Latvian Country Fiche on Pension Projections 2017

1. OVERVIEW OF THE PENSION SYSTEM

Pension System in Latvia

The Notional defined-contribution (NDC) pension scheme is functioning already since 1996, the state mandatory funded defined contribution pension scheme was launched in July 2001, and voluntary private pension funds are operating from July 1998. Social insurance contribution rate for the state old-age pensions (NDC + FDC) is 20 per cent of wage.

1.1. Description

Public pensions

Old age pensions

The first pillar pension scheme (implemented in January 1996) is based on insurance principles, as the social insurance contributions, earmarked for old-age pensions, are recorded in notional individual accounts, are given a rate of return until retirement and accumulate (notional) pension capital, while real contributions are used for financing current pension expenditures. Pensions are calculated by dividing the amount accumulated in the notional account by projected cohort unisex life expectancy at retirement.

Benefit can be claimed at any time starting from the minimum retirement age and it is possible to receive full pension while continuing work after the retirement. Working pensioners continue to contribute and accumulate additional notional pension capital. This newly accrued pension capital also yields a rate of return, and the benefit is recalculated upon final retirement to include this new capital. The principle behind this is that it provides an opportunity and support for flexible withdrawal from the labour force.

Minimum insurance record(qualification period) for eligibility to state old-age pension until 31 December 2013 was 10 years, from 1st January 2014 it has been increased to 15 years, from 1st January 2025 – 20 years.

Since 2017, a person who has insurance period less than minimum insurance record (or no insurance record) and has reached the statutory retirement age(SRA) (before 2017 – 5 years after SRA) is granted the state social security benefit, financed by the state budget. The amount of the benefit is 64.03 EUR. These state social security benefits are included in the pension projections.

Legislation provides an opportunity to retire 2 years before the normal retirement age for people whose insurance record is 30 years or more. The amount of early retirement pension is 50% of pension amount. The full pension is restored after reaching normal retirement age.

The normal retirement age for men and women, starting from 2014, increases gradually (from 62 years) every year by 3 months until reaching 65 years in 2025 (SRA in 2017- 63 years for men and women).

The average benefit is directly dependent on the actual pensioner's age, number of years worked until 1996, contributions paid from 1996 and dynamics of the contribution wage base (growth of the contribution wage sum in Latvia), which determines the rate of return for the NDC pension capital.

Old age pension formula:

$P = K/G,$ where

P - pension
K – pension capital
G – life expectancy at retirement

Contribution wage sum consists of the total amount (employed and self-employed income, transfers from the state basic budget and the state special budget) from which contributions are made.

Transition rules as part of the Law on State Pensions are the most important implementation tool of the pension system. This covers all insured persons, retiring after 1996, who have made contributions prior to 1996. An important task for transition provisions is to determine how to evaluate an individual contribution of a person in accumulation of the pension capital before 1996, when there were no personified registrations of social insurance contributions. According to Latvian design of the NDC scheme's transition provisions, insurance period until the year 1995 (inclusive) is credited with an initial capital, calculated using an average contribution wage[1] of individual in 1996-1999. Retired people, whose insurance record is not shorter than 30 years, but whose income has been below state average, also supported financially, e.g. for starting capital calculation in relevant years (1996–1999) the average wage in Latvia is taken into account, not the individual contributions wage.

Old age pension formula in transitional period:

$P = (Ks+K)/G,$ where

P - pension
Ks - pension capital until 1996 what is estimated by individual average wage 1996-1999
K – pension capital after 1996
G – life expectancy at retirement

Pensions granted before 1996 were not revised according to the rules of the NDC scheme.

Nevertheless the same rules for indexation are applied for both the old-law and new-law pensioners.

Within framework of pension reform it was also intended to introduce 4th pension tier from the state basic budget in order to reduce the impact of transition period for those pensioners whose work life until 1996 forms the major part of record.. Relatively the 4th pension tier was introduced in 2006 from the state special insurance budget resources. Since January 2006 supplements for each insurance year up to 31 December 1995, are paid to old age pensioners. As of January 1, 2009 this supplement is defined to all old-age and disability pensions in the amount of one. EUR for each year worked. From 2014 the supplement is financed from the state basic budget. As of July 2018 this supplement in the amount of one EUR for each year worked will increase to 1.50 EUR for those who retired until 1996.

Supplements to the old-age and disability pensions for newly granted pensions are suspended as of January 1, 2012.

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[1] The average contribution wage is the average wage on which contributions are actually based. It takes into account evasion as well as ceilings and also social transfers (for the non-contributory periods), and is usually lower than the economy-wide average wage.

Disability pensions

Persons, whose insurance record is not less than three years and who have been recognised as disabled, are entitled to disability pension(excluding persons whose disability has been caused by an accident at work or an occupational disease).Persons with disability resulting from an accident at work or an occupational disease are entitled to indemnity (compensation) for the loss of the work capacity .

Disabled persons are divided into three categories.(I-group- most severe) The Health and Working Capacity Medical Expert Commission determines the category of disability as well as the cause and anticipated duration of the disability.

Disability pension formulas:

Category I
$P = 0.45 \times Vi + (ASi / ASie) \times Vi \times 0.1$

Category II
$P = 0.4 \times Vi + (ASi / ASie) \times Vi \times 0.1$, where

       P: pension;
       Vi: reference earnings (the best earnings for 3 years in last 5 years period);
       Asi: individual insurance record in years;
       ASie: maximum possible insurance record from the age of 15 until legal retirement age;

For disabled persons of category III: the benefit is fixed at the amount of the state social security benefit (64.03 EUR per month).

The amount of the disability pension for Group I and II shall not be less than the amount of the state social security benefit (64.03 EUR), as the basis for calculation of the guaranteed pension amount, to which the following coefficient is applicable:
       in case of Group I disability - 1.6;
       in case of Group II disability - 1.4.

Disabled persons who have reached retirement age are granted the old-age pension instead of disability pension (disability pensioners, who reached retirement age before 1996 continue to receive disability pension – until the transition period ends). If the amount of old-age pension is lower than disability pension amount, person concerned continues to receive the highest amount.

To provide more universal support for people with the disabilities the state social security benefit is granted to persons who are not entitled to state disability pensions(based on contributions made).

In 2014 the amount of the state social security benefit in general case is 64.03 euro per month, for disabled persons since childhood - 106.72 euro per month.

Starting from July 2014 the amount of the state social security benefit granted to disabled persons (including disabled persons since childhood) above 18 years of age and not entitled to state pension is as follows:

- *in the case of disability Group I – 83.24 euro per month (for those disabled since childhood - 138.73 euro per month);*
- *in the case of disability Group II – 76.84 euro per month (for disabled persons since childhood - 128.06 euro per month).*

These state social security benefits are included in the pension projections.

Survivor's pensions

If the breadwinner has been an insured person, his/her family members are entitled to a survivor's pension irrespective of the cause of death of the breadwinner.

Family members (under the age of 18) incapable of work who have been dependent on the deceased breadwinner are entitled to the survivor's pension.

Persons are also considered incapable of work, if at the time of the death of the breadwinner or later they are full-time students at secondary, vocational or tertiary educational establishment and are aged below 24.
There are no widows pensions, except for ''old pension system's'' commitments:
Widows, who have pensions according to the old pension system, continue to receive those during the transition period(paid from the state pension special budget(insurance)).

Survivor's pension is calculated taking into account the breadwinner's possible old age pension:
- for one child - 50% from the pension;
- for two children - 75% from the pension;
- for three and more children - 90% from the pension.

The amount of survivor's pension for each child cannot be less than minimum amount of pensions defined by the Cabinet. From April 1st, 2017 the minimum amount of survivor's pension for each child:
- up to six years (including) - 92,50 euros;
- up to six years (including) to children disabled since the childhood - 106,72 euros;
- from seven years - 111,00 euros.

Service pensions (during the transition period)

Starting with 1 January 1999 the determination of insurance record entitling to service pensions has been terminated. Only persons, who by 1 January 1999 have worked in special qualifying occupations for not less than three fourths of the insurance period required for allocation of the service pension in accordance with special regulations, retain their entitlements. The service pension is paid from the state pension special budget.

Persons who have been granted the service pension in accordance to the special regulations and who have reached the statutory retirement age, are granted the old-age pension instead of the service pension. It must not be lower than the service pension received prior.

The state mandatory funded pension scheme

The FDC pension scheme in Latvia was started in July 2001. It is a fully funded statutory pension scheme, where part of the social insurance contributions within the 20% contribution rate for old-age pensions are invested in financial assets.

The FDC pension scheme is one of the pillars of the Latvia's pension system. Diversification of future risks into pillars helps to ensure a long term financial sustainability of the state pension system, to decrease state's liabilities for the future pensioners, to promote a pension adequacy as well as to invest more money in the economy.

Coverage in the FDC pension scheme is mandatory for persons who were under the age of 30 on 1 July 2001, when the State Funded Pension Law came into force. Persons who were at that moment in the age group of 30 – 49 can affiliate to this scheme on a voluntary basis at any time. Participation conditions are simplified to maximum extent and synchronized with the participation in the NDC PAYG pension scheme. This means that the FDC pension scheme gradually will cover almost all persons covered by the state pension insurance. However, persons who were at the age of 50, when the law came into force, have no option to participate. This scheme is expected to be fully mandatory around 2035, when cohorts of voluntary participants gradually vanish.

The share of contributions dedicated for saving in this scheme increase gradually, proportionally reducing contribution rate for the 1st pillar (NDC PAYG):

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Rate to FDC	2%	2%	2%	2%	2%	2%	4%	8%	2%	2%	2%	2%	4%	4%	5%	6%
Rate to NDC	18%	18%	18%	18%	18%	18%	16%	12%	18%	18%	18%	18%	16%	16%	14%	14%

Starting from 2016 the contribution rate to funded pension scheme according to the Law on State Funded Pensions is set at 6%. As the financing of the state mandatory funded pension scheme is within the framework of state pension system, all subsidies for the individual, paid by the state budget or other social insurance budgets (in case of child care, unemployment etc.) are attributed for both schemes accordingly.

State funded pension scheme participant's capital, left after the death and prior to retirement, are remitted to the state pension budget for financing survivor's benefits for the dependent family members (children) in accordance with the legislation for the 1st pillar. Spouses have no rights for survivor's benefits either in the NDC PAYG or in the FDC pension scheme.

There are two options at retirement - at the participant's choice the accumulated state funded pension capital will be:
- added to the 1st pillar pension capital for calculation of the total old-age pension, based on the NDC scheme formula, or
- transferred to the life insurance company, which subsequently will provide a whole life annuity.

Voluntary private pension scheme, not included in projections

Scheme is operating since 1 July 1998 and the purpose of this scheme is to accumulate and invest the voluntarily made contributions of its participants by means of private pension funds thus ensuring additional pension capital in old age. Pension plan participants may participate directly or with involvement of their employer. The pension plan participant can receive all accumulated pension capital from the age of 55 or continue participating and receive capital in parts.

Financing of the Social Security system

In 1998 several significant changes were introduced in the area of financing social insurance. Four special social insurance budgets (special budgets) were approved instead of one special insurance budget with expenditure permissible within the given budgetary frame: the state pension special budget; the employment special budget; the occupational accident special budget; the disability, maternity and sickness special budget. Differentiated rate for social insurance contributions was established. Persons were insured and made social insurance contributions against risks which could materialize.

Taxation of pensions

Pensions are included in the annual taxable income. Pensions granted prior to 1996 are not subject to income tax.

For pensioners, whose pensions were granted or recalculated since 1/1/1996, the annual non-taxable minimum was 235 EUR per month.
In accordance with 2017 Tax reform, starting from 2018, the personal income tax will become progressive and the non-taxable minimum for pensioners will rise to EUR 300 in 2020.

Annual additional tax exemption limits for disability pensions granted or recalculated since 1/1/1996:

Group I & II: 1 848 EUR per annum

Group III: 1 440 EUR per annum

Pension (in payment) indexation

Indexation of earning related pensions was frozen from 2009 till 2012. In 2013 an extra indexation for smaller pensions was applied. An actual consumer price index (CPI) and 25% of contribution wage sum real increase were used for the pension indexation from 2014 to 2016, as well as a ceiling of indexed part of pension's amounts defined. In 2014 the ceiling on indexed part of pension's amount at -285 EUR, but starting from 2015 – the indexed part of the pension amount is not higher than 50% of previous year's average contribution wage. However, pensions for persons with I group of disability, for politically repressed persons and for liquidators of the Chernobyl nuclear disaster is indexed in full amount. Since 2017 pension indexation an actual consumer price index (CPI) and 50% of contribution wage sum real increase were used.

As of 2018 when indexing old age pensions with high contribution record, higher part from average contribution wage sum real increase will be applied:
- 60%, if contribution record is 30-39 years long, as well as for pensions for employment in hard and hazardous or extra hard and hazardous employment conditions;
- 70% if contribution record is 40 or more years.

Table 1 – Qualifying condition for retiring									
			2016	2020	2030	2040	2050	2060	2070
Qualifying	Minimum	Contributory	15	15	20	20	20	20	20

condition for retiring with a full pension	requirements	period - men							
		Retirement age - men	62y 9m	63y9m	65	65	65	65	65
		Contributory period - women	15	15	20	20	20	20	20
		Retirement age - women	62y 9m	63y9m	65	65	65	65	65
	Statutory retirement age - men		62y 9m	63y9m	65	65	65	65	65
	Statutory retirement age - women		62y 9m	63y9m	65	65	65	65	65
Qualifying condition for retirement WITHOUT a full pension	Early retirement age - men		60y9m	61y9m	63	63	63	63	63
	Early retirement age - women		60y9m	61y9m	63	63	63	63	63
	Penalty in case of earliest retirement age		50%	50%	50%	50%	50%	50%	50%
	Bonus in case of late retirement		-	-	-	-	-	-	-
	Minimum contributory period - men		30	30	30	30	30	30	30
	Minimum contributory period - women		30	30	30	30	30	30	30
	Minimum residence period - men[2]		5	5	5	5	5	5	5
	Minimum residence period – women[2]		5	5	5	5	5	5	5

Source: Member state

Table 2 – Number of new pensioners by age group - administrative data					
Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	6 695	0	3 175	3 518	2
50 - 54	2 072	0	1 825	239	8
55 - 59	3 241	733	2 338	45	125
60 - 64	17 053	16 212	814	24	3
65 - 69	130	115	1	14	0
70 - 74	31	20	0	11	0
75+	6 695	0	3 175	3 518	2

Source: Commission services

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

2017 projections (compared to the AR 2015 projections) include:

1) Since July 2018 the supplementary payment for each length of period of insurance year up to 31 December 1995 in amount of 1.00 EUR for each year worked will increase to 1.50 EUR for those who retired until 1996;

2) Since 2017 earning –related pension indexation an actual consumer price index (CPI) and 50% (instead of 25% in AR 2015) of contribution wage sum real increase were used.

3) Since 2018 when indexing old age pensions with high contribution record higher part from average contribution wage real increase will be applied (instead of 25% in AR 2015):

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[2] for qualify for minimum pension from the State basic budget.

- 60%, if contribution record is from 30-39 years long, and for pensions for employment in hard and hazardous or extra hard and hazardous employment conditions;
- 70% if contribution record is 40 or more years;

4) From April 1st , 2017 the minimum amount of survivor's pension for each child:
- up to six years (including) - 92,50 euros;
- up to six years (including) to children disabled since the childhood - 106,72 euros;
- from seven years - 111,00 euros;

5) As of 1 April, 2017, in case of the state social security benefit in the event of loss of breadwinner there is a monthly minimum (before was 64.03 EUR) for each child amounting to:
- up to 6 years old (including) – 92,50 euro;
- up to 6 years old (including) for a disabled child since his childhood – 106,72 euro;
- from the age of 7 onwards – 111, 00 euro;

6) Since 2017, to a person who has insurance period less than minimum insurance record(or no record) and has exceeded the statutory retirement age (before 2017 – who exceeded the qualifying age for old-age pension by 5 years) the state social security benefit is granted, financed by the state budget.
7) For people to whom from 01.01.2010 till 31.12.2015 old - age, survivor's or historic service pensions were granted or re-calculated, based on a negative national capital rate (effect of previous economic crisis), the amounts are adjusted/ re-viewed.
In 2016 pensions granted or re-calculated in 2010 were revised. In 2017 those from 2011, but in 2018 those granted or re-calculated in 2012, 2013, 2014, and 2015.
The set negative national capital rate for the period 2009-2011 shall be replaced with "1" as well as the set index shall be levelled further until the multiplication of the negative and the positive indexes is higher than "1".

Indexation of pensionable earnings/old-age pension capital

The yearly nominal growth of contribution wage sum is used for the indexation of NDC pension capital.
On January 1, 2016 the amendments to the Law On State Pensions came into force, providing that from 2009 to 2011 the set negative index shall be replaced with "1" as well as the set index shall be levelled further until the multiplication of the negative and the positive indexes is higher than "1". If multiplication of negative and subsequent positive indexes of previous years is higher than „1", then index of insurance contribution wage is used for updating pension capital. Index of insurance contribution is composed of multiplication of negative and subsequent positive indexes of previous years.

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

According the legislation, no indexation rules for minimum (non-contributory) pensions paid by state budget (in case of old age, disability and survivors), these are revised based on a Cabinet decision. Assumptions for minimum pension's indexation used in projections: until 2025 indexing with CPI, from 2026 – full wage indexation is used – in accordance with AWG methodology. (CPI was used in AR2015).

2. OVERVIEW OF THE DEMOGRAPHIC AND LABOUR FORCE PROJECTIONS

2.1 Demographic development

Table 3 shows development of main demographic indicators in a time period from 2016 to 2070.

Table 3 – Main demographic variables evolution								
	2016	2020	2030	2040	2050	2060	2070	Peak year*
Population (thousand)	1 961	1 904	1 735	1 593	1 502	1 422	1 339	2016
Population growth rate	-0.8	-0.8	-1.0	-0.7	-0.5	-0.6	-0.5	2051
Old-age dependency ratio (pop65/pop15-64)	30.5	33.1	43.5	51.4	59.8	65.2	53.8	2058
Ageing of the aged (pop80+/pop65+)	25.8	28.8	27.8	32.6	36.4	38.4	50.8	2070
Men - Life expectancy at birth	69.4	70.7	73.5	76.1	78.5	80.7	82.7	2070
Men - Life expectancy at 65	14.0	14.7	16.2	17.7	19.0	20.4	21.6	2070
Women - Life expectancy at birth	79.5	80.4	82.3	84.1	85.7	87.2	88.6	2070
Women - Life expectancy at 65	19.0	19.6	20.9	22.1	23.3	24.4	25.4	2070
Men - Survivor rate at 65+	66.9	69.7	75.2	79.9	83.7	86.9	89.4	2070
Men - Survivor rate at 80+	29.8	33.6	41.9	49.9	57.3	64.1	70.0	2070
Women - Survivor rate at 65+	86.8	87.9	90.0	91.7	93.2	94.4	95.3	2070
Women - Survivor rate at 80+	61.5	64.3	69.8	74.7	78.9	82.4	85.4	2070
Net migration	-9.4	-8.0	-6.1	-1.5	1.2	0.0	0.1	2051
Net migration over population change	0.6	0.5	0.3	0.1	-0.2	0.0	0.0	2018

Source: EUROSTAT and Commission Services

*This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2016 to 2070.

The number of people in Latvia continue to decline and in 2060 will reach 73% of number of people in 2016, but in 2070 – 68%. The total population is projected a little higher in comparison with EUROPOP 2014, where population in 2060 was projected 1 396 thousand or by 26 thousand people less.

The actual demographical situation, sharp increase in projected life expectancy (for men at birth by 13.3 years; for women at birth by 9.1 years) as well as emigration promotes rapid increase in old age dependency rate in long run – from 30.5% in 2016 to 65.2% in 2060 or by 34.7 p.p. From 2060 the old age dependency rate decreases to 53.8% in 2070.

Graph 1   Age pyramid comparison: 2016 vs 2070

LV - Population by age groups and sex as a share of total population

2.2. Labour force

Table 4 shows development of main labour market indicators connected with the older workers in the long run until 2070. The table shows increase in a labour force participation rates, employment rates as well as in shares of workers on the total labour force for older age group of workers aged 55-64. The share of workers aged 65-74 is 100% for all the projection period.

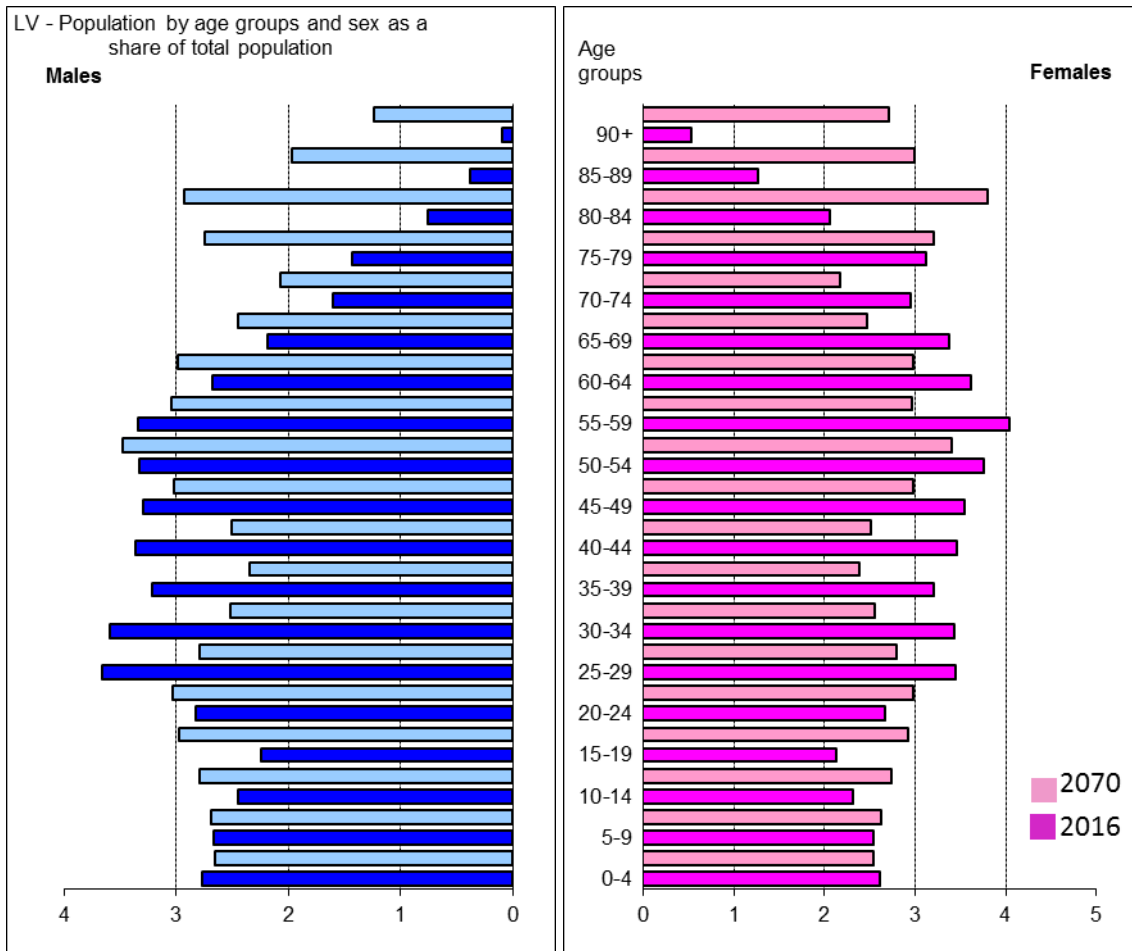| Table 4 – Participation rate, employment rate and share of workers for the age groups 55-64 and 65-74								
	2016	2020	2030	2040	2050	2060	2070	Peak year*
Labour force participation rate 55-64	67.5	64.5	67.5	70.9	70.0	72.7	72.4	2063
Employment rate for workers aged 55-64	61.5	59.0	61.7	65.5	65.2	67.5	67.4	2063
Share of workers aged 55-64 on the labour force 55-64	91.0	91.6	91.4	92.3	93.1	93.0	93.1	2055
Labour force participation rate 65-74	16.1	16.4	18.4	19.7	20.5	19.3	21.0	2070
Employment rate for workers aged 65-74	16.1	16.4	18.4	19.7	20.5	19.3	21.0	2070
Share of workers aged 65-74 on the labour force 65-74	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2016
Median age of the labour force	41.0	42.0	44.0	46.0	41.0	42.0	43.0	2037

Source: Commission Services

This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2016 to 2070

Tables 5a and 5b show labour market exit ages, contributory period, as well as expected durations of life spent at retirement divided by sex. Tables show the labour market effective exit age lower for men. And also contributory period is higher for women. The projected increase in life expectancy for both of sexes gives increase in duration of retirement – for men by 5.6 years, but for women by 4.6 years.

Table 5a – Labour market entry age, exit age and expected duration of life spent at retirement MEN								
	2017	2020	2030	2040	2050	2060	2070	Peak year *
Average effective exit age (CSM) (II)	61.7	62.9	65.2	65.2	65.2	65.2	65.2	2025
Contributory period	35.5	35.9	36.7	36.7	36.7	36.7	36.7	2025
Duration of retirement	16.0	15.9	16.2	17.7	19.0	20.4	21.6	2070
Duration of retirement/contributory period	0.5	0.4	0.4	0.5	0.5	0.6	0.6	2070
Percentage of adult life spent at retirement	26.8	26.2	25.6	27.3	28.7	30.2	31.4	2070
Early/late exit	0.8	1.3	1.2	1.1	1.1	0.6	0.7	2023

Source: Commission Services

This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2016 to 2070.

Table 5b – Labour market entry age, exit age and expected duration of life spent at retirement WOMEN								
	2017	2020	2030	2040	2050	2060	2070	Peak year *
Average effective exit age (CSM) (II)	63.5	64.2	65.3	65.3	65.3	65.3	65.3	2030
Contributory period	37.4	37.9	38.6	38.6	38.6	38.6	38.6	2025
Duration of retirement **	20.8	20.4	20.9	22.1	23.3	24.4	25.4	2070
Duration of retirement/contributory period	0.6	0.5	0.5	0.6	0.6	0.6	0.7	2070
Percentage of adult life spent at retirement***	31.4	30.6	30.6	31.8	33.0	34.0	34.9	2070
Early/late exit ****	0.9	1.2	0.9	0.7	0.8	0.4	0.6	2016

Source: Commission Services

This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2016 to 2070.
*** 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*

Table 6 - Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)								
	2007	2008	2009	2010	2011	2012	2013	2014
1 Eurostat total pension expenditure	4.9	5.7	8.3	10.1	8.6	8.2	8.2	7.9
2 Eurostat public pension expenditure	4.9	5.7	8.3	10.1	8.6	8.2	8.2	7.9
3 Public pension expenditure (AWG)	4.7	5.5	8.2	9.9	8.4	7.9	7.8	7.6
4 Difference (2) - (3)	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.3

Source: EUROSTAT and Member State

Main factors explaining the difference between ESSPROSS and AWG data of pension expenditures are that the only State pension system - Social security and private mandatory (funded) pension schemes as well as minimum (guarantee) pensions are used for projections, but ESSPROSS data of pension expenditures includes also indemnities of insurance against work injury, specific public sector service pensions and other minor pensions.

3.2. Overview of projection results

Table 7 - Projected gross and net pension spending and contributions (% of GDP)								
Expenditure	2016	2020	2030	2040	2050	2060	2070	Peak year*
Gross public pension expenditure	7.4	6.8	6.2	6.3	6.1	5.6	4.7	2018
Private occupational pensions	:	:	:	:	:	:	:	:
Private individual pensions	:	0.0	0.3	0.7	1.5	2.3	2.6	2070
Mandatory private	:	0.0	0.3	0.7	1.5	2.3	2.6	2070
Non-mandatory private	:	:	:	:	:	:	:	:
Gross total pension expenditure	7.4	6.8	6.4	7.0	7.6	8.0	7.3	2057
Net public pension expenditure	:	:	:	:	:	:	:	:
Net total pension expenditure	:	:	:	:	:	:	:	:
Contributions	2016	2020	2030	2040	2050	2060	2070	Peak year*
Public pension contributions	6.8	7.5	6.7	6.6	6.5	6.5	6.5	2018
Total pension contributions	8.4	9.3	8.6	8.5	8.5	8.4	8.5	2018

Source: Commission Services

*This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2010 to 2070.)

Table 8 shows dynamics of gross pension expenditures and contributions. Decrease of gross public pension expenditures in % of GDP during all the period of projections is mainly connected with the redistribution of pension contribution rate between NDC and FDC. Some impact also comes from increase in retirement age and indexation rules. Gross public pension expenditures as % of GDP decline by 2.7 p.p. during the period of projections, when in the same time the mandatory private pension expenditures increase by 2.6 p.p.

The public pension contributions include contributions to the state special pension budget (cover old-age pensions, survival pensions, service pensions, funeral benefits, benefit in case of dead spouse) and contributions to disability insurance. The contribution rate to the state pension budget is not a constant figure – it depends from proportions of expenditures between social insurance special budgets. The contribution rate to the state pension budget, fixed for the year 2017 further used in projections. And the contribution rate for disability insurance, fixed for the year 2017 further used in projections.

Net pensions are not included in LV model wherewith not included in projections.

Table 8 - Projected gross public pension spending by scheme (% of GDP)								
Pension scheme	2016	2020	2030	2040	2050	2060	2070	Peak year *

Total public pensions	7.4	6.8	6.2	6.3	6.1	5.6	4.7	2018
of which								
Old age and early pensions:	6.6	6.1	5.6	5.8	5.6	5.2	4.2	2018
Flat component	:	:	:	:	:	:	:	:
Earnings related	6.6	6.1	5.6	5.8	5.6	5.2	4.2	2018
Minimum pensions (non-contributory) i.e. minimum income guarantee for people above 65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2058
Disability pensions	0.65	0.60	0.46	0.40	0.36	0.33	0.40	2016
Survivor pensions	0.11	0.13	0.13	0.13	0.11	0.12	0.12	2035
Other pensions	:	:	:	:	:	:	:	:
of which								
country-specific scheme 1	:	:	:	:	:	:	:	:
country-specific scheme 2	:	:	:	:	:	:	:	:
country-specific scheme 3	:	:	:	:	:	:	:	:

Source: Commission Services

* This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2010 to 2070.)

The ratio of old-age and early pensions spending is mainly connected with the redistribution of pension contribution rate between NDC and FDC. The ratio of disability and survivors pensions spending mostly connected with demographic.

For minimum pension's (in case of old age, disability and survivors) indexation is used in projections: until 2025 indexing with CPI, from 2026 – full wage indexation is used.

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

This part provides more details about the development of public pension expenditures (Table 9a and Table 9b). It uses a standard arithmetic decomposition of a ratio of pension expenditures to GDP into the dependency, coverage, benefit ratio, employment rate and labour intensity.

$$\frac{\text{Pension Exp}}{\text{GDP}} = \overbrace{\frac{\text{Population 65+}}{\text{Population 20-64}}}^{\text{Dependency Ratio}} \times \overbrace{\frac{\text{Number of Pensioners (Pensions)}}{\text{Population 65+}}}^{\text{Coverage Ratio}}$$
$$\times \overbrace{\frac{\dfrac{\text{Average income from pensions (Average Pension)}}{\text{GDP}}}{\text{Hours Worked 20-74}}}^{\text{Benefit Ratio}} \times \overbrace{\frac{\text{Population 20-64}}{\text{Hours Worked 20-74}}}^{\text{Labour Market / Labour Intensity}}$$

[1]

For the projection round 2015, two further sub-decompositions have been agreed. The coverage ratio is further split with the scope of investigating the take-up ratios for old-age pensions and early pensions:

$$\overbrace{\frac{\text{Number of Pensioners}}{\text{Population } 65+}}^{\text{Coverage Ratio}} =$$

$$= \overbrace{\frac{\text{Number of Pensioners } 65+}{\text{Population } 65+}}^{\text{Coverage Ratio Old-Age}} + \left(\overbrace{\frac{\text{Number of Pensioners} \leq 65}{\text{Population } 50-64}}^{\text{Coverage Ratio Early-Age}} \times \overbrace{\frac{\text{Population } 50-64}{\text{Population } 65+}}^{\text{Cohort effect}} \right)$$ [2]

The labour market indicator is further decomposed according to the following:

$$\overbrace{\frac{\text{Population } 20-64}{\text{Hours Worked } 20-74}}^{\text{Labour Market / Labour Intensity}} =$$

$$\overbrace{\frac{\text{Population } 20-64}{\text{Working People } 20-64}}^{1/\text{Employment Rate}} \times \overbrace{\frac{\text{Working People } 20-64}{\text{Hours Worked } 20-64}}^{1/\text{Labour intensity}} \times \overbrace{\frac{\text{Hours Worked } 20-64}{\text{Hours Worked } 20-74}}^{1/\text{Career shift}}$$ [3]

The proposed decomposition is calculated using both data on pensions (Table 9a) and pensioners (Table 9b). The number of pensions and the average pension amount are important to understand the dynamics of pension expenditure. Projections on the number of pensioners have to be done coherently with the demographic and macroeconomic frameworks.

Table 9a - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - pensions								
	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	-0.6	-0.6	0.1	-0.2	-0.4	-0.9	-2.6	-0.049
Dependency ratio effect	0.7	2.0	1.1	0.9	0.7	-1.0	4.4	7.9%
Coverage ratio effect	-0.5	-0.6	-0.2	-0.2	-0.1	0.2	-1.4	-2.7%
*Coverage ratio old-age**	:	:	:	:	:	:	:	:
*Coverage ratio early-age**	:	:	:	:	:	:	:	:
*Cohort effect**	-0.3	-1.4	-0.5	-1.6	-1.5	2.2	-3.1	-6.7%
Benefit ratio effect	-0.7	-1.6	-0.6	-0.7	-0.8	-0.3	-4.7	-8.9%
Labour Market/Labour intensity effect	-0.1	-0.2	-0.1	-0.2	-0.1	0.2	-0.5	-0.9%
Employment ratio effect	0.0	-0.1	-0.1	-0.1	-0.2	0.1	-0.4	-0.8%
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1%
Career shift effect	0.0	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.2%
Residual	-0.1	-0.3	-0.1	-0.1	0.0	0.0	-0.5	-0.2%

Source: Commission Services

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

The model used for projections produce numbers of pensioners, not number of pensions. The difference between number of pensioners and number of pensions depend only on difference between number of survivor pensioners (for example - number of children) and number of survivor pensions (for example one pension is paid for 3 children in family). For calculation the total number of survivor pensions, the coefficient is used.

Table 9b - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - pensioners								
	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	-0.6	-0.6	0.1	-0.2	-0.4	-0.9	-2.6	-0.049
Dependency ratio effect	0.7	2.0	1.1	0.9	0.7	-1.0	4.4	7.9%
Coverage ratio effect	-0.5	-0.6	-0.2	-0.2	-0.1	0.2	-1.4	-2.7%
Coverage ratio old-age*	-0.3	-0.1	0.0	0.0	0.0	-0.1	-0.4	-0.8%
Coverage ratio early-age*	-0.6	-0.8	-0.6	0.9	0.8	-0.4	-0.8	-2.1%
Cohort effect*	-0.3	-1.4	-0.5	-1.6	-1.5	2.2	-3.1	-6.7%
Benefit ratio effect	-0.7	-1.6	-0.6	-0.7	-0.8	-0.3	-4.7	-8.9%
Labour Market/Labour intensity effect	-0.1	-0.2	-0.1	-0.2	-0.1	0.2	-0.5	-0.9%
Employment ratio effect	0.0	-0.1	-0.1	-0.1	-0.2	0.1	-0.4	-0.8%
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1%
Career shift effect	0.0	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.2%
Residual	-0.1	-0.3	-0.1	-0.1	0.0	0.0	-0.5	-0.2%

Source: Commission Services

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

The main driving force of decrease of public pension expenditures to GDP is benefit ratio. Decrease of the benefit ratio during the all period of projections is explained mainly by switching part of the public old-age scheme into private funded schemes - so public provision decrease while the private mandatory part increase. As well as the decrease of the benefit ratio reflects indexation rules.

The dependency rate is effect of current demographic situation, assumed rapid increase in life expectancy, what makes dependency rate to rise mostly over the all projections period. The life expectancy for men in age 65 increases from 14.0 in 2016 to 21.6 in 2070, for women – from 19.0 years to 25.4 years. However since 2060 the negative dependency ratio effect is projected - explainable by the small increase of working age population until 2070.

The high decrease of coverage ratio in first period of projection is the result of the increase in retirement age and early retirement age.

According to the demographic projections decrease of number of population in age 15-64 is expected till 2060 and since 2060 to 2070 the small increase is projected. Effect of employment ratio on the public pension expenditure to GDP reflects changes in employment rates.

Table 10 - Replacement rate at retirement (RR) and coverage by pension scheme (in %)							
	2016	2020	2030	2040	2050	2060	2070
Public scheme (BR)	24%	23%	18%	16%	15%	13%	12%
Public scheme (RR)	:	:	:	:	:	:	:
Coverage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Public scheme old-age earnings related (BR)	27%	25%	20%	18%	16%	13%	13%
Public scheme old-age earnings related (RR)	52%	46%	35%	27%	22%	20%	22%
Coverage	81.2	79.9	81.0	83.7	85.8	86.9	83.1
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual scheme (BR)	:	:	:	:	:	:	:

Private individual scheme (RR)	2%	3%	5%	8%	11%	12%	13%
Coverage	:	:	:	:	:	:	:
Total (BR)	24%	23%	19%	18%	18%	18%	19%
Total (RR)	53%	48%	39%	34%	33%	33%	35%

Source: Commission Services

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.

The mandatory private individual scheme (FDC) covers 86% of population 15-74. This scheme is expected to be fully mandatory around 2035, when cohorts of voluntary participants gradually vanish.

The gross average replacement rate at retirement is the ratio of the first average pension of those who retire in a given year over the average wage at retirement. In projection exercise in LV case the actual average contribution wage in 2016 for contributors (excluding transfers) in age 62 is used (608.71 EUR per month). For further years the average nominal wage growth rate (given in questionnaire) is used. The difference in RR, comparing with AR2015 (38% in 2016) can be explained with the average contribution wage in state, used in AR2015, which was 1.15 times higher than wage before retirement (698.64 EUR per month) as well as the set negative national capital rate for the period 2009-2011, replaced with "1" as well as the set index, to be levelled further until the multiplication of the negative and the positive indexes is higher than "1", resulting in a positive impact on newly granted old age pension amounts.

The RR now falls by 30 ppt in AR 2018 in comparison with 19 ppt in AR 2015, because the value of indicator of base year is higher than in AR 2015. For calculation of old age pension the insurance period until the year 1995 (inclusive) is credited with an initial capital, calculated using an average contribution wage[3] of individual in 1996-1999. Retired people, whose insurance record is not shorter than 30 years, but whose income has been below state average, are also supported financially, e.g. for starting capital calculation in relevant years (1996–1999) the average wage is taken into account, not the individual contribution wage (more than half of new granted pensions benefited from this privilege) as well as other privileges and advantages, for example for politically repressed persons are provided during the transition period, what give a positive impact to old age pension amount in transitional period. Year by year these privileges and their impact decreases and pure NDC rules work, what gives results close to those in AR 2015. As well as the nominal wage growth is projected higher than in AR 2015.

The total gross replacement rate showed in table 10 includes the public scheme of old age earnings related pensions and private mandatory scheme (different from AR2015, where old age, survivors' and disability pension schemes were included).

Both benefit rates and replacement rates decline significantly in the projection period.
In spite of that the new pension indexation mechanism gives positive impact to GDP, the impact to benefit ratio being insignificant. It is explained by high difference between the wide average gross wage used in AR 2018 and actual contribution wage from LV administrative data. Also, the wage growth in AR 2018 is projected higher than in AR 2015, what gives a negative impact to the benefit ratio.

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[3] The average contribution wage is the average wage on which contributions are actually based. It takes into account evasion as well as ceilings and also social transfers (for the non-contributory periods), and is usually lower than the economy-wide average wage.

Average Gross wage (growth rate)

Switching the part of the public old-age scheme into private funded schemes works as a main driving factor on decrease in the replacement ratio of the social security scheme and increase replacement ratio of the private mandatory scheme.

Old age pension capital is indexed by early contribution wage sum growth indexes. The negative growth of employment/socially insured persons mostly through the all projection period gives a negative impact to the future replacement ratio of the social security pension scheme – wages increase faster as the contribution wage sum increase.

Old age pension at retirement is calculated as accumulated pension capital divided by the life expectancy at retirement age. Rapid grow in life expectancy gives a negative effect to pension amount and to replacement ratio at retirement. The life expectancy for men in age 65 increases from 14.0 in 2016 to 21.6 in 2070, for women – from 19.0 years to 25.4 years.

Decline of benefit ratio is influenced by not only factors mentioned before (influence to RR), but also with factor that for pension indexation not full wage indexation is used.

The state social insurance scheme is mandatory and coverage rate is 100% over the all projection period. Coverage rate of private pension scheme as it started to operate in 2001 grows through all the projection period.

Table 11 – System Dependency Ratio and Old-age Dependency Ratio							
	2016	2020	2030	2040	2050	2060	2070
Number of pensioners (thousand) (I)	569.2	545.3	552.1	561.9	557.8	543.6	471.6
Employment (thousand) (II)	906.4	856.3	734.7	664.5	604.6	551.4	542.7
Pension System Dependency Ratio (SDR) (I)/(II)	62.8	63.7	75.1	84.6	92.3	98.6	86.9
Number of people aged 65+ (thousand) (III)	387.7	396.6	441.6	465.4	475.0	470.2	396.0
Working age population 15 - 64 (thousand) (IV)	1271.9	1196.5	1015.1	904.8	794.2	721.4	736.5
Old-age Dependency Ratio (ODR) (III)/(IV)	30.5	33.1	43.5	51.4	59.8	65.2	53.8
System efficiency (SDR/ODR)	2.1	1.9	1.7	1.6	1.5	1.5	1.6

Source: Commission Services

As the largest part of all pension recipients are old age pensioners, the large decrease in the total number of pensioners from 2016 to 2020-2030 is mainly influenced by the increase in retirement age, starting from 2014 and reaching 65 years in 2025, which cause the decrease in the newly granted pensions.

Ageing in Latvia is the driving force of the future evolvement of expenditures in relation to GDP. Number of people aged 65+ increases most of the all projection period and starts to decrease after 2050.

The number of working age population goes down until 2060 and after start to increase. The employment gradually stop to decline in the last decade of projection period.

Table 12a – Pensioners (public schemes) to inactive population ratio by age group (%)							
	2016	2020	2030	2040	2050	2060	2070
Age group -54	13.8	14.1	14.7	14.9	12.7	13.9	15.3
Age group 55-59	81.3	76.3	81.4	85.9	96.9	103.4	108.8
Age group 60-64	121.1	81.2	55.1	59.2	62.5	66.4	66.9
Age group 65-69	131.4	128.4	134.8	137.2	138.0	138.3	136.8
Age group 70-74	112.7	110.6	108.9	111.7	112.7	113.5	112.1
Age group 75+	105.9	100.1	98.7	98.6	98.2	99.3	97.3

Source: Commission Services

The ratio to inactive population in age group 55-59 is higher than in age group 60-64 due to differences in participation rates. The participation rates in age group 60-64 are lower than in age group 55-59 group. The coverage ratio for 60-64 falls by 2030 due to rise in CSM exit age by 1.8 years for women and 3.5 years for men and the increase in coverage after 2030 is due to rising participation/lower inactivity.
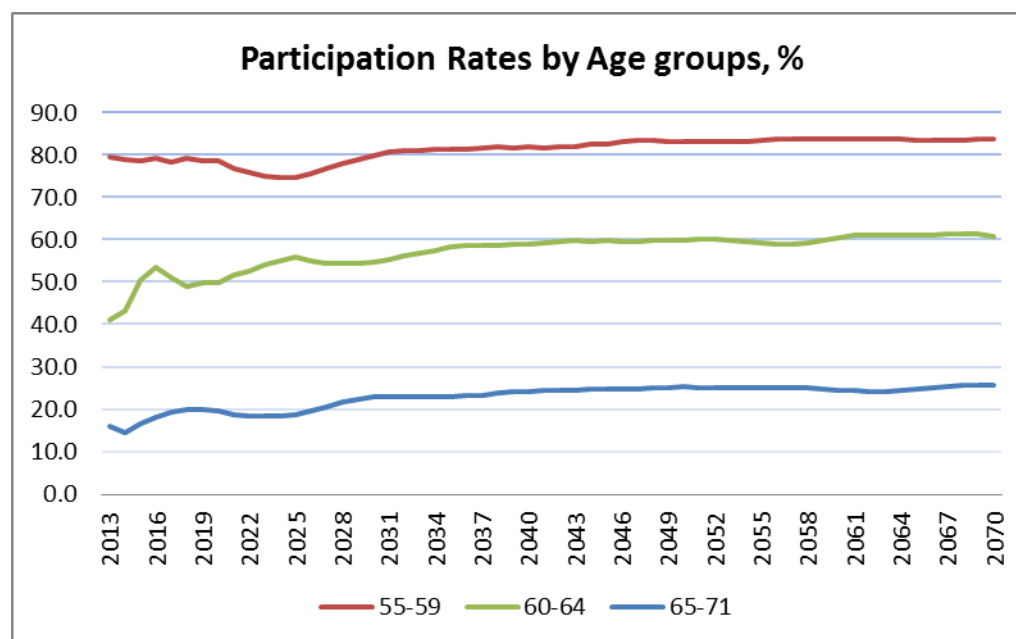
Table 12b – Pensioners (public schemes) to population ratio by age group (%)							
	2016	2020	2030	2040	2050	2060	2070
Age group -54	5.4	5.8	6.3	6.3	5.5	6.0	6.6
Age group 55-59	16.7	16.4	16.3	15.5	16.3	16.9	17.5
Age group 60-64	56.2	40.5	25.0	24.2	25.0	26.2	26.2
Age group 65-69	105.1	99.4	99.1	99.6	99.1	99.5	97.6
Age group 70-74	100.0	100.7	98.6	99.2	99.3	99.7	98.5
Age group 75+	105.9	100.1	98.7	98.6	98.2	99.3	97.3

Source: Commission Services

Table 13a – Female pensioners (public schemes) to inactive population ratio by age group (%)							
	2016	2020	2030	2040	2050	2060	2070
Age group -54	12.3	13.0	13.9	14.1	12.0	13.2	14.5
Age group 55-59	75.3	77.4	83.2	89.0	105.2	111.1	115.3
Age group 60-64	114.9	76.7	56.3	58.9	64.1	67.6	67.5
Age group 65-69	129.5	127.1	136.1	138.7	139.3	139.9	139.2
Age group 70-74	110.8	109.4	107.6	111.5	111.8	112.8	111.4
Age group 75+	105.6	99.8	98.3	98.5	98.2	99.1	97.5

Source: Commission Services

Table 13b – female pensioners (public schemes) to population ratio by age group (%)							
	2016	2020	2030	2040	2050	2060	2070
Age group -54	5.0	5.4	6.1	6.1	5.3	5.9	6.3
Age group 55-59	15.6	15.3	16.3	16.0	17.0	17.4	17.8
Age group 60-64	56.1	39.6	24.2	24.2	25.1	26.0	25.8
Age group 65-69	104.8	98.7	98.6	99.4	98.8	99.1	97.6
Age group 70-74	99.6	100.4	98.0	99.1	99.1	99.4	98.2
Age group 75+	105.6	99.8	98.3	98.5	98.2	99.1	97.5

Source: Commission Services

The ratio to population and to inactive population shows the relation between demographical, labour force and pension projections.
The number of pensioners in first years of projection includes also pensioners living abroad, in further model does not calculate pensions abroad.

Table 14a - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Total							
New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	34.3	57.6	79.5	94.4	127.1	89.4	157.2
II. Average contributory period	36.5	37.1	37.8	37.8	37.8	37.8	37.8
III. Monthly average pensionable earnings	0.8	0.9	1.4	2.1	3.1	4.6	7.5
IV. Average accrual rates (%)	1.0	1.0	1.0	0.8	0.7	0.6	0.6
Notional-accounts contribution rate (c)	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Annuity factor (A)	19.0	18.6	18.6	19.9	21.2	22.4	23.5
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Number of new pensioners ('000)	16.8	24.6	23.2	22.5	23.7	12.5	14.4
VII Average number of months paid the first year	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Monthly average pensionable earnings / Monthly economy-wide average wage	0.7	0.6	0.5	0.5	0.5	0.5	0.5

The growth of average contributory period is explainable by the gradual increase in statutory retirement age by 3 month every year- until 65 in 2025. Since 2025 the legislated retirement age is projected constant as well as projected contributory period.

The average notional –accounts contribution rate continue to decline in almost all projection period, because periodical decrease of NDC contribution rate (accordingly FDC contribution rate increases) from 2001 to 2016, what means that constant NDC rate – 14% will start +/- for cohorts born in 2001 (15 years old in 2016, when contribution rate to NDC stopped to decrease and continues to be constant) and who will retire in 2066.

The annuity factor increases during all the projection period because in accordance with demographical assumptions used in AR2018, the life expectancy is rising.

The decrease in average pensionable earnings as % of average wage is explainable by the contribution wage sum (not wage index), used for the indexation of notional capital. Also the transitional period's privileges decrease, what have a negative impact on pensionable earnings over time.

Table 14b - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - MEN							
New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	15.9	26.4	36.7	45.8	63.8	46.0	80.6
II. Average contributory period	35.3	35.9	36.7	36.7	36.7	36.7	36.7
III. Monthly average pensionable earnings	0.9	1.0	1.5	2.3	3.4	4.9	7.9
IV. Average accrual rates (%)	1.0	1.0	1.0	0.8	0.7	0.6	0.6
Notional-accounts contribution rate (c)	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Annuity factor (A)	19.0	18.6	18.6	19.9	21.2	22.4	23.5
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Number of new pensioners ('000)	7.1	10.7	10.4	10.5	11.5	6.3	7.2
VII Average number of months paid the first year	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Monthly average pensionable earnings / Monthly economy-wide average wage	0.8	0.7	0.5	0.5	0.5	0.5	0.6

Table 14c - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - WOMEN							
New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	18.4	31.2	42.8	48.6	63.2	43.4	76.7
II. Average contributory period	37.3	37.9	38.6	38.6	38.6	38.6	38.6
III. Monthly average pensionable earnings	0.8	0.9	1.3	2.0	3.0	4.4	7.1
IV. Average accrual rates (%)	1.0	1.0	1.0	0.8	0.7	0.6	0.6
Notional-accounts contribution rate (c)	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Annuity factor (A)	19.0	18.6	18.6	19.9	21.2	22.4	23.5
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Number of new pensioners ('000)	9.6	13.9	12.9	12.0	12.2	6.2	7.2
VII Average number of months paid the first year	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Monthly average pensionable earnings / Monthly economy-wide average wage	0.7	0.6	0.5	0.5	0.4	0.4	0.5

The average contributory period for women is in reality and projected higher as for men, while the average pensionable earnings are higher for men.

The average accrual rate for both men and women is the same.

Number of new pensioners in first years of projection declines in accordance with increase in retirement age as well as in future is developing in accordance with demography.

3.4. Financing of the pension system

Public earning related pensions are financed by state special social insurance budget, which consists of four separate budgets: the state pension special budget; the employment special budget; the occupational accident special budget; the disability, maternity and sickness special budget. The public earning related old age, survival and historic service pensions are covered by the pension special budget; the disability pensions - by the disability, maternity and sickness special budget. The state special social insurance budget is self-financing.

Table 15 – Financing of the system			
	Public employees	Private employees	Self-employed
Contribution base	Gross salary	Gross salary	Declared earnings
Contribution rate/contribution (in 2017)	For pension insurance (included old-age; historic service and survivor pensions) the total rate is 24.54%. For old age pension capital = 20% (of which 6% to the 2nd tier, if the person is a participant). For disability insurance the rate of 2.30% applies.		For pension insurance (included old-age; historic service and survivor pensions) the total rate is 24.54%. For old age pension capital = 20% (of which 6% to the 2nd tier, if the person is a participant). For disability insurance the rate of 1.84% applies.
Employer*	16.98% + 1.59%	16.98% + 1.59%	24.54% + 1.84%
Employee*	7.56% + 0.71%	7.56% + 0.71%	
State contributions	State budget transfers for old-age pensions and disability pensions insurance are paid		
Other revenues	Additional targeted revenues from the state budget also are taken into account for the addition supplement coverage (for transition period pensioners), etc.		
Maximum contribution	52 400 EUR per year (maximum contribution base) – in 2017		
Minimum contribution	-	-	Minimum contribution base of 380 EUR per month – in 2017 (changes together with minimum wage)

Source: Commission Services, Member state

* Actually the contributions for pension insurance are not divided by employer and employee. This distribution is made theoretically, using the distribution of total rate of social insurance contributions in general case: 34.09% of individual gross contribution wage, where employer pays 23.59% and employee - 10.5%.

Table 16 – Revenue from contribution (million), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)							
	2016	2020	2030	2040	2050	2060	2070
Public contribution	1696.1	2368.4	3613.6	5136.3	7088.4	9464.3	13429.3
Employer contribution	1474.6	2160.8	3453.1	4997.8	6946.1	9321.4	13210.7
Employee contribution	:	:	:	:	:	:	:
State contribution	4.4	3.8	3.2	3.6	4.9	5.3	5.9
Other revenues	217.2	203.8	157.3	134.9	137.5	137.6	212.7
Number of contributors (I)	959.9	927.5	781.3	704.7	649.2	588.0	583.4
Employment (II)	906.4	856.3	734.7	664.5	604.6	551.4	542.7
Ratio of (I)/(II)	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Source: Commission Services

In 2017 the total social insurance contribution rate in Latvia is 34.09% of individual gross contribution wage, where employer pays 23.59% and employee - 10.5%. The largest part of the total social insurance contributions goes to pension insurance and these contributions are not divided by employer and employee contributions.

The number of contributors is higher as number of employment for the reason that the contributions are paid also for unemployment persons, disabled persons, state budget transfers, etc.

3.5 Sensitivity analysis

Table 17 - Public and total pension expenditures under different scenarios (deviation from the baseline)							
	2016	2020	2030	2040	2050	2060	2070
Public Pension Expenditure							
Baseline	7.4	6.8	6.2	6.3	6.1	5.6	4.7
Higher life expectancy (2 extra years)	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Higher Total Factor Productivity Growth (+0.4 pp.)	0.0	0.0	0.0	-0.2	-0.3	-0.2	-0.2
Lower Total Factor Productivity Growth (-0.4 pp.)	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Higher emp. rate (+2 pp.)	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0
Lower emp. rate (-2 pp.)	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Higher emp. of older workers (+10 pp.)	0.0	0.0	-0.1	0.0	0.1	0.1	0.1
Higher migration (+33%)	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Lower migration (-33%)	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Lower fertility	0.0	0.0	0.0	0.0	0.1	0.3	0.4
Risk scenario	0.0	0.0	0.2	0.3	0.2	0.2	0.2
Policy scenario: linking retirement age to increases in life expectancy	0.0	0.0	0.0	-0.3	-0.5	-0.3	-0.2
Total Pension Expenditure							
Baseline	7.4	6.8	6.4	7.0	7.6	8.0	7.3
Higher life expectancy (2 extra years)	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Higher Total Factor Productivity Growth (+0.4 pp.)	0.0	0.0	0.0	-0.3	-0.5	-0.6	-0.7
Lower Total Factor Productivity Growth (-0.4 pp.)	0.0	0.0	0.0	0.0	0.2	0.5	0.7
Higher emp. rate (+2 pp.)	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
Lower emp. rate (-2 pp.)	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Higher emp. of older workers (+10 pp.)	0.0	0.0	-0.1	0.0	0.0	0.1	0.0

Higher migration (+33%)	0.0	0.0	0.1	0.2	0.3	0.3	0.1
Lower migration (-33%)	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.1
Lower fertility	0.0	0.0	0.0	0.0	0.3	0.6	1.0
Risk scenario	0.0	0.0	0.2	0.3	0.4	0.5	0.6
Policy scenario: linking retirement age to increases in life expectancy	0.0	0.0	0.0	-0.4	-0.8	-0.5	-0.4

Source: Commission Services

Amounts of new granted pension at retirement are calculated by dividing the amount of contributions accumulated in the notional account by projected life expectancy at retirement for the individual's birth cohort. *Higher life expectancy scenario* increases the number of pensioners, but that is partly covered by smaller average pension amount.

In the *higher/ lower labour productivity scenarios* due to the CPI + part of real wage sum growth is used for indexation of pensions and wage sum growth is used for indexation of NDC pension capital, the ratio of total pension expenditures to GDP is smaller/higher in comparison to the baseline scenario.

Higher/lower employment rate scenarios not only leads to higher/lower GDP but also makes larger/lower accumulated pension capital and higher/lower average pension.

Higher employment of older workers scenario not only leads to higher GDP but also makes larger accumulated pension capital and higher average pension.

Higher/lower migration scenarios decrease/increases number of contributors as well as number of pensioners.

Linking the retirement age to the increase in life expectancy scenario increases the number of contributors, decreases the number of pensioners and makes larger accumulated pension capital and higher average pension.

3.6. Description of the changes in comparison with the 2006, 2009, 2012 and 2015 projections

Table 18 - Average annual change in public pension expenditure to GDP during the projection period under the 2006, 2009, 2012 and 2015 projection exercises							
	Public pensions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. Interaction effect)
2006 *	-0.86	3.42	-1.27	-0.67	-2.35	:	0.01
2009 **	-0.35	5.73	-1.57	-0.16	-3.92	:	-0.43
2012 ***	-3.73	6.75	-2.13	-1.35	-6.15	-0.01	-0.84
2015****	-3.08	3.83	-1.35	-0.61	-4.46	-0.01	-0.48
2018*****	-2.60	4.45	-1.40	-0.37	-4.70	0.01	-0.59

 * 2004-2050; ** 2007-2060; *** 2010-2060; **** 2013-2060; *****2016-2070

Source: Commission Services

There are some changes in comparison with the previous AWG projections.

Despite the fact that the policy changes since 2015 – notably the pension indexation rules – are more generous than assumed in AR 2015, the overall downward impact of the benefit ratio on expenditure is slightly higher than in AR 2015 due to the changes in the macroeconomic and demographic assumptions (in particular, faster wage growth in AR 2018).

Changes in demographical situation and demographic projection affect the difference *in dependency ratio.*

Changes in population age structures affect the small difference *in coverage ratio*.

Difference in *employment effect* reflects changes in demography and employment rates.

Table 19 - Decomposition of the difference between Ageing Report 2015 and the new public pension projection (% of GDP)							
	2016	2020	2030	2040	2050	2060	2070
Ageing report 2015	6.6	5.9	5.5	5.4	5.1	4.6	:
Change in assumptions	0.8	0.5	0.1	0.4	0.6	0.7	:
Improvement in the coverage or in the modelling	:	:	:	:	:	:	:
Change in the interpretation of constant policy	0.0	0.0	0.01	0.02	0.03	0.03	:
Policy related changes	0.0	0.4	0.6	0.5	0.4	0.3	:
New projection	7.4	6.8	6.2	6.3	6.1	5.6	4.7

Source: Member State

The policy changes introduced since 2015 are more generous than assumed in AR 2015 and gives positive impact on pension expenditure to GDP of 0.6% of GDP through 2030 and 0.3% by 2060. The implemented policy changes include the new indexation mechanism, recalculation of pensions based on a negative national capital rate (effect of previous economic crisis) and the set negative national capital rate for the period 2009-2011 replaced with "1" as well as the set index to be levelled further until the multiplication of the negative and the positive indexes is higher than "1" andan increase in supplement for those retired before 1996.

The changes in the interpretation of constant policy include the minimum pension's (paid by state budget) indexation: until 2025 indexing with CPI, from 2026 – full wage indexation to be used – in accordance with AWG methodology. (CPI was used in AR2015).

The changes in assumptions include the changes in macro, labour force and demographic assumptions.

4. DESCRIPTION OF THE PENSION PROJECTION MODEL AND ITS BASE DATA

2.1. Institutional context in which those projections are made

The Ministry of Welfare is responsible for pension projections in Latvia. The Latvian Social Insurance Budget/Pension Model was built by World Bank consultants and ministry's experts.

2.2. Assumptions and methodologies applied

Most of the key assumptions needed to run the model can be varied over the projection period. For example, birth, mortality, migration, unemployment, disability, average wage, and interest rates can develop in various ways specified by the user. Some scenarios are specified by a vector, such as the rate of growth or rate(s). Others are specified as changing age-gender distributions, e.g. survival rates, the distribution of income, unemployment risks. This is done by specifying a set of possible scenarios in the Data Module and then choosing the desired

development of parameters and the desired combination of scenarios in the Control panel that steers a run.

The model produces projections on an annual basis through the year 2070, although the projection period can be abridged and in some cases elongated. The year 2070 is presently the limit for the old-age pension projections. It is possible to run the demographic and population status sub-models longer.

There are four old-age pension modules. These produce projections of average benefits and costs for:
- The pre-reform defined-benefit system
- The defined-contribution, notional account pay-as-you-go (PAYG) system
- The defined-contribution funded (2nd Tier) funded system
- The defined-contribution funded (2nd Tier) funded system with refunding into the PAYG reserve

The disability model keeps track of the flow of new recipients and the total stock of beneficiaries. The model contains the following features:
- User specified age-gender recovering probabilities specific for the disabled
- User specified age-gender granting probabilities specific for the disabled
- User specified groups with the separate benefit rules
- User specified indexation of benefits

Disabled persons who have reached retirement age are granted the old-age pension instead of disability pension (disability pensioners, who reached retirement age before 1996 continue to receive disability pension – until the end of transition period)

The model presently calculates survivor pensioners until age 24, using initial data and factor to specify the average number of survivors per deceased.

Assumptions and methodology used in the calculation of main variables

Underlying assumptions agreed by the AWG that have been used in the model(s):
- demographical assumptions (fertility, mortality, migration);
- macroeconomic assumptions:
  - wage growth;
  - GDP growth
  - participation rates;
  - unemployment rates;
  - employment rates,
  - interest rates, etc.

Additional assumptions and methodology used to estimate:
- the number of pensioners, including estimates of the average number of newly retired pensioners
  Average age of retirement of a birth cohort, for men and women separately (according to law, considering early retirement) has been used in the projections (all cohort of gender take retirement in the same year, except those who retired earlier)
- pension accrual
  Pension capital for old age pensions (NDC) has been calculated by age and gender in the model. Accumulated capital until year 2016 distributed by age and gender

has been put in input data as base. Growth of the social insurance wage base is used for capital indexation until retirement.

- Pension capital for old age pensions (**FDC**) has been calculated by age and gender in the model.
  Accumulated capital until year 2016 distributed by age and gender has been put in input data as base. AWG defined interest rate used for FDC capital indexation.
  An actual data about participation in FDC pension scheme by age and genders as well as projected demographical cohorts by age and genders distributed by mandatory and voluntary cohorts (in accordance with legislation) with assumptions for projected participation rates in FDC are used for projections of FDC contributions, capital and pensions.

  The legislated FDC rates (for all projection period) are used for projection the FDC contributions and AWG defined interest rate is used in accumulation an FDC capital.
  For calculation of FDC pension at retirement the FDC capital at retirement is divided by projected life expectancy at retirement.
  A legislated retirement age is used for FDC and NDC.
  As the financing of the FDC pension scheme is in the framework of public pension scheme, all subsidies for the individual, paid by the state budget or other social insurance budgets (in case of child care, unemployment etc.) are respectively attributed for both schemes.

  Total contribution rate to pension capital (NDC + FDC) = 20%.

Contribution rate to the state funded pension scheme:

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2%	2%	2%	2%	2%	2%	4%	8%	2%	2%	2%

2% in 2012, 4% in 2013 and 2014, 5% in 2015, 6% - from 2016.

FDC pensions in model are indexed by AWG defined interest rate.

- average pensions
  NDC and funded pension amounts depend on accumulated NDC and FDC capital, life expectancy at the retirement age and pension indexation.
  For calculations of different types of pensions model is making calculations according to the law.
- number of years receiving a pension
  Number of years receiving a pension depends on estimation of life expectancy.

Calculation of Old age pensions

Overview

In principle, the model can be used to compute any defined-benefit or defined contribution pension scheme. The model combines demographic and economic scenarios with user defined rule systems to compute benefits. One of the major uses of the model is to examine the financial development and cohort-benefit profiles of old-age pension benefits over time given different user-specified demographic and economic scenarios. The model is presently programmed to produce calculations to the year 2060, but can be modified to produce calculations over longer time spans.

The model population is specified in terms of birth cohorts and gender. Since the model also contains a function specifying the distribution of income for men and women by age, by first specifying an age and gender distribution, it is possible to use the model to compute benefit schemes taking into account typical age-earning income profiles.

Together with survival rates, the pension age is instrumental in determining the size of individual benefits and total costs for the pension system(s). The user specifies the average pension age to be employed in the calculations. Since the average pension age may change by either gender or birth cohort or both, do either to legislative or behavioural reasons, the user is responsible for specifying a desired scenario. The effect of this choice on the outcome can be studied in alternative scenarios.

Benefits are calculated according to benefit formulas specified by the user. They reflect assumptions made about the growth and distribution of individual earnings and contributions and the form of benefit indexation. Where appropriate, the user can make assumptions about what happens with survivor's capital, as well as the development of the real rate of return on funded capital.

The output of the model is summarized in a financial accounting structure. The model keeps track of the development of benefits and the number of recipients by birth cohort and gender. This makes it possible to compare and examine the effects of alternative rule systems by gender and birth cohort. The model aggregates cohort and gender data to aggregate annual data on revenues and expenditures, stocks and flows of assets and liabilities, and numbers of beneficiaries and contributors. There are predefined tables and charts, but a user familiar with EXCEL can create his own output tables.

The Retirement Age in the Model
Legislation and behaviour determine the retirement age. Within the scope of the model the user determines the average age of retirement of a birth cohort, for men and women separately. With decreasing death risks and the resultant increase longevity for persons reaching a certain (minimum, mandatory etc.) pension age the average age of retirement may increase, either through legislation or behaviour.

The disability model keeps track of the flow of new recipients and the total stock of beneficiaries. The model contains the following features:

- User specified age-gender survival rates specific for the disabled
- User specified groups with separate benefit rules
- User specified indexation of benefits

In addition, account is taken to the fact that different rules apply to persons granted benefits in different years in Latvia (pre-1996, 1996 and post-1996).

The Indexation of Benefits
All calculations in the model are performed in real values. This means that price indexation of benefits is assumed as the default option.

Wage sum indexation involves indexing the real-valued benefits with a real-wage sum index. This can be set equal to varying degrees of full indexation, from zero to full indexation.

2.3.   Data used to run the model

Basic data required to run the model(s)

Initial data are prepared by the State Social Insurance Agency and Central Statistical Bureau, like labour force and wage profiles, contributors, contributions, pensioners and pension profiles, etc.

2.4. Reforms incorporated in the model

The model incorporates the pension reforms.

2.5. General description of the model(s)

The model is a micro simulation model and generates long-term projections of expenditures and revenues of the total social insurance budget. The model rests on five pillars:

- A Demographic Model
- A Population Status and Labour-force Participation Model
- An Income Model
- Pension Model
- Benefit Models

The model is presently designed to produce projections for old age, disability, short-term sickness, work injury, unemployment, maternity, survivor, funeral benefits and other important outlays. The most elaborate modules are those that generate disability and old-age pension projections.

For a specified set of rules for the calculation of benefits, the user steers the projections by choosing parameters that determine scenarios for the development of the population, participation in the labour force, the unemployment rate, the average wage and the degree of participation in the formal economy.

Methodological annex

Economy- wide average wage at retirement

In projection exercise for LV case the economy - wide average wage at retirement in base year equal to average contribution wage in 2016 for contributors (excluding transfers) in age 62. For further the wide average wage at retirement evolve in line with the average yearly gross wage (given in questionnaire) - 54.3% of the average yearly gross wage.

Table A1 – Economy wide average wage at retirement evolution (in thousands euro)							
	2016	2020	2030	2040	2050	2060	2070
Average yearly gross wage at retirement (current prices - `000 EUR)	7.3	9.4	18.1	29.1	44.0	64.7	92.8
Average yearly gross wage (current prices - `000 EUR)	13.5	17.4	33.3	53.6	81.2	119.2	170.9

Source: Commission Services

Pensioners vs Pensions

Only number of pensioners are used and produced in pension projection model. The difference between number of pensioners and number of pensions could depend only on difference between number of survivor pensioners (for example - number of children) and

number of survivor pensions (for example one pension is paid for 3 children in family). For calculation the total number of survivor pensions, the coefficient is used.

Pension taxation

The pension projection model not include and not produce the taxation of pensions.

Disability pension
No new reforms introduced in connection with disability pensioners.

Survivor pensions

Family members (under the age of 18) incapable of work who have been dependent on the deceased breadwinner are entitled to the survivor's pension.

Persons are be also considered incapable of work, if at the time of the death of the breadwinner or later they are day department (full-time) students at secondary, vocational or tertiary educational establishment and are under the age of 24.

Widows, who have pensions according to the old pension system, continue to receive those during the transition period.

Non-earnings related minimum pension
According the legislation, no indexation rules for minimum (non-contributory) pensions paid by state budget (in case of old age, disability and survivors), these are revised based on a Cabinet decision. Assumptions for minimum pension's indexation used in projections: until 2025 indexing with CPI, from 2026 – full wage indexation is used – in accordance with AWG methodology. (CPI was used in AR2015).

Contribution

Implicit contribution rate is assumed to be constant over the projection horizon.

Alternative pension spending decomposition

Table A3 - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - pensions							
	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70
Public pensions to GDP	-0.6	-0.6	0.1	-0.2	-0.4	-0.9	-2.6
Dependency ratio effect	0.7	2.7	2.1	1.9	1.7	-2.9	6.1
Coverage ratio effect	-0.5	-0.6	-0.2	-0.2	-0.1	0.2	-1.4
*Coverage ratio old-age**	:	:	:	:	:	:	:
*Coverage ratio early-age**	:	:	:	:	:	:	:
*Cohort effect**	-0.3	-1.4	-0.4	-1.3	-0.9	1.3	-3.1
Benefit ratio effect	-0.7	-1.5	-0.5	-0.5	-0.5	-0.2	-3.9
Labour Market/Labour intensity effect	-0.1	-0.2	-0.1	-0.2	-0.2	0.3	-0.5
Employment ratio effect	0.0	-0.1	-0.1	-0.1	-0.2	0.1	-0.4
Labour intensity effect	0.0	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	0.2	-0.1
Residual	-0.1	-1.0	-1.1	-1.2	-1.3	1.7	-2.9

Source: Commission Services

Table A4 - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - pensioners							
	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70
Public pensions to GDP	-0.6	-0.6	0.1	-0.2	-0.4	-0.9	-2.6
Dependency ratio effect	0.7	2.7	2.1	1.9	1.7	-2.9	6.1
Coverage ratio effect	-0.5	-0.6	-0.2	-0.2	-0.1	0.2	-1.4
Coverage ratio old-age*	-0.3	-0.1	0.0	0.0	0.1	-0.1	-0.5
Coverage ratio early-age*	-0.6	-0.8	-0.6	0.8	0.8	-0.6	-1.0
Cohort effect*	-0.3	-1.4	-0.4	-1.3	-0.9	1.3	-3.1
Benefit ratio effect	-0.7	-1.5	-0.5	-0.5	-0.5	-0.2	-3.9
Labour Market/Labour intensity effect	-0.1	-0.2	-0.1	-0.2	-0.2	0.3	-0.5
Employment ratio effect	0.0	-0.1	-0.1	-0.1	-0.2	0.1	-0.4
Labour intensity effect	0.0	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	0.2	-0.1
Residual	-0.1	-1.0	-1.1	-1.2	-1.3	1.7	-2.9

Source: Commission Services