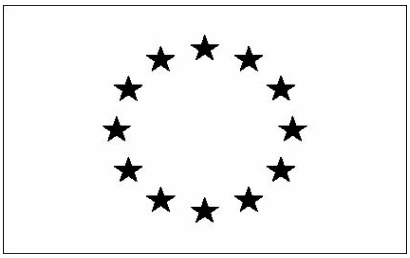
Ministry of Social Security and Labour



Lithuanian country fiche on pension projections 2015

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Overview of the pension system

1.1. Description

Key Features of the Pension System

Since 2004, the Lithuanian pension system consists of three pillars: statutory mandatory PAYG (defined-benefit) pension scheme, statutory quasi-mandatory private funded (defined contributions) scheme and voluntary private funded pension scheme. A legal framework for occupational pensions was developed in 2006.

A social security scheme in Lithuania comprises of the social insurance scheme, state pension scheme, and social assistance pension scheme. The scheme of state pension benefits is functioning alongside with the social insurance pension scheme as it usually accompanies one of the main pensions (social insurance pension), whereas social assistance pensions are meant for the persons not eligible for social insurance pension.

The Social insurance pension scheme in Lithuania is universal, it covers all employed workers regardless of the type of their employer – is it private or state. It was reformed in 1995 by introducing the insurance principle, extending the requirement of the years of full coverage, abolishing early retirement provisions and increasing the retirement age. It includes old-age, disability and widows (-ers) /orphans social insurance pensions. This pension scheme is financed out of contributions: 23.3% of gross wage is paid by the employer and 3% by the employee (data as of 2014). Self-employed people also have an obligation to insure themselves for the social insurance pension with the contribution rate of 26.3 %.
There are several population groups which contributions for the full pension calculated on minimum wage are covered by means of state budget, namely persons taking care of children under three years or of disabled persons, individuals having the status of an artist (as from the 1st of January, 2011).

Statutory retirement age in 2014 is 63 years for men and 61 years for women. The retirement age is being increased annually by 4 months for women and by 2 months for men until it reaches the age of 65 for both genders in 2026.

Pension formula

Social insurance pensions are combined of three elements:

- *the basic part* (basic pension), which is almost flat, fixed at same amount for all who have acquired 30 years of insurance record,
- *earnings related supplementary part* depending on a work record and on income, calculated with a formula comprising years of work record, individual wage coefficient and average insurable income in the country (the Government-approved figure based on the income on which social insurance contributions were paid) and
- *Bonus for lengthy insurance record* exceeding 30 years.

The pension formula is as follows:

P = basic part + supplementary part + bonus for lengthy insurance record

1.1 * B	**0.005 * S * K * DP**	**0.03 * e * B**
B – the amount of the basic pension on the month of the pension payment 1.1 – coefficient for the basic part of the pension	0.005 – accrual rate S – years of insurance record K – coefficient of insured income calculated as a weighted average of a ratio between person's monthly earnings and the average insurable income in the country for the entire insurance period (with ceiling = 5) DP – the amount of the average insurable income in the country on the month of the pension payment	0.03 – accrual rate for insurance record exceeding 30 years e – insurance record exceeding 30 years

The basic part of a pension is based on the basic pension and depends only on the length of the individual's insurance record, (the basic pension is EUR 104.3 as of 2014). The qualifying period for full pension is 30 years, while a minimum qualifying period is 15 years. The basic part of pension in case of the minimum qualifying period is half of the basic pension. The requirements for minimum and full social insurance period in case of the disability pension depend on the person's age and gradually increase with it. Since 2008, in order to increase adequacy for low wage earners, a basic part of pension was equalled to 110 percent of a basic pension.

A bonus (3 % of the basic pension for each year exceeding 30) as a part of pension benefit was introduced since July 2007.

For those who participate in quasi-mandatory private funded pension scheme, the coefficient of insured income (K) is corrected by C for every year of participation:

$$C = \frac{tp - tk}{tp},$$

where *tp* is the contribution rate to earnings-related supplementary part of social insurance old age pension and *tk* is the contribution rate to funded pension pillar.

The part of contribution rate allocated for the supplementary part of old age pension is approved by the Government every year and comprises 9.3 percentage points of total 26.3 percent in 2014.

There are no automatic valorisation and indexation rules for pensions in Lithuania. Social insurance pensions are increased when the new amount of basic pension and/or the average insured income of the current year are set by the Government. In the past adjustments were made in line with wage increases.

In July 2004 an early retirement pension scheme was introduced for the long-term unemployed who aged less than 5 years before the retirement age. Under that scheme pensions are reduced by 0.4% for every full month remaining until the retirement age and the reduced pension is paid life-long. The early retirement pensioners are not allowed to have income from work or other type of pension benefits (social assistance or state pensions) but it is possible to take a lump sum or pension annuity from quasi-mandatory private funded pension scheme.

After reaching the retirement age, a person can continue to work and to receive the employment income along with the old-age pension. In case of deferred retirement the pension is increased by 0.67 % per month or 8% per annum.

Table 1 – Statutory retirement age, earliest retirement age and penalties for early retirement

		2010	2020	2030	2040	2050	2060
Men - with 20 contribution years	statutory retirement age	62.5	64.0	65.0	65.0	65.0	65.0
	earliest retirement age*	-	-	-	-	-	-
	penalty in case of earliest retirement age**	-	-	-	-	-	-
	bonus in case of late retirement	8%	8%	8%	8%	8%	8%
Men - with 40 contribution years	statutory retirement age	62.5	64.0	65.0	65.0	65.0	65.0
	earliest retirement age	57,5	59.0	60.0	60.0	60.0	60.0
	penalty in case of earliest retirement age***	24%	24%	24%	24%	24%	24%
	bonus in case of late retirement	8%	8%	8%	8%	8%	8%
Women - with 20 contribution years	statutory retirement age	60.0	63.0	65.0	65.0	65.0	65.0
	earliest retirement age*	55.0	58.0	60.0	60.0	60.0	60.0
	penalty in case of earliest retirement age**						
	bonus in case of late retirement	0,08	0,08	0,08	0,08	0,08	0,08
Women - with 40 contribution years	statutory retirement age	60.0	63.0	65.0	65.0	65.0	65.0
	earliest retirement age	55.0	58.0	60.0	60.0	60.0	60.0
	penalty in case of earliest retirement age***	24%	24%	24%	24%	24%	24%
	bonus in case of late retirement	8%	8%	8%	8%	8%	8%

Source: Member States

* not eligible. Person must have 30 years of pension insurance record in order to retire earlier;
** no legal right to retire earlier with 20 years of contribution – no penalty;
*** pension reduction for the maximum 5 year period of early retirement.

In 2005 a disability reform was implemented, considerably changing the disability recognition procedure. Disability since then is linked to capacity to work rather than merely to a health condition. The level of capacity for work is established (three-tiered) in respect of individuals of working age only. Since 2009, a person who received the *disability pension* and reached the retirement age has a right to choose whether to continue receiving the disability pension or to convert to the old-age pension.

Family members of a deceased insured person are entitled to the *survivors pensions*. The widow's pensions were reformed in 2007. Only widows (-ers) of retirement age or disabled are eligible for widow's pensions; the pensions are flat (EUR 20.3) and are paid as a supplement to the main old age or disability pension. Orphan's benefits are linked to the pension amount of the deceased (50% of the latter's pension).

There is no minimum social insurance pension guaranteed by the Law. The minimum guarantee is provided by social assistance pensions financed from general taxation.

No income tax is levied on pension benefits paid from the statutory schemes.

The quasi-mandatory private funded pension scheme was introduced on the 1st of January 2004. The second tier of the statutory pension system is voluntary: people are free to choose whether to join it or not. Opting out from the scheme once joined is not allowed. The right to cancel the participation within 30 days of signing the agreement is given only to the newcomers to the system. There are no other limitations to participate except that for being insured with the social insurance pension system and aged below the legal retirement age.

The number of participants in quasi-mandatory private funded pension scheme grew largely due to the involvement of younger population (the share of participants in labour force is 79 %).

The scheme is a defined contribution scheme financed by a fraction of the social insurance contribution (increased from 2.5% to 5.5% of gross wage in 2004-2007 and reduced to 3% from January, 2009 and further to 2% from July, 2009 due to budget constrains). The rate of contributions was 1.5% in 2012 and 2.5% in 2013.

At the end of 2012, the Parliament adopted changes in the funded pension scheme. From 2014 the contributions to the Pension Funds comprise of three sources: 2 percentage points of obligatory social insurance pension contribution (3.5 p.p. since 2020), 1 percent paid by the member (2 per cent since 2016) and 1 percent of the country's average wage additionally paid by the State (2 per cent since 2016) (so-called "3.5+2+2" formula).

Contributions:			
Year	Fraction of social insurance pension contribution	Additional contribution paid by member	Contribution paid by the state (percentage of average wage in the country)
2014	2%	1%	1%
2016	2%	2%	2%
2020	3,5%	2%	2%

The contributions from the state budget will also be transferred for parents raising children of age under three years and receiving maternity (paternity) social insurance benefit or covered by state social pension insurance by state means. Contributions equal 2 per cent of the country's average monthly gross wage of the year before last. If these parents raise more than one child under 3 years of age, a fixed payment to the parent account is credited for each child.

The members already participating in the pension accumulation were given an option to choose further form of accumulation: to transfer additional contributions to the pension fund, to keep accumulating only part of their social insurance contributions or to terminate pension accumulation. 409 thousands of persons (36.7% of all participants of the scheme) have chosen to transfer the additional contributions, 684 thousands (61.2 % of all participants of the scheme) have chosen to accumulate only part of their social insurance contributions and 24 thousands (2.1 % of all participants of the scheme) have chosen to terminate pension accumulation in the private pension funds (data of December 2013). In the last case the accumulated sum is left in the pension fund till the person acquires the right for the benefit from pension fund. All new participants will join the scheme with additional contributions.

Pension funds management fees were reduced by amendments. As from 2013 the fee from accumulated assets, which is paid by member, is up to 0.65 percent of a member's average annual assets held in conservative pension fund and up to 1 percent of assets held in other pension funds. The fee from contribution is up to 2 percent and each year is being reduced by 0.5 percentage points till it reaches 0 percent:
Maximum contribution fee is being gradually decreasing since 2013:
2013 – 2%
2014 – 1.5%
2015 – 1%
2016 – 0.5%
Since 2017 – no contribution fee applied.

Joining the funded defined contribution system reduces the part of contributions going to the social insurance budget. The social insurance pension benefit formula reflects this part of "lacking" contributions by coefficient which is calculated yearly and applied to the earnings–related part of the social insurance pension (see coefficient C above). The coefficient of insured income is not reduced due to additional person's contributions or the contributions from the state budget.

At the retirement, a participant has an obligation to purchase a pension annuity from Life Insurance Company. Only in case of very small annuities (half the amount of the basic pension) or for sums exceeding the annuity of three times the basic pension, one can choose to receive pension benefit in lump sum or as phased withdrawals from the pension fund. Unisex life tables are used for annuity calculation since December 2012.

From 2013 it is possible to receive benefit (annuity) form the pension fund not earlier than 5 years before the retirement and when the early old age state social insurance pension is awarded.

The transfer of a part of social insurance contributions into quasi-mandatory private pension funds in 2004–2007 was partially (by 50%) funded by state allocations (from the means of the Reserve (Stabilisation) Fund). During the economic crisis and later in 2009-2013, the transfers were fully funded by the State budget allocations. Since 2014 these transfers are not compensated by State budget any more. This policy assumption is included in the projections.

There are no government guarantees on the return of the quasi-mandatory private funded pension scheme.

The voluntary private funded pension scheme started operating in 2004. Income and corporate tax allowances are applied to contributions made by an insured person or by his employer if they do not exceed 25% of the person's annual earnings. The participation in the system remains very low comprising for merely 2.5 % of the total labour force of Lithuania in 2014. Legal regulation of voluntary private pension accumulation allows terminating the accumulation agreement and withdrawal of the funds at any time. However, withdrawal of the funds is not taxed with the personal income tax only if duration of accumulation was longer than 5 years and there were less than 5 years left until the retirement age or the person was disabled. Acquisition of annuity is not mandatory, thus, such participants can be called participants in "pension" accumulation with some reservations.

The state pension system functions independently from the social insurance pension system. The so-called state pensions system evolved after 1995 pension reform, when it was aimed to clear up pension system from the privileges such as double counting of the pensionable record

for victims of occupation and war or early retirement for mothers of large families and others. All these special provisions were moved to the separate pension system financed from the state budget and not based of any type of contributions. The state pensions are awarded to the persons with distinguished achievements for the state (1st and 2nd degree), officials and military servants, judges, scientists and for victims and deprived persons, mothers of large families. Some of them are earnings-related (e.g. officials and military servants state pensions and judges' state pensions) some are calculated on the special state pension's basis (e.g. 1st and 2nd degree, scientists, mothers and pensions of deprived persons).

Since 2014 state pensions that amount 116 EUR are also paid for the mothers that have born 5 or more children (previously 7 or more children).
State pensions are awarded irrespective of the eligibility to social insurance pensions and may be paid out along with them. However, the amount of pensions of the first and second degree and military servants in total may not exceed 1.5 of the average wage in the country.

The state pension system is financed directly from the state budget. 11% of pensioners receive this type of pension and state pension expenditure comprises 0.29% to GDP in 2013.

Social assistance pensions provide a minimum income to those not eligible to social insurance old age, disability and survivors pensions or having insufficient amount of benefit. The amount of the social assistance pension in case of old age is equal to 90% of the basic pension that was 32.4% of the minimum monthly salary or 18.7% of the average net wage in the country in 2013. Social assistance pensions are pension income-tested. Social assistance pension expenditure to GDP comprised 0.19% in 2013 and covered about 5 % of pensioners.

The Payment of Social Security Benefits during Economic Crisis

Due to the economic crisis the Provisional Law on Social Benefit's Re-calculation and Payment was adopted on 9 December 2009. Pensions and other social benefits were temporarily cut for 2010 and 2011 (on average by 8 %) in order to reduce the social insurance fund deficit. Progressive character of the cuts was aimed at the protection of the most vulnerable recipients of smaller benefits.
In accordance with this Law, as of the 1st of January 2010, social insurance pensions were re-calculated for the period of two years by increasing the basic part of the pension to 120 per cent of the amount of the social insurance basic pension and by applying a smaller amount of insured income for the current year. When re-calculating pensions, the amount of a bonus for the lengthy record did not change.
The Provisional Law also provided for an additional reduction in pensions for persons who had income from work: their re-calculated pensions were cut progressively (max 70%), taking into consideration the insured income for the previous calendar month. The Provisional Law was in force for two years until 31 December 2011 for social insurance pension benefits and for three years until 31 December 2013 for state pension benefits.

On February 6, 2012 the Constitutional Court of the Republic of Lithuania adopted the ruling on the compliance of the provisions of the legal acts regulating the recalculation of pensions in an extremely difficult economic and financial situation in the state with the Constitution of the Republic of Lithuania which called for compensation of these reductions when the financial situation in the state improved. Following this ruling, in May 2014 the Parliament adopted the Law on Compensation of state social insurance old-age pensions and state social insurance work incapacity pensions which laid down the procedure of compensation to pensioners the losses resulting from the reduction of these pensions.

The Law itself does not explicitly mention the figures of funds needed for compensation. The total government liabilities (including the old age and state pension compensations to the working pensioners) are explicitly listed in the explanatory note. At the time of the adoption of the Law (2nd Quarter of 2014) they were 247.8 million EUR.[1]
According to this Law the compensation amount (130 million EUR) shall be paid during 2014–2016 in portions: in the last month of the fourth quarter of 2014 the recipients of the old-age pension and the work incapacity (invalidity) pension shall be paid 20 per cent of the compensation amount; in 2015 and 2016 the recipients of the old-age pension and the work incapacity (invalidity) pension shall be paid 40 per cent of the compensation amount in equal portions.
The Law makes a reference to the old age and state pensions compensations to the working pensioners. The government should consider compensations to these two groups of pensioners in 2015, when adopting the 2016 budget.

1.2. Recent reforms of the pension system included in the projections

The most recent of reforms included in the projections were 2012 amendments in the pension accumulation system. All new participants entering the scheme and part of those already participating will transfer not only a part of their social insurance contribution (2% in 2014-2019 and 3.5% since 2020) but also a part of their salary (1% in 2014-2015 and 2% since 2016) and contributions from the State budget (1% of the average country's wage of the year before last in 2014-2015 and 2% since 2016). The transfers from the state budget for parents raising children of age under three years and receiving maternity (paternity) social insurance benefit or covered by state social pension insurance by state means are included in the projections. The unisex life tables are used for private pension annuity calculation.

In state pension scheme pensions for mothers that have born 5 or more children are projected.

1.3. Description of the actual "constant policy" assumptions used in the projection

The constant policy scenario is applied with exception of the indexation of pensions during 2013-2014 periods. They are frozen according to the Law on State Social Insurance Fund Budget for 2012. Indexation of social insurance pensions since 2015 (basic pension and average insurable income) is fully aligned to wage evolution as well as earnings related state pensions. Non earnings-related state pensions are indexed to the half of the growth of the basic pension (as was the case in the past). Indexing to nominal wage growth is applied for social assistance pensions.

Indexation rules applied in the projection:

Social security pensions	
Old age pensions	Basic pension and average insured income are indexed by Nominal Wage Growth
Disability pensions	
Widows/widowers' and orphans' pensions	

[1] Statistical treatment of the recording of pension compensations following the ruling of the Constitutional Court: in Eurostat view on the Treatment of the Constitutional Court decisions: "once the legal act on the compensatory mechanism is passed, the estimated amount is to be recorded in government accounts for its full amount" – in national accounts the full amount is to be booked as government expenditure (D.9 pay) with the counterpart other accounts payable (F.8) at the time of the adoption of the Law (2nd Quarter of 2014)

State (special) pensions	
Pensions of the Republic of Lithuania of I and II degree	half of the growth of the Basic pension
Pensions for scientists	
Pensions for casualties	
Other state pensions	
Pensions for officials and military personnel	100 % Nominal Wage Growth for new pensions, but stock is not indexed
Pensions for judges	
Social assistance pensions	100 % Nominal Wage Growth

36.7% of quasi-mandatory private pension scheme participants transfer additional contributions to the pension funds at the beginning of the projection period. All new entrants to the scheme transfer additional contributions. The evolution of contribution tariffs is specified at the description of private pension scheme. The current contribution rate to quasi-mandatory private funded pension scheme was kept constant (2%) for all the projection period in Ageing Report 2012 exercise.

Overview of the Demographic and labour forces projections

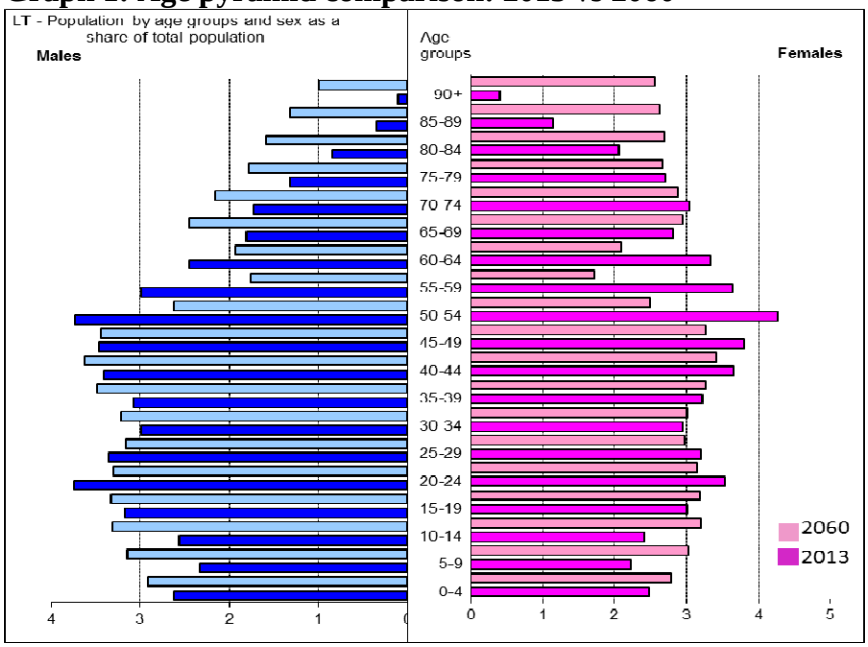
2.1. Demographic development

Population in Lithuania is still relatively young and most of the people are in productive ages. Although large part of population that was born during the baby boom are in age groups between 40-55 years and they will retire during the next 10-25 years.

According to Eurostat2013 demographic projections total population is expected to shrink by 38% over the entire forecasting period.

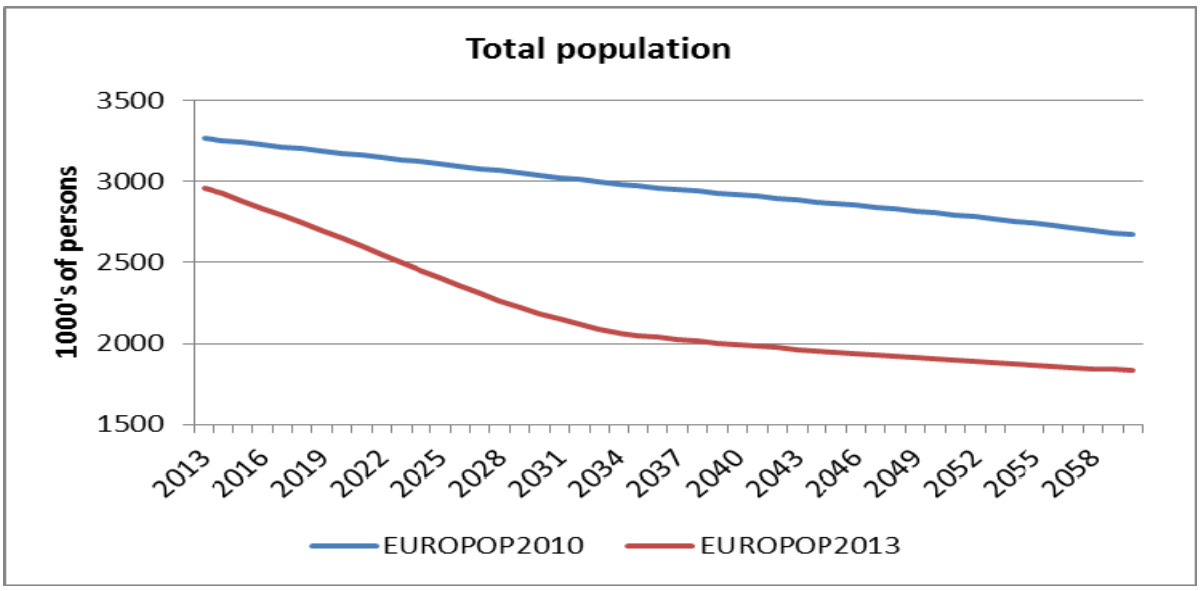
Even though fertility rate have been increased by 0.08 points on average because of the high forecasted emigration, Lithuania's population is forecasted to decrease dramatically and age pyramid to flatten by 2060.

Graph 1: Age pyramid comparison: 2013 vs 2060



Comparing to Eurostat2010 demographic projection, the population forecasted in the new projection is 311 thousands persons (-9.5 per cent) less because of 2011 census data and 836 thousands persons (-31.3 per cent) less at the end of projection period because of drastical negative net migration, despite of higher birth rates and longer lives.

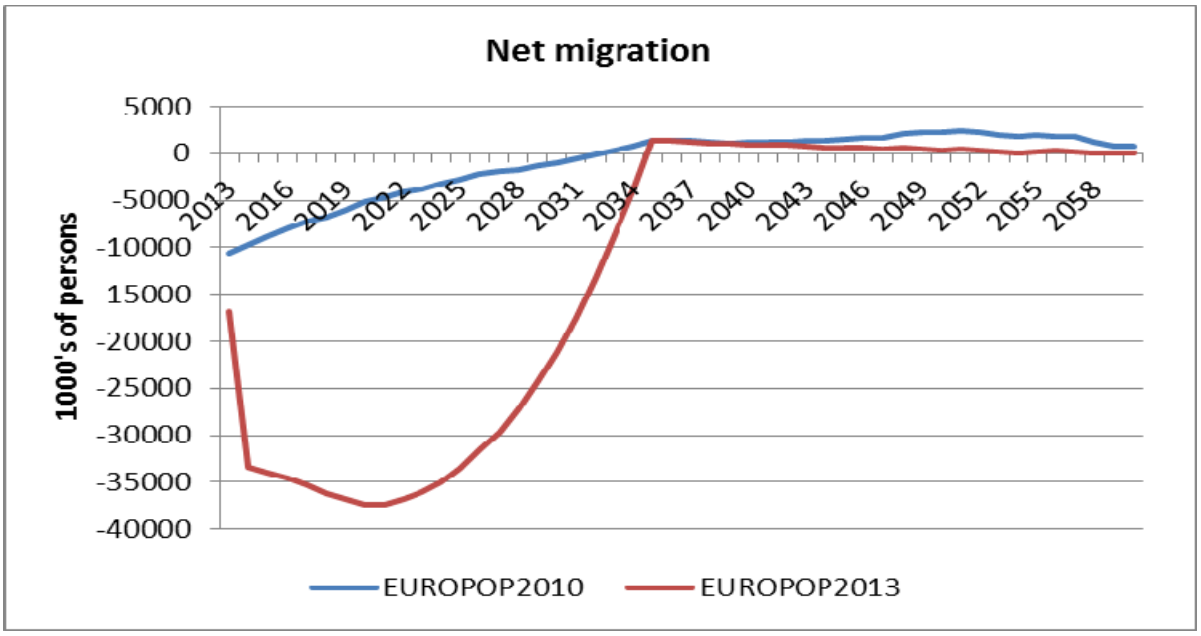
Graph 2



The population is projected to decrease fastest until 2027 and mostly in young age groups because of high projected emigration. Population decrease in younger age groups continues until 2040 when positive migration flow is projected. This is why dependency ratio rises dramatically during this period and peaks at 55.7% in 2041.

Later due to projected positive migration flows share of young persons starts to increase and dependency rate drops to 45.7% in 2060.

Graph 3



From 2013 to 2060 life expectancy at 65 years rises by 6.5 years for men and 5.4 years for women.

However, the rise of dependency ratio seems to be caused mostly by decreasing number of younger persons (because of projected high emigration) rather than by increasing longevity.

Table 2 – Main demographic variables evolution

	2013	2020	2030	2040	2050	2060	Peak year*
Population (thousand)	2958	2647	2183	1992	1906	1833	2013
Population growth rate	-1,0	-1,8	-1,8	-0,5	-0,4	-0,3	2060
Old-age dependency ratio (pop65/pop15-64)	27,4	32,3	48,0	55,7	51,6	45,7	2041
Ageing of the aged (pop80+/pop65+)	26,7	30,2	27,6	33,8	44,1	44,2	2054
Men - Life expectancy at birth	68,7	70,8	73,6	76,3	78,7	80,9	2060
Men - Life expectancy at 65	14,3	15,3	16,8	18,2	19,5	20,8	2060
Women - Life expectancy at birth	79,6	80,9	82,7	84,4	86,0	87,4	2060
Women - Life expectancy at 65	19,2	20,0	21,2	22,4	23,5	24,6	2060
Men - Survivor rate at 65+	64,1	68,7	74,4	79,2	83,2	86,5	2060
Men - Survivor rate at 80+	29,5	35,2	43,4	51,2	58,5	65,0	2060
Women - Survivor rate at 65+	86,6	88,2	90,2	91,9	93,3	94,4	2060
Women - Survivor rate at 80+	62,2	66,2	71,4	75,9	79,8	83,1	2060
Net migration	-16,8	-37,4	-21,1	1,0	0,4	0,0	2036
Net migration over population change	0,6	0,8	0,5	-0,1	0,0	0,0	2014

Source: EUROSTAT and Commission Services

*(Explanatory note: *This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060.)*

Positive evolution of the participation rates in age group 55-64 in first two decades is affected by increase in retirement age. Mainly the group 60-64 is affected, which participation rate increases by 16 p.p. Participation rate for age group 66-74 only increases slightly because the increase in retirement age is stopped at 65 years in 2026.

Table 3 – 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	60,2	61,1	66,9	66,6	66,6	65,6	2043
Employment rate for workers aged 55-64	53,4	55,0	61,4	62,4	62,3	61,4	2043
Share of workers aged 55-64 on the labour force 55-64	88,7	90,0	91,7	93,7	93,5	93,6	2056
Labour force participation rate 65-74	8,9	8,7	9,1	9,6	9,7	9,7	2057
Employment rate for workers aged 65-74	8,8	8,6	9,0	9,6	9,6	9,7	2057
Share of workers aged 65-74 on the labour force 65-74	98,4	98,6	98,9	99,2	99,2	99,2	2060
Median age of the labour force	41,0	42,0	43,0	41,0	38,0	39,0	2023

Source: Commission Services

*(Explanatory note: *This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060.)*

Driven by the recent pension reform average effective exit age will rise by 1.7 years for men and by 2 years for women. The increase for women is higher because of more rapid increase of retirement age (4 months per year for women and 2 months per year for men).

The contribution period and pattern of its increase is close to average effective working career calculated by CSM. The contributory period for women is on average 0.6 years longer due to non-contributory periods (mainly maternity leave). The contributory period for men in the first decade is 3.8 years shorter than average effective working career due to high long-term unemployment rates in the past for men.

Rapid increase of life spent at retirement (by 6.2 years for men and by 8 years for women) causes the increase of pension expenditure, because the DB pension scheme without the sustainability factor does not lower the size of pension benefit in reaction to increased duration of retirement.

The ratio of those who retired and aged less than the statutory retirement age and those who retired and are aged more than the statutory retirement age (Early/late exit) in the year 2020 is much higher comparing to other decades due to the cohorts approaching the retirement age in 2020 being significantly larger than the cohorts above the retirement age.

Table 4a – 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)	21,4	22,4	22,3	22,3	22,3	22,3	2017
Average effective exit age (CSM) (II)	62,6	63,6	64,3	64,3	64,3	64,3	2029
Average effective working career (CSM) (II)- (I)	41,1	41,3	42,0	42,0	42,0	42,0	2029
Contributory period	0,0	37,5	41,6	41,6	41,5	41,6	2058
Contributory period/Average working career	0,0	90,8	99,1	99,2	98,9	99,2	2058
Duration of retirement **	15,3	15,9	17,4	18,8	20,2	21,5	2060
Duration of retirement/average working career	37,2	38,5	41,4	44,8	48,1	51,2	2060
Percentage of adult life spent at retirement***	25,6	25,8	27,3	28,9	30,4	31,7	2060
Early/late exit****	1,0	1,8	1,0	0,8	1,0	0,8	2017

Source: Commission Services

Table 4b – 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)	23,1	23,9	23,9	23,9	23,9	23,9	2014
Average effective exit age (CSM) (II)	61,8	62,8	63,8	63,8	63,8	63,8	2028
Average effective working career (CSM) (II)- (I)	38,7	38,9	39,9	39,9	39,9	39,9	2028
Contributory period	0,0	38,1	40,5	40,6	40,4	40,6	2057
Contributory period/Average working career	0,0	97,8	101,5	101,7	101,3	101,7	2057
Duration of retirement **	21,6	21,7	22,1	23,3	24,4	25,5	2060
Duration of retirement/average working career	55,9	55,7	55,4	58,4	61,1	63,9	2060

Percentage of adult life spent at retirement***	33,0	32,6	32,6	33,7	34,8	35,8	2060
Early/late exit****	0,9	1,3	1,0	0,8	1,0	0,7	2019

Source: Commission Services

*(Explanatory note: *This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060. ** Duration of retirement is calculated as the difference between the life expectancy at average effective exit age and the average effective exit age itself. *** The percentage of adult life spent at retirement is calculated as the ratio between the duration of retirement and the life expectancy diminished by 18 years. **** Early/late exit, in the specific year, is the ratio of those who retired and aged less than the statutory retirement age and those who retired and are aged more than the statutory retirement age.)*

3. Pension projection results

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

All contributory social insurance and non-contributory (financed from state budget) state pensions are explicitly introduced in the country's pension model (social assistance as well). Disability pensions paid out to persons past the standard retirement age are attributed to the category *"disability pensions"*. Projections cover the quasi-mandatory private pensions.
Ageing Working Group definition of pension expenditure (% GDP) is identical to EUROSTAT official figures (ESSPROS)

Table 5 - Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)

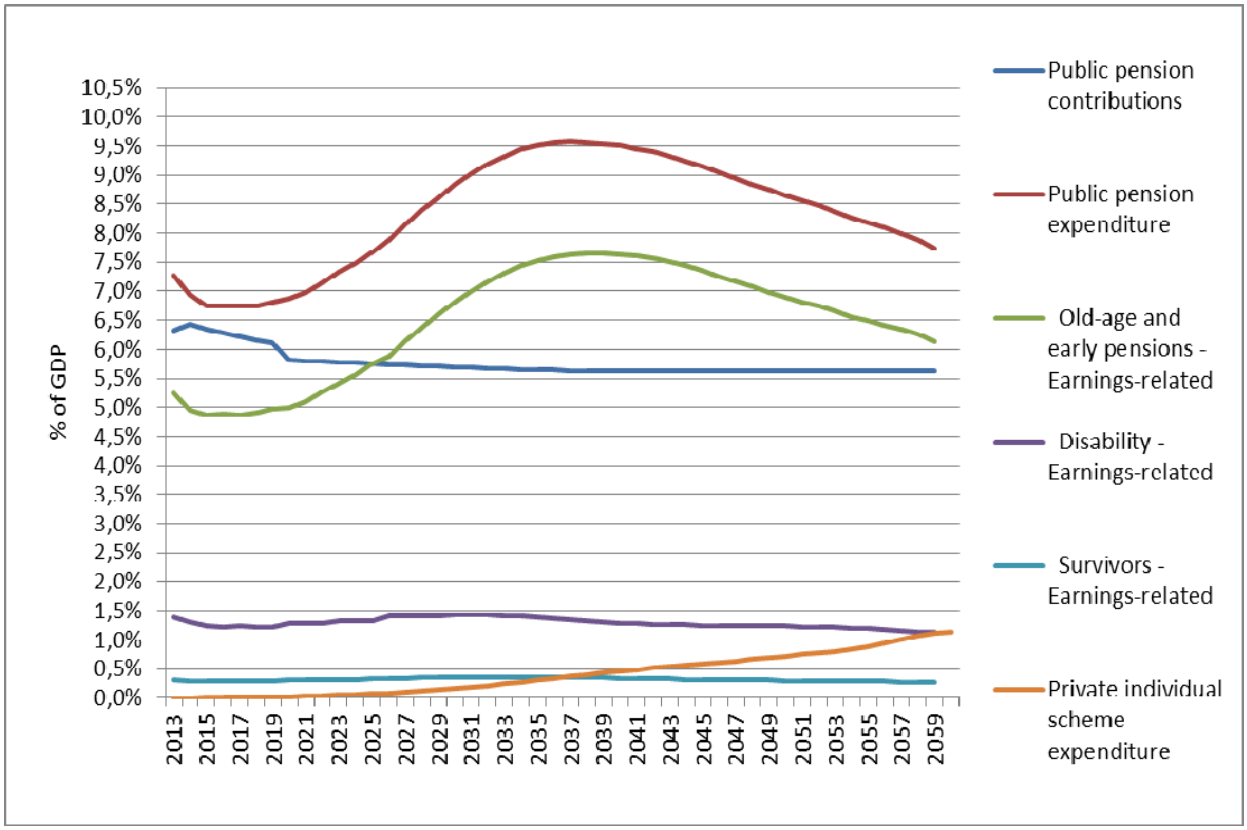
	2005	2006	2007	2008	2009	2010	2011	2012
1 Eurostat total pension expenditure	6,5	6,3	6,6	7,4	9,6	8,5	7,7	7,7
2 Eurostat public pension expenditure	6,5	6,3	6,6	7,4	9,6	8,5	7,7	7,7
3 Public pension expenditure (AWG)	6,5	6,3	6,6	7,4	9,6	8,5	7,7	7,7
4 Difference (2) - (3)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
5 Expenditure categories not considered in the AWG definition, please specify:	*:*	*:*	*:*	*:*	*:*	*:*	*:*	*:*
5.1 ...	*:*	*:*	*:*	*:*	*:*	*:*	*:*	*:*
5.2 ...	*:*	*:*	*:*	*:*	*:*	*:*	*:*	*:*
5.3 ...	*:*	*:*	*:*	*:*	*:*	*:*	*:*	*:*

Source: EUROSTAT and Member States

3.2. Overview of projection results

Gross public pension spending in proportion to GDP is projected to increase by 0.3 percentage points between 2013 and 2060 (from 7.3 to 7.6 per cent with a peak year of 2037 when pension expenditure reaches 9.6 percent of GDP).

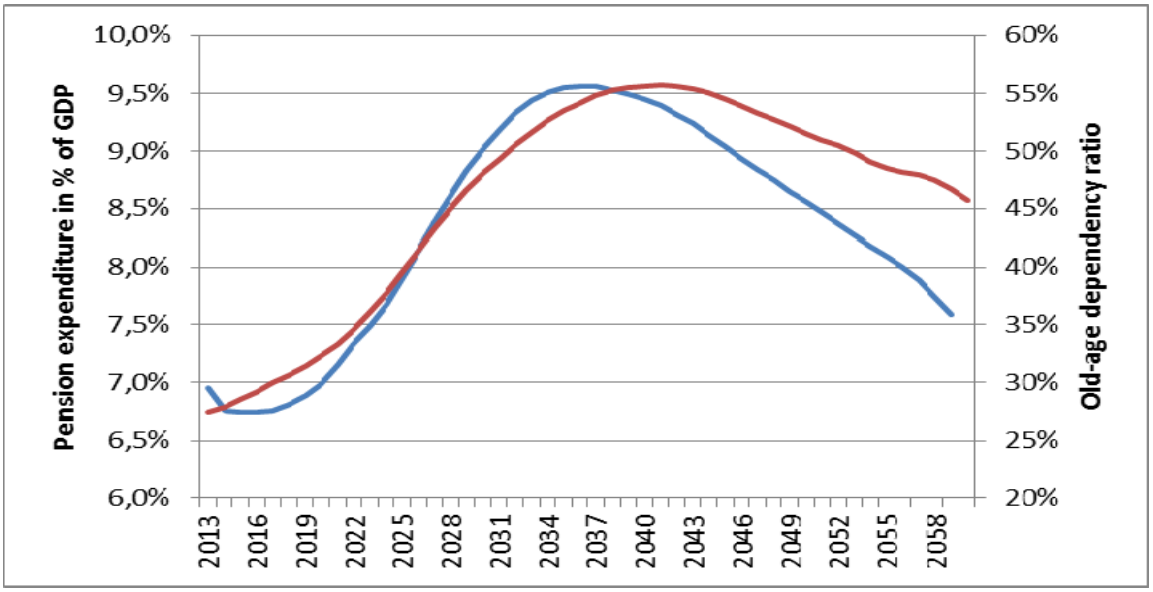
Graph 4



This increase results from the expenditure growth in the old age category (0.7 percentage points with the maximum of 2.3 in the peak year). The ratio of pension spending to GDP decreased by 1.3 percentage points in 2013 as compared to 2010 year's level of 8.6 per cent due to frozen pension indexation in 2009-2014 and an increase of nominal GDP by 25 per cent). The very small decline of public pension expenditure projection to GDP from 2013 to 2020 is caused by several factors: frozen pension indexation during 2009-2014, the smallest cohorts of pensioners, increase of retirement age since 2012 and moderate GDP growth (2.7 per cent average growth during the period 2013-2019).

The demographic situation will change sharply after 2020 when major post-war baby-boomer cohorts will retire and low birth rate cohorts will be contributing and the biggest flow of emigrants will be leaving the country (-37.4 thousand net migration per annum in 2020-2025 according to the EUROPOP2013 projections). The highest pension expenditure that will amount 9.6 per cent of GDP in the peak year 2037 is caused by the lowest GDP growth in the projection period and the highest old age dependency ratio (very high migration is a main driver of both). After 2037 public pension expenditure starts to decrease due to declining number of old-age pensioners. Main reason of this is projected huge negative net migration flows in the years 2013-2034. This decreases number of persons that could become old-age pensioners in the years after. This is also the main reason of improving dependency ratio.

Graph 5



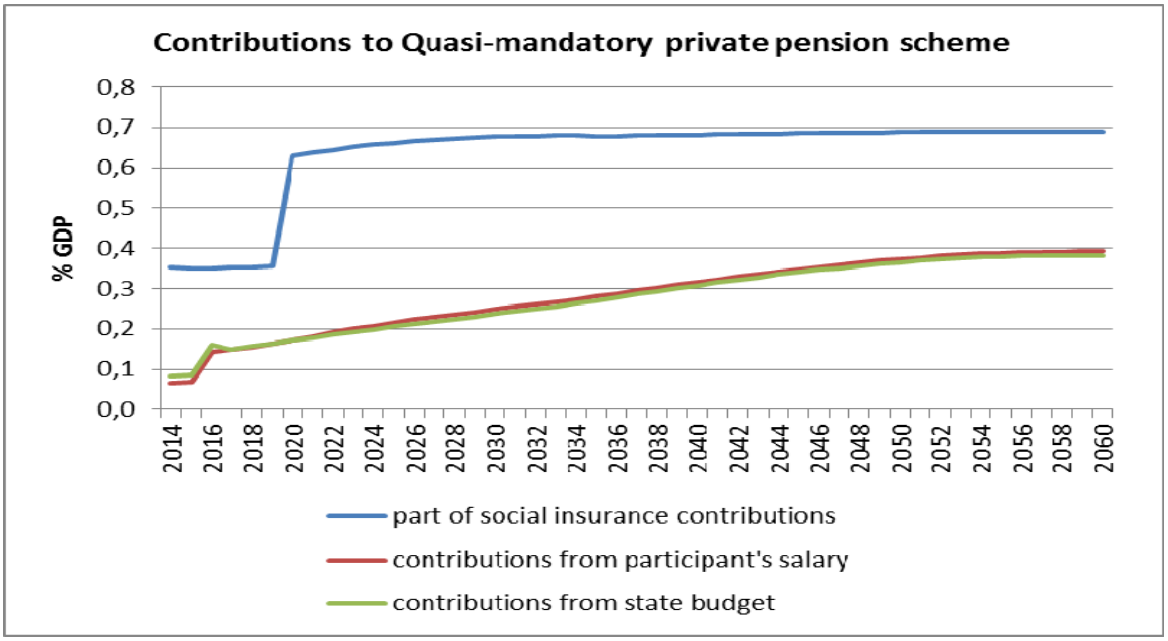
Graph 6

Quasi-mandatory private pension spending ratio to GDP is 0 to 1.1 percent until 2060, which is higher by 0.5 p.p. compared to the projection of Ageing Report 2012 because of the reform of private pension pillar.

All pension benefits (from public and private schemes) are not subject to taxation.

The lowering pattern of Public pension contributions is caused by maturation of Quasi-mandatory private pension scheme (higher number of participants accumulating a part of social insurance pension contribution in their private accounts) and sharply decrease in 2020 when part of contribution rate diverted to pension funds is increased (from 2 per cent in 2013 to 3.5 per cent since 2020).

Graph 7



Social insurance contributions transferred to pension funds of quasi-mandatory private pension scheme jumps by 0.2 per cent of GDP in 2020 because contribution rate increases from 2 per cent to 3.5 per cent in that year. Later it goes up slightly as the system matures and share of all workers participating in the scheme increases. Overall increase of contributions from social insurance is 0.41 per cent of GDP from 2013 to 2060 (from 0.35 per cent GDP to 0.76 per cent to GDP).

Sum of contributions from both participants' salary and from state budget increases about 2 times in 2016 because contribution rate increases from 1 per cent to 2 per cent. Later contributions from participant's salary and the state budget grow respectively from 0.14 per cent of GDP to 0.39 per cent of GDP and from 0.16 per cent of GDP to 0.38 per cent of GDP as all new entrants of the scheme automatically start transferring additional pension accumulation contributions. Contributions from state budget (even including pension accumulation contributions for parents) are mostly lower than the contributions from participant's salary because they are calculated from country's average salary of the year before last.

Overall contributions to Quasi-mandatory private pension scheme increases from 0.43 per cent of GDP in 2013 to 1.46 per cent of GDP in 2060.

Table 6 - Projected gross and net pension spending and contributions (% of GDP)

Expenditure	2013	2020	2030	2040	2050	2060	Peak year*
Gross public pension expenditure	7,3	6,9	8,8	9,5	8,6	7,6	2037
Private occupational pensions	:	:	:	:	:	:	:
Private individual pensions	:	0,0	0,2	0,5	0,7	1,1	2060
Mandatory private	0,0	0,0	0,2	0,5	0,7	1,1	2060
Non-mandatory private	:	:	:	:	:	:	:
Gross total pension expenditure	7,3	6,9	9,0	10,0	9,4	8,7	2040
Net public pension expenditure	:	:	:	:	:	:	:

Net total pension expenditure	:	:	:	:	:	:	:
Contributions	2013	2020	2030	2040	2050	2060	Peak year*
Public pension contributions	6,3	5,8	5,7	5,6	5,6	5,6	2014
Total pension contributions	6,8	6,8	6,9	6,9	7,1	7,1	2060

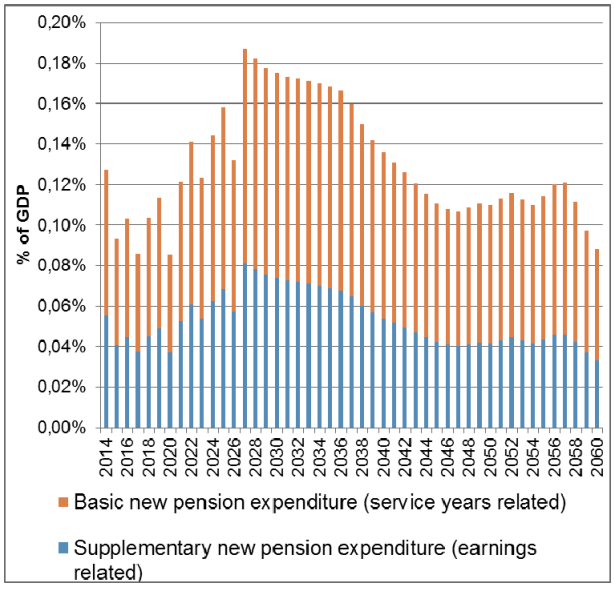
Source: Commission Services

*(Explanatory note: *This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060.)*

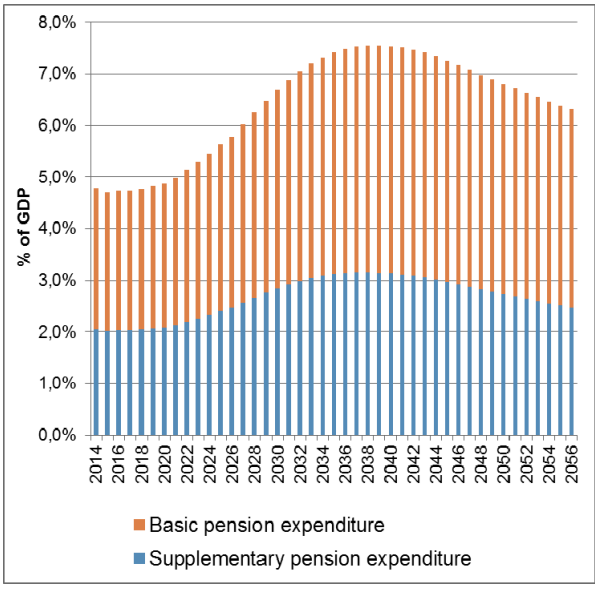
Pension expenditure of *earnings related Old age and early pensions* (including social insurance pensions and state pensions for officials and military servants) is projected to follow the path of the public pension expenditure with the same factors behind it.

Graphs 8 and 9 shows how basic pension, the earnings related part and the bonus for lengthy insurance record (for contributory periods above 30 years) evolve over time for both new old age social insurance pension expenditure and overall old age social insurance pension expenditure. As a number of service years increase due to higher pension ages the bonus for lengthy insurance record has a huge impact on overall basic pension expenditure increase. Noticeable increase in the basic new pension expenditure till 2026 in the graphs 8 can be treated as the increase in the bonus for lengthy insurance record expenditure due to increasing retirement age. Opposite to the basic pension expenditure that stays stable after 2026 the supplementary new pension expenditure decreases because the private system matures and larger share of new pensioners will be the participants of this scheme (with higher proportion of insurance record with larger reduction coefficient C). The same tendency with a slight delay is seen in the development of all old age pension expenditure (graph 9).

Graph 8



Graph 9



Unlike the old age pensions, *earnings related disability pensions'* expenditure is expected to increase slightly until 2026 in reaction to the postponement of the retirement age. Afterwards it remains stable with a very slight decrease because of lower population in working age. There is no generally expected decrease of disability pension's expenditure in the long run

because of the possibility to choose the higher pension (either old age or disability scheme) at the retirement, which was introduced in 2009.

The expenditure of the *survivors pensions* is very low and expected to decrease in the future because of three main factors: the new benefits of the reformed widows' pensions system are extremely low and not linked to the amount of the pension of the deceased; the number of orphan's pensions is shrinking in line with young age population and the old type pension of Lost of breadwinners is vanishing.

Non earnings related pension expenditure includes both non earnings related state pension schemes and Social assistance pension scheme expenditure.

State pension expenditure decreases from 0.37 percent level to 0.13 percent of GDP till 2040 and remains stable thereinafter with beneficiaries of the pensions of victims and deprived persons dying away and the pensions for the persons with distinguished achievements for the state progressively vanishing. Pensions for persecuted persons are awarded to those who suffered during the II World War and country's occupation after that. Naturally, the number of its recipients is diminishing in time as there are less and less new-comers. Similarly, since 2011 the law on state pensions was amended and the pensions for distinguished achievements for the state have been no longer awarded.

Social assistance pension expenditure keep constant about 0.2 percent of GDP level. Most of social assistance pension's recipients are disabled persons of working age with no rights to their own social insurance disability pension and their number decreases in line with shrinking working age population

Table 7 - Projected gross public pension spending by scheme (% of GDP)

Pension scheme	2013	2020	2030	2040	2050	2060	Peak year *
Total public pensions	7,3	6,9	8,8	9,5	8,6	7,6	2037
of which earnings related:							
Old age and early pensions	5,3	5,0	6,8	7,6	6,9	6,0	2038
Disability pensions	1,4	1,3	1,4	1,3	1,2	1,1	2031
Survivors' pensions	0,3	0,3	0,4	0,3	0,3	0,3	2033
Other pensions	:	:	:	:	:	:	:
of which non-earnings related (including minimum pension and minimum income guarantee):							
Old age and early pensions	0,18	0,17	0,12	0,09	0,08	0,06	2014
Disability pensions	0,14	0,13	0,12	0,13	0,14	0,13	2013
Other pensions	0,01	0,01	0,01	0,01	0,01	0,01	2013
of which							
country-specific scheme 1	:	:	:	:	:	:	:
country-specific scheme 2	:	:	:	:	:	:	:
country-specific scheme 3	:	:	:	:	:	:	:

Source: Commission Services

(Explanatory note: Table 7 provides an example of how public expenditure could be decomposed. Countries should adapt this table with regards to their specific situation, i.e. farmer, self-employed, etc.. This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2010 to 2060.)*

3.2.1. Description of main driving forces behind the projection results and their implications for main items from a pension questionnaire

Based on decomposition reported in table 8a and 8b, the main driving force behind the ratio of public pension expenditures to GDP between 2013 and 2060 is the dependency ratio that pushes up pension expenditure by 2.3 p.p. in the peak year 2037. The effect of a jump of dependency ratio factor in 2030s is influenced not only by specific features of cohorts retiring but also by negative net migration (especially of young employees). The effect of aging population accounts for 4.3 p. p. over the projection period with a peak in 2041 (5.6 p.p). Notably, pension formula of public scheme does not contain any longevity or dependency ratio adjustment factor, therefore the level of benefits in DB system does not react to longer periods spent in retirement. The improving picture in the last decades could be explained by projected huge negative net migration flows in the years 2013-2034. This decreases number of persons that could become old-age pensioners in the years after. Other not less important reason is the gradual disappearance of large baby boom generation of pensioners.

Coverage ratio is the main opposing effect especially in the first three decades. The main reason is the postponement of retirement age. Not less significant is the cohort effect – higher population of age 65+ due to retired baby boom generation comparing to smaller post baby boom 50-64 age group population.

The second offsetting factor – the benefit ratio – has a small decreasing effect in the end of the projection when the partial switch of social security pensions to the private scheme slightly offsets the increase of average pension with higher pension rights acquired due to the longer contribution career. Stronger short-term offsetting effect is seen only during 2013-2020 because of frozen pension indexation.
Labour market factor helps to lower pension expenditure growth mainly due to higher employment which increases the GDP. Longer career effect is noticeable in the period 2020-2030 due to shift in retirement age.

Table 8a - Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensions

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60	Average annual change
Public pensions to GDP	-0,4	1,9	0,7	-0,9	-1,1	0,3	-0,002
Dependency ratio effect	1,1	3,4	1,4	-0,8	-0,8	4,3	0,087
Coverage ratio effect	-0,6	-1,2	-0,7	0,1	-0,1	-2,6	-0,059
*Coverage ratio old-age**	*-0,1*	*-0,6*	*-0,3*	*0,1*	*-0,1*	*-1,1*	*-0,024*
*Coverage ratio early-age**	*-1,0*	*-0,7*	*-0,1*	*0,1*	*1,1*	*-0,6*	*-0,024*
*Cohort effect**	*-0,2*	*-2,5*	*-2,6*	*-0,1*	*-1,0*	*-6,5*	*-0,145*
Benefit ratio effect	-0,8	0,3	0,3	-0,1	-0,1	-0,4	-0,012
Labour Market/Labour intensity effect	0,0	-0,2	-0,2	0,0	-0,1	-0,6	-0,016
Employment ratio effect	*0,0*	*-0,1*	*-0,2*	*-0,1*	*-0,1*	*-0,6*	*-0,015*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,000*
Career shift effect	*0,0*	*-0,1*	*0,0*	*0,1*	*0,0*	*0,0*	*0,000*
Residual	-0,1	-0,3	-0,1	0,0	0,0	-0,4	-0,002

Source: Commission Services

Table 8b - Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensioners

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60	Average annual change
Public pensions to GDP	-0,4	1,9	0,7	-0,9	-1,1	0,3	-0,002
Dependency ratio effect	1,1	3,4	1,4	-0,8	-0,8	4,3	0,087
Coverage ratio effect	-0,6	-1,0	-0,6	0,0	0,0	-2,2	-0,048
*Coverage ratio old-age**	*0,0*	*-0,1*	*0,0*	*0,0*	*0,0*	*-0,1*	*-0,001*
*Coverage ratio early-age**	*-0,8*	*-0,6*	*-0,1*	*0,1*	*1,1*	*-0,3*	*-0,015*
*Cohort effect**	*-0,2*	*-2,5*	*-2,6*	*-0,1*	*-1,0*	*-6,5*	*-0,145*
Benefit ratio effect	-0,8	0,0	0,1	0,0	-0,2	-0,9	-0,023
Labour Market/Labour intensity effect	0,0	-0,2	-0,2	0,0	-0,1	-0,6	-0,016
Employment ratio effect	*0,0*	*-0,1*	*-0,2*	*-0,1*	*-0,1*	*-0,6*	*-0,015*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,000*
Career shift effect	*0,0*	*-0,1*	*0,0*	*0,1*	*0,0*	*0,0*	*0,000*
Residual	-0,1	-0,3	-0,1	0,0	0,0	-0,4	-0,002

Source: Commission Services

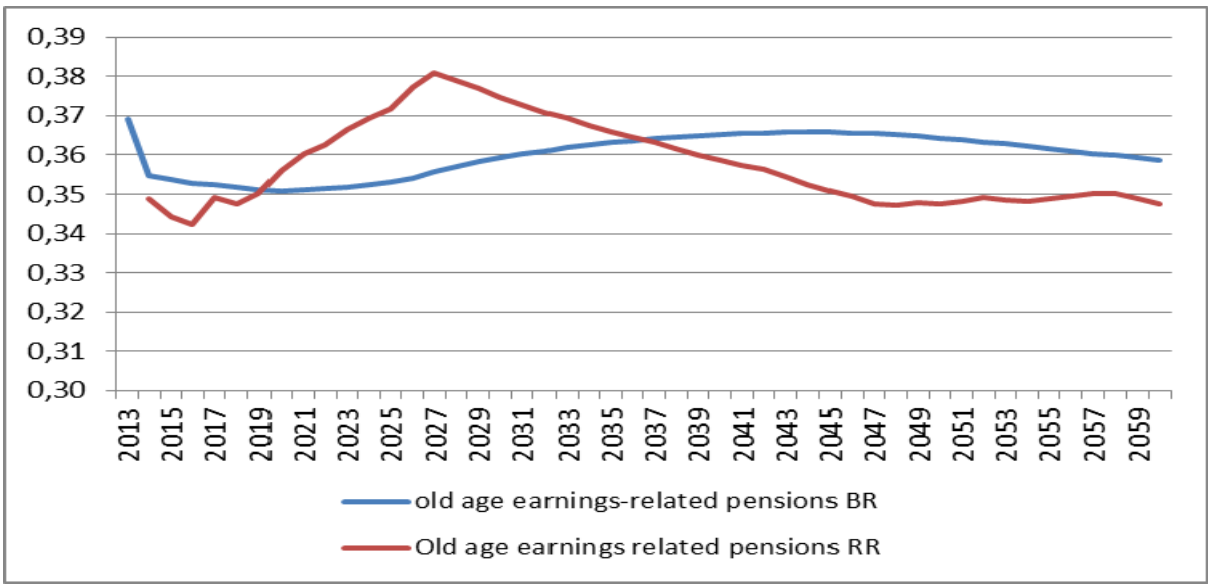
Public scheme old-age earnings related pension replacement rate is lower in the beginning (34.9 per cent in 2014) because of frozen pensions in payment. The replacement rate of social insurance old age pensions is expected to increase till year 2027 to 38.1 per cent as the result of higher pension rights acquired with the increase of the statutory retirement age.

As the social insurance pensions are assumed to evolve in line with wages the replacement rate would remain stable afterwards but because amount of pension depending not only on previous earnings but also on length of insurance record and the pension reduction due to participation in quasi-mandatory private pension scheme. Behaviour of the replacement rate of basic and earnings related pension parts are different because of different reaction to the participation in the quasi-mandatory private pension scheme. The replacement rate of the basic part of the pension is increasing from 2012 until 2026 and then stays stable with slight increase in the end of the period due to the increased insurance record. The growth of the replacement rate of the earnings-related part of the pension is offset by the reduction of accrual rate as the earnings-related part of the pension is reduced by a coefficient C (see above) for every year of participation in the private pension accumulation. The reduction is getting larger during the projection period as the private system matures and larger share of new pensioners will be the participants of this scheme. Also they will have higher proportion of insurance record with larger reduction coefficient C (due to more years when the tariff of 3.5% will have been transferred to private pension funds).

The public pension replacement rate will be complemented by a steadily rising replacement rate (from 0.1 per cent to 16.6 per cent) from quasi-mandatory private pension scheme for 66 per cent of new pensioners at the end of the projection period.

Gender difference in replacement rates is affected by two main factors: the difference in life time earnings, the difference in the statutory retirement age till 2026 and difference in contributory period. Consequently female pension is projected to be lower than male by 15 percent in 2013 and 12 percent in 2060. Higher proportion (56.4 %) of new female pensioners lowers the average replacement rate of all new pensioners.

Graph 10



Benefit ratio representing average pension benefit ratio to economy wide average wage is following the pattern of newly granted pensions (as pensions are indexed by wage growth). Different denominator of RR - average wage at retirement - is higher than the economy wide average wage. Benefit ratio is more inertial, its dynamic is delayed compared to the replacement ratio and volatility is lower because it represents the whole pool of pensions. Therefore, all effects presented in the description of replacement rate evolution are less pronounced in the benefit ratio evolution.

Table 9 - Replacement rate at retirement (RR) and coverage by pension scheme (in %)

	2013	2020	2030	2040	2050	2060
Public scheme (BR)	35,1	33,0	33,3	33,8	33,7	33,0
Public scheme (RR)	:	:	:	:	:	:
Coverage	100,0	100,0	100,0	100,0	100,0	100,0
Public scheme old-age earnings related (BR)	36,9	35,1	35,9	36,5	36,4	35,9
Public scheme old-age earnings related (RR)	34.9*	35,6	37,5	35,9	34,8	34,8
Coverage	68,5	68,2	71,3	74,5	73,9	72,8
Private occupational scheme (BR)	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:
Private individual scheme (BR)		1,1	2,0	3,2	4,5	7,4
Private individual scheme (RR)	0.1**	1,7	3,4	6,4	9,5	16,6
Coverage	:	10,5	30,8	51,5	61,7	66,0
Total (BR)	35,1	33,1	33,9	35,5	36,5	37,9
Total (RR)	35***	36,5	40,0	41,2	42,7	48,6

* Public scheme old-age earnings related (RR) data of 2014
** Private individual scheme (RR) data of 2014
*** Total (RR) data of 2014

Source: Commission Services

(Explanatory note: Coverage of each pension scheme is calculated as a ratio of the number of pensioners within the scheme and the total number of pensioners in the country. When data on pensioners are not available calculation based on number of pensions is allowed.)

In the first two decades the number of pensioners is decreasing due to postponement of pension age and later the tendency continues due to decrease of old age population as described in the chapters 2.1 and 3.1. Employment decreases dramatically (because of huge migration) and in 2040 the dependency ratio exceeds 100 percent but later the number of employed stabilises and the decrease becomes much slower. This together with decreasing number of pensioners slightly improves the System dependency ratio. The observed stronger decline in the system dependency ratio comparing to old age dependency ratio is the result of improved employment rate and demographic reasons.

Table 10 – System Dependency Ratio and Old-age Dependency Ratio

	2013	2020	2030	2040	2050	2060
Number of pensioners (thousand) (I)	926,6	858,5	823,1	782,1	687,5	601,0
Employment (thousand) (II)	1288,1	1124,5	840,7	753,0	724,7	706,8
Pension System Dependency Ratio (SDR) (I)/(II)	71,9	76,3	97,9	103,9	94,9	85,0
Number of people aged 65+ (thousand) (III)	542,2	547,2	604,9	614,4	540,2	472,5
Working age population 15 - 64 (thousand) (IV)	1981,9	1694,2	1259,8	1103,2	1047,7	1034,7
Old-age Dependency Ratio (ODR) (III)/(IV)	27,4	32,3	48,0	55,7	51,6	45,7
System efficiency (SDR/ODR)	2,6	2,4	2,0	1,9	1,8	1,9

Source: Commission Services

Table 11a and Table 11b describe the evolution of the number of pensioners by age groups. This provides an opportunity to analyse the effect of the increase in the statutory retirement age and the increased number of women in the labour market.

The ratio is higher than 100 in most cases because of a common practice in Lithuania to work and to get a full pension (old age or disability) at the same time which gives a possibility to increase pension rights for additional working years as well. Non-residents pensioners increase this ratio above 100 too.

The ratio of pensioners to the inactive population in the age group 55-59 between 2010 and 2020 is decreasing. It is mainly influenced by the legal postponement of the retirement age which postpones the early retirement later as well. So early old age pensioners in this age group fully disappear until 2020 and the number of the disability pensioners slightly increases as a reaction to that. The upward trend of the ratio between 2020 and 2030 is a result of shrinking inactive population as compared to the entire population of that age group because of a very sharp increase in employment rate, while number of disability pensioners are calculated using a constant probability to be disabled at specific age (this probability is thus increasing with shifting retirement age to older cohorts).

The stable decrease of the ratio in the age group 60-64 between 2010 and 2030 is caused by the increase of the statutory retirement age. After the statutory retirement age reaches 65 in 2026 the ratio becomes close to 100.

The ratio of pensioners to inactive population in the age groups 65+ stays constant because the increase of retirement age has no impact on this age group and a number of pensioners is calculated using the stable ratio from nondisabled population.
Coverage ratio is 100 percent because the model takes into account the beneficiaries of social assistance pension scheme, who have not acquired enough their own pension rights.

Table 11a – Pensioners (public schemes) to inactive population ratio by age group (%)

	2013*	2020	2030	2040	2050	2060
Age group -54	20,1	20,4	19,4	16,5	13,1	12,8
Age group 55-59	118,0	89,2	95,1	90,8	88,2	88,3
Age group 60-64	138,3	112,2	101,8	101,7	99,4	99,5
Age group 65-69	117,7	118,2	118,1	120,0	120,3	120,3
Age group 70-74	110,3	108,5	107,3	107,7	107,7	107,8
Age group 75+	104,8	104,3	103,9	103,7	103,8	103,8

*data of year 2014

Source: Commission Services

Table 11b – Pensioners (public schemes) to population ratio by age group (%)

	2013*	2020	2030	2040	2050	2060
Age group -54	7,6	7,5	7,5	6,6	5,4	5,6
Age group 55-59	27,8	22,7	21,0	20,4	21,0	20,5
Age group 60-64	81,3	59,7	44,2	44,3	43,2	43,7
Age group 65-69	103,5	103,1	101,5	101,6	101,5	102,3
Age group 70-74	104,5	104,3	103,4	103,3	103,5	103,3
Age group 75+	104,8	104,3	103,9	103,7	103,8	103,8

*data of year 2014

Source: Commission Services

The same evolution of the female's ratio could be noticed in the tables 12a and 12b. More rapid decrease of the ratio in the age group 60-64 could be explained by slightly lower participation rates in the labour market and more rapid increase in the retirement age.

Table 12a – Female pensioners (public schemes) to inactive population ratio by age group (%)

	2013*	2020	2030	2040	2050	2060
Age group -54	18,5%	18,3	17,7	14,4	11,0	10,6
Age group 55-59	108,4%	77,7	79,3	73,9	72,3	70,7
Age group 60-64	151,1%	117,6	109,7	108,6	107,1	109,0
Age group 65-69	115,7%	116,3	116,4	118,7	118,9	118,9
Age group 70-74	108,7%	107,1	105,8	106,2	106,2	106,2
Age group 75+	104,7%	104,0	103,6	103,5	103,6	103,7

*data of year 2014

Source: Commission Services

Table 12b – female pensioners (public schemes) to population ratio by age group (%)

	2013*	2020	2030	2040	2050	2060
Age group -54	7,0%	6,8	6,8	5,9	4,7	4,8
Age group 55-59	28,8%	20,4	17,9	17,2	17,8	17,0
Age group 60-64	95,5%	68,4	48,2	48,9	47,8	49,4
Age group 65-69	103,9%	103,6	102,2	102,2	102,2	103,1
Age group 70-74	104,4%	104,2	103,5	103,3	103,5	103,4
Age group 75+	104,7%	104,0	103,6	103,5	103,6	103,7

*data of year 2014

Source: Commission Services

The evolution of number of new pensioners reflects two effects: size of cohorts retiring and the increase of retirement age. Although the large retiring cohorts with the peak year in 2027 increases the number of new pensioners but postponement of the retirement age slightly offsets this effect. Later the number of new pensioners is continuously decreases due to demographic reasons explained above. The evolution of projected new pension expenditure is directly affected by the evolution of the number of new pensioners and the reform of quasi-mandatory private pension scheme.

New public pension expenditure for DB pension system can be checked by the factors in tables 13a, 13b and 13c only partially as earnings-related part of the pension comprises a smaller part (42.5% in average) of the full pension. The projected expenditure on new public pensions (row I) differs from the one obtained by multiplying components II to VII by the expenditure of the basic part of the pension depending solely on contributory period.
Average contributory period is rising till 2026 as a result of the increased statutory retirement age and stays constant afterwards.
Accrual rate (0.5%) decreases because of the increased share of contributions paid to quasi-mandatory private pension scheme by new pensioners (a supplementary part of an old-age pension is reduced in proportion to the size of the contribution rate transferred to the private pension fund). The main driver lowering projected accrual rate is the increase of sex-specific participation rates in quasi-mandatory private pension scheme for the new cohorts of pensioners.

Formula for a reduction coefficient in every year of participation is: $C = \frac{9.3\% - 2\%}{9.3\%}$, where 9.3 per cent is a contribution rate for the earnings-related pension and 2 per cent is a contribution rate to quasi-mandatory private funded pension scheme. The coefficient becomes lower in 2020 when the tariff of contribution rate is to be increased to 3.5 per cent.

Monthly average total pensionable earnings are lower than monthly economy-wide average wage as insurable income used as a base for pensionable earnings calculation was indexed at a lower rate than the wage growth since 2001 and even was frozen from 2009 to 2014.

During the projection period the insurable income is indexed to nominal wage growth. The ratio of pensionable earnings to the average wage increases from 0.69 to 0.75 in 2030 because pensioners retiring in that period have acquired higher coefficients of insured income due to the reason explained above. Later as insurable income is indexed to wage growth this proportion remains stable.

Table 13a - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Total

New pension	2013*	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	20.2	17,5	45,1	43,2	46,4	51,5
II. Average contributory period	36,8	37,8	41,0	41,0	40,9	41,1
III. Monthly average pensionable earnings	568,0	827,2	1488,9	2181,0	3145,0	4556,6
IV. Average accrual rates (%)	0,5	0,5	0,4	0,4	0,4	0,4
V. Sustainability/Adjustment factor	:	:	:	:	:	:
VI. Number of new pensioners ('000)	32,1	19,3	28,5	20,7	16,7	13,0
VII Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0
Monthly average pensionable earnings / Monthly economy-wide average wage	0,69	0,71	0,75	0,75	0,75	0,76

*data of year 2014

Source: Commission Services

Table 13b - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Male

New pension	2013*	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	9.8	8,9	22,7	21,5	23,3	28,0
II. Average contributory period	37.7	37,5	41,6	41,6	41,5	41,6
III. Monthly average pensionable earnings	663,6	933,9	1736,5	2546,8	3667,1	5249,7
IV. Average accrual rates (%)	0,5	0,5	0,4	0,4	0,4	0,4
V. Sustainability/Adjustment factor	:	:	:	:	:	:
VI. Number of new pensioners ('000)	13,0	8,7	12,1	8,7	7,1	6,1
VII Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0
Monthly average pensionable earnings / Monthly economy-wide average wage	0,80	0,81	0,87	0,87	0,87	0,87

*data of year 2014

Source: Commission Services

Pension rules are the same for both genders and so are the dynamics of pension entitlements. Differences only exist in the labour market and they cause the lower careers and lower income for females.

Table 13c - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Female

New pension	2013*	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	10,4	11,0	29,9	28,8	30,6	31,1
II. Average contributory period	36,2	38,1	40,5	40,6	40,4	40,6
III. Monthly average pensionable earnings	503,1	740,0	1305,5	1915,4	2758,3	3948,6
IV. Average accrual rates (%)	0,5	0,5	0,4	0,4	0,4	0,4
V. Sustainability/Adjustment factor	:	:	:	:	:	:

VI. Number of new pensioners ('000)	19,1	10,6	16,3	12,0	9,6	6,9
VII Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0
Monthly average pensionable earnings / Monthly economy-wide average wage	0,61	0,64	0,66	0,66	0,66	0,66

*data of year 2014

Source: Commission Services

3.2.2. Financing of the pension system

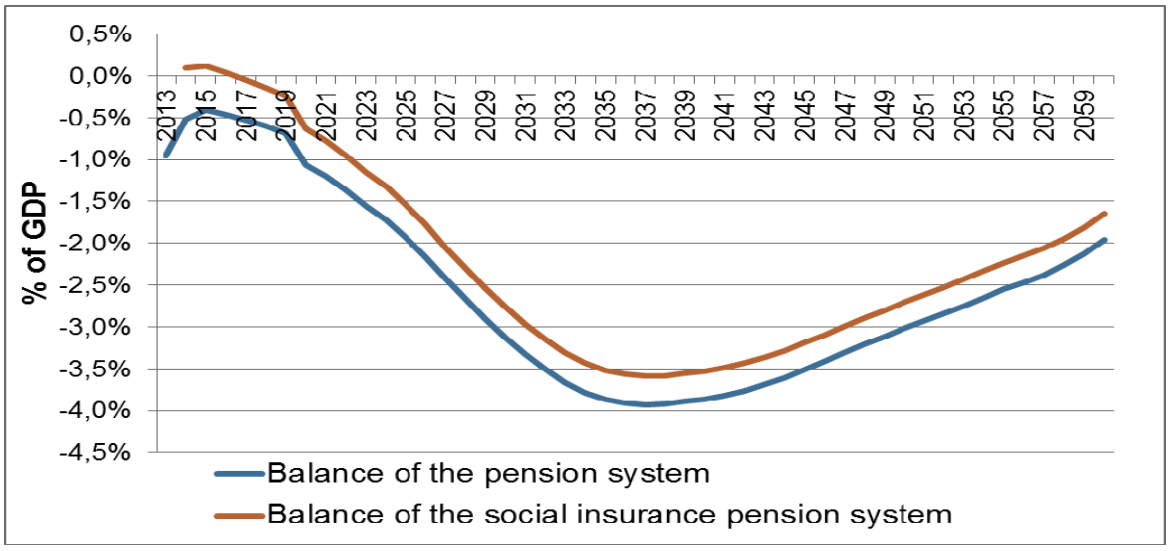
The Public pension system revenue from contributions consists only of PAYG social insurance pension contributions. Pension contribution tariff of 26.3 per cent is divided between employer (23.3%) and employee (3%). State pensions and social assistance pensions are financed from State budget.

Transfers to quasi-mandatory private funded pension scheme since 2020 are made both from employers and employees social insurance contributions. Only part of contributors participate in quasi-mandatory private pension scheme (this share is not constant through the projection period)

The number of persons employed decreases during all projection period. Largest decrease can be seen in the years till 2030 because of very high projected emigration. Later the decrease slows down as the positive net migration is projected and the employment rate increases. The rate of contributors to employed remains stable during all projections period as there are no reforms scheduled that would expand the coverage. The rate of contributors to employment (0.9) is lower as different data sources are used: for the employment - national statistics data and for the number of contributors - data from Social insurance fund board database.

There is currently no buffer fund to smooth the financing gaps. It existed prior to 2008 but was spent during the economic crisis when pension system revenues fell more than its expenditure. The pension system runs deficits trough all projection period with a peak of 3.9 % of GDP in year 2037 (graph 11).

Graph 11



There is no legislated obligation for the state to cover financing gaps but during the economic crisis State budget lent to Social insurance fund.

State does not transfer any contributions to the system. In case of unemployment and maternity the pension rights are acquired through non-contributory periods without paying contributions.

Table 14 – 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	2188,4	2745,0	3473,5	4519,7	6273,9	8736,1
Employer contribution	*2070,5*	*2652,7*	*3384,0*	*4410,3*	*6128,1*	*8533,7*
Employee contribution	*117,9*	*92,3*	*89,5*	*109,4*	*145,8*	*202,3*
State contribution	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Number of contributors (I)	:	1037,6	773,9	688,4	662,8	646,4
Employment (II)	1288,1	1124,5	840,7	753,0	724,7	706,8
Ratio of (I)/(II)	0	0,9	0,9	0,9	0,9	0,9

Source: Commission Services

3.2.3. Sensitivity analysis

Higher life expectancy scenario increases pension expenditure and that increase gets larger during the projection period because of higher number of years spent at retirement. This effect is substantial because there is no automatic shift of retirement age or reduction of amount of the pension benefit because of the higher life expectancy. Private quasi-mandatory pension funds' expenditure is supposed to be actuarially neutral.

Changes in the labour productivity as well as Risk scenario neither increase nor reduce public pension expenditure because the base of calculation of pension rights are valorised to the wage growth and the pensions are indexed to the wage growth too. On the other hand changes in the labour productivity affect the GDP so the ratio of pension expenditures to GDP remains constant. However, higher labour productivity scenario decreases expenditures to GDP ratio in the quasi-mandatory private pension scheme and lower labour productivity increases it. The reason of this is the changing spread between the returns of the private pension funds and the wage growth. Higher labour productivity decreases this spread while lower labour productivity increases it. The increase of the spread increases the accumulated sum and size of pension annuities relatively to the GDP.

Scenarios with changes in employment rates decrease the pension expenditure to GDP because GDP increases more than nominal pension expenditure. Higher employment of older workers' effect is larger because the increase is substantially larger (10% instead of 2%).

Lower migration scenario decreases pension expenditure in large part of the projection period and the effect is largest in 2030 and 2040. Lower migration scenario makes negative net migration lower and this increases the number of employed and GDP while pension expenditure remains similar (as most of emigrants are from younger age groups). In 2060 this scenario increases pension expenditure as lower negative net migration before increases the number of population in the older cohorts and thus the number of pensioners.

Scenario of linking retirement age to the life expectancy does not affect public pension expenditures until 2030 as there is legislated increase of pension age until 2026 in baseline

scenario. After 2030 linking of retirement age reduces public pension expenditure and the effect is largest from all the sensitivity rate scenarios.

Table 15 - Public and total pension expenditures under different scenarios (deviation from the baseline)

	2013	2020	2030	2040	2050	2060
Public Pension Expenditure						
Baseline	7,3	6,9	8,8	9,5	8,6	7,6
Higher life expectancy (2 extra years)	0,0	0,0	0,1	0,3	0,4	0,6
Higher lab. productivity (+0.25 pp.)	0,0	0,0	0,0	0,0	0,0	0,0
Lower lab. productivity (-0.25 pp.)	0,0	0,0	0,0	0,0	0,0	0,0
Higher emp. rate (+2 pp.)	0,0	-0,1	-0,2	-0,2	-0,2	-0,2
Higher emp. of older workers (+10 pp.)	0,0	-0,2	-0,6	-0,6	-0,4	-0,3
Lower migration (-20%)	0,0	-0,1	-0,4	-0,4	-0,1	0,3
Risk scenario	0,0	0,0	0,0	0,0	0,0	0,0
Policy scenario: linking retirement age to increases in life expectancy	0,0	0,0	-0,3	-0,6	-0,7	-0,8
Total Pension Expenditure						
Baseline	7,3	6,9	9,0	10,0	9,4	8,7
Higher life expectancy (2 extra years)	0,0	0,0	0,1	0,3	0,4	0,6
Higher lab. productivity (+0.25 pp.)	0,0	0,0	0,0	0,0	-0,1	-0,1
Lower lab. productivity (-0.25 pp.)	0,0	0,0	0,0	0,0	0,1	0,1
Higher emp. rate (+2 pp.)	0,0	-0,1	-0,2	-0,2	-0,2	-0,2
Higher emp. of older workers (+10 pp.)	0,0	-0,2	-0,6	-0,6	-0,4	-0,3
Lower migration (-20%)	0,0	-0,1	-0,4	-0,5	-0,1	0,4
Risk scenario	0,0	0,0	0,0	0,0	0,0	0,1
Policy scenario: linking retirement age to increases in life expectancy	0,0	0,0	-0,3	-0,7	-0,8	-0,9

Source: Commission Services

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

The difference of pension expenditure in per cent of GDP in 2015 as compared to 2012 exercise is a decrease by 3.17 percentage points. There are several reasons having an impact on the outcomes of the current projection round:

- Old age dependency ratio in the second half of projection period has improved compared to the 2012 projection mainly because of new population projections with much lower number of elderly people in the 2050s and 2060s and of the higher birth rate.
- The decrease of coverage ratio compensates old age dependency ratio to the lower extent than in 2012 exercise, because of introduction of new state pension scheme for mothers who have born 5 or more children since 2014 (previously 7 or more children).

- On the contrary, the benefit ratio in 2015 exercise reacts stronger as a compensating factor due to increased contribution rate to quasi-mandatory private pension scheme and lowered pension amount as a result of it.
- Employment factor does not act as a compensating factor as strong as in previous exercise because of shift in the population age structure to older ages as most productive age groups emigrates.
- Labour intensity factor remains unchanged.

Table 16 - Average annual change in public pension expenditure to GDP during the projection period under the 2001, 2006, 2009 and 2012 projection exercises

	Public pensions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. Interaction effect)
2006 *	1,90	5,41	-2,08	-1,03	-0,17	:	-0,24
2009 **	4,57	9,64	-2,41	-0,03	-1,82	:	-0,80
2012 ***	3,47	8,20	-2,87	-1,10	-0,22	-0,01	-0,53
2015****	0,30	4,30	-2,63	-0,55	-0,38	-0,01	-0,42

Source: Commission Services

*(Explanatory note: The Table presents the average annual change of pension expenditure and the contributions of the underlying component to that change, whereas Table shows, for different intervals of time, the decomposition, in percentage points, of the factors behind the change in public pension expenditures. * 2004 - 2050, ** 2007 - 2060, *** 2010 - 2060, **** 2013 – 2060. Please note that the four components do not add up because of a residual component.)*

Table 17 shows the decomposition of the difference between 2012 and the new public pension projection. The main drivers generating lower pension projection level to GDP are:

- *Changes in assumptions* new macroeconomic and demographic assumptions increase pension expenditure until 2030 and decrease them from 2040. This is mostly caused by the new demographic assumptions as it increases dependency ratio until 2030 (because of very high projected emigration of young cohorts) and increases number of people in the older cohorts compared to the previous projection. Since 2040 new demographic assumptions decrease pension expenditures because there are less people in the older cohorts (as large part of them emigrated in the years before 2030), fertility rate increases and there is little but positive net migration.

- *Improvement in the coverage* or in the modelling: data used for modelling of career histories (both the number of service years and size of pensionable income) was updated and the calculation of pensionable income improved. The changes cause the insurable income coefficient not to increase with the increase of the contribution period (because of increasing retirement age) as much as in the previous version of the model. The pensioners that work after the retirement age are (partially) not treated as new pensioners anymore compared with the previous version of the model. Service years of few old pensioners who continue to work after the retirement age and continue to acquire higher pension rights are not used to calculate the service years of the large mass of pensioners which retire at the increased retirement age. This decreased both the number of service years and size of pensionable income and it caused the decrease of pension expenditures in the large part of projection period.

– *Policy-related changes:* increase of pension accumulation tariff from social insurance contributions from 2% to 3.5% in 2020 decreases size of public old-age pension benefits and thus reduces public pension expenditure in 2040, 2050 and 2060.

Table 17 - Decomposition of the difference between 2012 and the new public pension projection (% of GDP)

	2013	2020	2030	2040	2050	2060
Ageing report 2012	7,5	7,6	8,4	9,6	10,8	12,1
Change in assumptions	0,0	0,3	0,8	-0,2	-2,0	-3,4
Improvement in the coverage or in the modelling	-0,2	-1,0	-0,4	+0,2	0,0	-0,9
Change in the interpretation of constant policy	0,0	0,0	0,0	0,0	0,0	0,0
Policy related changes	0,0	0,0	0,0	-0,1	-0,2	-0,2
New projection	7,3	6,9	8,8	9,5	8,6	7,6

Source: Member State

3.3. Description of the pension projection model and its base data

3.3.1. Institutional context in which those projections are made

The Ministry of Social Security and Labour is responsible for the projection of the financial development of the statutory pension scheme.

For this projection round the same cohort model was used. All pension schemes: social insurance, state, social assistance and private quasi-mandatory funded pension schemes are modelled in one model using the same set of assumptions and are linked to each other (e.g. old age and disability with social assistance scheme or old age with private quasi-mandatory scheme).

The projections have been done using the cohort simulation model LSIM (Lithuanian Social Insurance Model). It was firstly developed in 2006 by the joint project of the Ministry of Social Security and Labour and Sweden's National Social Insurance Board (Riksförsäkringsverket). The model was extended and improved by the Ministry in 2011 as the outcome of the project "Using and customizing of existing national standard models (macro and cohorts) for use in policy making" financed by European Commission under the PROGRESS program. The providers of service were Deloitte experts.

All the data (databases) used for the model was prepared in close cooperation with the institutions responsible for awarding the social security pensions and the Department of Statistics of the Government of the Republic of Lithuania (statistics).

In the preparation of the projections the conditions determined by the AWG were followed – the impact of the laws adopted before 2014 was considered.

The projections were not submitted to a peer review in the country.

The changes made to the model are that all three groups of the participants of quasi-mandatory private pension system (those that are paying additional contribution, ones contributing only part of their social insurance contributions and the ones that have terminated

contributions) are modelled separately. Situation at the beginning of the projection period is reflected by different shares of each participant type for each cohort. All new entrants of the scheme transfer additional contributions.

Indicators for new pension expenditure decomposition are now calculated for both genders separately. Pension replacement rates are calculated separately for different kinds of quasi-mandatory private pension scheme participants and they are calculated as a ratio of average new pension to average pre-retirement wage.

3.3.2. Assumptions and methodologies applied

The most important agreed demographic and macroeconomic assumptions were incorporated into the LSIM model exogenously: population projection, nominal wage growth, rate of inflation, rate of return, age-sex specific labour force rates and age-sex specific unemployment rates. The rate of nominal GDP growth was calculated endogenously.

Sex and cohort specific participation rates for all projection period are used exogenously for projecting the number of contributors to the quasi-mandatory private funded pension scheme as a percentage of all contributors.

The effect of the minimum number of service years can be best captured by studying the empirical distribution of service years. The distribution of the length of insurance records was introduced and mean pensions (old-age and disability) are calculated on the basis of this distribution in the LSIM model. This approach enables to reflect the non-linearity in pension formula as well as adjustments of the amount of the basic pension in case of insufficient records and bonuses in case of excessive record and thus provides more reliable estimate of mean pensions and replacement rates.

Besides calculation of the averages, model calculates the distribution of supplementary pensions as well as distribution of basic pensions. Both underlying conditional distribution of s (service years) on condition of the age of becoming pensioner and conditional distribution of k (average ratio of person’s insured income to average insured income) on condition of s are derived from the database of pensioners and considered only for newly granted pensions.

The current level of the rate of collecting social insurance contributions is fixed.

Due to the lack of automatic pension indexation (pensions are increased by discretional Government decisions), the assumption was made that old-age, disability, widow's and orphan's pensions would increase in line with the productivity growth (nominal wage growth).

Real rate of return was used when accumulating the contributions diverted to the quasi-mandatory private funded pension scheme. As regards payouts from this scheme, a single annuity was assumed, calculated by unisex life expectancy (from EUROPOP2013) and using annuity rate of return.

Assumptions and methodologies applied and data used to projections of the State pension scheme

The projections of the state pension scheme expenditure are made on the basis of AWG macroeconomic assumptions and the projections on the number of the state pension recipients are made in line with AWG demographic and economic assumptions. The data of the Department of Statistics of Lithuania and public institutions awarding and paying the state pensions on distribution of the number of the state pension receivers and pension amounts have been used as the primary data for these projections.

The following assumptions are used as the basis in calculation of the projections of the state pension system for the years 2013-2060:

- Number of officials and military personnel pensioners is projected using a share of pensioners in population (age and gender specific) and projection of the population. Population mortality tables are applied to determine number of dead pensioners and consequently new pensioners. Pensions newly granted in the specific year are calculated multiplying the percentage of newly granted pension (age and gender specific) and the share of average wage by the projected average nominal wage in that year. Pensions granted before the specific year are kept without indexation. Initial average military pensions are read from input data.
- Regarding the state pensions for victims, they are modelled separately from the other types of state pensions. However, the modelling approaches are very similar in both cases. Initial populations of victims' pension receivers as well as other state pensioners are loaded from the input data. These pensioners are further projected using population mortality tables. New pensions are granted at reaching the retirement age, when cohort share of victims' pension receivers (resp. other state pensioners) in population is applied to the projected number of people in the cohort reaching retirement age. Cohort share of victims' pension receivers in population decreases for younger cohorts down to zero (for cohorts born in 1957 or later).
- Cohort share of other state pensioners is assumed to be constant over the time according to current ratios by age and taking into consideration retirement age increase. New state pension type for mothers who have born 5 or more children (previously 7 or more children) was included into this scheme.
- Average initial victims' pension as well as average other state pensions are loaded from the input data and they are further indexed by the growth of the base for state pensions. Growth of the base for state pension is assumed to be the half of the growth of declared basic pension. The assumption is based on historic experience.

Assumptions and methodologies applied and data used to projections of the Social assistance pension scheme

- Cohort share of orphans and disability social assistance pensioners is assumed to be constant over the time according to current ratios by age and taking into consideration pension age increase.
- The number of social assistance old age pension beneficiaries are computed as a share in population not receiving old-age or disability pension. This share is set to 1 for cohorts older than statutory pension age. In order to get plausible number of social assistance beneficiaries separate projections with solely resident pensioners are produced.
- Initial average social assistance benefit is loaded from the input data and indexed by the growth of basic pension in consecutive years.

3.3.3. Data used to run the model

All the data (databases) used for the model was prepared in close cooperation with the institutions responsible for awarding the social security pensions and the Department of Statistics of the Government of the Republic of Lithuania (statistics).

The most important parameters for pension expenditure calculation, e.g. average retirement age (considering early and postponed retirement), average service period of new retirees, distribution by age and sex of the number of social insurance pensioners (old-age, disability, widows(-ers) and orphans), pension amounts for the base year, number of contributors and

their wage distribution by age, number of contributors to quasi-mandatory private funded pension scheme as a percentage of all contributors (disaggregated by sex and cohort) and were extracted from the database of the Social Insurance Fund Board for the year 2013.

3.3.4. Reforms incorporated in the model

All legislated reforms are incorporated in the model.

3.3.5. General description of the model(s)

The Lithuanian Social Insurance Model LSIM is standard cohort model written in VBA. In the model the population is split into several homogenous groups (cohorts) according to the sex and the year of birth. Individuals within each group are considered to be identical. Input data as well as the variables calculated within the model are in the form of cohort averages or totals or higher level aggregates.

The model starts from current cross-sectional information and makes projection of the cohort development on the basis of sex- and age-dependent assumptions on the cohort structure (e.g. sex- and age dependent participation rates, unemployment rates, disability rates, etc.). Most important outputs comprise total revenues and expenditures of the pension system.

The Model consists of the sequence of modules each performing relatively isolated calculations for all cohorts. Input data are loaded from separate file and they often contain several alternative scenarios so that the user can choose from the predefined scenarios for which the calculations are performed.

3.3.6. Additional features of the projection model

The number of old-age pensioners in the model is calculated on the basis of the population figures and age, gender and year specific shares of pensioners in nondisabled population estimated on the past trends with respect to the number of years before/after statutory retirement age while taking into account it's legislated increase. Age specific shares of pensioners will thus change with shifts of pension ages.

The number of new pensioners is calculated from difference between current number of pensioners in a cohort and number of pensioners in the respective cohort in the previous year with taking into consideration expected number of dead pensioners. Newly granted pensions are computed in a loop over "s" values (service years) and "k" values (average ratio of person's insured income to country average income). In each step, number of new pensioners having the respective values "s" and "k" is calculated from the conditional distributions of "s" on age of becoming pensioner and conditional distribution of "k" on "s" and corresponding newly granted pension (basic and supplementary) is calculated for them. These pensioners are subsequently added to the distribution of newly granted pensions. After calculating newly granted pensions for all values "k" and "s" (i.e. all new pensioners are already included), new pensioners with their pensions are added to pension distributions of survival pensioners.

Cohort and year specific participation rates in quasi-mandatory private funded pension scheme are loaded from the data. They are used later for reduction of supplementary pension due to transfers to quasi-mandatory private funded pension scheme.

The model calculates the number of insured who are actually contributing by applying compliance rates to the employed and their actual wage (lower than national average in statistics) on which contributions are paid.

The replacement rates are calculated as a ratio of average newly granted old-age pension (public or private) to average pre-retirement wage. Total replacement rate (public + private

old-age pension to average wage) is computed separately for participants in Pillar II and non-participants in Pillar II. Common total replacement rate (regardless to the participation in Pillar II) is calculated as well.

rrPublic(y) = (tot_NewPensionExpenditures(y) / (6 * tot_NewPensioners(y))) / (avgWage (y) / 12)

Disabled population at the specific age is calculated from the population (less number of disabled in the previous year) multiplied by disability granting probability and by share of disabled in the respective disability group. Probability of surviving half a year is then applied resulting in disabled population at the specific age in the specific year and for a specific gender and disability group. Number of disabled independent of disability group is cumulated. For cohorts older than the statutory pension age, the disability granting probability is set to zero. Some of the disability pensioners switch to the old-age pension and some of them keep the disability pension. Probabilities of switching to old-age pension depend on the group of the disability and they were derived from the database of pensioners.

Orphans population is projected on the basis of fertility rates, probability distribution of age of mother at the birth of the child. New orphans by death of mother are then calculated using annual survival rates for mothers. Corresponding new orphans' benefits are calculated as 50% of the expected pension of the mother (disability or old-age). New orphans by death of mother and their benefits are then summed over mother's age. New orphans by death of father are calculated similarly by using age difference between father and mother loaded from input data. Age, gender and sex specific number of new orphans and their benefits are than obtained by summing orphans and their benefits by death of mother and death of father.

New widow (-er)s are calculated by applying rate of marriage and survival rates for partners on average population. Projection takes into consideration remarriages and deaths of widow (-er)s. Number of different persons modelled per generation.

4. Methodological annex

Economy- wide average wage at retirement

The data for economy-wide average wage at retirement was obtained from Social insurance fund board database of insured persons. The wage profile by age shows that average pre-retirement wage is higher than economy-wide average wage (graph 12). It is presumed in the projection of pre-retirement wage that the wage profile shifts to the higher ages together with the increase of the retirement age.

Graph 12

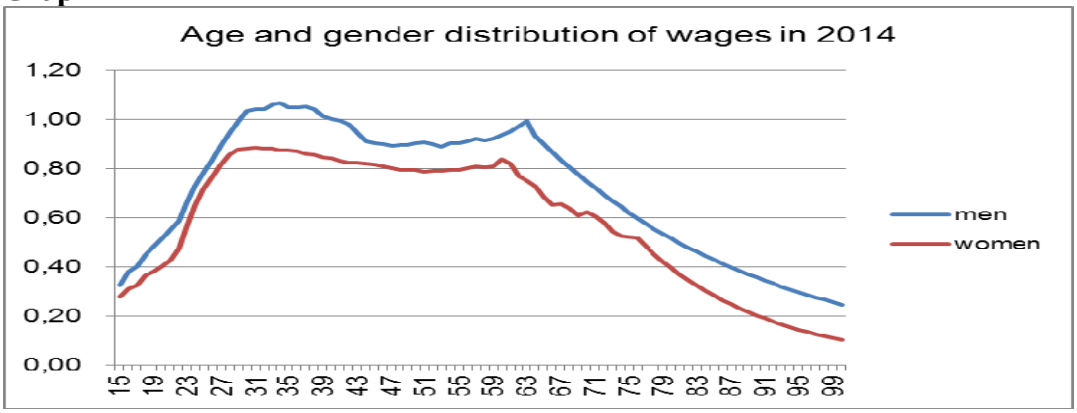


Table A1 – Economy wide average wage at retirement evolution (in thousands euro)						
	2014	2020	2030	2040	2050	2060
Economy-wide average wage 1000s EUR	8,1	11,5	19,7	28,8	41,6	59,4
Economy-wide average wage at retirement 1000s EUR	8,3	11,7	20,0	29,3	42,3	60,4

Source: Commission Services

Pensioners vs Pensions

Pension system model works with the number of pensioners. According to legislation it is possible to be entitled to more than one type of pension. Mainly widows and state pensions are paid together with old age and disability pensions. The ratio of pensions over pensioners is stable over the projection horizon and amounts to 1.3.

Pension taxation

Pensions are not subject to taxation.

Disability pension

There is no reform affecting the average amount of the disability pension.

The disability rates in the age groups are mainly affected by the changing distribution of population so as the population ages the average disability rates in older age groups are increasing. Disability rates of the younger age groups also fluctuate due to the changes in distribution of population.

Not all disability pensions are transformed into old age ones when statutory retirement age is reached (see above).

Table A2 – Disability rates by age groups (%)						
	2014	2020	2030	2040	2050	2060
Age group -54	0,58	0,59	0,57	0,53	0,48	0,52
Age group 55-59	2,15	2,16	2,15	2,15	2,18	2,21
Age group 60-64	3,19	3,10	3,21	3,26	3,21	3,30
Age group 65-69	5,42	5,47	5,56	5,56	5,56	5,70
Age group 70-74	6,96	6,92	7,04	7,15	7,21	7,30
Age group 75+	9,97	10,31	10,56	10,78	11,51	12,12

Source: Member State

Survivor pensions

A detailed description of the driving forces behind the evolution of the survivor benefit is described in chapter 3.3.6. There are no reforms envisaged that affect the quantification of the benefit so the development of both orphan's and widow's pensions follow the demographic trend.

Non-earnings related minimum pension

The number of social assistance old age pension beneficiaries are computed as a share in population not receiving old-age or disability pension. The shares for all categories (old- age, disability and survivors) are kept constant through all projection period. This share is set to 1

for cohorts older than statutory pension age. In order to get plausible number of social assistance beneficiaries separate projections with solely resident pensioners are produced.

Contribution

Constant contribution rate of 26.3% is assumed over the projection horizon. It is shared between employer (23.3%) and employee (3%). The part of contributions going to public scheme is changing from 24.3% in 2014 to 22.8% in 2020 due to increase of private pension accumulation rate of social insurance contributions from 2% to 3.5% in 2020.

Alternative pension spending decomposition

Table A3 - Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensions

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60
Public pensions to GDP	-0,4	1,9	0,7	-0,9	-1,1	0,3
Dependency ratio effect	1,2	4,5	2,1	-1,3	-1,3	5,1
Coverage ratio effect	-0,6	-1,1	-0,4	0,0	-0,1	-2,2
*Coverage ratio old-age**	*-0,1*	*-0,6*	*-0,2*	*0,1*	*-0,1*	*-1,0*
*Coverage ratio early-age**	*-1,3*	*-0,6*	*0,0*	*0,1*	*0,6*	*-1,3*
*Cohort effect**	*-0,2*	*-2,2*	*-1,3*	*-0,1*	*-0,4*	*-4,2*
Benefit ratio effect	-0,8	0,2	0,2	-0,1	-0,1	-0,4
Labour Market/Labour intensity effect	0,0	-0,2	-0,2	0,0	-0,1	-0,5
Employment ratio effect	*0,0*	*-0,1*	*-0,2*	*-0,1*	*-0,1*	*-0,4*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Career shift effect	*0,0*	*-0,1*	*0,0*	*0,1*	*0,0*	*0,0*
Residual	-0,1	-1,4	-1,0	0,5	0,4	-1,7

Source: Commission Services

Table A4 - Factors behind the change in public pension expenditures between 2013 and 2060 (in percentage points of GDP) - pensioners

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60
Public pensions to GDP	-0,4	1,9	0,7	-0,9	-1,1	0,3
Dependency ratio effect	1,2	4,5	2,1	-1,3	-1,3	5,1
Coverage ratio effect	-0,6	-0,9	-0,4	0,0	0,0	-1,9
*Coverage ratio old-age**	*0,0*	*-0,1*	*0,0*	*0,0*	*0,0*	*-0,1*
*Coverage ratio early-age**	*-1,0*	*-0,6*	*0,0*	*0,1*	*0,7*	*-0,9*
*Cohort effect**	*-0,2*	*-2,2*	*-1,3*	*-0,1*	*-0,4*	*-4,2*
Benefit ratio effect	-0,8	0,0	0,1	0,0	-0,1	-0,9
Labour Market/Labour intensity effect	0,0	-0,2	-0,2	0,0	-0,1	-0,5
Employment ratio effect	*0,0*	*-0,1*	*-0,2*	*-0,1*	*-0,1*	*-0,4*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Career shift effect	*0,0*	*-0,1*	*0,0*	*0,1*	*0,0*	*0,0*
Residual	-0,1	-1,4	-1,0	0,5	0,4	-1,6

Source: Commission Services