

# Dealing with the challenges posed by an ageing population in the EU<sup>1</sup>

DRAFT

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Abstract

The paper discusses Europe's ability to tackle the economic and fiscal challenges that population ageing raises over the coming decades. The policy challenge is broad, covering the ongoing debate on modernisation of welfare systems and extending working lives as part of the overall Europe 2020 strategy for smart, sustainable and inclusive growth. Restoring durable growth has to go hand in hand with ensuring progress towards sustainable public finances in line with the EU fiscal framework, the Stability and Growth Pact.

The projected low birth rates, rising life expectancy and continuing inflow of migrants will result in an almost unchanged, but much older, total EU population by 2060. This means that the EU would move from having four working-age people (aged 15-64) for every person aged over 65 to a ratio of only two to one.

Potential economic growth is likely to be much lower than experienced in previous decades, and the need for public provision of age-related transfers and services will increase. On the one hand, we should take comfort by the fact that there has been considerable progress with structural reforms, notably in the field of pensions. The improvements are already visible, for instance employment rates have risen on account of pension reforms, especially among older workers.

On the other hand, the fiscal impact of ageing is still being projected to be substantial in almost all Member States, becoming apparent already over the course of the next decade. Overall, on the basis of current policies, age-related public expenditure is projected to increase considerably over the coming two decades, and also in a longer-term perspective in the EU and EA— especially through pension, health care and long-term care spending, but there are notable differences across Member States.

The damage caused by the economic crisis to public finances makes it all the more important to bear in mind the longer-term needs of the EU and to strengthen the structural reform agenda aimed at tackling the demographic challenge. This means raising employment rates in line with the Europe 2020 objectives and, in particular, helping and encouraging people to stay on the labour market rather than retire early, as previous generations have tended to do. Europe's best chance of ensuring that ageing will not be perceived as a threat, but as a historic achievement, lies in not wasting the potential of brought about by the gains in life expectancy.

Reforms of welfare systems, in particular of pensions, will be key for fiscal sustainability and to set the incentives to raise labour supply. There has been considerable progress in reforming the European Social Models in the last decade, and notably as regards pension arrangements. While systems differ markedly between Member States, a majority have adapted these systems so as to better withstand the demographic change that will start taking hold already next decade.

With these sustainability-enhancing pension reforms in place in a majority of Member States, the challenge can take new forms. Generally, there has been a reduction of generosity of public pension schemes, often phased in over long time periods. This has reduced the expenditure increasing effects of demographic change in the long-term. But to make sure that these reforms will enjoy lasting support and success, other reforms are likely to be necessary. For example, reforms that boosts retirement incomes by extending working lives and provides other means of retirement incomes.

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<sup>1</sup> This draft paper draws on, and expands upon, work originally contained in 2015 Ageing Report

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The demographic challenge affects not only pensions. Budgetary pressures on care-related expenditure – health care and long-term care - are also likely to increase. In this context, there will be a need to discuss how health care services should be organized in the future; an ageing population will exercise pressures for higher spending on health care. On top of this, technological progress is likely to push up costs further. It will therefore be important to ensure that these services are provided in an efficient manner. It will also prompt a discussion on the accessibility and financing of health care services. More broadly, in reforming of welfare systems, there is no one-size-fits-all solution in the EU of 28 Member States. Different countries need to find different solutions.

Arguing strongly for reform is not just an economic agenda. It is an agenda that will promote good health, good education and good quality of life for current and future generations. It is an agenda that will allow Europe to look once again to the future with confidence.

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## Introduction

*"You know there was a time when Rudi Dornbusch used to say that the Europeans are so rich they can afford to pay everybody for not working.*

*That's gone."*

Mario Draghi, President, ECB, *Wall Street Journal*, 27 February 2012

This paper discusses Europe's ability to tackle the economic and fiscal challenges that population ageing raises over the coming decades. It draws on the 2015 Ageing Report and the long-term economic and budgetary projections included. The policy challenge is broad, covering the ongoing debate on modernisation of welfare systems and extending working lives as part of the overall Europe 2020 strategy for smart, sustainable and inclusive growth. Restoring durable growth has to go hand in hand with ensuring progress towards sustainable public finances in line with the EU fiscal framework, the Stability and Growth Pact.

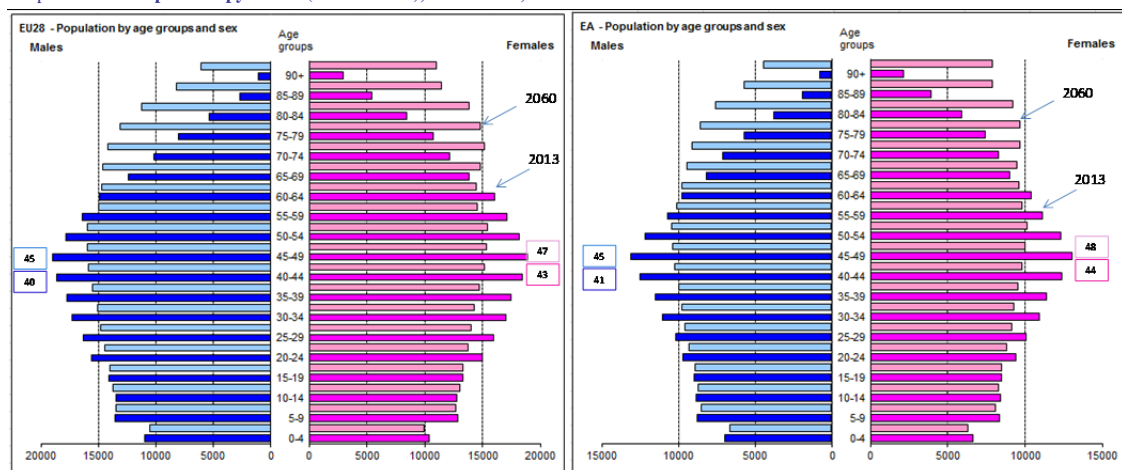
The paper is organised as follows: the first section discusses the demographic changes over the next 50 years in the EU based on Eurostat's Europop2013 population projection. This is followed by a description of labour force projections and potential GDP projections. The subsequent sections present budgetary projections of age-related expenditure starting with public pension expenditure, followed by health care and long term care expenditures and finally projections on total age related expenditure. The concluding part presents the changes in the projections of pension expenditure and total age related expenditure compared to the previous, 2012 projection exercise.

### The age structure in the EU projected to changes dramatically

The demographic trends projected over the long term reveal that Europe is 'turning increasingly grey' in the coming decades. The Commission, as well as the European Council, have already recognised the need to tackle resolutely the impact of ageing populations on the European Social Models.

Having reliable and comparable information on the challenges of the future demographic changes in Europe entails considering the age-structure of the population today, and how it could look like in coming decades. This sheds light on the economic, budgetary and societal challenges that policy makers will have to face in the future. The long-term projections provide an indication of the timing and scale of challenges that would result from an ageing population. They show where, when, and to what extent, ageing pressures will accelerate as the baby-boom generation retires and the average life-span continues to increase. Hence, the projections are helpful in highlighting the immediate and future policy challenges posed for EU countries by demographic trends.

Graph 1: Population pyramids (in thousands), EU and EA, in 2013 and 2060

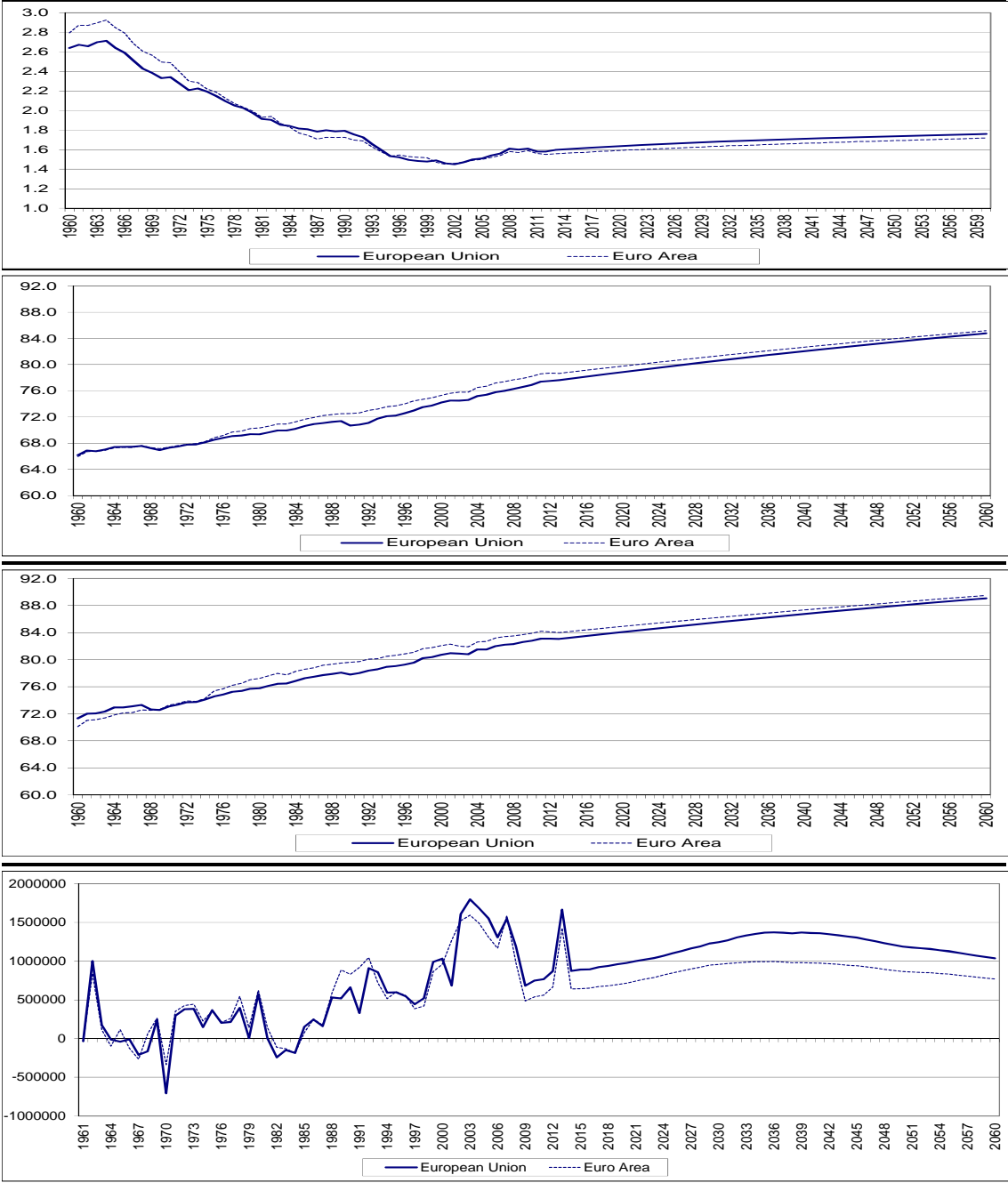


Source: Commission services, EUROPOP 2013, EPC.

Due to the dynamics in fertility, life expectancy and migration, the age structure of the EU population will change strongly in the coming decades. The overall size of the population is projected to be slightly larger by

2060 but much older than it is now. <sup>(3)</sup> The EU population is projected to increase (from 507 million in 2013) up to 2050 by almost 5%, when it will peak (at 526 million) and will thereafter decline slowly (to 523 million in 2060). This increase would however not be the case without the projected inward migration flows to the EU. There are wide differences in population trends until 2060 across Member States. While the EU population as a whole would be larger in 2060 compared to 2013, decreases of the total population are projected for about half of the EU Member States (BG, DE, EE, EL, ES, HR, LV, LT, HU, PL, PT, RO, SI and SK). For the other Member States (BE, CZ, DK, IE, FR, IT, CY, LU, MT, NL, AT, FI, SE and UK) an increase is projected.

Graph 2: Total fertility rates, life expectancy at birth, men and women (in years) and net migration flows



Source: Commission services, EUROPOP 2013, EPC.

In terms of drivers of the population changes, total fertility rates are projected to rise for the EU as a whole, though remaining below the natural replacement rate. At the same time, the projections show large and sustained increases in life expectancy at birth. In the EU, life expectancy at birth for males is expected to increase by 7.1

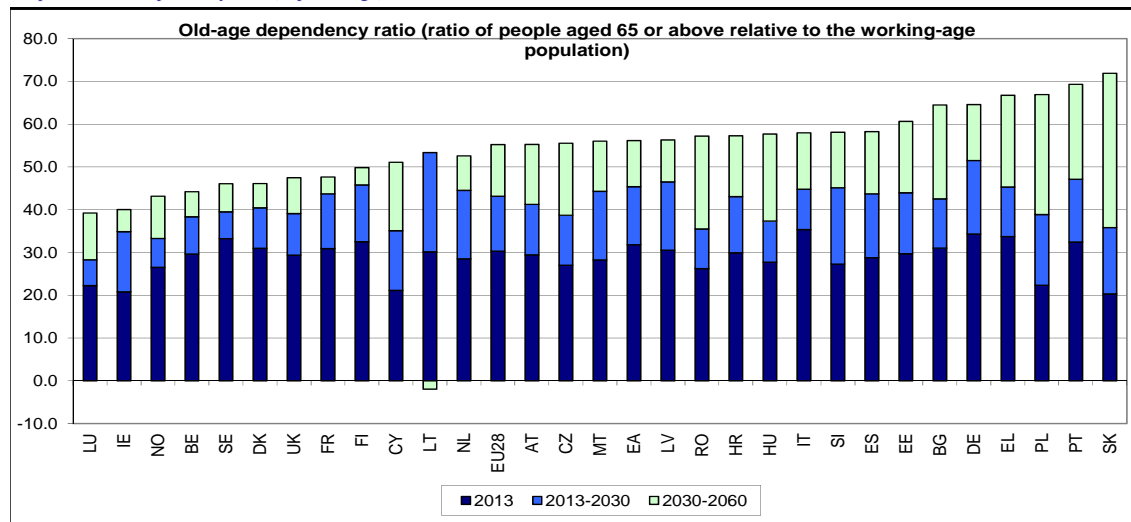
<sup>(3)</sup> Eurostat's population projection (EUROPOP2013) was published on 28 March 2014.

years over the projection period, reaching 84.8 in 2060. For females, it is projected to increase by 6.0 years, reaching 89.1 in 2060. Net migration inflows to the EU are projected to continue; first increasing to 1,364,000 by 2040, and thereafter declining to 1,037,000 people by 2060.

### The demographic old-age dependency ratio set to nearly double over the long-term

As a result of these different trends among age-groups, the demographic old-age dependency ratio (people aged 65 or above relative to those aged 15-64) is projected to increase from 27.8% to 50.1% in the EU as a whole over the projection period. This implies that the EU would move from having four working-age people for every person aged over 65 years to about two working-age persons.

Graph 3: Dependency ratio (in percentage)



Source: Commission services, EUROPOP 2013, EPC.

### Projected increases in overall participation rates, and in particular for older workers on account of implemented pension reforms...

Based on a cohort simulation model, labour force projections show a rise in overall participation rates, particularly visible for ages 50+, reflecting the combined effect of the rising attachment of younger generations of women to the labour market, together with the expected impact of pension reforms. By large, the biggest increases in participation rates are projected for older workers (around 21 pp. for women and 10 pp. for men) in the EU for the age group 55-64, influenced by enacted pension reforms.<sup>(4)</sup> Consequently, the gender gap is projected to narrow substantially in the period up to 2060. The total participation rate (for the age group 20-64) in the EU is projected to increase by 3.5 pp. (from 76.5% in 2013 to 80.1% in 2060). In the same period, women's participation rate is projected to increase by about 6 pp. compared with 1 pp. for men.

### ... but labour supply will decline because of the projected population trends

Total labour supply in the EU (and in the euro area) is projected to nearly stabilise between 2013 and 2023 (age group 20-64), while it is projected to decline by 8.2% between 2023 and 2060, representing roughly minus 19 million people. In the euro area, the projected fall in labour supply between 2023 and 2060 is 9.2%, equivalent to about 14 million people.

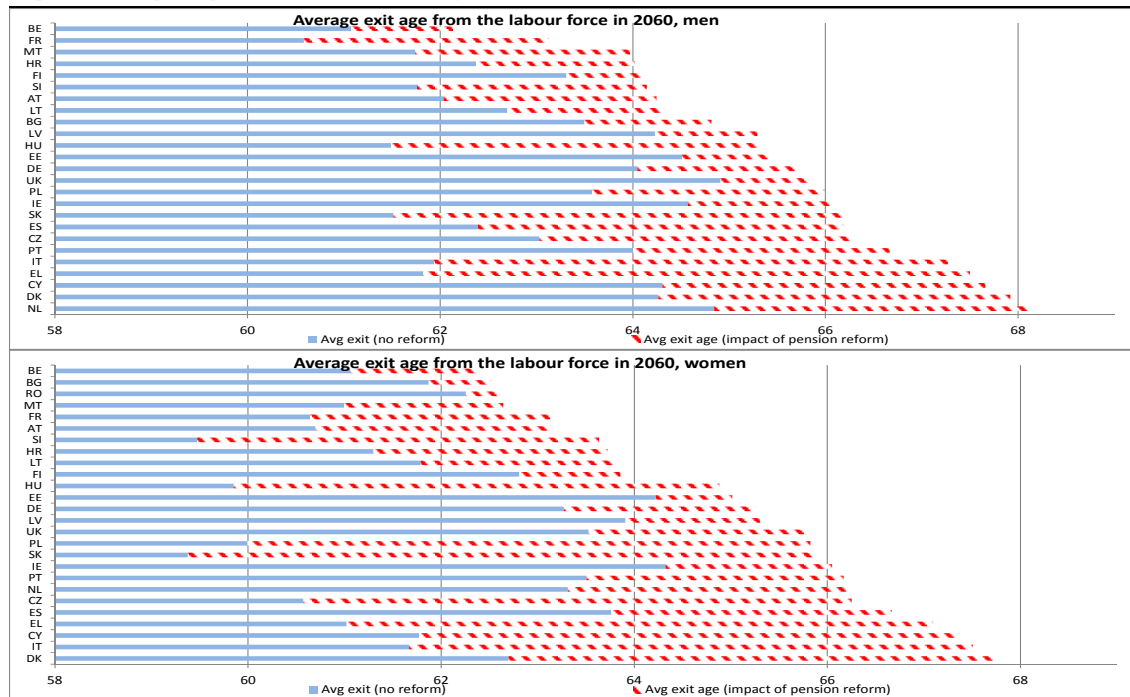
### Further rises in employment rates projected...

Given the population projection, the labour force projection and the unemployment rate assumptions<sup>(5)</sup>, the total employment rate (for persons aged 20 to 64) in the EU is projected to increase from 68.4% in 2013 to 72.2% in 2023 and 75% in 2060. In the euro area, a similar development is expected, with the employment rate attaining 74.7% in 2060.

<sup>(4)</sup> See footnote 8.

<sup>(5)</sup> Starting from current historically high levels, a reduction in the EU unemployment rate of around 4 ¼ percentage points is projected over the long-term (to 6 ½% in 2060). A slightly larger fall of 5 ¼ pp. is projected for the euro area of (to 6 ¾% in 2060).

Graph 4: Impact of pension reforms (1) on the average effective retirement age from the labour force (2)

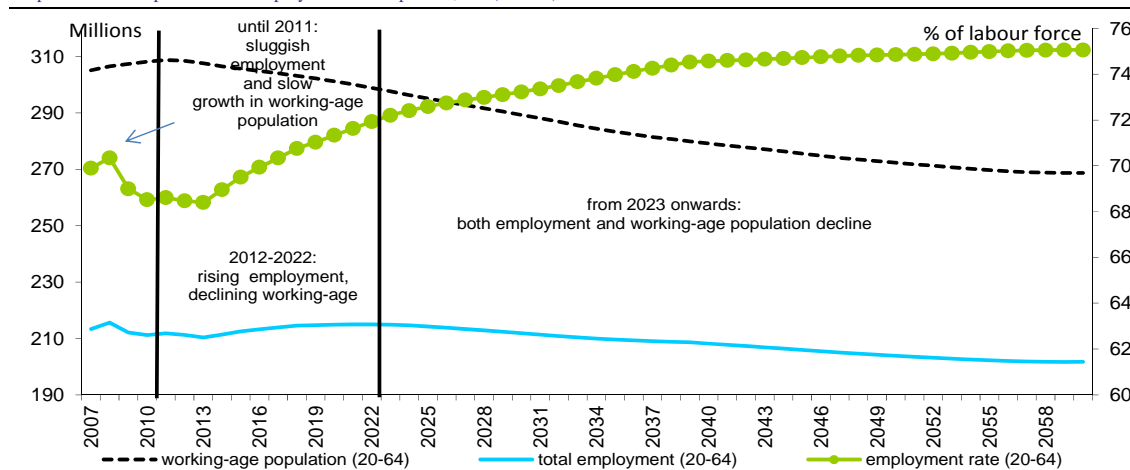


Source: Commission services, EPC.

... but the number of employed would diminish

The projections show that employment (aged 20-64) will peak at 215 million in 2022, and after that fall to 202 million in 2060. This implies a decline of about 9 million workers over the period 2013 to 2060. The negative prospects stemming from the rapid ageing of the population, will only be partly offset by the increase in (female and older workers) participation rates migration inflows and the assumed decline in structural unemployment, leading to a reduction in the number of people employed during the period 2023 to 2060 (13 million).

Graph 5: Population and employment developments, EU (million)



Source: Commission services, EUROPOP 2013, EPC.

Demographic developments have a major impact on labour market developments. Three distinct periods can be observed for the EU as a whole (see Graph 5):

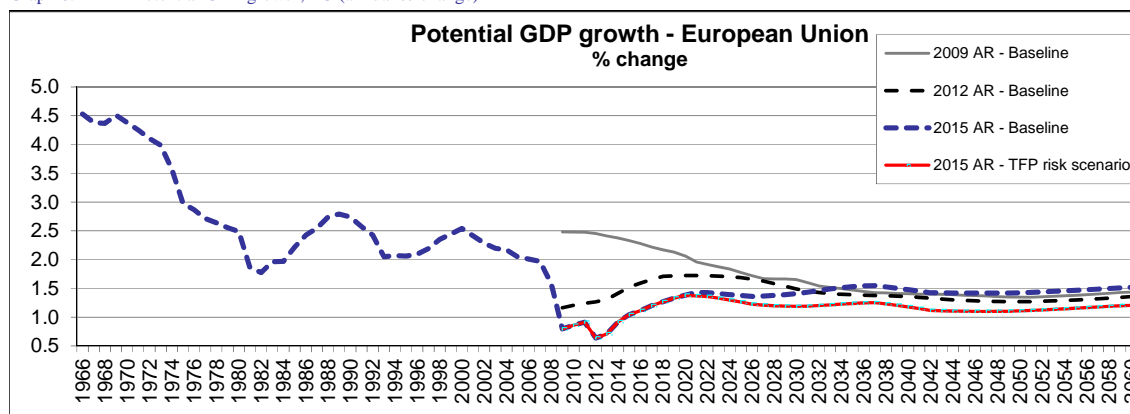
- 2007-2011 – demographic developments still supportive of growth: the working-age population is growing, but employment is sluggish as the financial and economic crisis weighs on labour prospects during this period.

- *2012-2022 – rising employment rates offset the decline in the working-age population:* the working-age population starts to decline as the baby-boom generation enters retirement. However, the assumed reduction in unemployment rates, the projected increase in the employment rates of women and older workers cushion the impact of demographic change, and the overall number of persons employed would start to increase during this period.
- *From 2023 – the population ageing effect dominates:* the projected increase in employment rates is slower, as trend increases in female employment and the impact of pension reforms will be less pronounced. Hence, both the working-age population and the number of persons employed start falling over the remainder of the period.

### Macro-economic assumptions: Potential GDP growth projected to remain quite stable over the long-term

In the EU as a whole, the annual average potential GDP growth rate in the baseline scenario is projected to remain quite stable over the long-term, albeit much lower than in previous decades and moreover lower than projected a few years ago (see Graph 6). The assumption of convergence to a TFP growth rate of 1% entails for most countries that it would rise over the coming decades from the current historically low levels, and this will more than compensate for the declining labour growth from 2023 onwards. As a result, after an average potential growth of 1.1% up to 2020, a slight increase to 1.4-1.5% is projected for the remainder of the projection horizon. Over the whole period 2013-2060, average potential GDP growth rates in the EU is projected to be 1.4%. Developments in the euro area are very close to that of the EU as a whole and the potential growth rate in the euro area (averaging 1.3%) is projected to be slightly lower than for the EU throughout the projection period.

Graph 6: Potential GDP growth, EU (annual % change)



Source: Commission services, EUROPOP 2013, EPC.

In light of the trend decline in TFP growth performance over the last decades in the EU, including in relation to the US economy, due visibility and prominence should also be given to the risk of lower TFP growth in the future. Thus, a TFP risk scenario is included, with a lower TFP growth rate (0.8%). The TFP risk scenario essentially shows that GDP growth could be much lower in the event that future TFP growth rates developed less dynamically than in the baseline scenario, i.e. more in line with the growth rate (0.8%) observed over the last 20 years. In overall potential GDP terms, it would grow by 1.2% on average up to 2060, as opposed to 1.4% in the baseline scenario. In the euro area, it would be even lower, growing by 1.1% on average. In terms of GDP per capita levels, it would be 10% lower in the TFP risk scenario compared with the baseline by 2060 in the EU.

### The crucial role of TFP growth

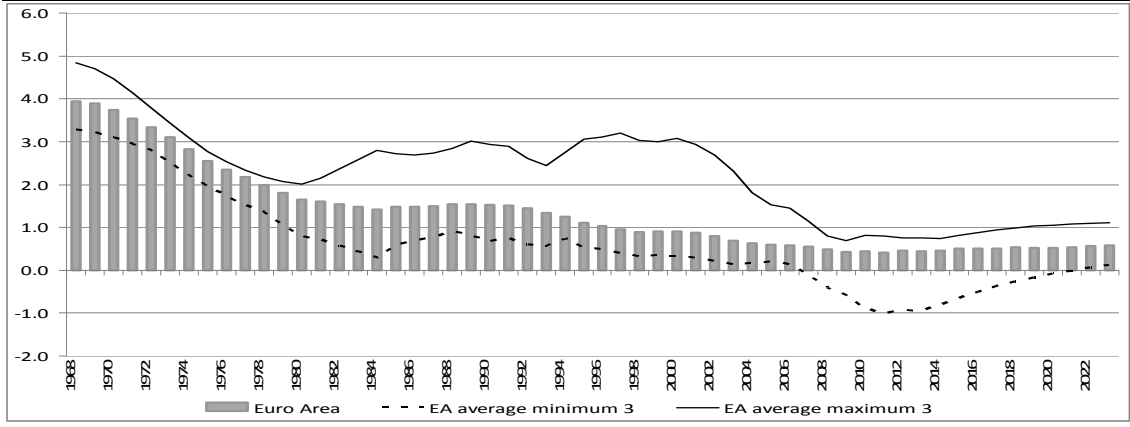
Developments in total factor productivity are of particular importance for future income levels (GDP/capita). A considerable reduction in TFP growth rates has been observed well before the onset of the crisis, and a sluggish recovery has been recorded so far (Graph 7 illustrates developments in the euro area as a whole).

As regards TFP, the impact of a crisis on trend TFP growth in a longer term perspective is however less clear. TFP may be dampened after a crisis, due to e.g. 'one-off' downward shifts in TFP levels stemming from restructuring of the economies structure (e.g. financial services and construction) or possible negative impact on R&D activities and its financing. At the same time, a crisis can also lead to a process of restructuring and

renewal, which could eventually be beneficial for TFP. There is uncertainty as to which factors will dominate as well, as to their duration.

However, it should also be borne in mind that even before the crisis that started in 2008, a trend decline had been observed as regards productivity performance in the euro area. Graph 7 shows the situation for potential TFP growth over the past decades in the euro area. Trend TFP growth in the euro area has been systematically below 1% since the mid-1990s. It is estimated to rise from 0.5% in 2012 to only 0.6% in 2023. There are however wide differences between countries in the euro area, as illustrated by the average of the three best and the three worst performers in the euro area, respectively. The top-3 performers maintained positive trend growth rates between ½% and 1 % during the crisis, while the bottom-3 performers are actually still struggling to even get back into positive growth territory.

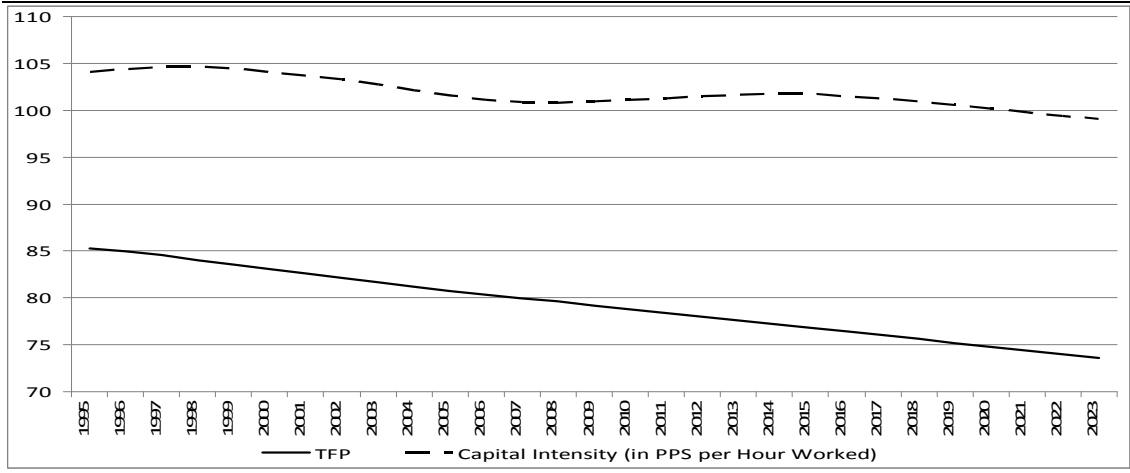
Graph 7: Trend TFP growth in the EA (% change), and productivity level trends in the Euro area vs. the US



Source: Commission services.

Another issue of concern is the trend of a growing divergence in productivity levels between the euro area and the US that has been observed also before the crisis (see Graph 8). Given the relatively stable developments as regards capital intensity between the euro area and the US (with higher capital intensity in the euro area), the trend decline in TFP levels could signal a relatively lower innovative capacity in the euro area due to e.g. insufficient R&D and human capital formation. Since the mid-1990s, there appears to be little support for convergence to the ‘US leader’, to the contrary. There are however large differences at country level.

Graph 8: Productivity level trends in the Euro area vs. the US (US=100)



Source: Commission services.

There are different views with regards to the longer-term prospects for TFP and hence GDP growth. Research of the determinants of economic growth is continuously ongoing, and views differ on whether labour productivity will be higher or lower in the future compared with the past.

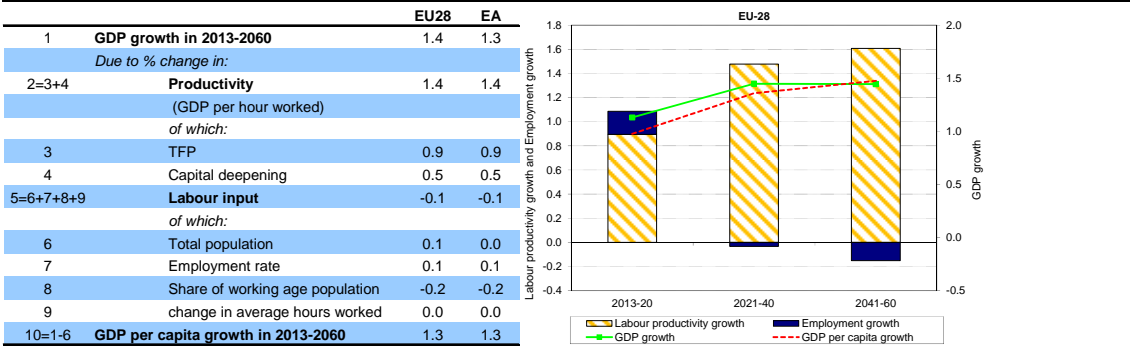


For example, Gordon (2012) <sup>(6)</sup> takes a very long-term view (covering the period since the year 1300) and argues that the increase in economic growth rates from virtually no growth between 1300 and 1750 to that recorded since the 1800s (pioneered by leading western economies, especially the US) until now is unlikely to be sustained in the future. He underpins this hypothesis by identifying a set of paradigm changes – ‘industrial revolutions’ - that pushed up growth during this period that are likely to fade in future. By contrast, Brynjolfsson and McAfee (2011 and 2014) <sup>(7)</sup> take an optimistic view and consider that further paradigm changes (i.e. relating to computer technology/the digital economy) can likely sustain decent productivity growth rates, and thus economic growth, also in the future. They argue that there is considerable scope for exploiting further the ‘general purpose technology’ of computer technology/the digital economy – the latest ‘industrial revolution’ identified by Gordon - also in the future. In discussing labour-replacing trends brought about by ‘computer technology/digital economy’ automation processes, they point to the ‘great decoupling’ illustrating that employment and median income are no longer growing alongside productivity, which may have implications for labour input growth in the future, thereby suggesting another challenge for western (as well as other) economies in terms of income distribution in societies.

*Growth accounting going forward: from positive to negative labour growth*

The sources of GDP growth will alter dramatically over the projection horizon. Labour will make a positive contribution to growth in both the EU and the euro area up to the 2020s, but turn negative thereafter. For the EU and for the euro area, a slight increase in the size of the total population over the entire projection period and an assumed increase of employment rates make a positive contribution to average potential GDP growth. However, this is more than offset by a decline in the share of the working-age population, which is a negative influence on growth (by an annual average of -0.2 percentage points). As a result, labour input contributes negatively to output growth on average over the projection period (by 0.1 pp. in the EU and in the euro area). Hence, labour productivity growth, driven by TFP growth, is projected to be the sole source of potential output growth in both the EU and the euro area over the entire projection period.

Graph 9: Breakdown of potential GDP growth



Source: Commission services, EPC.

**Pension policies**

*Pension expenditure projected to be largely unchanged by 2060*

Public pension expenditure in the EU is projected to increase by +0.4 p.p. of GDP over the period 2013—2040, to 11.7% of GDP, before levelling down to around 11% of GDP by 2060 (see Graph 10). In the euro area, an increase of +0.7 p.p. of GDP is projected over the 2013-2040 horizon. In 2060, public pension expenditure ratio should reach 12.3% of GDP, a level similar to 2013.

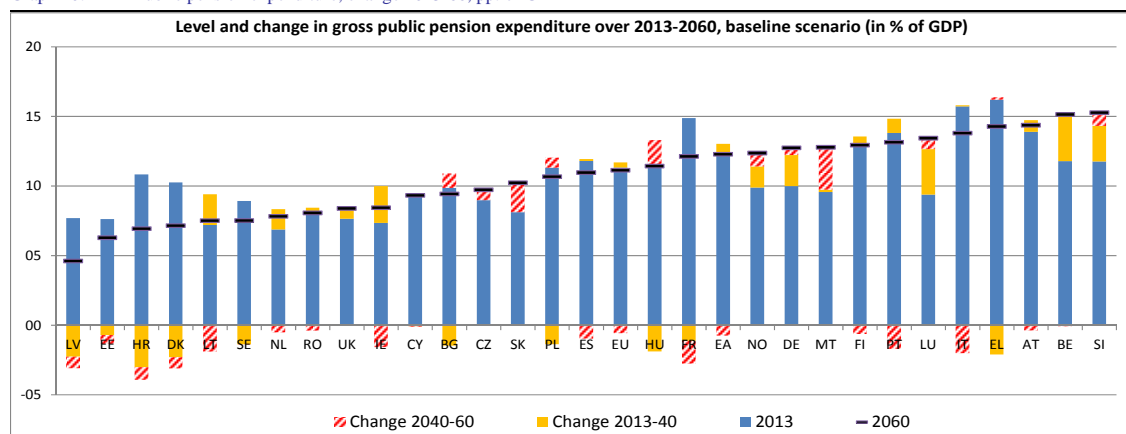
The range of projected changes in public pension spending is relatively large across Member States (see Graph 10). Croatia should record the highest decrease (-3.9 p.p. of GDP between 2013 and 2060), along with Denmark, Latvia (-3.1 p.p. of GDP) and France (-2.8 p.p. of GDP). In seven other Member States, a smaller decrease of

<sup>(6)</sup> Robert J. Gordon (2012), 'Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds', NBER Working Paper No.18315.  
<sup>(7)</sup> Erik Brynjolfsson and Andrew McAfee (2011), 'Race Against The Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy', Digital Frontier Press, and Erik Brynjolfsson and Andrew McAfee (2014), 'The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies', W. W. Norton & Company.

public pension expenditure ratio - ranging from -2 p.p. of GDP to -0.7 p.p. of GDP - is projected (Italy, Greece, Sweden, Estonia, Spain, Portugal and Poland).

On the other hand, Luxembourg should experience the strongest increase of public pension spending ratio (+4.1 p.p. of GDP over 2013-2060), followed by Slovenia (+3.5 p.p. of GDP), Belgium (+3.3 p.p. of GDP) and Malta (+3.2 p.p. of GDP). Two Member States (Germany and Slovakia) and Norway should see their public pension expenditure ratio grow between 2 to 3 p.p. of GDP, whilst this ratio is projected to rise by a more moderate pace (between +0.7 and 1.1 p.p. of GDP) in the UK, Czech Republic, Netherlands and Ireland. Finally, the ratio should be broadly stable (at the most +/- 0.5 p.p. of GDP) in seven countries (Austria, Lithuania, Finland, Hungary, Cyprus, Romania and Bulgaria).

Graph 10: Public pension expenditure, change 2013-60, pp. of GDP



Source: Commission services, EPC.

The large differences between Member States reflect primarily the diversity in public pension arrangements, their degree of maturity and the effects of pension reforms enacted so far.<sup>(8)</sup> In fact, a reduction of public pension spending as a share of GDP over the long-term is projected in the majority (15) of Member States (HR, DK, LV, FR, IT, EL, SE, EE, ES, PT, PL, BG, RO, CY and HU), mostly as a result of implemented pension reforms. These reform measures, including changes to the retirement age and the pension benefit, have primarily been adopted to address fiscal sustainability concerns of pension systems.

#### *Which pension reforms curtail pension expenditure growth?*

Several Member States that reformed their pension systems in the recent past have formally introduced an “automatic balancing mechanism” and/or other “sustainability factor (benefit linked to life expectancy)” into the specification that determines the amount of pension benefits (Portugal and most recently Spain).

The first one copes with the fact that the pension liability, as a main rule, is not indexed with the internal rate of return of the pension system and thus potentially financially unstable. The mechanism ensures that the system will be able to finance its obligations by reducing the indexation or by increasing the contribution until the financial stability is restored.

The second instrument consists of introducing a component that changes the size of the pension benefit depending on expected demographic changes such as the life expectancy at the time of retirement. In most of the cases, this leads to a reduction in pension entitlements, having a positive impact on the sustainability of the public pension system as well as on public finances.

In addition, several countries have introduced a link between retirement ages and life expectancy (or age) in their pension system legislation (most recently the Slovak Republic). This approach presents an effective tool for increasing sustainability in public pension systems. Moreover, by increasing retirement ages, people are assumed to accrue more pension rights and thus a higher pension provided that the labour market allows for working longer. Thus, there is also a positive effect on pension adequacy.

<sup>(8)</sup> The projections incorporate pension legislation in place in December 2014. No further reform measures has been legislated in EU Member States by 1 April 2015 (except Portugal).

Table 1: Automatic balancing mechanisms, sustainability factors and links to life expectancy in pension systems

Country	Automatic balancing mechanism	Sustainability factor (benefit link to life expectancy)	Retirement age linked to life expectancy
Germany	X		
Finland		X	
Spain	X	X	
Italy		X	X
France*		X	
Latvia		X	
Poland		X	
Portugal		X	X
Sweden	X	X	
Norway		X	
Cyprus			X
Denmark**			X
Greece			X
Netherlands			X
Slovak Republic			X

Source: Commission services, EPC.

Note: In addition to the reported countries above, in CZ and UK the legislated increase in retirement age to cater for expected life expectancy increases but no automatic rule is legislated. In the UK, the State Pension age has been legislated to rise up to 68 by 2046. Moreover, the Pensions Act 2014 provides for a regular review of the State Pension age, at least once every six years, taking into account life expectancy. The first review must be completed by May 2017.

\*Pension benefits evolve in line with life expectancy, through the coefficient of 'proratisation'; it has been legislated until 2035 and not thereafter.

\*\*Subject to parliamentary decision.

Large differences in pension legislation can be observed not only with respect to indexation rules but also concerning official retirement ages and incentives to postpone retirement. Table 2 shows the statutory retirement age, the early retirement age (in brackets) and reports whether the pension system has penalties for early retirement and bonuses to provide incentives for postponing retirement.

These three parameters of the pension system, the statutory retirement age, the early retirement schemes and the presence of incentives, influence the retirement behaviour of individuals.<sup>(9)</sup> Early retirement schemes and/or other government measures that provide pension income before reaching the official retirement age threshold create an opportunity to exit the labour market in advance. One way to increase the effective exit age from the labour market (and also the effective retirement age) in line with an increase in the statutory retirement would hence be to extend the required years of contributions or to improve incentives to stay longer on the labour market, e.g. by restricting early retirement as well increasing employment opportunities for older workers or applying penalties and bonuses in the pension calculation for those who exit the market earlier/later (e.g. France). Another way is to introduce financial incentives to stay longer in the labour market to be entitled to a higher amount of pensions after retirement.

<sup>(9)</sup> Needless to say the exit from the labour market is influenced also by other policies and institutional factors like the adoption of active labour market policy, active ageing, etc..

Table 2: Statutory retirement ages, early retirement (in brackets) and incentives to postpone retirement

	MALE				FEMALE				Incentives	
	2013	2020	2040	2060	2013	2020	2040	2060	Penalty	Bonus
BE	65 (60.5)	65 (62)	65 (62)	65 (62)	65 (60.5)	65 (62)	65 (62)	65 (62)		X
BG	63.7 (63.7)	65 (65)	65 (65)	65 (65)	60.7 (60.7)	62.7 (62.7)	63 (63)	63 (63)		X
CZ*	62.7 (59.7)	63.7 (60)	66.5 (61.5)	69.3 (64.3)	59.7 (56.7)	61.7 (58.7)	66.5 (61.5)	69.3 (64.3)	X	X
DK*	65 (60)	66 (63)	70 (67)	72.5 (69.5)	65 (60)	66 (63)	70 (67)	72.5 (69.5)		
DE	65.3 (63)	65.8 (63)	67 (63)	67 (63)	65.3 (63)	65.8 (63)	67 (63)	67 (63)	X	X
EE	63 (60)	63.8 (60.8)	65 (62)	65 (62)	62 (59)	63.8 (60.8)	65 (62)	65 (62)	X	X
IE	65 (65)	66 (66)	68 (68)	68 (68)	65 (65)	66 (66)	68 (68)	68 (68)		
EL*	67 (62)	67 (62)	69.9 (64.9)	71.9 (66.9)	67 (62)	67 (62)	69.9 (64.9)	71.9 (66.9)	X	
ES	65 (63)	65.8 (63)	67 (63)	67 (63)	65 (63)	65.8 (63)	67 (63)	67 (63)	X	X
FR	65.8 (60.8)	67 (62)	67 (62)	67 (62)	65.8 (60.8)	67 (62)	67 (62)	67 (62)	X	X
HR	65 (60)	65 (60)	67 (62)	67 (62)	60.8 (55.8)	62.5 (57.5)	67 (62)	67 (62)	X	X
IT*	66.3	66.8	68.4 (65.4)	70 (67)	62.3	66.8	68.4 (65.4)	70 (67)		
CY*	65 (63)	65 (63)	67 (65)	69 (67)	65 (63)	65 (63)	67 (65)	69 (67)	X	
LV	62 (60)	63.8 (61.8)	65 (63)	65 (63)	62 (60)	63.8 (61.8)	65 (63)	65 (63)		
LT	62.8 (57.8)	64 (59)	65 (60)	65 (60)	60.7 (55.7)	63 (58)	65 (60)	65 (60)	X	X
LU	65 (57)	65 (57)	65 (57)	65 (57)	65 (57)	65 (57)	65 (57)	65 (57)		
HU	62 (62)	64.5 (64.5)	65 (65)	65 (65)	62 (62)	64.5 (64.5)	65 (65)	65 (65)		X
MT	62 (61)	63 (61)	65 (61)	65 (61)	62 (61)	63 (61)	65 (61)	65 (61)		
NL*	65.1 (65.1)	66.3 (66.3)	69.3 (69.3)	71.5 (71.5)	65.1 (65.1)	66.3 (66.3)	69.3 (69.3)	71.5 (71.5)		
AT	65 (62)	65 (62)	65 (62)	65 (62)	60 (58.8)	60 (60)	65 (62)	65 (62)	X	X
PL	65.3 (65.3)	67 (67)	67 (67)	67 (67)	60.3 (60.3)	62 (62)	67 (67)	67 (67)		
PT*	65 (55)	66.4 (55)	67.7 (55)	68.8 (55)	65 (55)	66.4 (55)	67.7 (55)	68.8 (55)	X	X
RO	64.7 (59.7)	65 (60)	65 (60)	65 (60)	59.7 (54.7)	61.4 (56.4)	63 (58)	63 (58)		
SI	65 (58.3)	65 (60)	65 (60)	65 (60)	63.5 (58)	65 (60)	65 (60)	65 (60)	X	X
SK*	62 (60)	62.8 (60.8)	65.4 (63.4)	67.8 (65.8)	58.3 (56.3)	62.8 (60.8)	65.4 (63.4)	67.8 (65.8)	X	X
FI	66 (62)	66 (63)	66 (63)	66 (63)	66 (62)	66 (63)	66 (63)	66 (63)	X	X
SE	67 (61)	67 (61)	67 (61)	67 (61)	67 (61)	67 (61)	67 (61)	67 (61)		
UK	65 (65)	66 (66)	66.7 (66.7)	68 (68)	61 (61)	66 (66)	66.7 (66.7)	68 (68)		X
NO	67 (62)	67 (62)	67 (62)	67 (62)	67 (62)	67 (62)	67 (62)	67 (62)		

Source: Commission services, EPC.

(1) Statutory retirement ages and early retirement ages as reported in the country fiche. Age requirement for early retirement is not necessarily the only eligibility criteria and it is often associated to contribution requirement (or other equivalent parameters) significantly higher than those foreseen for the statutory retirement age.

CZ - Statutory retirement age depending on the number of children. Values for women with 2 children are reported.

IT - In 2013, female SRA refers to private sector employees (the self-employed 63.8, public employees 66.3). In bracket the minimum age for early retirement under the NDC system (a minimum amount of pension of 2.8 times the old age allowance is also required). Early retirement is also allowed regardless of age, with a contribution requirement of 42.5 years (41.5 for female) in 2014, indexed to changes in life expectancy.

PT - Early retirement suspended for employees in the social security scheme in 2013. Since January 2015 retirement age is reduced by 4 months a year exceeding the 40th for workers with insurance careers longer than 40 years (applied to worker aged more than 60 in 2015). Reform not considered in the pension projections.

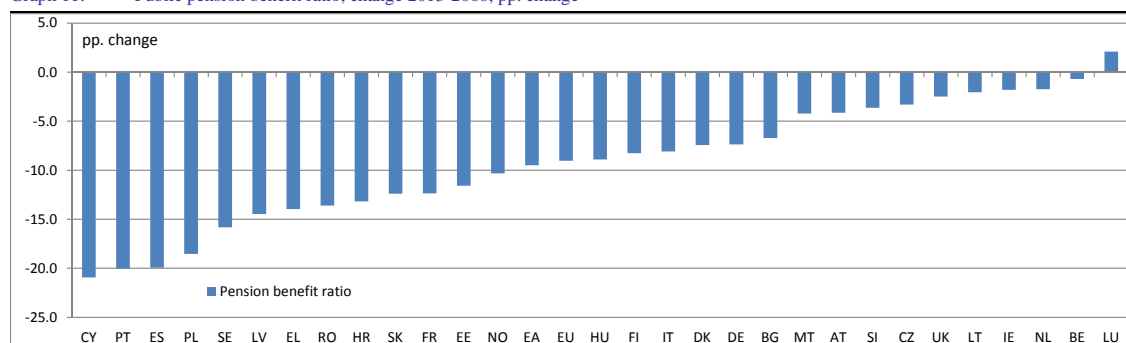
SE - Retirement age flexible from age of 61 without an upper limit. Under the Employment Protection Act, an employee is entitled to stay in employment until his / her 67th birthday.

\*Countries where statutory retirement age is legislated to increase in line with increase in life expectancy. Reported retirement ages calculated according to life expectancy increases as from EUROPOP 2013 demographic projections.

Actuarial equivalence is not considered as a penalty/bonus.

The pension projections rely on unchanged pension legislation, and risks exist. If pensions are being perceived as being 'too low' or the retirement age 'too high', this could eventually result in changes in pension policies, leading to upward pressure on pension spending, and the projections could thus underestimate future government expenditure. For example, the public pension benefit ratio (i.e. average pensions in relation to average wages) is projected to fall in all Member States (except Luxembourg) in the period to 2060, on average by 9 pp. in the EU and in some countries (CY, PT and ES) by up to 20 pp. (see Graph 11). Consequently, the benefit ratio at the end of the forecasting period is generally low. Even including private pensions, the benefit ratio in 2060 settle above 50 percent in only few countries (DK, EL, IT, LU, NL) while it falls below 30 percent in some other cases (BG, EE, HR, LV, PL, RO). Another upward risk is related to the projected decrease of the coverage ratio (i.e. the number of pensioners as percent of population aged 65 or more) in some countries, where a large increase of the legal retirement age is legislated. On the other hand, if countries enact additional expenditure-reducing pension reforms (currently being discussed in some countries), the projected expenditures could be overestimated.

Graph 11: Public pension benefit ratio, change 2013-2060, pp. change



Source: Commission services, EPC.

### Decomposition of pension expenditure to GDP

In order to analyse the dynamics and the underlying drivers of the pension spending to GDP ratio over time, decomposition is made as follows:

$$\frac{\text{PensionExp}}{\text{GDP}} = \frac{\overbrace{\text{Population65+}}^{\text{Dependency Ratio}}}{\text{Population20-64}} \times \frac{\overbrace{\text{Number of Pensioners(Pensions)}}^{\text{Coverage Ratio}}}{\text{Population65+}} \times \frac{\overbrace{\text{Average income from pensions (Average Pension)}}^{\text{Benefit Ratio}}}{\text{GDP}} \times \frac{\overbrace{\text{Population20-64}}^{\text{Labour Market / Labour Intensity}}}{\text{Hours Worked20-74}}$$

The Equation highlights the forces that affect the dynamics of pension expenditure. Indeed the overall change in public pension expenditure to GDP ratio can be expressed as the sum of the contribution of the following four main factors:

**The dependency ratio effect** which quantifies the impact of demography, (the change in the composition of the population, old age versus working age) on the pension-to-GDP ratio. An increase in this ratio indicates a higher proportion of older individuals with respect to working age population, i.e. an ageing population. As the dependency ratio increases, the pension-to GDP ratio moves in the same direction.

**The coverage ratio effect** is defined as the number of pensioners of all ages to the population over 65 years. The analysis of the coverage ratio provides information about how the developments of the effective exit age and the share of the population covered by the pension system influence pension spending. As the coverage ratio increases, the pension expenditure-to-GDP ratio increases as well.

**The benefit ratio effect** indicates the development of the relative value of the average pension (public pension spending / number of pensioners) with respect to the average wage. It reflects the features of the legal framework of pension systems as far as the calculation and indexation rules are concerned.

**The labour market/ labour intensity effect** describes the effects of labour market behaviour on pension expenditure. In order to split this labour market behaviour policies into different drivers, a further decomposition is used:

$$\frac{\overbrace{\text{Population 20-64}}^{\text{Labour Market / Labour Intensity}}}{\text{Hours Worked 20-74}} = \frac{\overbrace{\text{Population 20-64}}^{1/\text{Employment Rate}}}{\text{Working People 20-64}} \times \frac{\overbrace{\text{Working People 20-64}}^{1/\text{Labour intensity}}}{\text{Hours Worked 20-64}} \times \frac{\overbrace{\text{Hours Worked 20-64}}^{1/\text{Career shift}}}{\text{Hours Worked 20-74}}$$

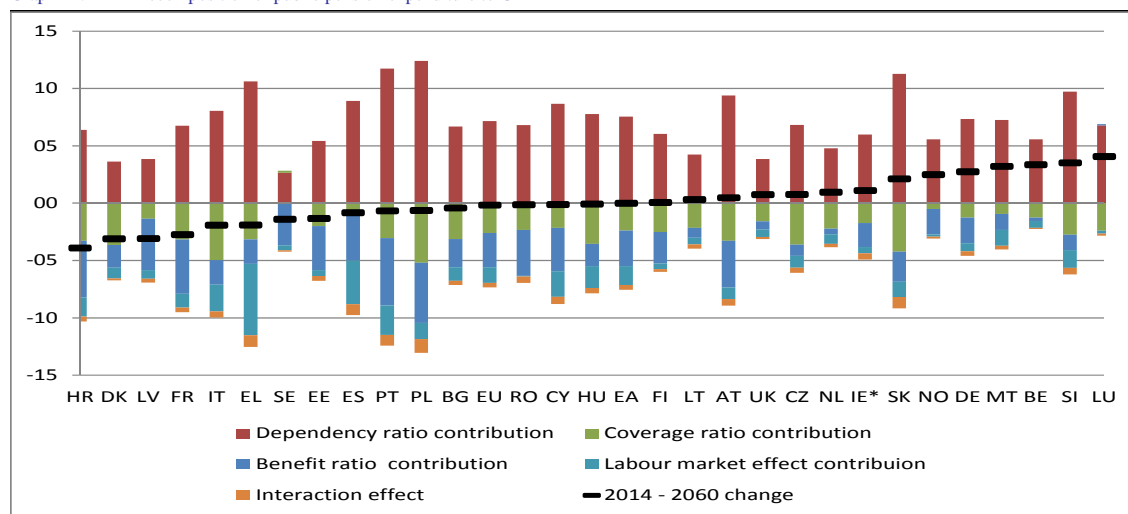
More in detail, the 3 different labour market behaviour components can be interpreted as follows:

**The employment rate effect** is defined as the ratio of population aged 20-64 to the number of working people aged 20-64 (i.e. 1/employment rate). In Pay-as-You-Go systems, a higher employment rate helps increasing the sustainability of pension systems by allowing for a larger contribution base (at least in the short term), hence as the employment rate increases, the ratio of pension expenditure to GDP falls.

**The labour intensity effect** is defined as the ratio of the working population 20-64 to the hours worked of the population 20-64 (i.e. 1/labour intensity). As labour intensity increases, the ratio of pension expenditure to GDP falls.

**The career prolongation effect** is defined as the ratio of hours worked by the population 20-64 to the hours worked by the population 20-74 (i.e. 1/career shift). Changes in this ratio (i.e. a decrease) capture the effect of a working life prolongation above the age of 65 (e.g. because of reforms that postpone the statutory retirement age or because of active ageing policies). An increase in the hours worked by people aged more than 65 helps to reduce the ratio of pension expenditure to GDP.

Graph 12: Decomposition of public pension expenditure to GDP



Source: Commission services, EPC.

The overall change in gross public pension expenditure over the projection horizon 2013-2060 is decomposed into 4 drivers: i) dependency ratio; ii) coverage ratio; iii) benefit ratio; and, iv) the labour market effects (see Graph 12).

Confirming the results of the population projections, the demographic factor contributes the most to the increase in public pension expenditure over the period 2013-2060 (EU28: +7.6 p.p. of GDP), ranging from +2.6 p.p. in Sweden to as much as +12.4 p.p. in Poland.<sup>(10)</sup> Moreover, for nearly all Member States the dependency ratio is the only factor contributing to increasing the pension expenditure to GDP ratio, while the coverage ratio, the employment effect as well as the benefit ratio contribute to limit the upward trend in pension expenditure for nearly all countries.

Although the upwards contribution of the ageing population is the largest single factor, the negative budgetary effect of demographic factors is fully offset by the other sub-components. As a consequence, gross public pension expenditure in 2060 stays at its 2013 level in the EA, while a slight decline in public pension expenditure as a share of GDP is projected for the EU as a whole by 2060 (-0.2 p.p.)

Among the factors contributing to a lowering of the expenditure trend, the labour market effect is the least pronounced. Increasing employment and labour intensity together with the effect of career shifts only leads to a reduction in the public pension expenditure over GDP ratio by more than 2 p.p. over the projection period for Greece, Spain, Italy, Cyprus and Portugal. Overall, the labour market effect is projected to reduce the upward pressure on pension expenditure by 1.4 p.p. on average for the EU28. <sup>(11)</sup> Projected figures range from 0.0 p.p. of GDP in Romania to -6.2 p.p. of GDP in Greece.

Both the effects of the coverage rate as well as of the benefit ratio are more pronounced than the labour market effect in leading to downward pressure on the expenditure ratio.

For the EU as a whole, the coverage ratio effect (-2.6 p.p.) is slightly smaller compared to the benefit ratio effect (-3.0 p.p.). However, large variations can be observed among Member States. Only Sweden (+0.2 p.p.) projects a small increase in the coverage ratio contribution to the pension expenditure to GDP ratio. On the contrary, strong

<sup>(10)</sup> Due to a lack of necessary data IE public service occupational pensions are not included in the analysis of the decomposed pension expenditure drivers throughout the whole chapter. This also affects the decomposed EU28 and EA figures. All respective residual values are corrected accordingly in order to be consistent with the overall expenditure figures as a share of GDP which include these two components.

<sup>(11)</sup> As cross-border workers in Luxembourg are not covered in the labour force projections for the pension projection exercise, a deeper analysis of the employment effect contribution as well as the coverage ratio contribution is not meaningful.

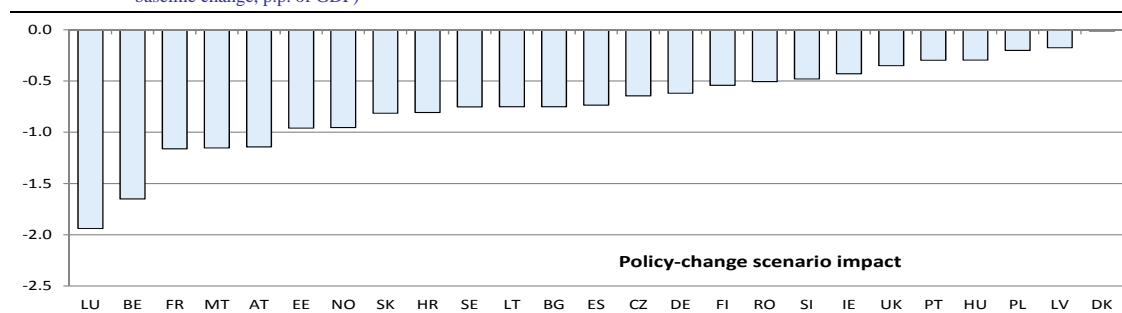
downward effects of the coverage ratio on public pension expenditure are projected in Poland (-5.2 p.p.), Italy (-5.0 p.p.) and Slovakia (-4.2 p.p.).

A similar picture can be observed for the benefit ratio effect. Only one country projects upward pressures on expenditure due to an increasing benefit ratio effect (Luxembourg with +0.1 p.p.) while in countries like Portugal (-5.9 p.p.), Poland (-5.2 p.p.) and Croatia (-5.0 p.p.) a strong downward trend has been projected. The differences between countries – both for the coverage ratio as well as the benefit ratio effect – are in most of the cases due to different kinds of reforms affecting both the access to pensions (e.g. set up or shift to secondary pillars not classified in the public sector or increases in the statutory retirement age) and the generosity of future pension benefits (e.g. sustainability factors, less generous indexation rules).

### *Simulating pension policy changes: linking the retirement age to life expectancy*

Introducing an *automatic* link between early and statutory retirement ages and life expectancy, starting from the base year<sup>(12)</sup>, would yield a substantial downward impact in most of countries (see Graph 13). Indeed, such a link, by lowering the number of pensioners (and thus the coverage ratio), reduces gross public pension expenditure.

Graph 13: Impact of linking retirement age to life expectancy on gross public pension expenditure change over 2013-2060 (deviation from baseline change, p.p. of GDP)



Source: Commission services, EPC.

This impact can be partially mitigated by an increase of average pensions, since longer careers are often associated with higher pension entitlements. By increasing labour supply, this linking policy also boosts GDP growth<sup>(13)</sup>. The strongest effect is projected for Luxembourg (-1.9 p.p. of GDP by 2060) and Belgium (-1.7 p.p. of GDP), countries which do not foresee any increase of retirement ages in the baseline scenario. The impact would also be substantial (around -1 p.p. of GDP) in France, Malta, Austria, Estonia and Norway. On the other hand, in Denmark, where a linkage of retirement age to life expectancy already exists (subject to parliamentary decisions), the projected impact is marginal<sup>(14)</sup>.

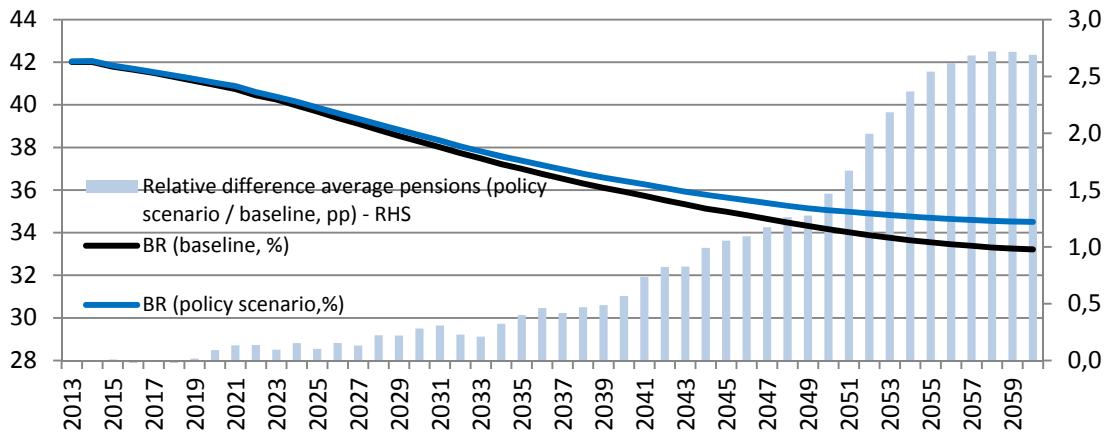
Increasing retirement ages in line with gains in life expectancy not only allows for a substantial reduction in pension expenditures, but also allows for accruing higher pension entitlements due to a longer working life in most cases. Indeed, in this scenario, average EU pension level would be around 2.7% higher in comparison to the baseline scenario (see Graph 14). Consequently, the projected decrease of the benefit ratio over the projection period would be somehow reduced, since it would stabilise around 34½% (against around 33% in the baseline).

<sup>(12)</sup> This increase translates into a rise of the effective retirement age compared to the baseline. To take into account the already legislated changes in retirement age reflected in the baseline scenario, the highest effective retirement age outcome between the one reported in the baseline and the one in the policy-change scenario is assumed at every point in time over the projection horizon. Therefore differences may occur also in case of countries where legislated statutory retirement age develops in line with life expectancy.

<sup>(13)</sup> For more details of activity and expenditure impacts, see Schwan, A. and Sail, E., 2013, "Assessing the economic and budgetary impact of linking retirement ages and pension benefits to increases in longevity", *European Economy, Economic Papers*, no. 512, December.

<sup>(14)</sup> In other countries where an *automatic* linkage already exists, this alternative policy-change scenario has not been run (since coinciding with the baseline). This is the case of Italy, Greece, Cyprus and the Netherlands.

Graph 14: Benefit ratio and average pensions in the policy scenario compared to the baseline at the EU aggregate level



Source: Commission services, EPC.

EU simple average (excluding countries in which a link to life expectancy already exists i.e. Italy, Greece, Cyprus and the Netherlands).

### Health care policies

Demand for health care provision is sizeable and its potential benefits are high. However, those benefits come at a substantial cost: in the EU28 total expenditure on health care equalled 10.1% of GDP in 2012.

A substantial part of this expenditure – 7.8% of GDP on average<sup>(15)</sup> in the EU28 in 2012 – is public spending. Overall, public expenditure on health care has risen in most EU Member States over time. Although in the aftermath of the economic crisis this rise has slowed down or reversed in some cases, this deviation from the trend is expected to be temporary. The size and growing importance of public expenditure on health care in government expenditure and the need for budgetary consolidation all across Europe makes health care expenditure an important topic in the policy debate on how to ensure the long-term sustainability of public finances.

The complexity of health care markets makes expenditure projections a challenging task.<sup>(16)</sup> The projections presented below follow a "what if" approach and results are bound with uncertainty.<sup>(17)</sup> Nevertheless, these projections can be very helpful for allowing policy makers to figure out the possible evolution of their public expenditure and the impact of the main underlying drivers of health care costs.

Public expenditure on health care is driven by a series of factors that affect both demand for and supply of health care goods and services. Population size and structure, its health status, the individual and national income and provisions regulating access to health care goods and services are seen as key determinants of demand. Supply side determinants include the availability and distance to health care services, technological progress and the framework regulating the provision of those goods and services (institutional settings).

Public health expenditure in EU28 was at 7.8% of GDP in 2012, the projections show that expenditure may grow to 8 % of GDP in 2060 only on accounts of demographic ageing– and to higher levels when other push up factors are accounted for as in the other scenarios presented below.

The "demographic scenario" assumes that per capita spending grows in line with national income per capita. The effect is that without population ageing, the share of health spending in % of national income would stay

<sup>(15)</sup> The averages presented in this Chapter are weighted according to GDP, as explained in the 2015 Ageing Report "Underlying assumptions and projection methodologies":

<sup>(16)</sup> Health care markets may suffer from adverse selection (higher health risks have difficulty in obtaining affordable coverage), moral hazard (insured people have an incentive to over consume health care services as they do not bear the full cost) and asymmetric information (physicians have more information than patients, which could lead to supply-induced demand and economic rents, depending on the type of remuneration of physicians: capitation, fee-for-service, pay-for-performance). These market failures are the economic rationale for public sector involvement (financing and regulations) in health care markets based on efficiency and equity considerations.

<sup>(17)</sup> Uncertainty relates to three factors. First, public expenditure on health care are determined by an interrelated play of numerous demand and supply-related factors, often not fully observed or quantifiable. Second, ad hoc policy reforms may change their relevance and impact upon future health care spending. Third, the long-term horizon of the projections increases the uncertainty of the results.

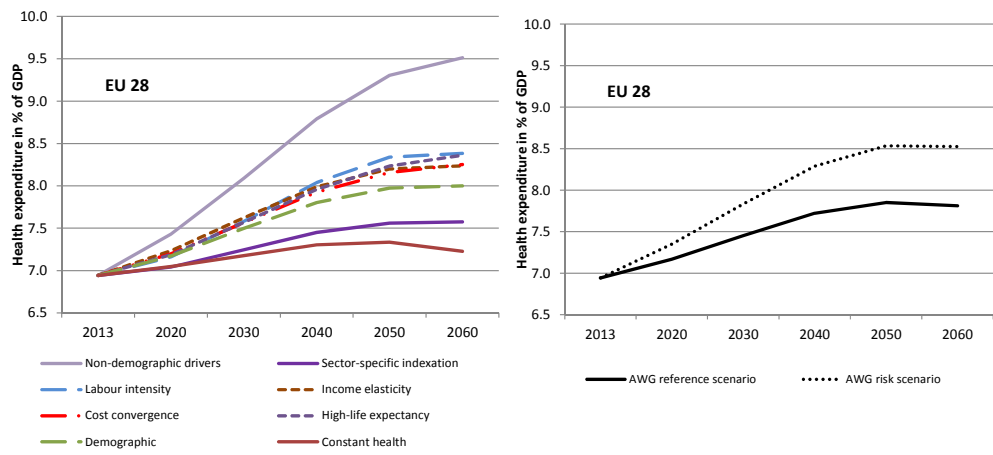


constant. However, on the one hand empirical research shows that growth in both public and total health care spending may exceed the growth rate of national income, be it because of rising expectations towards more and better health care and a higher willingness to pay for health care services. On the other hand, the scenario assumes that all future gains in life expectancy are spent in bad health. Consequently, the "demographic scenario" may under- or overestimate health spending growth.

Indeed, the projections show (see Graph 15) that whilst ageing per se has a non-negligible effect on expenditure growth, it is rather moderate. In effect, much depends on whether gains in life expectancy are spent in good or bad health. Optimistically, if all additional life years are healthy life years, the additional cost burden from ageing can be lowered, as exemplified in the "constant health scenario".

With rising income and longevity, older people are willing to spend more on health care services.<sup>(18)</sup> Assuming a higher growth in spending relative to national income (i.e. income elasticity of 1.1) adds an extra 0.2 pp. of GDP to health expenditure. Non-demographic factors will be a key driving force of health expenditures, if past trends persist. Our projections show that - on the basis of an econometric estimate - when the impact of future income growth on the demand for more and better health care is taken into consideration, projected expenditure becomes much higher.

Graph 15: Range of results from different scenarios on health care in EU28



Source: Commission services, EPC.

Other supply related drivers, such as the costs of wages, are a non-negligible component of health expenditures. Health care is highly labour-intensive and requires highly skilled medical personnel who have strong bargaining power in a number of countries. Assuming that wages grow in line with labour productivity (therefore exceeding growth in GDP per capita) - such as in the *labour intensity scenario* -, leads to an additional spending of 0.4 pp. of GDP relative to the "demographic scenario".

Disentangling the contribution of the individual costs components and their contribution to changes in health care spending improves the understanding of the actual expenditure drivers (*sector-specific composite indexation scenario*). The "sector-specific composite indexation scenario" in which future expenditure of each different driver evolves in line with their specific past trends, leads to an average projected increase 0.4 pp. of GDP lower than in the "demographic scenario". Two conclusions can be drawn from this scenario. First, wages and pharmaceuticals are very important drivers of expenditure growth. Second, whether the growth contribution is positive or negative is country specific.

Finally, growing convergence in citizens' income per capita and expectations towards benefitting from a similar basket of health services and goods across countries may push expenditures up for below EU average income countries (cost convergence scenario). In the "cost convergence scenario" Member States with shares of GDP per capita spending below the EU28 average converge in real living standards to the EU28 average.

<sup>(18)</sup> In the past decade there was an increase in the expenditure associated with old age diseases such as Alzheimer or dementia for example.

Based on a combination of different scenarios, the AWG reference and the AWG risk scenarios show that spending in the EU28 may increase between 0.9 and 1.6 pp. of GDP. Expenditure on health care is also influenced by the productivity of the economy. The "total factor productivity risk" scenario assumes that the productivity of the economy will grow slower compared with the baseline in the future.

All in all, ageing as well as non-demographic drivers of health care expenditures will continue putting pressure on the long-term sustainability of public finances. Balancing the health care needs of the European population with spending resources, as well as continuous efforts to increase the efficiency and quality of health service delivery, will continue to be high on the political and economic reform agenda of Member States.

**Long term care**

Long term care ( LTC) represents a non-negligible and growing share of GDP and of public and total, i.e. including private, health spending. As such, public expenditure on LTC is an important item for the long-term sustainability of public finances

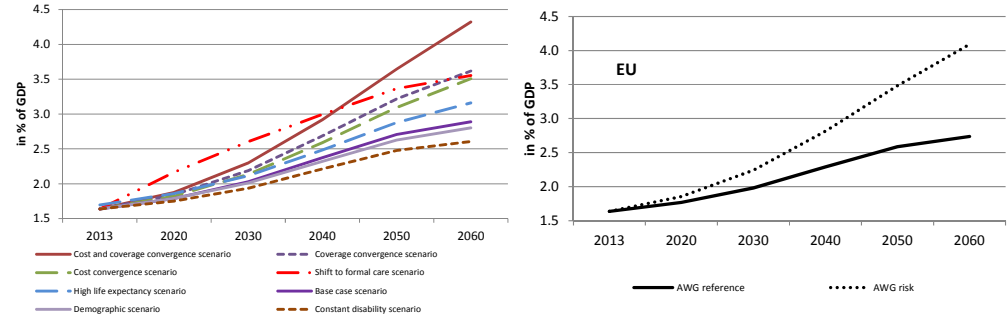
There are two aspects which need to be taken into account. First, population ageing, if not accompanied by a corresponding improvement in health status, leads to an increase in the number of dependent elderly and LTC needs. Secondly, the availability of informal care may decline, increasing the need to resort to publicly financed formal care and thereby putting pressure on public expenditure on LTC. A key element of future public expenditure on LTC is the number of people who will need and receive LTC. The higher share and numbers of old and very old people expected in the coming decades is a key determinant. This is because the risk to live with physical or mental disability leading to a dependency situation that requires LTC tends to increase with age, especially with very old age (80+).

The increasing need for the availability of and access to formal long-term care services implies increased financing needs. As LTC services are to a high degree financed by public payers, public expenditures on LTC are on the rise.

The range of results is rather wide (Graph 16), and risks vary highly depending on the country and scenario, reflecting the implicit uncertainty surrounding the evolution of key variables in this kind of long-term projections. In the AWG reference scenario, which assumes that one half of future gains in life-expectancy will be spent in good health and the other half in disability, public LTC expenditure in the EU is projected to increase from 1.6% of GDP to 2.7% of GDP, i.e. an increase of 67% until 2060.

With rising need for formalized LTC solutions, it is plausible to assume that both coverage of dependents and costs of LTC services will change. Cost implications for the EU may be substantial (Graph 14). The shift of informal to formal care (Shift to formal care scenario) and a convergence process in terms of coverage and costs of LTC for those countries, which are below EU average levels of care in this respect, imply a substantial fiscal risk (cost and convergence related scenarios). It may be safely concluded that ageing and non-demographic drivers of long-term care expenditure will exert a continuous pressure on public finances. The obvious need for a broadening of formalized coverage of the European population with long-term care services will thus have to be balanced with the need to ensure the sustainable public finances.

Graph 16: Range of results from different scenarios on long-term care in EU28



Source: Commission services, EPC.

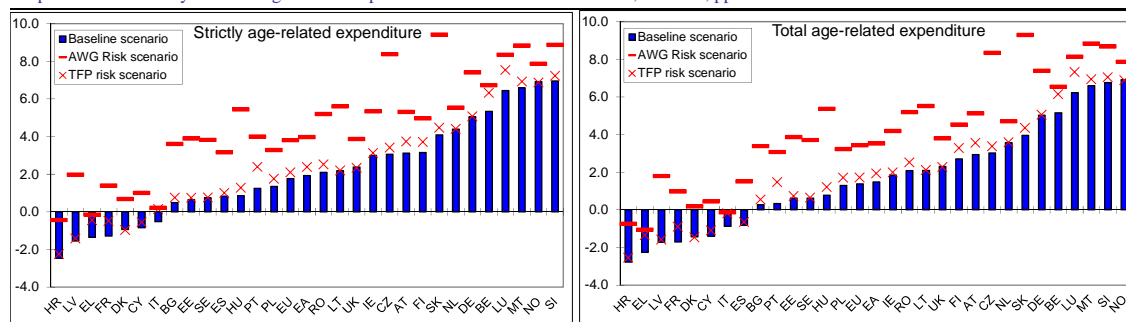
## Population ageing puts upward pressure on age-related public spending

The long-term budgetary projections show that population ageing poses a challenge for the public finances in the EU. The fiscal impact of ageing is projected to be high in most Member States, with effects becoming apparent already during the next decade.

The projected change in strictly public age-related expenditure (pensions<sup>(19)</sup>, health care, long-term care and education) is almost 2 pp. of GDP in the period to 2060 (EU: +1.8 pp., EA: +1.9 pp.) between 2013 and 2060 in the baseline scenario (see Graph 17 and Table A.1). Looking at the components of strictly age-related expenditure, the increase between 2013 and 2060 is mostly driven by health care and long-term care spending, which combined is projected to rise by about 2 pp. of GDP (Health care: +0.9 pp., Long-term care: +1.1 pp.). After a projected increase up to 2040 (EU: +0.4 pp., EA: +0.8 pp.), public pension expenditure is projected to return close to its 2013 level (EU: -0.2 pp., EA 0 pp. over the period 2013-2060). However, the projected decline in pension spending is mostly visible in the latter part of the projection horizon. Education expenditure is projected to remain unchanged up to 2060.

The projected change in total age-related expenditure is lower, since unemployment benefit expenditure is projected to fall in the period to 2060 (by 0.4 pp. of GDP in the EU). For the EU as a whole, the projected increase in total age-related expenditure is 1.4 pp. of GDP in the baseline scenario (EA: +1.5 pp. of GDP) (see Graph 17 and Table A.1).

Graph 17: Strictly and total age-related expenditure in the EU Member States, 2013-60, pp. of GDP



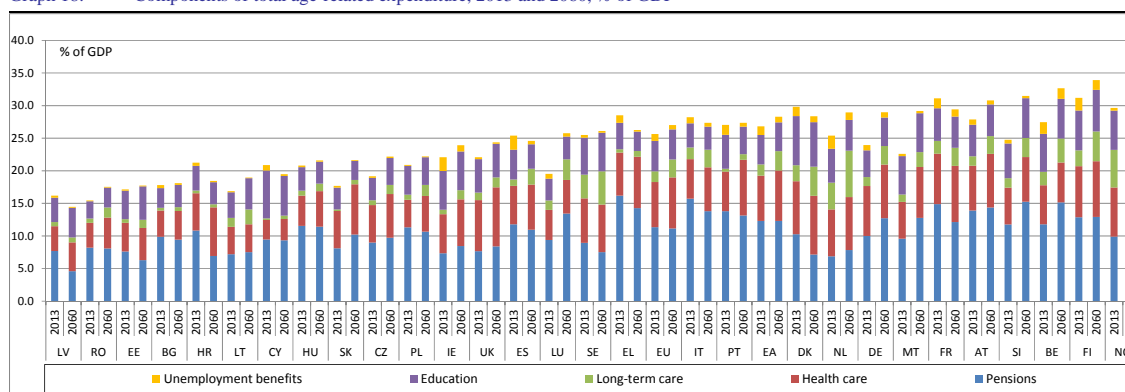
Source: Commission services, EPC.

There is however considerable variety across EU Member States and also in the profile over time in the long-term spending trends (see Graph 18 and Table A.1). According to the projections:

- A fall in total age-related expenditure relative to GDP is projected in eight Member States (HR, EL, LV, FR, DK, CY, IT and ES). In all of these countries, a decline in the pension-to-GDP ratio is projected in the long-term (exceeding 3 pp. of GDP in HR, DK and LV).
- For another set of countries (BG, PT, EE, SE, HU, PL, IE, RO, LT and UK), age-related expenditure ratio is expected to rise moderately (by up to 2.5 pp. of GDP).
- The age-related expenditure ratio increase is projected to be the largest in the remaining ten Member States (FI, AT, CZ, NL, SK, DE, BE, LU, MT and SI), rising by between 2.5 pp. and 6.8 pp. of GDP and with pension expenditure increasing in all of these countries (exceeding 3 pp. of GDP in BE, LU, MT and SI).

<sup>(19)</sup> Public pension expenditure include all public expenditure on pension and equivalent cash benefits granted for a long period, including disability benefits and social assistance benefits for older people.

Graph 18: Components of total age-related expenditure, 2013 and 2060, % of GDP



Source: Commission services, EPC.

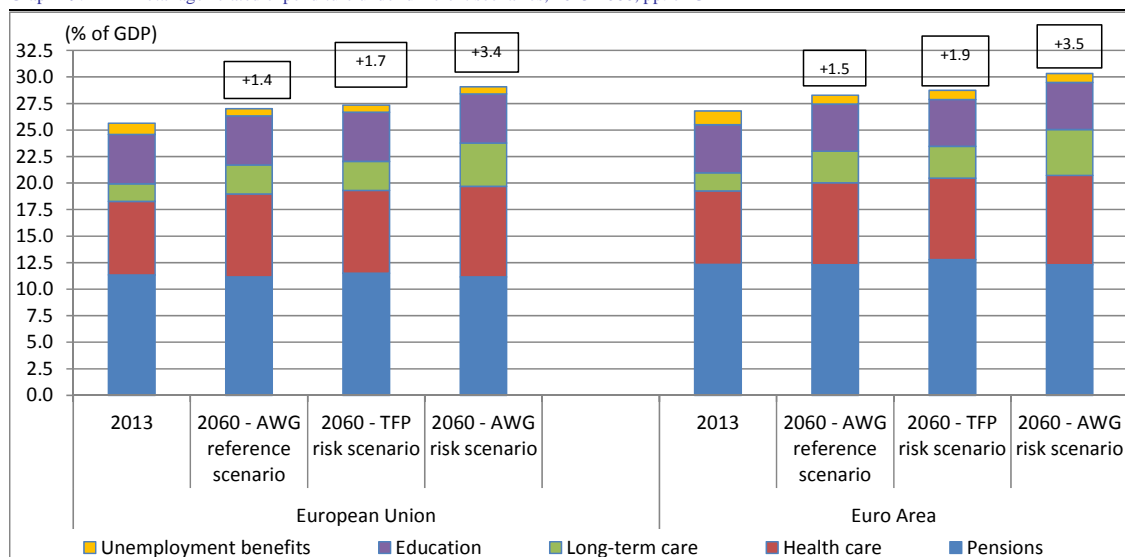
### Risk scenarios

As noted above, there is considerable uncertainty as to future developments of age-related public expenditure. In order to provide a comprehensive assessment of the impact on government expenditure of changing the assumptions, the budgetary projections were also run with alternative scenarios, e.g. the risk scenarios. Two risk scenarios were therefore carried out, defined as follows:

- **TFP risk scenario:** In light of the trend decline in TFP growth performance over the last decades in the EU, due visibility and prominence should also be given to the risk of lower TFP growth in the future. Thus, a TFP risk scenario is included, with a lower TFP growth rate (0.8%).

**AWG risk scenario:** Non-demographic drivers may exercise an upward push on costs in the health care and long-term care areas. In order to gain further insights into the possible importance of such developments, another set of projections were run which assumes the partial continuation of recently observed trends in health care expenditure due to, e.g. technological progress. Moreover, an upward convergence of coverage and costs to the EU average is assumed to take place in long-term care.

Graph 19: Total age-related expenditure under different scenarios, 2013-2060, pp. of GDP



Source: Commission services, EPC.

The TFP risk scenario primarily affects pension expenditure, projected to rise by ½ pp. of GDP more on average (EU and EA) up to 2060 compared with the baseline scenario. This is because pensions in payments are on average projected to rise in line with inflation, i.e. slower than wages (which evolve in line with labour productivity growth, which in turn depends on TFP growth). By contrast, it only has a small impact on health care and long-term care, as unit costs in these areas are closely linked to labour productivity growth and hence

with wage growth. The projected increase in total age-related expenditure would be about 1/3 pp. of GDP higher than the baseline scenario up to 2060 in the EU and EA (see Graph 19 and Table A.2).

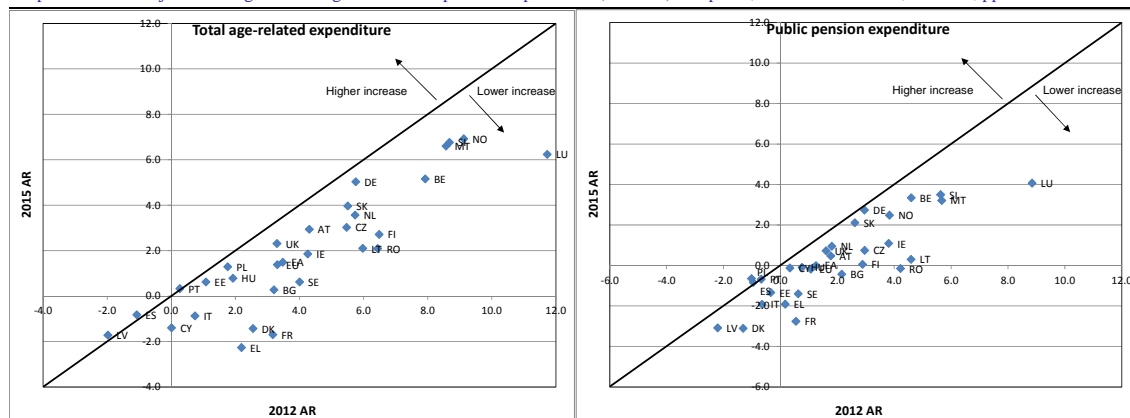
The AWG risk scenario has strong impact on health care and long-term care expenditure. The projected increase in total age-related expenditure would be 2.1 pp. of GDP higher than the baseline scenario up to 2060 for both the EU as a whole and the EA. It would entail an increase over the entire projection horizon of 3.4 pp. in the EU and of 3.5 pp. in the EA. However, in both risk scenarios, the EU aggregates mask considerable variety and the expenditure projections are very different across Member States (see Graph 19).

### A lower projected increase in age-related spending in the current projections than in the 2012 Ageing Report

Compared with the projections in the 2012 Ageing Report<sup>(20)</sup>, total age-related public expenditure according to the baseline scenario is now projected to rise less in all countries except Spain, Latvia and Portugal over the entire projection horizon. This is mostly due to less pronounced increases in pension expenditure over the long-term (see Graph 20). This reflects not only the impact of pension reforms, but also a less pronounced population ageing effect in the EU, according to the EUROPOP2013 demographic projection.<sup>(21)</sup>

Over the period 2013-2060, the increase in the EU is 1 ½ pp. of GDP and in the EU and EA, compared with a projected increase of 3 ½ pp. of GDP in the 2012 Ageing Report (see Graph 20). The largest downward revisions have occurred in Luxembourg, France, Greece, Romania, Denmark, Lithuania and Finland (more than 3 ½ pp. of GDP).

Graph 20: Projected change in total age-related and pension expenditure (baseline) compared, 2012 and 2015 AR, 2013-60, pp. of GDP



Source: Commission services, EPC.

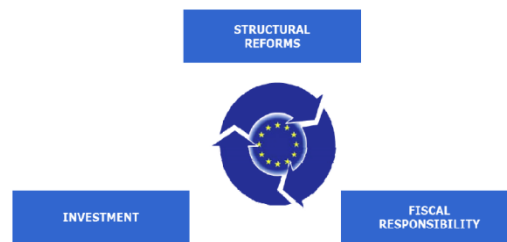
### Policy challenges going forward

- Europeans living longer than ever before, and hopefully in good health, is an enormous achievement for societies – a great gift to mankind - and should not be seen as a threat
- The EU is facing a retirement challenge and not an ageing challenge, stemming from European social models of yesterday not being apt for tomorrow, affecting expectations and behaviour of the population
- On pension policy, reforms carried out suggest that sustainable pension systems are within reach for many Member States, although many still have a long way to go
- The focus increasingly turns to aligning public perception of retirement incomes and its composition in the future with what the reformed systems will deliver, so as to ensure lasting success of implemented reforms and to provide opportunities for people to adjust and shape their lives as pensioners

<sup>(20)</sup> Pension reforms implemented and having been subject to a peer review by the EPC since the 2012 Ageing Report was published are included in the 2012 AR projections in Graph 20.

<sup>(21)</sup> A lower increase in the old age dependency ratio (aged 65 or more/aged 20-64) over the period 2013-2060 in the EU as a whole and in all countries except EL, PT, SK, UK projected in EUROPOP2013 compared with EUROPOP2010.

- A key challenge will be to extend working lives, giving a double dividend: (i) higher living standards; and, (ii) progress towards sustainable public finances
- Moreover, the transformation of the European social models – not restricted to pension policy - need to be intensified to support jobs and growth
- For the EU to emerge stronger from the crisis, a credible and coordinated strategy for structural reforms supporting durable growth is necessary so as to restore confidence in the public finances
- The Commission responds this challenge. The Commission recommends three mutually reinforcing main pillars for the EU's economic and social policies in 2015 and beyond: i) structural reforms; ii) investment; iii) financial responsibility



- In the words of European Commission Vice-president Valdis Dombrovskis when launching the 2015 Annual Growth Survey<sup>(22)</sup> in November 2014:

*“The European Union is facing a risk of prolonged low economic growth, which would aggravate the already serious social problems in parts of the Union. This is why today we propose a strategic policy mix based on investment, structural reforms and fiscal responsibility. By acting together now, we can make sure that the conditions for sound and sustainable growth in the future are met and that our citizens have more opportunities for employment.”*

<sup>(22)</sup> See [http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index\\_en.htm](http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index_en.htm)

## ANNEX

Table A.1: Overview of the 2015 long-term budgetary projections – Baseline scenario

		Age-related spending, percentage points of GDP, 2013-2060																																			
		Ageing Report 2015 - AWG reference scenario												Total age related items																							
		Pensions						Health-care						Long-term care						Education						Strictly age-related items						Unemployment benefits					
		2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60												
BE	11.8	3.4	3.3	6.0	0.1	0.1	2.1	0.9	1.6	1.6	5.8	0.2	0.3	0.3	25.7	4.6	5.3	1.8	-0.2	-0.2	27.5	4.4	5.2														
BG	9.9	-1.5	-0.4	4.0	0.4	0.4	0.4	0.1	0.2	0.2	3.0	-0.1	0.4	0.4	17.3	-1.0	0.5	0.5	-0.2	-0.2	17.8	-1.3	0.3														
CZ	9.0	0.0	0.7	5.7	0.7	1.0	0.7	0.4	0.7	0.7	3.4	0.3	0.7	0.7	18.9	1.4	3.1	0.2	0.0	0.0	19.1	1.4	3.0														
DK	10.3	-2.3	-3.1	8.1	0.8	0.9	2.4	1.4	2.0	2.0	7.6	-0.4	-0.7	-0.7	28.4	-0.9	-0.9	1.4	-0.5	-0.5	29.8	-1.0	-1.4														
DE	10.0	2.2	2.7	7.6	0.7	0.6	1.4	0.9	1.5	1.5	4.1	0.1	0.3	0.3	23.1	3.9	5.1	0.8	0.0	0.0	23.9	3.9	5.0														
EE	7.6	-0.7	-1.3	4.4	0.6	0.6	0.6	0.4	0.7	0.4	4.4	0.1	0.8	0.8	17.0	0.3	0.6	0.2	0.0	0.0	17.1	0.3	0.6														
IE	7.4	2.7	1.1	6.0	1.3	1.2	0.7	0.4	0.7	0.4	6.0	-0.7	0.0	0.0	20.0	3.6	3.0	2.1	-1.1	-1.1	22.1	2.5	1.9														
EL	16.2	-2.1	-1.9	6.6	0.9	1.3	0.5	0.2	0.4	0.4	4.1	-1.4	-1.1	-1.1	27.4	-2.4	-1.4	1.2	-0.9	-0.9	28.5	-3.3	-2.3														
ES	11.8	0.1	-0.8	5.9	1.1	1.1	1.0	0.6	1.4	1.4	4.6	-1.4	-0.8	-0.8	23.2	0.4	0.8	2.2	-1.7	-1.7	25.4	-1.2	-0.8														
FR	14.9	-1.1	-2.8	7.7	0.9	0.9	2.0	0.6	0.8	0.8	5.0	-0.1	-0.2	-0.2	29.6	0.3	-1.3	1.5	-0.4	-0.4	31.1	-0.2	-1.7														
HR	10.8	-3.0	-3.9	5.7	1.6	1.7	0.4	0.0	0.1	0.1	3.7	-0.5	-0.4	-0.4	20.7	-1.9	-2.5	0.5	-0.3	-0.3	21.2	-2.2	-2.8														
IT	15.7	0.1	-1.9	6.1	0.6	0.7	1.8	0.4	0.9	0.7	3.7	0.0	-0.2	-0.2	27.3	0.8	-0.5	0.9	-0.3	-0.3	28.2	0.4	-0.9														
CY	9.5	-0.1	-0.1	3.0	0.3	0.3	0.3	0.2	0.2	0.2	7.3	-1.9	-1.2	-1.2	20.0	-1.5	-0.8	0.8	-0.6	-0.6	20.9	-2.1	-1.4														
LV	7.7	-2.3	-3.1	3.8	0.6	0.6	0.6	0.1	0.1	0.1	3.8	0.0	0.8	0.8	15.9	-1.5	-1.6	0.3	-0.2	-0.2	16.2	-1.7	-1.7														
LT	7.2	2.2	0.3	4.2	0.5	0.1	1.4	0.8	0.9	0.9	3.9	0.3	0.9	0.9	16.7	3.8	2.2	0.2	0.2	-0.1	16.9	3.7	2.1														
LU	9.4	3.3	4.1	4.6	0.2	0.5	1.5	0.7	1.7	1.7	3.3	0.1	0.2	0.2	18.8	4.3	6.4	0.7	-0.2	-0.2	19.5	4.1	6.2														
HU	11.5	-1.9	-0.1	4.7	0.6	0.8	0.8	0.2	0.4	0.4	3.6	-0.5	-0.2	-0.2	20.5	-1.6	0.9	0.3	-0.1	-0.1	20.8	-1.7	0.8														
MT	9.6	0.2	3.2	5.7	1.8	2.1	1.1	0.9	1.2	1.2	5.9	-0.4	0.1	0.1	22.2	2.5	6.6	0.3	0.0	0.0	22.6	2.5	6.6														
NL	6.9	1.5	0.9	7.2	1.0	1.0	4.1	1.7	3.0	3.0	5.2	-0.4	-0.5	-0.5	23.4	3.8	4.4	2.0	-0.8	-0.8	25.4	3.0	3.6														
AT	13.9	0.8	0.5	6.9	1.0	1.3	1.4	0.6	1.3	1.3	4.9	-0.1	0.0	0.0	27.1	2.4	3.1	0.8	-0.2	-0.2	27.9	2.2	2.9														
PL	11.3	-1.4	-0.7	4.2	0.8	1.2	0.8	0.5	0.9	0.9	4.4	-0.6	-0.1	-0.1	20.7	-0.6	1.3	0.2	-0.1	-0.1	20.9	-0.7	1.3														
PT	13.8	1.0	-0.7	6.0	1.7	2.5	0.5	0.2	0.4	0.4	5.2	-1.2	-1.0	-1.0	25.5	1.8	1.3	1.5	-0.9	-0.9	27.0	0.8	0.3														
RO	8.2	0.2	-0.1	3.8	0.8	1.0	0.7	0.5	0.9	0.9	2.6	0.2	0.4	0.4	15.3	1.7	2.1	0.1	0.0	0.0	15.5	1.7	2.1														
SI	11.8	2.6	3.5	5.7	1.1	1.2	1.4	1.0	1.5	1.5	5.3	0.1	0.8	0.8	24.2	4.7	7.0	0.6	-0.2	-0.2	24.7	4.5	6.8														
SK	8.1	0.0	2.1	5.7	1.4	2.0	0.2	0.2	0.4	0.4	3.4	-0.6	-0.4	-0.4	17.4	1.0	4.1	0.2	-0.1	-0.1	17.7	0.9	4.0														
FI	12.9	0.7	0.1	7.8	0.7	0.7	2.4	1.8	2.1	2.1	6.1	0.2	0.3	0.3	29.2	3.4	3.2	1.9	-0.4	-0.4	31.2	3.0	2.7														
SE	8.9	-1.4	-1.4	6.9	0.4	0.4	3.6	1.0	1.5	1.5	5.7	0.2	0.2	0.2	25.1	0.2	0.7	0.4	-0.1	-0.1	25.5	0.0	0.6														
UK	7.7	0.8	0.7	7.8	1.0	1.3	1.2	0.3	0.4	0.4	5.1	0.0	0.0	0.0	21.8	2.0	2.4	0.3	-0.1	-0.1	22.1	1.9	2.3														
NO	9.9	1.5	2.5	7.5	0.6	0.9	5.8	2.0	3.6	3.6	6.0	0.0	-0.1	-0.1	29.2	4.1	6.9	0.4	0.0	0.0	29.6	4.1	6.9														
EU	11.3	0.4	-0.2	6.9	0.8	0.9	1.8	0.7	1.1	1.1	4.7	-0.2	0.0	0.0	24.6	1.6	1.8	1.1	-0.4	-0.4	25.6	1.2	1.4														
EA	12.3	0.8	0.0	7.0	0.8	0.8	1.7	0.7	1.3	1.3	4.5	-0.3	-0.1	-0.1	25.5	2.0	1.9	1.3	-0.5	-0.5	26.8	1.6	1.5														

(1) SK: the figures in this table do not include public expenditure on armed forces pension. They represented 0.4% of GDP in 2013, and are projected to remain roughly stable until 2060.

(2) The health care and long-term care EU averages are weighted according to GDP. The level of health care and long-term care expenditures in 2013 is the first year of projected expenditures based on the latest available data. Health care expenditure excludes long-term nursing care.

Source: Commission services, EPC.

Table A22: Overview of the 2015 long-term budgetary projections – TFP risk scenario

		Age-related spending, percentage points of GDP, 2013-2060																			
		Pensions				Health-care		Long-term care		Education		Strictly age-related items		Unemployment benefits		Total age related items					
		2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60	2013 level	CH 2013-40	CH 2013-60		
BE	11.8	3.9	4.3	6.0	0.1	0.1	2.1	0.9	1.6	0.3	0.3	25.7	5.1	6.3	1.8	-0.2	-0.2	27.5	4.9	6.1	
BG	9.9	-1.3	-0.1	4.0	0.4	0.3	0.4	0.1	0.2	0.4	0.4	17.3	-0.9	0.8	0.5	-0.2	-0.2	17.8	-1.1	0.5	
CZ	9.0	0.2	1.1	5.7	0.7	0.9	0.7	0.4	0.7	3.4	0.3	18.9	1.6	3.4	0.2	0.0	0.0	19.1	1.6	3.4	
DK	10.3	-2.3	-3.1	8.1	0.8	0.8	2.4	1.4	2.0	7.6	-0.4	-0.7	23.1	4.0	-1.0	1.4	-0.5	-0.5	28.8	-1.0	-1.5
DE	10.0	2.3	2.8	7.6	0.7	0.5	2.1	0.9	1.5	4.1	0.1	0.3	28.4	4.0	5.1	0.8	0.0	0.0	29.3	3.9	5.0
EE	7.6	-0.7	-1.2	4.4	0.6	0.6	0.6	0.4	0.7	4.4	0.1	0.8	17.0	0.4	0.7	0.2	0.0	0.0	17.1	0.3	0.7
IE	7.4	2.8	1.2	6.0	1.3	1.2	0.7	0.4	0.7	6.0	-0.7	0.0	20.0	3.7	3.1	2.1	-1.1	-1.1	22.1	2.6	2.0
EL	16.2	-1.6	-1.0	6.6	0.9	1.2	0.5	0.2	0.4	4.1	-1.4	-1.1	27.4	-1.9	-0.4	1.2	-0.9	-0.9	28.5	-2.8	-1.4
ES	11.8	0.4	-0.7	5.9	1.1	1.0	1.0	0.6	1.4	4.6	-1.4	-0.8	23.2	0.7	1.0	2.2	-1.7	-1.7	25.4	-1.0	-0.7
FR	14.9	-0.6	-1.9	7.7	0.9	0.8	2.0	0.6	0.8	5.0	-0.1	-0.2	29.6	0.7	-0.5	1.5	-0.4	-0.4	31.1	0.3	-0.9
HR	10.8	-2.9	-3.7	5.7	1.6	1.7	0.4	0.0	0.1	3.7	-0.5	-0.4	20.7	-1.8	-2.3	0.5	-0.3	-0.3	21.2	-2.1	-2.6
IT	15.7	0.7	-1.2	6.1	0.6	0.6	1.8	0.4	0.9	3.7	-0.3	-0.2	27.3	1.3	0.1	0.9	-0.3	-0.3	28.2	1.0	-0.2
CY	9.5	0.1	0.2	3.0	0.2	0.3	0.3	0.2	0.2	7.3	-1.9	-1.2	20.0	-1.4	-0.6	0.8	-0.6	-0.6	20.9	-1.9	-1.1
LV	7.7	-2.2	-2.9	3.8	0.6	0.6	0.6	0.1	0.1	3.8	0.0	0.8	15.9	-1.5	-1.4	0.3	-0.2	-0.2	16.2	-1.6	-1.6
LT	7.2	2.2	0.3	4.2	0.5	0.1	1.4	0.8	0.9	3.9	0.3	0.9	16.7	3.8	2.2	0.2	-0.1	-0.1	16.9	3.7	2.1
LU	9.4	3.6	5.2	4.6	0.2	0.5	1.5	0.7	1.7	3.3	0.1	0.2	18.8	4.7	7.5	0.7	-0.2	-0.2	19.5	4.4	7.3
HU	11.5	-1.7	0.3	4.7	0.6	0.8	0.8	0.2	0.4	3.6	-0.5	-0.2	20.5	-1.4	1.3	0.3	-0.1	-0.1	20.8	-1.5	1.2
MT	9.6	0.4	3.6	5.7	1.8	2.1	1.1	0.9	1.2	5.9	-0.4	0.1	22.2	2.7	6.9	0.3	0.0	0.0	22.6	2.7	6.9
NL	6.9	1.4	1.0	7.2	1.0	0.9	4.1	1.7	3.0	5.2	-0.4	-0.5	23.4	3.7	4.4	2.0	-0.8	-0.8	25.4	2.9	3.6
AT	13.9	1.0	1.1	6.9	1.0	1.3	1.4	0.6	1.3	4.9	-0.1	0.0	27.1	2.6	3.7	0.8	-0.2	-0.2	27.9	2.4	3.6
PL	11.3	-1.2	-0.2	4.2	0.8	1.2	0.8	0.5	0.9	4.4	-0.6	-0.1	20.7	-0.5	1.8	0.2	-0.1	-0.1	20.9	-0.5	1.7
PT	13.8	1.5	0.5	6.0	1.7	2.5	0.5	0.2	0.4	5.2	-1.2	-1.0	25.5	2.2	2.4	1.5	-0.9	-0.9	27.0	1.3	1.5
RO	8.2	0.5	0.3	3.8	0.8	0.9	0.7	0.5	0.9	2.6	0.2	0.4	15.3	1.9	2.5	0.1	0.0	0.0	15.5	1.9	2.5
SI	11.8	2.7	3.8	5.7	1.1	1.2	1.4	1.0	1.5	5.3	0.1	0.8	24.2	4.9	7.2	0.6	-0.2	-0.2	24.7	4.7	7.0
SK	8.1	0.1	2.5	5.7	1.4	2.0	0.2	0.2	0.4	3.4	-0.6	-0.4	17.4	1.1	4.5	0.2	-0.1	-0.1	17.7	1.0	4.3
FI	12.8	1.1	0.6	7.8	0.7	0.7	2.4	1.8	2.1	6.1	0.2	0.3	29.2	3.8	3.7	1.9	-0.4	-0.4	31.1	3.3	3.3
SE	8.9	-1.3	-1.4	6.9	0.3	0.4	3.6	1.0	1.5	5.7	0.2	0.2	25.1	0.2	0.8	0.4	-0.1	-0.1	25.5	0.1	0.6
UK	7.7	0.8	0.7	7.8	1.0	1.2	1.2	0.3	0.4	5.1	0.0	0.0	21.8	1.9	2.3	0.3	-0.1	-0.1	22.1	1.9	2.3
NO	9.9	1.5	2.5	7.5	0.6	0.9	5.8	2.0	3.6	6.0	0.0	-0.1	29.2	4.0	6.9	0.4	0.0	0.0	29.6	4.1	6.9
EU	11.3	0.6	0.2	6.9	0.8	0.8	1.6	0.7	1.1	4.7	-0.2	0.0	24.6	1.8	2.1	1.1	-0.4	-0.4	25.6	1.4	1.7
EA	12.3	1.1	0.5	7.0	0.8	0.7	1.7	0.7	1.3	4.5	-0.3	-0.1	25.5	2.3	2.4	1.3	-0.5	-0.4	26.8	1.8	1.9

(1) SK: the figures in this table do not include public expenditure on armed forces pension. They represented 0.4% of GDP in 2013, and are projected to remain roughly stable until 2060.

(2) The health care and long-term care EU averages are weighted according to GDP. The level of health care and long-term care expenditures in 2013 is the first year of projected expenditures based on the latest available data. Health care expenditure excludes long-term nursing care.

Source: Commission services, EPC.