



Aging and Demographic Change in European Societies: Main Trends and Alternative Policy Options

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March 2007

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Abstract

This paper gives an overview on current demographic trends and projected population change in Europe and neighboring regions. The main focus of the analysis is on Western and Central Europe. Today this world region has a total population of 500 million. Available forecasts until the year 2050 project a decline of the population at working age, a subsequent decline of the (native) work force and a parallel increase in the number of retired people. The paper discusses policy options by demonstrating the impact of possible changes in labor force participation, higher retirement age and pro-active recruitment of migrant labor on population size and future labor force.

* This paper has profited from close research co-operation with Robert Holzmann (Washington DC), very valuable research support by Johannes Koettl (Washington DC) and great support by Thomas Buettner and Patrick Gerland from the United Nations Population Division (New York).

Introduction

Today, demographic change is a global phenomenon resulting from two almost universal trends: declining fertility and increasing life expectancy. Most countries in the world experience declining fertility or have stagnating fertility. In most developed countries fertility is below replacement level.¹ And the majority of countries report increasing life expectancies.² As a consequence most parts of the world will witness demographic aging – defined as a rise in median age of populations and a growing share of people above age 65 – during this 21st century. Large discrepancies, however, will remain.

Europe and Japan have entered the stage of very slow demographic growth and will most likely be confronted with some population decline during the first half of the 21st century. In Europe the age group 0-15 is already shrinking. This world region now faces declining working age populations and the prospect of shrinking domestic (i.e. non-migrant or native) labor forces. In contrast to this, the United States will experience sustained population growth until 2050 and most likely throughout the whole 21st century.³ China is still growing, but the country has entered the stage of slow demographic growth and will have to deal with a stagnating and subsequently falling population. Population decline in China is expected to start around the year 2025.⁴ Europe's neighboring regions Africa and the Middle East, however, will continue to grow significantly and stay younger. These regions still have much higher fertility. And their populations are much younger, with a median age of 20 years or less, compared to 38 in Europe.

From a demographic point of view Europe combines some “extremes”: Many of the 27 EU member states⁵ and other parts of Europe (other EEA, Balkans, and European CIS) experience the lowest fertility worldwide. At the same time most of the 27 EU member states and all other parts of Western Europe⁶ belong to the group of countries with the highest life expectancy world wide.

In the future the majority of EU member states will experience an excess of deaths over births. And until 2050, the median age in EU27 will rise to 48 years. As a result prospects and consequences of demographic ageing are widely discussed in Europe. Today, pay-as-you-go systems based public pension regimes as well as funded private pension plans and their sustainability are at the center of the debate. The impact of longevity on health care expenditure has drawn some attention. Possible effects of ageing on future innovation and productivity have been an issue. Other discussions have focused on replacement migration as a means of coping with of ageing and shrinking populations. And there is a discussion on potential demographic and migratory arbitrage between Europe and regions with youthful and growing populations.

¹ On average fewer than 2.1 children per women (Total Fertility Rate/TFR).

² Main exceptions are countries with a high prevalence of HIV/AIDS and several post-Soviet successor states in Europe and Central Asia which have experienced stagnating or even declining male life expectancy since the late 1980s. See UN Population Division (2004, 2005, 2007).

³ See forecasts of the US Bureau of the Census and the UN Population Division (2004, 2005).

⁴ See forecasts of the UN Population Division (2004, 2005).

⁵ Currently the following countries are EU member states: Austria, Belgium, Bulgaria, Cyprus, the Czech Rep., Estonia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the UK.

⁶ These other West European countries comprise EEA (European Economic Area) member states outside EU (=Iceland, Liechtenstein, Norway), bilaterally associated Switzerland and the Channel Islands.

European population today

As stated above, many EU member states and other parts of Europe experience the lowest fertility worldwide. On average European women have 1.4 children. In order to keep domestic (i.e. native or non-immigrant) populations constant an average of 2.1 children would be necessary. Turkey is the only country in Europe where fertility (2.4 children per woman) is above this level. In France (1.9) and several Scandinavian countries (Iceland: 1.9, Norway: 1.8, and Sweden: 1.7) fertility is just below 2 children per woman. Austria, Germany and Switzerland are all close to the European average (1.4). Most countries in East-Central and Southern Europe have very low fertility. The lowest levels are reported by the Czech Rep., Italy, Slovakia and Ukraine (all below 1.2 children per woman).

Many parts of Europe belong to the group of countries with the highest life expectancy world wide. Europeans have on average a life expectancy at birth of 70 years (men) and 78 years (woman). In Iceland (79.0), Switzerland (78.6) and Sweden (77.9) male life expectancy reaches record levels while the female life expectancy is highest in Switzerland (83.7), Spain (83.6) and Italy (82.9). Europe's lowest life expectancies are recorded outside EU25: for men in Russia (58.8), Belarus (62.3) and Ukraine (62.7); for woman in Russia and Moldova (both 72.0).

In early 2006, the total population of Western and Central Europe, the Balkans, Turkey and the European CIS countries was 813 million. The European Union (EU27) had 491 million inhabitants: of these, 389 million were either citizens or foreign residents of the 15 pre-enlargement member states (EU15). The other 102 million were citizens or foreign residents of the 12 new EU member states (EU10+EU2; of them: 101 million in Central Europe, Eastern Balkans [EU2] and the Baltic States). 77 million people were living in (today's) EU candidate countries⁷ (among them 73 million in Turkey), another 12 million people in the rest of Western Europe,⁸ and 18 million in other Western Balkan countries.⁹ In 2005, the European CIS countries¹⁰ had 219 million inhabitants (2005) altogether.

In 2005, Western and Central Europe still experienced population increase. In the 30 EU/EEA countries and Switzerland (=EU27+) total population growth was +2.1 million or 4.4 per 1000 inhabitants. This increase in total population was based on a net gain from international migration (+1.8 million people; 3.7 per 1000) and a small natural increase (+300,000 people; 0.7 per 1000 inhabitants). A comparison of these two components defining total population change shows the following. Some 85% of Europe's recent population growth is resulting from international migration. In contrast, immigration accounts for less than 50% of US population growth.

The majority of EU member states continue to have some population growth. In 2005, relative to population size this increase was largest in Cyprus (+31.3 per 1000 inhabitants) followed by Ireland (+20.2) and Spain (+17.1). Estonia (-2.8 per 1000), Germany (-0.5 per 1000), Hungary (-2.1), Latvia (-5.4), Lithuania (-7.0) and Poland (-0.7) had a declining population. Bulgaria (-7.4) and Romania (-2.5) also experienced declining numbers of residents. The other 19 countries (analysed in Table 1) still experienced some natural population growth. In the coming years, however, the number of countries with declining domestic population will increase.

⁷ Croatia, Macedonia, and Turkey.

⁸ Iceland, Liechtenstein, Norway and Switzerland.

⁹ Albania, Bosnia-Herzegovina, Montenegro, and Serbia (including Kosovo).

¹⁰ Armenia, Azerbaijan, Belarus, Georgia, Moldavia, Russia, Ukraine.

In sharp contrast to historical periods prior to the 1960s and 1970s, today most countries of Europe have a positive net migration balance. In 2005, this was the case in 24 of the 30 EU/EEA countries and Switzerland (=EU27+). In absolute numbers, net migration was largest in Spain (+652,000) and Italy (+338,000), followed by the UK (+196,000), France (+103,000), Germany (+99,000), Portugal (+64,000), Austria (+61,000) and Ireland (+47,000).¹¹ In Central Europe and the Baltic (EU 8) the Czech Rep. experienced the largest net migration gain (2005: +36,000). But Hungary, Slovakia, Slovenia also had a positive migration balance. Among the candidate countries of the next EU enlargement rounds (Croatia, Macedonia, Turkey) only Croatia reported a positive migration balance.

A considerable number of European countries had both an excess of births over deaths (=positive natural growth) and a positive migration balance. Several countries, in particular the Czech Republic, Italy, Greece, Slovenia and Slovakia, only showed population growth because of immigration. In other countries, for example Germany and Hungary, gains from migration are not large enough to stop population decline; but recent population decline would have been much larger without a positive migration balance. Only a few countries, in particular the Baltic states, Poland, Bulgaria and Romania experienced both an excess of death over births (=negative natural growth) and a negative migration balance.

Today the European Union (EU27) and associated countries (other EEA, CH) have over 500 million inhabitants. Of them some 42 million are regular international migrants; they represent 8.% of Western and Central Europe's (=EU27+) total population. A minority of these migrants have come from other EU member states. We can assume that at least one in four has migrated from one of today's 25 EU member states into another Western or Central European country.¹² The remaining 30 million have come from other parts of Europe and from other world regions.

In absolute terms Germany has by far the largest foreign-born population (10.1 million), followed by France (6.3 million), the UK (5.1 million), Spain (4.5 million) and Italy (2.5 million). Relative to population size, two of Europe's smallest countries – Luxembourg (37.4%) and Liechtenstein (33.9%) – have the largest stock of immigrants, followed by Switzerland (22.4%), two Baltic States (Latvia 19.5% and Estonia 15.2%) and Austria (15.1%). In the majority of West European countries the foreign-born population accounts for 7-15% of total population. Among the new EU member states of Central Europe, Slovenia has the highest share of foreign-born residents (8.5%) followed by the Czech Republic (4.4%; see Table 2).

Expected changes in total population until 2050

Low fertility and increasing life expectancy (based on declining mortality at higher ages) in Europe both reverse the age pyramid, leading to a shrinking number of younger people, an ageing work force, and an increasing number and share of older people. Most experts assume that immigrants will only partly compensate for the declining native population and work force. As a consequence medium-term population projections of Eurostat¹³ and the UN

¹¹ Net flow of migrants (regardless of citizenship) according to Eurostat (Chronos data base).

¹² The exact proportions of intra-EU migrants vs. migrants from third countries are unknown because many EU countries do not have (or do not publish) detailed data on place of birth of their population. The suggested proportion is an estimate based on the analysis of the European Labour Force Survey (Muenz and Fassmann 2004) and OECD data (2004).

¹³ Based on Eurostat's most recent Europop 2004 projection (baseline scenario) assuming cumulated net immigration of 40 million people to EU 25 (2005-2050). See Eurostat 2004.

population division¹⁴ for EU27 expect a moderate decline in EU total population after the year 2025. Both projections assume a continuing increase of total EU population until 2025 and a subsequent decline, with most of the new EU member states in Central Europe and the Baltic as well as many old EU member states – Germany, Greece, Italy and Spain in particular – anticipated having a marked decrease of native populations.

Based on the UN population projection (medium variant, assuming immigration) total EU population¹⁵ will increase from 472 million (EU25+ 2005) to 478 million (2025) and then start to decline (2050: 462 million; Table 3). During the same period, in the absence of mass migration Western and Central Europe's total population would already start to decline after reaching its maximum in 2010. By 2025 the region would still have 468 inhabitants. By 2050 this number would have dropped to 415 million (Table 5).¹⁶

Neighboring Balkan countries of South-East Europe¹⁷ – including the two new EU member states of 2007 (Bulgaria, Romania) and EU candidate country Croatia – have 54 million (2005) inhabitants all together. Their total population is already declining and will continue to do so: to 50 million in 2025 and to 43 million in 2050 (Table 6).¹⁸

A similar decline is likely to occur in Russia and other European CIS countries.¹⁹ Total population of this sub-region is projected to fall from 219 million in 2005 to 196 million in 2025 and to 164 million in 2050 (Table 7). During the same period Central Asian CIS countries will continue to have demographic growth. Today this region has a total population of 58 million. According to the analyzed projection this number will increase to 70 in 2025 and to 76 in 2050 (Table 8). Turkey's population is expected to grow at a similar pace: from 73 million (2005) to 90 million (2025) and further to 101 million (2050; Table 9).²⁰

Among the world regions analyzed in this paper, the largest growth will occur in the Middle East and North Africa. Labor importing Gulf States (MENA5) will double their total population. Today they are home or host to 36 million natives and immigrants. Total population will reach 54 million by 2025 and 71 million by 2050 (Table 10). The remaining countries of North Africa and the Middle East (MENA14) are home to 313 million people. Total population of this region is projected to increase to 432 million by 2025 and to 542 million in 2050 (Table 11).²¹

¹⁴ Based on the 2004 Revision of UN World Population Prospects (UN WPP, medium variant; UN Population Division 2004, 2005) assuming cumulated net immigration of some 30 million people to EU 25+ (2005-2050).

¹⁵ The following calculations take 2005 as base year. The projection takes the 25 EU member states of 2005 and affiliated countries (other EEA member states and Switzerland) into account. The calculations of this paper are based on the 2004 revision of UN World Population Prospects (UN WPP, medium variant; UN Population Division 2004, 2005). In March 2007 the UN Population Division has released the 2006 revision of the UN WPP. For Europe and its neighborhood the results do not differ significantly from the 2004 revision.

¹⁶ Based on the 2004 Revision of UN World Population Prospects (UN WPP, zero migration variant; UN Population Division (2004, 2005) assuming no immigration/emigration.

¹⁷ Albania, Bosnia, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

¹⁸ Based on the 2004 Revision of UN World Population Prospects (UN WPP, medium variant; UN Population Division (2004, 2005).

¹⁹ Armenia, Azerbaijan, Belarus, Georgia, Moldova, the Russian Federation, and Ukraine.

²⁰ Based on the 2004 Revision of UN World Population Prospects (UN WPP, medium variant; UN Population Division (2004, 2005).

²¹ Based on the 2004 Revision of UN World Population Prospects (UN WPP, medium variant; UN Population Division (2004, 2005).

Changing age structures in Western and Central Europe

Demographic developments have a considerable impact on the size of various age groups, including populations at working age. As a consequence demographic trends – together with labor market trends and labor force participation rates – determine the size of future work force.

In Europe, low fertility and increasing life expectancy both reverse the age pyramid, leading to a shrinking number of younger people, an aging and eventually shrinking work force, and an increasing number and share of older people. In the age group 0-14 the quantitative decline is already taking place today.

In Western and Central Europe²² the size of the working age population (EU25+ age group 15-64 in 2005: 317 million) will start to decline after the year 2015 reaching 302 million (-15 million or -5%) in 2025 and 261 million in 2050 (-66 million or -18%; Table 3).²³ Within this group the momentum will shift from younger to older people at employable age. The number of younger Europeans entering the labor market (age group 15-24) is already shrinking in a number of EU member states and will decline in EU25 as a whole over the next 45 years (2005-2050: -25%). In contrast the age group 30-54 will continue to grow until the year 2010. And the age group 55-65 is likely to grow until the year 2030 when the largest cohorts of the baby boom have reached (today's) retirement age. After 2030 all (native) adult age groups below age 65 will be declining in size (Table 4).

On the other hand, as a result of increasing life expectancy and the aging of the baby boom generation the age group 65+ (2005: 79 million) will grow to 107 million in 2025 (+28 million or +35%) and to 133 million in 2050 (+54 million or +68%). Within this age group the largest increase is to be expected for people over 80 years of age (2005: 19 million, 2050: 51 million; +22 million or +180%).²⁴

For Europe the demographic process analyzed here can be characterized as a gradual shift from a society with quantitatively dominant younger cohorts to a society in which the elderly form a solid majority. This is best reflected when looking at the median age. In 1960, during the unfolding of the baby boom, the median age of all 25 countries that now belong to the European Union was 32 years. In 2005 this median age of EU25 was 38.5. By the year 2050 it will most likely have risen to 48 years – meaning that by then, almost half of Europe's population will be above age 50.

In 2005 within EU 25 the demographically defined *old age dependency ratio* was: 25 people in the age group 65+ per 100 people at working age (15-65; Table 4). In Germany and Italy (both 29 in the age group 65+ per 100 people at working age) this ratio was well above EU25 average. In contrast to this Cyprus, Ireland, Malta and Slovakia still had relatively young populations with old age dependency ratios of 17-18.

By the year 2050 this ratio will double to 51 people in the age group 65+ per 100 people at working age (15-65). By that time Spain (68), Italy (66) and Portugal (58) are expected to have the highest old age dependency ratios. Due to the lasting effects of higher numbers of children per women/family countries like Luxemburg (36), the Netherlands (39), Denmark

²² 25 EU member states of 2005, other 3 EEA member states and Switzerland.

²³ UN WPP, medium variant; UN Population Division (2004, 2005) assuming cumulated net immigration of some 30 million people to EU 25+ (2005-2050).

²⁴ UN WPP, medium variant; UN Population Division (2004, 2005) assuming cumulated net immigration of some 30 million people to EU 25+ (2005-2050).

(40) and Sweden (41) will have much lower old age dependency ratios. Compared to today, however, the increase appears to be a universal phenomenon.

For the financing of future pensions a related *support ratio* is of major importance: In 2005 EU 25+ had 35 people in the age group 65+ per 100 people in the labor force. By the year 2050 – at constant labor force participation rates and with immigration (medium variant) – this support ratio would reach the level of 72 people in the age group 65+ per 100 people in the labor force. If a considerable numbers of people below age 65 have already retired – as it is the case today – in 2050, the actual support ratio would be well above 72 per 100!

Demographic change in other parts of Europe and in neighboring regions

The situation on the Balkans and in the European CIS countries²⁵ is similar to the one in the EU-25. Sustained endogenous population growth, however, is expected for Albania, Azerbaijan, Kosovo, Macedonia, Turkey (Table 9), and most parts of Central Asia (Table 7),²⁶ but many Balkan countries, Russia, and Ukraine face considerable demographic decline (Tables 6 and 8).

In contrast, the situation in Europe's southern and south-eastern neighbour regions, i.e. in the Middle East and North Africa (the Gulf States and MENA14²⁷; Tables 10 and 11) is characterised by higher – but declining – fertility, rising life expectancy, and sustained demographic growth. Total population in MENA14 will grow steadily from 313 million in 2005 to 438 million by 2025 (+40%) and to 557 million by 2050 (+78%). During this period, in MENA-14 the number of people between ages 15 and 64 will almost double: from 195 million in 2000 to 289 million by 2025 (+48%) and to 365 million by 2050 (+78%). At the same time, this region also faces demographic ageing as its population over age 65 will grow almost fivefold over the next 45 years (Table 11).

Implications for total work force in the absence of mass migration

Demographic developments have a considerable impact on the size of various age groups, including populations at working age. As a consequence demographic trends – together with labor market trends and labor force participation rates – determine the size of future work force as well as the number of the retired persons.

In 2005 the labor force of Western and Central Europe²⁸ comprised 227 million people (EU25+). Of them some 21 million (=9%) were foreign-born. At current labor force participation rates, demographic aging translates into a shrinking labor force. The change in the economically active population will, however, be smaller than the projected changes for the age group 15–64, as only 60–80% of this age group are currently employed or self-employed.

²⁵ EECA20 countries in Europe are Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Macedonia, Moldova, Montenegro, Romania, Russian Fed., Serbia, Turkey, Ukraine.

²⁶ EECA20 countries in Asia are Kazakhstan, Kyrgyz Rep., Tajikistan, Turkmenistan, Uzbekistan.

²⁷ MENA14 countries are Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Palestinian Territories/West Bank and Gaza, Syria, Tunisia, and Yemen.

²⁸ 25 EU member states of 2005, other 3 EEA member states and Switzerland.

Based on the assumptions of the UN medium scenario Western and Central Europe's (EU25+) work force would decrease to 211 million (-16 million or -7%) in 2025 and to 183 million (-44 million or -19%)²⁹ in 2050 (Table 3).³⁰ In the absence of any international migration this decline would be even larger (2025: 201 million; -26 million or -12%; 2050: 160 million; -66 million or -29%; Table 5).³¹

In the Balkans, the situation is similar if we assume no large migration flows affecting the demographic situation. Population at working age (2005: 36 million) will decrease after the year 2015 to 34 million (-8%) in 2025 and to 27 million (-28%) in 2050. At current labor force participation levels this would mean a decrease of the work force from 26 million (2005) to 24 million (-8%) in 2025 and to only 18 million (-30%)³² in 2050. In countries such as Bulgaria, Moldavia, Romania, Montenegro, and Serbia³³, the active or job-seeking population is already shrinking (Table 8).

Russia and other European CIS countries – in the absence of immigration – would face an even larger decline of population at working age (15-65): from 154 million today (2005) to 132 million (-14%) in 2025 and to 101 million (-34%) in 2050.³⁴ At current labor force participation rates this would translate into a considerable decline of the labor force: from 119 million today (2005) to 101 million (-15%) in 2025 and to only 75 million (-37%)³⁵ in 2050 (Table 6).

In contrast, Europe's neighboring regions are marked by higher fertility leading not only to a younger population, but also to larger cohorts entering working age. Many of them, however, remain unemployed. In MENA14 countries outside the Gulf region population at age 15-65 will grow from today's 195 million to 289 million (+48%) in 2025 and to 365 (+87%) in 2050.³⁶ Without mass emigration and at current labor force participation rates this demographic growth would translate into a MENA14 labor force growing from 118 million (2005) to 184 million (+55%) in 2025 and to 236 million (+100%)³⁷ in 2050 (Table 11). It is highly probable that most national labor markets in this region will not be able to absorb this additional supply of domestic labor.

Turkey and the countries of Central Asia face a similar problem. In Turkey the age group 15-65 will grow from 48 million (2005) to 63 million (+31%) in 2025 and at a slower pace to 67 million (+40%)³⁸ in 2050. During the same period – at current labor force participation rates – Turkey's work force would grow from today's 35 million to 47 million (+32%) in 2025 and to 51 million (+45%) in 2050 (Table 9).

In Central Asia the age group 15-65 will grow from 37 million (2005) to 50 million (+36%) in 2025 and also at a slower pace to 55 million (+51%)³⁹ in 2050. During the same period – at current labor force participation rates and assuming no massive emigration – the work force of this region would grow from today's 27 million to 38 million (+39%) in 2025 and to 40

²⁹ Comparing 2050 with 2005.

³⁰ UN WPP, medium variant; UN Population Division (2004, 2005) assuming cumulated net immigration of some 30 million people to EU 25+ (2005-2050).

³¹ UN WPP, zero migration variant; UN Population Division (2004, 2005).

³² Comparing 2050 with 2005.

³³ Without Kosovo.

³⁴ UN WPP, zero migration variant; UN Population Division (2004, 2005).

³⁵ Comparing 2050 with 2005.

³⁶ UN WPP, zero migration variant; UN Population Division (2004, 2005).

³⁷ Comparing 2050 with 2005.

³⁸ Comparing 2050 with 2005.

³⁹ Comparing 2050 with 2005.

million (+49%) in 2050 (Table 7). Again labor markets in Central Asia will probably lack the capacity to absorb the increase that will primarily occur during the coming 20 years.

For Europe, the main challenge is the changing ratio between younger and older adults in general (*old age dependency ratio*) and between economically active and retired persons (i.e. *old age support ratio*) in particular.

In 2005 within EU 25+ the demographically defined *old age dependency ratio* was: 25 people in the age group 65+ per 100 people at working age (15-65). By the year 2050 this ratio will more than double to 53 people in the age group 65+ per 100 people at working age (15-65). For the financing of future pensions a related *support ratio* is of major importance: In 2005 EU 25+ had 35 people in the age group 65+ per 100 people in the labor force. By the year 2050 – at constant labor force participation rates and with immigration (medium variant) – this support ratio would reach the level of 72 people in the age group 65+ per 100 people in the labor force. If a considerable number of people below age 65 are already retired – as it is the case today – in 2050, the actual support ratio would be well above 72 per 100! In Romania this is already the case.

Coping with the impact of demographic aging on the work force

The most obvious strategies coping with demographic aging and the eventual decline of native work forces are:

- *Higher labor force participation rates.* This strategy primarily applies to countries where participation rates of women and immigrants from middle- and low-income countries are below EU average.⁴⁰ In 2003, EU 15 countries on average had a male labor force participation rate of 78.3 percent (for population age 15-65) and a female labor force participation rate of 60.8 percent (for population age 15-65) leaving room for considerable increase of the latter.⁴¹ This, however, would require better child care facilities and schools that take care of children all day.
- *Higher retirement age.* This strategy particularly applies to countries where actual retirement age is well below legal retirement age.⁴² In more than half of EU 25 countries actual male retirement age has fallen to or even below age 60 whereas female retirement age already is below age 60. As a result the employment rate for people aged 55-65 was 40.2% in 2003 – far below the European objective of 50% defined by the Lisbon agenda.⁴³ After reaching this goal a rise in legal retirement age should also be considered. The employment rate of 65-74 year olds in EU was 5.6% in 2003, compared to 18.5% in the USA.⁴⁴

⁴⁰ Ágeirsdóttir 2004, EUROPEAN COMMISSION 2002a, EUROPEAN COMMISSION 2003b, 2004c, Independent High Level Group 2004.

⁴¹ “To meet this challenge, the Lisbon Agenda must be resolutely implemented, in particular those policies focusing on getting people into jobs – especially certain groups in the population such as women and both younger and older people – on innovation and increasing productivity.” (EUROPEAN COMMISSION 2005b)

⁴² Ágeirsdóttir 2004, Bishop 2005, EUROPEAN COMMISSION 2002a, EPC 2002, 2003, Independent High Level Study Group 2003.

⁴³ EUROPEAN COMMISSION 2004c, 2005b, Independent High Level Group 2004.

⁴⁴ EUROPEAN COMMISSION 2005b.

- *Pro-active economic migration policy.* This strategy obviously applies to countries with current and future shortages of labor and skills.⁴⁵ In recent years annual net immigration to EU 25 was in the order of 1.2 million people. In 2004-2005 it peaked at 1.7 million per year. During this period Spain, Italy, the UK and Germany were the destination of more than 2/3 of this net inflow. In the early 2000s nearly 40 percent of all residence permits issued in EU15⁴⁶ were granted for the purpose of employment whereas 30 percent were granted for the purpose of family reunion.⁴⁷ These figures, however, do not give the full picture. For example, in several EU countries economic migration takes place to a larger extent in the form of seasonal and temporary labor migration (529,000 persons admitted in 2001 in EU 15)⁴⁸ as well as in the form of irregular labor migration of at least the same magnitude.⁴⁹ Only a small number of the newly arriving migrants, however, are selected according to their skills and professional experience. Meanwhile France and the UK have introduced legislation that offers fast-track immigration to highly skilled applicants. From a development perspective some experts have argued that this might lead to higher brain-drain with negative implications for developing countries.

These strategies are not mutually exclusive.

Could changes in labor force participation substitute for migration?

The expected relevance of the strategies discussed above can be demonstrated by looking at their impact on the size and composition of Europe's future labor force.

In the absence of mass immigration (zero migration variant) Western and Central Europe's labor force⁵⁰ would decline from 227 million (2005) to 201 million in 2025 (-26 million or -12%) and to 160 million in 2050 (-66 million or -29%⁵¹; Table 5, Table 14).

If by 2050 all EU 25+ countries could match labor force participation rates⁵² of the three European countries currently having the highest participation rates,⁵³ Western and Central Europe's work force would increase (medium variant with immigration; Scenario I) to 233 million in 2025 (+3%) and only then start decreasing to 222 million in 2050 (-2%; Table 18).⁵⁴ In the absence of migration (zero migration variant; Scenario I) the labor force would

⁴⁵ EUROPEAN COMMISSION 2003a, 2005a, Holzmann and Muenz 2004, Papademetriou 2003, Reitz 2005.

⁴⁶ EU15 refers to the "old" 15 pre-enlargement EU member states.

⁴⁷ The remaining 30 percent are permits granted for educational reasons, for humanitarian reasons (mainly to refugees) and to co-ethnic (return) migrants (OECD/Sopemi 2004).

⁴⁸ Admitted by France, Germany, Italy, Sweden, and Switzerland (OECD/Sopemi 2004).

⁴⁹ The latter only becomes statistically visible at the occasion of so-called amnesties and regularization programs. During the period 1995-2004 some 2.8 million migrants were regularized in EU 15 (Holzmann and Muenz 2004, Papademetriou et al. 2004). In 2005 Spain offered regularization to another 700,000 irregular migrants.

⁵⁰ Calculation based on the assumption of constant national labour force participation rates in EU 25+.

⁵¹ Comparing 2050 with 2005.

⁵² Assuming steady incremental change: 50% between 2005 and 2025, 50% between 2025 and 2050.

⁵³ Denmark, Iceland, and Sweden.

⁵⁴ Comparing 2050 with 2005.

slightly decrease to 222 million in 2025 (+2%) and then decline to 195 million in 2050 (-16%⁵⁵; Table 19).

If, however, by 2050 all EU member states would manage to increase female labor force participation in age groups 15-65 to the (national) level of male labor force participation,⁵⁶ Europe's work force would stagnate (medium variant with immigration; Scenario II) at 224 million in 2025 (-1%) and only then start decreasing to 205 million in 2050 (-10%; Table 18).⁵⁷ In the absence of migration (zero migration variant; Scenario II) the labor force would stagnate at 225 million in 2025 (-1%) and then decline to 179 million in 2050 (-21%⁵⁸; Table 19).

An increase of actual retirement age by 5 years until 2025 and by 10 years until 2050 would lead to a slightly growing European work force (medium variant with immigration; Scenario III 2025: 228 million; +1%) and only then to subsequent decline (2050: 216 million; -5%; Table 18).⁵⁹ In this scenario III, even in the absence of migration (zero migration variant) the labor force would decline to 218 million in 2025 (-4%) and then continue to decline to 190 million in 2050 (-16%⁶⁰; Table 19).

In the absence of mass migration only a combination of Scenarios I and III – i.e. a combination of Scandinavian labor force participation rates for all EU 25+ countries plus a rise in retirement age by 10 years until 2050 – could compensate for the impact of demographic aging on the work force. By 2050 a combination of Scenarios I and III would lead to a Western and Central European work force of 228 million (2005: 227 million). Without mass immigration a combination of Scenarios I and II – i.e. female labor force participation rates at male levels in all EU 25+ countries plus a rise in retirement age by 10 years until 2050 – would still lead to a decline of Western and Central Europe's work force to 206 million (2005-2050: -21 million or -9%). And a combination of Scenarios I and II – i.e. current male Scandinavian labor force participation rates for men and women in all EU 25+ countries – would lead to a slightly smaller decline of Western and Central Europe's work force to 215 million (2005-2050: -12 million or -5%; Table 19).

How much Migration would be needed to narrow the demographic gap?

The possible contribution of future migration can be assessed by taking the demographic projection without migration – which represents an unlikely case – as starting point. At current labor participation rates and in the absence of migration (zero migration variant) Western and Central Europe's labor force would decline by 26 million during the period 2005-2025 and by 66 million during the whole analyzed period 2005-2050 (Table 5). Labor migration might compensate for the whole "gap". But in this case, between 2005 and 2025, EU 25+ would have to add an annual net amount of 1.3 million migrants at working age to its work force. And between 2025 and 2050, this number would need to increase to 1.6 million migrants annually. Assuming that at best 70 percent of newly arriving immigrants join the work force,⁶¹ the annual net gain from migration would have to be in the order of 1.9-2.0

⁵⁵ Comparing 2050 with 2005.

⁵⁶ Assuming steady incremental change: 50% between 2005 and 2025, 50% between 2025 and 2050.

⁵⁷ Comparing 2050 with 2005.

⁵⁸ Comparing 2050 with 2005.

⁵⁹ Comparing 2050 with 2005.

⁶⁰ Comparing 2050 with 2005.

⁶¹ This conclusion can be drawn from an analysis of the European Labor Force Survey showing labor force participation rates above 65% (age groups 15-65) for West European immigrants living in another EU

million annually until 2025 and 2.3 million annually between 2025 and 2050. Under these assumptions, between 2005 and 2050 a net migration gain of 95 million people at working age (15-65) would be required to add 66 million economically active migrants to Western and Central Europe's labor force. This would lead net migration well above European levels of the last decades.

Given the divergence of demographic trends it would be possible to recruit labor migrants in larger numbers from Europe's neighboring regions. In the Middle East and North Africa (outside the oil producing Gulf states) the labor force is expected to grow from 118 million (2005) to 184 million (+66 million) in 2025 and to 236 million (+118 million)⁶² in 2050 (Table 11). During the same period Turkey's work force will grow from today's 35 million to 47 million (+12 million) in 2025 and to 51 million (+16 million) in 2050 (Table 9).

Despite the fact that from a mere quantitative point demographic and migratory arbitrage between Europe and its neighboring regions would be a possibility, one might come to the conclusion that net immigration in the order of 90-100 million people – even over a period of 45 years – is beyond Europe's integration capacity. The following, however, should also become clear: North Africa, the Middle East and Central Asia cannot solve their employment problems by just "exporting" surplus labor. In this region, economic and labor market reforms will also be necessary to cope with rapid increase of working age populations.

Conclusions

The overall picture is clear: Europe's demographic situation is characterised by low fertility, an increasing life expectancy, and overall by a projected shrinking of native populations in the decades to come. This contrasts with the demographic prospects of neighbouring regions to the south and south-east, where fertility is much higher, albeit declining, life expectancy is also increasing, and overall population is projected to continue to grow at a considerable pace.

Compared to other world regions Europe faces rapid demographic ageing. During the period 2005-2050, the median age of the European Union's population is projected to rise by 10 years: from 38 to 48 years. The Balkans face a similar increase. Demographic ageing is inevitable, but future changes in labour force and population at working age are not only determined by population dynamics. This gives European societies a variety of policy options including rising retirement age, higher labour force participation of women and a pro-active recruitment of migrant labour and skills. These strategies are not mutually exclusive, but – depending on the mix – they have different outcomes: Pro-active immigration policies will have to address potential migrants at working age. If successful, such policies will inevitably lead to much larger ethno-cultural and religious heterogeneity; higher labour force participation rates would require a radical departure from early retirement which in many EU countries has become a widespread phenomenon. In several EU countries there is also room for higher female labour force participation which would require adaptations in the educational and child care systems allowing mothers to continue their careers. In any case Europe will experience a shift from societies with quantitatively dominant younger cohorts to societies in which the elderly form a solid majority.

member state as well as for Australian, Canadian, Japanese and US immigrants in the EU (Muenz and Fassmann 2004).

⁶² Comparing 2050 with 2005.

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Annex

Table 1: Demographic Indicators 2005 in Europe

	Pop. January 2005	births	deaths	Nat. pop. change	Net migration	Total pop. change	Pop. January 2006
	in 1,000	per 1,000 population					in 1,000
EU-27	488 910	10.5	9.9	0.6	3.3	3.9	490 816
Austria	8 207	9.4	9.0	0.4	7.4	7.8	8 270
Belgium	10.446	11.4	10.0	1.4	3.2	4.6	10.494
Bulgaria	7.761	9.0	14.6	-5.6	-1.8	-7.4	7.704
Cyprus (i)	749	10.9	6.7	4.1	27.2	31.3	773
Czech Rep.	10.221	10.0	10.5	-0.5	3.5	2.9	10.251
Denmark	5.411	11.8	10.3	1.6	1.4	3.0	5.428
Estonia	1.347	10.6	13.1	-2.5	-0.3	-2.8	1.343
Finland	5.237	11.0	9.2	1.8	1.7	3.5	5.255
France	60.561	12.6	8.8	3.7	1.7	5.4	60.892
Germany	82.501	8.4	10.1	-1.7	1.2	-0.5	82.456
Greece	11.076	9.4	9.2	0.2	3.1	3.3	11.112
Hungary	10.098	9.6	13.5	-3.9	1.8	-2.1	10.076
Ireland	4.109	15.3	6.5	8.8	11.4	20.2	4.193
Italy	58.462	9.9	10.4	-0.5	5.8	5.3	58.772
Latvia	2.306	9.3	14.2	-4.9	-0.5	-5.4	2.294
Lithuania	3.425	8.9	12.9	-4.0	-3.0	-7.0	3.401
Luxembourg	455	11.5	7.6	3.9	3.4	7.3	458
Malta	403	9.9	7.2	2.7	5.0	7.8	406
Netherlands	16.306	11.6	8.4	3.1	-1.2	2.0	16.338
Poland	38.174	9.4	9.7	-0.3	-0.3	-0.7	38.148
Portugal	10.529	10.5	9.7	0.8	3.9	4.7	10.579
Romania	21.659	10.2	12.3	-2.1	-0.5	-2.5	21.604
Slovakia	5.385	10.0	9.8	0.2	0.8	0.9	5.390
Slovenia	1.998	8.8	9.2	-0.5	3.6	3.1	2.004
Spain	43.038	10.9	8.8	2.1	15.0	17.1	43.781
Sweden	9.011	10.4	9.9	0.5	2.7	3.2	9.040
UK	60.035	11.9	9.9	2.0	3.3	5.3	60.354
EU Candidate							
Croatia	4 444	9.4	11.1	-1.7	2.6	0.9	4 448
Macedonia	2.030	:	:	:	:	0.2	2.034
Turkey	71.610	18.9	6.2	12.7	0.0	12.7	72.520
<hr/>							
Ireland	294	14.2	6.2	7.9	2.0	10.0	297
Liechtenstein	35	10.8	6.4	4.5	3.8	8.3	35
Norway	4.606	12.4	8.8	3.7	4.7	8.4	4.645
Switzerland	7.415	9.6	8.3	1.3	4.7	6.0	7.460

Notes:

(i) Greek part of Cyprus only.

Source: EUROSTAT, Chronos Database; for Macedonia: World Development Indicators 2006; Münz et al. (2007).

Table 2: Foreign-nationals and foreign-born population in EU-27 (latest available year)

	Foreign-nationals ⁽ⁱ⁾						Foreign-born ⁽ⁱ⁾					
	Total		Citizen of an other EU-27 country		Citizen of a country outside the EU-27		Total		Born in an other EU-27 country		Born in a country outside the EU-27	
	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%
EU-27	22,888	4.7	8,462⁽ⁱⁱ⁾	1.7⁽ⁱⁱ⁾	14,426⁽ⁱⁱ⁾	2.9⁽ⁱⁱ⁾	40,501	8.3	13,222⁽ⁱⁱⁱ⁾	2.7⁽ⁱⁱⁱ⁾	27,279⁽ⁱⁱⁱ⁾	5.6⁽ⁱⁱⁱ⁾
Austria	777	9.5	272	3.3	505	6.2	1,234	15.1	489	6.0	745	9.1
Belgium	871	8.4	618	6.0	253	2.4	1,186	11.4	611	5.9	575	5.5
Bulgaria	26	0.3	:	:	:	:	104	1.3	:	:	:	:
Cyprus ^(iv)	65	9.4	35	5.1	30	4.3	116	13.9	44	5.3	72	8.6
Czech Republic	254	2.5	126	1.2	128	1.3	453	4.4	344	3.3	109	1.1
Denmark	268	4.9	91	1.7	177	3.2	389	7.2	116	2.2	273	5.0
Estonia	95	6.9	(3)	(0.2)	92	6.7	202	15.2	(10)	(0.8)	192	14.4
Finland	108	2.1	46	0.9	62	1.2	156	3.0	63	1.2	93	1.8
France	3,263	5.6	1,278	2.2	1,985	3.4	6,471	10.7	2,125	3.5	4,346	7.2
Germany	6,739	8.9	2,385	3.1	4,354	5.8	10,144	12.3	:	:	:	:
Greece	762	7.0	163	1.5	599	5.5	974	8.8	214	1.9	760	6.9
Hungary	142	1.4	92	0.9	50	0.5	316	3.1	200	2.0	116	1.1
Ireland	223	5.5	152	3.7	71	1.8	585	14.1	429	10.3	156	3.8
Italy	2,402	4.1	:	:	:	:	2,519	4.3	:	:	:	:

Table 2 (cont.)

	Foreign-nationals ⁽ⁱ⁾						Foreign-born ⁽ⁱ⁾					
	Total		Citizen of an other EU-27 country		Citizen of a country outside the EU-27		Total		Born in an other EU-27 country		Born in a country outside the EU-27	
	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%	in 1,000	%
Latvia	103	3.9	(10)	(0.4)	93	3.5	449	19.5	43	1.9	406	17.6
Lithuania	21	0.6	(5)	(0.1)	16	0.5	165	4.8	11	0.3	154	4.5
Luxemburg	177	39.0	:	:	:	:	174	37.4	:	:	:	:
Malta	13	3.2	6	1.5	7	1.7	11	2.7	4	1.0	7	1.7
Netherlands	699	4.3	261	1.6	438	2.7	1,736	10.6	354	2.2	1,382	8.4
Poland	49	0.1	(12)	(0.03)	37	0.1	703	1.8	241	0.6	462	1.2
Portugal	449	4.3	90	0.9	359	3.4	764	7.3	178	1.7	586	5.6
Romania	26	0.1	:	:	:	:	103	0.6	:	:	:	:
Slovakia	22	0.4	(12)	(0.2)	(10)	(0.2)	124	2.3	106	2.0	18	0.3
Slovenia	37	1.9	(4)	(0.2)	(33)	(1.7)	167	8.5	14	0.7	153	7.8
Spain	1,977	4.6	594	1.4	1,383	3.2	4,790	11.1	1,405	3.3	3,385	7.8
Sweden	463	5.1	205	2.3	258	2.8	1,117	12.4	558	6.2	559	6.2
United Kingdom	2,857	2.9	1,131	1.1	1,726	1.8	5,408	9.1	1,592	2.7	3,816	6.4

Notes: (i) Data of the total foreign-national and foreign-born populations are from OECD (2006), UN (2006) and national statistics. The totals are split between "other EU-27" and "outside EU-27" on the basis of estimations computed with data from the European Labour Force Survey (2005). (ii) For the estimation of the EU-27 total we assume that the foreign-nationals in Bulgaria, Italy, Luxembourg and Romania (for which there are no data available in the LFS) are distributed among "other EU-27" and "outside EU-27" in the same way as the average of the remaining EU-27 countries. (iii) For the estimation of the EU-27 total we assume that the foreign-born in Bulgaria, Germany, Italy, Luxembourg and Romania (for which there are no data available in the LFS) are distributed among "other EU-27" and "outside EU-27" in the same way as the average of the remaining EU-27 countries. (iv) Greek part of Cyprus only.

Data in brackets are of limited reliability due to the small sample size.

Source: Münz et al. (2007), OECD (2006), UN (2006), European Labour Force Survey (LFS) ad hoc modules (2006), and national statistics.

Table 3: Medium variant projections: demographic and labor force development in the EU-25(i) and other European countries(ii) by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	75.6	71.4	69.6	68.6
<i>Index</i>	100	94	92	91
Age group 15-64	317.1	315.3	302.1	261.1
<i>Index</i>	100	99	95	82
Age group 65+	78.9	91.0	106.8	132.6
<i>Index</i>	100	115	135	168
Total	471.7	477.7	478.6	462.2
<i>Index</i>	100	101	101	98
Labor force ⁽ⁱⁱⁱ⁾	226.7	223.4	210.5	183.3
<i>Index</i>	100	99	93	81
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.25	0.29	0.35	0.51
<i>Age group 65+/labor force</i>	0.35	0.41	0.51	0.72

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 4a: EU 25 population at working age, based on Eurostat's Europop 2004 projection,(i) (2005-2050, projected change in % and in millions)

Working age group	2005-2050	2005-2010	2010-2030	2030-2050
15-24	-25.0% (-14.4)	-4.3% (-2.5)	-12.3% (-6.8)	-10.6% (-5.1)
25-39	-25.8% (-2.6)	-4.1% (-4.0)	-16.0% (-15.3)	-8.0% (-6.4)
40-54	-19.5% (-19.1)	+4.2% (+4.2)	-10.0% (-10.3)	-14.1% (-13.1)
55-64	+8.7% (+4.5)	+9.6% (+5.0)	+15.5% (+8.8)	-14.1% (+9.3)

Note:

(i) Based on the assumption of net immigration 2005-2050 amounting to almost 40 million people.

Source: Eurostat, Europop 2004 (base scenario)

Table 4b: EU 25 old age dependency ratio: population at working age in relation to population 65+ based on Eurostat's Europop 2004 projection,(i) (2000-2050; in %)

	2000	2005	2025	2050
EU 25				
Austria	22.9	23.6	34.5	53.2
Belgium	25.5	26.3	36.5	48.1
Cyprus(ii)	17.0	17.7	29.3	43.2
Czech Rep.	19.8	19.8	35.0	54.8
Denmark	22.2	22.6	33.8	40.0
Estonia	22.4	24.1	31.3	43.1
Finland	22.2	23.7	41.4	46.7
France	24.6	25.3	36.9	47.9
Germany	23.9	27.8	39.3	55.8
Greece	24.2	26.8	35.5	58.8
Hungary	22.0	22.8	34.5	48.3
Ireland	16.8	16.5	25.2	45.3
Italy	26.8	29.4	39.7	66.0
Latvia	22.1	24.1	30.7	44.1
Lithuania	20.8	22.5	29.2	44.9
Luxemburg	21.4	21.2	27.7	36.1
Malta	17.9	19.2	33.8	40.6
Netherlands	20.0	20.7	32.5	38.6
Poland	17.6	18.7	32.8	51.0
Portugal	23.7	25.2	34.7	58.1
Slovakia	16.6	16.3	28.1	50.6
Slovenia	19.8	21.7	35.8	55.6
Spain	24.5	24.5	33.6	67.5
Sweden	26.9	26.4	36.5	40.9
UK	23.9	24.4	33.2	45.3
EU 25 average	23.4	24.9	35.7	52.8

Note:

(i) Based on the assumption of net immigration 2005-2050 amounting to almost 40 million people.

(ii) Greek part of Cyprus only.

Source: Eurostat, Europop 2004 (base scenario)

Table 5: Zero-migration variant: demographic and labor force development in the EU-25(i) and other European countries (ii) by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	75.6	69.6	65.4	59.2
<i>Index</i>	100	92	86	78
Age group 15-64	317.1	308.6	288.6	229.0
<i>Index</i>	100	97	91	72
Age group 65+	78.9	90.3	105.5	126.5
<i>Index</i>	100	114	134	160
Total	471.7	468.5	459.4	414.7
<i>Index</i>	100	99	97	88
Labor force ⁽ⁱⁱⁱ⁾	226.7	218.4	200.5	160.4
<i>Index</i>	100	96	88	71
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.25	0.29	0.37	0.55
<i>Age group 65+/labor force</i>	0.35	0.41	0.53	0.79

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Iceland, Norway, and Switzerland.

(iii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 6: Zero-migration variant: demographic and labor force development in CIS - Caucasus and Eastern Europe(i) by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	34.7	33.2	30.5	26.2
<i>Index</i>	100	96	88	76
Age group 15-64	154.2	147.6	132.3	101.3
<i>Index</i>	100	96	86	66
Age group 65+	30.7	28.4	34.7	40.0
<i>Index</i>	100	92	113	131
Total	219.5	209.2	197.5	167.5
<i>Index</i>	100	95	90	76
Labor force ⁽ⁱⁱ⁾	119.0	113.0	101.4	74.9
<i>Index</i>	100	95	85	63
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.20	0.19	0.26	0.40
<i>Age group 65+/labor force</i>	0.26	0.25	0.34	0.54

Notes:

(i) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(ii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 7: Zero-migration variant: demographic and labor force development in CIS - Central Asia(i) by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	18.0	17.8	17.6	15.1
<i>Index</i>	100	99	98	84
Age group 15-64	36.7	44.9	49.9	55.3
<i>Index</i>	100	122	136	151
Age group 65+	3.3	3.5	5.5	12.0
<i>Index</i>	100	104	165	361
Total	58.0	66.1	73.0	82.4
<i>Index</i>	100	114	126	142
Labor force ⁽ⁱⁱ⁾	27.0	33.5	37.5	40.3
<i>Index</i>	100	124	139	149
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.09	0.08	0.11	0.22
<i>Age group 65+/labor force</i>	0.12	0.10	0.15	0.30

Notes:

(i) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(ii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 8: Zero-migration variant: demographic and labor force development in South East Europe(i) by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	8.9	8.0	7.5	6.5
<i>Index</i>	100	90	84	73
Age group 15-64	36.8	36.3	33.9	26.7
<i>Index</i>	100	99	92	72
Age group 65+	7.8	8.2	9.5	12.0
<i>Index</i>	100	105	122	153
Total	53.6	52.5	50.9	45.1
<i>Index</i>	100	98	95	84
Labor force ⁽ⁱⁱ⁾	26.1	25.7	24.1	18.4
<i>Index</i>	100	99	92	70
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.21	0.23	0.28	0.45
<i>Age group 65+/labor force</i>	0.30	0.32	0.39	0.65

Notes:

(i) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(ii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 9: Zero-migration variant: demographic and labor force development in Turkey by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	21.4	21.3	20.7	18.5
<i>Index</i>	100	100	97	87
Age group 15-64	47.8	56.3	62.6	66.8
<i>Index</i>	100	118	131	140
Age group 65+	4.0	5.1	7.7	17.3
<i>Index</i>	100	129	194	436
Total	73.2	82.8	91.0	102.7
<i>Index</i>	100	113	124	140
Labor force ⁽ⁱ⁾	35.3	41.6	46.5	51.1
<i>Index</i>	100	118	132	145
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.08	0.09	0.12	0.26
<i>Age group 65+/labor force</i>	0.11	0.12	0.17	0.34

Notes:

(i) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 10: Zero-migration variant: demographic and labor force development in the Gulf Cooperation Council Countries (MENA6)⁽ⁱ⁾ by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	12.1	12.9	13.1	11.9
<i>Index</i>	100	107	109	99
Age group 15-64	22.9	29.1	34.5	40.6
<i>Index</i>	100	127	151	177
Age group 65+	0.9	1.4	2.9	10.1
<i>Index</i>	100	157	319	1,108
Total	35.9	43.4	50.6	62.6
<i>Index</i>	100	121	141	175
Labor force ⁽ⁱⁱ⁾	14.7	18.4	21.4	24.9
<i>Index</i>	100	126	146	169
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.04	0.05	0.08	0.25
<i>Age group 65+/labor force</i>	0.06	0.08	0.14	0.41

Notes:

(i) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(ii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 11: Zero-migration variant: demographic and labor force development in other countries of the Middle East and North Africa (MENA14)⁽ⁱ⁾ by age group, 2005-2050 (millions)

	2005	2015	2025	2050
Age group 0-14	104.3	115.0	120.1	116.2
<i>Index</i>	<i>100</i>	<i>110</i>	<i>115</i>	<i>111</i>
Age group 15-64	195.2	243.7	289.2	364.8
<i>Index</i>	<i>100</i>	<i>125</i>	<i>148</i>	<i>187</i>
Age group 65+	13.7	18.1	28.5	75.6
<i>Index</i>	<i>100</i>	<i>132</i>	<i>208</i>	<i>551</i>
Total	313.2	376.8	437.8	556.6
<i>Index</i>	<i>100</i>	<i>120</i>	<i>140</i>	<i>178</i>
Labor force ⁽ⁱⁱ⁾	118.3	154.7	183.6	236.2
<i>Index</i>	<i>100</i>	<i>131</i>	<i>155</i>	<i>200</i>
Old-age dependency ratio				
<i>Age group 65+/age group 15-64</i>	0.07	0.07	0.10	0.21
<i>Age group 65+/labor force</i>	0.12	0.12	0.16	0.32

Notes:

(i) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

(ii) Numbers for labor force calculated by aggregating country data, based on national participation rate projections for 2005 and 2010 over age group and sex by the ILO, and population projections for 2005, 2015, 2025, and 2050 over age group and sex by the UN, multiplying population projections for 2015-2050 with participation rate projections of 2010.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 12: Zero-migration variant: demographic changes in Wider Europe by age group, from 2005 to 2025 (millions)

	Age group 0-14	Age group 15-64	Age group 65+	Total
EU-25 ⁽ⁱ⁾ and Other Western	-10.2	-28.6	26.5	-12.3
CIS - Caucasus and Eastern	-4.2	-21.9	4.0	-22.0
CIS - Central Asia ^(iv)	-0.4	13.2	2.1	15.0
South East Europe ^(v)	-1.4	-2.9	1.7	-2.6
Turkey	-0.6	14.8	3.7	17.8
Gulf Cooperation Council	1.0	11.7	2.0	14.7
Other Middle East and North	15.8	94.0	14.8	124.6
Total	0.0	80.3	54.9	135.2

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 13: Zero-migration variant: demographic changes in Wider Europe by age group, from 2005 to 2050 (millions)

	Age group 0-14	Age group 15-64	Age group 65+	Total
EU-25 ⁽ⁱ⁾ and Other Western	-16.4	-88.2	47.6	-57.0
CIS - Caucasus and Eastern	-8.5	-52.9	9.4	-52.0
CIS - Central Asia ^(iv)	-2.9	18.6	8.7	24.4
South East Europe ^(v)	-2.4	-10.2	4.2	-8.4
Turkey	-2.8	18.9	13.4	29.5
Gulf Cooperation Council	-0.1	17.7	9.2	26.7
Other Middle East and North	11.9	169.6	61.9	243.4
Total	-21.2	73.6	154.2	206.7

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 14: Zero-migration variant: changes in the labor force in Wider Europe, from 2005 to 2025 and 2050 (millions)

	2005 to 2025	2005 to 2050
EU-25 ⁽ⁱ⁾ and Other Western Europe ⁽ⁱⁱ⁾	-26.2	-66.3
CIS - Caucasus and Eastern Europe ⁽ⁱⁱⁱ⁾	-17.6	-44.1
CIS - Central Asia ^(iv)	10.5	13.3
South East Europe ^(v)	-2.0	-7.7
Turkey	11.2	15.8
Gulf Cooperation Council Countries (MENA6) ^(vi)	6.8	10.2
Other Middle East and North Africa (MENA14) ^(vii)	65.3	117.9
Total	48.0	39.0

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 15: Medium variant projections: demographic changes in Wider Europe by age group, from 2005 to 2025 (millions)

	Age group 0-14	Age group 15-64	Age group 65+	Total
EU-25 ⁽ⁱ⁾ and Other Western	-6.0	-15.0	27.9	6.9
CIS - Caucasus and Eastern	-4.4	-23.5	3.9	-24.0
CIS - Central Asia ^(iv)	-1.1	11.0	2.0	11.9
South East Europe ^(v)	-1.6	-3.4	1.6	-3.4
Turkey	-0.7	14.4	3.7	17.4
Gulf Cooperation Council	2.0	14.1	1.7	17.8
Other Middle East and North	14.3	89.7	14.7	118.7
Total	2.6	87.3	55.5	145.3

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 16: Medium variant projections: demographic changes in Wider Europe by age group, from 2005 to 2050 (millions)

	Age group 0-14	Age group 15-64	Age group 65+	Total
EU-25 ⁽ⁱ⁾ and Other Western	-7.0	-56.0	53.6	-9.5
CIS - Caucasus and Eastern	-8.8	-55.8	8.6	-55.9
CIS - Central Asia ^(iv)	-4.2	13.9	7.9	17.6
South East Europe ^(v)	-2.7	-11.3	3.9	-10.1
Turkey	-3.1	17.9	13.2	28.0
Gulf Cooperation Council	1.4	25.4	8.6	35.4
Other Middle East and North	9.1	158.9	61.0	229.1
Total	-15.2	92.9	156.9	234.6

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 17: Medium variant projections: changes in the labor force in Wider Europe, from 2005 to 2025 and 2050 (millions)

	2005 to 2025	2005 to 2050
EU-25 ⁽ⁱ⁾ and Other Western Europe ⁽ⁱⁱ⁾	-16.2	-43.4
CIS - Caucasus and Eastern Europe ⁽ⁱⁱⁱ⁾	-18.9	-46.4
CIS - Central Asia ^(iv)	8.7	9.8
South East Europe ^(v)	-2.4	-8.6
Turkey	10.9	15.0
Gulf Cooperation Council Countries (MENA6) ^(vi)	8.9	15.9
Other Middle East and North Africa (MENA14) ^(vii)	62.1	110.3
Total	53.2	52.6

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

(iv) Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

(v) Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo)and.

(vi) Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

(vii) Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

Sources: ILO 1997, UN 2005, Koettl 2005, Holzmann and Münz (2005).

Table 18: Medium variant projections: impact on the labor force of various policy goals, reached by 2050, in the EU-25(i) and Other Western Europe(ii)

	2005	2025 ⁽ⁱⁱⁱ⁾	2050 ^(iv)
Base Scenario			
Total Labor Force (millions)	226.7	210.5	183.3
<i>Index</i>	100	93	81
<i>Absolute change (base=2005, millions)</i>	..	-16.2	-43.4
<i>Average age of labor force</i>	39.5	41.0	40.6
<i>Participation rate of 55-74 age group (%)</i>	25.8	24.6	23.6
Scenario I: Benchmark^(v)			
Total Labor Force (millions)	226.7	233.1	221.7
<i>Index</i>	100	103	98
<i>Absolute change (base=2005, millions)</i>	..	6.4	-5.0
<i>Average age of labor force</i>	39.5	42.2	42.9
<i>Participation rate of 55-74 age group (%)</i>	25.8	35.8	44.8
Scenario II: Adjustment of female participation^(vi)			
Total Labor Force (millions)	226.7	223.5	204.8
<i>Index</i>	100	99	90
<i>Absolute change (base=2005, millions)</i>	..	-3.2	-21.9
<i>Average age of labor force</i>	39.5	41.5	41.5
<i>Participation rate of 55-74 age group (%)</i>	25.8	28.5	30.7
Scenario III: Increase in retirement age^(vii)			
Total Labor Force (millions)	226.7	228.2	215.5
<i>Index</i>	100	101	95
<i>Absolute change (base=2005, millions)</i>	..	1.5	-11.2
<i>Average age of labor force</i>	39.5	42.9	44.3
<i>Participation rate of 55-74 age group (%)</i>	25.8	38.7	52.0
Scenario I+II			
Total Labor Force (millions)	226.7	239.8	233.5
<i>Index</i>	100	106	103
<i>Absolute change (base=2005, millions)</i>	..	13.1	6.8
<i>Average age of labor force</i>	39.5	42.6	43.5
<i>Participation rate of 55-74 age group (%)</i>	25.8	39.0	51.1

Table 18 (cont.)

	2005	2025 ⁽ⁱⁱⁱ⁾	2050 ^(iv)
Scenario I+III			
Total Labor Force (millions)	226.7	252.1	257.5
<i>Index</i>	100	111	114
<i>Absolute change (base=2005, millions)</i>	..	25.4	30.8
<i>Average age of labor force</i>	39.5	44.1	46.3
<i>Participation rate of 55-74 age group (%)</i>	25.8	50.9	76.3
Scenario II+III			
Total Labor Force (millions)	226.7	244.5	243.2
<i>Index</i>	100	108	107
<i>Absolute change (base=2005, millions)</i>	..	17.8	16.5
<i>Average age of labor force</i>	39.5	43.5	45.3
<i>Participation rate of 55-74 age group (%)</i>	25.8	45.2	64.4
Scenario I+II+III			
Total Labor Force (millions)	226.7	257.9	267.8
<i>Index</i>	100	114	118
<i>Absolute change (base=2005, millions)</i>	..	31.2	41.1
<i>Average age of labor force</i>	39.5	44.3	46.5
<i>Participation rate of 55-74 age group (%)</i>	25.8	53.4	81.2

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) The data presented under this column assumes that 50 percent of the respective policy goals are reached by 2025.

(iv) The data presented under this column assumes that the respective policy goals are reached by 2050.

(v) Scenario I assumes that all countries adjust to a benchmark participation rate profile, which equals the average participation rates for every age group and sex of the three countries with the highest national participation rate in 2005, namely Denmark, Iceland, and Sweden.

(vi) Scenario II assumes that the national female participation rates adjust to the male participation rates for every age group.

(vii) Scenario III simulates an increase of the legal retirement age by 10 years.

Sources: Holzmann and Münz (2005).

Table 19: Zero-migration variant: impact on the labor force of various policy goals, reached by 2050, in the EU-25(i) and Other Western Europe(ii)

	2005	2025 ⁽ⁱⁱⁱ⁾	2050 ^(iv)
Base Scenario			
Total Labor Force (millions)	226.7	200.5	160.4
<i>Index</i>	100	88	71
<i>Absolute change (base=2005, millions)</i>	..	-26.2	-66.3
<i>Average age of labor force</i>	39.5	41.3	41.0
<i>Participation rate of 55-74 age group (%)</i>	25.8	24.6	23.4
Scenario I: Benchmark^(v)			
Total Labor Force (millions)	226.7	222.4	194.9
<i>Index</i>	100	98	86
<i>Absolute change (base=2005, millions)</i>	..	-4.3	-31.8
<i>Average age of labor force</i>	39.5	42.5	43.2
<i>Participation rate of 55-74 age group (%)</i>	25.8	35.8	44.4
Scenario II: Adjustment of female participation^(vi)			
Total Labor Force (millions)	226.7	212.9	179.2
<i>Index</i>	100	94	79
<i>Absolute change (base=2005, millions)</i>	..	-13.8	-47.5
<i>Average age of labor force</i>	39.5	41.7	41.8
<i>Participation rate of 55-74 age group (%)</i>	25.8	28.5	30.3
Scenario III: Increase in retirement age^(vii)			
Total Labor Force (millions)	226.7	218.0	190.2
<i>Index</i>	100	96	84
<i>Absolute change (base=2005, millions)</i>	..	-8.7	-36.5
<i>Average age of labor force</i>	39.5	43.2	44.7
<i>Participation rate of 55-74 age group (%)</i>	25.8	38.7	51.8
Scenario I+II			
Total Labor Force (millions)	226.7	228.9	205.5
<i>Index</i>	100	101	91
<i>Absolute change (base=2005, millions)</i>	..	2.2	-21.2
<i>Average age of labor force</i>	39.5	42.8	43.9
<i>Participation rate of 55-74 age group (%)</i>	25.8	38.9	50.7

Table 19 (cont.)

	2005	2025 ⁽ⁱⁱⁱ⁾	2050 ^(iv)
Scenario I+III			
Total Labor Force (millions)	226.7	241.2	228.3
<i>Index</i>	100	106	101
<i>Absolute change (base=2005, millions)</i>	..	14.4	1.6
<i>Average age of labor force</i>	39.5	44.4	46.7
<i>Participation rate of 55-74 age group (%)</i>	25.8	50.9	76.1
Scenario II+III			
Total Labor Force (millions)	226.7	233.6	214.7
<i>Index</i>	100	103	95
<i>Absolute change (base=2005, millions)</i>	..	6.9	-12.0
<i>Average age of labor force</i>	39.5	43.8	45.7
<i>Participation rate of 55-74 age group (%)</i>	25.8	45.2	64.1
Scenario I+II+III			
Total Labor Force (millions)	226.7	246.8	237.5
<i>Index</i>	100	109	105
<i>Absolute change (base=2005, millions)</i>	..	20.1	10.8
<i>Average age of labor force</i>	39.5	44.6	47.0
<i>Participation rate of 55-74 age group (%)</i>	25.8	53.4	81.1

Notes:

(i) Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

(ii) Channel Islands, Liechtenstein, Iceland, Norway, and Switzerland.

(iii) The data presented under this column assumes that 50 percent of the respective policy goals are reached by 2025.

(iv) The data presented under this column assumes that the respective policy goals are reached by 2050.

(v) Scenario I assumes that all countries adjust to a benchmark participation rate profile, which equals the average participation rates for every age group and sex of the three countries with the highest national participation rate in 2005, namely Denmark, Iceland, and Sweden.

(vi) Scenario II assumes that the national female participation rates adjust to the male participation rates for every age group.

(vii) Scenario III simulates an increase of the legal retirement age by 10 years.

Sources: Holzmann and Münz (2005).

Definitions of Geographic Terms

CIS Caucasus and Eastern Europe: Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, and Ukraine.

CIS Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

CEE: Central and Eastern Europe: the Balkans, Turkey and Central Asia, including: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Romania, Russian Federation, Serbia (including Kosovo), Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

EECA20: CEE countries plus Turkey.

EU27: The current European Union, consisting of 15 pre-enlargement EU member states (see below) plus 12 EU states that became members in 2004 and 2007 (see below).

EU25: The 25 member states that constituted the European Union in 2005 (base year of the demographic analysis).

EU15: The 15 states that comprised the European Union prior to May 1, 2004, including: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and the United Kingdom

EU10: The 10 EU member states admitted on May 1, 2004, including Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

EU8: The Central European EU member states admitted on May 1, 2004, including Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.

EU2: Bulgaria and Romania admitted on January 1, 2007.

EU Candidate Countries: Countries scheduled for admission to the EU, currently including Croatia (membership possible in 2010), Turkey (negotiations started in 2006), and Macedonia (no negotiations so far).

European Economic Area (EEA) and Switzerland: With the 1995 enlargement of the European Union, the EEA remained in existence to enable its 3 non-EU members (Norway, Iceland, and Liechtenstein) to participate in the Common Market. Switzerland decided not to join the EEA, but is associated with the EU by bilateral treaties.

MENA14: Countries of the Middle East (without the Gulf States) and North Africa including Algeria, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, West Bank and Gaza, and Yemen.

MENA6: The Gulf states, including: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAR).

South East Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, and Serbia (including Kosovo).

Western Europe: EU15, Iceland, Norway and Switzerland.

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Summary Findings

This paper gives an overview on current demographic trends and projected population change in Europe and neighboring regions. The main focus of the analysis is on Western and Central Europe. Today this world region has a total population of 500 million. Available forecasts until the year 2050 project a decline of the population at working age, a subsequent decline of the (native) work force and a parallel increase in the number of retired people. The paper discusses policy options by demonstrating the impact of possible changes in labor force participation, higher retirement age and pro-active recruitment of migrant labor on population size and future labor force.

HUMAN DEVELOPMENT NETWORK

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