, the size of the population of those aged 55-64 is expected to rise until 2025 by 35% compared with 2000, and most significantly in the years 2000-2020. However, both groups of the EU countries differ in terms of the course their changes will take. In the EU-15+2 countries the highest increase is set for the years 2015-2020. That population will, in 2025, reach the level of 59.15 million, that is 37% higher than in 2000. Later on, the reverse trend will start and the size of the population in 2050 will only be 9% higher as compared to 2000. Transition countries will experience more irregular changes in terms of timing and direction: the rapid increase between 2005 and 2010; the continued rise until 2015 to 10 million people which represents 45% more than in 2000; and the decline during the next decade, followed in 2025-2040 by another rise. Then in the last decade the number of persons aged 55-64 will drop again. In 2040 that population will be 50% higher than in 2000. In 2050 it is expected to be 25% higher than in 2000.

Looking at both groups of the EU-25+2 countries one can find considerable cross-region and cross-country differences. In central-western and north-western Europe the population aged 55-64 years will see upward growth until 2025, and in southern Europe, until 2030. In central Europe this increase will cease by 2015.

Figure 5 – Population 55-64 years by regions of the EU-25, UN projections – medium variant 2000-2050 (in thous.)



Source: own calculations based on UN projections (UN, 2003)

Furthermore, the intensity of changes is markedly differentiated across countries. Until 2025, north-western Europe and southern European countries will be confronted with the most radical changes in the size of the older working population (a rise by 47% and 40% respectively). For central Europe the coming ten years will be key in that respect due to a rapid rise in the supply of older workers (by 51% between 2000 and 2015).

The changes described above are crucial for the timing of labour force ageing (see Figure 1). The process will intensify in southern and north-western European countries, especially until 2010. In 2030, the share of persons aged 55-64 will range between 24% (Portugal) and 29% (Italy) while for the second group of countries it will range between 20% (United Kingdom) and 23% (Netherlands). In Germany, Austria and Switzerland the share will be 24-25%. In transition countries it will range between 20% for Poland and 25% for Slovenia.

In general, labour force ageing will markedly intensify in the HIGH group – the ageing indicator will be in 2030 between 21% (France) and 29% (Italy), however its acceleration in the remaining groups is also significant (see Table 1). According to UN projections, from 2030 onwards the labour force ageing is expected to slowdown in the HIGH group and to continue in other groups of countries, especially in the former socialist countries.

Table 1 – Labour force ageing in HIGH, MIDDLE and LOW groups of countries, 2000-2050

Groups of countries	Range of the percentage of persons aged 55-64 years		
	2000	2030	2050
HIGH	9-17	21-29	20-25
MIDDLE	12-17	18-24	20-32
LOW	14-20	16-25	20-32

Source: own calculations based on UN projections (UN, 2003a)

The size of the population aged 65 and more is going to grow continuously in all countries from 112.3 million people in 2000 to 172.2 million in 2030 (by 53% as compared to 2000) and 197.9 million in 2050 (by 76% as compared to 2000). That rise is accompanied by a significant decline in the working age population, therefore elderly dependency ratios are expected to increase rapidly in all Council of Europe member States. They are becoming more heterogeneous in terms of their values and the group heterogeneity is rising (Table 2).

Table 2 – Elderly dependency ratios in HIGH, MIDDLE and LOW groups of countries, 2000-2050

Groups of countries	The number of person aged 65 and more per 100 of persons aged 15-64		
	2000	2030	2050
HIGH	20-27	34-52	38-68
MIDDLE	17-23	27-38	35-59
LOW	9-24	16-43	27-64

Source: own calculations based on UN projections (UN, 2003a)

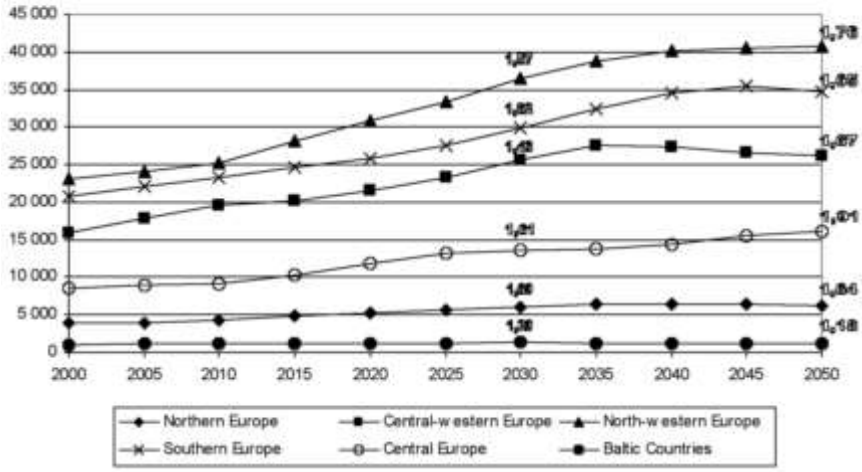
When looking at various countries one can notice that in 2030 Switzerland is set to be a leader (53 old persons per 100 of working-age people), followed by Italy, Germany, and Finland (44-47 persons). Only Turkey and Azerbaijan are predicted to have elderly dependency ratios below 20 persons. Twenty years later the lowest values are expected also for Turkey and Azerbaijan (28 and 28 persons), while the highest will be in Spain (68), Italy (65), Slovenia (64) and Greece (62).

In the EU-25+2 countries the elderly population will increase from 73.2 million people to 104.2 million in 2030 (by 54% as compared to 2000) and 125.6 million in 2050 (by 71% as compared to 2000). There is a marked difference between both groups of the EU countries in terms of timing and intensity of changes. Up to 2030 the rise for the UE-15+2 countries is more regular (nearly 8% for each five-year period) while for transition countries the growth will accelerate after 2010 (by at least 10% for each five-year period up to 2025). That group of countries will experience the elderly population increased by 56% in 2030 and by 83% in 2050 while these indices are respectively 54% and 70% for the EU-15+2.

The highest dynamics of change up to 2030 is predicted for southern Europe (by 62%), central Europe (by 61%), northern Europe (by 60%) and north-western Europe (by 57%). In the long- run the strongest increase of the elderly population will be in central Europe (by 91%), followed by north-western Europe (76%).

Since both the rise in the elderly population and the labour force decline are more pronounced in the EU-25+2 countries, the upward trend in dependency ratios is also stronger, especially up to 2030 (Figure 7). The rapid increase of dependency ratios is expected for all regions between 2015 and 2025. Later on changes are diversified across regions. The most intensive rise will be for southern European countries up to 2045, similarly the values for central Europe will grow continuously. For other regions the upward trend will stop after 2035.

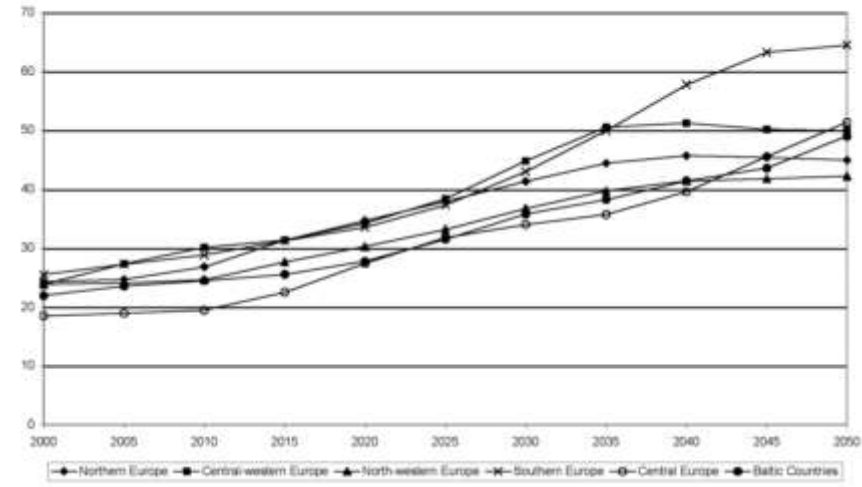
Figure 6 – Population aged 65 year and more by regions of the EU-25, UN projections – medium variant, 2000-2050 (in thous.)



Indices for the years 2030 and 2050 refer to changes between 2000-2030 and 2000-2050 respectively.

Source: own calculations based on UN projections (UN, 2003)

Figure 7 – Elderly dependency ratio by regions of the EU-25, UN projections – medium variant, 2000-2050



Source: own calculations based on UN projections (UN, 2003)

2.3. Possible effects of the projected changes in the age composition

Predicted changes in the age composition show unfavourable shifts between the working-age population and the elderly population. Furthermore, taking into account the fact that effective dependency ratios, based on the relation between inactive and active populations, are considerably higher than measures currently discussed, and coupling that with labour force participation trends, which contribute to a worsening of effective ratios, concerns about the financial viability of public pension systems are deeply justified.[5]

Moreover, the shrinking working-age population and its ageing are expected to have widespread effects on the labour market and the economy. Firstly, the decreasing size of the working-age population may contribute to a decline in the labour force (employed and unemployed persons). If the current trends in the participation rates are to continue (baseline scenario), the labour force of the European Union will decline after 2010, and by 2050 the number of active people observed in 1985 might be reached (Statistics in focus, theme 1-2/ 2001, 1). Despite regional differences in the timing and intensity of the decline, as well as differences in labour force participation, Europe will face a widespread labour force decline.[6]

One can argue that the declining labour force might be counteracted by diminishing under-utilisation of labour, which is widespread across Europe. It seems, however, that labour force decline, coupled with its ageing, can result in labour force shortages and skill mismatches (especially in some regions and sectors of the economy), a slowdown of technological progress, as well as reduction in mobility and flexibility of the labour force.

On the demand side, the increasing dynamics is observed, that is rapid technological change, profound shifts in work patterns (temporary jobs, part-time jobs, fragmentation of work and timing of work). The changing nature of employment from a structured work-life and work-environment to a self-managed, more flexible and personal career might create some difficulties for older workers. Therefore, there is cause for concern about the capabilities of labour supply, especially of older persons, to adapt to new require-

5. A decomposition of long-term projections in spending on old-age pensions to 2050 for 22 OECD countries due to demographic change, change in labour force participation and unemployment and changes in the generosity of the pension system (which includes both changes in the share of those aged 55 and over receiving benefits and in the average pension benefit), shows that the demographic effect is the key factor driving pension spending over the period while impacts of the three other factors are visibly lower (Casey *et al*, 2003).
6. Labour force projections prepared recently for the OECD area from 2000 to 2050 also illustrate the labour force decline in majority of European countries (Burniaux *et al*, 2004).

ments. Keeping in mind advances in population ageing and increasing old-age dependency ratios, as well as existing financial arrangements for pension systems, it can be concluded that on the whole Europe is confronted with a significant challenge to adjust labour market policies and social security systems to these changes.

3. Changes in the labour force participation rates of persons aged 55 and over

3.1. Overall trends in economic activity of the population

Changes in economic activity are analysed over recent three decades. They can be illustrated by the age-sex-specific labour force participation rates (LFPR). Available data on transition countries for the years up to 1990 cannot be directly compared with data for the 1990s. Therefore, the long-term trends in LFPRs are only analysed for the EU old member States plus Norway and Switzerland while for transition countries the last decade can be considered.

The last three decades wrought remarkable changes in the labour market such as an increase of women in employment and a decline in the economic activity of males, both amongst younger and older workers. The later entrance in the labour market and early exit affect the individual time spent in employment. This has been shortening despite increasing life expectancy. Major changes in economic activity can be summarised as follows (Kotowska, 2003; Burniaux *et al.*, 2004):

- cross-country differences in economic activity can be attributed to differences in the labour market participation of women, youths and older workers while the economic activity of males aged 25-54 shows a universal pattern;[7]
- males, especially for the age range 55-64, reveal a general decrease in economic activity. The rates for males aged 25-54 being around the 90% level are homogenous across countries. Country differences increase within the old age groups (see footnote 7). These changes cannot be associated only with economic cycles (for example an increase in the 1970s and a decline in the 1980s);
- the economic activity of females has been rising continuously for those aged 25-54, especially those aged 25-44. For the remaining age groups the changes did not show such a uniform picture. In a majority of countries the increase can also be observed for females at age 55-59 while the

7. As has been shown by Burniaux *et al.*, (2004) for the OECD countries participation rates of prime-age males vary little across countries while those of older workers reveal the largest disparities followed by youths (15-24 years old) and prime-age women (Burniaux *et al.*, 2004, 86-87).

rates of females aged 60-64 declined. The activity of females aged 65 and more was low and declined. Increasing participation of women has been the largest component of the rise of the aggregate economic activity rates over the past decades;

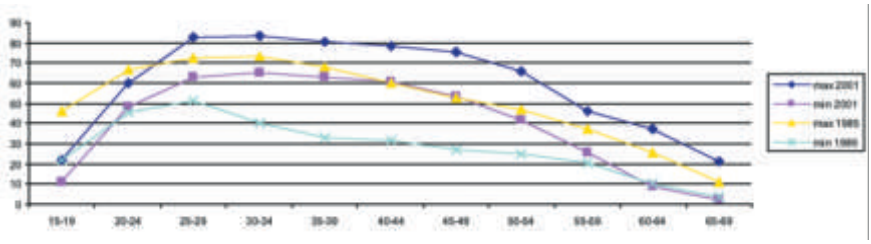
- the female LFPRs are considerably differentiated across countries. In 1970 the lowest rates for age 25-44 were found in Italy, Greece, Belgium while the highest ones in Denmark, Austria and Sweden. The differences still existed in the beginning of the 21st century, but at the significantly higher level of economic activity: Italy and Greece are still at the bottom of the ranking list, while Scandinavian countries and France are at the top;
- the general downward trend in the LFPRs of persons aged 55 and more is also markedly differentiated by countries. Despite the fact that in most countries the standard age of retirement for males, being at least 65 years in the 1970s (Greece and Italy are exceptions), was relatively stable over time, in 1990 economic activity rates of males aged 55-59 ranged from 54% (Luxembourg) to 84% (Sweden, Denmark) and those of males aged 60-64 from 14% (Austria) to 64% (Norway, Sweden). In 2003 the range for economic activity rates of males aged 55-59 remained as in 1990 while for males aged 60-64 the lowest values shifted to 18-19% (Austria, France) (ILO data).[8]

Figures 8 and 9 demonstrate both changes in the female economic activity and age patterns of female labour force participation. Shifts in age patterns between 1985 and 2001 are defined by maximum and minimum values of the LFPRs. Figure 8 presents countries with low participation (Italy, Greece, Spain and Portugal). An impact of breaks in paid work after starting a family, a distinctive feature of that pattern of economic activity, has disappeared. However, the highest values of the participation rates are still for women aged 25-34. The participation rates in countries with high economic activity of women (Sweden, Norway, Finland, Denmark) have increased as well, countries have became more homogenous. However, the maximal rates for women aged 20-29 are visibly lower in 2001 than in 1985 and those of women aged 30-49 have also dropped slightly but they oscillate around 90%.

Centrally planned economies had, by European standards, high economic activity for both males and females. These countries were almost uniform in terms of LFPRs of males and slightly differentiated in terms of female rates.[9] Labour market participation changed drastically in the 1990s. In most of these countries economic reforms brought a sharp contraction in output and employment accompanied by a rise in unemployment. Despite the recovery,

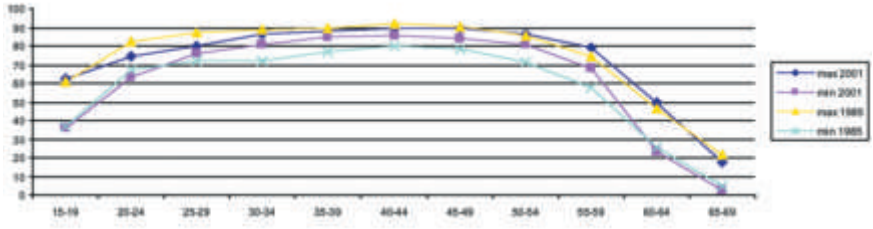
8. http://laborsta.ilo.org/ – extracted in January 2005.
9. In fact, that measure can be compared with employment rates for the developed market economies, given the full-employment principle and a lack of open unemployment before the 1990s.

Figure 8 – Female labour force participation in Southern Europe



Source: Based on labour force participation data in: Saczuk K. (2004), Labour force participation scenarios for 27 European countries, CEFMR Working Paper 5/2004, Warsaw

Figure 9 – Female labour force participation in Northern Europe



Source: Based on labour force participation data in: Saczuk K. (2004), Labour force participation scenarios for 27 European countries, CEFMR Working Paper 5/2004, Warsaw

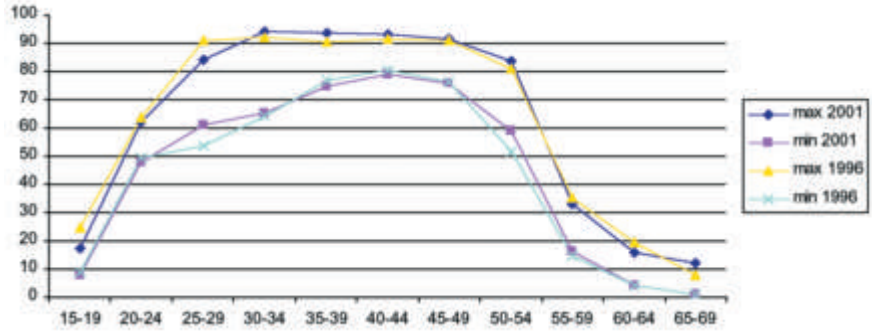
which started in around 1993, employment has continued to decline or stagnate. The LFPRs, available from labour force surveys[10] fell in all countries, most visibly in Bulgaria, Hungary and Poland. However, as compared to the EU-15 participation rates in 1996, in most transition countries they were still higher than the EU average (67.4% for persons aged 15-64). Lower rates were found for Bulgaria and Poland (Central European countries employment and labour market review, 1999). Slowing economic growth at the end of the 1990s was accompanied by further employment decline while its acceleration was not reflected in a rise of employment. In 2003 the Slovak Republic had the activity rate above the EU level (76.7% vs. 70%). The Baltic states and the Czech Republic kept the economic activity close to the

10. The national labour force surveys were introduced in transition countries in the first half of 1990s, according to international recommendations on definitions and methods. They have become the main source of data on labour market developments. A selection of transition countries forming part of that study has been based on the availability of comparative labour market data. Among ten countries selected Hungary was the first country, with the survey established in 1991 and Latvia and Estonia were the last ones with the surveys starting in 1995.

EU level and the other transition countries were well below the EU level (the lowest rate 63.9% was in Poland).

To illustrate the age pattern of female activity in transition countries, different from both patterns presented already, the age-specific activity rates of females in five countries of central Europe (Czech Republic, Hungary, Poland, Slovak Republic, Slovenia) are shown in Figure 10. Unfortunately, comparable data could be found only from 1996 onwards (see footnote 10). The participation patterns of females reflect cross-country discrepancies in starting work and family which became more difficult than before 1990. The largest differences between maximum and minimum rates persist for age 25-34 while the rates of women aged 55-59 are below those found for both southern and northern European countries.

Figure 10 – Female labour force participation in Central Europe



Source: Based on labour force participation data in: Saczuk K. (2004), Labour force participation scenarios for 27 European countries, CEFMR Working Paper 5/2004, Warsaw

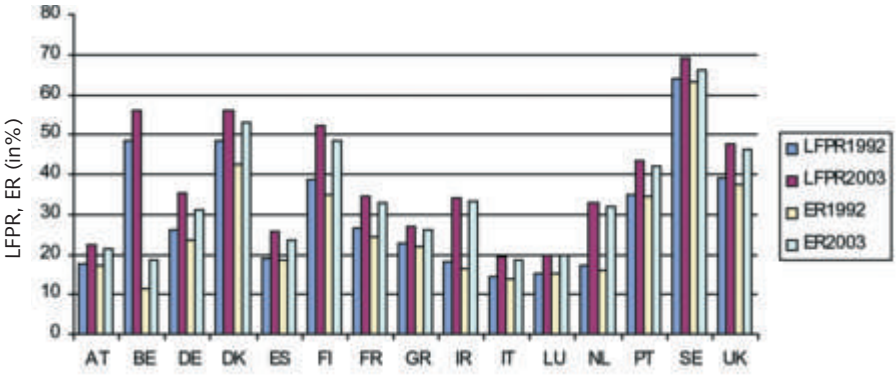
To deal with rising unemployment, governments of transition countries liberalised disability and early retirement provisions. As a result, economic activity of persons aged 55-64 dropped considerably. The relatively rapid changes of employment of older workers in transition countries led to the employment rate of males being considerably lower when compared to the developed economies. However, it should be noted that the standard age of retirement is, for both males and females, lower than in the EU-15 countries – on average 60 years for males and 57 for females. It is important to remember also that in the EU-15 countries the trend of the labour market participation of older workers results mainly from declining economic activity of males, while in transition countries declines in both male and female participation contributed to the observed change.

3.2. Changes in labour force participation of persons aged 55-64, 1992-2003

The general downward trend in economic activity of persons aged 55 and more is a subject of concern, all the more so when referring to the foreseen shrinking of the labour force and its ongoing ageing in addition to the population ageing. There are some signs that this tendency stopped at the EU-15 level at the end of 1990s. However, when looking across countries at changes for both males and females over the recent decade, the picture becomes more diversified.

In 1992 the lowest activity rates of males aged 55-64 did not exceed 40% (Austria, Belgium, France, Luxembourg), the highest ones ranged between 66-73% (Denmark, Portugal, Sweden, United Kingdom). The upward trend started in the Netherlands in 1996, later on in Ireland and Finland, and gradually more and more countries joined that trend. In 2003 all the EU-15 experienced a rise in the LFPRs of older male workers. When looking at employment rates, in 1992 Belgium, France, and Luxembourg had the lowest rates (less than 36%) while Sweden was the leader with 72%, followed by Denmark and Portugal (64%) and United Kingdom (58%). The clear upward tendency concerned firstly Finland (since 1995), the Netherlands and United Kingdom (since 1996) and since 2000 that change has become widespread across other countries. As a result the economic activity of older males in the majority of the EU-15 was higher in 2003 than in 1992 (in terms of both indicators), except for Italy and Portugal (both rates lower than in 1992) and Sweden (employment rates lower than in 1992) (see Figure 11).

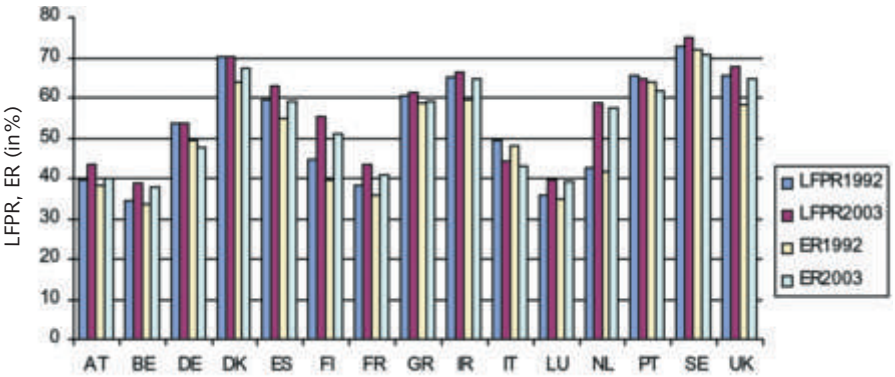
Figure 11 – Changes in economic activity of females aged 55-64, 1992-2003, EU-15



Source: Employment in Europe 2004, Recent trends and Prospects, European Commission, Employment and Social Affairs, Brussels

Contrary to males, the economic activity of females aged 55-64 at the EU-15 level revealed a steady rise during 1992-2003. However, across countries changes were not uniform. A regular increase of economic activity concerned only Ireland and the Netherlands. In other countries the rise began in the second half of 1990s. Since 2002 the relevant rates are increasing in all countries. In 2003 labour market participation of older females in all EU-15 was higher than in 1992 (in terms of both indicators). The rise was stronger than for older males. Despite this activity, indicators remain low (around 20%) in Austria, Belgium, Italy, and Luxembourg. Sweden again is located at the top of the list with the rates exceeding 65%, followed by Denmark with rates ranged between 53-56% (see Figure 12).

Figure 12 – Changes in economic activity of males ages 55-64, 1992-2003, EU-15



Source: Employment in Europe 2004, Recent trends and Prospects, European Commission, Employment and Social Affairs, Brussels

Comparable labour force participation data for eight of the new EU member states covers the second half of the 1990s.[11] Between 1996 and 2003, declines in economic activity of older males prevailed. However, recent years show signs of halting this tendency. Only Hungary showed a clear upward trend, but from an extremely low level (29% in 1996). In Hungary, Poland and Slovenia the activity rates of males were below 40% in 2003 and in other countries ranged between 48% (Slovakia) and 64% (Estonia).

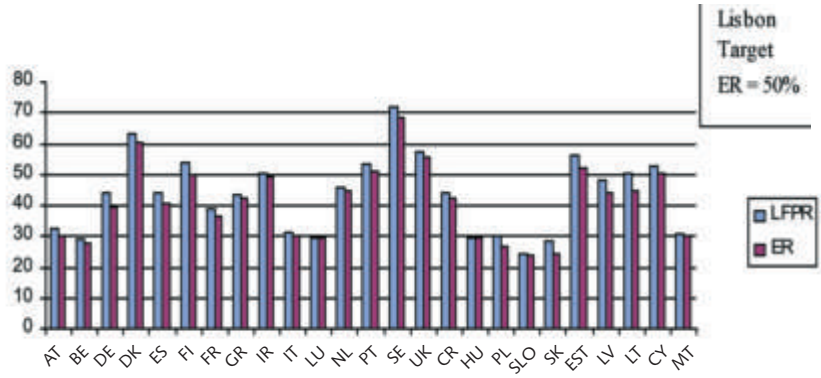
In very recent years there are signs of improvement in labour force participation among older women in the new EU member states, but their economic activity is extremely low. Only in the Baltic states the rates ranged

11. For Malta and Cyprus such data are available since 2000.

between 42% and 50% in 2003. In Slovenia and Slovakia the LFPRs did not exceed 15% while in Hungary, the Czech Republic and Poland they ranged from 22 to 30%.

Figure 13 illustrates cross-country differences in aggregate activity and employment rates of those aged 55-64 in 2003. The employment rate for older workers stood at just over 40% in 2003. The lowest rate was for Slovenia (under 24%), while Austria, Belgium, Hungary, Italy, Luxembourg, Malta, Poland, and the Slovak Republic had rates approaching 30%. Employment rates close to the Lisbon target – set at 50% – were to be found in Finland, Ireland, the Netherlands, Portugal, Latvia, Lithuania and Cyprus. Only Sweden, Denmark, United Kingdom and Estonia were far ahead of that level.

Figure 13 – Economic activity of older workers, 2003, EU-15



Source: Employment in Europe 2004, Recent trends and Prospects, European Commission, Employment and Social Affairs, Brussels

To summarise, over the past decades falling participation of older workers contributed markedly to the aggregate participation rate. However, since the second half of the 1990s signs of reversing that downward trend occurred. Decomposition of changes in the aggregate participation rate for OECD countries over the period 1975-1990 and 1990-2000 into demographic changes and group-specific shifts in participation showed that negative contributions of older workers' activity rates declined in the years 1990-2000 as compared to the years 1975-1990 (Burniaux *et al.*, 2004, 9-10). That could reflect pension and other labour market reforms implemented in a number of the EU countries (see also Scherer, 2001).

3.3. Possible determinants of declining economic activity of persons aged 55 and over

The declining labour force participation of older workers is most commonly attributed to three main factors: increased living standards of the population, incentives embedded in social security systems, and labour market structures (for example Blöndal and Scarpetta, 1998, 1999; Gruber and Wise, 1999; Disney and Whitehouse, 1999a, 1999c; OECD, 1995a, 1995b; Scherer, 2001; Casey *et al*,.2003, Duval 2003). The intensity of changes across age groups is affected by the different standard age of retirement by countries as well.

In empirical studies on changes in economic activity of older workers, labour market related effects and institutional factors are highlighted as the main determinants. Usually, both the demand effects (structure of the economy, high and persistent unemployment, technological progress) and the supply effects (the size and age composition of the labour force, old-age pensions and other non-employment related benefits) are analysed. The studies refer almost entirely to the OECD countries excluding transition countries.

The main findings of comparative studies on retirement decisions of male workers for OECD countries, directly referred to here, can be summarised as follows (Blöndal and Scarpetta, 1998; Casey *et al*, 2003; Duval, 2003):[12]

- there is a close correlation between the average effective retirement age and continued work;
- pension wealth accrual and unemployment-related benefits have a strong impact on decisions to retire;
- the availability of generous non-employment benefits seems to be a pre-requisite for labour market variables to influence activity rates of older workers;
- implicit tax rates on continued work embedded in old-age pension systems and other social transfer programmes, widely dispersed across OECD countries, affect retirement decision of older male workers;
- the labour market variables play a significant role in explaining cross-country and time variations in the economic activity of older men: the

12. The study on determinants of changes in the labour force participation rates of older men aged 55-64 by Blöndal and Scarpetta (1998) is based on panel data of about fifteen OECD countries from 1971-1995. Duval (2003) has separately analysed economic activity of males aged 55-59, 60-64 and 65 and more by use of panel data on 22 OECD countries over the years 1967-1999. The paper by Casey *et al* (2003) makes use of the data set for fifteen OECD countries which provides an assessment of the incentives to retire in current systems for single individuals aged from 55 to 70 at various levels of income.

increase in the prime-age unemployment rate influences the drop in the labour force participation rate, changes in the size and the age composition of the working-age population seem to exert strong pressure for early withdrawal on older male workers;

- incentives to retire vary across age groups. For those aged 55-59 years they result from a number of social transfer programmes which have been used as early retirement schemes. For the 60-64 and 65+ age groups eligibility ages also appear to have a specific impact;
- institutional factors such as different bargaining systems (the level of centralisation/co-ordination of wage negotiations) and the degree of unionisation (the share of trade union members) play direct and indirect roles: for example high levels of unionisation have favoured early withdrawals by promoting early retirement schemes at the firm and/or sectoral level, and the stronger effect of changes in the labour supply on participation rates was found in countries with sectoral bargaining but without co-ordination;
- labour market factors and institutional factors explain a great deal of the cross-country and time-series differences in the labour force participation rates, however a large part of the cross-country variation remains unexplained.

Another study on changes in economic activity rates in the EU-15 by Vlasblom and Nekkers (2001),[13] in which both the labour supply and labour demand factors were represented along with institutional variables, allows for the following synthesis:

- more highly educated persons tend to stay longer in the labour market;
- the higher the pension age, the higher the activity rates;
- the possibility to defer pensions increases the activity rates;
- the possibility of early retirement lowers the activity rates of males younger than 65 and increases the rates of males older than 65;
- a similar effect has been noted regarding the possibility of receiving a partial pension.

The studies referred to here confirm that the majority of the differences in the labour force participation rates between countries stem from differences in the country-specific labour force behaviour and work attitudes and in institutional and policy factors affecting labour supply decisions, i.e. they confirm a relevance of contextual factors.

13. Labour force participation rates of both females and males aged 55-74 at the national and regional (NUTS-II) levels have been analysed for the period 1992-1997.

The decline in the economic activity of persons aged 55 and over in transition countries could also be related to both the demand and supply sides. The demand for labour has been strongly influenced by the transformation processes: institutional changes linked to the establishment of a labour market and the restructuring of the economy and employment structures. Economic reforms imposed a fundamental reconstruction of labour market control mechanisms aimed at the more effective management of the workforce, a rise in labour productivity and an improvement in the quality of work. Demand for labour changed drastically in quantitative and qualitative terms.

On the supply side, the increase in the size of the working-age population and its ageing and declining spatial mobility were observed. Moreover, the fact that the overwhelming majority of older workers were low-skilled significantly reduced their capacity to avoid skill mismatches. Demand-supply imbalances led to rising unemployment in most countries on a large and unanticipated scale. Furthermore, the strategy to re-allocate some groups of the population from work to outside the labour market was frequently used to limit the labour supply (for example liberalising entitlements to early retirement and implementing non-employment related benefits). However, despite recent reforms aimed at reducing early withdrawal from the labour market, the economic activity of older workers in the new EU member states is significantly lower that in the EU-15, except for the Baltic states and Cyprus.

4. Older workers in the labour market – from a fragmented to an integrated policy

4.1. The Lisbon Strategy perspective

The EU development strategy, adopted in March 2000 at the Lisbon European Council, aims to reach, by 2010, the strategic goal: "to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" (Employment in Europe 2004, 2004, 3). The Lisbon Strategy takes into account population ageing, the contraction of the labour force and its ageing. In response to these changes, increases in labour supply are considered as extremely relevant from the economic and social perspectives. Following this approach, the European Council has formulated ambitious employment targets to increase the overall EU employment rate to 70% by 2010 and to increase the female employment rate to more than 60% by 2010.

The European Council in Stockholm (March 2001) added two intermediate targets for 2005: to increase the overall employment rate to 67% and the employment rate for women to 57%. This additional target includes an

increase of the employment rate for older workers to 50% by 2010. Moreover, the Barcelona European Council (March 2002) confirmed that full employment was the overarching goal of the EU and called for a reinforced employment strategy to underpin the Lisbon Strategy in the enlarged EU. Furthermore, the revised European Employment Strategy, adopted at the European Council in Thessalonica in June 2003, includes three overarching objectives: full employment, quality and productivity at work, social cohesion and an inclusive labour market. For their achievement four key strategies are recommended:

- increasing adaptability of workers and enterprises;
- attracting more people to the labour market;
- investing more and more effectively in human capital;
- ensuring effective implementation of reforms through better governance.

Putting the emphasis on labour supply would appear to reflect the viewpoint that rapid ageing is calling into question Europe's ability to achieve the defined strategic goal, in particular higher employment and productivity rates. Therefore, interventions to improve the adaptability of the labour force for a dynamic and highly competitive labour market are strongly recommended. In particular, actions towards older workers require a radical policy and culture shift away from early retirement.

Increasing participation of older workers, along with higher participation of women and other groups of population underrepresented in the labour market are considered as fundamental to meet the goals of increasing economic growth, improving competitiveness and achieving greater social cohesion. In order to achieve this, both institutional and cultural adaptations are required and reforming the old-age pension systems is a component of a more comprehensive approach to prolonging the length of time people remain in the labour market.

Therefore, not only measures aimed at removing disincentives for workers to work longer and to discourage early retirement should be discussed, but also policies stimulating lifelong learning, improving working conditions, encouraging employers to retain and retrain older workers should be examined. That view, presented increasingly by many researchers in the field, is also shared by policy makers. The Lisbon Strategy situates policies towards older workers within the broad framework of active ageing and highlights its fostering as a priority (Economic Commission, 2004; Economic Commission, 2005). These policy considerations inform the discussion of old-age pension system reforms.

4.2. Reform of old-age pension systems

The rising imbalance between the number of contributors to the public defined-benefit pension systems, predominantly based on a Pay-As-You-Go (PAYG) basis, and their beneficiaries is one of the main reasons for concerns about deteriorating levels of income support for the elderly, widely shared by the governments. This imbalance is related to population ageing as well as to labour force ageing, accompanied by the decline in economic activity of older workers.

In transition countries shrinking tax bases additionally affect public pension finances. What happened in transition countries with PAYG schemes clearly demonstrates the sensitivity of that scheme to changes in the labour market (Augusztinovics, 1999, after Fultz, Ruck, 2001), contrary to its usual perception as being mainly dependent on demographic factors. Other issues which are also of concern for policy-makers are: the low effective retirement age despite increasing life expectancy; work disincentives embedded in the pension systems; adequacy of the pension benefit level (mostly in transition countries), and improving the size of the population covered by pension arrangements.

Since the 1990s, particularly in the second half of the decade, many policy initiatives have been undertaken to improve social and private financial arrangements for retirement. The commonly listed goals of pension reforms are:

- establishing a closer link between contributions and benefits;
- reducing the size of pensions;
- removing financial incentives to early retirement;
- improving the adequacy of pension benefit levels;
- increasing the number of contribution years;
- increasing the share of the population covered by pension arrangements;
- promoting private pension schemes;
- reaching greater convergence between existing public and private pension schemes.

Since theoretical considerations as well as empirical studies have demonstrated that defined-benefit pension schemes include work disincentives (for example Blöndal and Scarpetta, 1998, 1999; Gruber and Wise, 1999; Kalisch, Aman, 1998; Disney and Whitehouse, 1999a, 1999c; Duval, 2003; Casey *et al*,.2003) amendments to the PAYG schemes have been recommended as necessary to counteract the deterioration of public pension finances. Reforms recently undertaken in a number of countries follow that direction. However, it has becoming increasingly clear that fundamental changes are needed to ensure the financial sustainability of pension systems, given the predicted advancement in population and labour force ageing.

In discussions on how to adapt pension schemes to demographic and labour market challenges, the issue of closer links between benefits and contributions remains one of the main problems. What is an adequate solution: to reform defined-benefit schemes or to introduce notional defined contribution schemes? A reform strategy oriented at the first option could include a reformulated benefit structure (for example by adjusting the contribution rate, the pension coverage ratio and the replacement rate, reducing the accrual periods, lengthening the assessment periods, introducing actuarially fair adjustments for late/early retirements, and incorporating demographic and fiscal factors in the benefit formula). Early retirement should be eliminated or permitted on a more limited and actuarially fair basis. Also, consolidation of the system by removing sector privileges and administrative adjustments is necessary. With this approach changes to some parameters of the system are implemented but logic remains unchanged. These adjustments can be termed *parametric reform* (Holzman *et al*, 2003). Most of the EU-15 countries have adopted these reforms.

Moving towards a notional defined contribution scheme requires a transformation of the public pension system into a new system based on individual accounts. Pension contributions are credited with an "interest rate" equal to the growth of that country's aggregate wage. Each person's pension depends on his or her accumulated amount divided up by the average life expectancy at retirement age. That formula uses lifetime wages to determine benefits, includes adjustments to growing longevity and incentives for older workers to remain in the labour force and pay contributions. This approach imposes a change in the paradigm of the system. *Paradigmatic reforms* (Holzman *et al*, 2003) encourage not only those below the standard retirement age but also persons above that age to stay in the labour market. Several examples of such reforms can be referred to, mostly in transition countries: Sweden (1994), Italy (1995), Latvia (1998/2001), Estonia (1998/2002), Hungary (1994/1998), Poland (1999), Bulgaria (1994/2002), Romania (2001), Lithuania (2003).[14]

Given the existing and future challenges, it is difficult to state definitely whether the parametric or paradigmatic approach is better when reforming pension systems. The parametric reforms improve the short-term financial stability of the system but for the long-term sustainability further changes are needed. Furthermore, diversification of pension provisions proceeds much slower than under paradigmatic reforms. Incentives to stay longer in

14. Reforms started from implementation of the private voluntary tier which was followed by implementation of the private mandatory tier (Chłoń, 2004).

the labour market seem to be weaker. Placing more emphasis on individual responsibility for his/her future pension in the paradigmatic reform is also an advantage. The move towards financial stability is mentioned as an advantage of the changing paradigm solution but high transition costs are pointed out as its drawback (see for example Disney, 1999; Disney, Whitehouse, 1999b; Holzman *et al*, 2003).

Among the different measures suggested for pension reforms, those listed below are usually considered to promote the economic activity of older workers (see Kalisch, Aman, 1998; Disney and Whitehouse, 1999c, Casey *et al*, 2003):

- a reduction in early retirement opportunities by an actuarial reduction in early-retirement pensions, an increase in the standard age of retirement, tighter conditions for entitlement (duration of employment, participation in training programmes);
- some disincentives to work in the defined-benefit scheme can be mitigated by moving to pensions based on the average salary across the working life rather than on a limited number of best or final years. Maximum pensions and limits to the number of years of contributions that earn pensions should be removed;
- permission to combine pensions at the standard age with some work;
- the introduction of partial retirement schemes aimed at helping people leave the workforce gradually by moving to part-time work;
- equalising women's retirement age.

Several of these measures have been implemented in ongoing pension reforms in Europe.[15] Increases in the standard age of retirement, especially with respect to women's age, have been a key measure sometimes combined with more flexible retirement and stronger incentives to continue work (see Table 3).

Other relatively frequent measures to counteract early retirement mostly concern increasing the contribution period, increasing the minimum age, reducing access to early retirement schemes and improvements in the actuarial fairness of the system. Several of the changes adopted recently are presented below to illustrate the scope of the ongoing reforms in Europe.

15. For the comprehensive overview of reforms to pensions systems in the OECD countries since the early 1990s see Casey *et al* (2003), Burniaux et al (2004); A review of reforms in Europe accounting for two main strategies i.e. parametric and paradigmatic approaches is given by Holzman *et al* (2003).

Table 3 – Standard age of retirement and its changes in the EU-25+2 since 1999*

Country	Males	Females
Austria	65	60 (to 65 in the years 2019 -2028)
Belgium	65	62 (to 65 by 2009)
Denmark	67	67
Finland	65	65
France	60	60
Germany	65	65
Greece	62 (65 for the post-1992 labour-market entrants)	57 (65 for the post-1992 labour-market entrants)
Ireland	66	66
Italy	60 (to 65 by 2008)	60 (65 for the post-1995 labour-market entrants)
Luxembourg	65	65
Netherlands	65	65
Norway	67	67
Portugal	65	65
Spain	65	65
Sweden	67	67
Switzerland	65	62 (to 64 by 2005)
United Kingdom	65	60 (to 65 by 2020)
Czech Republic	60 (to 62 by 2006)	53-57** (increase to 57-61 by 2007)
Hungary	62	57 (increase to 62 by 2009)
Poland	65	60
Romania	60 (increase to 65 by 2013)	57 (increase to 60 by 2013)
Slovak Republic	60	53-56**
Estonia	62.5 (increase to 63 by 2001)	57.5 (increase to 63 by 2016)
Latvia	60 (increase to 62 by 2003)	57 (increase to 62 by 2005)
Lithuania	61 (increase to 62.5 by 2009)	57 (increase to 60 by 2009)
Slovenia	60 (increase to 63)	53-58** (increase to 58-61)

* Malta and Cyprus are omitted.

** The retirement age depends on the number of children.

Source: Kotowska, 2003, 117; Duval, 2003, 35; Casey *et al*., 2003, 41; Burniaux *et al.*, 2004, 46-48

Italy has increased the minimum number of years of contributions from 20 to 35 for public sector employees (to be phased in by 2013); In 1997 Iceland abolished the right of civil servants to take retirement at 60; Belgium is increasing contribution years for retirement at 60 from 20 to 35 (by 2005); Greece has raised minimum contribution years from 13.5 to 15; Portugal has increased the minimum contribution years from 10 to 15, and France from 37.5 to 40 years; Italy has set the minimum age at 52 (from 1997) and the contribution years from 35 to 40 years (from 2008). By increasing the number of contribution years required for a full pension in France, retirement at the earliest legal age (60) has been discouraged; Early pensions because of unemployment are being phased out in Germany; Finland has introduced a lower benefit and increased minimum age from 55 to 58; Similarly in Germany the minimum age will increase to 62 (from 2012); New regulations in Norway provide for a smaller reduction for ages 67-70 who work while drawing pension; Sweden and United Kingdom allow for actuarial increases for deferral after the age of 70 (Burniaux et al, 2004; Casey *et al*, 2003).

The Netherlands have introduced radical reform of the early-retirement system by switching from the PAYG schemes to more actuarially neutral ones. Under the new regime the early-retirement benefit is related directly to the work record and the contribution paid, accumulated on an individual basis. The minimum retirement age is 55 (van Dalen and Henkens, 2002).

Austria, Finland, Germany, and Italy have reduced access to early retirement. Sweden has recently abolished any incentive for early retirement by introducing progressive pension entitlements when retiring later and making pension entitlement dependent on the average income over the whole life-course instead of the best 15 years of wage income (Burniaux *et al.*, 2004).

Several countries have implemented changes which aim at improving the actuarial fairness of the system. The 2003 pension reform in Austria has introduced a decline in the accrual rate and an increase in the number of contribution years required to reach the maximum replacement rate as well as larger actuarial adjustments for early and deferred retirement. In Finland the cost of retirement before the standard age of retirement has been increased by lowering the accrual rate for the pension earned by people on pre-retirement benefits.

Raising the public pension accrual rates for those who work after 60 affects incentives to retire later. Moreover, similar arrangements to those introduced in 2003 for the private sector are under consideration for the public sector. The notional-defined contribution systems introduced in Italy and Sweden during the 1990s permit early retirement and apply a form of actuarial

reduction to the benefits received. In Germany later retirement has been encouraged by benefit appreciation. In Luxembourg the 2001 reform has introduced a supplementary accrual rate, which has slightly lowered implicit tax rates on continued work. The 2003 reform in Portugal has reduced replacement rates at age 65 and established an actuarially reduced pension from age 55 as well as an actuarial bonus for deferred retirement beyond age 65. The 2003 pension reform in France has brought in lower actuarial adjustments for insufficient contribution years as well as an actuarial adjustment for deferred retirement. As a result, post-reform implicit tax rates are higher at age 55 but lower at ages 60 and 65 (Burniaux *et al*, 2004; Casey *et al*, 2003).

Besides various pathways to retirement, reforms to tighten up access to alternative arrangements have been implemented. Access to disability pensions has been limited in Finland, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom. In Finland and the Netherlands a form of "experience rating" has shifted the costs of disability pensions back to the employer. In Finland the individual disability pension is to be phased out. Italy has increased costs to employers by forcing them to take on greater responsibility for rehabilitation and job retention policies. Some countries have also introduced more frequent medical checks, complemented by greater incentives to return to the labour market and increased emphasis on rehabilitation (Germany, Italy, the Netherlands, Norway, Switzerland). Also a number of reforms have been undertaken to unemployment benefit systems to lower benefits, shorten benefit periods and to enforce job search criteria for older workers in a variety of countries (Casey *et al*, 2003).

Pension reforms in a number of countries in central and eastern Europe are based on the paradigmatic approach (Latvia, Estonia Lithuania, Hungary, Poland, Bulgaria, Romania, Lithuania). Only Poland and Latvia replaced the PAYG schemes with the notional defined contribution schemes. Other countries implemented multi-pillar systems with the public mandatory pillar based on significantly modified PAYG schemes. The changes concern increases in the standard age of retirement (see Table 3), reduced accrual rates (Bulgaria, Hungary, Estonia), adjustments to individual contributions (Poland, Latvia) and lower indexation of pension benefits in all countries and kept them below wage rises. (Chłoń, 2004).

4.3. The integrated policy towards older workers

Social policies concerning older workers have emphasised removing disincentives to retire earlier rather than on improving the employability and employment opportunities of older people. This can be related to the high priority of the medium and long-term financial viability of public pension systems in these reforms. Moreover, in debates on PAYG schemes, demographic

changes have been emphasised without relevant attention being paid to labour market developments. Whilst arguing for policies aimed at discouraging older workers from leaving work, the necessary conditions for their adaptability to dynamic and competitive labour markets as well as their employment opportunities have not been adequately addressed.

However, it should be remembered that under-utilisation of productive capacity and unemployment are widespread across Europe. Early retirement regulations as well as occupational pension arrangements have been implemented to facilitate the exit of older workers in order to combat youth unemployment. Under existing labour market structures, reduced opportunities for early retirement and failure to make improvements to the employability and work opportunities for older workers, could lead to a rise in disability incidence and unemployment (see for instance Blöndal and Scarpetta 1999; Taylor 2002; van Dalen and Henkens, 2002; Duval 2003; Casey *et al*, 2003).

Existing employers' attitudes towards older workers would limit the effects of measures stimulating their higher labour market participation. Research among employers carried out in several European countries has shown that they still do not consider older workers a force to be reckoned with. Few employers are inclined to recruit older workers due to a perceived lack of appropriate skills, a truncated payback period on training and rules governing company/occupational pension schemes. Furthermore, many employers prefer laying off older workers first when firms downsize their labour force instead of implementing programmes to retain and retrain them (Henkens, van Dalen, 2004; Taylor, 2002). Moreover, employers perceive increasing labour costs as one of the most important effects of labour force ageing due to the fact that wages increase more with age than does productivity. Additionally, older workers might be negatively affected by technological progress which erodes their technology-specific human capital. They could also have some difficulties in adapting to new work patterns.

Therefore, comprehensive approaches to employment and retirement of older workers are needed which aim at integrating older workers in the labour market as well as closing down options to early exits. Such integrated policies have been implemented only in a few countries (Austria, Finland and United Kingdom). In the majority of European countries fragmented policies prevail (Taylor, 2002; Casey *et al*, 2003). Some examples of these are:

- active labour market programmes targeting older workers (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, the Netherlands, Spain and United Kingdom);

- wage subsidy schemes and other employment incentive schemes (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Spain and United Kingdom);
- support to employers such as advice, guidance, training, employment placements (Denmark, Finland and United Kingdom);
- encouraging a more gradual retirement as an alternative to full early retirement (Finland, Germany, the Netherlands, Spain);
- age discrimination legislation, protection against dismissal, proscription of age bars in recruitment advertisements, and/or abolition of mandatory retirement (Austria, Belgium, Finland, France, Ireland, Italy, Spain and United Kingdom);
- awareness raising campaigns among employers (Denmark, Finland, Germany, Netherlands and United Kingdom).

The need to formulate a comprehensive policy towards older workers which integrates pension and social welfare reforms and employment policy have been increasingly explored by many researchers in the field (for instance OECD, 1998; Blöndal and Scarpetta 1999; van Dalen and Henkens, 2002; Taylor, 2002; Duval, 2003; Casey at al, 2003; Kotowska 2003). This is also reflected in the Lisbon Strategy (European Commission, 2004; European Commission, 2005; Kok, 2004) in which the main policy recommendations concerning older workers are formulated as follows:

- providing the legal and financial incentives for workers to work longer and for employers to hire and keep older workers;
- increasing participation in training for all ages, especially for the low-skilled and for older workers;
- improving working conditions and quality of work.

However, these approaches are situated within a framework of building active ageing strategies which requires both fostering relevant interventions and a culture shift which concerns workers, employers, and public authorities. Especially relevant seems to be overcoming institutional and mental barriers related to participation in training which is currently particularly poor for older workers. Skills upgrading and life-long learning are considered to be the main measures necessary to improve the adaptability of the older workforce.

A concept of sharing the costs and responsibilities for increased investment in human resources by all actors – public authorities, individuals and employers – is expected to foster the implementation of new measures to develop a widespread culture of business investment in training, accessible for all regardless of age, and encouraging individuals to participate in lifelong learning. Both Kok's report (2004) and a communication to the Spring European

Council by the Economic Commission about a new start for the Lisbon Strategy (European Commission, 2005) put an emphasis on lifelong learning as a key strategy to increase employment and improve work quality.

5. Older workers in the labour market – individual and experts' perspectives

The need for urgent retirement reforms is perceived mostly at the macro level. On the level of organisations and individuals, and also among older workers, the problem is not considered to be so important. Moreover, the attitudes of employers are also affected by norms and representations of age and stereotypes concerning younger and older workers in the labour market. For many years a prevailing view was that in combating unemployment among young people, older workers were supposed to make room for young workers on the labour market. Therefore, much more should be done to raise awareness of the issue of ageing, employment and links to retirement systems among employers and individuals (Taylor, 2001 in van Dalen and Henkens, 2002; Taylor, 2002).

In debates on economic and social adaptations to population changes, the citizen's perspective is underrepresented. Very little is known about individual opinions on these issues and attitudes towards suggested policies. In particular, a cross-country perspective is missing. The international project "*Population Policy Acceptance Study – The Viewpoint of Citizens and Policy Actors Regarding the Management of Population Related Change (DIALOG)*" (EC project, HPSE-CT-2002-00153) offers an unique opportunity to look at attitudes towards retirement and suggested policy measures from the individual perspective. This project makes use of data from cross-sectional national surveys to analyse attitudes and opinions concerning demographic changes, fertility behaviour, ageing, intergenerational exchange of resources and services as well as perceptions of population related policies. The national surveys, based on a standardised questionnaire, have been carried out in 13 European countries in 2000-2003 (Austria, Belgium (Flanders), the Czech Republic, Estonia, Finland, Germany, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, Slovenia).[16] Selected results on preferences and expectations about the age of retirement and opinions on retirement policies will be briefly described below. However, discussions on possible explanations are beyond this paper.

Since the age range differed across the DIALOG countries our analyses refer to the population aged 20-64 years. People's opinions about transition to

16. In 2004 Cyprus joined the group of countries which have carried out the surveys.

retirement can be confronted with experts' views. Within the DIALOG project experts' opinions on population changes and policy scenarios have been studied by the Delphi method (Work Package 3, Delphi-Study, 2004). Some results of that study with respect to ageing and the labour market will be briefly presented.

5.1. People's opinions on transition to retirement

Preferences and expectations about retirement age

People's preferences and expectations about the age to retire from ten of the DIALOG countries are related to the standard age of retirement at the period of field work i.e. in the years 2000-2003.[17] The standard age of retirement of males is 65 years except for the Czech Republic (62), Estonia, Slovenia (63) and Lithuania (61.5). The age of retirement for women is more diversified. It is set lower than that of males in Austria and transition countries (Table 4).

Estimates of the average age of withdrawal from the labour market, based on a probability model considering the relative changes of activity rates from one year to another at a specific age (European Commission, Indicators for Monitoring the Employment Guidelines, 2004), confirm a common practise of leaving the labour market earlier. Only in the Czech Republic does the average age of exit for males exceed slightly the standard age.

Preferences to retire before the age of 60 years are visibly stronger in the former socialist countries, especially Poland, Romania and Slovenia. Estonia is an exception. Women prefer to retire before 60 remarkably more frequently than men. Austria is similar to transition countries in terms of preferences to retire before 60 years and the differences between men and women. Another exception is Finland where more men than women wish to retire before 60 years. About 45% of respondents in the Netherlands and Finland preferred to retire before 60 years while the standard age of retirement is 65 for both sexes.

These results demonstrate a general strong preference to withdraw from the labour market earlier than at age 65. At least 84% of respondents expressed such a wish, and this wish was slightly less frequent in the Netherlands, Estonia and Germany than in the other countries. For six countries where the retirement age of males is set at 65 years, the percentage of males who preferred to leave the labour market before 65 ranged between 81% (Germany) and 95% (Slovenia).

17. Data on retirement ages have been provided in country specific reports within the project.

Table 4 – Expectations and preferences about retirement age by sex of respondent (respondents aged 20-64)*

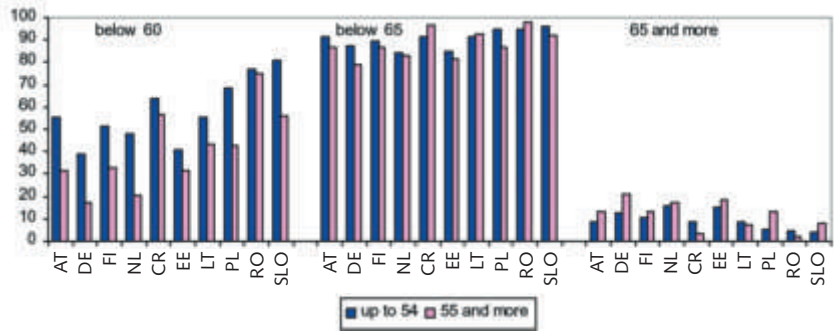
Country	sex	standard age of retirement	Exit age of older workers in 2002**	Expected age of retirement			Preferred age of retirement		
				below 60	below 65	65-69	below 60	below 65	65-69
AT	Male	65	59.4	6.4	50.1	41.7	40.9	87.4	9.4
	Female	60	59.3	31.4	77.3	16.2	71.0	96.2	2.5
	Total			**16.9**	**61.5**	**31.0**	**53.6**	**91.1**	**6.5**
DE	Male	65	61.1	4.7	29.0	66.0	30.9	80.9	16.7
	Female	65	60.3	4.4	49.8	47.7	38.4	91.1	7.6
	Total			**4.6**	**39.3**	**56.9**	**34.7**	**86.1**	**12.1**
FI	Male	65	60.6	17.9	61.9	34.3	52.2	87.9	9.1
	Female	65	60.4	11.4	63.2	35.0	44.9	90.2	8.8
	Total			**14.7**	**62.5**	**34.7**	**48.6**	**89.0**	**9.0**
NL	Male	65	62.9	10.5	57.9	37.0	44.1	82.7	13.8
	Female	65	61.6	16.8	60.6	37.3	47.2	86.6	11.8
	Total			**13.1**	**59.0**	**37.1**	**45.4**	**84.3**	**12.9**
CR	Male	62	62.2	5.6	67.6	26.9	42.0	88.1	9.1
	Female	57-61***	58.4	42.2	88.5	8.5	82.2	96.9	2.6
	Total			**23.8**	**78.0**	**17.7**	**62.4**	**92.6**	**5.8**
EST	Male	63	-	6.5	41.6	49.1	17.6	76.4	19.4
	Female	63	-	10.2	63.9	31.6	54.5	90.1	8.2
	Total			**8.7**	**54.8**	**38.8**	**39.5**	**84.5**	**12.8**
LT	Male	61.5	-	5.1	42.4	49.5	29.3	87.5	9.6
	Female	57.5	-	19.0	81.0	15.5	76.1	95.6	2.9
	Total			**12.6**	**63.3**	**31.1**	**54.5**	**91.8**	**6.0**
PL	Male	65	58.1	15.3	56.9	42.3	46.8	90.0	9.5
	Female	60	55.8	48.8	94.4	5.5	85.1	97.7	1.8
	Total			**31.8**	**75.4**	**24.1**	**66.2**	**93.9**	**5.6**
RO	Male	65	60.5	33.8	71.4	26.2	62.8	93.4	5.4
	Female	60	59.2	64.2	92.9	6.1	89.7	97.4	1.7
	Total			**48.8**	**82.0**	**16.2**	**76.6**	**95.4**	**3.5**
SLO	Male	63	-	23.4	65.1	33.3	72.7	94.8	4.0
	Female	61	-	50.8	85.3	13.8	88.1	97.2	2.3
	Total			**36.8**	**75.0**	**23.8**	**80.2**	**95.9**	**3.2**

*) percentages of respondents who select a relevant option
**) the average age of withdrawal from the labour market, based on a probability model considering the relative changes of activity rates from one year to another at a specific age; for Romania figures in 2001 (European Commission, Indicators for Monitoring the Employment Guidelines, 2004)
***) related to the number of children
Source: own calculations, DIALOG 2004

Expectations about the age of retirement are more realistic, i.e. the percentages of persons who *expect* to retire before 60 and before 65 are markedly lower than those for persons who *prefer* to retire before that age. Expectations seem to be more related to existing regulations. The differences between expectations and preferences are on average higher for retirement before 60 years, except for Germany which has the highest discrepancy for retirement before 65 for both sexes while in Estonia, Lithuania, and Poland that refers to males. Germany and Estonia are also distinctive for their most frequent expectations to retire at age 65-69. Expectations to retire before 60 years were expressed relatively often by women in Poland, Romania (age of retirement 60), and Slovenia (61). In the Netherlands and Finland a similar percentage of men and women (58-63%) expected to retire before 65, the standard age for both sexes.

When looking at these preferences on retirement age by the age of respondents one can see that, in general, the age of the respondents (up to 54 years and over 54 years) does not affect their preference to retire before 65 years and after 65 (Figure 14). Contrary to what might be expected, younger persons more than older ones prefer to leave the labour market before 60 (except Estonia).

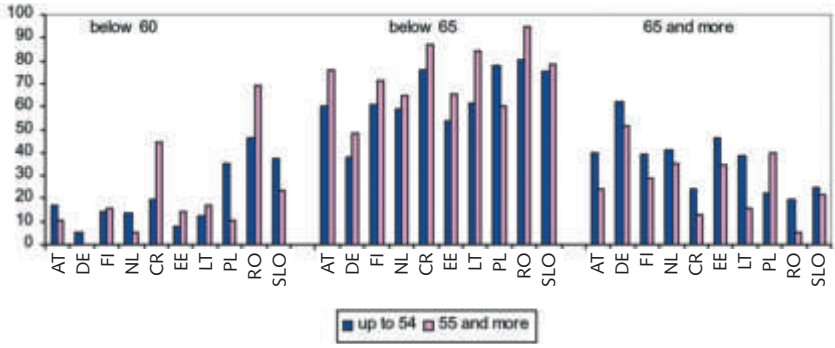
Figure 14 – Preferred age of retirment by age of respondent, respondents aged 20-64



Source: own calculations, DIALOG 2004.

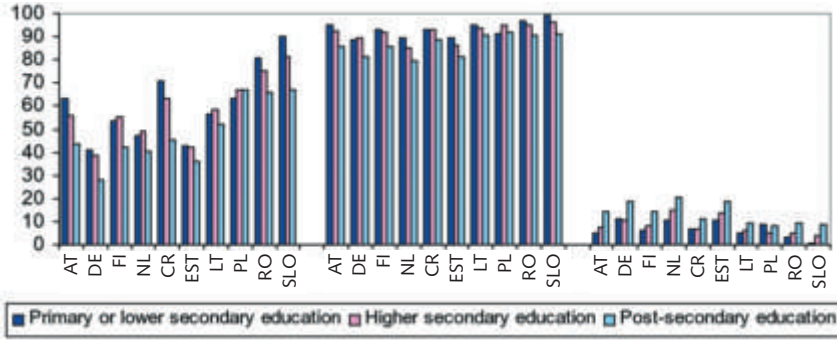
On the other hand, the age of respondents diversifies visibly expectations about the age of retirement (Figure 15). Persons aged over 54 years expected more frequently to retire before 65 years except in Poland where percentages of younger persons expecting to retire either before 60 or before 65 exceed that of older ones. Expectations to leave the labour market before 60 are markedly lower than preferences for both persons aged up to 54 and

Figure 15: Expected age of retirment by age of respondent, respondents aged 20-64



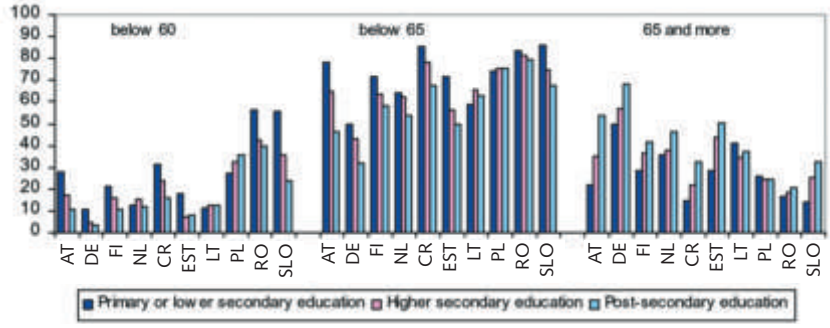
Source: own calculations, DIALOG 2004.

Figure 16 – Preferred age of retirment by education, respondents aged 20-64



Source: own calculations, DIALOG 2004.

Figure 17 – Expected age of retirment by education, respondents aged 20-64



Source: own calculations, DIALOG 2004.

those aged 55 and more. Here four countries revealed a different pattern: the Czech Republic, Poland, Romania and Slovenia – expectations for early retirement remained relatively high, especially among Czechs and Romanians aged 55 and more. Younger persons expect to retire at age 65-69 more frequently than those aged 50 years and more. Again Poland is an exception since younger persons expressed their expectations to retire at a later age less often than older people.

Education also seems to have a stronger impact on expectations than on preferences. In general, persons at the highest level of education (above higher secondary education) preferred and expected to retire before 65, especially before 60 years, less frequently. The relatively high expectations to retire before 60 are shown by respondents with the lowest education in Romania and Slovenia. Expectations about the age of retirement are markedly different by three defined education levels. Only in Poland, Lithuania and Romania interrelations between education and preferences/expectations seem to be weak or do not exist.

Preferences on policy measures for the sustainability of pension systems

People's preferences regarding policy measures to be implemented in order to ensure the financial stability of the old-age pension system might be evaluated by analysing respondents' opinions on the following measures:

- increasing the age of retirement;
- increasing monthly taxes or social premiums on income;
- lowering monthly benefit payment to pensioners;
- forcing children to financially support their aged parents;
- abolishing early retirement programmes;
- making old-age benefits dependent on the number of children: the more children one has, the higher the benefit.

In general, abolishing early retirement and raising monthly taxes or social premiums on income were the most preferred measures in the DIALOG countries. They were selected by at least 50% of respondents (only in Estonia by 43% and in Germany by 45%, see Table 5). In Finland, abolishing early retirement was followed by raising the retirement age. In Romania people opted most often for increasing monthly taxes and the retirement age. Making old-age benefits dependent on the number of children was ranked as the second measure in Germany, Lithuania, Estonia and Poland.

Table 5 – First preferences on governmental measures to ensure old-age benefits in the future (respondents aged 20-64 years)[18]

Country	Increase the retirement age	Increase monthly taxes or social premium on income	Lower monthly benefit payment to pensioners	Force children to support their parents	Abolish early retirement programmes	Make old-age benefits dependent on the number of children
BE	9.2	**26.5**	5.3	3.2	**45.2**	10.7
DE	15.1	11.9	8.9	2.8	**33.3**	**20.7**
FI	**26.5**	**40.5**	5.6	3.8	15.5	8.1
NL	14.3	**40.9**	4.9	1.4	**33.7**	4.8
CR	11.4	**27.0**	2.7	7.2	**30.7**	21.1
EST	19.1	17.2	3.6	9.3	**25.7**	**25.1**
LT	9.5	**28.6**	2.0	6.8	24.8	**28.3**
PL	9.1	**39.1**	2.5	7.8	20.5	**21.0**
RO	**26.2**	**30.6**	4.0	10.6	17.1	11.4
SLO	10.9	**38.7**	5.3	2.6	**24.3**	18.3

Bold denotes the most frequent choice by respondents, i.e. firs t and second choices
Source: own calculations, DIALOG 2004

These results appear to be inconsistent with the preferences and expectations on retirement age since the popularity of abolishing early retirement programmes seems to contradict desires and expectations to retire before 60 and 65 years. However, they might indicate that abolishing early retirement is a solution which could be accepted to ensure old-age pensions, contrary to raising the age of retirement which was ranked as the second preferred measure in three countries only. They seem to suggest that there is more support for policies which make existing regulations on retirement age more effective than for changes in the standard age of retirement. For countries which have recently increased the retirement age (Belgium, the Czech Republic, Lithuania, Slovenia) these results might suggest disapproval for a further rise. In other countries they reveal a lack of support for the increase in the retirement age irrespective of its current level (Germany, the Netherlands, Poland).

Another policy measure often discussed is enabling the elderly to combine work and retirement. This question was asked only in some countries: Belgium (Flanders), Germany, the Czech Republic, Estonia, Lithuania, Poland and Romania. This policy measure received the greatest support in Lithuania (47% of respondents aged 20-64), Romania (44%) and Poland (43%). In other countries no more than 34% persons selected this measure. Respondents aged 55-64 selected more often this measure than those aged 20-54 years.

18. Since the standardised questionnaire included obligatory and optional questions, the identical country coverage is difficult to be obtained in our analyses. And in Table 5 data on Belgium are presented while in Table 4 Austria is included.

To summarise, the DIALOG countries showed strong preferences to withdraw earlier from the labour market, i.e. to retire either before 60 or before 65, especially among women. The age of the respondents (up to 54 years and over 54 years) does not affect their preference to retire before 65 years and after 65. However, the age of respondents does seem to matter regarding those who wish to leave the labour market before 60 years of age: this is preferred more often by younger persons than older ones. Better educated persons preferred to stay in work longer slightly more frequently. Their expectations about the age of retirement were also more realistic – younger, better educated persons expected to work longer, although women less frequently than men. Raising the age of retirement, the most popular measure suggested in debates on pension scheme reforms and already implemented in a number of countries, did not get an approval as a solution to ensure old-age pensions in the future. Rather, the consolidation of existing regulations on retirement age and increasing taxes were perceived as suitable measures.

5.2. Experts' views on active ageing[19]

The policy-Delphi study, carried out under the DIALOG project, aimed at formulating population and societal scenarios up to 2030. The policy-Delphi method is particularly useful to get a consensus on complex issues by a group of experts who work independently. Population ageing, family and fertility and gender roles were the main issues dealt with in terms of policy developments. Fifteen European countries participated in the policy-Delphi study (Austria, Belgium (Flanders), Cyprus, the Czech Republic, Estonia, Germany, Finland, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, Slovenia, Switzerland). Experts selected for the study represented highly diverse groups of opinion and decision-makers, influential people and institutions: policy-makers, industrial organisations, entrepreneurial associations, lobbies and pressure groups, trade unions, journalists, representatives of church and religious associations, gender equity institutions, academics, representatives of the cultural world (writers, art directors, poets, musicians, etc.), and representatives of the local administration.

As regards population ageing policy objectives, the policies most frequently selected by experts were: ensuring retirement provision and adapting old-age pension systems to socio-demographic changes as well as improving the quality of life of the elderly.

19. This section is based on the research report 'Work Package 3, Delphi Study. Comparative Delphi Report, Summary Policy Implications of Delphi Study, DIALOG 2004, prepared by the Research Institute of Population and Social Policy in Rome.

Consequently, among the fifteen Delphi study participants, eleven countries included policy priorities relating to active ageing in their final policy scenarios. These priorities also covered objectives relevant to older workers' participation in the labour market: making retirement flexible (Switzerland); supporting employment of the elderly i.e. persons aged at least 60 years and more (Austria, Italy, the Netherlands); and promoting active ageing (the Czech Republic, Lithuania, the Netherlands, Poland, Slovenia).

Active ageing was considered to be made up of five elements: to be involved in paid work, lifelong learning, voluntary work, leisure and health. As regards the elderly in paid work, the experts suggested implementing the following measures: promoting part-time work; introducing innovative forms of part-time work; reducing work-load; continuation of work after retirement; removing old-age barriers in the labour market; vertical job-sharing; tax-exemption for hiring retired persons and the adoption of leave during work-life as a form of preparing for retirement whilst working. Lifelong learning was also recommended as a tool for sustaining active ageing.

The importance placed on the old-age pension issue is reflected by the fact that all the countries included different objectives relating to pension systems in their final policy scenarios. Adjusting the social security system to the ageing population and increasing intergenerational solidarity was selected by a majority of countries (except for the Czech Republic, Estonia, the Netherlands, Poland, and Switzerland). Five countries set ensuring the sustainability of the pension systems as a policy objective (Belgium (Flanders), the Czech Republic, Estonia, Italy, and Switzerland).

The policies suggested by experts to attain these goals could be grouped as follows:

- innovation and flexibility of work models and pension systems proposed by all countries;
- better investment in health improvement and lifelong learning (Finland, Hungary, Lithuania and Estonia);
- intergenerational solidarity and rejuvenation of society (Lithuania, Romania, Slovenia and Italy);
- gender balance in the work environment and new immigrants' work schemes (Austria, Germany and Italy).

Within the first group of policies, raising the retirement age was the most recommended measure to ensure the financial sustainability of pension systems. However, experts of six countries did not select that solution as a priority for 2030 (the Czech Republic, Italy, Lithuania, Poland, Slovenia and Romania). In terms of their capability to assist in reforming pension systems,

the second choice of experts was the broadening of private retirement schemes while flexible and gradual retirement and work after retirement were ranked at third and fourth position respectively.

As illustrated above, adjusting a social security system to the ageing population is considered to be a highly important and complex issue. However, the relevant policy measures to be implemented to achieve this differ between countries. This reflects the fact that there are a variety of ways to tackle the problem. However, within the broad scope of possible solutions, those relating to changes in working patterns and pension systems were suggested the most often. Furthermore, raising the age of retirement received high recognition from the experts.

6. Concluding remarks

Recent population projections by the UN (2003a) as well as labour force projections by Eurostat (Statistics in focus, 2001) and OECD (Burniaux *et al*, 2004) clearly show that population ageing, the shrinking of the working age population and its ageing are unavoidable characteristics of the Europe of the future. Despite regional differences in the intensity and timing of changes, illustrated in detail in Section 2, their global dimension is undisputable.

Pressure on the social security system resulting from these changes, and especially on pension systems predominantly based on the PAYG system, is further affected by labour market developments. A decomposition of long-term projections in spending on old-age pensions to 2050 for 22 OECD countries to evaluate the impacts demographic change, change in labour force participation, unemployment and changes in the generosity of the pension system, shows that the demographic effect is the key factor driving pension spending over the period while effects on the three other factors are visibly lower. However, the results also demonstrate that increases in the share of persons aged 55 and more drawing a pension appears to be offset, to some extent, by reforms undertaken in many countries to encourage later retirement (Casey *et al*, 2003).

Regarding policy responses to demographic change, more emphasis has been given to interventions which ensure the financial sustainability of the public pension systems than on improving the use of human potential in Europe. Labour market developments in the current decade show that the questions formulated in 2000 are still vital (Pearce and Punch, 2000, 11): will there be an increase in demand for labour and can that increase be met by increased economic activity rates under future population trends and by addressing the high degree of under-utilisation of the labour force wide-

spread across Europe? The view that Europe needs more and better jobs as well tapping its unused human potential is clearly expressed in the recent policy documents of the European Union (Kok, 2004; European Commission, 2005). Thus in the employment recommendations and in the arguments for a new start of the Lisbon Strategy, much emphasis is placed on the adaptability of both workers and employers as well as on creating a culture of lifelong learning.

In the light of this, the researchers insisted on viewing policies towards workers aged 55 and more differently. Policies should encourage older workers to stay in employment whilst improving their working conditions and increasing their employment prospects. This would reflect a shift from a fragmented approach to an integrated policy towards older workers within a broad multidimensional strategy of active ageing. However, this shift is more visible at the conceptual level than at the implementational level.

It is clear that the adaptability of the older workforce is increasing in significance in the EU and among governments. However, stimulating labour market participation of older workers depends largely on employers and unions also acknowledging that older workers are an essential part of the labour force. The need for reforms is perceived mostly at the macro level. Organisations and individuals, also among older workers, do not perceive the problem to be so important.

Preliminary results on individual perception of ageing and retirement from the DIALOG project also confirm that individual's perspectives on the later phase of the life course is entirely different from that of experts (the Delphi study) and policy makers. Therefore, much more should be done to raise awareness of the issue of ageing, employment, investment in human resources and links to retirement among employers and individuals.

National education programmes have been undertaken in many countries (Taylor, 2001 in van Dalen and Henkens, 2002; Taylor, 2002). Despite their mixed and questionable effects until now, it seems reasonable to expect some changes in opinions, at least in the mid-term, especially when they are combined with educational programmes and support for local job initiatives aimed at strengthening the position of older workers within firms and in the labour market.

Ageing is not a problem in Europe's future. It is already happening. An intelligent and effective management of change needs an integrated approach towards pension, social welfare and employment policies which promotes a coordinated set of public policies (education, health, safety and social protection, and employment) and involves all the relevant stakeholders.

However, for this to happen, the general approaches to respond to demographic change which seem to be shared governments and experts – despite the wide variety of measures proposed – should be transferred to other social actors such as organizations, employers, local authorities and citizens.

Adapting the economy and society to population and labour force ageing means sharing the costs and responsibilities resulting from the increased number of elderly and older workers between public authorities, employers and individuals, and caring for effective use of their human and social capital. It requires the reinforcement of the mediating role of the state rather than the disengagement of public authorities (Avramov and Mašková, 2003).

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The Action Plan of the 3rd Summit of Heads of States and Government of the Council of Europe identified ageing as a major challenge to social cohesion. Population ageing is indeed a global phenomenon which affects European countries in particular, putting increased pressure on the financial sustainability of current European social systems. This is a prominent, high-profile aspect of European societies arising from structural changes in fertility and mortality.

Faced with the shrinking working-age population, policy makers are, or soon will be, facing the need to review their policies towards older workers. Policies should be developed to improve the employment prospects of older workers and create a favourable environment and institutional framework for active ageing. Although increased attention is being given to these issues at the international and national levels, this change is less obvious at the individual and corporate levels. To be effective, the concept of active ageing should be accompanied by a set of comprehensive measures in the areas of education, social policy, pension reform, employment and the working environment. The debate during the conference showed that governments have an important part to play and can no longer be content with a laissez-faire approach.

This volume reviews the major demographic challenges posed by population ageing and its impact on policies in areas including health, employment, public expenditure and social relationships. It contains two studies written by Ronald Schoenmaeckers and Irena Kotowska. The introduction is based on Ronald Schoenmaeckers' presentation at the conference as the keynote speaker for the session on population ageing.

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