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From: General Secretariat of the Council
To: Permanent Representatives Committee (Part 2) / Council (ECOFIN)
Subject: The 2015 Ageing Report: Economic and budgetary projections for the
EU 28 Member States (2013-2060)

Delegations will find attached the third part of the 2015 Ageing Report: Economic and budgetary projections for the EU 28 Member States (2013-2060).

3. LONG TERM CARE

3.1. INTRODUCTION

Projections for public expenditure on long-term care (LTC) from 2013 to 2060 were run using Commission services' (DG ECFIN) models on the basis of the methodology and data agreed with the Member States delegates to the AWG-EPC. ⁽¹⁰⁵⁾

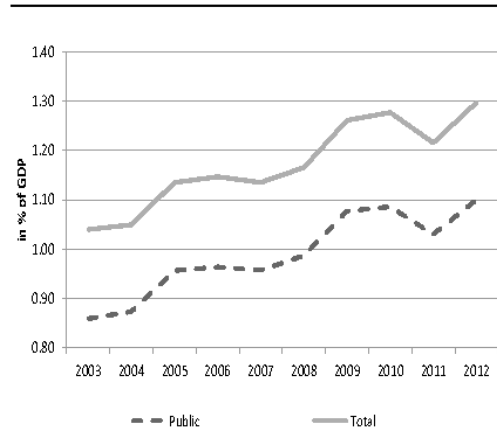
LTC represents a non-negligible and growing share of GDP and of public and total, i.e. including private, health spending (Graphs II.3.1 and II.3.2). As such, public expenditure on LTC is an important item for the long-term sustainability of public finances

living (ADL). Basic Activities of Daily Living (ADL) or personal care services are frequently provided in combination with help with basic medical services such as nursing care, prevention, rehabilitation or services of palliative care. Instrumental Activities of Daily Living (IADL) or assistance care services are mostly linked to home help (Colombo et al., 2011).

Member States finance formal LTC services "in-kind", i.e. by paying for care provided for eligible care recipients, or via "cash benefits". Cash benefits can be used to pay for LTC services, often provided by informal carers, such as family members.

Often the same recipient may receive both in-kind and cash benefits. Graph II.3.3 shows the overlap of different benefits in the provision of care in the EU by the type of care provided, i.e. institutional care, home care or cash benefits, which leads to coverage rates of above 100% in some age-categories (See also Graph II.3.7). This complicates the estimation of the number of care recipients and the expenditure level due to potential double-counting of recipients and expenditure. These factors are thoroughly taken into account in this projection exercise. Annex 4 describes the data used and ways to deal with data limitations.

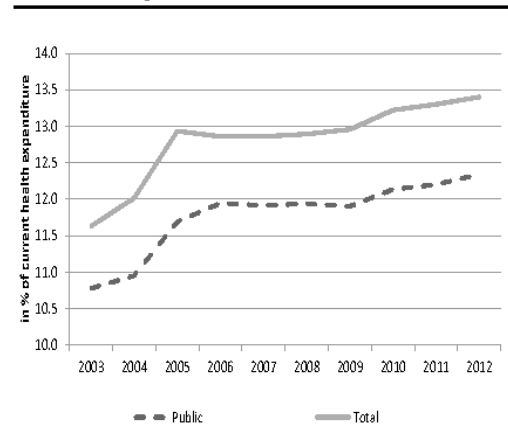
Graph II.3.1: Total and public long-term care expenditure in the EU, as % GDP



(1) Expenditure based only on the medical care component (HC.3) of system of health accounts data
 Source: European Commission, EPC.

Long-term care is by uniform definition of international institutions (OECD, Eurostat, WHO) defined as a range of services required by persons with reduced degree of functional capacity (physical or cognitive) and who are consequently dependent for an extended period of time on help with basic and/or instrumental activities of daily

Graph II.3.2: Total (public) expenditure on long-term care in the EU, as a share of total (public) current health expenditure

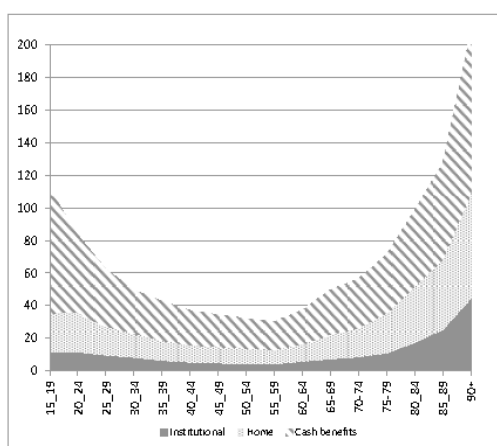


(1) Expenditure based only on the medical care component (HC.3) of system of health accounts data
 Source: European Commission, EPC.

⁽¹⁰⁵⁾Data and methodology are briefly recapulated in the Annexes to the Chapter. The detailed methodology for running the long-term expenditure projections is explained in detail in the Joint Report prepared by the European Commission (DG ECFIN) and the Economic Policy Committee (AWG): "The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies", European Economy. No 8/2014. Brussels: http://ec.europa.eu/economy_finance/publications/european_economy/2014/ee8_en.htm

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.

Graph II.3.3: Age-related coverage of dependent population by type of care provided in the EU, as % of population.



(1) Coverage estimated as ratio between recipients and potentially dependent population. Recipient data, as provided by Member States. Population of potentially dependent based on EU-SILC data on "self-perceived longstanding limitation in activities because of health problems [for at least the last 6 months]" is used.

Source: European Commission, EPC.

The increasing need for care will have to be addressed, for instance through changing working arrangements in the formal care sector, but also arrangements for a better work/life balance to make the provision of informal care easier, including a better (public) support to informal carers, the development of respite care,⁽¹⁰⁶⁾ and investments in ICT solutions. In the short to medium term, these ultimately mean more public expenditure as well. Public expenditure on LTC thus depends on a number of factors affecting the demand and supply of LTC services. The main factors include the socio-demographic developments, the health status of the

⁽¹⁰⁶⁾Respite care is the provision of short-term accommodation in a facility outside the home for a dependent person. This is temporary relief family carers, who as an alternative might require permanent placement of the dependent person in a facility outside the home.

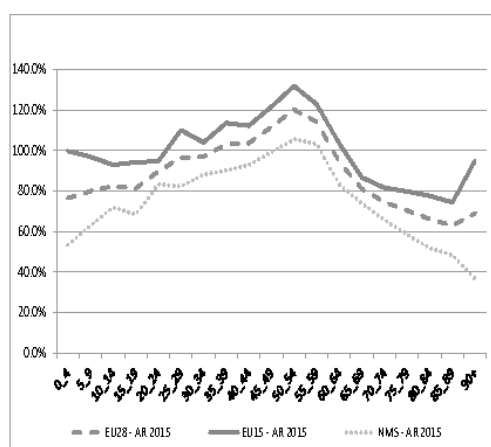
population, the patterns of LTC provision (organisation and financing of the system and thus essentially the extent to which Member States rely on formal, paid care and on informal care) and human resource availability, be it for formal or informal care supply. Economic growth also plays a role, as can the development and use of new technologies and medical progress.

3.2. DETERMINANTS OF LONG-TERM CARE EXPENDITURE

3.2.1. Demographic structure of the population

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+).

Graph II.3.4: Institutional care: Expenditure per recipient of long-term care services in institutional care, as % of GDP per capita



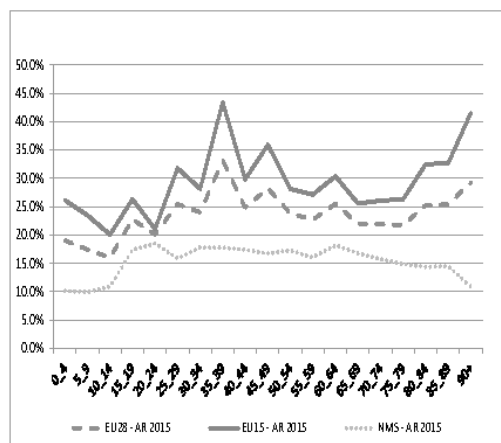
(1) EU15: Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden and United Kingdom. NMS = New Member States: Bulgaria, Czech Republic, Estonia, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia.

Source: European Commission, EPC.

The age-related expenditure profiles used in the 2015 Ageing Report show that expenditure (spending per user as % of GDP per capita) is

rather flat for LTC recipients, which signals that the LTC costs related to severe disability are relatively independent of age. See graphs II.3.4, II.3.5 and II.3.6 for specific profiles related to institutional care, home care and cash benefits.

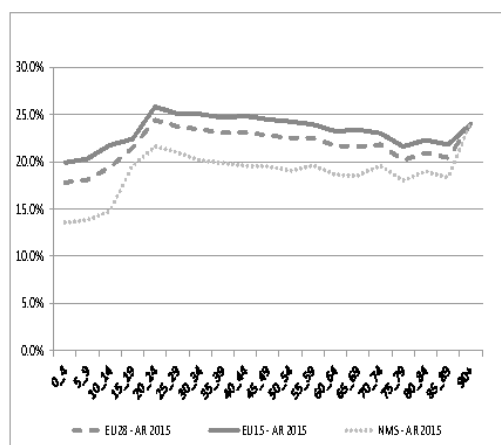
Graph II.3.5: Home care: Expenditure per recipient of long-term care services in home care, as % of GDP per capita



Source: European Commission, EPC.

Thus, contrary to health care, where higher spending is related to increasing age-cost profiles, increases in LTC spending are more related to the growing number of dependent people as driven by population ageing.

Graph II.3.6: Cash benefits: Expenditure per recipient of long-term care cash benefits care, as % of GDP per capita



Source: European Commission, EPC.

As described in Part I, 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. The increase in the total age-dependency ratio (people aged 14 and below and aged 65 and above over the population aged 15-64) is projected to be even larger, rising from 51.4% to 76.6%. Thus, one can reasonably expect an increase in the need and demand for LTC (both formal and informal) in the years and decades to come. However, the rise in the number of the old and very old people varies between countries and is by no means the only factor. The need for LTC is not arising from ageing itself; it is a consequence of sickness or frailty,⁽¹⁰⁷⁾ causing dependency on others.

3.2.2. Dependency levels - developments in health status

As in health care, increased longevity (i.e. increased life expectancy) can contribute to an increase of future LTC spending. The increase in life expectancy may translate in an increase in the number of people and years during which the need for LTC increases and thus costs accumulate. This is the case when longevity is not accompanied by a corresponding improvement in the "quality" of life. As in health care, it is not necessarily age per se but the prevalence levels of dependency determining LTC expenditure.

Dependency is not disability, which refers to some functional impairment of an individual. Dependency is rather disability translated into the inability to perform daily personal care tasks (called activities of daily living –ADLs)⁽¹⁰⁸⁾ and instrumental activities of daily living (IADLs)⁽¹⁰⁹⁾ and therefore requiring some external assistance. Therefore, one could illustrate the causality on the demand side as such that disability translates into dependency establishing the need and consequently the demand for LTC.

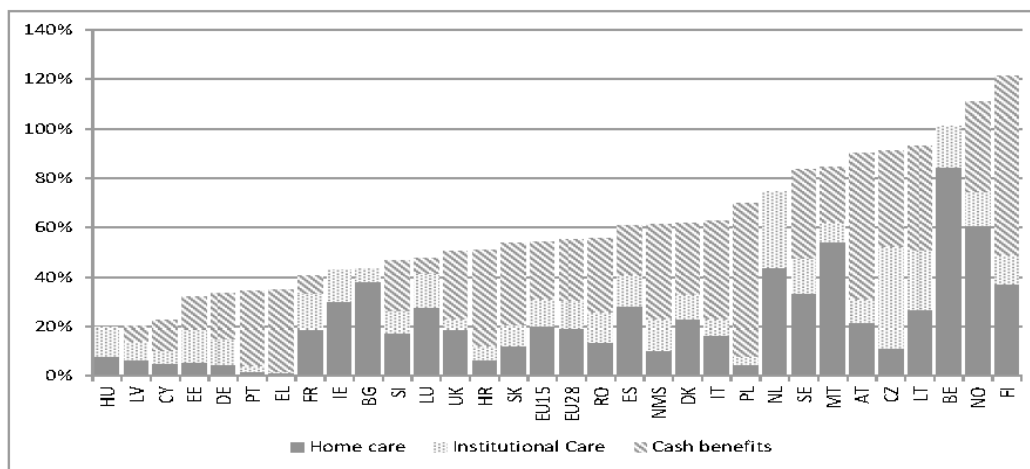
⁽¹⁰⁷⁾For a discussion of the term frailty, see Clegg, Andrew et al. (2013), Frailty in elderly people, The Lancet, Volume 381, Issue 9868, 752 – 762.

⁽¹⁰⁸⁾ADL are: eating, bathing, washing, dressing, getting in and out of bed, getting to and from the toilet and continence management

⁽¹⁰⁹⁾IADL are: shopping, laundry, vacuuming, cooking and performing housework, managing finances, using the telephone, etc.

The links between dependency levels and demand/use of LTC are not straightforward. There are many people with some form of disability who can lead completely independent lives without the need for care services. Further, disability also depends on a person's perception of his or her ability to perform activities associated with daily living. On the one hand, survey data can underestimate some forms of disability. People may not report certain socially stigmatised conditions, such as alcohol and drug related conditions, schizophrenia, and mental degeneration. On the other hand, disability data can be too inclusive and measure minor difficulties in functioning that do not require the provision of community care.

Graph II.3.7: Country-specific coverage rates of long-term care recipients, as % of dependent population



(1) Median coverage rates between 2009-2013 in the EU and Norway. Coverage estimated as ratio between recipients and potentially dependent population; Recipient data, as provided by Member States; Coverage may be above 100%, as some recipients may receive cash benefits and in-kind benefits at the same time, which is not corrected for in this graph. Population of potentially dependent based on EU-SILC data on "self-perceived longstanding limitation in activities because of health problems [for at least the last 6 months]" is used.

Source: European Commission, EPC

In order to clarify the relation and to follow the usual eligibility conditions of public schemes, it is commonly accepted that the relevant disability levels are those categorized as "severe". To calculate dependency rates the EU-SILC data on "self-perceived longstanding limitation in activities because of health problems [for at least the last 6 months]" is used. This is considered an adequate measure of dependency, available for all EU Member States and Norway, for people aged 15+ and by age group. ⁽¹⁰⁾

The key question for the purpose of making LTC projections is of course whether, as life expectancy increases, dependency levels will increase, remain constant or decrease. Recent empirical research has not come to a clear conclusion regarding this question. Some evidence suggests that specific causes of disability may become more prominent with increasing age. These disabilities can have a direct impact on the frailty of longer-living older people. In particular, the number of people with a dementia (Alzheimer's disease) is expected to

⁽¹⁰⁾As this data is based on subjective assessment of care needs. The comparability of cross-country data is more limited, then would be the case for objective measures of care needs, which are, however, not available on a comparable basis for all EU countries.

increase. ⁽¹¹⁾ On the other hand, certain studies have noted that as life expectancy increases, the incidence of severe disability is postponed, leading to a reduction in the prevalence of severe disability for some age-groups.

3.2.3. Patterns of long-term care provision

The extent to which a country relies on formal care and the extent to which this is provided in institutions or at home are important determinants of public expenditure on LTC. There is also an increasing interest for the "opportunity costs" derived from informal care: the impact on labour market and productivity, as well as on carers' health status itself.

LTC is delivered informally by families and friends – mainly spouses and children – and formally by care assistants who are paid under some form of employment contract. To be considered informal, the provision of care cannot be paid as if purchasing a service, even though an informal care giver may receive income transfers and, possibly, some payments from the person receiving care. Formal care is given at home or in

⁽¹¹⁾According to OECD (2013), the economic and social impact of chronic brain disorders such as Alzheimer's disease will become the number one public-health problem worldwide, directly affecting 100 million people by 2050.

an institution (such as care centres and nursing homes). Cash benefits are payments which can be used to purchase formal care at home or in an institution or which can be paid to informal caregivers as income support.

All EU Member States are involved in either the public provision and/or financing of LTC services, although the degree of involvement differs across countries. Some Member States rely heavily on the informal provision of LTC and their expenditure on formal care is small. Other Member States provide extensive public services to the elderly and devote a significant share of GDP to LTC. Pressure for increased public provision and financing of LTC services may grow substantially in coming decades, especially in Member States where the bulk of LTC is currently provided informally.

3.2.4. Care supply – availability of human resources

In the 2015 Ageing Report, similar to the report published in 2012, it is assumed that all those receiving home care or institutional care are dependent and that all persons deemed dependent receive either home care or institutional care or informal care. However, one should be aware that the provision of LTC is not as clear cut, be it for formal or for informal care. Further, the substitution effects between formal and informal care are not as straightforward.

The provision of LTC is a demanding task for carers. Often, care is associated with low recognition and salaries, leading to high staff turnover. In some countries, staff shortages in the sector are already high. In the future, there will be fewer people of working age and a decline in the size of low-skilled workforce (which may be relevant for some home-care services), potentially increasing staff shortages. This situation combined with higher pressure on the formal provision of LTC may increase wages in the sector. As the cost of LTC is dominated by labour costs, changes in wage rates of LTC workers are likely to influence future costs of LTC.

Migrants make up an increasing proportion of formal-care workers in Member States with more extensive LTC service provision. Staff shortages have encouraged these countries to develop

policies to attract migrants. Differences in pay and working conditions among Member States influence the inflow of mainly female migrant workers. However, the extent to which migrants may compensate for staff shortages is unclear, while they may generate staff shortages elsewhere.

For those depending on long-term care who do not receive (publicly financed) formal care (in kind or in cash), it is assumed that they receive informal care or privately funded care. Most informal care is provided by partners, children and children-in-law (intergenerational care), and sometimes by friends and other relatives. The provision of care increases with age, to reach a peak in the age cohorts 45-60. Two dimensions are to be taken into account: the future availability of potential informal carers and their propensity to provide care.

- *Availability of potential informal caregivers:* Key variables affecting the future availability of potential informal carers are the future numbers of elderly who will have children (around, i.e. co-residence or geographical proximity), and the future numbers of people who will be living with their spouse. The FELICIE⁽¹²⁾ projections show an increase in the availability of informal caregivers. Indeed, the 85 years-old and more, both males and females, are expected to live more frequently with a partner in 2030 than in 2000.
- *Propensity to provide care:* The propensity to provide care will be affected by the participation in the labour market, as well as the ability/willingness to provide care, which is likely to decrease as spouses, children and relatives themselves become older and frailer.

One can foresee a shift from informal care towards formal care-giving as typical caregivers get more involved in the labour market and the new family structures may imply less support to the older generations. Note that caring is not without consequences to the carer in case of intensive caring: there may be a negative impact on the

⁽¹²⁾FELICIE: or "Future of Elderly Living Conditions in Europe" The goal of this project was to forecast the living arrangements of people aged 75+ in the next thirty years (2000-2030), with the aim to estimate their needs, through an evaluation of the future demand for nursing homes and for informal and formal care.

carer's health status, reducing their ability to care and to participate in the labour market. ⁽¹¹³⁾

The current institutional arrangements for the provision and financing of LTC by the public sector may be under strong pressure in the future, if the availability of informal carers and their propensity to provide care diminish.

The impact is nevertheless uncertain and depends on whether informal and home care are complements or substitutes. ⁽¹¹⁴⁾ In case of complementarity, a decreasing supply of informal carers will reduce the availability of home care, increasing the demand for residential care. This is because a lack of primary carers will force dependents to move to institutional care. If informal care is a substitute for formal home care, a shortage of informal carers could lead to an increase in demand for formal care in both home and institutional care.

According to Bonsang (2009), 2004 SHARE data confirm that informal care decreases low-skilled home care use (paid domestic help), while it is a complement to high-skilled home care (nursing/personal care). Further, the substitution effect is shown to vanish for elderly suffering from heavy disability.

3.2.5. Accounting for country specific policies

Fiscal-structural policy reforms may change the projected path of LTC expenditure through a variety of channels. While some of the reforms may have a fiscal impact in the short term already, such as wage freezes of care personnel or budget caps, others may have a long-term impact, such as changing treatment guidelines or eligibility criteria to receive LTC benefits.

The impact of these reforms on future LTC expenditure is explicitly modelled in this projection exercise and discussed further in section 3.4.1.

In addition, institutional specificities in Germany and France are an important determinant for

⁽¹¹³⁾ See Colombo (2010).

⁽¹¹⁴⁾ See for instance Van Houtven & Norton (2004) for a review on the topic, and Bonsang (2009).

projecting LTC expenditure. Their implementation in the projections is described also in section 3.4.2.

3.3. OVERVIEW OF THE PROJECTION METHODOLOGY

3.3.1. The model

The macro-simulation model captures the effect of demographic and non-demographic variables on future public expenditure on long-term care. The model includes many of the described drivers of care, based on data availability considerations. ⁽¹¹⁵⁾

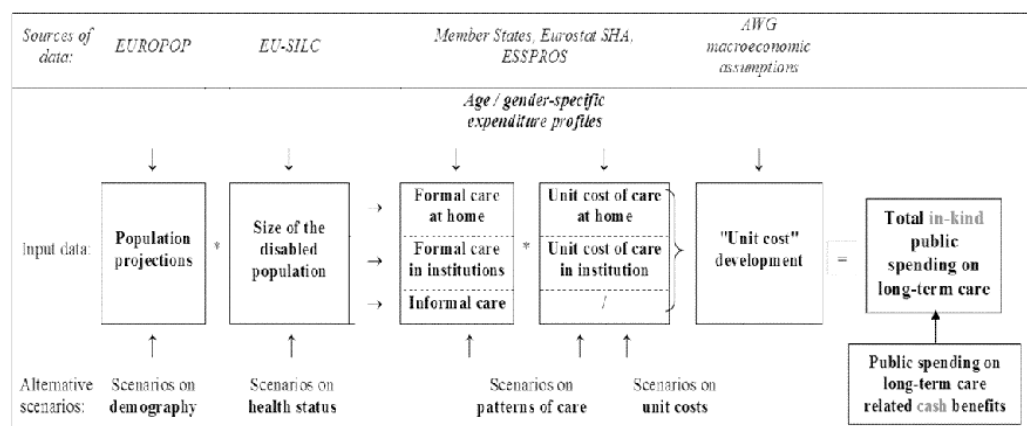
The methodology proposes sensitivity analysis for key assumptions based on a series of scenarios estimating changes in:

- the future relative numbers of elderly people, reflecting changes in the population projections;
- the future numbers of dependent elderly people, by applying changes to the prevalence rates of dependency;
- the balance between formal and informal care provision;
- the balance between home care and institutional care within the formal care system; and
- the unit costs of care.

These macro-simulation models assume that the whole population is divided into groups which are assigned certain characteristics (e.g. age, gender, per capita expenditure, health status, type of care/support...). Changes in the (relative) size or features of these groups lead to expenditure changes overtime. A schematic presentation of the methodology can be found in Graph II.3.8. A more detailed description can be retrieved in Annex V.

⁽¹¹⁵⁾ The methodology for running the long-term expenditure projections is explained in detail in the Joint Report prepared by the European Commission (DG ECFIN) and the Economic Policy Committee (AWG): "The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies", European Economy. 8. November 2014. Brussels:
http://ec.europa.eu/economy_finance/publications/european_economy/2014/ee8_en.htm

Graph II.3.8: Schematic presentation of the projection methodology



(1) The projections need to be viewed in the context of the overall projection exercise. Consequently, the common elements of all scenarios are the population projections provided by Eurostat (EUROPOP2013) and the baseline assumptions on labour force and macroeconomic variables agreed by the EC (DG ECFIN) and the AWG-EPC. The age and gender-specific per user public expenditure (on long-term care) profiles are provided by Member States, or proxied by the EU-average. They are applied to the demographic projections provided by Eurostat to calculate nominal spending on long-term care. As to cash benefits, they are assumed to grow in line with GDP per capita; their actual unit cost is seldom available, and therefore could not be used in this projection exercise. Further, the necessary age and sex distribution of cash recipients has not been provided by a number of member states.

Source: Commission services, EPC.

In past exercises, it has been decided that the base-case long-term budgetary projections should illustrate the policy-neutral situation. This is the situation where changes in government policy are not considered.⁽¹¹⁶⁾ In other words, any potential future institutional or legal changes to the financing and organisation of long-term care systems are not reflected in the methodology used for projecting expenditure, except when specifically and clearly stated.

Pressure for increased public provision and financing of long-term care services may grow substantially in coming decades, especially in Member States where the bulk of long-term care is currently provided informally. Therefore, additional "policy scenarios" have been prepared to illustrate the impact of possible future policy changes on that matter, such as Member States deciding to provide more formal care services to the elderly.

3.3.2. Scenarios

One advantage of the methodology described above is that it allows for the examination of different scenarios regarding the evolution of dependency rates, unit costs and policy settings. Consequently, a series of scenarios and sensitivity tests assess the potential impact of each of the determinants of long-term care expenditure on future public expenditure on long-term care. Building on the 2012 EPC-EC projections exercise,⁽¹¹⁷⁾ the present exercise maintains most of the existing scenarios and sensitivity tests while attempting to improve the specification of some of the scenarios, and runs one new scenario. Annex 5 shows an overview table with all baseline characteristics of the respective scenarios.

The analysis tries to identify the impact of each quantifiable determinant separately, on the basis of hypothetical assumptions like an estimated guess or a "what if" situation. Therefore, the results of

⁽¹¹⁶⁾ It is implicitly assumed that the eligibility requirements do not change, as the proportion of persons covered is kept constant. Therefore, the supply of LTC will follow any related changes in demand.

⁽¹¹⁷⁾ See Economic Policy Committee and European Commission (EPC/EC) (2012), The 2012 Ageing Report: economic and budgetary projections for the EU-27 Member States (2010-2060), European Economy, No. 2/2012, Directorate General Economic and Financial Affairs, European Commission 2012. Available at: http://ec.europa.eu/economy_finance/publications/european_economy/2012/2012-ageing-report_en.htm

the projections should not be interpreted as forecast of expenditure as for example particular policy/institutional settings in Member States are not taken into account.

Demographic scenario

The "*demographic scenario*" assumes that the shares of the older disabled population who receive either informal care, formal care at home or institutional care are kept constant over the projection period. Those constant shares are then applied to the projected changes in the dependent population. Thus, the dependent population evolves precisely in line with the total elderly population and all gains in life expectancy are spent in bad health/with disability.

In Annex 4 the so-called "age-gender expenditure profiles", i.e. the relationship between the age of an average individual and his/her demand for long-term care, are shown. The graph plots each age-gender specific average public spending on LTC per user (and not per capita as in the case of health care) as a share of GDP per capita in the NMS and EU-15, as used in this report.

Base case scenario

The "*base case scenario*" links long-term care unit cost to GDP per worker, rather than to GDP per capita. LTC is highly labour-intensive and productivity gains can be expected to be particularly slow in this sector. Given the current deficit of formal care provision and its highly labour-intensive character, public expenditure on LTC can be expected to be rather more supply driven than demand-driven.

Similar to the 2012 exercise, the projections will link unit cost to GDP per hours worked for in-kind benefits (services), while unit cost of cash benefits will evolve in line with GDP per capita growth (as cash benefits are more related to a form of income support).

High life expectancy scenario

The "*high life expectancy scenario*" presents the budgetary effects of an alternative demographic scenario which assumes life expectancy to be higher for all ages than in the reference scenario.

The rationale is twofold. First, the marked increase in public expenditure with older age (i.e. 80 and more). In fact, the age profile for long-term care expenditure is much steeper than that for health expenditure, partly because the costs related to long-term care are very high for institutionalised individuals, and the share of institutionalised individuals increases sharply among persons aged over 80. Second, the higher age groups are also the part of the demographic projections which are likely to be the most uncertain.

Constant disability scenario

This scenario reflects an alternative assumption about trends in age-specific ADL-dependency rates. Being inspired by the so-called "*dynamic equilibrium hypothesis*", it is analogous to the "*constant health scenario*" performed in the framework of health care expenditure projections. The profile of age-specific disability rates shifts in line with changes in life expectancy (disability rate in the future is equal to that of a younger - by the same number of years as the change in age-specific life expectancy - age cohort today), resulting in a gradual decrease over time in disability prevalence for each age cohort.

Shift to formal care scenario

Ultimately, the public funding of LTC – and the policy orientation – will determine whether future needs for long-term care translate into (direct) public expenditure or not, as neither informal care provision nor private expenditure on long-term care are formally part of public expenditure on long-term care.

Pressure for increased public provision and financing of LTC services may grow substantially in coming decades, especially in Member States where the bulk of long-term care is currently provided informally.

This policy-change scenario is run to assess the impact of a given – demand-driven – increase in the (public) provision of formal care replacing care provided in informal setting. In particular, this sensitivity test examines the budgetary impact of a progressive shift into the formal sector of care of 1% per year of disabled elderly who have so far received only informal care. This extra shift takes place during the first ten years of the projection

period only, thus it sums up to about 10.5% shift from informal to formal care.

The shift from informal to formal care is considered to be in line with the current shares of home care and institutional care in total formal care. In other words, if currently 10% of the dependents receiving care, receive care at home, the shift/increase will also go for 10% to home care (and 90% to institutional care).

Coverage convergence scenario

This scenario assumes that the exchange of best practices and growing expectations of the populations will drive an expansion of publicly financed formal care provision into the groups of population that have not been covered by the public programmes so far. Note that "formal coverage" covers any of the three types of formal long-term care: institutional care, formal home care, and cash benefits. The remaining number of "dependent" people is assumed to receive informal care.

This scenario should also be considered as a policy-change scenario, as it assumes a considerable shift in the current long-term care provision policy, while aiming to take into account the high diversity of country-specific current care-mix.

It assumes a coverage convergence to the EU28 average by 2060. More specifically, the Member States where the formal coverage rate – i.e. referring to any of the three types of formal care described above – is below the EU28 average in the starting year are assumed to converge to this average by 2060.

Cost convergence scenario

For those Member States with high levels of informal care, and therefore relatively low costs for LTC, an increase in public expectations for more formal care (and therefore an increase in the average cost of long-term care) might be expected. For example, an increase in the costs of care (as percent of GDP per capita) towards the average for EU Member States could perhaps be expected.

The "*cost convergence scenario*" is meant to capture the possible effect of a convergence in real

living standards on long-term care spending. It assumes an upward convergence of the relative age-gender specific per beneficiary expenditure profiles (as percent of GDP per capita) of all countries below the corresponding EU28 average to the EU28 average. This is done for each type of formal care coverage (i.e. formal care in institutions, formal care at home, cash benefits).

Cost and coverage convergence scenario

This scenario combines the coverage convergence scenario and the cost convergence scenario, as described in the sections above.

The new "cost and coverage convergence scenario" proposes a balanced and plausible distribution of risks stemming from future needs to converge both costs and coverage matching future LTC needs. From the perspective of country-specific needs in these convergence processes, it is evident that countries are affected highly unequally by these convergence processes.

AWG reference scenario

The "AWG reference scenario" combines the assumptions of the "demographic" and the "constant disability" scenarios. This scenario is used in the multilateral budgetary surveillance at EU level. It is based on the assumptions of the reference scenario for LTC expenditure projections of the 2009 Ageing Report. Specifically, it is assumed that half of the projected gains in life expectancy are spent without disability (i.e. demanding care), taking thus an intermediate position between the "demographic" and "constant disability" scenario assumptions.

AWG risk scenario

The "AWG risk scenario" keeps the assumption that half of the future gains in life expectancy are spent with no care-demanding disability, as in the "AWG reference scenario". In addition, it combines it with the "cost and coverage convergence scenario" by assuming convergence upwards of unit costs to the EU-average as well as coverage convergence upwards to the EU-average.

In comparison to the "AWG reference scenario", this scenario thus captures the impact of additional cost drivers to demography and health status, i.e.

the possible effect of a convergence in coverage and in real living standards on LTC spending.

Total factor productivity risk scenario

Moreover, as compared to the previous 2012 *Ageing Report*, a new productivity risk scenario has been applied assuming lower Total Factor Productivity (TFP) growth (cf. volume 1 of the 2015 *Ageing Report* for more details on this alternative scenario). In the AWG reference scenario country-specific TFP growth rates converge to 1%, whereas in this TFP scenario, growth rates would converge to 0.8%.

3.4. PROJECTION RESULTS

3.4.1. Country specific policy reforms

In the past years, many countries have undertaken policy reforms in LTC, e.g.:

- In the Netherlands, with the implementation of the Social Support Act and the Youth Act, responsibilities for long-term care are partly transferred to municipalities and health insurance companies. The aim of the decentralisation is to achieve efficiency gains and to provide tailor-made support. The number of people receiving intramural care is reduced, and some new clients will receive care at home. At the same time the municipal budget for household/family support will decrease substantially, as greater reliance on informal care is expected. Overall, budgetary savings of 3.8bn over the period 2015-2018 are expected.
- Cyprus has increased the potential for a higher LTC coverage, as additional LTC benefits both for care recipients and their family members be provided on legal grounds. In addition, Cyprus is planning to increase the devolution of responsibilities to the Regions and Communities with regard to social policies, as well as strengthened in recent years the availability of home care services and other forms of community based care services.

It becomes clear that the fiscal impact of some of those reforms is not easy to estimate. However, as

far as budgeted changes in long-term care spending are concerned, many countries have estimated potential budgetary effects on LTC spending triggered by legislated LTC reforms.

Table II.3.1: Long-term care reforms with direct budget impact taken into account in the projections

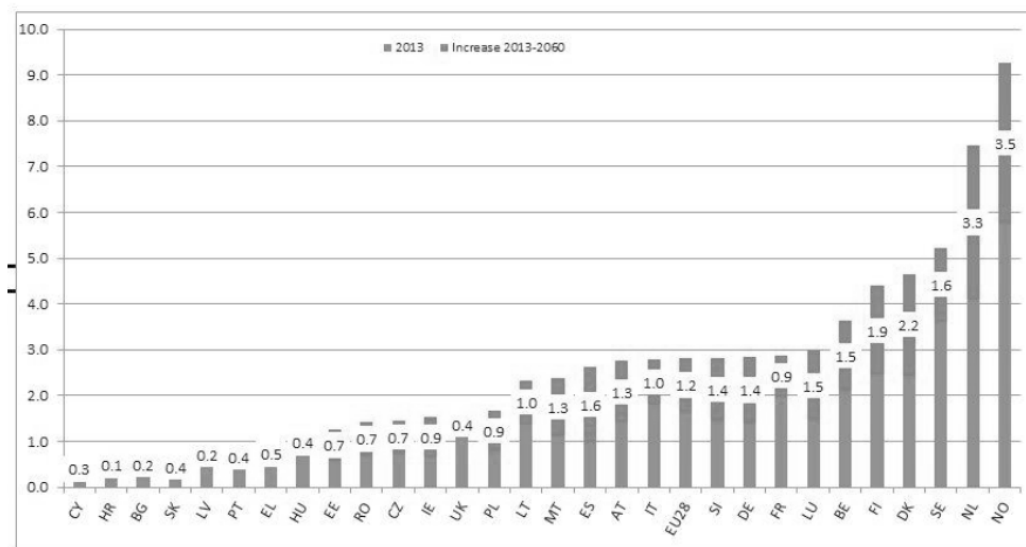
Country	Policy reform
Belgium	Growth ceiling on long-term care expenditure
Cyprus	Extension of long-term care coverage
Czech Republic	Abolition of "user fees" for day of stay in long-term care medical facilities
Estonia	Wage adjustments
Italy	Wage freeze in public sector
Netherlands	Budgeted decrease in long-term care expenditure
Poland	Increase in income thresholds below which citizens are covered
Portugal	Freeze of the amount of daily payments and increase of coverage related to institutional care
Slovakia	Increase of direct state participation in the provision of long-term care
Slovenia	Reduction in wages of employees in the general government sector

Source: European Commission, EPC.

Table II.3.1 shows that 10 countries provided information regarding the budgetary effects of policy reforms. In all cases, the impact of reforms was modelled as a percentage change of long-term care expenditure relative to the base year of projections, differentiated for the areas of institutional care, home care and cash benefits where applicable and upon agreement with the respective Member States.

As an example, the effect of the policy reform in the Netherlands is depicted in Graph II.3.10. The budgetary savings result in a downward shift of expenditure starting throughout 2015 to 2018. The effects of the measure are prolonged after 2018 and are expected to have an increasing effect as a result of the ageing population. At the end of the projection period, savings equivalent to 1.3 pp. of GDP are expected to materialize.

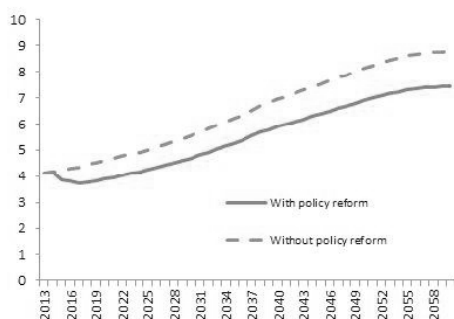
Graph II.3.9: Demographic scenario, current and projected levels of public expenditure on LTC as % of GDP; 2013-2060



(1) Public expenditure on LTC is defined as long-term nursing care category (HC.3) and social care category (HC.R.6.1) based on the methodology of the system of health accounts and including additional cash-benefits for disability based on ESPROSS data. The level of expenditures in 2013 is the first year of projected expenditure based on latest available data. The aggregate of long-term care expenditure utilized for projections is based on OECD SHA/health data definition based on ESA 95, while GDP and other expenditure items have been revised according to ESA 2010. A revision of long-term expenditure data based on ESA 2010 may change the reported level of expenditure.

Source: European Commission, EPC.

Graph II.3.10: Impact of LTC reform in the Netherlands on projected levels of LTC spending, in % of GDP



Source: European Commission, EPC.

3.4.2. Accounting for institutional specificities

As described in the health care chapter in section 2.6.1, Germany's specific set-up of insurance combining social health insurance with private health insurance implies a reduced burden of ageing within the SHI scheme in future. As for

health care projections, this is taken into account in the same way for estimating LTC projections. ⁽¹¹⁸⁾

An additional effect is related to German and French legislations on the ceiling of LTC expenditure. In the projection, unit costs are indexed to GDP per hours worked or GDP per capita. Under current rules in Germany, all long-term care benefits are indexed to prices. ⁽¹¹⁹⁾ The difference between the amounts financed by the State and the costs of long term care are either recovered by private insurance or are paid by the beneficiaries themselves. To account for this legislation, an alternative projection has been run where unit costs of long-term care benefits remain constant in real terms. This would mean that the amounts financed by the State are adjusted in line with prices. The same partly holds true for France, where one part of the long-term care benefits is also indexed to prices. For people over 60 years

⁽¹¹⁸⁾ Reducing the number of SHI insurees in working age also implies that SHI income from insurance contributions will decrease,

⁽¹¹⁹⁾ Similarly to Germany, part of long-term care benefits are indexed to prices in France, which is relevant for budgetary surveillance purposes.

old, the benefits are calculated according to the needs up to a ceiling which is indexed to prices; while for people under 60, the indexation is decided each year by the ministry in charge of the disability matters.

Assuming constant unit costs in real terms, the long-term care public expenditure in Germany is projected to increase not by more than 0.1 pp. of GDP, with a spending level of around 1.5% of GDP at the end of the projection period, as compared to a spending level of 3.0% of GDP when assuming unit costs evolve in line with GDP per hours worked ("base case scenario") (Table II.3.2). For France also, taking into account price indexation would lead to a smaller increase of the LTC expenditure up to 2060. For budgetary surveillance purposes, the evolution of LTC expenditure reflecting current legislation in both countries is relevant. The German government is required by law to check every three years the need and extent of adjusting LTC benefits according to inflation.

levels. For the EU, public expenditure on LTC is projected to increase by 1.2 pp. of GDP i.e. from 1.6% in 2013 to 2.8 % of GDP in 2060. This is equivalent to an increase of expenditure by 71%. The projected increase ranges from 0.1 pp. of GDP in Croatia to 3.3 pp. in the Netherlands, and 3.5 pp. in Norway.

Table II.3.2: Indexation of LTC spending to prices in Germany

	2013	2060	Change 2013-2060	
			pp.	In %
Base case scenario - Unit costs evolve in line with GDP per hours worked	1.4	3.0	1.6	117%
Unit costs constant in real terms	1.4	1.5	0.1	7%

Source: European Commission.

3.4.1. Changes in demography and health status

Results of four no policy change scenarios are presented and discussed here. These basically capture varying assumptions the isolated effects of ageing, health status and the labour intensity of LTC on expenditure.

The "demographic scenario" aims to isolate the size effect of an ageing population on public expenditure on LTC; for all types of LTC services, expenditure per user grows in line with GDP per capita.

Graph II.3.9 shows the projected increase in public expenditure in this scenario from 2013 to 2060, while Table II.3.3 shows projected expenditure

Table II.3.3: Demographic scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	3.6	1.5	71%
BG	0.4	0.6	0.2	48%
CZ	0.7	1.5	0.7	94%
DK	2.4	4.7	2.2	90%
DE	1.4	2.8	1.4	103%
EE	0.6	1.3	0.7	122%
IE	0.7	1.5	0.9	129%
EL	0.5	1.0	0.5	100%
ES	1.0	2.6	1.6	166%
FR	2.0	2.9	0.9	46%
HR	0.4	0.5	0.1	26%
IT	1.8	2.8	1.0	56%
CY	0.3	0.5	0.3	110%
LV	0.6	0.8	0.2	30%
LT	1.4	2.3	1.0	70%
LU	1.5	3.0	1.5	103%
HU	0.8	1.2	0.4	57%
MT	1.1	2.4	1.3	113%
NL	4.1	7.5	3.3	82%
AT	1.4	2.7	1.3	94%
PL	0.8	1.7	0.9	107%
PT	0.5	0.9	0.4	88%
RO	0.7	1.4	0.7	103%
SI	1.4	2.8	1.4	96%
SK	0.2	0.6	0.4	171%
FI	2.4	4.4	1.9	79%
SE	3.6	5.2	1.6	44%
UK	1.2	1.6	0.4	34%
NO	5.8	9.3	3.5	60%
EA	1.7	3.0	1.3	78%
EU	1.6	2.8	1.2	71%
EU15	1.7	2.9	1.2	71%
NMS	0.7	1.4	0.7	94%

(1) Projections are on based expenditure for medical and social long-term care services, as approximated through the data sources described in Annex 4. Due to agreements taken with the Member States delegates in the AWG-EPC, definition of LTC expenditure may deviate from expenditure levels as reported in other publications. Specifically, cash benefits include period economic integration of handicapped from ESSPROS disability function, and are projected with age specific probability. Expenditure on this item amounts to 0.2% of GDP for France, 0.4% of GDP for Germany, Greece and Slovenia and 1.6% of GDP for Norway. The level of expenditures in 2013 is the first year of projected expenditure based on latest available data. The number of disabled persons in Germany is increasing and will continue for about the next ten years. In this projection the number of disabled persons is assumed to increase with the age specific LTC need probabilities, which is not relevant for this group, since (older) disabled persons are covered by the LTC system and not by the integration of handicapped anymore.

Source: Commission services, EPC.

The "base case scenario" focuses in addition on the highly labour-intensive characteristic of the long-term care services by letting in-kind LTC benefits profile grow in line with GDP per hours worked.

This is the common assumption to all scenarios – except in the "demographic" scenario.

Table II.3.4: Base case scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	3.9	1.8	83%
BG	0.4	0.6	0.2	58%
CZ	0.7	1.5	0.8	101%
DK	2.4	4.7	2.2	92%
DE	1.4	3.0	1.6	117%
EE	0.6	1.3	0.7	130%
IE	0.7	1.5	0.8	124%
EL	0.5	1.0	0.5	98%
ES	1.0	2.6	1.6	159%
FR	2.0	2.9	0.9	47%
HR	0.4	0.5	0.1	28%
IT	1.8	2.8	1.0	58%
CY	0.3	0.5	0.3	109%
LV	0.6	0.8	0.2	34%
LT	1.4	2.4	1.0	75%
LU	1.5	3.3	1.9	128%
HU	0.8	1.3	0.5	70%
MT	1.1	2.4	1.3	116%
NL	4.1	7.7	3.5	86%
AT	1.4	2.8	1.4	101%
PL	0.8	1.8	1.0	127%
PT	0.5	0.9	0.4	98%
RO	0.7	1.7	1.0	143%
SI	1.4	3.0	1.6	112%
SK	0.2	0.7	0.5	205%
FI	2.4	4.8	2.3	96%
SE	3.6	5.5	1.8	51%
UK	1.2	1.6	0.4	37%
NO	5.8	10.0	4.2	72%
EA	1.7	3.1	1.4	84%
EU	1.6	2.9	1.3	76%
EU15	1.7	3.0	1.3	75%
NMS	0.7	1.5	0.8	111%

Source: Commission services, EPC.

Table II.3.4 presents the projected expenditure for the base case scenario. When LTC in-kind costs evolve in line with labour productivity, public expenditure is projected to increase on average by 1.3 pp. of GDP. This is a bit higher than in the demographic scenario.

Table II.3.5: High life expectancy scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	4.1	2.0	94%
BG	0.4	0.6	0.2	54%
CZ	0.7	1.6	0.8	113%
DK	2.4	5.2	2.8	114%
DE	1.4	3.2	1.8	127%
EE	0.6	1.4	0.8	150%
IE	0.7	1.7	1.0	153%
EL	0.5	1.0	0.5	106%
ES	1.1	3.3	2.2	209%
FR	2.0	3.1	1.1	57%
HR	0.4	0.6	0.1	29%
IT	1.8	3.0	1.2	69%
CY	0.3	0.6	0.3	129%
LV	0.6	0.9	0.2	37%
LT	1.4	2.6	1.2	87%
LU	1.5	3.4	1.9	130%
HU	0.8	1.3	0.5	70%
MT	1.1	2.6	1.5	135%
NL	4.1	8.5	4.4	107%
AT	1.4	3.1	1.7	118%
PL	0.8	1.8	1.0	123%
PT	0.5	0.9	0.4	97%
RO	0.7	1.5	0.8	119%
SI	1.4	3.1	1.7	117%
SK	0.2	0.7	0.4	190%
FI	2.4	4.9	2.5	102%
SE	3.6	5.7	2.1	57%
UK	1.2	1.6	0.5	40%
NO	5.8	10.1	4.3	74%
EA	1.7	3.4	1.7	99%
EU	1.6	3.1	1.5	89%
EU15	1.7	3.3	1.5	89%
NMS	0.7	1.5	0.8	109%

Source: Commission services, EPC.

This is due to the fact that for most countries the growth in GDP per hours worked is higher than the growth in GDP per capita for most or all of the projection period. The smallest expenditure increases are observed for Bulgaria and Latvia (+0.2 pp.) and the largest projected increases are observed for the Netherlands (+3.5 pp.) and Norway (+4.2 pp.).

Table II.3.6: Constant disability scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	3.5	1.4	66%
BG	0.4	0.5	0.1	28%
CZ	0.7	1.3	0.6	76%
DK	2.4	4.3	1.9	77%
DE	1.4	2.7	1.3	96%
EE	0.6	1.2	0.6	103%
IE	0.7	1.3	0.7	101%
EL	0.5	0.9	0.4	80%
ES	1.0	2.3	1.3	135%
FR	2.0	2.7	0.7	36%
HR	0.4	0.4	0.0	4%
IT	1.8	2.5	0.8	42%
CY	0.3	0.5	0.2	86%
LV	0.6	0.7	0.1	12%
LT	1.4	2.1	0.8	55%
LU	1.5	3.0	1.5	106%
HU	0.8	1.0	0.3	39%
MT	1.1	2.2	1.0	93%
NL	4.1	6.7	2.5	62%
AT	1.4	2.6	1.2	82%
PL	0.8	1.6	0.8	96%
PT	0.5	0.8	0.3	76%
RO	0.7	1.4	0.7	107%
SI	1.4	2.8	1.4	94%
SK	0.2	0.6	0.4	158%
FI	2.4	4.4	1.9	78%
SE	3.6	4.9	1.3	36%
UK	1.2	1.4	0.3	24%
NO	5.8	9.0	3.2	55%
EA	1.7	2.8	1.1	66%
EU	1.6	2.6	1.0	59%
EU15	1.7	2.7	1.0	59%
NMS	0.7	1.3	0.6	82%

Source: Commission services, EPC.

The "high life expectancy scenario" assumes that life expectancy in 2060 is higher by two years than in the "demographic scenario".

Table II.3.5 presents the projected expenditure for this scenario. As the assumed two extra years of increase in life expectancy (at birth) would imply an increased period of time within which care needs to be provided, public expenditure would increase by 0.2 p.p. above the "base case scenario". As expected, countries with a rather high coverage display the largest increases, such as Denmark and Spain.

The "constant disability scenario" aims to capture the potential impact of assumed improvements in

the health (or non-disability) status of the population.

The results presented in Table II.3.6 shows that an improved disability status would lead to a considerably lower expenditure in future. Public expenditure would increase by 1.0 pp. for the EU or 0.3 pp. below the base case scenario. This lower increase is due to the fact that lower dependency rates translate in lower demand for LTC services.

Compared to the assumption of no change in health status in the high life expectancy scenario, the countries that see the highest decrease in this scenario (in pp. of GDP) are Denmark, the Netherlands and Norway. This may be expected as these are the countries with some of the highest spending levels on LTC and where a decrease in dependency may therefore make a more visible difference.

3.4.2. Changes in cost and coverage

Results of four policy-change scenarios are presented and discussed here. These capture basically varying assumptions of changing costs and coverage of LTC.

The "shift to formal care scenario" illustrates the impact of a 10-year progressive shift into the formal service sector of 1% per year of dependent population who have so far received only cash benefits or informal care. LTC is projected to increase by 1.9 pp. of GDP from 2013 up until 2060 (Table II.3.7), compared to the 1.3 pp. of GDP under the "base case" scenario.

Interestingly, even countries where expenditure level and coverage rate are already relatively high (such as Denmark or Finland) show a projected increase that is much higher than in the "base case" scenario. This is because as long as coverage of the dependent population is less than 100% in any age-group, the scenario assumes an additional increase in coverage of the dependent population in the respective age groups.

Table II.3.7: Shift from informal to formal care scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	4.1	2.0	95%
BG	0.4	0.8	0.4	94%
CZ	0.7	1.6	0.8	112%
DK	2.4	5.5	3.0	124%
DE	1.4	4.1	2.7	190%
EE	0.6	1.5	0.9	165%
IE	0.7	1.7	1.1	159%
EL	0.5	1.3	0.8	168%
ES	1.0	2.8	1.8	186%
FR	2.0	3.6	1.6	80%
HR	0.4	1.0	0.5	125%
IT	1.8	3.4	1.6	90%
CY	0.3	0.7	0.4	172%
LV	0.6	1.4	0.8	122%
LT	1.4	2.6	1.3	92%
LU	1.5	3.8	2.3	158%
HU	0.8	1.9	1.2	153%
MT	1.1	2.7	1.6	142%
NL	4.1	8.4	4.3	104%
AT	1.4	3.1	1.7	119%
PL	0.8	2.9	2.1	264%
PT	0.5	3.0	2.5	545%
RO	0.7	2.2	1.5	219%
SI	1.4	3.6	2.1	149%
SK	0.2	0.9	0.7	306%
FI	2.4	5.3	2.9	118%
SE	3.6	6.6	3.0	82%
UK	1.2	2.2	1.0	87%
NO	5.8	10.6	4.9	84%
EA	1.7	3.8	2.1	122%
EU	1.6	3.6	1.9	117%
EU15	1.7	3.7	2.0	114%
NMS	0.7	2.2	1.4	197%

Source: Commission services, EPC.

The "coverage convergence scenario" assumes an extension of the formal/public coverage in any form (institutional, home care or cash benefits) towards the average EU rate.

Table II.3.8: Coverage convergence scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	3.9	1.8	84%
BG	0.4	1.9	1.5	367%
CZ	0.7	1.5	0.8	101%
DK	2.4	4.7	2.3	92%
DE	1.4	4.0	2.6	186%
EE	0.6	1.5	0.9	163%
IE	0.7	2.4	1.7	258%
EL	0.5	1.0	0.5	112%
ES	1.0	3.1	2.1	218%
FR	2.0	4.8	2.9	146%
HR	0.4	0.8	0.4	92%
IT	1.8	3.1	1.3	72%
CY	0.3	0.8	0.5	213%
LV	0.6	3.1	2.4	391%
LT	1.4	2.4	1.0	75%
LU	1.5	5.0	3.6	243%
HU	0.8	3.5	2.7	358%
MT	1.1	3.2	2.0	183%
NL	4.1	7.8	3.6	89%
AT	1.4	2.8	1.4	101%
PL	0.8	1.8	1.0	128%
PT	0.5	1.5	1.1	232%
RO	0.7	1.7	1.0	148%
SI	1.4	3.4	1.9	135%
SK	0.2	0.7	0.5	208%
FI	2.4	4.8	2.3	96%
SE	3.6	7.4	3.8	105%
UK	1.2	1.8	0.6	53%
NO	5.8	10.0	4.2	72%
EA	1.7	4.0	2.3	134%
EU	1.6	3.6	2.0	121%
EU15	1.7	3.8	2.1	120%
NMS	0.7	1.9	1.1	157%

Source: Commission services, EPC.

Table II.3.8 shows the projection results under the coverage convergence scenario. For the EU, public expenditure on LTC is projected to increase by 2.0 pp. of GDP over the whole projection period, 0.7 pp. of GDP higher than the "base case scenario".

Table II.3.9: Cost convergence scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	4.9	2.8	131%
BG	0.4	0.9	0.5	128%
CZ	0.7	6.4	5.7	758%
DK	2.4	5.3	2.8	116%
DE	1.4	3.6	2.2	154%
EE	0.6	3.3	2.7	475%
IE	0.7	2.0	1.3	198%
EL	0.5	1.2	0.8	158%
ES	1.0	3.3	2.3	235%
FR	2.0	2.9	1.0	48%
HR	0.4	1.3	0.9	213%
IT	1.8	2.8	1.1	59%
CY	0.3	1.2	0.9	355%
LV	0.6	1.0	0.4	57%
LT	1.4	5.2	3.8	277%
LU	1.5	3.3	1.9	129%
HU	0.8	2.2	1.4	188%
MT	1.1	2.9	1.8	161%
NL	4.1	8.1	4.0	97%
AT	1.4	4.4	3.0	214%
PL	0.8	2.9	2.1	259%
PT	0.5	2.1	1.6	356%
RO	0.7	4.2	3.5	503%
SI	1.4	3.9	2.5	173%
SK	0.2	5.0	4.7	2051%
FI	2.4	6.1	3.6	149%
SE	3.6	6.0	2.4	66%
UK	1.2	2.2	1.0	90%
NO	5.8	10.2	4.4	76%
EA	1.7	3.6	1.9	111%
EU	1.6	3.5	1.9	113%
EU15	1.7	3.5	1.8	103%
NMS	0.7	3.5	2.8	384%

Source: Commission services, EPC.

As in the "shift to formal scenario", this higher but expected increase vis-à-vis the "base case" scenario is the result of an increased coverage of dependents individuals, especially in countries where the coverage of the dependent population is low compared to the EU average.

Table II.3.10: Cost and coverage convergence scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	4.9	2.8	133%
BG	0.4	3.1	2.7	672%
CZ	0.7	6.4	5.7	758%
DK	2.4	5.3	2.9	117%
DE	1.4	4.8	3.4	241%
EE	0.6	4.0	3.4	603%
IE	0.7	3.2	2.5	376%
EL	0.5	1.3	0.9	179%
ES	1.0	4.1	3.1	316%
FR	2.0	4.9	2.9	149%
HR	0.4	1.7	1.3	302%
IT	1.8	3.1	1.3	73%
CY	0.3	2.1	1.9	740%
LV	0.6	3.6	3.0	479%
LT	1.4	5.2	3.8	277%
LU	1.5	5.1	3.6	245%
HU	0.8	5.5	4.7	626%
MT	1.1	3.9	2.8	248%
NL	4.1	8.2	4.1	99%
AT	1.4	4.5	3.0	214%
PL	0.8	2.9	2.1	260%
PT	0.5	2.7	2.3	493%
RO	0.7	4.3	3.6	512%
SI	1.4	4.3	2.9	202%
SK	0.2	5.0	4.8	2080%
FI	2.4	6.1	3.6	149%
SE	3.6	8.0	4.4	120%
UK	1.2	2.4	1.2	105%
NO	5.8	10.2	4.4	76%
EA	1.7	4.6	2.9	168%
EU	1.6	4.3	2.7	163%
EU15	1.7	4.3	2.6	152%
NMS	0.7	4.1	3.3	455%

Source: Commission services, EPC.

The "cost convergence scenario" is meant to capture the potential impact of a convergence in real living standards on LTC spending. Table II.3.9 shows the results under this scenario.

For the EU, public expenditure on LTC is projected to increase by 1.9 pp. of GDP from 2013 up until 2060, with the impact of an increased cost per user of LTC services, assumed to be the result of economic convergence and higher patient expectations. Note that some outlier results may be partly due to data issues. Indeed, as explained in the annex, non-available or partial data lead to the (full or partial) application of the EU averages for the missing parts – in terms of coverage and related cost profile – adjusted to the national expenditure level.

In general, as can be expected, a country with high coverage and therefore relatively low average costs per beneficiary in the base year 2013 will show a relatively bigger increase in the "cost convergence scenario", while the expenditure increase projected for a country with relatively low coverage, and relatively high starting average cost profile, will be relatively bigger in the "coverage convergence scenario". Table II.3.10 shows the projection results under the "cost and coverage convergence scenario". It assumes a combination of coverage and cost convergence, combining the effects of the previous two scenarios. In the EU, this scenario leads to a projected increase in spending of 2.7 pp. until 2060.

Note that for countries, which have no effect in terms of coverage convergence, such as Belgium, the results are very close to the cost convergence scenario, and vice versa. For countries with low initial levels of coverage and low unit costs per recipient, the convergence process kicks in from both sides.

3.4.3. AWG reference scenario

The "AWG reference scenario" combines the assumptions of the "demographic" and the "constant disability" scenarios. Specifically, it is assumed that half of the projected gains in life expectancy are spent without disability (i.e. demanding care), taking thus an intermediate position between the "demographic" and "constant disability" scenarios assumptions. This scenario is the point of reference for comparisons with the 2012 Ageing report and is used in the multilateral budgetary surveillance at EU level.

In this scenario public long-term expenditure is thus driven by the combination of changes in the population structure and a moderately positive evolution of the health (non-disability) status. The joint impact of those factors is a projected increase in spending of about 1.1 pp. of GDP in the EU by 2060 (Table II.3.11).

The Total Factor Productivity (TFP) risk scenario gives the same results as the AWG reference scenario (same results at first decimal point), thus a separate table is not reported, as unit costs in this area is closely linked to labour productivity growth.

Table II.3.11: AWG reference scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	3.7	1.6	75%
BG	0.4	0.6	0.2	42%
CZ	0.7	1.4	0.7	87%
DK	2.4	4.5	2.0	83%
DE	1.4	2.9	1.5	105%
EE	0.6	1.2	0.7	116%
IE	0.7	1.4	0.7	111%
EL	0.5	0.9	0.4	88%
ES	1.0	2.4	1.4	147%
FR	2.0	2.8	0.8	41%
HR	0.4	0.5	0.1	15%
IT	1.8	2.7	0.9	50%
CY	0.3	0.5	0.2	97%
LV	0.6	0.8	0.1	22%
LT	1.4	2.3	0.9	65%
LU	1.5	3.2	1.7	116%
HU	0.8	1.2	0.4	54%
MT	1.1	2.3	1.2	104%
NL	4.1	7.1	3.0	74%
AT	1.4	2.7	1.3	91%
PL	0.8	1.7	0.9	112%
PT	0.5	0.9	0.4	86%
RO	0.7	1.6	0.9	124%
SI	1.4	2.9	1.5	103%
SK	0.2	0.6	0.4	181%
FI	2.4	4.6	2.1	86%
SE	3.6	5.1	1.5	41%
UK	1.2	1.5	0.4	30%
NO	5.8	9.4	3.6	63%
EA	1.7	3.0	1.3	74%
EU	1.6	2.7	1.1	67%
EU15	1.7	2.9	1.1	66%
NMS	0.7	1.4	0.7	96%

Source: Commission services, EPC.

Table II.3.12: AWG risk scenario, projected public expenditure on long-term care as % of GDP

	2013	2060	Change 2013-2060	
			pp.	In %
BE	2.1	4.7	2.6	121%
BG	0.4	2.9	2.5	620%
CZ	0.7	6.0	5.2	695%
DK	2.4	5.1	2.6	107%
DE	1.4	4.5	3.1	222%
EE	0.6	3.7	3.2	556%
IE	0.7	3.0	2.3	349%
EL	0.5	1.3	0.8	166%
ES	1.0	3.9	2.9	294%
FR	2.0	4.7	2.7	139%
HR	0.4	1.6	1.1	268%
IT	1.8	2.9	1.1	64%
CY	0.3	2.0	1.8	695%
LV	0.6	3.4	2.7	440%
LT	1.4	4.9	3.5	253%
LU	1.5	4.8	3.3	226%
HU	0.8	5.0	4.2	562%
MT	1.1	3.7	2.6	229%
NL	4.1	7.6	3.5	86%
AT	1.4	4.2	2.8	198%
PL	0.8	2.7	1.9	235%
PT	0.5	2.6	2.1	461%
RO	0.7	3.9	3.2	464%
SI	1.4	4.2	2.7	189%
SK	0.2	4.6	4.4	1909%
FI	2.4	5.8	3.3	136%
SE	3.6	7.5	3.8	106%
UK	1.2	2.3	1.1	97%
NO	5.8	9.6	3.8	66%
EA	1.7	4.4	2.7	154%
EU	1.6	4.1	2.5	149%
EU15	1.7	4.1	2.4	139%
NMS	0.7	3.8	3.0	414%

Source: Commission services, EPC.

3.4.4. AWG risk scenario

The "AWG risk scenario" keeps the assumption that half of the future gains in life expectancy are spent with no care-demanding disability, as in the "AWG reference scenario".

In addition, it combines it with the "cost and coverage convergence scenario" by assuming convergence of both total average cost and coverage to the EU average for those below it.

In comparison to the "AWG reference scenario", this scenario thus captures the impact of additional cost drivers to demography and health status, i.e. the possible effect of a cost and coverage convergence.

The joint impact of the drivers in this scenario is a projected increase in spending of 2.5 pp. of GDP in the EU by 2060 (Table II.3.12).

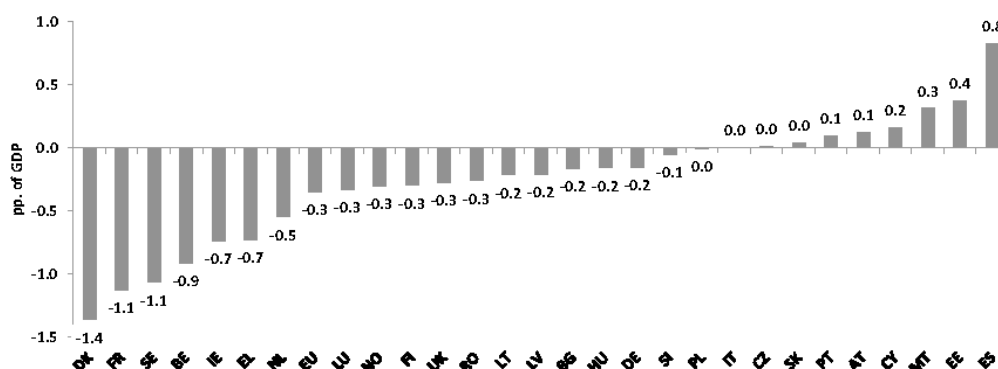
3.5. COMPARISON WITH THE 2012 AGEING REPORT

As in the case of health care projections, the differences observed between the 2012 Ageing Report and the current projections result from a set of factors: i) a different initial spending level; ii) a different base-year for starting the projections; iii) updated macroeconomic assumptions resulting in different GDP per capita growth rates and GDP levels for the period under analysis; iv) updated population projections; v) updated age-gender expenditure profiles; vi) changes in scenario assumptions; and quantified policy reforms. As shown in Graph II.3.11, results are pronounced for a number of countries and are related to different reasons.

Firstly, the age-cost profiles have been updated, leading to different dynamics of ageing costs for many countries. For some countries, country-specific profiles have now replaced imputed profiles used in the previous Ageing Report. Also, due to better data availability, it was possible to project expenditure by using country specific age-cost profiles related to the type of care, i.e. institutional care, home care or cash benefits. In the previous Ageing Report, age-cost profiles were not distinguished to this degree. This implies different dynamics of projected spending changes according to the types of care (and the associated costs), which do impact the projection results.

Secondly, the 2013 level of public expenditure on long-term care in the EU is 0.2 pp. of GDP lower in the current exercise than in the 2012 projections (Table II.3.13). Most countries now start from a lower level of spending. The main reason for a lower starting level of spending is that the observed public expenditure on long-term care has been lower for many countries than that projected in the 2012 Ageing Report. This may be explainable by policy reforms which have consolidated health care budgets in recent years in most EU countries. In other cases, data availability has improved, allowing to get rid of double counting of expenditure due to usage of different data sources (e.g. AT, BE and DK). In NO, spending levels have increased considerably contrary to the general trend in the EU in the past few years.

Graph II.3.11: AWG reference scenario: Differences in the projected increase in public expenditure on long-term care over 2013-2060 between the 2015 and 2012 Ageing Report, as pp. of GDP



Source: European Commission, EPC.

Thirdly, the new ESA 2010 accounting has implied an upward revision of GDP levels in the base year. For the EU, the GDP level has increased by about 3.5% in 2013.

A fourth point relates to updated population projections which contribute to a less marked ageing problem of the population than in the previous report, resulting in lower expenditure projections.

A fifth effect is related to changes in LTC spending triggered by legislated policy reforms as discussed in previous sections.

A quantitative decomposition of drivers is proposed in Table II.3.14. The decomposition aims at quantifying which factors are driving the differences in projected spending between the 2012 and the 2015 projection exercises in the base case scenario. The considered drivers are the age-cost profiles, the coverage of beneficiaries by formal care service, the disability rates, GDP per hours worked, the population projections, an interaction and a base-year effect. Basically, departing from the level of expenditure in 2013 each driver's impact is estimated by replacing ceteris paribus its current value with the 2012 Ageing Report data.

Overall, changes in projected expenditure levels were driven to a higher degree by revised GDP growth rates and coverage rates of beneficiaries, and to a lower degree by changes in age-cost profiles, disability rates and demographic

projections. Lower GDP growth rates per capita in the current relative to the last Ageing Report and changes in age-specific coverage rates impact favourably on lower LTC expenditure growth.

Changes in disability rates are a minor driver of changes in projected expenditure, reflecting the relative stability of disability rates between the reports. Changes in demographic projections are not that important as compared to health care, as only a part of the population is in need of LTC services. For some countries, some drivers clearly stand out in their relative impact on the change of results between the two Ageing Reports. As such Finland has a steeper age cost profile at higher ages and Spain has considerably higher coverage of LTC recipients, driving expenditure projections upwards relative to the 2012 Ageing Report. Luxembourg has significantly lower GDP growth rates reducing projected expenditure growth.

Table II.3.13: Comparison between public long-term care spending as % of GDP in the 2015 and the 2012 Ageing Reports, in the base year (i.e. 2013) of current projections

	2015 Ageing Report	2012 Ageing Report	Difference 2015 - 2012	
BE	2.1	2.5	-0.4	BE
BG	0.4	0.5	-0.1	BG
CZ	0.7	0.8	-0.1	CZ
DK	2.4	4.5	-2.1	DK
DE	1.4	1.5	-0.1	DE
EE	0.6	0.5	0.0	EE
IE	0.7	1.1	-0.5	IE
EL	0.5	1.4	-1.0	EL
ES	1.1	0.8	0.2	ES
FR	2.0	2.3	-0.3	FR
HR	0.4	:	:	HR
IT	1.8	1.9	-0.2	IT
CY	0.3	0.2	0.1	CY
LV	0.6	0.7	-0.1	LV
LT	1.4	1.2	0.2	LT
LU	1.5	1.1	0.4	LU
HU	0.8	0.9	-0.1	HU
MT	1.1	0.7	0.4	MT
NL	4.1	4.0	0.1	NL
AT	1.9	1.7	0.2	AT
PL	0.8	0.8	0.1	PL
PT	0.5	0.3	0.2	PT
RO	0.7	0.6	0.1	RO
SI	1.4	1.5	-0.1	SI
SK	0.2	0.3	0.0	SK
FI	2.5	2.7	-0.1	FI
SE	3.6	3.9	-0.2	SE
UK	1.2	2.1	-0.9	UK
NO	5.8	3.8	2.0	NO
EA	1.8	1.9	0.0	EA
EU	1.7	1.9	-0.2	EU
EU15	1.8	2.0	-0.2	EU15
NMS	0.7	0.7	0.0	NMS

(1) The 2015(2012) AR column values refers to the 2013 (projected) long-term care spending to GDP ratio in the current (previous) projection exercise.

Source: European Commission, EPC

(Graph II.3.12 and Table II.3.15), 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.

3.6. CONCLUSIONS

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.

This report presented the expected effects of various demographic and non-demographic drivers on LTC expenditure over a range of plausible scenarios. The range of results is rather wide

Table II.3.14: Decomposing the impact of drivers on differences in spending growth between the 2015 and the 2012 Ageing Reports- based on the base case scenario, in pp. of GDP.

	Difference in spending growth between the 2015 and 2012 Ageing Reports	Due to:								
		Change in age-cost profiles	Change in coverage	Change in disability rate	Change related to GDP growth	Change in demographic projections	Interaction effect*	Change in all drivers**	Base-year effect***	
BE	-1.1	0.0	-0.4	0.0	-0.8	0.1	-0.1	-1.2	0.1	BE
BG	-0.2	0.0	-0.2	0.0	-0.1	0.0	-0.1	-0.4	0.3	BG
CZ	0.0	0.0	0.2	0.0	-0.1	0.0	0.0	0.1	-0.1	CZ
DK	-1.7	0.4	0.2	-0.3	-0.7	0.1	-0.1	-0.4	-1.3	DK
DE	-0.2	-0.1	0.3	0.0	-0.3	0.1	-0.1	-0.1	0.0	DE
EE	0.4	0.0	0.4	0.0	0.0	-0.1	0.0	0.3	0.1	EE
IE	-0.7	0.0	-0.1	-0.1	0.2	-0.3	0.1	-0.1	-0.6	IE
EL	-0.9	0.0	0.2	0.0	0.2	-0.2	0.0	0.3	-1.1	EL
ES	0.8	0.1	0.7	0.0	0.4	-0.3	-0.1	0.9	0.0	ES
FR	-1.2	-0.1	-0.6	0.0	-0.2	0.0	0.0	-0.9	-0.3	FR
HR	:	:	:	:	:	:	:	:	:	HR
IT	0.0	-0.2	0.5	0.0	-0.1	0.0	0.0	0.1	-0.1	IT
CY	0.2	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	CY
LV	-0.3	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.3	0.1	LV
LT	-0.2	-0.1	0.3	0.0	0.4	-1.3	0.1	-0.5	0.3	LT
LU	-0.3	0.1	0.1	-0.1	-1.9	0.6	0.4	-0.8	0.5	LU
HU	-0.2	-0.2	-0.1	0.0	-0.1	-0.1	0.0	-0.4	0.3	HU
MT	0.2	0.0	0.0	0.0	-1.0	0.3	0.2	-0.6	0.9	MT
NL	-0.9	-0.1	0.2	-0.1	-0.4	0.0	-0.1	-0.4	-0.5	NL
AT	0.1	0.1	0.5	0.0	-0.4	0.1	0.0	0.3	-0.3	AT
PL	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	PL
PT	0.1	0.1	-0.2	0.0	0.2	-0.3	0.2	-0.1	0.2	PT
RO	-0.3	0.0	-0.1	0.0	-0.5	-0.2	-0.4	-1.2	0.9	RO
SI	-0.1	-0.2	0.5	0.0	0.1	-0.1	-0.2	0.1	-0.2	SI
SK	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	-0.1	0.1	SK
FI	-0.4	0.4	0.1	-0.1	-0.6	0.1	-0.1	-0.1	-0.2	FI
SE	-0.9	-0.1	0.1	-0.2	-1.5	0.3	-0.1	-1.5	0.6	SE
UK	-0.4	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.2	UK
NO	-0.1	-0.8	0.1	-0.6	-3.3	1.1	0.3	-3.4	3.2	NO
EA	-0.3	-0.1	0.1	0.0	-0.2	0.0	0.0	-0.2	-0.1	EA
EU	-0.4	0.0	0.1	0.0	-0.2	0.0	0.0	-0.3	-0.1	EU
EU15	-0.4	0.0	0.1	0.0	-0.3	0.0	0.0	-0.3	-0.1	EU15
NMS	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.0	-0.3	0.1	NMS

(1) * The interaction effect is the unexplained difference between the change in all drivers and the sum of the effects of the individual drivers.

** The change in all drivers is estimated by replacing the current data with the 2012 Ageing Report data for all drivers at once.

*** The base-year effect is the difference between column 1 and column 8.

Source: Commission services, EPC.

If one assumes in addition, that until 2060 EU countries will have equal coverage rates of LTC dependents and equal costs per dependent, reflecting an underlying convergence process of EU economies, expenditure is expected to increase up to 4.1% of GDP in the EU (Graph II.3.13).

While reflecting a plausible combination of developments in ageing and health status, the AWG reference scenario may underestimate expenditure, if due to higher life expectancy (High life expectancy scenario) people remain longer in disability and in addition, if the assumed improvements in health status do not materialize (demographic scenario) (Graph II.3.14). Also, supply side bottlenecks may increase fiscal pressure, if labour costs of LTC personnel increase

due to insufficient availability of health personnel (Base case scenario).

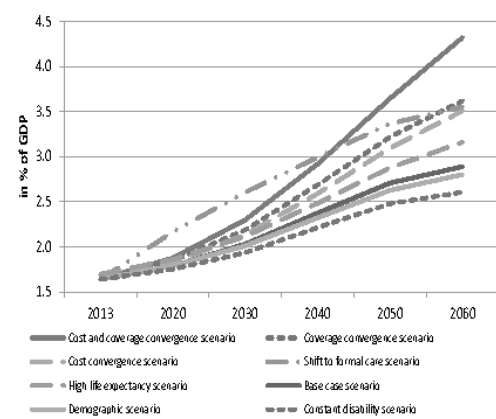
On the other hand, if health status improvements match fully increases in life expectancy projected expenditure turns out to be less pronounced (Constant disability scenario).

Table II.3.15: Overview of results across scenarios – Change in spending as % of GDP 2013-2060

	Demographic scenario	Base case scenario	High life expectancy scenario	Constant disability scenario	Shift to formal care scenario	Coverage convergence scenario	Cost convergence scenario	Cost and coverage convergence scenario	AWG reference scenario	AWG risk scenario	TFP risk scenario	
BE	1.5	1.8	2.0	1.4	2.0	1.8	2.8	2.8	1.6	2.6	1.6	BE
BG	0.2	0.2	0.2	0.1	0.4	1.5	0.5	2.7	0.2	2.5	0.2	BG
CZ	0.7	0.8	0.8	0.6	0.8	0.8	5.7	5.7	0.7	5.2	0.7	CZ
DK	2.2	2.2	2.8	1.9	3.0	2.3	2.8	2.9	2.0	2.6	2.0	DK
DE	1.4	1.6	1.8	1.3	2.7	2.6	2.2	3.4	1.5	3.1	1.5	DE
EE	0.7	0.7	0.8	0.6	0.9	0.9	2.7	3.4	0.7	3.2	0.7	EE
IE	0.9	0.8	1.0	0.7	1.1	1.7	1.3	2.5	0.7	2.3	0.7	IE
EL	0.5	0.5	0.5	0.4	0.8	0.5	0.8	0.9	0.4	0.8	0.4	EL
ES	1.6	1.6	2.2	1.3	1.8	2.1	2.3	3.1	1.4	2.9	1.4	ES
FR	0.9	0.9	1.1	0.7	1.6	2.9	1.0	2.9	0.8	2.7	0.8	FR
HR	0.1	0.1	0.1	0.0	0.5	0.4	0.9	1.3	0.1	1.1	0.1	HR
IT	1.0	1.0	1.2	0.8	1.6	1.3	1.1	1.3	0.9	1.1	0.9	IT
CY	0.3	0.3	0.3	0.2	0.4	0.5	0.9	1.9	0.2	1.8	0.2	CY
LV	0.2	0.2	0.2	0.1	0.8	2.4	0.4	3.0	0.1	2.7	0.1	LV
LT	1.0	1.0	1.2	0.8	1.3	1.0	3.8	3.8	0.9	3.5	0.9	LT
LU	1.5	1.9	1.9	1.5	2.3	3.6	1.9	3.6	1.7	3.3	1.7	LU
HU	0.4	0.5	0.5	0.3	1.2	2.7	1.4	4.7	0.4	4.2	0.4	HU
MT	1.3	1.3	1.5	1.0	1.6	2.0	1.8	2.8	1.2	2.6	1.2	MT
NL	3.3	3.5	4.4	2.5	4.3	3.6	4.0	4.1	3.0	3.5	3.0	NL
AT	1.3	1.4	1.7	1.2	1.7	1.4	3.0	3.0	1.3	2.8	1.3	AT
PL	0.9	1.0	1.0	0.8	2.1	1.0	2.1	2.1	0.9	1.9	0.9	PL
PT	0.4	0.4	0.4	0.3	2.5	1.1	1.6	2.3	0.4	2.1	0.4	PT
RO	0.7	1.0	0.8	0.7	1.5	1.0	3.5	3.6	0.9	3.2	0.9	RO
SI	1.4	1.6	1.7	1.4	2.1	1.9	2.5	2.9	1.5	2.7	1.5	SI
SK	0.4	0.5	0.4	0.4	0.7	0.5	4.7	4.8	0.4	4.4	0.4	SK
FI	1.9	2.3	2.5	1.9	2.9	2.3	3.6	3.6	2.1	3.3	2.1	FI
SE	1.6	1.8	2.1	1.3	3.0	3.8	2.4	4.4	1.5	3.8	1.5	SE
UK	0.4	0.4	0.5	0.3	1.0	0.6	1.0	1.2	0.4	1.1	0.4	UK
NO	3.5	4.2	4.3	3.2	4.9	4.2	4.4	4.4	3.6	3.8	3.6	NO
EA	1.3	1.4	1.7	1.1	2.1	2.3	1.9	2.9	1.3	2.7	1.3	EA
EU	1.2	1.3	1.5	1.0	1.9	2.0	1.9	2.7	1.1	2.5	1.1	EU
EU15	1.2	1.3	1.5	1.0	2.0	2.1	1.8	2.6	1.1	2.4	1.1	EU15
NMS	0.7	0.8	0.8	0.6	1.4	1.1	2.8	3.3	0.7	3.0	0.7	NMS

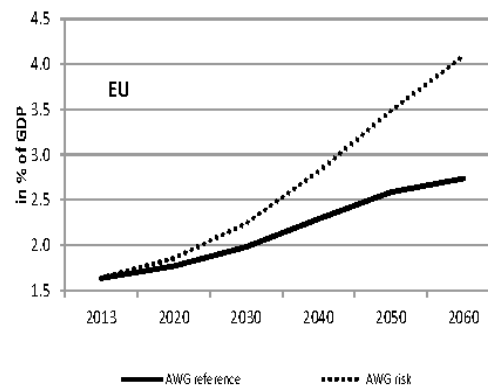
Source: Commission services, EPC.

Graph II.3.12: Projected expenditure in different LTC scenarios, for the EU in % of GDP



Source: Commission services, EPC.

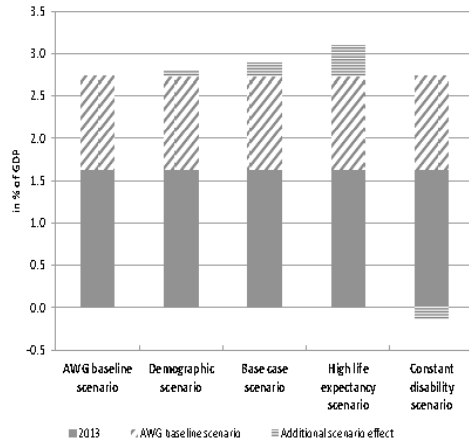
Graph II.3.13: Projected expenditure in LTC AWG reference and risk scenarios, for the EU in % of GDP



Source: Commission services, EPC.

With rising need for formalized LTC solutions, it is plausible to assume that both coverage of dependents and costs of LTC services will change.

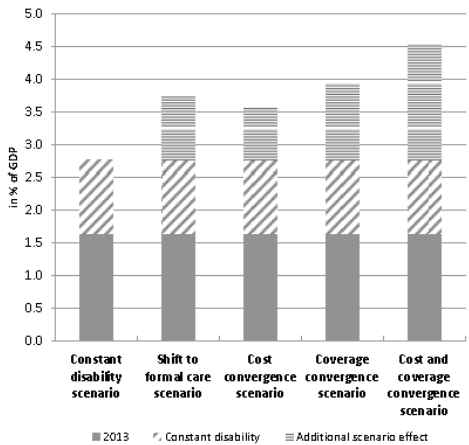
Graph II.3.14: Range of results for scenarios with mainly demographic sensitivity analysis (no policy change scenarios), EU in % of GDP



Source: Commission services, EPC.

Cost implications for the EU may be substantial (Graph II.3.15). 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).

Graph II.3.15: Range of results for scenarios with mainly cost and coverage sensitivity analysis (policy change scenarios), EU in % of GDP



Source: Commission services, EPC.

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.

4. EDUCATION

4.1. INTRODUCTION

Due to the pronounced age profile of enrolment rates, and consequently of expenditure levels, government expenditure on education largely reflects demographic developments. However, many other factors have also an important bearing on government education expenditure, such as the involvement of the general government in the education system, the duration of mandatory education, progress in enrolment rates in upper secondary and tertiary education, relative wages in the education sector, the average size of classes, discretionary saving measures to curb expenditure trends, etc.

The projection exercise aims at assessing the impact of demographic changes (per se) on general government education expenditure. Therefore, projections are carried out under the assumption of "no policy change". The methodology used is highly stylised and does not "capture" the full complexities of Member States' education systems. It has been set out with a view to use harmonised datasets,⁽¹²⁰⁾ secure equal treatment across countries, and be consistent with wide labour market developments, particularly on participation rates.⁽¹²¹⁾

The present exercise considers two scenarios. First and foremost, a baseline scenario that attempts to isolate the impact of demographic factors. The major assumption of the baseline scenario is a constant students-to-teacher ratio, implying an instantaneous adjustment in the number of teaching staff to student levels. One sensitivity scenario is also considered for illustrative

⁽¹²⁰⁾ UNESCO-UIS/OECD/EUROSTAT (UOE) data collection on education statistics, LFS data, and macroeconomic variables from "The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies", European Economy, No. 8/2014, European Commission.

⁽¹²¹⁾ A substantial part of the work consists in cleaning datasets and imputing missing/incomplete data points. Overall, there are no significant outstanding data availability issues, besides the fact that COFOG data (instead of UOE) has to be used for total expenditure data in Greece. The last year for which UOE education expenditure data for Greece are available is 2005. At the express request of national authorities, base financial data for Italy were updated to 2013 according to COFOG growth rates to take into consideration reform effects, including a wage freeze in the government sector.

Projections are carried out using the programme R.

purposes, namely a high enrolment rate scenario, which is easily calibrated from the baseline, assuming a linear convergence (to be completed by 2040) of enrolment rates (for Isced levels 3-4 and 5-6) towards the average of the 3 best performers in the EU28 plus Norway, namely Finland, Belgium and Sweden.⁽¹²²⁾

4.2. GENERAL CHARACTERISTICS OF NATIONAL EDUCATION SYSTEMS

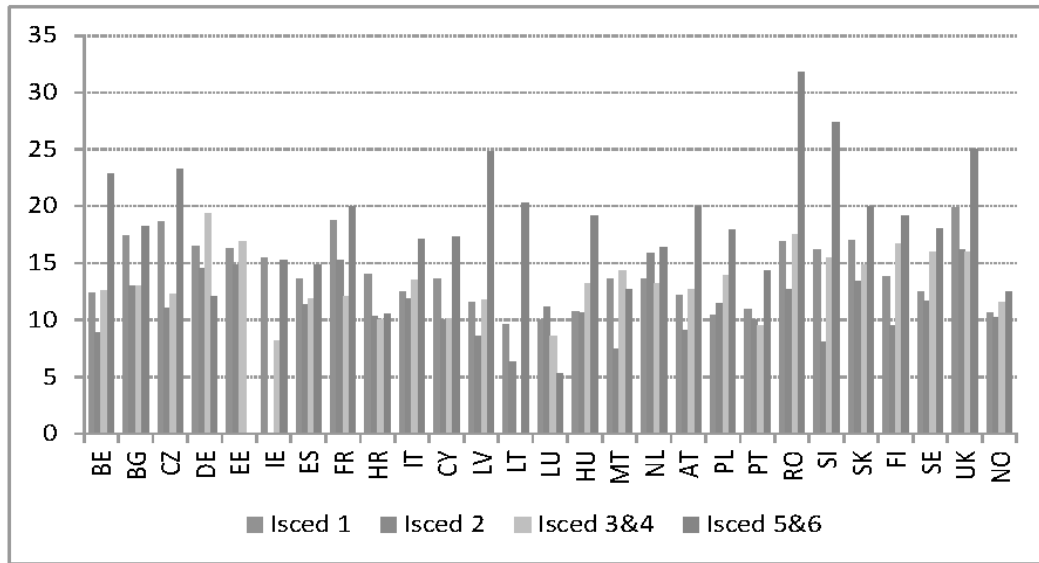
While the methodology used to project future education expenditure is based on a highly stylised framework that abstracts from country specificities, the methodology considers also major aspects of education systems, such as enrolment rates by age and education level and expenditure categories by education level and type. Detailed breakdowns of education systems (by age and education level) can potentially improve the quality of model calibrations.

4.2.1. Enrolment rates in the EU

The institutional structure of education systems varies considerably across Member States. Although the configuration between compulsory and non-compulsory education is in general similar across countries (mandatory education starting between ages 5 to 7 and ending between ages 13 to 16), education pathways of young people differ across countries. Differences in "statutory" age bands for a person attending a particular level of education are reflected in cross country differences in the distribution of "actual" enrolment ages, raising the issue of cross-country comparability. Country diversity is clearly visible in Table II.A6.1 in the statistical annex for education, which presents average enrolment rates in the period 2010-2011 by country, age and level of education.

⁽¹²²⁾ In the 2012 AR, the EU2020 scenario (equivalent to the high enrolment rate one in the AR 2015) was difficult to calibrate, because it involved reconciling information from different sources (UOE and LFS). The EU2020 scenario included two elements: i) the share of early leavers from education and training should be less than 10%; and ii) the share of 30 to 34 years olds with tertiary or equivalent educational attainment should be at least 40%. In the AR 2015, the high enrolment rate scenario is generated simply by inflating enrolment rates for ISCED levels 3-4 and 5-6 to the three best performers in the EU plus Norway by 2040.

Graph II.4.1: Students-to-teacher ratio across ISCED levels (average values 2010-2011)



(1) Students over total staff in education by ISCED level (UOE dataset).
Source: Commission services, EPC

4.2.2. Students-to-teacher ratio (average class size)

Average class sizes vary significantly both across countries and level of education, reflecting specific organisational features of education systems.

The size of primary education classes is on average slightly larger than that of secondary education (both lower and upper). In most countries, average class size is largest in tertiary education (see Graph II.4.1), reflecting teaching methods relying more on individual research and library work.

4.2.3. Staff compensation in the education sector

There is considerable variation across Member States in the wages paid in the education sector. Graph II.4.2 plots average data for the period 2010-2011 for the compensation per public employee in the education sector to GDP per worker.⁽¹²³⁾ Both the wage distribution and the

structure of employment in the education sector (i.e. the relative importance of different professional categories, such as professors, assistants and non-teaching staff) play a role in explaining these differences. As expected, on average wages are highest in the tertiary level of education, reflecting the higher qualifications required of the staff.

adjustments, namely AT, BG, CY, CZ, DE, DK, ES, FI, FR, IE, IT, LT, LV, NL, PL, RO, SI, and SK. For 9 countries there are some minor data missing problems, namely for BE, EE, HR, LU, MT, NO, PT, SE, and the UK. For 2 countries there are significant missing data problems: EL and HU.

The general procedure used to impute missing data is to use the basic expenditure equation for education:

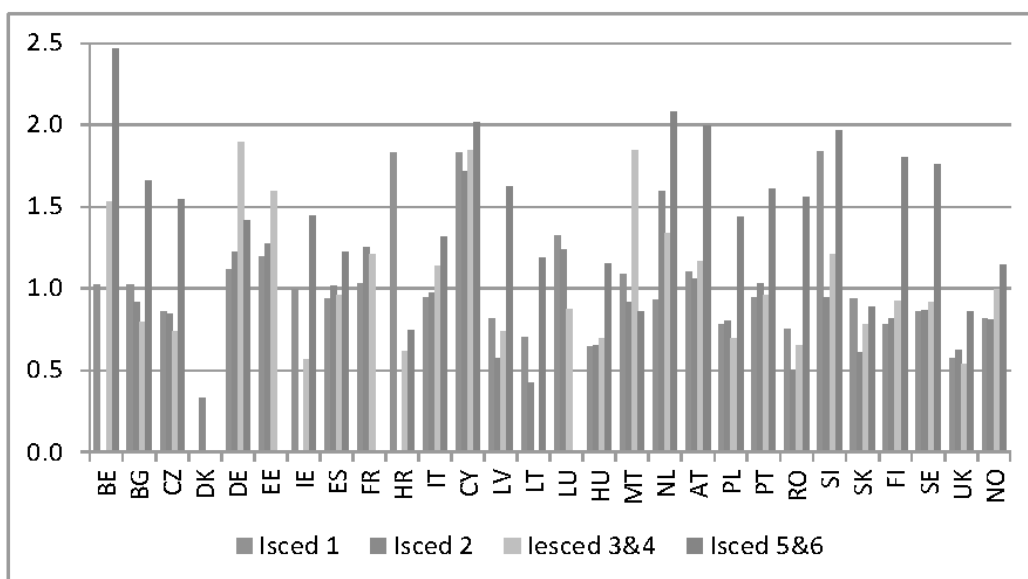
$$A_6 + A_{12} + A_{15} = G_5 + P_5$$

For 11 (9+2) countries, missing data were interpolated, breaking down total expenditure (i.e. expenditure categories $G_5 + P_5$, representing public and private, respectively) into personnel compensation (A_6), other current expenditure (A_{12}), and capital expenditure (A_{15}), using the average distribution in the above listed 18 "non-problematic" countries.

Furthermore, given the latest available year for total expenditure (i.e. $G_5 + P_5$) for Greece was 2005, COFOG data was used instead.

⁽¹²³⁾2011 is the latest year for which UNESCO-OECD/EUROSTAT (UOE) education statistics are available. As a rule, the AWG decided to use the average for the years 2010 and 2011 as the base period for education projections. As regards financial data, this general rule could be applied to 18 countries without any

Graph II.4.2: Average compensation per member of staff as ratio of GDP per worker (average values of 2010-2011)

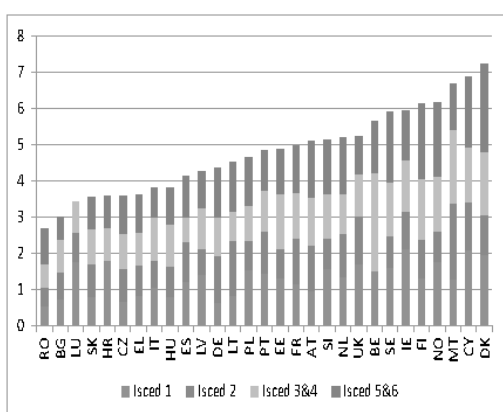


(1) Compensation per public employee in the education sector to GDP per worker by ISCED level (UOE dataset). A few observations appearing to be outliers are not reported.

Source: Commission services, EPC

Graph II.4.3 presents average total public expenditure in education in the period 2010-2011 in the four levels of education. Total public expenditure ranges from 2.7% of GDP (Romania) to 7.2% (Denmark) (for more details see Tables 2 and 3 in the statistical annex for education).

Graph II.4.3: Structure of public expenditure on education as % of GDP (average values of 2010-2011)



Source: Commission services, EPC

4.3. METHODOLOGY AND RESULTS

4.3.1. Projection results for the baseline scenario

A simple simulation model is used to project expenditure on education. ⁽¹²⁴⁾

Assuming "unchanged policy" in the provision of education, the baseline scenario attempts to illustrate the pure impact of demographic changes on government education expenditure for the 29 countries considered in the projections. The baseline scenario assumes a fixed students to teaching staff ratio. To what extent the latter is compatible with an assumption of "unchanged policy" merits some reflexion. In fact, assuming that staff levels in the education sector adjust instantaneously to student levels might prove unrealistic, besides actually demanding discretionary action to change staff levels. Instead, it might be preferable to assume some lag or inertia in the adjustment. Conversely, any mechanism chosen to adjust staff to the number of students would essentially be arbitrary. For the

⁽¹²⁴⁾For details see the statistical annex on education.

latter reason, the AWG decided not to implement an adjustment scenario with teaching staff adjusting with a lag to the number of students. ⁽¹²⁵⁾

Tables II.4.1 and II.A.6.4 show the variation in the projections of education expenditure for the baseline scenario between 2013 (start year of the projections) and 2060 (end year of the projections).

In the baseline scenario, government expenditure is expected to nearly stabilise at 4.6% and 4.4% of GDP in 2060, respectively, in the EU and euro area. Government expenditure on education increases in 15 countries and falls in 14 countries. However, the impact varies across individual countries ranging from a decline of 1.2 pp of GDP in Cyprus to an increase of 0.9 pp in Lithuania.

Graph II.4.4 shows the projected changes in expenditure to GDP ratios between 2013 and 2060 by country and ISCED level in the baseline scenario.

Table II.4.1: Results of the baseline (public expenditure on education as a percentage of GDP; ESA2010 for GDP ⁽¹⁾)

	Level		Change 2060-2013
	2013	2060	
BE	5.8	6.1	0.3
BG	3.0	3.4	0.4
CZ	3.4	4.1	0.7
DK	7.6	6.8	-0.7
DE	4.1	4.4	0.3
EE	4.4	5.1	0.8
IE	6.0	5.9	0.0
EL	4.1	3.0	-1.1
ES	4.6	3.7	-0.8
FR	5.0	4.8	-0.2
HR	3.7	3.4	-0.4
IT	3.7	3.5	-0.2
CY	7.3	6.1	-1.2
LV	3.8	4.5	0.8
LT	3.9	4.8	0.9
LU	3.3	3.5	0.2
HU	3.6	3.4	-0.2
MT	5.9	6.0	0.1
NL	5.2	4.7	-0.5
AT	4.9	4.9	0.0
PL	4.4	4.3	-0.1
PT	5.2	4.2	-1.0
RO	2.6	3.0	0.4
SI	5.3	6.1	0.8
SK	3.4	2.9	-0.4
FI	6.1	6.4	0.3
SE	5.7	5.9	0.2
UK	5.1	5.2	0.0
NO	6.0	5.9	-0.1
EA19	4.5	4.4	-0.1
EU28	4.7	4.6	0.0

(1) Except Norway (ESA1995)
Source: Commission services, EPC

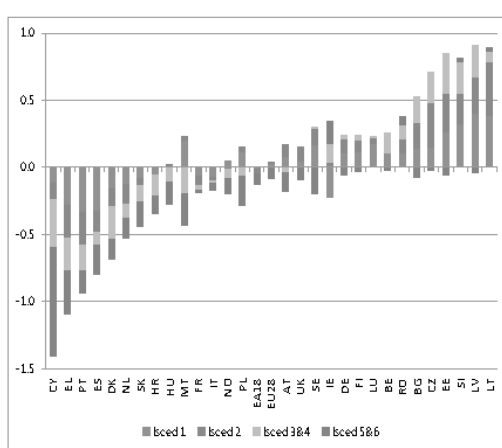
⁽¹²⁵⁾In the 2012 AR, this type of scenario was called the "inertia scenario", and assumed that adjustments in the number of teaching staff lagged by five years variations in the number of students.

Table II.4.2: Breakdown in the total variation between 2013 and 2060 (ESA2010 for GDP⁽¹⁾) - baseline scenario -

	Expenditure to GDP ratio		Change 2060-2013 in % (3)=(2)-(1) (3)=(4)-(5)+(6)	Students effect	Employment effect	Discrepancy (6)=(3)-(4)+(5)
	2013 (1)	2060 (2)		Indexes % change * Exp ratio in 2013 (4)	Exp ratio in 2013 (5)	
BE	5.8	6.1	0.28	2.17	1.80	-0.09
BG	3.0	3.4	0.39	-0.71	-0.98	0.13
CZ	3.4	4.1	0.71	0.51	-0.17	0.03
DK	7.6	6.8	-0.71	0.53	1.37	0.13
DE	4.1	4.4	0.28	-0.74	-0.96	0.06
EE	4.4	5.1	0.75	-0.70	-1.24	0.21
IE	6.0	5.9	-0.02	0.64	0.66	0.00
EL	4.1	3.0	-1.12	-1.19	-0.10	-0.03
ES	4.6	3.7	-0.82	-0.21	0.75	0.13
FR	5.0	4.8	-0.21	0.41	0.65	0.03
HR	3.7	3.4	-0.37	-0.79	-0.47	-0.05
IT	3.7	3.5	-0.18	0.29	0.41	-0.05
CY	7.3	6.1	-1.24	1.02	2.71	0.46
LV	3.8	4.5	0.80	-0.86	-1.37	0.29
LT	3.9	4.8	0.88	-1.28	-1.76	0.40
LU	3.3	3.5	0.16	3.40	3.09	-0.15
HU	3.6	3.4	-0.23	-0.54	-0.33	-0.02
MT	5.9	6.0	0.09	0.52	0.43	-0.01
NL	5.2	4.7	-0.52	-0.56	-0.04	0.00
AT	4.9	4.9	0.03	0.22	0.19	0.00
PL	4.4	4.3	-0.14	-1.20	-1.09	-0.04
PT	5.2	4.2	-0.96	-1.89	-1.15	-0.21
RO	2.6	3.0	0.41	-0.47	-0.76	0.12
SI	5.3	6.1	0.79	0.23	-0.49	0.07
SK	3.4	2.9	-0.43	-1.20	-0.88	-0.11
FI	6.1	6.4	0.25	0.67	0.40	-0.02
SE	5.7	5.9	0.22	2.01	1.73	-0.07
UK	5.1	5.2	0.04	1.11	1.05	-0.01
NO	6.0	5.9	-0.09	2.76	2.90	0.05

(1) Except Norway (ESA1995)

Source: Source: Commission services, EPC

Graph II.4.4: Changes in government expenditure by ISCED level between 2013 and 2060; ESA2010 for GDP⁽¹⁾ - baseline scenario -

(1) Except Norway (ESA1995)

Source: Commission services, EPC

In those countries for which a reduction in total expenditure between 2013 and 2060 is projected, it is common that primary and secondary education (ISCED levels 1 to 4) contribute the most to the projected fall in total expenditure. At the same time, in Member States where total education expenditure is projected to rise between 2013 and 2060, tertiary education tends to dampen the overall increase in expenditure.

Table II.4.3: Breakdown of revisions in expenditure-to-GDP ratio (2015 round minus 2012 round; ESA1995), values for the baseline scenario in 2060

	Expenditure to GDP ratio		Expenditure (3)=(2)-(1) (3)=(4)+(5)-(6)+(7)	Revisions			
	AR2012 (1)	AR2015 (2)		Base (4)	Students index	Employment index	Discrepancy (7)=(3)-(4)-(5)+(6)
					Indexes % change *	Exp ratio in AR2012	
BE	6.1	6.3	0.15	0.19	0.96	1.00	0.01
BG	3.7	3.5	-0.21	-0.32	0.47	0.34	-0.02
CZ	3.7	4.3	0.59	0.28	0.88	0.55	-0.02
DK	7.1	7.0	-0.07	0.52	0.59	1.24	0.06
DE	3.8	4.5	0.72	0.41	0.55	0.25	0.01
EE	5.1	5.2	0.06	0.27	0.25	0.47	0.01
IE	6.3	6.2	-0.06	1.06	-1.41	-0.54	-0.24
EL	4.0	3.0	-1.00	-0.26	-1.01	-0.27	0.00
ES	3.5	3.9	0.36	0.31	-0.33	-0.37	0.01
FR	4.6	4.9	0.33	0.12	0.35	0.13	0.00
IT	3.7	3.7	-0.07	-0.04	0.36	0.05	-0.34
CY	5.8	6.7	0.84	0.53	-0.02	-0.29	0.04
LV	3.2	4.5	1.39	-0.31	0.90	-0.62	0.19
LT	3.9	4.8	0.97	0.30	0.10	-0.45	0.12
LU	3.1	3.5	0.43	0.15	2.04	1.63	-0.13
HU	3.7	3.4	-0.31	-0.33	0.69	0.65	-0.01
MT	4.1	6.1	2.07	1.15	1.82	0.94	0.04
NL	4.8	5.1	0.28	0.50	-0.18	0.03	-0.02
AT	4.5	5.0	0.48	0.26	0.73	0.50	-0.01
PL	3.2	4.3	1.14	0.18	0.75	-0.12	0.09
PT	3.5	4.4	0.87	0.42	-0.75	-1.04	0.17
RO	3.4	3.1	-0.33	-0.85	1.61	0.77	-0.32
SI	4.9	6.2	1.35	0.45	0.59	-0.20	0.11
SK	2.7	3.0	0.32	0.38	-0.28	-0.23	-0.01
FI	6.2	6.7	0.49	0.82	0.53	0.86	0.00
SE	6.4	6.2	-0.16	0.11	0.92	1.23	0.05
UK	4.9	5.4	0.56	0.56	-0.13	-0.13	0.00
NO	8.4	5.9	-2.48	-2.02	1.49	2.25	0.31

Source: Commission services, EPC

4.3.2. Drivers of education expenditure

Table II.4.2 uses equation 4.4 in the education annex to break down changes in the GDP ratio of public expenditure on education between 2013 and 2060.

The evolution of public expenditure on education is determined by the ratio between the (average) student and employment indexes. ⁽¹²⁶⁾

$$\frac{\frac{EDU_t^{1-6}}{GDP_t} - \frac{EDU_0^{1-6}}{GDP_0}}{\frac{EDU_0^{1-6}}{GDP_0}} = \frac{IS_t}{IE_t} \quad 4.1$$

Empirically, the indexes ratio $\frac{IS_t}{IE_t}$ is driven by the age structure of the population.

Graph II.4.5 plots across countries $\frac{IS_t}{IE_t}$ against the ratio of the population in schooling age (ages 6 to 24) to the "active" population (ages 25 to 70). Variations in government expenditure on education between 2013 and 2060 (y-axis) are highly correlated with changes in the age structure of the population (x-axis). This results from the methodology used where per-capita costs grow in line with labour productivity, thereby the expenditure-to-GDP ratio basically increases with the number of students and decreases with employment levels. ⁽¹²⁷⁾

⁽¹²⁶⁾ Assuming a constant students-to-teacher ratio (i.e. $\frac{IT_t}{IT_0} = \frac{IS_t}{IS_0}$).

⁽¹²⁷⁾ EL and ES look as outliers in Graph II.4.5, largely reflecting the macroeconomic assumption of a sharp

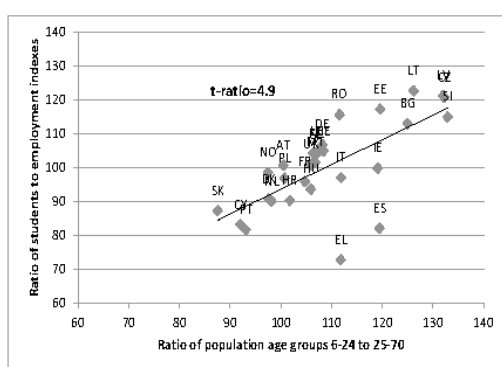
Table II.4.4: Baseline and high enrolment rate scenarios (public expenditure-to-GDP ratio; ESA2010 ⁽¹⁾)

	2013		2020		2030		2040		2050		2060		Difference (3)-(2)-(1)	
	Base	High	Base	High	Base	High	Base	High	Base	High	Base (1)	High (2)		
BE	5.8	5.8	5.7	5.9	6.0	6.3	6.0	6.5	6.0	6.5	6.1	6.5	0.4	BE
BG	3.0	3.1	2.9	3.2	3.0	3.5	2.9	3.8	3.2	4.1	3.4	4.3	0.9	BG
CZ	3.4	3.5	3.6	3.9	3.9	4.4	3.7	4.5	4.0	4.8	4.1	4.9	0.8	CZ
DK	7.6	7.6	7.1	7.4	6.9	7.3	7.2	7.8	7.0	7.6	6.8	7.4	0.6	DK
DE	4.1	4.1	3.8	4.0	4.0	4.5	4.2	4.8	4.2	4.8	4.4	5.0	0.7	DE
EE	4.4	4.4	4.6	4.8	4.8	5.2	4.4	5.1	4.8	5.5	5.1	5.8	0.7	EE
IE	6.0	6.0	6.4	6.6	5.8	6.4	5.2	6.2	6.0	6.9	5.9	6.9	0.9	IE
EL	4.1	4.1	3.5	3.8	3.0	3.3	2.7	3.2	2.9	3.4	3.0	3.5	0.6	EL
ES	4.6	4.6	4.1	4.4	3.4	4.0	3.1	3.9	3.6	4.4	3.7	4.5	0.8	ES
FR	5.0	5.1	5.0	5.2	4.9	5.4	4.9	5.6	4.9	5.6	4.8	5.5	0.7	FR
HR	3.7	3.8	3.5	3.7	3.4	3.8	3.2	3.8	3.3	3.8	3.4	4.0	0.6	HR
IT	3.7	3.8	3.5	3.7	3.3	3.8	3.4	4.2	3.6	4.4	3.5	4.3	0.8	IT
CY	7.3	7.5	6.5	7.3	6.2	7.7	5.5	7.7	5.5	7.7	6.1	8.4	2.3	CY
LV	3.8	3.8	3.8	3.9	4.0	4.2	3.8	4.2	4.1	4.5	4.5	4.9	0.4	LV
LT	3.9	3.9	3.6	3.8	4.2	4.6	4.2	4.8	4.2	4.9	4.8	5.4	0.6	LT
LU	3.3	3.4	3.2	3.6	3.4	4.2	3.5	4.8	3.5	4.8	3.5	4.9	1.4	LU
HU	3.6	3.7	3.1	3.3	3.0	3.4	3.1	3.7	3.2	3.9	3.4	4.0	0.7	HU
MT	5.9	6.0	5.3	6.0	5.6	6.9	5.5	7.3	5.5	7.4	6.0	7.9	1.9	MT
NL	5.2	5.3	4.9	5.1	4.7	5.2	4.9	5.6	4.8	5.5	4.7	5.4	0.7	NL
AT	4.9	4.9	4.5	4.8	4.7	5.3	4.8	5.7	4.7	5.7	4.9	5.9	1.0	AT
PL	4.4	4.4	4.1	4.2	4.1	4.3	3.8	4.1	3.9	4.2	4.3	4.5	0.3	PL
PT	5.2	5.3	4.7	4.9	4.0	4.5	4.0	4.7	4.3	5.0	4.2	5.0	0.8	PT
RO	2.6	2.6	2.6	2.6	2.7	2.8	2.8	3.0	2.9	3.1	3.0	3.2	0.2	RO
SI	5.3	5.4	5.4	5.6	5.6	6.1	5.5	6.3	5.8	6.7	6.1	6.9	0.8	SI
SK	3.4	3.4	3.2	3.5	3.1	3.6	2.8	3.5	2.8	3.6	2.9	3.7	0.8	SK
FI	6.1	6.1	6.1	6.2	6.3	6.4	6.3	6.4	6.3	6.4	6.4	6.5	0.1	FI
SE	5.7	5.7	5.7	5.8	5.9	6.2	5.8	6.3	5.7	6.2	5.9	6.3	0.5	SE
UK	5.1	5.2	5.1	5.5	5.3	6.1	5.1	6.2	5.1	6.2	5.2	6.3	1.1	UK
NO	6.0	6.1	5.8	6.0	5.9	6.4	6.0	6.7	5.9	6.6	5.9	6.6	0.7	NO
EA19	4.5	4.6	4.3	4.6	4.3	4.7	4.3	5.0	4.4	5.1	4.4	5.1	0.7	EA19
EU28	4.7	4.7	4.5	4.7	4.5	5.0	4.5	5.2	4.6	5.3	4.6	5.4	0.7	EU28

(1) Except Norway (ESA1995)

Source: Commission services, EPC

Graph II.4.5: Demographic structure as the main driver of education expenditure (2060 index values, 2013=100)



Source: Commission services

Using equation 4.4 in the education annex A6.1, results can also be broken down between the 2012 and 2015 projection exercises (Table II.4.3). Although there are considerable cross-country variations, on average the expenditure to GDP ratio for 2060 is revised upwards by about 0.31 pp between the 2012 and the 2015 projection exercises, ⁽¹²⁸⁾ largely reflecting a 0.44 pp increase in the number of students, together with an upward revision of 0.17 pp in base period values are roughly offset by an employment increase of 0.31 pp. ⁽¹²⁹⁾

4.4. SENSITIVITY TEST: THE HIGH ENROLMENT RATE SCENARIO

A single sensitivity scenario is considered in the 2015 Ageing Report, namely a demand shock that

decline in unemployment rates, which inflates the employment index.

⁽¹²⁸⁾ Unweighted averages.

⁽¹²⁹⁾ ESA1995 GDP definition is used in Table II.4.3.

raises enrolment rates in ISCED levels 3&4 and 5&6 to the average of the three best performing countries. This represents a simplified approach compared to the analysis carried out in the 2012 AR, reflecting the difficulties then experienced in translating policy targets into UEO data.⁽¹³⁰⁾ Therefore, in the current edition of the AR, it was judged preferable instead to directly inflate baseline enrolment rates towards the best outcomes in the EU, thereby capturing the flavour of EU policy initiatives in the education sector.⁽¹³¹⁾

In the base period 2010-2011, the three countries with the highest enrolment rates in ISCED levels 3&4 and 5&6 are Finland, Belgium and Sweden. By age bracket (15 years and older) and ISCED level (3&4 and 5&6), countries are assumed to converge linearly from 2012 until 2040 to the average enrolment rate in Finland, Belgium and Sweden. Higher enrolment rates are then kept constant (aside the impact of participation rates) between 2041 and 2060. A country keeps its initial enrolment rate break (by ISCED and age) if it is higher than the target average.

In 2060, the additional budgetary cost due to higher enrolment rates is projected at +0.7 pp of GDP on average both in the EU and the euro area (Tables II.4.4, II.A6.4 and II.A6.5). Across countries, the increase in education expenditure varies considerably, ranging from +0.1 in FI to +2.3 in CY. Notice that even in best performing countries expenditure increases occur, reflecting the fact that while the rank of best performing countries is determined averaging across all ISCED levels (3&4 and 5&6) and ages, convergence will occur at single combinations of ISCED and age (for every outcome below best performing outcomes/targets).

⁽¹³⁰⁾In the 2012 AR, the high enrolment scenario corresponded to the EU2020 scenario defined as: i) the share of early leavers from education and training should be less than 10%; and ii) the share of 30 to 34-year-olds with tertiary or equivalent educational attainment should be at least 40%.

⁽¹³¹⁾<http://ec.europa.eu/europe2020/targets/eu-targets/>.

5. UNEMPLOYMENT BENEFIT

5.1. INTRODUCTION

Unemployment benefit (UB) expenditure projections are carried out in order to preserve the comprehensive nature of the long term budgetary exercise, although UB expenditure is largely driven by (short- and medium-term) cyclical fluctuations and influenced by structural factors relating to the functioning of the labour market, rather than by (long-term) demographic waves. In addition, and for underperforming countries, UB projections largely depend on the assumption of a decline in the (structural) unemployment rate (UR), which is rather significant in a number of Member States, converging to some EU wide ceiling/benchmark, implicitly anticipating the future implementation of structural reforms in labour markets.

A simple equation is used to project UB expenditure. Although the methodology can account for country specificities, such as changes in the coverage and replacement rates of its UB system, in practice lack of details and concern about providing equal treatment across countries would discourage fine tuning the methodology.

In order to apply the methodology described here and secure the comparability of projections across countries, data should be taken from Eurostat's Social Protection Statistics (ESSPROS).⁽¹³²⁾ Furthermore, expenditure data on unemployment benefits should cover recent years, namely 2012 and 2013. Given the delays involved in the official publication of these values by Eurostat, updated values for 2013 as provided by EPC/AWG delegates were used. Eurostat has published ESSPROS data for 2012 for all 29 countries covered in the projections (EU28 and Norway). Sixteen Member States provided provisional information for 2013.⁽¹³³⁾

UB projections basically require three elements: i) calibration of UB expenditure for a recent base year/period; ii) assumption of an UR trajectory up to 2060; and iii) the assumptions of constant replacement and coverage rates of UB systems

⁽¹³²⁾The European System of integrated Social PROtection Statistics (ESSPROS).

⁽¹³³⁾BE, DK, DE, IE, ES, IT, CY, LV, LT, MT, NL, AT, PT, RO, SI and FI.

after a given date, usually from the start of the projection period, if no policy change has been announced.⁽¹³⁴⁾

5.2. THE BASE PERIOD AND THE DATASET

The methodology basically uses the AWG's unemployment rate scenario (as the driving variable) and expenditure in periodic full and partial unemployment benefits in the base period 2011-2013⁽¹³⁵⁾ to extrapolate future expenditure levels. Using multi-annual averages can limit the impact of any given year on the final results, which is desirable in periods of strong economic fluctuations and possible large statistical errors.

In the absence of alternative reasonable assumptions on the future number of UB beneficiaries (which results from entitlement rules that affect coverage, take-up rates, and so on) and the average duration of unemployment spells, the calculation assumes that all these elements remain constant. This approximation should be neutral, particularly over the long term, not leading to any systematic bias in the projections.

In order to guarantee the comparability of projections across countries, expenditure data were taken mainly from Eurostat's ESSPROS, specifically the sum of periodic full and partial unemployment benefits (Table II.5.1).⁽¹³⁶⁾

⁽¹³⁴⁾For DK the present projections consider the impact of the 2012 tax reform which lowers the indexation of UB between 2016 and 2023.

⁽¹³⁵⁾The sixteen MSs mentioned in footnote 3. For the remaining countries: 2011-2012.

⁽¹³⁶⁾Periodic full and partial UB were also used (at least) in the last two Ageing Reports (2009 and 2012).

Table II.5.1: Periodic full and partial unemployment benefits in % of GDP (ESSPROS), ESA2010 for GDP(I)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
BE	2.0	2.0	1.9	1.7	1.6	2.0	1.9	1.7	1.8	1.8	BE
BG	:	0.2	0.2	0.1	0.1	0.3	0.4	0.4	0.4	:	BG
CZ	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.2	0.2	:	CZ
DK	1.5	1.3	0.9	1.0	0.8	1.4	1.6	1.5	1.6	1.4	DK
DE	1.4	1.5	1.3	1.0	0.9	1.2	1.1	0.9	0.8	0.8	DE
EE	0.1	0.1	0.1	0.1	0.2	0.9	0.4	0.2	0.2	:	EE
IE	0.8	0.7	0.7	0.8	1.2	2.2	2.5	2.3	2.2	2.1	IE
EL	0.4	0.4	0.3	0.4	0.4	0.7	0.8	0.9	0.7	:	EL
ES	1.1	1.0	1.0	1.1	1.2	2.2	2.1	2.3	2.3	2.2	ES
FR	1.6	1.5	1.4	1.2	1.2	1.5	1.5	1.4	1.5	:	FR
HR	:	:	:	:	0.2	0.4	0.5	0.4	0.4	:	HR
IT	0.4	0.4	0.4	0.3	0.4	0.7	0.7	0.7	0.8	0.9	IT
CY	0.4	0.4	0.4	0.3	0.3	0.4	0.5	0.5	0.6	0.8	CY
LV	0.3	0.3	0.3	0.3	0.3	1.0	0.7	0.3	0.3	0.3	LV
LT	0.1	0.1	0.1	0.1	0.1	0.6	0.4	0.2	0.2	0.2	LT
LU	0.4	0.5	0.5	0.5	0.4	0.6	0.6	0.6	0.6	:	LU
HU	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	:	HU
MT	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	MT
NL	1.6	1.5	1.3	1.1	1.0	1.3	1.5	1.4	1.7	2.0	NL
AT	0.8	0.7	0.7	0.6	0.6	0.8	0.8	0.7	0.7	0.8	AT
PL	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	:	PL
PT	1.1	1.1	1.1	0.9	0.8	1.1	1.2	1.1	1.5	1.5	PT
RO	0.3	0.2	0.2	0.1	0.1	0.3	0.5	0.2	0.1	0.1	RO
SI	0.3	0.3	0.3	0.2	0.2	0.4	0.4	0.6	0.6	0.6	SI
SK	0.3	0.2	0.1	0.1	0.1	0.3	0.2	0.2	0.2	:	SK
FI	1.6	1.5	1.4	1.1	1.0	1.5	1.7	1.5	1.7	1.9	FI
SE	1.2	1.1	0.9	0.6	0.4	0.6	0.5	0.4	0.4	:	SE
UK	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	:	UK
NO	0.7	0.5	0.3	0.2	0.2	0.4	0.5	0.4	0.4	:	NO

(1) Except Norway (ESA1995)
Source: Commission services

As in previous rounds of the Ageing Report, DG ECFIN's structural unemployment rate estimates (NAWRU) are used as a proxy for the structural unemployment rate.

As a general rule, actual unemployment rates are assumed to converge to NAWRU rates by 2019 corresponding to the assumed closure of the output gap. On their turn, NAWRU rates are assumed to gradually converge (by 2040) to the minimum of country specific *Anchors*⁽¹³⁷⁾ or the weighted mean across the EU Member States, which is 7.6, whichever is the lowest. Furthermore, for those countries where current NAWRU *Anchors* exceed unemployment rates for 2060 as projected in the

2012 Ageing Report, only half of that increase is retained (see Table II.5.2).

Anchor values are country-specific values for the NAWRU that are calculated assuming that non-structural variables are set at their average values over the estimated sample, thereby averaging out the impact of cyclical fluctuations, while structural variables are assumed to remain unchanged at their last observed values (i.e. applying the "no policy change" principle).

Capping country specific NAWRU values to 7½% is done in order to avoid extrapolating into the far future too high unemployment rate values, which are largely a consequence of the economic and financial crisis. It should be noted that this cap on unemployment rates is a crucial assumption for some countries which currently register high levels.

Table II.5.3 presents the base values for the unemployment rate and the unemployment

⁽¹³⁷⁾ Under the guidance of the EPC-OGWG and with the double objectives of improving the medium-term framework for fiscal surveillance up to T+10 (currently 2024), and correcting for the counter-cyclicalities of the NAWRU, DG ECFIN carried out some econometric work, leading to the estimation of *Anchor* values for the NAWRU.

Table II.5.2: Unemployment rate projections

	2013	2020	2030	2040	2050	2060	
BE	8.5	7.9	7.4	7.4	7.4	7.4	BE
BG	13.0	11.9	9.1	7.5	7.5	7.5	BG
CZ	7.0	6.3	6.0	6.0	6.0	6.0	CZ
DK	7.2	5.5	4.9	4.9	4.9	4.9	DK
DE	5.4	4.7	5.4	5.4	5.4	5.4	DE
EE	8.8	7.8	8.0	7.5	7.5	7.5	EE
IE	13.3	10.2	8.2	6.8	6.8	6.8	IE
EL	28.0	22.1	13.7	7.5	7.5	7.5	EL
ES	26.5	19.5	12.3	7.5	7.5	7.5	ES
FR	10.0	9.6	8.7	7.5	7.5	7.5	FR
HR	17.8	13.5	10.3	7.5	7.5	7.5	HR
IT	12.4	10.6	8.6	7.5	7.5	7.5	IT
CY	16.9	16.6	10.1	6.1	6.1	6.1	CY
LV	12.1	12.4	10.3	7.5	7.5	7.5	LV
LT	12.0	10.8	9.6	7.5	7.5	7.5	LT
LU	5.9	5.1	4.3	4.2	4.2	4.2	LU
HU	10.3	8.6	7.6	7.5	7.5	7.5	HU
MT	6.5	6.6	6.7	6.7	6.7	6.7	MT
NL	6.7	5.9	4.2	3.9	3.9	3.9	NL
AT	5.0	4.2	3.8	3.8	3.8	3.8	AT
PL	10.5	8.7	8.5	7.5	7.5	7.5	PL
PT	17.0	12.6	8.4	7.5	7.5	7.5	PT
RO	7.4	7.1	7.0	6.9	6.9	6.9	RO
SI	10.2	9.1	6.7	6.4	6.4	6.4	SI
SK	14.2	12.8	10.8	7.5	7.5	7.5	SK
FI	8.4	7.3	7.0	6.9	6.9	6.9	FI
SE	8.2	6.4	5.9	5.9	5.9	5.9	SE
UK	7.8	6.5	6.4	6.1	6.1	6.1	UK
NO	3.5	3.3	3.5	3.6	3.6	3.6	NO

Source: Commission services

benefits-to-GDP ratio that are used in the equation that projects future UB expenditure.

5.3. PROJECTIONS IN PERCENTAGE OF GDP

Table II.5.4 presents UB projections for the period 2013-2060. In 27 out of a total of 29 countries, the UB-to-GDP ratio decreases due to unemployment rate assumptions. Graph II.5.1 highlights the strong cross country correlation between changes in expenditure on unemployment benefits and unemployment rate assumptions (see equation 9 in Annex 7).

In fact, the percentage change in the UB-to-GDP ratio between the final period (2060) and the base

period: $\ln\left(\frac{UB_t}{GDP_t}\right) - \ln\left(\frac{UB_b}{GDP_b}\right)$ can be

approximated by $\frac{1}{1-u_t} * \left(\frac{u_t - u_b}{u_b}\right)$. This means that reducing the unemployment rate pays a

"double dividend" in terms of reducing the UB-to-GDP ratio. For similar changes in the

unemployment rate $\left(\frac{u_t - u_b}{u_b}\right)$, countries with a higher unemployment rate in the current year (u_t) will record a larger variation in the UB-to-GDP ratio.

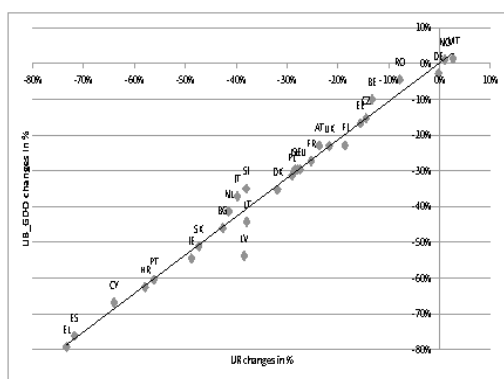
Table II.5.3: Base values for the unemployment rate (UR) and the unemployment benefits-to-GDP ratio

Average 2012-2013*		
	UR 15-64	UB as % of GDP
BE	8.1	1.8
BG*	11.9	0.4
CZ*	6.9	0.2
DK	7.4	1.5
DE	5.5	0.8
EE*	11.5	0.2
IE	14.1	2.1
EL*	21.7	0.8
ES	25.8	2.2
FR*	9.6	1.5
HR*	15.4	0.4
IT	11.6	0.9
CY	14.8	0.7
LV	13.8	0.3
LT	12.9	0.2
LU*	5.1	0.6
HU*	11.0	0.3
MT	6.4	0.3
NL	6.0	1.8
AT	4.7	0.8
PL*	10.0	0.2
PT	16.7	1.5
RO	7.3	0.1
SI	9.6	0.6
SK*	13.8	0.2
FI	8.2	1.8
SE*	8.1	0.4
UK*	8.2	0.3
NO*	3.2	0.4

(1) * 2011-2012 for countries not having 2013 figures
 Source: Commission services

Overall, UB projections from the 2015 AR are relatively similar to those made in the 2012 AR (see the last two columns in Table II.5.4). Focusing on the differences between 2060 and 2013, expenditure on UB in the EU is expected to decline by 0.4 pp of GDP, which is close to the estimate made in the 2012 AR (a decline of 0.3 pp). However, there are significant differences between the two projections for a number of MS. For example, while in IE, LV and EE we are now projecting a smaller reduction in UB expenditure compared to the 2012 AR, conversely, in the NL, EL, FI, and DK a larger reduction in UB expenditure is assumed between 2013 and 2060.

Graph II.5.1: Changes in the UB-to-GDP ratio versus changes in the UR (2060-2013)



Source: Commission services

Table II.5.4: Expenditure projections of unemployment benefits (UB) in % of GDP (ESA2010) - base period 2013-2011, unless stated otherwise -

	2013	2020	2030	2040	2050	2060	Change 2060-2013		
							AR2015	pm AR2012	
BE	1.8	1.7	1.6	1.6	1.6	1.6	-0.2	-0.0	BE
BG*	0.5	0.4	0.3	0.3	0.3	0.3	-0.2	-0.1	BG*
CZ*	0.2	0.2	0.2	0.2	0.2	0.2	-0.0	-0.0	CZ*
DK	1.4	1.1	0.9	0.9	0.9	0.9	-0.5	-0.1	DK
DE	0.8	0.7	0.8	0.8	0.8	0.8	-0.0	-0.1	DE
EE*	0.2	0.1	0.2	0.1	0.1	0.1	-0.0	-0.2	EE*
IE	2.1	1.5	1.2	1.0	1.0	1.0	-1.1	-2.1	IE
EL*	1.2	0.8	0.5	0.2	0.2	0.2	-0.9	-0.3	EL*
ES	2.2	1.6	0.9	0.5	0.5	0.5	-1.7	-1.7	ES
FR*	1.5	1.5	1.3	1.1	1.1	1.1	-0.4	-0.3	FR*
HR*	0.5	0.4	0.3	0.2	0.2	0.2	-0.3	:	HR*
IT	0.9	0.9	0.7	0.6	0.6	0.6	-0.3	0.0	IT
CY	0.8	0.8	0.5	0.3	0.3	0.3	-0.6	-0.2	CY
LV	0.3	0.3	0.2	0.1	0.1	0.1	-0.2	-0.5	LV
LT	0.2	0.2	0.1	0.1	0.1	0.1	-0.1	-0.3	LT
LU*	0.7	0.6	0.5	0.5	0.5	0.5	-0.2	-0.0	LU*
HU*	0.3	0.2	0.2	0.2	0.2	0.2	-0.1	-0.2	HU*
MT	0.3	0.3	0.3	0.3	0.3	0.3	0.0	-0.0	MT
NL	2.0	1.8	1.3	1.2	1.2	1.2	-0.8	-0.2	NL
AT	0.8	0.7	0.6	0.6	0.6	0.6	-0.2	-0.0	AT
PL*	0.2	0.1	0.1	0.1	0.1	0.1	-0.1	-0.0	PL*
PT	1.5	1.1	0.7	0.6	0.6	0.6	-0.9	-0.7	PT
RO	0.1	0.1	0.1	0.1	0.1	0.1	-0.0	-0.0	RO
SI	0.6	0.5	0.4	0.4	0.4	0.4	-0.2	-0.1	SI
SK*	0.2	0.2	0.2	0.1	0.1	0.1	-0.1	-0.1	SK*
FI	1.9	1.6	1.5	1.5	1.5	1.5	-0.4	0.0	FI
SE*	0.4	0.3	0.3	0.3	0.3	0.3	-0.1	-0.0	SE*
UK*	0.3	0.2	0.2	0.2	0.2	0.2	-0.1	-0.1	UK*
NO*	0.4	0.4	0.4	0.4	0.4	0.4	0.0	-0.0	NO*
EA	1.3	1.1	1.0	0.8	0.9	0.9	-0.4	-0.3	EA
EU	1.1	0.9	0.8	0.7	0.7	0.7	-0.4	-0.3	EU

(1) * 2011-2012 average has been used in the projections for countries not having UB figures for 2013

Source: Commission services

ANNEX 1

Pension projection questionnaire

Table II.A.1.1: Pension projections reporting framework: blocks common to all schemes

European Commission DG ECFIN Unit C2 Draft reporting framework: Pension expenditure and contributions - in billions EURs, current prices							
		Country:					
		Scenario:					
		Pension scheme:					
		Voluntary:					
A. Fixed table		2013	2020	2030	2040	2050	2060
		Base year	Projections in current prices				
<i>GDP (ECFIN projection, in current prices - billions EUR)</i>							
1	GDP (used in projections, in current prices)						
2	GDP deflator						
3	Economy-wide average gross wage (current prices - billions €)						
4	Average gross wage (current prices - 1000 €)						
5	Consumer price inflation						
0 - AVERAGE GROSS WAGE AT RETIREMENT							
6	Average gross wage at retirement (current prices - 1000 €)						
1 - PENSION EXPENDITURES (Gross, in millions €)							
7	Public pensions scheme, gross (14+16+18+20+22) and (8+9+10+11+12+13)						
Of which							
8	aged -54						
9	aged 55-59						
10	aged 60-64						
11	aged 65-69						
12	aged 70-74						
13	aged 75+						
14	Old-age and early pensions - Earnings-related						
<i>Of which new pensions (15³*15⁴*15⁵*15⁶*15⁷*15⁸ if DB) or (15⁵*15⁶*15⁹*16⁰*16¹ if Point) or (15⁷*15⁸*15⁹*16²*16³*16⁴ if NDC)</i>							
15	Disability - Earnings-related						
16	Survivors - Earnings-related						
17	Other pensions - Earnings-related						
18	Non-earning-related pensions including minimum pensions and minimum income guarantees (24+25+26)						
19	Private occupational scheme, gross						
20	Of which new pensions (16 ⁵ *16 ⁶ *16 ⁷ *16 ⁸ *16 ⁹ *17 ⁰)						
21	Private individual scheme gross (31 + 33)						
22	Of which new pensions (17 ¹ *17 ² *17 ³ *17 ⁴ *17 ⁵ *17 ⁶)						
23	Mandatory private individual scheme						
24	Of which new pensions						
25	Non-mandatory private individual scheme						
26	Of which new pensions						
27	Total pension expenditure, gross (7+27+29) and (36+37+38+39+40+41)						
Of which							
28	aged -54						
29	aged 55-59						
30	aged 60-64						
31	aged 65-69						
32	aged 70-74						
33	aged 75+						
34	Public pension scheme, tax revenues						
35	Private occupational scheme, tax revenues						
36	Private individual scheme, tax revenues						
37	Total pension, tax revenues (42+43+44)						
38	Public pensions scheme, net						
39	Of which non-earning-related pensions including minimum pensions and minimum income guarantees						
40	Private occupational scheme, net						
41	Private individual scheme, net						
42	Total pension expenditure, net (46+48+49)						
2 - BENEFIT RATIO							
43	Public pensions ((788)/4)						
44	Of which old-age earnings-related pensions ((14/101)/4)						
45	Private occupational pensions ((27/109)/4)						
46	Mandatory private individual pensions (31/111)/4)						
47	Non-mandatory private individual pensions (33/112)/4)						
48	Total benefit ratio ((35/113)/4)						
3 - GROSS AVERAGE REPLACEMENT RATES (at retirement)							
49	Public pensions						
50	Of which old-age earnings-related pensions ((15/153)/6 if DB) or ((15/155)/6 if Point) or ((15/157)/6 if NDC)						
51	Private occupational pensions (28/165)/6						
52	Private individual pensions (30/171)/6						
53	Total gross replacement rate						
4 - NUMBER OF PENSIONS (in 1000)							
54	Public pensions (63+64+65+66+67+68) and (69+70+71+72+73)						
Of which							
55	aged -54						
56	aged 55-59						
57	aged 60-64						
58	aged 65-69						
59	aged 70-74						
60	aged 75+						
61	Old-age and early pensions - Earnings-related						
62	Disability - Earnings-related						
63	Survivors pensions - Earnings-related						
64	Other pensions - Earnings-related						
65	Non-earning-related pensions including minimum pensions and minimum income guarantees (74+75+76)						

(Continued on the next page)

Table (continued)

74	Of which old-age and early pensions						
75	Of which disability pensions						
76	Of which other pensions						
77	Private occupational pensions						
78	Private individual pensions (79+80)						
79	Mandatory private individual						
80	Non-mandatory private individual						
81	All pensions (52+77+78) and (82+83+84+85+86+87)						
	Of which						
82	aged -54						
83	aged 55-59						
84	aged 60-64						
85	aged 65-69						
86	aged 70-74						
87	aged 75+						
6 - NUMBER OF PENSIONERS (in 1000)							
88	Public pensions (89+91+93+95+97+99)						
	Of which						
89	aged -54						
90	Of which female						
91	aged 55-59						
92	Of which female						
93	aged 60-64						
94	Of which female						
95	aged 65-69						
96	Of which female						
97	aged 70-74						
98	Of which female						
99	aged 75+						
100	Of which female						
101	Old-age and early pensions - Earnings-related						
102	Disability - Earnings-related						
103	Survivors pensions - Earnings-related						
104	Other pensions - Earnings-related						
105	Non-earning-related pensions including minimum pensions and minimum income guarantees (106+107+108)						
106	Old-age and early pensions						
107	Disability pensions						
108	Other pensions						
109	Private occupational pensions						
110	Private individual pensions (111+112)						
111	Mandatory private individual						
112	Non-mandatory private individual						
113	All pensioners (114+116+118+120+122+124)						
	Of which						
114	aged -54						
115	Of which female						
116	aged 55-59						
117	Of which female						
118	aged 60-64						
119	Of which female						
120	aged 65-69						
121	Of which female						
122	aged 70-74						
123	Of which female						
124	aged 75+						
125	Of which female						
6 - CONTRIBUTIONS (employee+employer, in millions €)							
126	Public pensions (127+128+129)						
127	Employer						
128	Employee						
129	State						
130	Private occupational pensions						
131	Private individual pensions (132+133)						
132	Mandatory private individual						
133	Non-mandatory private individual						
134	Total pension contributions (126+130+131)						
7 - NUMBER OF CONTRIBUTORS (employees, in 1000)							
135	Public pensions						
136	Private occupational pensions						
137	Private individual pensions (138+139)						
138	Mandatory private individual						
139	Non-mandatory private individual						
140	All pensions (135+136+137)						

(1) The green lines are provided on a voluntary base.

Source: Commission services, EPC

Table II.A1.2: Pension projection reporting framework: decomposition of new public pension expenditure - earnings related for points schemes

Point schemes - CY		2013	2020	2030	2040	2050	2060
TOTAL							
141	Number of new pensions (in 1000)						
142	Average number of insured points						
143	Average accrual rate						
144	Point value						
145	Sustainability/adjustment factors						
146	Average number of months paid the first year						
Point schemes - DE		2013	2020	2030	2040	2050	2060
TOTAL							
141	Number of new pensions (in 1000)						
142	Average pension						
143	Point value						
144	Average pension points accumulated at retirement (142/143)						
145	Sustainability/adjustment factors						
146	Average number of months paid the first year						
Point schemes - HR		2013	2020	2030	2040	2050	2060
TOTAL							
141	Number of new pensions (in 1000)						
142	Total pension points at retirement						
143	Average pension points accumulated per year						
144	Actual and virtual contributory period						
145	Point value (V)						
146	Sustainability/adjustment factors						
147	Average number of months paid the first year						
Point schemes - RO		2013	2020	2030	2040	2050	2060
TOTAL							
141	Number of new pensions (in 1000)						
142	Average annual pension						
143	Point value						
144	Average pension points at retirement (142/143)						
145	Contributory period						
146	Average number of points accrued per year (144/145)						
147	Sustainability/adjustment factors						
148	Average number of months paid the first year						
149	Correction index						
Point schemes - SK		2013	2020	2030	2040	2050	2060
TOTAL							
141	Number of new pensions (in 1000)						
142	Total pension points at retirement						
143	Average pension points accumulated per year or average contributory period						
144	Average accrual rate (=W/K)						
145	Point value (V)						
146	Point cost (K)						
147	Sustainability/adjustment factors						
148	Average number of months paid the first year						

(1) Data to be provided also by gender.

Source: Commission services, EPC

Table II.A1.3: Pension projection reporting framework: decomposition of new public pension expenditure - earnings related for DB schemes

Defined Benefit schemes (BE BG CZ DK EE EL ES FR IE LT LU HU MT NL AT PT SI FI UK)		2013	2020	2030	2040	2050	2060
TOTAL							
153	Number of new pensions (in 1000)						
154	Average contributory period (in years)						
155	Average accrual rate						
156	Monthly average pensionable earning						
157	Sustainability/adjustment factors						
158	Average number of months paid the first year						

(1) Data to be provided also by gender.

Source: Commission services, EPC

Table II.A1.4: Pension projection reporting framework: decomposition of new public pension expenditure - earnings related for NDC schemes

Notional defined contribution (IT LV PL SE NO)		2013	2020	2030	2040	2050	2060
TOTAL							
157	Number of new pensions (in 1000)						
158	Average contributory period (in years)						
159	Average accrual rate (=c/A)						
160	Notional accounts contribution rate (c)						
161	Annuity factor (A)						
162	Monthly average pensionable earning						
163	Sustainability/adjustment factors						
164	Average number of months of pension paid the first year						

(1) Data to be provided also by gender.

Source: Commission services, EPC

Table II.A1.5: Pension projections reporting framework: decomposition of new private pension expenditure

Private occupational scheme		2013	2020	2030	2040	2050	2060
TOTAL							
159	Number of new pensions (in 1000)						
160	Average contributory period (in years)						
161	Average accrual rate						
162	Monthly average pensionable earning						
163	Sustainability/adjustment factors						
164	Average number of months paid the first year						
Private individual scheme		2013	2020	2030	2040	2050	2060
TOTAL							
165	Number of new pensions (in 1000)						
166	Average contributory period (in years)						
167	Average accrual rate						
168	Monthly average pensionable earning						
169	Sustainability/adjustment factors						
170	Average number of months paid the first year						

(1) This block is to be provided on a voluntary basis.

Source: Commission services, EPC

Coverage of pension projections and additional information

The core of the projection exercise is *the government expenditure on pensions for both the private and public sectors*. Pension expenditure should cover pensions and equivalent cash benefits granted for a long period (over one year) for old-age, early retirement, disability, survivors (widows and orphans) and other specific purposes which should be considered as equivalents or substitutes for above-mentioned types of pensions, i.e. pensions due to reduced capacity to work or due to labour market reasons. In particular, social assistance should be included if it is equivalent to minimum pension (as for non-earning-related minimum pension). ⁽¹³⁸⁾

Overall, Member States were asked to provide data for the following categories (see Table II.A.2.1)

Table II.A.2.1: Coverage of the pension projections

Data to be provided on a mandatory basis
Pension expenditures (Gross and net)
Benefit ratios
Gross average replacement rates (at retirement)
Number of pensions
Number of pensioners
Contributions
Number of contributors to pension schemes (employees)
Decomposition of new public pension expenditures (earnings-related)
Additional data to be provided on a mandatory basis (voluntary or absent in the previous 2012 Ageing Reports)
Decomposition of new pension expenditure projected also by gender,
Benefit ratio (in public schemes and earnings-related old-age pensions),
Contributions to public pension schemes divided into employer,
employee and State;
Average wage at retirement

Source: Commission services, EPC.

Moreover, in order to tackle system specificities, the structure of the module of new pension expenditure has been made country specific in the case of pension point systems (CY, DE, HR, RO, SK and partially FR).

In addition Member States can cover on a voluntary basis the figures on taxes on pensions and the figures on net pension expenditure.

Data on occupational schemes and private individual schemes (mandatory and non-mandatory) including those on replacement rates

⁽¹³⁸⁾ Further information on the coverage and definition of variables are available in European Commission (DG ECFIN) and Economic Policy Committee (Ageing Working Group) (2014), *The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies*. European Economy, no. 8.

(at retirement), benefit ratio and net pension expenditures have been provided on a voluntary basis. Countries that provide figures for taxes on private occupational and private individual pensions, also to be taken into account in the sustainability assessment, agreed to provide the data above on a mandatory basis as well as a decomposition of new pension expenditures for private occupational and private individual pensions.

The block on "Assets of pension funds and reserves" is not projected any longer.

A complete list of items covered by the 2015 pension projection exercise, including the blocks for new pension decomposition, is presented in Annex 1.

The part of the reporting sheet that is common to all pension schemes consists of 140 variables to be projected; 56 are to be provided on a voluntary basis and 5 are input data provided by the Commission.

In general, all of the amendments reflect the need to better understand recent developments and the expected changes over the projection period as regards the main features of the pension systems in the Member States.

Two additional tables are provided below: one related to social contributions to the public pension system as a share of the gross wage bill (see Table II.A.2.2); one related to the average, standard deviation and coefficient of variation of gross public pension expenditure over the period 2013 – 2060 (see Table II.A.2.3). An additional graph is also included below (see Graph II.A.2.1) that shows the impact of the migration scenario on the change of public pension expenditures (as compared to the baseline) over the period 2013–2037. In countries expected to experience net migration outflows in the baseline scenario, over the first half of the projection period, the projected change in public pension expenditure is reduced in this migration scenario compared to the baseline. However, this negative effect is reverted over the 2060 horizon under the convergence assumption.

Table II.A2.2: Social contributions to the public pension system in 2013 and in 2060 (% of gross wage bill)

Country	2013	2060	Change 2013-2060
BE	.	.	.
BG	16.4	16.3	0.0
CZ	21.3	21.9	0.6
DK	0.3	0.2	-0.1
DE	22.6	28.3	5.8
EE	14.8	12.3	-2.4
IE	12.3	16.1	3.7
EL	27.8	32.7	4.9
ES	29.1	30.2	1.1
FR	24.7	24.1	-0.6
HR	11.5	11.5	0.0
IT	35.9	37.6	1.7
CY	16.9	24.8	8.0
LV	16.6	14.7	-2.0
LT	17.8	16.1	-1.7
LU	35.7	35.6	-0.1
HU	25.4	25.1	-0.3
MT	21.8	18.8	-3.0
NL	15.2	17.9	2.7
AT	18.2	18.2	0.0
PL	17.1	19.7	2.6
PT	25.2	24.4	-0.8
RO	12.8	15.4	2.6
SI	16.9	17.6	0.7
SK	16.4	17.3	1.0
FI	26.6	26.6	0.0
SE	14.3	14.5	0.2
UK	.	.	.
NO	19.7	24.0	4.3
EU	23.0	24.7	1.7
EA	24.7	26.9	2.2

(1) BE: no separate public pension contributions.
 IE: contributions reported are also used to finance other social benefits in addition to pensions.
 UK: data not provided.

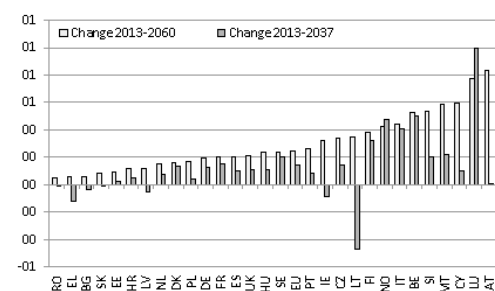
Source: Commission services, EPC

Table II.A2.3: Gross public pension expenditure average, standard deviation and coefficient of variation over the period 2013-2060 (% of GDP)

	average (1)	standard deviation (2)	coefficient variation (2) / (1)
RO	8.2	0.2	2%
CY	9.4	0.2	2%
AT	14.4	0.3	2%
PL	10.5	0.3	3%
PT	14.5	0.5	4%
CZ	9.2	0.3	4%
ES	11.7	0.4	4%
IT	15.3	0.6	4%
EL	14.6	0.6	4%
UK	8.0	0.4	5%
NO	11.3	0.5	5%
NL	7.8	0.4	6%
EE	7.0	0.4	6%
SE	7.8	0.4	6%
FI	13.7	0.8	6%
BG	8.7	0.6	6%
FR	13.8	1.0	7%
BE	14.4	1.1	8%
DE	11.7	0.9	8%
HU	10.1	0.8	8%
LU	11.9	1.0	9%
DK	8.2	0.8	9%
SK	8.5	0.8	9%
MT	10.3	1.0	10%
IE	9.1	0.9	10%
LV	5.5	0.6	11%
LT	8.2	0.9	11%
SI	13.5	1.8	13%
HR	8.6	1.4	16%
EU	11.5	0.2	2%
EA	12.7	0.3	2%

Source: Commission services, EPC

Graph II.A2.1: Impact of lower migration on gross public pension expenditure change (deviation from baseline change, pp of GDP)



Source: Commission services, EPC

ANNEX 3

Detailed overview of indexation rules

Table II.A3.1: Legal indexation rule in EU Member States

Public pensions					
	Minimum pension / social allowance	Old-age pensions	Early retirement pensions	Disability pensions	Survivors' pensions
BE	CPI + LSA	CPI + LSA	CPI + LSA	CPI + LSA	CPI + LSA
BG	50% CPI + 50% NI	50% CPI + 50% NI	50% CPI + 50% NI	50% CPI + 50% NI	50% CPI + 50% NI
CZ	NI	CPI + min 1/3 RI	CPI + min 1/3 RI	CPI + min 1/3 RI	CPI + min 1/3 RI
DK	NI	NI	NI	NI	NI
DE	70% CPI + 30% NI & reexam	NI + sust	NI + sust	NI + sust	NI + sust
EE	80% ST + 20% CPI	80% ST + 20% CPI	80% ST + 20% CPI	80% ST + 20% CPI	80% ST + 20% CPI
EL	Before 2015: YD; as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD; as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD; as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD; as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD; as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI
ES	IPR	IPR	IPR	IPR	IPR
FR	CPI	CPI	CPI	CPI	CPI
HR	Highest of: 70% NI + 30% CPI 50% CPI + 50% NI 30% CPI + 70% NI	Highest of: 70% NI + 30% CPI 50% CPI + 50% NI 30% CPI + 70% NI	Highest of: 70% NI + 30% CPI 50% CPI + 50% NI 30% CPI + 70% NI	Highest of: 70% NI + 30% CPI 50% CPI + 50% NI 30% CPI + 70% NI	Highest of: 70% NI + 30% CPI 50% CPI + 50% NI 30% CPI + 70% NI
IE	NR	NR	NR	NR	NR
IT	CPI ; lump-sums fixed in nominal terms	CPI - size	CPI - size	CPI - size	CPI - size
CY	NI	Basic: NI; Suppl.: CPI	Basic: NI; Suppl.: CPI	Basic: NI; Suppl.: CPI	Basic: NI; Suppl.: CPI
LV	CPI + 25% RI	CPI + 25% RI	CPI + 25% RI	CPI + 25% RI	CPI + 25% RI
LT	NR	NR	NR	NR	NR
LU	CPI if CPI>2.5% & RI re-exam(2)	CPI if CPI>2.5% & RI re-exam(2)	CPI if CPI>2.5% & RI re-exam(2)	CPI if CPI>2.5% & RI re-exam(2)	CPI if CPI>2.5% & RI re-exam(2)
HU	-	min 100% CPI	min 100% CPI	min 100% CPI	min 100% CPI
MT	COLA	COLA + NI (born before 1962); 70% NI + 30% CPI (born after 1962)	-	COLA	COLA + NI (born before 1962); 70% NI + 30% CPI (born after 1962)
NL	NI	NI	-	NI	NI
AT	CPI	CPI	CPI	CPI	CPI
PL	CPI + 20% RI	CPI + 20% RI	CPI + 20% RI	CPI + 20% RI	CPI + 20% RI
PT	CPI + GDP partially (GDP)	CPI + GDP partially (size and GDP)	CPI + GDP partially (size and GDP)	CPI + GDP partially (size and GDP)	CPI + GDP partially (size and GDP)
RO	Up to 2030: CPI + 50% RI; as of 2030: CPI	Up to 2030: CPI + 50% RI; as of 2030: CPI	Up to 2030: CPI + 50% RI; as of 2030: CPI	Up to 2030: CPI + 50% RI; as of 2030: CPI	Up to 2030: CPI + 50% RI; as of 2030: CPI
SI	In line with pensions	40% CPI + 60% NI	40% CPI + 60% NI	40% CPI + 60% NI	40% CPI + 60% NI
SK	CPI	50% CPI + 50% NI	50% CPI + 50% NI	50% CPI + 50% NI	50% CPI + 50% NI
FI	CPI	80% CPI + 20%NI + sust	80% CPI + 20%NI + sust	80% CPI + 20%NI + sust	80% CPI + 20%NI + sust
SE	CPI	NI + sust	NI + sust	NI + CPI	NI + CPI
UK	NI	NI	-	-	NI
NO	NI (- 0.75 pp as of 2011)	NI (- 0.75 pp as of 2011)	NI (- 0.75 pp as of 2011)	NI (- 0.75 pp as of 2011)	NI (- 0.75 pp as of 2011)

(1)NR No rule exists
 RI Real income growth
 NI Nominal income growth
 ST Social tax growth
 GDP GDP growth
 CPI CPI inflation
 IPR Index for pension revaluation. The IPR must lie between 0.25 and the year-on-year percentage change in annual CPI on December of year t plus 0.5%
 LE Adjustment to life expectancy
 LSA Living standard adjustment
 COLA Adjustment to cost of living
 size Adjusted by a pension size
 sust Additional adjustment due to other mechanisms such as a sustainability factor, balancing mechanism, life expectancy, value of a pension point, maintenance of relativity between means-tested and contributory pension, etc.
 re-exam(X) Re-examination of pension value every X years
 min At least
 YD Yearly decree
 pub Public sector
 Source: Commission services, EPC.

Table II.A3.2: Indexation rules applied in the projections exercise (when different from the legal rule)

Public pensions					
	Minimum pension / social allowance	Old-age pensions	Early retirement pensions	Disability pensions	Survivors' pensions
CZ	NI	CPI + 1/3 RI	CPI + 1/3 RI	CPI + 1/3 RI	CPI + 1/3 RI
DK	NI				
ES	NI	IPR	IPR	IPR	IPR
EL	Before 2015: YD, as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD, as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD, as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD, as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI	Before 2015: YD, as of 2015: Minimum of 1) 50% CPI + 50% GDP or 2) 100% CPI
IE	NI (from 2017)	NI (from 2017)	NI (from 2017)	NI (from 2017)	NI (from 2017)
IT	GDP per capita as of 2019				
CY	NI				
LT	NI	NI	NI	NI	NI
LU	NI	CPI + Wages (50% to 100% depending on financial situation)	CPI + Wages (50% to 100% depending on financial situation)	CPI + Wages (50% to 100% depending on financial situation)	CPI + Wages (50% to 100% depending on financial situation)
HU	NI				
MT	NI				
AT	NI				
RO	NI				
SK	NI				
FI	50 % CPI + 50 % to NI				
SE	NI as of 2019	NI	NI	NI	NI

(1)NR	No rule exists
RI	Real income growth
NI	Nominal income growth
ST	Social tax growth
GDP	GDP growth
CPI	CPI inflation
LE	Adjustment to life expectancy
LSA	Living standard adjustment
COLA	Adjustment to cost of living
size	Adjusted by a pension size
sust	Additional adjustment due to other mechanisms such as a sustainability factor, balancing mechanism, life expectancy, value of a pension point, maintenance of relativity between means-tested and contributory pension, etc.
re-exam(X)	Re-examination of pension value every X years
min	At least
YD	Yearly decree
pub	Public sector

Source: Commission services, EPC.

Input data used to project long-term care expenditure

The most important data required to successfully run this projection exercise in the field of LTC include:

- public expenditure on LTC;
- per user (also called beneficiary or recipient) public expenditure on LTC by gender and single age or five-year age cohorts (so-called "age-related expenditure profiles");
- disaggregation of total public spending on LTC into spending on services in kind and spending on cash benefits for LTC, by gender and single age or five-year age cohorts;
- disaggregation of total public spending on services in kind into spending on services provided in the institutions and services provided at home, by gender and single age or five-year age cohorts;
- number of beneficiaries of LTC services provided a) at home and b) in institutions, and recipients of cash benefits for LTC, by gender and single age or five-year age cohorts;
- information on the possible overlapping between the recipients of cash benefits related to LTC and the recipients of LTC services (legal possibility and numbers);
- EU-SILC dependency rates by gender and five-year age cohorts (as a measure of demand for LTC);
- Policy reforms in the LTC area.

The EU Member States and Norway were invited to complete the data questionnaire. Outstanding issues were discussed with the Commission on a bilateral basis. Table II.A4.2 below presents an overview of the available data. It first shows the expenditure data sources for in-kind long-term care and cash benefits, as well as whether member states supplied quantified estimates of the effects of legislated reforms. It then shows whether cost-profiles by age of recipient were available, or whether, in their absence the profile of expenditure by age has been assumed to be in-line with other EU15 or NMS Member States. The table shows that where possible a disaggregation of profiles

according to institutional, home care and cash benefits was made, which became possible with better data availability. Next, it describes the availability of expenditure and recipient data for home care, institutional care and cash benefits. Finally, the availability of cost-profiles in the Ageing Report 2015 is reported.

It is useful to recall that the AWG has decided to define viable solutions for important data limitations regarding reporting of LTC expenditure. This concerns both in-kind and cash benefit expenditure. Many countries using SHA accounting do not report expenditure on social services of LTC, which may lead to underreporting of expenditure. Second, cash benefits for LTC are not accurately reported in the SHA database. The AWG agreed thus, to preserve the accounting methodology from the 2012 Ageing Report, which combines SHA and ESSPROS databases, while effectively eliminating on a bilateral basis any issues of double-counting of expenditure, which may arise in this case (Table II.A4.1)

As a result of this accounting exercise, the reported levels of spending may deviate from those reported by international data, such as EUROSTAT or OECD. The resulting spending levels are depicted by the source of expenditure in Table II.A4.3.

27 countries based their questionnaires on SHA data, while 2 countries used ESSPROS (UK, IE). 22 country-specific age-cost profiles were agreed upon for usage. This is a considerable increase compared to 2012, where also BG, CZ, EE, FR and PT did not report age-cost profiles. In addition, 10 countries provided information regarding the budgetary effects of policy reforms on public long-term care spending.

As Table II.A4.2 shows, only a few countries have provided the full data necessary to run the projection exercise. Missing data has been replaced in a number of ways. In particular:

1. when the number of users of institutional and home care and the number of cash beneficiaries were not available by age and sex group but only in total, they have been computed by age and sex on the basis of the share of dependents (EU-SILC dependency rates) by respective age and sex group;

Table II.A4.1: Combinations of data sources for estimating long-term care expenditure

Preferred solution: SHA, when data is available (CZ, DE, DK, EE, ES, FR, CY, LV, LT, LU, MT, PL, RO, SI, SK, FI, SE)

HC	LTC – "medical" component	LTC – "social" component	LTC – institutional care	LTC – home care	LTC – cash benefits
SHA: HC.1-HC.2 + HC.4-HC.9 + HC.R.1	SHA: HC.3	SHA: HC.R.6	SHA: HC.3.1 + HC.3.2 + HC.R.6 divided according to the split in benefits in kind in ESSPROS data	SHA: HC.3.3 + HC.R.6 divided according to the split in benefits in kind in ESSPROS data	ESSPROS: cash benefits from disability and old-age functions (see Table 15)

Alternative 1: When data on HC.R.6 - "social" component of LTC is not available in SHA (AT, BE, BG, EL, HR, HU, NO)

		LTC – "social" component			
		ESSPROS: benefits in kind from sickness, disability and old-age functions (see Table 14)			

Alternative 2: When SHA lacks data on institutional/home care, i.e. on sub-categories of HC.3 (for NL and PT)

			LTC – institutional care	LTC – home care	
			SHA health providers classification: HP.1, HP.2 and HP.3, except for HP.3.6	SHA health providers classification: HP.3.6 and HP.7.2.	

Alternative 3: When SHA data is not available (IE, UK)

HC	LTC – "medical" component AND "social" component	LTC – institutional care	LTC – home care	
ESSPROS: benefits in kind (in-patient + out-patient) and cash benefits in sickness function + other benefits in kind in the family function + exp. on rehabilitation in social exclusion function	Estimated on the basis of ESSPROS data: benefits in kind from sickness, disability and old-age functions + cash benefits in disability and old-age functions (see Table 14 and Table 15)	Estimated on the basis of ESSPROS data (see Table 19)	Estimated on the basis of ESSPROS data (see Table 19)	

Source: European Commission, EPC.

2. when a country provided the total number of users of home care by age and sex but only the total number of users of institutional care, the allocation of institutional care users to each age and sex group was done on the basis of the distribution of home care users;

of individual countries' LTC age-gender specific expenditure profiles expressed as % of GDP per capita and as calculated for either EU15 or NMS aggregates; the averages have been calculated using all available data;

3. missing LTC age-gender specific cost profiles have been replaced by the simple average

Table II.A.4.2: Availability of input data for long-term care expenditure projections

Country	Source in-kind expenditure data	Quantified reforms	AR 2015 - Long term care data provided and used						AR 2015		AR 2012	
			Detailed Expenditure by type of care			Detailed numbers of recipients by type of care			Ageing Report 2015	Ageing Report 2012	Age cost profiles	Country
			LTC services ("in-kind")	LTC services in institutions (HC.3.1 + HC.3.2)	LTC services at home (HC.3.3)	LTC-related cash benefits	LTC services ("in-kind")	In institutions				
	IE, UK, only ESSPROS	Quantified reforms for 10 countries							22 country specific profiles	17 country specific profiles		
Austria	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Austria	
Belgium	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Belgium	
Bulgaria	SHA		X	X	X	X	X	X	X	Imputed	Bulgaria	
Croatia	SHA								Imputed	N.A.	Croatia	
Cyprus	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Cyprus	
Czech Republic	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Czech Republic	
Denmark	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Denmark	
Estonia	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Estonia	
Finland	SHA		X	X	X	X	X	X	Imputed	Imputed	Finland	
France	SHA		X	X	X	X	X	X	Imputed	Imputed	France	
Germany	SHA		X	X	X	X	X	X	Imputed	Imputed	Germany	
Greece	SHA		X	X	X	X	X	X	Imputed	Imputed	Greece	
Hungary	SHA		X	X	X	X	X	X	Imputed	Imputed	Hungary	
Ireland	ESSPROS								Imputed	Imputed	Ireland	
Italy	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Italy	
Latvia	SHA		X	X	X	X	X	X	Imputed	Imputed	Latvia	
Lithuania	SHA		X	X	X	X	X	X	Imputed	Imputed	Lithuania	
Luxembourg	SHA		X	X	X	X	X	X	Imputed	Imputed	Luxembourg	
Malta	SHA		X	X	X	X	X	X	Imputed	Imputed	Malta	
Netherlands	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Netherlands	
Norway	SHA		X	X	X	X	X	X	Imputed	Imputed	Norway	
Poland	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Poland	
Portugal	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Portugal	
Romania	SHA								Imputed	Imputed	Romania	
Slovak Republic	SHA	X							Imputed	Imputed	Slovak Republic	
Slovenia	SHA	X	X	X	X	X	X	X	Imputed	Imputed	Slovenia	
Spain	SHA		X	X	X	X	X	X	Imputed	Imputed	Spain	
Sweden	SHA		X	X	X	X	X	X	Imputed	Imputed	Sweden	
United Kingdom	ESSPROS		X	X	X	X	X	X	Imputed	Imputed	United Kingdom	

Source: European Commission, EPC

Table II.A4.3: Public expenditure on LTC on the basis of the SHA joint questionnaire with proxy for HC.R.6 from ESSPROS and cash benefits from ESSPROS as a % of GDP, most recent SHA data

	SHA joint questionnaire categories			ESSPROS cash benefits related to LTC as a % of GDP						Public expenditure on LTC as a % of GDP, with cash benefits
				Disability function				Old age function	Total cash benefits related to LTC as a % of GDP = Proxy for LTC expenditure in HC.R.7	
	HC.3	HC.R.6, including proxies from ESSPROS	Sum = public expenditure on LTC in kind as a % of GDP	Periodic care allowance	Periodic economic integration of handicapped	Lump sum care allowance	Lump sum economic integration of handicapped	Periodic care allowance		
BE	2.0	0.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
BG	0.0	0.3	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.4
CZ	0.3	0.0	0.3	0.1	0.0	0.0	0.0	0.4	0.5	0.8
DK	2.4	0.0	2.4	0.0	0.1	0.0	0.0	0.0	0.1	2.5
DE	1.0	0.0	1.0	0.0	0.4	0.0	0.0	0.0	0.4	1.4
EE	0.2	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.3	0.5
IE	:	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7
EL	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.4
ES	0.6	0.1	0.7	0.1	0.1	0.0	0.0	0.2	0.4	1.1
FR	1.2	0.5	1.8	0.0	0.2	0.0	0.0	0.0	0.2	2.0
HR	0.0	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4
IT	0.8	0.2	1.0	0.8	0.0	0.0	0.0	0.0	0.8	1.8
CY	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.2	0.3
LV	0.2	0.3	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.6
LT	0.5	0.4	0.9	0.1	0.0	0.0	0.0	0.4	0.5	1.4
LU	1.3	0.1	1.4	0.0	0.1	0.0	0.0	0.0	0.1	1.5
HU	0.2	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7
MT	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.2	1.0
NL	2.9	1.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	4.1
AT	0.5	0.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1.4
PL	0.4	0.0	0.4	0.1	0.0	0.0	0.0	0.2	0.3	0.7
PT	0.2	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
RO	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7
SI	0.9	0.1	1.0	0.1	0.4	0.0	0.0	0.1	0.5	1.5
SK	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
FI	0.6	1.5	2.1	0.3	0.1	0.0	0.0	0.0	0.3	2.4
SE	0.7	3.0	3.7	0.1	0.0	0.0	0.0	0.0	0.1	3.8
UK	:	1.1	1.1	0.1	0.0	0.0	0.0	0.0	0.1	1.2
NO	3.1	0.9	3.9	0.1	1.6	0.0	0.0	0.0	1.7	5.7

Source: European Commission, EPC.

4. missing LTC age-gender specific number of recipients of either home, institutional care or cash benefits have been replaced by corresponding simple average of individual countries' LTC age-gender specific number of recipients expressed as % of disabled for either EU15 or NMS aggregates; the averages have been calculated using all available data;

5. spending in home and institutional care has been proxied by the average share of those two items in total LTC spending.

The average LTC age-gender specific expenditure profile (as calculated in point 3 just above) was

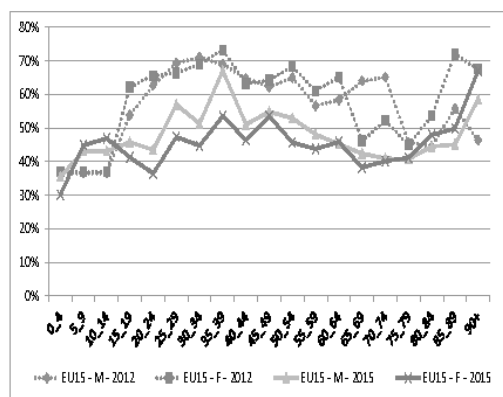
also used when a country: 1) provided aggregate expenditure but 2) no information on recipients of institutional and home care, 3) no information on age-gender expenditure profile per user and 4) only age-gender specific expenditure per capita (total public expenditure on long-term care for each age-gender cohort divided by the number of population in a given age-gender cohort). Using per capita rather than per user creates a pattern of age-gender profiles which is not coherent with the pattern of age-gender profiles of the countries providing data per user. Indeed, the per capita profiles show a strongly increasing (exponential) shape. The methodology for running these

projections required expenditure per user (also called beneficiary or recipient).

Moreover, the age-gender expenditure profiles were adjusted to the total public expenditure provided according to SHA/ESSPROS i.e upward or downward adjustment without modifying the age specific distribution. This is the same procedure as that followed in the case of health care projections.

Graphs II.A4.1 and II.A4.2 display the age-related expenditure profiles (as % of GDP per beneficiary) which have been used in the projection of long-term care expenditure, also in comparison to the 2012 Ageing Report.

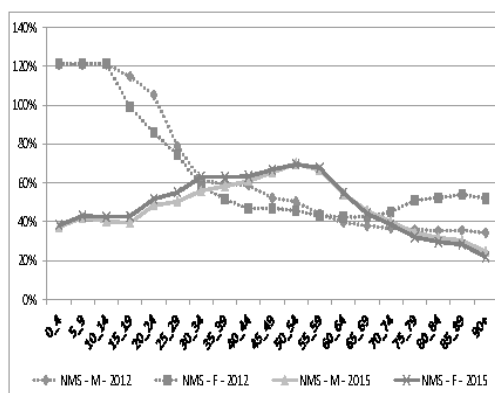
Graph II.A4.1: Expenditure profiles of long-term care services by age and gender in the EU15, spending per recipient as % of GDP per capita and comparing 2015 and 2012 Ageing Reports



Source: European Commission, EPC.
 Notes: F= Females; M=Males;
 EU15: Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom

The 2015 "age-related expenditure profiles" show that expenditure (spending per user as % of GDP per capita) is rather flat for LTC recipients, which signals that the LTC costs related to severe disability are relatively independent of age.

Graph II.A4.2: Expenditure profiles of long-term care recipients in the New Member States, spending per recipient as % of GDP per capita and comparing 2015 and 2012 Ageing Reports



Source: European Commission, EPC.
 Notes: F= Females; M=Males;
 NMS = New Member States: Bulgaria, Czech Republic, Estonia, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia.

Partially due to lower initial spending levels on LTC in the current report, age cost profiles in the EU15 are below those estimated in the 2012 Ageing Report. Profiles have also changed in the remaining countries, although here also driven by availability of profiles for more countries than in the previous report. Country specific profiles are shown in graphs II.A4.3, which illustrates the variation mostly in spending levels per age category between countries.

Dependency rates

As defined in EU-SILC, dependency does increase by age (and, on average, is more prevalent among women than among men). Table II.A4.5 shows the dependency rates per age group, for each Member States and Norway.

Table II.A4.4: Coverage rates in the base case scenario

	Coverage Home care		Coverage Institutional Care		Coverage Cash benefits	
	2013	2060	2013	2060	2013	2060
BE	84%	93%	17%	23%	0%	0%
BG	38%	39%	5%	7%	0%	0%
CZ	11%	18%	41%	44%	39%	57%
DK	23%	33%	10%	17%	29%	42%
DE	5%	6%	10%	16%	19%	25%
EE	6%	9%	13%	23%	13%	18%
IE	30%	41%	13%	21%	0%	0%
EL	1%	2%	1%	1%	33%	42%
ES	28%	52%	13%	19%	20%	33%
FR	19%	22%	15%	18%	7%	5%
HR	6%	6%	6%	6%	39%	39%
IT	17%	20%	6%	8%	40%	50%
CY	5%	7%	5%	6%	12%	15%
LV	6%	6%	7%	7%	6%	6%
LT	27%	45%	24%	27%	42%	59%
LU	28%	33%	14%	23%	6%	7%
HU	8%	11%	12%	17%	0%	0%
MT	54%	73%	8%	12%	22%	12%
NL	44%	56%	31%	46%	0%	0%
AT	21%	27%	10%	14%	59%	81%
PL	5%	7%	3%	5%	62%	75%
PT	2%	2%	3%	3%	30%	41%
RO	13%	18%	12%	15%	30%	36%
SI	17%	23%	9%	15%	20%	35%
SK	12%	17%	9%	11%	33%	33%
FI	37%	50%	12%	18%	72%	81%
SE	33%	41%	14%	19%	36%	45%
UK	19%	21%	4%	5%	28%	37%
NO	61%	72%	14%	22%	36%	45%
EU28	19%	26%	11%	15%	25%	32%
EU15	20%	27%	11%	15%	23%	30%
NMS	10%	14%	12%	15%	38%	48%

Source: European Commission, EPC.

The age-specific dependency rates vary markedly across EU Member states (and Norway). In some countries they are three times higher than in others. Given the limited comparability of the data concerning self-perceived disability, the dependency rates in Table II.A4.5 cannot fully represent the real country-specific health status. As already mentioned, they may diverge noticeably from other national statistics.

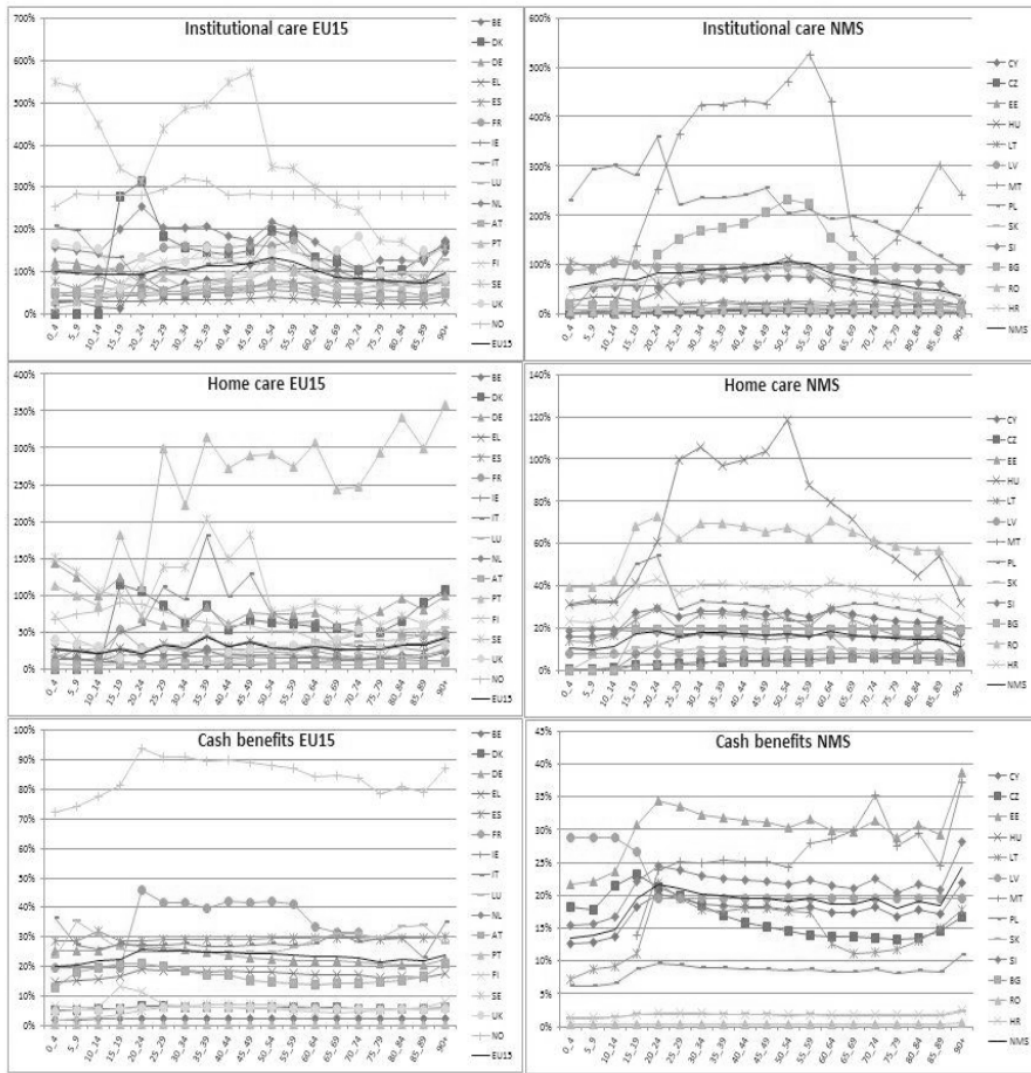
Coverage rates

Bearing this in mind, the calculated coverage rates, for both types of formal LTC services are presented for each country in Table II.A4.4 and in Graph II.A4.4. They result from the comparison between the number of "dependents", such as

defined by EU-SILC, and the number of recipients of LTC services as provided by the Member States (or, when missing, as measured by the correspondent EU13 or EU15 average). Of course, the approximation which results from using EU-SILC survey has consequences for the construction of coverage rates as well, which may be considerably under- or overestimated.

In nearly all countries, overall coverage rates are projected to increase between 2013 and 2060, even in the "base case scenario". This reflects the fact that the ageing of the population shifts the composition of the dependent population towards higher ages, where coverage rates are higher.

Graph II.A4.3: Country-specific long-term care expenditure profiles by type of care, age and gender, as % of GDP per capita.



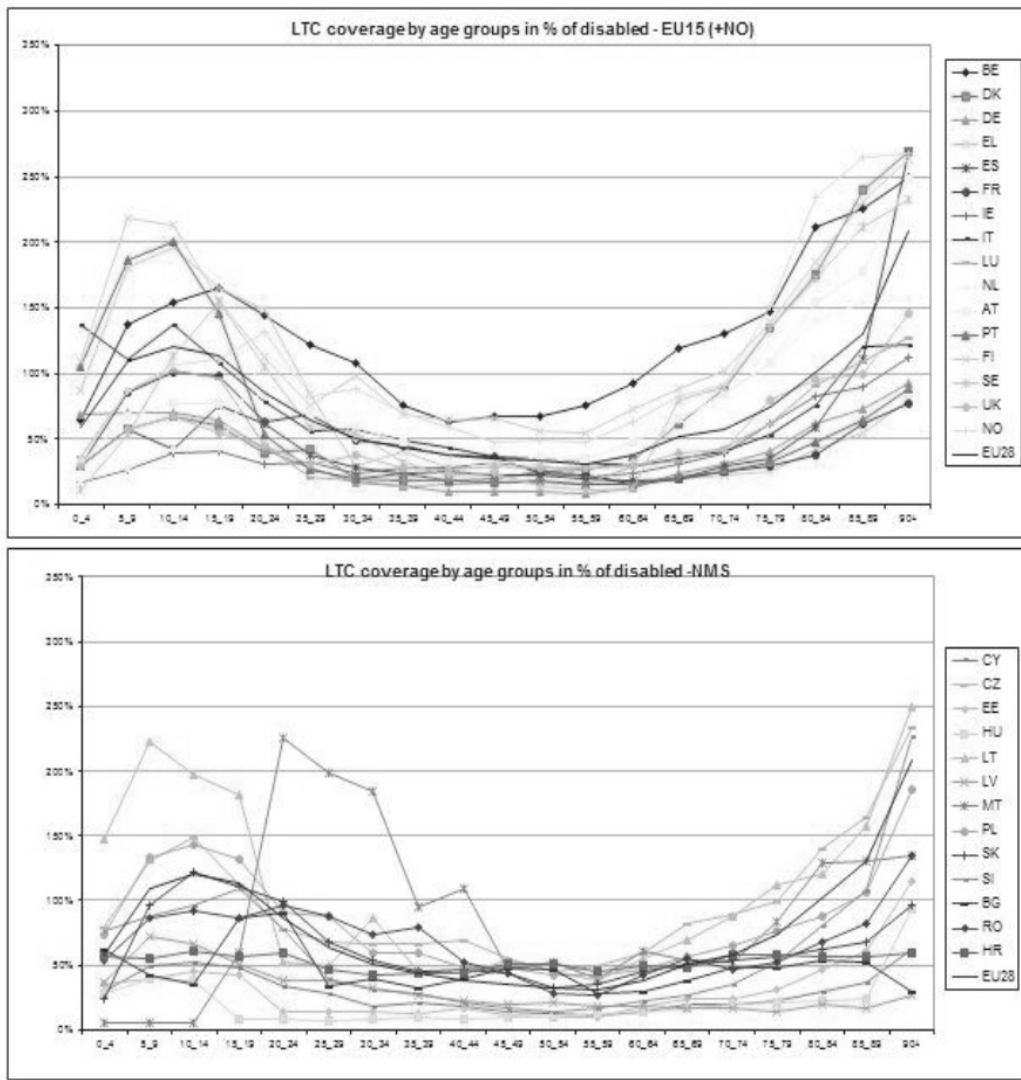
Source: European Commission, EPC.

Notes:

EU15: Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom.

NMS = New Member States: Bulgaria, Czech Republic, Estonia, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia

Graph II.A4.4: Age-specific long-term care coverage rates (in-kind and cash benefits) by age groups in % of disabled



Source: European Commission, EPC.

Table II.A4.5: Dependency rates, based on EU-SILC

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	
BE	1.1	1.8	2.2	2.9	4.3	6.1	6.9	8.6	9.7	9.7	10.3	12.9	19.0	21.0	30.6	BE
BG	0.4	0.5	1.4	1.2	1.5	1.4	1.3	1.8	3.9	5.8	7.4	8.5	13.0	16.8	25.3	BG
CZ	1.0	1.5	1.9	2.0	2.1	2.2	3.6	6.1	7.4	7.8	7.4	10.9	17.1	22.7	34.9	CZ
DK	2.5	3.5	3.2	7.3	8.0	9.2	9.9	9.2	11.1	10.0	8.5	8.9	10.1	13.5	13.6	DK
DE	1.1	1.5	2.0	3.3	4.2	6.3	7.7	10.5	16.2	16.6	13.1	16.1	22.2	29.4	43.0	DE
EE	1.5	1.8	2.1	2.1	2.7	2.7	5.2	7.8	11.0	9.2	13.9	17.8	25.5	37.2	48.7	EE
IE	1.3	2.4	2.1	3.1	2.8	3.1	3.0	4.7	7.4	7.5	9.1	10.8	12.7	16.8	27.5	IE
GR	0.6	0.5	0.8	2.3	1.9	3.0	3.7	4.0	7.3	10.3	14.8	19.5	31.0	35.0	47.7	GR
ES	0.8	0.9	1.3	1.5	2.1	2.4	3.1	3.7	5.2	6.7	7.8	10.0	14.6	21.8	31.5	ES
FR	2.0	1.6	2.0	2.8	3.7	4.8	5.8	8.8	11.1	10.2	11.0	17.5	22.6	33.2	42.6	FR
HR	0.8	1.2	2.0	1.6	2.8	3.9	3.8	6.1	6.6	8.4	12.3	15.3	18.2	25.5	30.4	HR
IT	0.9	1.4	1.7	2.1	2.5	3.3	4.2	4.9	6.5	8.5	11.4	15.5	22.7	32.0	41.2	IT
CY	1.3	1.7	1.8	2.7	2.8	3.7	5.1	7.5	11.2	14.5	14.8	20.5	29.4	38.2	47.5	CY
LV	1.0	1.1	1.4	1.9	2.5	3.3	3.7	5.0	7.5	9.7	13.0	17.4	23.7	30.1	38.1	LV
LT	0.6	2.2	2.3	1.3	3.1	3.4	2.9	5.0	8.4	11.4	13.8	15.2	19.4	34.0	46.1	LT
LU	0.9	1.6	2.2	2.4	3.9	4.3	4.8	6.3	10.0	7.3	9.8	12.3	16.7	18.5	23.0	LU
HU	1.1	1.3	1.6	1.9	2.3	3.8	4.8	8.2	9.4	11.6	13.7	18.0	24.9	32.6	41.7	HU
MT	0.6	0.5	0.7	0.7	1.7	1.2	2.5	2.7	4.4	3.1	4.7	9.4	14.9	21.1	26.6	MT
NL	1.2	0.9	1.5	3.7	3.9	5.1	6.4	7.5	9.2	9.3	7.1	8.7	12.6	15.7	19.4	NL
AT	1.8	1.7	2.1	2.6	3.5	5.1	7.8	9.2	12.8	12.2	13.4	16.4	24.5	32.7	47.9	AT
PL	1.3	1.7	1.6	2.3	2.6	3.8	4.2	6.5	8.5	11.0	14.0	17.8	22.9	31.3	40.2	PL
PT	0.7	1.3	2.4	3.5	3.1	4.6	6.1	7.1	10.4	12.7	15.5	18.5	26.4	35.5	44.2	PT
RO	1.5	1.2	1.2	1.4	1.4	2.7	3.6	7.7	10.6	9.6	10.9	19.8	27.7	36.8	46.8	RO
SI	3.3	3.6	4.0	4.3	4.9	7.7	10.5	13.6	16.7	15.4	20.7	23.8	29.8	34.2	39.6	SI
SK	1.8	1.8	2.3	2.7	3.8	4.4	5.2	9.8	13.6	15.8	20.6	27.8	37.4	50.7	65.1	SK
FI	2.0	2.2	3.0	2.4	3.9	4.7	5.8	8.0	10.6	9.5	10.4	13.8	18.3	25.6	34.5	FI
SE	1.7	2.0	3.0	2.7	4.3	5.7	5.7	8.5	9.6	8.8	6.6	9.3	10.8	15.4	19.5	SE
UK	2.5	2.7	3.0	3.7	4.6	7.2	7.7	9.8	12.2	12.9	15.3	17.3	21.5	24.7	33.1	UK
NO	2.3	1.8	2.8	2.7	3.7	4.9	7.0	7.4	8.6	7.6	8.2	12.0	12.7	13.5	18.1	NO

Source: European Commission, EPC.