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Federal Planning Bureau

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Foreword

The European System of National Accounts (ESA) 2010 was introduced from September 2014. As decided by the AWG, Member States do not need to update their pension country fiches to reflect the new national accounts. The Commission services will incorporate the ESA2010 revision by updating the GDP series for the base year (2013), and by applying the previous growth rates of both GDP and the pension projections from 2013 onwards throughout the projection horizon.

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1. Overview of the Belgian pension system

1.1. Description of the Belgian pension system

1.1.1. Three pillars

The Belgian pension system can be divided into three pillars:

- The first pillar has the greatest importance (12.2% of GDP in 2013). It is a statutory public pension scheme with defined benefits (DB) for 99% of the expenses (only the assistance scheme is means-tested) and based on the pay-as-you-go financing (PAYG) principle. Since 1/1/1995, the financing of all social expenses for the general scheme for wage earners and self-employed is carried out through the so-called “global management” system (contributions and some tax revenues), which implies that there is only a global contribution rate for all social security schemes and no longer a contribution rate by scheme. Most social benefits for civil servants, among others pensions, are financed through the general budget of the federal government. The first pillar includes three main pension schemes: the scheme for wage earners (47% of total pension expenditure in 2013 – AWG definition), the scheme for the self-employed (7% of the total) and the scheme for civil servants (32% of the total). Besides these three schemes, the pension expenditure covered in the AWG results also comprises the assistance scheme named guaranteed income for the elderly (1% of the total pension expense), the unemployment with company allowance¹ under the wage earners’ scheme (4% of the total) and the disability benefits under the wage earners’ and self-employed schemes (9% of the total).
- Private occupational pension schemes (second pillar) are of minor importance: pension spending only amounts to 1.2% of GDP in 2012 for retired wage earners dependent on collective contracts entered into with insurance companies or institutions for occupational retirement provision (no data available for total spending). Concerning those pensions, an act was passed in 2003, i.e. the Act on supplementary pensions of 28 April 2003, centred on sectoral pension schemes and aimed at stepping up the development of these pensions by improving their access and by giving more guarantees to workers. For the time being, there are not enough data available to model the second pillar and to make relevant pension expenditure projections.
- The private voluntary individual pension schemes constitute the third pillar, but no estimate for pension expenditure is available at this stage.

Table 1 illustrates the relative weight of the various pension schemes both in terms of spending and in terms of number of pensioners.

¹ Formerly known as “pre-pension”.

Table 1 Weight of the various pension schemes in 2013 (unless otherwise stated) according to the AWG breakdown

	Pension spending (in % of GDP)	Number of pensioners (in thousands)
Public pension schemes (first pillar)	12.2	
of which earnings-related		
- wage earners' scheme		
old-age, early and survivor pensions	5.7	1542.4
% of beneficiaries entitled to the guaranteed minimum pension		14%
unemployment with company allowance	0.4	111.3
% of beneficiaries reaching the ceiling		95%
disability	1.1	289.6
% of beneficiaries entitled to the minimum allowance		64%
- self-employed scheme (old-age, early and survivor pensions)	0.8	284.1
% of beneficiaries entitled to the guaranteed minimum pension		50%
- civil servants' scheme (old-age, early, disability and survivor pensions)	3.9	387.1
of which non-earnings-related		
- assistance scheme (guaranteed income for elderly persons)	0.1	19.4
- disability (self-employed scheme) ²	0.1	21.2
Occupational scheme (second pillar) - only wage earners	1.2 (2012)	na
Non-mandatory private scheme (third pillar)	na	na

1.1.2. Some parameters of the public pension scheme

The following table summarizes information on the retirement age in the public pension scheme, taking into account the December 2011 pension reform which is briefly described here (a more detailed description is presented in section 1.3.2.). The new Belgian Government has just announced a new pension reform which is, of course, neither in the table below nor in the projections.

² The disability pensions in the self-employed scheme are lump-sum amounts so that they comply with the AWG definition of the non-earnings-related pensions ("all pension expenditures for which entitlements are not dependent on personal earnings, e.g. flat-rate or means-tested minimum pensions."). The distinction between earnings-related and non-earnings-related pensions for disability was not present in the 2012 questionnaire.

Table 2 Public pension scheme: statutory retirement age, earliest retirement age, penalty for early retirement and bonus for late retirement - on October 2014

		2013	2020	2030	2040	2050	2060
Wage earners	Statutory retirement age	65	65	65	65	65	65
	Earliest retirement age / career years	60.5/38	62/40	62/40	62/40	62/40	62/40
	Penalty for early retirement	-	-	-	-	-	-
	Bonus in case of late retirement	Pension bonus (old)	Pension bonus				
Self-employed	Statutory retirement age	65	65	65	65	65	65
	Earliest retirement age / career years	60.5/38	62/40	62/40	62/40	62/40	62/40
	Penalty for early retirement	from 25% to 3% between 60 and 64	-	-	-	-	-
	Bonus in case of late retirement	Pension bonus (old)	Pension bonus				
Civil servants	Statutory retirement age	65	65	65	65	65	65
	Earliest retirement age / career years	60.5/38	62/40	62/40	62/40	62/40	62/40
	Penalty for early retirement	-	-	-	-	-	-
	Bonus in case of late retirement	Age supplement	Pension bonus				
Unemployment with company allowance (only for wage earners)	Statutory retirement age with	60	60	60	60	60	60
	- career years: men	35	40	40	40	40	40
	- career years: women	28	36	40	40	40	40
	Companies in difficulty	52.5	55	55	55	55	55
	Companies undergoing restructuring	55	55	55	55	55	55
Disability (wage earners and self-employed)	No statutory age (between 18 and 64)	-	-	-	-	-	-
Guaranteed income for elderly persons	Statutory retirement age	65	65	65	65	65	65
	Earliest retirement age	-	-	-	-	-	-

The statutory retirement age in the three main public old-age pension schemes (wage earners, self-employed and civil servants) is 65 for both men and women, it being understood that forty-five career years are required for a full pension.

Till 2012, early retirement was allowed from the age of 60 with 35 career years in the wage earners' and self-employed schemes. Early retirement was also allowed in the civil servants' scheme from the age of 60 without practically any career length condition³. As from 2013, a parametric pension reform entered into force, mainly aimed at delaying early retirement by restricting its access in all schemes ("Miscellaneous provisions Act (1)" of 28 December 2011, published in the Belgian Gazette of 30 December 2011). The reform raises the minimum early retirement age and the minimum number of career years required for eligibility, respectively from 60 to 62 and from 35 (5 years for civil servants) to 40 years. A short transition period was introduced from 2013 until 2016: as from 2013, the early retirement age is raised each year by six months in order to reach the age of 62 in 2016. Simultaneously, the minimum career length is fixed at 38 years from 2013, 39 years from 2014 and 40 years from 2015. However, exceptions are made for long careers: at cruising speed (as of 2016), people with a 42-year career will still be eligible for early retirement at 60 (and at 61 with a 41-year career). For special schemes with pref-

³ In fact, a minimum of 5 years of services was required to qualify for a civil servants' pension.

erential 'tantiemes' (career fraction) in the civil servants' scheme (teachers, magistrates, university professors ...), accrual rates are reduced and career requirements for early retirement are increased.

The reform also introduces modifications in the unemployment with company allowance under the wage earners' scheme: the minimum career length requirement will be gradually increased to 40 years. The minimum age remains 60 in general (with the exception of companies in difficulty or undergoing restructuring, in which the entry age is gradually raised to 55, and the schemes "Interprofessional Agreement").

Till 31/12/2013, in the self-employed scheme, early retirement between 60 and 64 was subject to a penalty: the self-employed worker lost 25% when retiring at the age of 60, 18% at 61, 12% at 62, 7% at 63 and 3% at 64. Workers with a career of at least 43 years were not penalized. From 1/1/2014, there are no more penalties.

Financial stimuli to keep working after the age of 60 exist in the pension calculation: the pension bonus (old)⁴ for the wage earners' and self-employed schemes since 2007 and the age supplement⁵ for the civil servants' scheme since 2000. From 1/1/2014, the financial stimuli are the same in the three pension schemes and are all called "pension bonus". This new pension bonus starts one year after the worker complies with the requirements for early retirement. The new pension bonus is a lump-sum amount for each additional effectively worked day, increasing with the number of additional working days (from 1.5 EUR by day during the first 12 months till 2.5 EUR by day after 60 months; those amounts will be indexed to prices).

⁴ Since 2007, in the wage earners' and self-employed schemes, a pension bonus (old) of 2 EUR per working day (in prices of 2007) was granted from the age of 62 or to those who begin a 44th year of career (this amount was indexed to price: 2.2974 EUR in 2013). In 2013 for example, this pension bonus (old) would amount to 717 EUR per year for one year full-time occupation from the age of 62, or 2150 EUR per year if retiring at 65.

⁵ Since 2000, an age supplement was granted to civil servants retiring from the age of 60. This age supplement amounted to 0.125% of the annual pension rate for each worked month between 60 and 62 (1.5% per worked year), and to 0.167% from the age of 62 (2% per worked year). The pension of a civil servant who retires at 65 would increase by 9% due to this age supplement.

Box 1 Major characteristics of the three main public pension schemes (old-age earnings-related) – October 2014

Wage earners' scheme: a low replacement rate

- A full career is 45 years.
- Normal accrual rate: 1.33% (60%/45) applied to the wages over the career and only adjusted to current prices (CPI); 1.67% (75%/45) for the head of household with a dependent spouse.
- Increased accrual rate for low wages: minimum pension for a full career or at least 2/3 of a full career in the wage earners' scheme (1123.34 EUR per month in September 2014 for a full career; 1403.73 EUR per month for the head of household with a dependent spouse); minimum claim per working year (guaranteed minimum wage of 1872 EUR per month in September 2014).
- Decreased accrual rate for high wages: maximum pension for a full career due to wage ceiling (wage ceiling of 52760.95 EUR for the year 2013).
- Pension bonus as an incentive to work longer: progressive lump-sum amount for each additional effectively worked day, beginning one year after the worker complies with the requirements for early retirement.
- Pension automatically adjusted to price index and partially adjusted to living standards.

Self-employed scheme

- Very similar to the wage earners' scheme.
- However, the reference income takes into account the much lower contribution rate. As a result, 60% of the beneficiaries are entitled to the minimum pension (1060.94 EUR per month in 2014 for a full career; 1403.73 EUR per month for the head of a household with a dependent spouse).
- Pension bonus as an incentive to work longer: progressive lump-sum amount for each additional effectively worked day, beginning one year after the worker complies with the requirements for early retirement.
- Pension automatically adjusted to price index and partially adjusted to living standards.

Civil servants' scheme: a high replacement rate

- A full career is 45 years.
- Normal "nominal" accrual rate of 1.67% (1/60) applied to the average wage of the last 10 (5 years for people born before 1962) years of work (the "effective" accrual rate is much higher if expressed in terms of the average wage of the whole career).
- Pension bonus as an incentive to work longer: progressive lump-sum amount for each additional effectively worked day, beginning one year after the worker complies with the requirements for early retirement.
- Pension automatically adjusted to the nominal wage increases of the working civil servants.

More information on pension calculation is available in annex 6.1.

1.1.3. Rules for indexation and living standards adjustment

a. Legislation

All pensions are automatically adjusted to the price index.

Besides the indexation to prices, pensions are also adjusted to living standards in real terms (see also section 4.3.4). As far as civil servants are concerned, pensions are automatically adjusted to the real wage increase of the working civil servant. For the other pension schemes, the “Generation Pact” of December 2005 establishes the principle of an adjustment of the replacement benefits (not only pensions) to living standards in the wage earners’, the self-employed and the assistance schemes. Firstly, the government must provide for a budget covering an annual growth of 1.25% for the wage ceilings and the minimum claim per working year, an adjustment to living standards of 0.5% for the non-lump-sum allowances and a real growth of 1% for the lump-sum allowances. Once this budget is calculated, concrete measures for the adjustment to living standards are proposed by the social partners. These measures have to respect, in each scheme (wage earners’, self-employed, social assistance), the abovementioned global financial constraint. However, in each scheme, they can be aimed at specific sectors, categories of beneficiaries or types of allowances. Finally, the government decides on the final measures.

b. Projection

The table below presents the rules for indexation and living standards adjustment in the projection. All allowances are indexed to prices (CPI).

Table 3 Indexation and living standards adjustment of pensions by scheme in the projection

	Living standards adjustment (1)		Indexation to prices (whole projection period)
	Till 2014	From 2015	
Wage earners (including unemployment with company allowance and disability)	All the measures decided by the government	Partially adjusted to living standards following the “Generation Pact”: annual growth of	Automatically adjusted to price index (CPI)
Self-employed (including disability)		1.25% for the wage ceilings and the minimum claim;	
Guaranteed income for elderly persons		1% for the lump-sum benefit; 0.5% for the non-lump-sum benefit	
Civil servants	Adjusted to the real wage increases of the working civil servants diminished by 0.4%		

(1) in addition to price indexation

Regarding adjustment to living standards, in the 2015 Ageing Report, for the years 2013 and 2014, the projection takes into account all the measures already decided by the government until May 2014.

From 2015 onwards, in the wage earners’, the self-employed and the assistance schemes, social allowances are adjusted according to the parameters used for computing the budget devoted to the adjustment to living standards as stated in the Generation Pact (annual growth of 1.25% for the wage ceilings and the minimum claim, 1% for lump-sum benefits, 0.5% for non-lump-sum benefits). The civil servants’ pensions are adjusted to real wage increase of the working civil servants diminished by 0.4%

which corresponds to a historical trend of the difference between real wage increases and effective welfare adjustment of civil servants' pensions.

1.2. Description of the “constant policy” assumptions used in the projection

The long-term modelling of the social expenses has been carried out according to the constant policy principle, mainly similar to the constant legislation principle (see section 1.1.3). All the measures and reforms already decided by the government until May 2014 are taken into account in the projection (see below).

1.3. A continuous process of reform

1.3.1. Reforms before December 2011

These reforms were included in the 2012 Ageing Report.

- Act of 12 August 2000: introduction of age supplement in the civil servants' scheme for those retiring after the age of 60 (in force until 31/12/2013).
- The scheme of guaranteed income for elderly persons (GIEP) was reformed on 1 June 2001. Before 2001, the amount of the allowance mainly depended on the marital status (married or not). Since 2001, the allowance has been individualized and cohabitants are distinguished from lone persons on the basis of their place of residence (shared or not). The basic amount of the guaranteed income has been increased significantly since the reform of 2001.
- The age required for the unemployment with company allowance has been raised from 58 to 60 as from 2008 and the career condition has also been raised for men and women.
- In the pension scheme for wage earners, the wage ceiling has been split in two as from 2007: the first ceiling applies to wages and allowances received for illness and disability periods. The second ceiling applies to allowances received in case of unemployment, unemployment with company allowance and full-time and part-time career breaks. Only the first ceiling will be adjusted every two years according to the Act on Pension Reform passed in 1996. When the difference between the two ceilings reaches a certain level, the second ceiling is adjusted.
- As from 2007, a pension bonus per working day is granted after the age of 62 or to those who have a full career of 44 years, both in the wage-earners' and the self-employed scheme (in force until 31/12/2013).
- Adjustment of the “penalty” in the self-employed scheme: instead of losing 5% per year of early retirement between the age of 60 and 64, the self-employed worker with a career of less than 43 years will lose 25% when retiring at the age of 60, 18% at 61, 12% at 62, 7% at 63 and 3% at 64.
- Easing of the conditions for pensioners working after the statutory retirement age, but tightening of the conditions for working during early retirement.
- Adjustment to living standards as from 2008: see the Generation Pact above (section 1.1.3.).

1.3.2. The pension reform of December 2011

This reform was presented in the updated pension review of July 2012 and included in the 2012 Fiscal Sustainability Report⁶.

The December 2011 pension reform raises the minimum early retirement age and the minimum number of career years required for eligibility, respectively from 60 to 62 and from 35 (5 years for the civil servants) to 40 years, with a transition period between 2013 and 2016 (see table below). Exceptions are made for long careers: at cruising speed (as from 2016), people with a 42-year career will still be eligible for early retirement at 60 (and at 61 with a 41-year career).

Due to the reform, some special schemes in the private sector or professions with a specific status (miners and civil aviation flying personnel) which generally have a statutory retirement age under 65 and/or a full career of less than 45 years will be aligned with the general wage earners' scheme after a transition period. Similarly, for special schemes with higher accrual rates in the civil servants' scheme (teachers, magistrates, university professors ...), accrual rates will be reduced and career requirements for early retirement will be increased. In the unemployment with company allowance scheme, the minimum career length requirement will be gradually increased to 40 years and the minimum age will be raised to 55 for companies in difficulty or undergoing restructuring.

Table 4 The December 2011 pension reform in the three main public pension schemes

Year	Before reform		After reform		
	Minimum age	Career requirement	Minimum age	Career requirement	Exceptions for long careers
2012	60	35 years (5 years ⁷)	60	35 years (5 years)	
2013	60	35 years (5 years)	60 1/2	38 years	60 for a 40-year career
2014	60	35 years (5 years)	61	39 years	60 for a 40-year career
2015	60	35 years (5 years)	61 1/2	40 years	60 for a 41-year career
From 2016	60	35 years (5 years)	62	40 years	60 for a 42-year career 61 for a 41-year career

In addition, reforms are also introduced in the pension calculation. In the wage earners' scheme, the equivalent periods (periods of unemployment, work incapacity, maternity leave, career breaks, professional sickness, work injury...) were valued at a notional wage. Henceforth, some periods (third period of unemployment, some periods of unemployment with company allowance before the age of 60, some periods of career break or time credit) will be valued according to the minimum right per career year as from 1 January 2012. The periods of career break taken into account for pension entitlements will also be limited.

At the same time, in the civil servants' scheme, some periods of career break and of absence after 31 December 2011 will be taken into account for pension rights and calculation for 12 months maximum in the entire career (and no longer 5 years as before). Moreover, the reference wage taken into account for the pension calculation will correspond to the average wage over the last 10 career years and no longer

⁶ European Commission (2012), Fiscal Sustainability Report, European Economy n° 8

⁷ 5 years in the civil servants' scheme.

the last 5 years⁸. However, this does not apply to people who reached the age of 50 on 1 January 2012 (born before 1962).

The abovementioned reform of early retirement made a reform of the bonus system unavoidable, by targeting it to people working longer while complying with the requirements for early retirements. The July 2012 vintage of Belgian pension projections partially anticipated this reform in the schemes in which such a reform was not contradictory with the "constant legislation" assumption, namely in the wage earners' and self-employed pension schemes.

Eventually, the reform of the pension bonus put in place included also the so-called "age supplement" in the civil servants' scheme and was made more strongly dependent on the number of additional working years (see next section about reforms after the 2012 update).

The initial budget in the wage earners' and self-employed schemes allocated to living standards adjustment was reduced to 60% for the years 2013 and 2014.

1.3.3. Reforms between the 2012 updated pension projection and May 2014

These reforms are included in the present pension projection.

- After a relaxation of the penalty in the self-employed scheme in 2013, the penalty is completely abolished as from 1/1/2014.
- As from 2014, the new pension bonus replaces the old pension bonus in the wage earners' and self-employed schemes and the age supplement in the civil servants' scheme.
- Spring 2014: reform of the survivor pension. The minimum age to be granted a survivor pension will be 45 as from 2015 and will be gradually raised to 50 in 2025.
- Spring 2014: as from 2015, the last months worked before retiring will be taken into account for the calculation of the pension in the wage earners' and self-employed schemes.

1.3.4. Further pension reforms announced in October 2014

These reforms have just been announced in October 2014 and have not been voted yet. The concrete implementation of these measures is not yet decided. These measures are, of course, not included in the present pension projection.

a. Parametric reforms

The pension reform announced by the new Belgian government in its Government Agreement of October 2014 aims to keep people longer at work through two main measures. Firstly it raises further the minimum early retirement age and the minimum number of career years required for eligibility. Starting from 62 years and 40 years respectively in 2016, it goes to 62.5 and 41 years in 2017, then to 63

⁸ The impact of the civil servants' pension calculation based on the last 10 career years is weak, given that the wages of a large number of civil servants do not grow anymore at the end of their careers. Although civil servants benefit from a salary scale increase when being promoted, each scale consists of merely 27 grades. In other words, after 27 career years, the salary remains at the same level for the rest of the career (provided no promotion to a higher salary scale is obtained).

and 41 years in 2018 and finally to 63 and 42 years in 2019 (exceptions for long career will be raised from 42 to 44 years at 60 and from 41 to 43 years at 61 in 2019). The reform also raises the minimum entry age in the unemployment with company allowance scheme from 60 to 62 years in 2015 for the new entries in this scheme. For companies in difficulty or undergoing restructuring, the minimum age is raised to 60 years as from 2017 (instead of 55). Secondly, the statutory retirement age will be raised from 65 to 66 years in 2025 and to 67 years in 2030. In parallel, access to the disability or unemployment schemes is also extended to these ages. As from 2030, an automatic adaptation of the career conditions to early and old-age retirement will occur in connection with life expectancy.

The minimum age to be granted a survivor pension will be 55 in 2025 (instead of 50), increasing by one year (instead of 6 months) each year as from 2015.

In the civil servants' scheme, the preferential so-called 'tantiemes' (career fraction) will be abolished. The service credit allocated to civil servants for their degrees will be phased out from 2015 for the career condition for early retirement. For the pension calculation, this credit could be conditioned by individual contribution.

b. Other reforms

The minimum pension and the guaranteed income for the elderly will be raised. The amount of the minimum pension for lone persons in the self-employed scheme will be raised to be equal to the level fixed in the wage earners' scheme.

Other measures are part of the Agreement like the removal of the pension bonus as from 2015, specific measures for heavy work, the harmonisation of the civil servants' scheme with the wage earners' scheme, more access to the minimum pension, possibility to partial retirement, democratization of the second pillar... The Agreement also announced the introduction of a points system as from 2030 for the pension calculation.

A National Pension Committee will be set up to advise the government on the implementation of these pension reforms. This Committee will also investigate how the pension system can be reformed to be more in line with the modern society (for instance, reform of non-contributory pension entitlements...).

The next adjustment of pension benefits (and of other social allowances and wages) to price evolution will be skipped. This means that in 2015 pensions will not follow the evolution of prices. Given the 2% stepwise indexation mechanism, this corresponds to 2% reduction of the pension benefits in real terms. But a budget of 127 million is foreseen as accompanying social measure for the index jump (this budget will be translated into fiscal measures). A period of wage moderation is also planned for the years 2015-2016.

Living standards adjustment: in the wage earners' scheme, the Government Agreement decreases the budget for the adjustment of social allowances to living standards as foreseen in the "Generation Pact" (since family allowances are no longer under federal jurisdiction, they are no longer taken into account for the calculation of the living standards adjustment budget as from 2015). As from 2015, the concrete measures for the adjustment to living standards in each scheme (wage earners, self-employed and so-

cial assistance), which have to respect the financial constraint of the abovementioned budget by scheme, will be translated into fiscal measures. In 2018, 78 million of the welfare budget will not be spent. The concrete implementation of these measures and how it will influence pension benefits is not yet decided.

2. Demographic and labour force projections

2.1. Demographic development

The next table presents the evolution of the main demographic variables for Belgium coming from Eurostat's population projection EUROPOP2013, released in March 2014. Population is expected to rise from 11.2 million people in 2013 to more than 15.4 million in 2060, i.e. a growth rate of nearly 38% or an annual growth rate of 0.7%. All age groups are contributing to this increase but not to the same extent: the 0-14 group rises by 38% between 2013 and 2060, the working-age population (15-64) by 26% and the group aged 65 and over by 85%. Consequently, the share of the young people remains fairly stable during the projection period while the proportion of persons aged 15-64 and of persons aged 65 and over respectively decreases and increases. This explains the 47% rise of the old-age dependency ratio from 27% in 2013 to almost 40% in 2060. This means that, whilst we had almost 4 working-age people for one person aged 65 and over in 2013, this proportion becomes 2.5 in 2060. The increased ageing of elderly people (80+ compared to 65+) is also important, moving from 30% in 2013 to 37.5% in 2060.

Table 5 Main demographic variables evolution

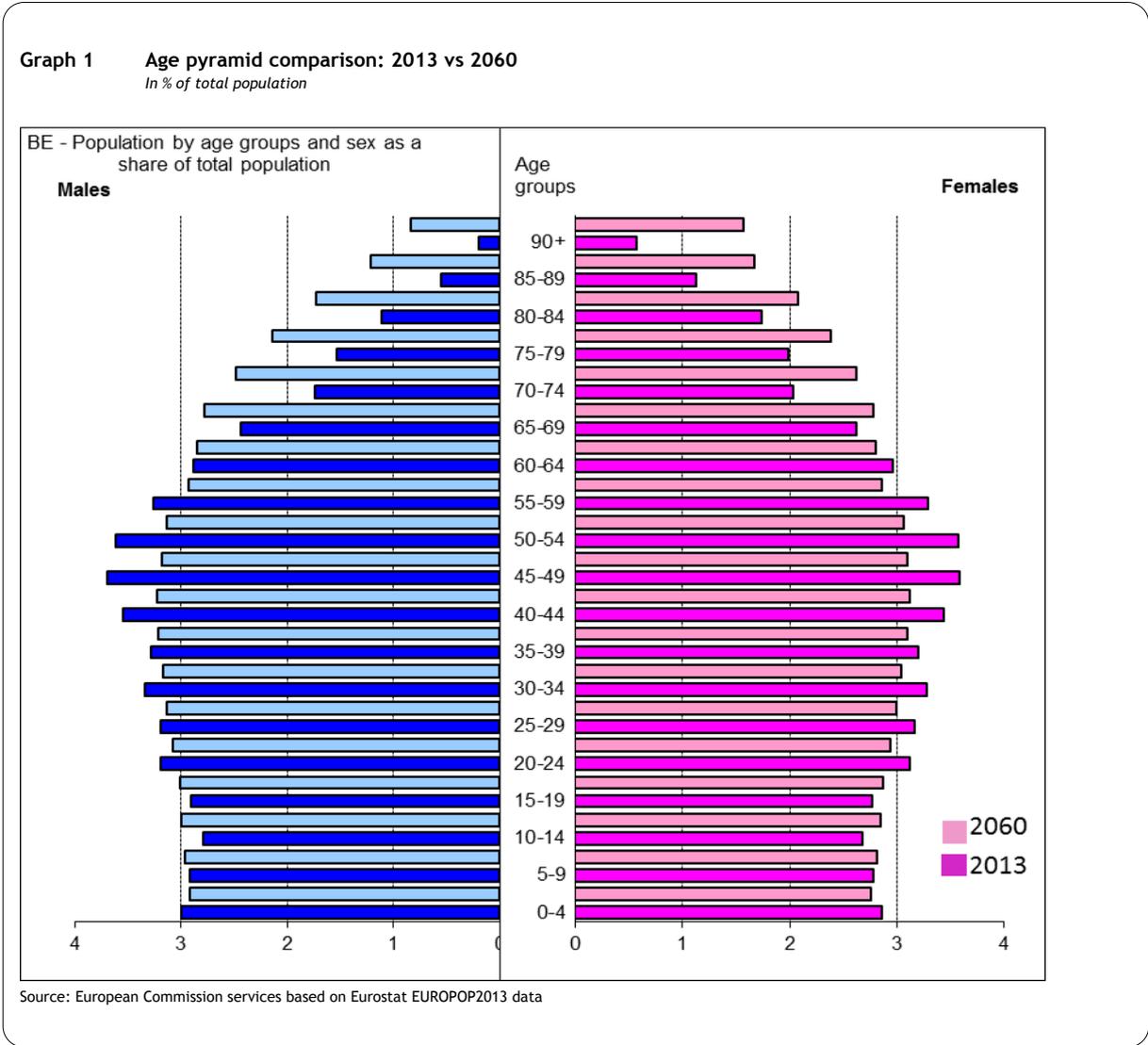
	2013	2020	2030	2040	2050	2060	Peak year
Population (in thousands)	11203	11876	12939	13966	14792	15431	2060
Population growth rate (in %)	0.7	0.9	0.8	0.7	0.5	0.4	2022
Old-age dependency ratio (65+/15-64)	27.1	29.7	34.7	37.2	37.9	39.9	2060
Ageing of the elderly (80+/65+)	30.0	28.8	28.5	33.5	38.0	37.5	2052
Men - Life expectancy at birth	77.8	78.9	80.5	82.0	83.3	84.6	2060
Men - Life expectancy at 65	17.6	18.4	19.4	20.4	21.3	22.2	2059
Women - Life expectancy at birth	82.9	84.0	85.3	86.6	87.8	88.9	2060
Women - Life expectancy at 65	21.1	21.8	22.8	23.8	24.7	25.6	2060
Men - Survivor rate at 65+	84.7	86.4	88.4	90.1	91.6	92.8	2060
Men - Survivor rate at 80+	54.6	58.5	63.6	68.3	72.4	76.1	2060
Women - Survivor rate at 65+	91.1	92.1	93.3	94.3	95.1	95.8	2060
Women - Survivor rate at 80+	71.7	74.6	78.2	81.4	84.1	86.5	2060
Net migration (in thousands)	61.2	80.2	80.9	69.8	46.8	42.1	2026
Net migration over population change	0.8	0.8	0.8	0.7	0.7	0.7	2014

Source: European Commission services based on Eurostat EUROPOP2013 data

The gain in life expectancy at birth is 6.8 years for men and 6 years for women between 2013 and 2060, reducing the gap between men and women from 5.1 years in 2013 up to 4.3 years in 2060. Life expectancy at 65 increases by around 4.5 years for both men and women between 2013 and 2060, keeping the gap unchanged between men and women during the projection period. The survivor rates or the proportions of people who will survive the next year increase during the projection period due to gains in life expectancy.

The projected net migration flow increases to reach 80 000 people in the 2030s then declines to 42 000 people in 2060, still a significant flow. The large increase of the total population is mainly due to this net migration flow, amounting to between 70 and 80% (see the ratio of net migration to the variation of the total population).

The next graph shows the proportions of age groups as shares of the total population or the age pyramid by gender for 2013 and 2060. It should be noted that it does not really look like a pyramid in 2013 and it has more the form of a tube in 2060.



This graph shows that the age structure of the Belgian population is due to largely change. Up to the age of 19 years, the proportions do not really change between 2013 and 2060, for both men and women. From the age of 20 up to 59, the proportions of these age groups decrease between 2013 and 2060. Consequently, the shares of the 60+ sharply increase during the projection period.

Box 2 EUROPOP2013 and EUROPOP2010 compared: the projected total population for Belgium revised upwards.

The projected total population for Belgium in 2060 is much higher in the 2014 vintage of the EUROSTAT projections than in the 2011 vintage (15.4 million in EUROPOP2013 vs. 13.5 million in EUROPOP2010). The difference (+2.0 million) is partially attributable to a higher population figure at the starting year (2013) in the new projection than the projected population figure in EUROPOP2010 for the same year (11.162 million vs. 11.005 million), but mostly to a much stronger increase during the projection period (+4.2 million instead of + 2.4. million for the period 2013-2060). The latter is explained by much higher net migration flows in the new projection than in the previous one. The dynamics of migration in the medium term is inflated in the new EUROSTAT approach that consists in taking recent trends into account: the projected net migration climbs to + 82 000 in 2025 (0.66% of total population) while it was projected at + 44 000 in 2025 (0.37% of the total population) in EUROPOP2010.

Note that EUROPOP2013 takes into account the EUROSTAT recommended definition of population ("usual resident population") which includes a group of residents who were not included in EUROPOP2010, namely the asylum-seekers registered in the so-called "waiting register". This change in definition explains, among others, the higher level of the total population in 2013 for EUROPOP2013 compared to EUROPOP2010, while the net migration in the base year (2010 in EUROPOP2010 and 2013 in EUROPOP2013) is practically identical in both exercises (around 61 000).

It is worth noting that the difference between EUROSTAT and national projections is much larger with EUROPOP 2013 than with EUROPOP 2010. Two factors explain this difference:

1. The official national definition of the population of the Kingdom of Belgium (Act of 24 May 1994, article 4) does not allow to take the "waiting register" into account and it is not excluded, although impossible to establish, that emigration could be underreported in the "waiting register", and therefore underestimated to some extent in EUROPOP2013.
2. In addition, the dynamics of net migration in the medium term notably takes into account recent restrictive policy measures aimed at containing immigration flows.

2.2. Labour force

Following the baseline assumptions of the European Commission for Belgium, using the cohort simulation model (CSM), the total participation rate (20-64) is expected to increase from 73.3% in 2013 to 76% in 2060, i.e. +2.7 percentage points. The participation rate of the 25-54 remains almost unchanged in the projection while that of the young people (20-24) slightly increases by 1.5 percentage point and that of the age group 55-64 substantially rises by 12 percentage points (see Table 6). The latter is largely due to the pension reform of December 2011 that came into force in 2013 (see section 1.3.2). Therefore, the employment rate of the age group 55-64 also largely increases. The median age of the labour force remains stable at 40 years during the projection period.

Table 6 Participation rate, employment rate and share of workers for the age groups 55-64 and 65-74

	2013	2020	2030	2040	2050	2060	Peak year
Labour force participation rate 55-64	44.0	54.0	55.8	56.8	56.3	56.0	2038
Employment rate 55-64	41.6	51.4	53.3	54.3	53.7	53.5	2038
Share of workers aged 55-64 on the total labour force	94.6	95.1	95.5	95.5	95.5	95.5	2041
Labour force participation rate 65-74	3.5	3.6	5.2	5.1	5.2	5.2	2048
Employment rate 65-74	3.4	3.5	5.1	5.0	5.2	5.1	2048
Share of workers aged 65-74 on the total labour force	98.7	98.3	98.3	98.3	98.3	98.3	2013
Median age of the labour force	40.0	40.0	40.0	40.0	40.0	40.0	2013

Source: European Commission services

The next two tables present the evolution of the working career duration and of the life spent at retirement for both men and women. The average contributory period comes from the results of the pension questionnaire that each country has to provide. All other indicators are calculated by the Commission: average effective entry age to labour market (exit age from the labour market), duration of retirement as the difference between the life expectancy at average effective exit age and the average effective exit age itself, percentage of adult life spent at retirement as the ratio between the duration of retirement and the life expectancy minus 18 years, early/late exit in the specific year as the ratio of those who retired and are aged less than the statutory retirement age (65 in Belgium) to those who retired and are aged more than the statutory retirement age.

Table 7 Labour market entry age, exit age and expected duration of life spent at retirement - Men

	2013	2020	2030	2040	2050	2060	Peak year
Average effective entry age (CSM) (I)	23.4	22.9	22.9	22.9	22.9	22.9	2013
Average effective exit age (CSM) (II)	62.0	62.1	62.1	62.1	62.1	62.1	2032
Average effective working career (CSM) (II) - (I)	38.6	39.2	39.3	39.3	39.3	39.3	2032
Contributory period	40.7	40.5	40.3	39.9	39.7	39.7	2013
Contributory period/Average working career	105.3	103.2	102.7	101.6	101.1	101.1	2013
Duration of retirement	19.9	20.7	21.8	22.9	23.9	24.9	2060
Duration of retirement/average working career (CSM)	51.5	52.8	55.5	58.3	60.9	63.4	2060
Percentage of adult life spent at retirement	31.1	31.9	33.1	34.2	35.1	36.1	2060
Early/late exit	3.0	4.1	3.0	3.0	3.1	2.9	2017

Source: European Commission services

It must be noted that the average contributory period (Belgian pension questionnaire) and the average effective working career (Commission CSM) are not comparable, neither in level nor in evolution. In the calculation of pension expenditure, the average contributory period represents in year t the past career of new pensioners in year t. That explains the lower level of contributory period for women than for men at the starting year and also their different evolution: an increasing female contributory period resulting from the rise of the female participation rate and a decreasing male contributory period due to a rise in education years.

The average effective working career calculated by the CSM reflects the difference between the average effective entry age in year t in the labour market and the average effective exit age in year t from the labour market. It does not reflect the past career of the new pensioners useful to calculate pension expenditure. For instance, a woman who retires in 2013 at the age of 62.9 (average exit age CSM in 2013) did not necessarily started her career at 24.2 (average entry age CSM in 2013) and she has most probably not worked during 38.7 years (average working career CSM in 2013), considering the past evolution of the female participation rate. It must be noted that the evolution of the average effective exit age could result from composition effect.

Table 8 Labour market entry age, exit age and expected duration of life spent at retirement - Women

	2013	2020	2030	2040	2050	2060	Peak year
Average effective entry age (CSM) (I)	24.2	24.1	24.1	24.1	24.1	24.1	2013
Average effective exit age (CSM) (II)	62.9	62.3	62.4	62.4	62.4	62.4	2013
Average effective working career (CSM) (II) - (I)	38.7	38.3	38.3	38.3	38.3	38.3	2013
Contributory period	32.7	35.7	36.3	37.5	37.9	37.9	2018
Contributory period/Average working career	84.5	93.3	94.8	97.9	98.9	98.9	2018
Duration of retirement	22.8	24.4	25.4	26.4	27.4	28.3	2060
Duration of retirement/average working career	58.9	63.7	66.3	68.9	71.5	73.9	2060
Percentage of adult life spent at retirement	33.7	35.5	36.4	37.3	38.2	38.9	2060
Early/late exit	3.9	3.7	2.5	2.5	2.6	2.4	2013

Source: European Commission services

Based on historical data regarding participation rates by 5-year age group, the contributory period in the projection depends on the participation profile of the generation. The decreasing contributory period of men is due to an extension of education years. For women, the increasing contributory period stems from declining career breaks.

The number of years spent in retirement by men is expected to rise from 20 years in 2013 to almost 25 years in 2060 due to gains in life expectancy. Consequently, the share of adult life spent at retirement increases from 31% in 2013 to 36% in 2060 for men. The duration of retirement for women increases by 5.5 years between 2013 and 2060 because of the rise in life expectancy. The female share of adult life spent at retirement would increase from 34% in 2013 to 39% in 2060.

Box 3 Assumptions on structural unemployment, labour productivity and potential GDP

To complete the scenarios elaborated by the European Commission, assumptions about the structural unemployment rate, the labour productivity growth and consequently the potential GDP growth should be mentioned.

Concerning the unemployment rate, the actual unemployment rate is assumed to converge to NAWRU rate by 2018 corresponding to the closure of the output gap. Afterwards, the NAWRU rate is assumed to gradually converge to an Anchor which is a country-specific value for the NAWRU, calculated assuming that non-structural variables are set at their average value and that structural variables remain unchanged at their last observed value. Given these assumptions, the unemployment rate for Belgium decreases from 8.5% in 2013 (Eurostat definition) to 7.4% around 2030 and then remains stable.

To project potential GDP over the long term, a production function is used. GDP growth results from the evolution of the employment and the labour productivity. In the long term, the growth of labour force leads the growth of employment. The evolution of the labour productivity results from the total factor productivity and the capital stock per worker. With respect to total factor productivity, the baseline scenario presents a convergence to a TFP growth rate of 1% by 2036 for Belgium. With regard to capital deepening, the capital to labour ratio is assumed constant in the long run (from 2031 onwards), which leads to a capital deepening contribution round 0.5%, and a total labour productivity of 1.5% per year in the long term. As a result, the potential GDP growth rate for Belgium is 1.8% per year between 2013 and 2060, with a 1.2% growth of labour productivity and a 0.6% growth of employment.

Average annual growth rate in %	2013-2030	2030-2060	2013-2060
Labour productivity	0.7	1.5	1.2
Employment	0.8	0.5	0.6
GDP	1.5	2.0	1.8

Source: European Commission, AWG baseline assumptions for Belgium

3. Pension projection results

3.1. Extent of the coverage of the pension schemes in the projections

The Belgian pension projection covers the statutory public pension scheme (first pillar) which comprises the three main pension schemes (the general scheme for wage earners including the unemployment with company allowance, the scheme for the self-employed workers and the scheme for civil servants) as well as the assistance scheme (guaranteed income for elderly persons) and the disability benefits, according to the AWG definition of pension expenditure. The second and the third pillars have not yet been introduced into the model, given, on the one hand, a lack of reliable and detailed data, and, on the other, the relatively marginal importance of those schemes (see Table 1).

The table below shows the pension expenditure in % of GDP between 2006 and 2013, according to Eurostat's ESSPROS database and data provided by Belgium to the Ageing Working Group.

Table 9 Eurostat (ESSPROS) vs Ageing Working Group definition of pension expenditure
% of GDP

	2005	2006	2007	2008	2009	2010	2011
1. Eurostat total pension expenditure	11.2	11.1	10.7	11.4	12.2	12.1	12.4
2. Eurostat public pension expenditure	10.8	10.7	10.4	11.0	11.8	11.8	12.0
3. Public pension expenditure AWG	10.1	10.0	10.0	10.4	11.1	11.1	11.3
4. Difference (2-3)	0.7	0.7	0.4	0.6	0.7	0.6	0.7
= benefits for handicapped persons and for occupational diseases	0.7	0.7	0.4	0.6	0.7	0.6	0.7

Source: European Commission services and Belgian pension questionnaire

The difference between the Eurostat's ESSPROS database and data provided by Belgium to the Ageing Working Group lies in the disability function. Eurostat's ESSPROS public expenditure for disability registers the expenses for occupational diseases and all expenses related to handicapped persons while that is not the case in the database used for AWG (according to the AWG definition of disability pensions) and national pension projections.

3.2. Overview of projection results

The main characteristics of the first pillar's pension expenditure projection are listed in the box below.

Box 4 Main characteristics of the Belgian public pension projection

- Increase of 3.5% of GDP between 2013 and 2060.
- Due to the old-age pensions of the wage earners' scheme and the civil servants' scheme.
- Main driving forces: the pension expenditure rise results from the population ageing (increase of the dependency ratio: contribution of 5.8% of GDP), while the coverage ratio, the inverse employment rate and the benefit ratio contribute negatively to this rise. In fact, the negative contribution of the coverage ratio is only due to the early retirement coverage ratio for people below 65 and to the cohort effect of the same age group, as far as the contribution of the old-age coverage ratio is positive. Concerning the decreasing benefit ratio, it is worth noting that the decline only holds in average for the whole projection period, as far as the benefit ratio increases in the beginning of the projection period. These fluctuations mainly reflect the evolution of the wage growth.

Gross public pension expenditure increases by 3.5% of GDP between 2013 and 2060 (see Table 10). This increase occurs between 2013 and 2040 (+3.5% of GDP), mostly in the sub-period 2020-2030 (+2.1%). The peak year is 2037. The net public pension expenditure (excluding contributions and taxes paid by the pensioners) represents around 87% of the gross public pension expenditure.

Table 10 Projected gross and net pension spending and contributions
% of GDP

	2013	2020	2030	2040	2050	2060	Peak year
Expenditure							
Gross public pension expenditure	12.2	13.2	15.3	15.8	15.5	15.7	2037
Private occupational pensions	:	:	:	:	:	:	:
Private individual pensions	:	:	:	:	:	:	:
Mandatory private	0	0	0	0	0	0	0
Non-mandatory private	:	:	:	:	:	:	:
Gross total pension expenditure	12.2	13.2	15.3	15.8	15.5	15.7	2037
Net public pension expenditure	10.7	11.5	13.3	13.7	13.5	13.6	2037
Net total pension expenditure	10.7	11.5	13.3	13.7	13.5	13.6	2037
Contributions							
Public pensions contributions	:	:	:	:	:	:	:
Total pension contributions	:	:	:	:	:	:	:

Source: European Commission services based on Belgian pension questionnaire

As mentioned above (point 1.1), the pension contributions are not available. The contributions in their entirety were gathered in the Global management and redistributed among the different pension categories based on their needs.

The following table offers a more comprehensive view on public pension spending by scheme and according to the distinction old-age – disability – survivor.

Table 11 Projected gross public pension spending by scheme
% of GDP

	2013	2020	2030	2040	2050	2060	Peak year
Total public pensions	12.2	13.2	15.3	15.8	15.5	15.7	2037
of which earnings-related:	12.0	12.9	15.0	15.5	15.3	15.5	2037
<i>Old-age and early pensions^a</i>	9.8	10.7	13.0	13.7	13.9	14.3	2059
<i>Disability pensions</i>	1.1	1.3	1.3	1.3	1.0	0.9	2027
<i>Survivor pensions</i>	1.2	1.0	0.7	0.5	0.4	0.3	2013
<i>Other pensions</i>	0	0	0	0	0	0	0
of which non-earnings-related:							
<i>Minimum pensions and minimum income guarantees</i>	0.2	0.2	0.2	0.2	0.2	0.2	2027
Earnings-related							
-wage earners' scheme	7.3	8.1	9.5	9.8	9.5	9.4	2037
old-age and early pensions ^a	5.6	6.3	7.9	8.4	8.4	8.5	2058
disability	1.1	1.3	1.3	1.3	1.0	0.9	2027
survivor	0.6	0.5	0.3	0.2	0.1	0.1	2013
-self-employed scheme	0.8	0.9	1.1	1.1	1.1	1.1	2058
old-age and early pensions	0.7	0.8	1.0	1.1	1.1	1.1	2060
survivor	0.1	0.1	0.1	0.1	0.0	0.0	2013
-civil servants' scheme	3.9	4.0	4.4	4.5	4.7	4.9	2059
old-age and early pensions	3.4	3.6	4.1	4.3	4.4	4.8	2059
survivor	0.5	0.4	0.3	0.3	0.2	0.2	2013
Non-earnings-related	0.2	0.2	0.2	0.2	0.2	0.2	2027
assistance scheme	0.1	0.1	0.2	0.1	0.1	0.1	2028
disability (self-employed)	0.1	0.1	0.1	0.1	0.1	0.1	2027

a) Including unemployment with company allowance scheme.

Source: European Commission services based on Belgian pension questionnaire

The global increase in pension expenditure of 3.5% of GDP between 2013 and 2060 comes entirely from the earnings-related pensions and more specifically from the old-age and early pensions (+4.5% of GDP).

Survivors' expenditure decreases by 0.9% of GDP between 2013 and 2060. Survivors' expenditure concerns "pure" survivor pensions for the wage earners' and the self-employed schemes: people who cumulate an old-age pension and a survivor pension are included in the category "old-age pension". Three reasons explain the evolution of the survivors' pension expenses. Firstly, the increasing participation rates of women imply that a growing number of women receive an old-age pension. Secondly, it is necessary to have been married in order to receive a survivor pension and the number of married pensioners decreases in the projection. Finally, the survivor pension reform of spring 2014 also reduces this expenditure, but to a minor extent.

Disability expenditure expressed in % of GDP presents different evolutions by sub-periods: firstly an increase till the beginning of the 2020s, then a stabilization till around the end of the 2040s, followed by a decrease until the end of the projection period. This evolution is due to the assumptions regarding the entry probabilities in this scheme. Indeed, the last observed data show increasing disability rates (probably due to the crisis, to new diseases...). In accordance with the National Institute for Health and Disability Insurance, the entry probabilities still increase till almost 2020, which results in increasing number of beneficiaries (till the end of the 2030s because of the cohort modelling). These probabilities then progressively decrease until the mid-2030s to their average pre-crisis level and then remain constant. Over the whole period, disability expenditure decreases by 0.2% of GDP due to the evolution of the disability rate but also because of a partial living standards adjustment of these allowances⁹ and an increasing employment rate.

The global increase is mainly due to the wage earners' scheme (+2.2% of GDP) and to a lesser extent to the civil servants' scheme (+1.0% of GDP). The pension expenditure of the self-employed scheme only increases by 0.3% of GDP. In relation to the shares of these schemes in % GDP in 2013, their increases evolve almost at the same pace as the total expenditure.

The breakdown of old-age pensioners by scheme is driven by the evolution of employment by scheme (see section 4 on model description). The employment breakdown by scheme (wage earners, self-employed and civil servants) is made according to the national official projections methodology. In the medium term, this breakdown follows the national official medium-term projections¹⁰. In the long run, the evolution of public sector employment is the result of two developments: the development of the labour force as far as it comes to the public administration and the evolution of the school population in the education sector. The growth of self-employment is also driven by the labour force. Over the whole projection period, employment growth in the wage earners' scheme (0.6% annual average growth rate) is the same as of the public sector. The evolution of self-employment is slightly less dynamic (0.5%).

3.3. Description of the main driving forces behind the projection results

3.3.1. Factors behind the change in public pension expenditure

The table below shows the breakdown of the increase in public pension expenditure according to 5 explanatory factors: the dependency ratio, the coverage ratio, the benefit ratio, the labour intensity effect and a residual. Results are broken down using both data on pensions (Table 12) and pensioners (Table 13).

⁹ Decrease of the benefit ratio in the disability scheme (constant legislation assumption, see section 1.1.3): these allowances are largely lump-sums and therefore adjusted by 1% per year in real terms.

¹⁰ Federal Planning Bureau, Economic Outlook 2014-2019, June 2014

Table 12 Factors behind the change in public pension expenditure between 2013 and 2060 - pensions
In percentage points of GDP

	2013- 2020	2020- 2030	2030- 2040	2040- 2050	2050- 2060	2013- 2060	Average annual change
Public pensions to GDP	0.9	2.1	0.5	-0.2	0.2	3.5	0.080
Dependency ratio effect (pop. 65+/pop. 20-64)	1.2	2.4	1.1	0.3	0.8	5.8	0.124
Coverage ratio effect (pensions/pop. 65+)	-0.1	-0.5	-0.2	-0.2	-0.2	-1.2	-0.025
<i>Coverage ratio old-age (pensions 65+/pop. 65+)*</i>	0.2	0.2	0.2	0.2	0.1	0.8	0.018
<i>Coverage ratio early-age (pensions <=65/pop. 50-64)*</i>	-0.1	0.4	-0.6	-1.9	-1.0	-3.1	-0.067
<i>Cohort effect (pop. 50-64/pop. 65+)*</i>	-0.7	-3.0	-1.4	0.1	-0.7	-5.7	-0.128
Benefit ratio effect (average pension/(GDP/hours worked 20-74))	0.3	0.4	-0.3	-0.4	-0.5	-0.4	-0.004
Labour market/Labour intensity effect	-0.5	-0.2	-0.1	0.1	0.0	-0.6	-0.015
<i>Employment ratio effect (pop.20-64/employment 20-64)</i>	-0.5	-0.1	-0.1	0.1	0.0	-0.6	-0.013
<i>Labour intensity effect (employment 20-64/hours worked 20-64)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.000
<i>Career shift effect (hours worked 20-64/hours worked 20-74)</i>	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.002
Residual	0.0	0.0	0.0	0.0	0.0	-0.1	0.000

* Sub components of the coverage ratio effect do not add up necessarily.

Source: European Commission services based on Belgian pension questionnaire

Over the whole projection period, the rise in public pension expenditure (+3.5% of GDP) results from the dependency ratio (+5.8%), while all other ratios contribute negatively to the overall result (-1.2% for the coverage ratio, -0.6% for the labour intensity effect and -0.4% for the benefit ratio).

The analysis by sub-periods does not really diverge from the general presentation. The pension expenditure increase occurs between 2013 and 2040 because of the strong increase in the dependency ratio (+4.7%). The decreasing coverage ratio (-0.8% between 2013 and 2040) and employment ratio (-0.7% between 2013 and 2040, i.e. an increase of the employment rate) partially compensate this rise of the dependency ratio. The benefit ratio first contributes positively to pension expenses between 2013 and 2030 and then contributes negatively from 2030 till the end of the projection period.

The decreasing coverage ratio deserves further explanation as far as it is subdivided between the old-age coverage ratio (number of pensions 65+ / population 65+), the early age coverage ratio (number of pensions <=65 / population 50-64) and a cohort effect (population 50-64 / population 65+). The old-age coverage ratio rises from 113% in 2013 to 120% in 2060, reflecting the increasing female labour market participation. The early age coverage ratio decreases from 36% in 2013 to 29% in 2060 because of the December 2011 pension reform (except for the period 2020-2030 when the number of disabled largely increases) and the cohort effect decreases from 111% in 2013 to 73% in 2060.

The evolution of the benefit ratio partially reflects the evolution of the replacement rate at retirement (see Table 14 and related comments). In addition, at the start of the projection period (from 2013 to 2030), the benefit ratio notably increases by the introduction of a systematic partial adjustment to living standards since 2008 in the wage earners' scheme and the self-employed scheme (0.5% per year for the non-lump-sum allowances - see section 1.1.3). This adjustment has a positive impact on the benefit ratio as long as the system does not reach maturity (around the mid-2020s). Moreover this maturation takes place in a context of low wage growth. As from 2030, the projection shows a negative contribution of the benefit ratio because of the fixed adjustment of 0.5% per year for non-lump sum social ben-

efits in a context of wage growth recovery, of the difference between the adjustment of the wage ceiling by 1.25 % of real growth and the evolution of productivity, and of the decline of the share of wage earners' pensioners receiving a household pension (rate of 75%) in the total population of pensioners.

The next table shows the same breakdown of the pension expenditure increase but using the number of pensioners instead of the number of pensions. The results of that analysis are totally similar.

Table 13 Factors behind the change in public pension expenditure between 2013 and 2060 - pensioners
In percentage points of GDP

	2013- 2020	2020- 2030	2030- 2040	2040- 2050	2050- 2060	2013- 2060	Average annual change
Public pensions to GDP	0.9	2.1	0.5	-0.2	0.2	3.5	0.080
Dependency ratio effect (pop. 65+/pop. 20-64)	1.2	2.4	1.1	0.3	0.8	5.8	0.124
Coverage ratio effect (pensions/pop. 65+)	-0.1	-0.5	-0.3	-0.2	-0.2	-1.3	-0.028
<i>Coverage ratio old-age (pensions 65+/pop. 65+)*</i>	0.2	0.3	0.2	0.2	0.1	0.9	0.020
<i>Coverage ratio early-age (pensions <=65/pop. 50-64)*</i>	-0.1	0.4	-0.5	-1.9	-1.0	-3.1	-0.069
<i>Cohort effect (pop. 50-64/pop. 65+)*</i>	-0.7	-3.0	-1.4	0.1	-0.7	-5.7	-0.128
Benefit ratio effect (average pension/(GDP/hours worked 20-74))	0.3	0.4	-0.3	-0.3	-0.4	-0.3	0.000
Labour market/Labour intensity effect	-0.5	-0.2	-0.1	0.1	0.0	-0.6	-0.015
<i>Employment ratio effect (pop.20-64/employment 20-64)</i>	-0.5	-0.1	-0.1	0.1	0.0	-0.6	-0.013
<i>Labour intensity effect (employment 20-64/hours worked 20-64)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.000
<i>Career shift effect (hours worked 20-64/hours worked 20-74)</i>	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.002
Residual	0.0	0.0	0.0	0.0	0.0	-0.1	0.000

* Sub components of the coverage ratio effect do not add up necessarily.

Source: European Commission services based on Belgian pension questionnaire

3.3.2. Replacement rate at retirement and benefit ratio

Table 14 illustrates, on one hand, the replacement rate at retirement (the first pension related to the last wage) and, on the other hand, the benefit ratio or the average pension benefit divided by the economy-wide average wage. Both the replacement rate and the benefit ratio are presented by pension scheme. The replacement rate at retirement is only provided for the old-age earnings-related pensions¹¹ while the benefit ratio is presented for the total pension benefits (including the disability allowances, the survivor pensions and the non-earnings-related benefits) and the old-age earnings-related.

The average wage at retirement is provided by the pension model (see point 5.1 of the methodological annex). An economy-wide average wage is provided by the Commission services in the pension projection questionnaire. However, corresponding figures by scheme are not available. Therefore, for the sake of consistency between the benefit ratios by scheme and the total benefit ratio, we used in the observed data the average wages (total and by scheme) from the Belgian National Accounts that evolve in line with the labour productivity in projection.

¹¹ In comparison with the replacement rate concerning old-age earnings-related pensions, the total replacement rate would include the disability pensions of the wage earners' scheme and the survivor pensions. The average wage at retirement (end of the career) used to calculate the replacement rate is not relevant for these two kinds of benefits. Indeed the disability pensions of the wage earners' scheme exist between 18 and 64 (the benefit of a 35 year disabled is not calculated on the basis of the wage at retirement). The same applies to the survivor pensions: the survivor pension of a new 80 year widow is not calculated on the basis of the wage at retirement.

It might seem surprising that the level of the benefit ratio is higher than the level of the replacement rate at retirement. This is due to a large difference between the average wage at retirement (seniority wage scale) and the economy-wide average wage, while the average pension of the new pensioners is not that much higher than the average pension of all pensioners.

Table 14 Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme
In %

	2013	2020	2030	2040	2050	2060
Public scheme (RR)	:	:	:	:	:	:
Coverage	77.3	78.3	82.6	84.9	87.9	89.7
of which old-age earnings-related (RR)	39.5	41.6	41.8	41.0	40.1	38.8
wage earners' scheme	33.6	35.4	36.4	34.9	33.4	32.1
self-employed scheme	32.4	37.2	38.8	37.2	35.2	33.3
civil servants' scheme	61.8	67.9	68.3	69.4	70.3	70.7
Public scheme (BR)	42.5	43.9	45.2	44.3	43.1	41.8
Coverage	100.0	100.0	100.0	100.0	100.0	100.0
of which old-age earnings-related (BR)	45.1	46.5	47.7	46.4	44.9	43.4
wage earners' scheme	35.8	37.6	39.1	37.7	35.8	33.9
self-employed scheme	35.5	38.0	41.4	40.8	39.1	36.9
civil servants' scheme	76.4	76.0	77.4	78.9	80.3	80.8
Private occupational scheme (RR)	:	:	:	:	:	:
Private occupational scheme (BR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:
Private individual scheme (RR)	:	:	:	:	:	:
Private individual scheme (BR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:
RR: old-age earnings-related	39.5	41.6	41.8	41.0	40.1	38.8
BR: total pension public scheme	42.5	43.9	45.2	44.3	43.1	41.8

Source: European Commission services based on Belgian pension questionnaire

The evolution of the replacement rate at retirement mainly reflects the evolution of the replacement rate in the main pension scheme, i.e. the wage earners' scheme, namely an increase till the second half of the 2020s, followed by a decrease until the end of the projection. This development is similar in the self-employed scheme. Four factors explain the evolution in the wage earners' scheme: the increasing average career length of women, the wage evolution (in the past and in projection), the living standards adjustment of the minima and ceilings, and a decreasing proportion of pensioners with dependent spouse benefiting from a higher pension (see Box 1). Since the early 2000s, the macroeconomic wage growth is relatively low. This poor wage dynamics is expected to persist in the coming years. This weak wage growth tends to raise the replacement rate at retirement, as the reference wage of new generations of pensioners - which corresponds to the wages earned during their whole career - grows faster than the last wage. Conversely, in the longer term, when wages will grow faster again (converging to their long-term growth rate of 1.5%), this period of low wage growth will have a downward effect on the replacement rate at retirement. Over the whole projection period, ceilings and minima are adjusted to living standards at a constant rate of respectively 1.25% and 1% per year (see section 1.1.3). In a context of low wage growth, such adjustments to living standards will tend to raise the replacement rate at retirement. A reverse trend is observed when wages grow stronger. Finally, given the

growing participation of women in the labour market and the decreasing number of married persons, the share of new male pensioners receiving a household pension with dependent spouse (rate of 75%) considerably shrinks, from 26.9% of the total new male pensioners in 2013 to 12.3% in 2060. The slightest gain obtained from this preferential rate results in a decreasing replacement rate at retirement.

It should be noted that in the civil servants' scheme, the replacement rate is much less sensitive to the historical evolution of wages. In the other schemes, the pension amount is calculated on the basis of the wage earned over the entire career, whereas the last 5 or 10 career years are taken into account in the civil servants' scheme. In the latter scheme, the replacement rate at retirement substantially increases during the first decade of the projection period due to a significant increase in the career length of persons going into retirement (after the Pension Reform of December 2011 and in line with the increased participation of women in the labour market).

The evolution of the benefit ratio follows more or less the evolution of the replacement rate at retirement, but is also influenced by the policy regarding the adjustment of social benefits to living standards. The introduction of a systematic partial adjustment to living standards since 2008 (0.5% per year for the non-lump-sum allowances - see section 1.1.3) has a positive impact on the benefit ratio as long as the system does not reach maturity (around the mid-2020s). This maturation takes place in a context of low wage growth. The subsequent wage growth recovery will tend to reduce the benefit ratio given the fixed adjustment of 0.5% per year for non-lump-sum social benefits.

3.3.3. System dependency ratio and old-age dependency ratio

Table 15 shows some indicators that shed some light on the dependency of the public pension system (system dependency ratio or SDR) through the ratio between the number of pensioners and the number of employees and on the efficiency of the system by comparing this system dependency ratio with the demographic old-age dependency ratio (ODR = 65+ over the 15-64).

Table 15 System dependency ratio and old-age dependency ratio

	2013	2020	2030	2040	2050	2060
Number of pensioners (I)	2655.1	2988.0	3543.7	3966.1	4194.1	4486.5
Employment (II)	4555.9	4898.0	5179.5	5516.8	5794.1	5967.8
Pension system dependency ratio (SDR) (I)/(II)	58.3	61.0	68.4	71.9	72.4	75.2
Number of people aged 65+ (III)	1979.8	2241.7	2755.7	3138.1	3368.8	3658.9
Working age population 15-64 (IV)	7316.0	7555.8	7937.2	8432.3	8877.4	9164.9
Old-age dependency ratio (ODR) (III)/(IV)	27.1	29.7	34.7	37.2	37.9	39.9
System efficiency (SDR/ODR)	2.2	2.1	2.0	1.9	1.9	1.9

Source: European Commission services based on Belgian pension questionnaire

The number of pensioners is growing fast between 2013 and 2030 (average annual growth rate of 1.7%) and slower between 2030 and 2060 (average annual growth rate of 0.8%), but anyway faster than the employment which grows respectively by 0.8% and 0.5% a year during the periods 2013-2030 and 2030-2060. This leads to an increasing pension system dependency ratio from 58% in 2013 to 75% in 2060 (+17 percentage points). As concerns the old-age dependency ratio, it increases from 27% in 2013 to almost 40% in 2060 (see section 2.1), which represents +13 percentage points. This means that the

system efficiency, i.e. the ratio between the SDR and the ODR, decreases by 0.3 percentage points during the projection period.

3.3.4. Number of pensioners in proportion to the (inactive) population

The next two tables respectively present the ratio of the number of pensioners to the inactive population for female pensioners (Table 18) and for pensioners in general (Table 16). The inactive population is defined as the difference between the total population and the labour force as defined in the “Labour Force Survey”. The coverage of the retired population corresponds with the AWG definition (old-age, early, disability and survivor pensioners).

Both the level (mainly at the beginning and at the end of the projection period) and the developments in the pensioners to inactive population ratio in age groups 55-59 and 60-64 (see Table 16 and Table 18) – as well, to some extent, in the pensioners to population ratio in the same age group (see Table 19 and Table 20) – seem surprising. The fact that the level of the pensioners to inactive population ratio in these age groups is low in the base year (2013) is due both to segments of the inactive population included in social security schemes other than pension (short-term disability, handicapped people...) and to the use of administrative definitions for employment and unemployment in the Belgian model (this model provides an exhaustive breakdown of the population between the different socio-economic groups). In particular, the unemployment rate on the basis of administrative data is much higher in these age groups than in the EUROSTAT definition. The corresponding public expenditure is nevertheless taken into account in the projection via a higher average unemployment benefit. The employment rate on the basis of administrative data is also higher than on the basis of the Eurostat definition, which contributes to a higher inactive population in the AWG projection.

Table 16 Pensioners (public schemes) to inactive population ratio by age group
In %

	2013	2020	2030	2040	2050	2060
Age group -54 ¹²	6.3	6.8	6.4	5.2	4.4	4.4
Age group 55-59	56.3	63.1	68.8	78.7	58.7	51.9
Age group 60-64	75.8	85.4	88.2	93.3	87.2	80.8
Age group 65-69	96.4	99.7	105.2	106.8	108.0	108.4
Age group 70-74	94.1	96.5	99.2	100.1	101.7	102.5
Age group 75+	99.6	100.6	101.6	102.5	103.3	103.9

Source: European Commission services based on Belgian pension questionnaire

To fully understand the evolution of the ratios for the age groups below 65, the evolution in average annual growth rate of both the numerator and the denominator have to be reviewed (see Table 17). It should be noted that the number of pensioners below 65 consists of disabled, unemployed with company allowance and old-age and survivor pensioners.

¹² Inactive population of -54 is the population from 0 to 54 diminished with the labour supply 15-54.

Table 17 Average annual growth rate of the number of pensioners, the inactive population and the population, below 65
In %

	2013-2020	2020-2030	2030-2040	2040-2050	2050-2060
Pensioners*					
-54	1.7	0.2	-1.2	-1.3	0.5
55-59	-0.7	-0.5	1.8	-1.8	-1.2
60-64	1.0	0.2	0.1	0.4	-0.4
Inactive population**					
-54	0.6	0.9	0.7	0.5	0.3
55-59	-2.3	-1.4	0.5	1.2	0.0
60-64	-0.7	-0.1	-0.5	1.1	0.4
Population***					
-54	0.6	0.7	0.7	0.5	0.3
55-59	1.4	-0.6	0.4	1.0	0.0
60-64	1.8	0.4	-0.3	1.0	0.4

Source: * Belgian pension questionnaire (national model); ** CSM and EUROPOP2013; *** EUROPOP2013

Under 54, the evolution is mostly explained by a trend increase of the entry rate in disability during the first half of the projection period, which is assumed to be reversed in the long run (see Table 11 and Table 28 – section 4.3.1.d).

The increase of the ratio pensioners to inactive population in the age group 55-59 till 2030 is due to the decrease of the inactive population (large increase of the labour supply). During this period, despite the increasing number of disabled persons, the total number of pensioners declines due to the unemployed with company allowance and the survivor pensioners (because of the pension reform of December 2011, the reform of the survivor pension of spring 2014 and the evolution of the survivor pension - see comment of Table 11). As from 2030, the evolution of the ratio pensioners to inactive population is mostly driven by the evolution of the number of pensioners (especially by the number of disabled persons), except between 2040 and 2050 when the strong growth of the inactive population amplifies the reduction of the ratio.

In the age group 60-64, number of pensioners grows until 2050 (because of the disabled persons till 2040 and thereafter because of the dependency ratio). But the increase of the ratio pensioners to inactive (till 2040) is accentuated by the declining inactive population. As from 2040, the decrease of this ratio reflects mostly the evolution of the inactive population.

Table 18 Female pensioners to inactive population ratio by age group
In %

	2013	2020	2030	2040	2050	2060
Age group -54	7.2	7.9	7.5	6.1	5.1	5.1
Age group 55-59	47.1	56.1	67.2	81.3	57.1	51.2
Age group 60-64	59.8	74.8	82.9	91.3	84.0	76.3
Age group 65-69	84.2	89.1	97.5	100.2	102.6	102.8
Age group 70-74	80.4	87.3	92.0	93.4	96.5	97.4
Age group 75+	94.5	96.5	98.4	100.2	100.9	101.6

Source: European Commission services based on Belgian pension questionnaire

The analysis of the ratio of the female pensioners to the inactive population (Table 18) is rather similar to the analysis of the global ratio.

Table 19 shows the ratio of the number of pensioners to the population by age group. The ratio of pensioners to population in the age group -54 follows the same evolution as the pensioners to inactive population ratio. For the age groups 55-59 and 60-64, unlike the increase of the ratios of pensioners to inactive population due to the growing labour force, the ratios pensioners to population decrease between 2013 and 2030. As from 2030, the evolution of the inactive population is quite similar to the evolution of the population, as well as the development of the ratios pensioners to (inactive) population.

This global analysis is very similar for women (Table 20), except for the age group 60-64. In this group, the female pensioners to population ratio rises till around 2045 because of both the increasing disabled persons to population ratio and the unemployed with company allowance ratio¹³. It should be noted that, due to the December 2011 reform, the old-age pensioners to population ratios decrease for both male and female pensioners.

Table 19 Pensioners (public schemes) to population ratio by age group
In %

	2013	2020	2030	2040	2050	2060
Age group -54 ¹⁴	2.8	3.1	2.9	2.4	2.0	2.0
Age group 55-59	21.4	18.6	18.7	21.5	16.4	14.4
Age group 60-64	57.8	54.8	53.9	55.9	52.9	49.0
Age group 65-69	92.3	93.9	96.2	97.5	98.6	99.0
Age group 70-74	91.9	95.6	97.8	98.7	100.2	101.0
Age group 75+	99.6	100.6	101.6	102.5	103.3	103.9

Source: European Commission services based on Belgian pension questionnaire

Starting from the age group 65-69, the total pensioners to population ratios increase because of the rise of the female ratios due to their increasing participation rate. It should be noted that ratios sometimes exceed 100%, which can be explained on the one hand by pensioners living abroad, on the other hand by the double counting of pensioners receiving both old-age and survivor benefits in the civil servants' scheme and finally by double counting of pensioners receiving benefits from different public sub-sectors in the civil servants' scheme (no data was available to avoid such double counting).

¹³ Entries into the unemployment with company allowance scheme are calculated using entry probabilities from a growing number of wage earners (due to the increasing female participation rate), though taking into account the progressive increase of the career length requirements for women in this scheme.

¹⁴ Population -54 is the population from 0 to 54.

Table 20 Female pensioners to population ratio by age group

	2013	2020	2030	2040	2050	2060
Age group -54	3.5	3.8	3.7	2.9	2.5	2.5
Age group 55-59	21.3	19.9	21.3	25.4	17.7	15.8
Age group 60-64	48.7	49.8	51.6	55.2	51.2	46.4
Age group 65-69	81.9	84.8	89.8	91.9	94.1	94.3
Age group 70-74	79.3	86.6	90.9	92.1	95.1	96.0
Age group 75+	94.5	96.5	98.4	100.2	100.9	101.6

Source: European Commission services based on Belgian pension questionnaire

3.3.5. New public pension expenditure disaggregation

Table 21 and Table 22 illustrate the disaggregation of the new public pension expenditure by gender (old-age and early earnings-related) between the number of new pensions, the average contributory period (see comment of Table 7), the average accrual rate and the average pensionable earning.

The average accrual rate is an average of the accrual rates by scheme: 1.67% (1/60) in the civil servants' scheme¹⁵, 1.33% (60%/45) in the wage earners' and the self-employed schemes (1.67% for head of a household with dependent spouse (75%/45)) – see Box 1.

Table 21 Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Male

	2013	2020	2030	2040	2050	2060
Projected new pension expenditure (millions EUR)*	1536.9	2073.4	3057.4	3965.4	6029.2	8888.0
I. Average contributory period (years)	40.7	40.5	40.3	39.9	39.7	39.7
II. Monthly average pensionable earnings ('000 EUR)	2.5	3.1	4.1	5.7	8.0	11.0
III. Average accrual rates (%)	1.5	1.5	1.5	1.5	1.5	1.5
IV. Number of new pensions (in thousands)	83.6	92.2	104.5	98.9	108.0	115.8
V. Average number of months paid the first year	12	12	12	12	12	12
VI. Sustainability/Adjustment factor	0	0	0	0	0	0
Monthly average pensionable earnings/Monthly average wage at retirement**	0.7	0.8	0.8	0.8	0.7	0.7
Monthly average pensionable earnings/Monthly economy-wide average wage**	0.8	0.9	0.9	0.9	0.8	0.8

*new pension expenditure = I x II x III x IV x V

**average wage at retirement and economy-wide average wage: figures from the Belgian pension questionnaire

Source: European Commission services based on Belgian pension questionnaire

As for men, the average contributory period declines due to an extension of education years but is still about 40 years. The number of new pensions strongly increases until 2030, then slightly decreases till 2040 to finally increase moderately again (see the evolution of the dependency ratio in Table 12). The average accrual rate firstly declines, from 1.51 in 2013 to 1.46 at the end of the thirties, due to the replacement of male pensioners heads of household with a dependent spouse (75% of the reference wage) by lone pensioners (60% of the reference wage) in the wage earners' and self-employed schemes, and

¹⁵ The 1.67% accrual rate for civil servants is in fact applied to end-of-career wages. As a consequence, the concept of monthly average pensionable earning is slightly inflated by the difference of start-of-career wages and end-of-career wages in the civil servants' scheme.

then remains stable. Over the whole projection period, the average pensionable earnings grow parallel to the average wage or the labour productivity.

Table 22 Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Female

	2013	2020	2030	2040	2050	2060
Projected new pension expenditure (millions EUR)*	835.4	1331.6	2166.6	2985.6	4501.1	6384.7
I. Average contributory period (years)	32.7	35.7	36.3	37.5	37.9	37.9
II. Monthly average pensionable earnings ('000 EUR)	2.4	2.8	3.9	5.3	7.3	10.1
III. Average accrual rates (%)	1.4	1.4	1.4	1.4	1.4	1.4
IV. Number of new pensions (in thousands)	63.7	77.5	89.4	87.6	95.4	98.4
V. Average number of months paid the first year	12	12	12	12	12	12
VI. Sustainability/Adjustment factor	0	0	0	0	0	0
Monthly average pensionable earnings/Monthly average wage at retirement**	0.7	0.7	0.7	0.7	0.7	0.7
Monthly average pensionable earnings/Monthly economy-wide average wage**	0.8	0.8	0.8	0.8	0.8	0.8

*new pension expenditure = I x II x III x IV x V

**average wage at retirement and economy-wide average wage: figures from the Belgian pension questionnaire

Source: European Commission services based on Belgian pension questionnaire

As far as women are concerned, the evolution of the number of new pensions is similar to the men's. But the average contributory period of women increases from 32.7 years in 2013 to 37.5 years in 2045 and then remains fairly stable at almost 38 years. It represents a strong rise of more than 5 years over the whole projection period due to the growing female participation rate. The average accrual rate remains stable around 1.4.

Table 23 Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Total

	2013	2020	2030	2040	2050	2060
Projected new pension expenditure (millions EUR)*	2372.3	3405.0	5224.1	6951.0	10530.4	15272.7
I. Average contributory period (years)	37.2	38.2	38.4	38.8	38.8	38.9
II. Monthly average pensionable earnings ('000 EUR)	2.5	3.0	4.0	5.6	7.7	10.6
III. Average accrual rates (%)	1.5	1.5	1.4	1.4	1.4	1.4
IV. Number of new pensions (in thousands)	147.3	169.7	194.0	186.5	203.5	214.3
V. Average number of months paid the first year	12	12	12	12	12	12
VI. Sustainability/Adjustment factor	0	0	0	0	0	0
Monthly average pensionable earnings/Monthly average wage at retirement**	0.7	0.7	0.8	0.7	0.7	0.7
Monthly average pensionable earnings/Monthly economy-wide average wage**	0.8	0.9	0.9	0.8	0.8	0.8

*new pension expenditure = I x II x III x IV x V

**average wage at retirement and economy-wide average wage: figures from the Belgian pension questionnaire

Source: European Commission services based on Belgian pension questionnaire

In total, the number of new pensions increases very quickly between 2013 and 2030 (1.6% average annual growth rate) and then increases slightly (0.3% average annual growth rate), because of the dependency ratio evolution. The average contributory period increases from 37.2 to 38.4 years between 2013 and 2030, thanks to women and to the pension reform of December 2011. The average accrual rate

slightly decreases during the projection period due to the decrease in the average male accrual rates in the wage earners' and the self-employed schemes.

3.4. Financing of the pension system

This section examines the evolution of the contributions to the public pension system. In Belgium however, the financing of all social expenses is since 1/1/1995 carried out for the general scheme of wage earners and self-employed through the so-called "global management" system (contributions but also some tax revenues), which implies that there is only a global contribution rate for all social security schemes (pensions, disability, primary incapacity, maternity leave, unemployment...) and no longer a contribution rate by scheme. In the wage earners' and self-employed schemes, social spending is funded respectively by contributions (63.8% / 54.3% in 2013), but also by state subsidies (16.3% / 28.3%) and alternative funding (16.5% / 13.8%) mainly made up of VAT revenues. Most social benefits for civil servants, among others pensions, are financed through the general budget of the federal government. Therefore public contributions for pensions are not available in the following table.

Table 24 Revenue from contribution (million), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2013	2020	2030	2040	2050	2060
Public contribution	:	:	:	:	:	:
<i>Employer contribution</i>	:	:	:	:	:	:
<i>Employee contribution</i>	:	:	:	:	:	:
<i>State contribution</i>	:	:	:	:	:	:
Number of contributors - employment administrative concept (I)	4626.5	5024.7	5322.0	5660.8	5950.6	6134.2
Employment AWG(II)	4555.9	4898.0	5179.5	5516.8	5794.1	5967.8
Ratio of (I)/(II)	1.0	1.0	1.0	1.0	1.0	1.0

Source: European Commission services based on Belgian pension questionnaire

In Belgium, the number of contributors is equal to the number of working people (following the administrative concept – see 4.2.3. below -), so that the ratio between contributors and employment is one (Table 24 shows the employment based on Eurostat statistics).

3.5. Sensitivity analysis

The next table shows the sensitivity of public pension expenditure in % of GDP to various scenarios, expressed in deviation from the baseline.

Table 25 Public pension expenditures under different scenarios (deviation from the baseline)
In % of GDP

	2013	2020	2030	2040	2050	2060
Public pension expenditure						
Baseline	12.2	13.2	15.3	15.8	15.5	15.7
Higher life expectancy (+2 extra years)	0.0	0.0	0.2	0.3	0.6	0.7
Higher labour productivity (+0.25 pp.)	0.0	0.0	-0.3	-0.5	-0.7	-0.9
Lower labour productivity (-0.25 pp.)	0.0	0.0	0.3	0.5	0.8	1.0
Higher employment rate (+2 pp.)	0.0	-0.2	-0.4	-0.4	-0.4	-0.4
Higher employment of older workers (+10 pp.)	0.0	-0.5	-1.1	-1.1	-1.0	-1.1
Lower migration (-20%)	0.0	0.1	0.3	0.6	0.6	0.5
Lower TFP (risk)	0.0	0.0	0.2	0.5	0.8	1.0
Policy scenario: linking retirement age to increases in life expectancy	0.0	0.0	-0.3	-0.6	-1.2	-1.7

Source: European Commission services based on Belgian pension questionnaire

3.5.1. Higher or lower productivity scenarios and risk scenario

In these scenarios, with unchanged parameters regarding the living standards adjustment, public pension expenditure respectively decreases (increases) by 0.9 (1.0 and 1.04) percentage point of GDP in 2060 in the higher (lower – risk) productivity scenario in comparison with the baseline.

Pension expenditure in the wage earners' scheme is indeed calculated on the basis of the income earned over the whole career, which means it only progressively reflects the effect of higher (lower) productivity, whereas GDP increases (decreases) immediately. As a result, the weight of these pensions expressed as a percentage of GDP is lower (higher). This effect is proportionally even stronger in the self-employed scheme because of the high number of people receiving a guaranteed minimum pension (adapted to 1% real growth). On the contrary, in the civil servants' scheme, the change in wages is directly mirrored in pensions (the reference wage for new retirees is the average wage over the last ten working years and the pensions are automatically indexed to nominal wages), so that the change in the productivity assumptions has practically no impact on the ageing cost of this scheme.

3.5.2. Higher employment rate and higher employment rate of older workers scenarios

A higher employment rate of two percentage points leads to a decrease in pension expenditure by 0.4 percentage point of GDP by 2060 in comparison with the baseline, because of a higher GDP.

The scenario of a higher employment rate of ten percentage points for older workers leads to a decrease by 1.1 percentage point of GDP by 2060 in comparison with the baseline because of a higher economic growth.

3.5.3. Demographic scenarios: higher life expectancy and lower migration

The higher life expectancy (by 2 years) scenario generates higher public pension expenditure compared to the baseline scenario (+0.7 percentage point of GDP in 2060), because of the higher number of pensioners. The higher dependency coefficient totally explains this evolution.

With a lower migration of 20%, public pension spending rises by 0.5 percentage point of GDP compared to the baseline in 2060. A lower working age population leads to lower employment, hence lower economic growth, which increases the relative weight of pension expenditure in percentage of GDP.

3.5.4. Linking retirement age to increases in life expectancy

In this scenario, public pension expenditure decrease by 1.7% of GDP compared to baseline in 2060, due to a lower number of pensions (less entry into old-age and early pensions for the age group 60-65) and to a higher economic growth. For technical reasons, this scenario decreases the number of new retirees only in the wage earners' scheme.

3.6. Description of the changes in comparison with the 2006, 2009 and 2012 projections

Table 26 compares the average annual change in public pension expenditure in % of GDP between the new projection and the three previous projections (2006, 2009 and 2012). It also presents the contributory factors behind those evolutions.

Table 26 Average annual change in public pension expenditure to GDP during the projection period under the 2006, 2009 and 2012 projection exercises

	Public pen- sions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. Inter- action ef- fect)
Pension/GDP - 2006 (2004-2050)	5.12	7.74	-0.38	-0.90	-1.19	:	-0.15
Pension/GDP - 2009 (2007-2060)	4.76	7.39	-0.86	-0.50	-1.02	:	-0.25
Pension/GDP - 2012 (2010-2060)	5.13	7.41	-1.11	-0.51	-0.47	0.01	-0.20
Pension/GDP - 2015 (2013-2060)	3.46	5.78	-1.15	-0.60	-0.44	0.04	-0.16

Source: European Commission services based on Belgian pension questionnaire

In the current projection, public pension expenditure increases by 3.5 % of GDP between 2013 and 2060, which is 1.7 percentage point of GDP less than in the 2012 exercise for the period 2010-2060 (peer review of July 2012, including the pension reform of December 2011). The difference is mostly due to the change in the population projection: the contribution of the dependency ratio is 1.6% of GDP lower than in the previous exercise. There is also some impact of the different reforms introduced since 2012 (see section 1.3.3). The employment effect (or the inverse employment rate) also contributes more negatively. It should be noted that the slightly less negative contribution of the benefit ratio (despite the reforms - section 1.3.3) results from the less favourable assumption regarding productivity growth.

The difference between the 2012 and 2009 exercises (+0.4% of GDP) is attributable to a less negative contribution of the benefit ratio due to a change of assumption regarding productivity growth (1.5% annual growth between 2010 and 2060 instead of 1.7% in the 2009 projection).

In the 2009 projection, the variation of public pension expenditure amounted to 4.8% of GDP between 2007 and 2060, i.e. a slightly smaller variation than in the 2006 exercise (5.1% of GDP). This was mainly due to a more limited positive contribution of the dependency ratio, while the negative contributions of both the inverse employment rate and the benefit ratio were less significant than in the 2006 exercise. In the 2009 exercise, the adjustments to living standards (which impact the benefit ratio) were based on the Generation Pact. It means that the ceilings evolved on the basis of a real growth of 1.25%, irrespective of wage growth, whereas in the 2006 exercise, the wage ceilings evolved at a growth rate which was 0.5% lower than the productivity growth. Moreover, the Generation Pact implies an increase in the pension benefits of the wage earners' and self-employed schemes after the age of 62 (pension bonus).

Table 27 tries to break down the difference between the last projection of July 2012 and the new one into various explanations.

Table 27 Breakdown of the difference between 2012 and the new public pension projection
% of GDP

	2010	2013	2020	2030	2040	2050	2060	2013-2060	Projection period
Ageing report 2012 (peer review July 2012)	11.1	11.6	12.8	15.2	16.1	16.3	16.2	+4.6	+5.1
Change in assumptions	:	0.6	0.4	0.2	-0.1	-0.6	-0.3	-0.9	-1.5
Improvement in the coverage or in the modelling	:	:	:	:	:	:	:		
Change in the interpretation of constant policy	:	:	:	:	:	:	:		
Policy related changes	:	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
New projection	11.1	12.2	13.2	15.3	15.8	15.5	15.7	+3.5	+3.5

Source: European Commission services based on Belgian pension questionnaire

Between the 2012 and the 2015 projections, there are no major coverage or modelling improvements and no change in the interpretation of constant policy. The main difference lies in changes in population projection and employment rate (changes in assumptions). The reforms introduced between the 2012 updated pension projection and May 2014 (see section 1.3.3) also slightly contribute to explain the difference (policy related changes). The reforms of the pension bonus in the wage earners' and the self-employed schemes and of the age supplement in the civil servants' scheme are by far the main driver of the policy related changes.

Let us note that in the same projection period 2013-2060, the pension cost of ageing is 1.1 percentage point of GDP lower in the new projection, due, for 82%, to the change in assumptions. If we compare the pension cost of ageing over the different projection periods (2010-2060 in the July 2012 projection and 2013-2060 in the new projection), it is 1.7 percentage point of GDP lower in the new projection, due, for 88%, to the change in assumptions.

4. Description of the pension projection model and its database

4.1. Institutional context

For the AWG pension projection exercise, the Belgian MALTESE system of models, developed by the Federal Planning Bureau, produces projections of pension expenditure for the first pillar using the national methodology but based on the AWG assumptions. As part of other (non-AWG) projection activities, this model also provides projections for other kinds of social expenditure as well as for the entire Belgian government's budget.

In 1987, at the request of the government, the Federal Planning Bureau started developing the Maltese system of models in order to assess long-term social expenditure within the overall framework of public finance. This was done within the scope of the statutory mission of the FPB to support economic policy-making. Since 1987, the Maltese system has constantly been improved.

Between 1987 and 2001, it was used several times, either on the initiative of the FPB or to support economic policy-making (especially for measuring the impact of various statutory public pension reforms in Belgium: 1990, 1996).

In 2001, the Act "guaranteeing a continuous reduction in public debt and the setting up of the Ageing Fund" was ratified. The goal of the Fund was to build up a demographic reserve to finance the additional expenses pertaining to the statutory pension schemes due to ageing during the period 2010-2030, as long as the public debt was reduced to 60% of GDP. This Act also initiated the creation of the Study Committee on Ageing (SCA), which publishes a yearly report on the budgetary and social implications of ageing (estimate of the budgetary cost of ageing and specific studies). The Federal Planning Bureau has been entrusted with the technical and administrative work of the SCA. Consequently, the MALTESE system of models is used every year to produce a long-term projection of all social expenditure for the yearly report of the SCA. Then, the « Borrowing requirements of the Public Sector » department of the High Council of Finance provides its yearly Advice with recommendations for budgetary policy, based on the annual report of the SCA. And finally, the Federal Government publishes a yearly « Memorandum on Ageing » which is based on the annual report of the SCA and the annual Advice of the « Borrowing requirements of the Public Sector » department of the High Council of Finance.

As for the AWG, the MALTESE system of models is used for Belgium since the first long-term projection of 2001.

Box 5 The main characteristics of the MALTESE system of models

- Modelling social expenses and global public finances in their entirety
- System of mechanical and accounting models adequate for translating demographic projections into budgetary developments
- Special attention is paid to modelling social expenses according to the calculation rules (legislation), by scheme, gender and age: number of beneficiaries (new and other), average benefits (ceiling, minimum, indexation rules...)
- Baseline with no change in legislation, rules and policy
- Number of beneficiaries: the fundamental principle is a cohort modelling by gender and age, using transition probabilities from one status to another. Notably, the distribution by scheme for pensioners (wage earners, self-employed and civil servants) is determined according to the historical evolution of participation by scheme of the corresponding generation.
- Average benefit: semi-aggregated model generating average social benefits for each main representative socioeconomic group, in particular for pensions. The dynamics of average benefits for pensions (not the level) is notably computed using micro-data (representative sample for the wage earners' scheme, very high number of categories for the self-employed scheme, different pension types in each civil servants' subsector).

4.2. General description of the whole model

4.2.1. Type and structure of the whole model

MALTESE is a system of meso-economic models with one central model and several specific peripheral models (computing the number of pensioners, average pensions, health care, etc.). The global accounting frame of the system relies on the national accounts. The central model and the peripheral models are accounting models adequate for translating demographic projections into budgetary developments like the social security account and the overall public finance account. Special attention is paid to modelling social expenses by scheme, gender, age and categories (old-age, survivor, household, lone persons) for the number of beneficiaries (new and other) and the corresponding average benefits according to the calculation rules (ceiling, minimum, indexation rules, etc.). A very detailed database is used for this purpose. The baseline assumes no change in legislation, rules or policy.

The projection proceeds in five steps:

- **The first step is the projection of the population by age and gender given the assumptions on fertility rates, life expectancy and migration flows.**
- **Given the behavioural assumptions, legal parameters of eligibility and the macroeconomic framework, the population is, in a second step, split up into different socio-economic groups:** school population, labour force (working and unemployed), unemployed with company allowance,

people on a full-time career break, disabled persons, pensioners and other non-participating population (see section 6.2 for the data sources).

This socio-economic projection results from transition probabilities from one status to another. It is a generalisation of the AWG methodology which is used to produce the labour force projection. **The participation and retirement behaviour of the different generations in the different age and gender classes is based on assumptions regarding participation rates¹⁶ and on present retirement behaviour, taking into account the effects of the numerous reforms.** The socio-demographic projection leads to a coherent projection of the number of beneficiaries in the different social security schemes.

- **In a third step, the benefits in the various schemes are projected on the basis of the number of beneficiaries and of the different institutional arrangements (wage ceilings, adjustment to living standards, etc.). Average benefits are calculated by branch, gender, age group and category, except for healthcare and long-term expenditure which are estimated using an econometrical modelling (with GDP per capita and age structure as independent variables, and also unemployment rate and drug approvals in the case of healthcare).**
- **In a fourth step, the dynamics of the benefits obtained in the third step are applied to the corresponding aggregates of national accounts.**
- Finally, social security expenditure is included in a projection of the public budget. This consolidation of the social security sector with the rest of public finances is necessary because of the links between the social security budget and other aspects of the budget. Social expenditure is not only financed by contributions, but also by social security taxes and transfers from the federal budget, and the civil servants' pensions are financed by the federal budget. The evolution of all revenues and primary expenditure leads to the calculation of public debt and interest payments.

4.2.2. Coverage of the whole model

Starting from a demographic projection, the whole model generates the evolution of expenditure in the different social security schemes (see Box 6), given socio-demographic and macroeconomic scenarios. The pension model for those AWG pension projections specifically covers the pensions, the disability allowances after one year and the unemployment with company allowance, all of which appear in bold in the box below.

¹⁶ As defined by the AWG.

Box 6 The different social expenditure categories in the MALTESE system of models

Pensions:

- **wage earners**
- **self-employed**
- **civil servants**
- **assistance scheme**

Health care

- acute care
- long-term care

Disability allowances (wage earners and self-employed)

- primary incapacity allowances (first year of disability)
- **disability allowances (subsequent years of disability)**
- maternity leave

Unemployment benefits (wage-earners' scheme)

Unemployment with company allowance (wage earners' scheme)

Family allowances (wage-earners' scheme, scheme for the self-employed, civil servants' scheme)

Other social expenditure (mainly subsistence support, accidents at work, occupational diseases, handicapped persons)

Education

4.2.3. Assumptions made in the AWG labour force projection

The labour force projection is given by the AWG (employment and unemployment) on the basis of Eurostat Statistics. Importing this AWG projection into the MALTESE system raises two main issues. Firstly, the MALTESE system normally produces a consistent projection of the various socio-economic groups (not only the labour force but also disabled persons, pensioners, unemployed with company allowance, etc.), which is an important feature for simulating the evolution of the number of pensioners. Secondly, this socioeconomic projection results in an exhaustive breakdown of the population by age and gender for each projection year, which ensures the consistency between the demographic and the socio-economic projection. Both properties of the MALTESE system imply the use of the original data and definitions concerning the socio-economic groups, in particular the administrative employment and unemployment data. Otherwise, the transition probabilities from the labour force and from employment to other socio-economic statuses - retirement in particular - should be re-estimated, and the consistency of the demographic and the socio-economic projections, on the other hand, would be lost.

As far as employment is concerned, the projection uses the AWG's evolution of the employment rates broken down into 5-year age groups. This means that an increase of one percentage point of the employment rate according to the Eurostat concept leads to an increase of one percentage point of the employment rate following the administrative concept. However, between 60 and 64 years, the original dynamic of the model is maintained, reflecting the early retirement in old-age pension. Those differences (concept, autonomous projection of the 60-64-year-old group) carry along small divergences in terms of employment rate evolution: the AWG employment rate of the 15-64-year-old increases by 2.4

percentage point between 2013 and 2060 while the administrative employment rate increases by 2.6 percentage points.

As regards unemployment, for the age groups under 55 years, the approach is similar to the one used for employment: the growth of the administrative unemployment rate follows the growth of the Eurostat unemployment rate given by the AWG (a one percent decrease of the Eurostat unemployment rate leads to a one percent decrease of the administrative unemployment rate). However, for the 55-59, the Eurostat and the administrative unemployment rates differ: the Eurostat unemployment rates are low while the administrative rates are high. So, the administrative unemployment rates have been reduced more in those age groups, but without consequence for the number of pensioners. Between 60 and 64 years, the original dynamic of the model is maintained. Those differences (concept, different evolution of the unemployment rate for age groups older than 55) create some divergences in terms of overall unemployment rate evolution: the AWG unemployment rate decreases by 13% between 2013 and 2060 while the administrative unemployment rate decreases by 16%.

4.3. Assumptions and methodologies applied to the pension model

4.3.1. Number of pensions

The key principle used to model the number of pensions is to let the existing number of pensions grow old and to add new pensions based on recent “entry behaviour” and historical participation rates. The projection of the number of pensions is carried out at a disaggregated level per scheme, gender and age or age group.

a. Entries in the old-age pension system

The statutory retirement age is 65 years. As far as men are concerned, **the overall pension rate at 65** (number of pensions in the first pillar to the population of 65 year-old people) is kept constant (because of the almost universal character of the legal pension). For women, a “total coverage rate” at 65 years is defined and also supposed to be constant. This “total coverage rate” is the ratio of the number of women with their own pension (old-age or survivor pension) or with their husband’s (at the family rate, which is higher if the spouse has no income) to the overall number of women aged 65.

The **distribution by scheme** (wage earners, self-employed and civil servants) **of the beneficiaries at 65 years** is determined according to the historical evolution of activity by scheme of the corresponding generation.

Entries in old-age pension occur mainly between 60 and 65 years. The **entry profile for old-age pension between 60 and 65 years** depends on the socio-economic status of the population between 59 and 64 years. Depending on this socio-economic status (employment, unemployment, unemployment with company allowance or disability) and on the scheme, retirements occur at varying ages: for example, people at work retire at a younger age than beneficiaries of a disability allowance. Moreover, this entry profile explicitly takes into account the career condition for early retirement before 65 years.

b. Entries in the survivor pension system

Before the age of 60, (female) entries in the survivor pension system are determined by scheme (wage earners, self-employed and civil servants) and 5-year age group, in function of the evolution of the female labour force, the widowed population and the distribution by scheme of the male labour force of the same age group. The projection also takes into account the survivor pension reform (spring 2014) with the gradual increase of the minimum entry age: 45 as from 2015 to 50 in 2025.

From the age of 60 onwards, the number of new female pensions in the survivor pension system is determined by the number of deceased (married) male pensions in the scheme concerned.

c. Entries into unemployment with company allowance

Entries into the unemployment with company allowance system are calculated on the basis of an entry probability by age and gender based on the number of wage earners workers.

d. Entries into disability

The methodology implies that the disability rates (the shares of disabled persons per gender and age category in the demographic population) are calculated using the principle of cohorts. Firstly, the entry probabilities in the primary incapacity benefit system (disabled for less than one year; they are not taken into account in the results of pension expenditure) are calculated from the potential labour force¹⁷. Then, the entry probabilities in the disability benefit system (after one year primary incapacity) are calculated from the primary disabled category. Finally, probabilities of remaining in the disability system are calculated for the other disabled. The number of primary disabled and disabled persons by age category and gender is computed by applying these rates to the demographic projection. The distribution of the number of primary disabled and disabled persons in the wage earners' scheme and the self-employed scheme is carried out proportionally to the number of workers in the respective schemes.

The next table shows the disability rates by age group, i.e. the ratios of the disabled to the corresponding overall population. The maximum age to receive a disability allowance is 64 (after that age, the beneficiary gets retired).

Table 28 Disability rates by age group (%)

	2010	2013	2020	2030	2040	2050	2060
Age group -54	2.1	2.3	2.8	2.8	2.3	1.9	1.9
Age group 55-59	8.5	9.6	11.3	12.3	15.6	10.8	9.3
Age group 60-64	8.2	8.9	11.3	13.3	16.7	13.4	9.8
Age group 65-69	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Age group 70-74	0	0	0	0	0	0	0
Age group 75+	0	0	0	0	0	0	0

Source: Belgian pension questionnaire

The last observed data show increasing disability rates. In accordance with the National Institute for Health and Disability Insurance, the entry probabilities and the probabilities of remaining disabled still

¹⁷ Working and unemployed people, people in unemployment with company allowance and on a full-time career break

increase till almost the end of the 2010s (crisis, new diseases...), which results in increasing disability rates. Then, the entry probabilities and the probabilities of remaining disabled progressively decrease until the mid-2030s to their pre-crisis level and then remain constant. The cohort modelling implies increasing disability rates till 2040 for the 60-64. At the end of the projection period, the disability rates return approximately to their levels of 2010-2013.

4.3.2. Average pension

The average pension amount in the different pension schemes is estimated by modelling as accurately as possible the main legislative parameters for the successive cohorts of persons entitled to a pension. For each pension scheme (wage earners, self-employed, civil servants), an average pension is estimated for each career profile (full career or not, retirement age), each category (old-age, survivor, household, lone person...) and according to the legal replacement rate (in the wage earners' and self-employed schemes).

The evolution of these shares depends on the socio-economic and macroeconomic projections. For instance, the increase in the female participation rate results in a growing number of women building up full pension rights. As a consequence, a growing number of pensioners, both in the wage earners' and self-employed schemes, claim a lone pensioner's allowance, which is calculated at a lower legal replacement rate, instead of a household rate pension.

Furthermore, the projection of the unemployment rate, of the early retirement rate, etc. affects the development of a full-time career. The assumption concerning productivity growth also has an impact on the evolution of average pension amounts through wages. This effect occurs faster in the case of pensioners from the civil servants' scheme, because their reference wages are calculated on the basis of their incomes over the last ten working years. As for employees and the self-employed, this wage evolution only appears in the long term, as their pension is calculated on the basis of the average income over their whole career, which, at the start of the projection period, is almost completely situated in the past.

The income distribution is supposed to remain constant in the projection. It is used, among other things, to compute the percentages of recipients with incomes above the wage ceiling and below the minimum pension.

In the wage earners' scheme, the average unemployment with company allowance (only the part paid by the National Employment Office) and disability benefits are calculated per gender and age group, taking into account the respective ceilings. Disability allowances in the self-employed scheme are lump-sum benefits.

4.3.3. Career length or contributory period

It is assumed that the average career length of men taking their pension depends, within the various systems, on the participation profile of the generation (historical participation rate for 5-year age groups). For women, the average career length is assumed to converge to that of men (without actually reaching that level).

The decreasing average career length of men is due to an extension of education years and is supposed to lead to a reduction of their representation in the higher part of the distribution of career lengths. For women, the increasing average career length stems from declining career breaks and is reflected in a strong reduction of their representation in the lower part of the distribution.

4.3.4. Indexation and social policy assumptions

a. Legislation

All allowances are automatically indexed to prices (consumer price index, CPI).

In addition, they can also be subject to adjustment in real terms in order to take into account the growth of wage ceilings, the adjustment of the non-lump-sum benefits to living standards, the real growth of lump-sum benefits and the indexation of civil servants' pensions to real wages.

Adjustment in real terms in the wage earners', self-employed and assistance schemes

The Generation Pact of December 2005 introduces the principle of an adaptation of the replacement benefits (not only pensions) to living standards. This (biennial) mechanism works in two steps. First, the available budget by scheme (wage earners', self-employed and assistance scheme) is calculated, which is equivalent to the increase of:

- wage ceilings (and minimum claim of wage earners' pensions) by 1.25% per year;
- earning-related benefits by 0.5% per year;
- lump-sum benefits (including minimum benefits) by 1% per year.

In a second step, concrete measures of adjustment to living standards are proposed by the social partners. These measures have to respect, in each scheme, the abovementioned global financial constraint. However, in each scheme, they can be aimed at specific sectors, categories of beneficiaries or types of allowances. Lastly, the government decides on the final measures on the basis of the proposal of the social partners.

Adjustment in real terms in the civil servants' scheme

The indexation of civil servants' pensions to real wages implies that the real wage increases for active civil servants are mirrored in the pensions of the retired civil servants.

b. Projection

All allowances are indexed to prices (CPI).

Regarding adjustment to living standards, until 2014, the projection takes into account all the measures already decided by the government.

In the wage earners', self-employed and assistance schemes, from 2015 onwards, social allowances are adjusted according to the general principle of available budget calculation (see parameters above). In the civil servants' scheme, pensions are adapted to the real wage increase of the working civil servants diminished by 0.4%. Indeed, historically, average pension increases have been 0.4% lower than the

5. Methodological annex

Information about survivor and disability pensions is mentioned in sections 4.3.1.b and 4.3.1.d.

5.1. Economy-wide average wage at retirement

The next table presents the economy-wide average wage globally and at retirement, by scheme. The AWG questionnaire only provides a global economy-wide average wage, not by scheme. This table also provides economy-wide average wages by scheme on the basis of the National Accounts. As expected by the AWG, the economy-wide average wages at retirement (by scheme) are provided by the country. Their levels are consistent with the economy-wide average wages from the National Accounts.

Table 30 Economy wide average wage at retirement evolution (in thousand euro)

	2013	2020	2030	2040	2050	2060
Economy-wide average wage (AWG)	34.4	35.6	38.9	45.1	52.5	61.1
Economy-wide average wage - National Accounts	31.6	32.8	35.9	41.6	48.5	56.5
Economy-wide average wage - National Accounts - Wage earners' scheme	32.8	34.0	37.2	43.0	50.1	58.4
Economy-wide average wage - National Accounts - Self-employed scheme	26.4	27.3	29.9	34.6	40.3	46.9
Economy-wide average wage - National Accounts - Civil servants' scheme	35.2	36.5	39.8	46.1	53.7	62.5
Economy-wide average wage at retirement	35.5	37.5	41.0	47.5	55.4	64.6
Economy-wide average wage at retirement - Wage earners' scheme	36.3	37.8	41.2	47.8	55.8	65.1
Economy-wide average wage at retirement - Self-employed scheme	30.2	31.3	34.2	39.6	46.2	53.8
Economy-wide average wage at retirement - Civil servants' scheme	43.5	44.5	48.8	56.4	65.2	75.8

Source: Belgian pension questionnaire

In the wage earners' scheme, the average wage at retirement is based on the gross wage multiplied by the ratio of the average wage of the people aged 60-64 year to the global average wage. This rate, by gender and blue/white-collar worker, evolves in the projection with the evolution of the share men/women and blue/white-collar worker.

In the self-employed scheme, based on data from the Statistics Belgium on the wages of the self-employed by sector (agriculture and fishing, industry and crafts, commerce, liberal professions, services) and by 5-year age group, the FPB calculates the coefficients linking the wages of the age categories (by 5- year groups) to the average wages which are projected until 2060 according to the aforementioned macroeconomic hypotheses. These coefficients remain constant throughout the projection. The wages at the career end are estimated by multiplying the average wages by the coefficient of the age group 60-64 years.

The observations of the average wages that civil servants receive at the end of their career are provided by the SdPSP (“Service des Pensions du Secteur Public”). They are the reference wages used to calculate the pensions of the new pensioners. They are available by type of civil servant (public administration, education). The FPB introduces a correction on these wages to take into account mixed careers, as the provided wages by SdPSP are those of civil servants who did not have a mixed career.

5.2. Pensioners vs pensions

The methodology behind the calculation of the number of pensions is presented in section 4.3.1. This number of pensions is a hybrid concept combining the number of pensions and the number of pensioners. Double counting of pensioners receiving benefits from both the wage earners’ and the self-employed scheme is avoided (when pensioners receive a pension from both schemes, pensions are classified either in the wage earners’ scheme or in the self-employed scheme, taking into account the average benefit in both schemes for “mixed” pensions). However, double counting between pensioners of the civil servants’ scheme and pensioners of the general scheme for wage earners and the self-employed could not be avoided.

To obtain the number of pensioners, we firstly assume that there is no double counting at the ages below 60. For the ages above 59, the number of pensioners is obtained on the basis of observed data related to double counting between pensions of the civil servants’ scheme and the wage earners’ scheme (15% of wage earners’ pensions) and between pensions of the civil servants’ scheme and the self-employed scheme (7% of the self-employed pensions). In the assistance scheme (guaranteed income for elderly), the double counting rates with the other schemes are important: 78% for women, 92% for men and globally 83%. We assume that those double counting rates are the same by gender and age group and remain unchanged over the whole projection period.

5.3. Pension taxation

Gross pension is subject to contributions: 3.55% for health care if the pension benefit exceeds a threshold, solidarity contribution between 0 and 2% according to the pension benefit and contribution of 0.5% for funeral expenses in the civil servants’ scheme. The implicit contribution rate is 2.2% in 2013.

Pension benefit is taxed if above a minimum amount varying according to the number of dependent children. The implicit tax rate is of 11.8% in 2013.

5.4. Non-earnings-related minimum pension

The non-earnings-related pensions are the guaranteed income for elderly persons (assistance scheme) and the disability benefit in the self-employed scheme.

The driving forces behind the expenditures for minimum income guarantee for elderly are the number of beneficiaries and their average benefit amount. The number of beneficiaries evolves with the older population and the number of pensioners. Since the minimum income guarantee is a means-tested scheme and more than 80% of its beneficiaries also receive a pension benefit, almost exclusively in the

wage-earners' or self-employed scheme, the average benefit amount is influenced by the maximum amount of this social assistance scheme and the evolution of pension benefits in the wage-earners' and self-employed scheme. The maximum amount of the minimum income guarantee evolves in line with the stipulations foreseen in the "Generation Pact", which is 1% per year.

The disability expenditure of the self-employed scheme is driven by the number of beneficiaries (see 4.3.1.d) and the evolution of the average benefit. The latter one is a lump-sum amount evolving in real terms with 1% per year (as foreseen in the "Generation Pact" - see sections 1.1.3 and 4.3.4).

5.5. Contributions

Since 1/1/1995, the financing of all social expenses in Belgium is carried out for the general scheme of wage earners and self-employed through the so-called "global management" system (contributions but also some tax revenues), which implies that there is only one global contribution rate for all social security schemes (pensions, disability, primary incapacity, maternity leave, unemployment...) and no longer a contribution rate by scheme. In the wage earners' scheme, the global contribution rates for employers and employees are 24.77% and 13.07% respectively. In the self-employed scheme, the global contribution rate in 2014 is 22% for revenues from 12,870 to 55,576 EUR and 14.16% for revenues from 55,576 to 81,903 EUR. It should be noted that the wage earners' and the self-employed schemes are not only funded by contributions (63.8% / 54.3% respectively in 2013) but also by state subsidies (16.3% / 28.3%) and alternative funding (16.5% / 13.8%) mainly made up of a percentage of VAT revenues. Most social benefits for civil servants, among others pensions, are financed through the general budget of the federal government.

5.6. Alternative pension spending decomposition

Reduction of the residual is not allowed in the next two tables. The analysis of these tables is similar to the one regarding Table 12 and Table 13.

Table 31 Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensions

	2013-2020	2020-2030	2030-2040	2040-2050	2050-2060	2013-2060
Public pensions to GDP	0.9	2.1	0.5	-0.2	0.2	3.5
Dependency ratio effect (pop. 65+/pop. 20-64)	1.2	2.4	1.2	0.3	0.9	6.0
Coverage ratio effect (pensions/pop. 65+)	-0.1	-0.4	-0.2	-0.1	-0.1	-0.9
<i>Coverage ratio old-age</i>	0.2	0.2	0.2	0.1	0.1	0.7
<i>Coverage ratio early-age</i>	-0.1	0.4	-0.4	-1.4	-0.7	-2.2
<i>Cohort effect</i>	-0.7	-2.3	-0.8	0.0	-0.4	-4.2
Benefit ratio effect (average pension/(GDP/hours worked 20-74))	0.3	0.4	-0.3	-0.3	-0.4	-0.2
Labour market/Labour intensity effect	-0.5	-0.2	0.0	0.0	0.0	-0.6
<i>Employment ratio effect (pop.20-64/employment 20-64)</i>	-0.5	-0.1	-0.1	0.0	0.0	-0.6
<i>Labour intensity effect (employment 20-64/hours worked 20-64)</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect (hours worked 20-64/hours worked 20-74)</i>	0.0	-0.1	0.0	0.0	0.0	-0.1
Residual	0.0	-0.1	-0.2	-0.1	-0.3	-0.8

Source: European Commission services based on Belgian pension questionnaire

Table 32 Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensioners

	2013-2020	2020-2030	2030-2040	2040-2050	2050-2060	2013-2060
Public pensions to GDP	0.9	2.1	0.5	-0.2	0.2	3.5
Dependency ratio effect (pop. 65+/pop. 20-64)	1.2	2.4	1.2	0.3	0.9	6.0
Coverage ratio effect (pensions/pop. 65+)	-0.1	-0.4	-0.2	-0.2	-0.2	-1.0
<i>Coverage ratio old-age</i>	0.2	0.2	0.2	0.1	0.1	0.8
<i>Coverage ratio early-age</i>	-0.1	0.4	-0.4	-1.4	-0.7	-2.3
<i>Cohort effect</i>	-0.7	-2.3	-0.8	0.0	-0.4	-4.2
Benefit ratio effect (average pension/(GDP/hours worked 20-74))	0.3	0.4	-0.2	-0.3	-0.3	-0.1
Labour market/Labour intensity effect	-0.5	-0.2	0.0	0.0	0.0	-0.6
<i>Employment ratio effect (pop.20-64/employment 20-64)</i>	-0.5	-0.1	-0.1	0.0	0.0	-0.6
<i>Labour intensity effect (employment 20-64/hours worked 20-64)</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect (hours worked 20-64/hours worked 20-74)</i>	0.0	-0.1	0.0	0.0	0.0	-0.1
Residual	0.0	-0.1	-0.2	-0.1	-0.3	-0.8

Source: European Commission services based on Belgian pension questionnaire

6. Annexes

6.1. The characteristics of the different public pension schemes

The following box presents the characteristics of the different public pension schemes (main pension formulas for old-age, survivor, minimum pension...).

Pension scheme for wage earners	
Formula for old-age pension:	
$P = 75\% \text{ or } 60\% \times \text{reference wage}$	(1)
with reference wage =	
$\sum_{t=1}^n \frac{1}{45} \times \text{wage in } t \text{ up to the wage ceiling} \times \frac{\text{price index } n}{\text{price index } t}$	(2)
The pension is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other cases.	
The reference wage is calculated on the basis of the wage really earned during the career up to a wage ceiling (52760.95 EUR for the year 2013). This wage is adjusted to current prices by the CPI. The sum of those adjusted wages over the career is multiplied by 1/45th (a full career is 45 years). Some periods of unemployment, disability, etc. are valued at the last corresponding earned wage and some others at the minimum claim per working year.	
The survivor pension is calculated as 80% of the deceased person's retirement pension, computed at the household rate (which means 80% of 75%), that is 60% of the reference wage.	
A guaranteed minimum pension exists for the pensions acquired over a full career or a career which equals at least two thirds of a full career in the wage earners' scheme (1403.73 EUR per month for the head of household with a dependent spouse and 1123.34 EUR per month in all other cases, in September 2014 for a full career).	
A minimum claim per working year also exists (guaranteed minimum wage of 1872 EUR per month in September 2014), as long as the beneficiary can prove he/she has worked at least 15 years in the wage earners' scheme, and provided his/her job was at least one third of a full-time job. In September 2014, for new pensioners meeting those requirements and provided that their adjusted wage in a full time employment of one year of career was lower than 22464 EUR, their pension is calculated for this year of career on the basis of this amount of the minimum claim per working year. The total pension can not exceed 1191.1 EUR per month (1488.8 EUR per month for the head of household with a dependent spouse).	
Statutory retirement age: 65 for men and women. Flexible retirement age from 60 until 2012, 62 from 2016 onwards, for a minimum career length of 35 years until 2012, 40 years as from 2016.	
Since 2007, a pension bonus (old) has been granted for each working day after the age of 62 or to those who have a career of 44 years (see 1.1.2). With the December 2011 reform, the pension bonus starts one year after the worker complies with the requirements for early retirement.	
Pension benefits are automatically adjusted to the price index and partially adjusted to living standards following the "Generation Pact".	
Pension scheme for the self-employed	
Formula for old-age pension:	
$P = 75\% \text{ or } 60\% \times \text{reference wage}$	(3)
with reference wage =	
$\sum_{t=1}^n \frac{1}{45} \times \text{income} \times \frac{\text{price index } n}{\text{price index } t} \times \text{correction coefficients}$	(4)
The pension is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other	

cases, just like in the wage earners' scheme.

For the reference wage, the working years before 1984 are valued at a fixed income, while for the working years as from 1984 (during which a self-employed professional activity has been performed), it is calculated on the basis of the business income used to compute social security contributions and income tax, up to an income ceiling.

The correction coefficients (reduction coefficients) reflect the discrepancy between the contributions paid by wage earners and by the self-employed.

A minimum pension exists, which is granted in proportion to the career fraction and for at least two thirds of a full career as a self-employed and/or wage earner (1403.73 EUR per month for the head of household with a dependent spouse and 1060.94 EUR per month in other cases, in September 2014 for a full career). When pensions (from the wage earners' scheme and the self-employed scheme) are cumulated, the total amount of the pension cannot exceed a ceiling. There is no minimum claim per year.

Survivor pension, pension bonus, adjustments to price index and living standards: similar to the wage earners' scheme.

Pension scheme for civil servants

Formula for old-age pension and disability pension (civil servants declared permanently unfit to continue their career, regardless of their age or seniority):

$$P = \frac{\text{considered service years (max 45 years)}}{60 \text{ (reference career fraction)}} \times \text{reference wage} = \text{maximum 75\%} \times \text{reference wage} \quad (5)$$

The reference wage is the average wage over the last ten years (five years for people born before 1962) of work, on the basis of the wage brackets.

The maximum replacement rate of 75% of the reference wage is obtained with a numerator of a maximum career length of 45 years and a reference career fraction of 60 (so-called *tantieme*). Some have a preferential *tantieme* (55 in teaching and less for other specific categories like magistrates and academic services). The December 2011 reform raises these last preferential *tantiemes* to at least 48.

To benefit from a minimum pension, 20 years of services are required.

The survivor pension is calculated as 60% of the reference wage.

Statutory retirement age: 65 (there are some exceptions) for men and women. Retirement possible as from 60 with 5 years of career until 2012, 62 with 40 years of career from 2016 onwards (38.5 years of career from 2018 in teaching).

Pension benefit is automatically adjusted to the CPI and to the real wage increases of the working civil servants.

Assistance scheme: guaranteed income for elderly persons (GIEP)

The elderly people with no income or an insufficient income (pension) can receive the so-called guaranteed income for elderly persons (GIEP). In September 2014, the maximum amount of the GIEP is 1011.7 EUR per month for a lone person and 674.46 EUR per month for cohabitants (for each person). Before granting the GIEP, the financial means of the person are checked.

Statutory age: 65.

GIEP benefit is automatically adjusted to the CPI and partially adapted to living standards following the Generation Pact.

Unemployment with company allowance scheme (only for wage earners)

The unemployment with company allowance consists of an unemployment benefit, paid by the public authorities (National Employment Office), which amounts to 60% of the last gross wage earned, limited by a ceiling (different from that used in the pension scheme). The beneficiaries also receive a company allowance, paid by the employer, which is not taken into account in the model.

Statutory age: 60 from 2008 onwards, provided the career length as a wage earner is minimum 35 years for men in 2013 (40 years in 2015) and 28 years for women (afterwards increasing till 40 years in 2024).

Unemployment benefit with company allowance is automatically adjusted to the CPI and partially adapted to living standards following the Generation Pact.

Disability

If a person's disability keeps him/her away from work during more than one year (if less than one year, it is called "primary incapacity", which is not taken into account in the results of pension expenditure), a disability benefit is paid.

In the wage earners' scheme, disability benefits are calculated at 65% of the limited lost wage for beneficiaries heads of household, 55% for lone persons, and 40% for cohabitants.

In the self-employed scheme, the disability benefits are fixed (lump-sum) but differ according to whether the beneficiary is in charge of a household or not.

Disability benefit is automatically adjusted to the CPI and partially adapted to living standards following the Generation Pact.

6.2. Data sources of the socio-economic projection of the MALTESE model

The basic idea is to perform an exhaustive and consistent breakdown of the projected population into different socio-economic groups which are important for the projections. The projection of the labour force - which is at the basis of the projection of the economic growth - is thus consistent with the projection of the socio-economic groups receiving social benefits.

The four major socio-economic groups that are identified in the MALTESE model are the following: the school population, the potential labour force (further disaggregated into employment by professional status, unemployment, unemployment with company allowance and full-time career break), the disabled population (subdivided in primary disability and disability) and pensioners.

Data for the different relevant socio-economic groups come from administrative records issued by the different competent social security bodies (see next table). In contrast to this approach, groups may be based on a single source (like the Eurostat Labour Force Survey, LFS in short). However, not all types of social security beneficiaries and socio-economic categories can be readily distinguished by means of the LFS.

All data are collected by gender and 5-year age groups, sometimes even per age year.

Table 33 MALTESE model: sources of data for the overall socio-economic projection

Socio-economic groups	Sources of data	Remarks
School population	Labour Force Survey, NIS of Belgium	
Potentially labour force of which:		
- full-time career breaks	National Employment Office	
- unemployment with company allowance	National Employment Office	
- older unemployed exempt from job search requirements	National Employment Office	Beware: the definitions differ from those used in the LFS and by the AWG
- unemployed job-seekers	National Employment Office	
- employment: wage earners	National Accounts and Crossroads Bank for Social Security for the breakdown by sex and age groups	
- employment: self-employed	National Accounts and Crossroads Bank for Social Security for the breakdown by sex and age groups	Beware: the definitions differ from those used in the LFS and by the AWG
- civil servants (with a distinction between statutory and non-statutory)	National Accounts and Crossroads Bank for Social Security for the breakdown by sex and age groups	
Disabled population (primary disability and disability):		
- wage earners' scheme	National Institute for Disability and Health Insurance	
- self-employed scheme	National Institute for Disability and Health Insurance	
Pension beneficiaries:		
- wage earners' scheme by category [*] details about the career	National Pensions Office	
- self-employed scheme by category [*] details about the career	National Pensions Office	
- civil servants' scheme by category [*] details about the career	National Institute for the Social Security of the Self-Employed	
- civil servants' scheme by category [*] details about the career	Public sector pension service	
- civil servants' scheme by category [*] details about the career	Public sector pension service	
Guaranteed income for elder people	National Pensions Office	

^{*}old-age, survivor; head of household, lone person in the wage earners' scheme and the self-employed scheme

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