



Ministry of Social Security
and Labour of the Republic
of Lithuania

Lithuanian country fiche on pension projections 2021 Ageing Report

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1. Overview of the pension system

1.1. Description

Key Features of the Pension System

Since 2004, the Lithuanian pension system consists of three pillars: a statutory mandatory PAYG public pension scheme (point based), a statutory quasi-mandatory private funded scheme (defined contributions) and a voluntary private funded pension scheme.

A. *The public pension scheme*

The social security scheme in Lithuania comprises the social insurance scheme, the state pension scheme, and the 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 employment. It was reformed in 1995 by introducing the insurance principle, extending the career requirement for full coverage, abolishing early retirement provisions and increasing the retirement age. It includes old-age, disability and widow(er)s/orphans social insurance pensions.

The financing of the pension system was changed in 2019. The financing of the general part of the 1st pillar pension was shifted to the State budget. This shift in financing was accompanied by a reform of the social insurance contributions and personal income tax (see section 3.4.)

Qualifying condition for retiring

In 2019, the statutory retirement age was 63.7 years for men and 62.8 for women. They rose to 64 years and 63 years, respectively, in 2020. 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.

In July 2004, an early retirement pension scheme was introduced for people who have 5 years to go until the retirement age and minimum 30 years of service (since 2018 the obligatory period of insurance for early-retirement pension is increased). Those who comply with the obligatory insurance period – which will be valid by reaching the statutory retirement age – will be eligible to an early retirement pension. 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 types of pension benefits (social assistance or state pensions) but it is possible to take a lump sum or pension annuity from the quasi-mandatory private funded pension scheme.

After reaching the retirement age, a person can continue to work and combine a salary with the old-age pension. In case of deferred retirement, the pension is increased by 0.67 % per month or 8% per year.

Table 1 – Qualifying condition for retiring

		2019	2030	2040	2050	2060	2070	
Qualifying condition for retiring with a full pension	Statutory retirement age - men	63.7	65	65	65	65	65	
	Statutory retirement age - women	62.8	65	65	65	65	65	
	Minimum requirements	Contributory period - men	31	35	35	35	35	35
		Retirement age - men	63.7	65	65	65	65	65
		Contributory period - women	31	35	35	35	35	35
		Retirement age - women	62.8	65	65	65	65	65
Qualifying condition for retirement <i>without</i> a full pension	Early retirement age - men	58.7	60	60	60	60	60	
	Early retirement age - women	57.8	60	60	60	60	60	
	Penalty in case of earliest retirement age	24%	24%	24%	24%	24%	24%	
	Bonus in case of late retirement per year	8%	8%	8%	8%	8%	8%	
	Minimum contributory period - men	15	15	15	15	15	15	
	Minimum contributory period - women	15	15	15	15	15	15	
	Minimum residence period - men	-	-	-	-	-	-	
	Minimum residence period - women	-	-	-	-	-	-	

Source: Ministry of Social Security and Labour

To address the dramatic ageing and to control future spending, a reform of the social insurance pension system was enacted in 2016 (Law No XII-2512, 29.06.2016) and entered into force in 2018. The main components of this reform are automatic indexing pensions to the overall wage sum, the increase of transparency through a simplified pension formula (switch from defined benefit to point system), the tightening of eligibility requirements for the “full” general pension component from 30 years in 2017 to 35 years by 2027.

Pension formula

The overall pension consists of two parts: (i) a flat-rate basic pension (also called general part of pension), and (ii) the earnings-related pension (also called individual part of pension).

Basic flat pension

The basic pension is a flat-rate contributory benefit. The full amount is paid for those with the obligatory years of contributions, with a proportionally reduced benefit available for people with shorter contribution histories. On 1 January 2020, the basic monthly pension was EUR 180.95.

According to the 2016 reform (applicable since 2018), a change in the calculation of the basic pension was implemented for all initial pensioners. The change increased the general part for pensioners with service years exceeding 30, but did not have any impact for others. Under the new rules, every additional year of contributions raises the general pension component by around $1/30 = 0.33\%$ (if eligible retirement age was reached before 2018). This value will decline to $1/35 = 0.29\%$ by 2027.

$$\text{general part of pension} = \beta \times B$$

where:

- β – ratio of persons’ insurance period to qualifying insurance period for full pension;
- B = Basic pension amount.

The requirement of insurance period for full pension will gradually rise from 30 in 2017 to 35 year by 2027.

Earnings-related pension

The new pension formula defines pension points as the ratio of a person's past social insurance contributions and the average contributions paid in the economy. This should lead to a slower and more transparent accrual of entitlements in the future. The new formula for the calculation of the earnings-related (called individual) part is:

$$\text{ERP} = V \times p$$

where:

- ERP – individual part of pension;
- V – pension points, acquired throughout the whole working career;
- p – pension point value.

As said, pension points V are calculated as the ratio of a person's past social insurance contributions and the average contributions paid in the economy for the individual part of pension. Average wage means the average gross monthly wage in the 3rd and 4th quarters two years before and the 1st and 2nd quarters of the previous year, as published by the Lithuanian Department of Statistics. If a person participates in the quasi-mandatory private scheme, the amount of pension points will be lower, as they will be calculated on lower contributions because of the transfers to the private pension funds. However, it will be so only for the years before the private pension accumulation reform of the year 2019.

The maximum number of pension points one can acquire in a given year is set at 5. A contribution ceiling was introduced in 2019 and it will gradually decrease from 120 in 2019 to 60 times monthly average wage amount till 2021. Pension points are calculated by applying income history data solely from the period after 1994 and service years from both periods – before and after 1994. Every year of service before 1995 is credited with the average yearly amount of pension points accrued during post-1994 career. All post-1994 career years are included in the formula, as compared to the best 25 in the old defined benefit system.

Since 2018, the average wage earner accrues 1 point a year theoretically though in practice it is 1.1 because of the average wage used for the calculation.

Pension indexation

A new indexation mechanism applies since 1 January 2018. The new rule couples pensions with the wage sum in the economy, i.e. the product of average wages and total employment in full-time equivalents. Both the basic pension amount and the pension point value are annually adjusted by the growth of the total wage bill in the economy, averaged over the past three years, the current year, and three forecasted years.

As a result, the change in the average pension is directly linked to the sum of contributions paid, hence accounting for the projected workforce decline.

Qualifying condition for retiring

In July 2004, an early retirement pension scheme was introduced for people who have 5 years to go until the retirement age and minimum 30 years of service (since 2018 the obligatory period of insurance for early-retirement pension is increased to 35 years by 2027). Those who comply with the obligatory insurance period – which will be valid by reaching the statutory retirement age – will be eligible to an early retirement pension. 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 types of pension benefits (social assistance or state pensions) but it is possible to take a lump sum or pension annuity from the quasi-mandatory private funded pension scheme.

Disability pensions

In 2005, a disability reform was implemented, considerably changing the disability recognition procedure. Since then, disability is linked to the capacity to work rather than merely to a health condition. The level of capacity for work is established (three-tiered, and twelve-tiered since 2018) for individuals of working age only. Although the pension formula is the same as for the old-age pension, the benefit is multiplied by a coefficient ranging from 0.5 to 1.5 according to the level of capacity for work. Upon reaching the statutory retirement age, the largest of the two benefits is paid – either the old-age pension or the disability pension

Survivors' pensions

Family members of a deceased insured person are entitled to the survivor's pensions. The widow(er) pensions were reformed in 2007. Only widow(er)s of retirement age or disabled are eligible; the pensions are flat-rate (EUR 26.13 in 2020) and are paid as a supplement to the main old-age or disability pension. Orphan benefits are linked to the pension amount of the deceased (50% of the latter's pension). The orphans' pension can be paid till age of 24 if orphan is studying full-time. In case of several orphans in the family the sum of their pension is not more than 100% amount of pension of the diseased.

All survivor pensions are indexed by the same index as old-age pensions since 2018.

There is no minimum amount of social insurance pension guaranteed by the Law. The minimum guarantees for older and disabled people are provided by pension supplements (introduced in 2019) and social assistance benefits financed from general taxation.

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

The state pension system functions independently from the social insurance pension system. The so-called state pensions system evolved after the 1995 pension reform, which tried to clear up the 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 on 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 (116 EUR per month in 2019) are also paid to mothers that have birthed 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 1.16 times 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 0.3% of GDP in 2019. The non earnings-related state pensions are included under 'other pensions', earnings-related - under 'old-age and early pensions' and all are presented separately in the block 'Special pension schemes' in Table 7.

Social assistance pensions provide a minimum income to those not eligible to social insurance old-age, disability and survivors pensions. There were no social assistance pension indexation rules and benefits were increased on an ad hoc basis. On 1 January 2018, the social assistance pension was increased by 16% after a ten-year period of stagnation. It was further increased by 12.8% in 2019 and by 6% in 2020. In 2019, the monthly amount of social assistance pension was EUR 132, calculated as 54% of minimum consumption needs in the previous year (EUR 245), which is 23.7% of the minimum monthly salary or 16% of the average net wage in 2019. This tying of the social assistance pension base with the amount of minimum consumption needs entails indexation to prices in the future.

Since 2019, recipients of statutory old-age pensions whose pensions are less than 95% of the amount of the minimum consumption needs (EUR 251 per month for 2019) are eligible to receive a pension supplement from the state budget. Supplements for small social insurance pensions – top up to the ceiling (100% of minimum consumption needs) depends on service years (full amount with obligatory service years requirement; minimum amount with 15 years minimum requirement). There were 76 900 beneficiaries in 2019 eligible to the average monthly benefit of EUR 33.

Social assistance pension expenditure to GDP comprised 0.19% in 2019 and covered about 5.4% of pensioners.

B. The quasi-mandatory private scheme

The quasi-mandatory private funded pension scheme was introduced on 1 January 2004. The second tier of the statutory pension system is voluntary: employees are free to choose whether or not to opt-in. Opting-out from the scheme once joined is not allowed before retirement (only a single-time possibility of the opting-out due to the change of legislation related to the participation conditions was offered in 2019). The procedure of auto-enrolment to the scheme was introduced in 2019. All the employees below 40 years of age are enrolled with the right to opt-out within a set period (6 months); the auto-enrolment procedure is repeated every 3 years. Older employees can join the scheme voluntarily. There are no other limitations on participation except to be insured under the social insurance pension system and aged below the legal retirement age.

The scheme before the reform of 2019 was a defined contribution scheme financed by a fraction of the social insurance contribution (2% of gross wage), participant's individual salary (2%) and a supplementary contribution paid for the participant out of the state budget (2%). Another option was to transfer only the part (2%) of social insurance contribution. Since 2019, contributions into the statutory funded pension funds comprise 3% of the participant's salary and 1.5% of the national average salary as a supplementary contribution paid for the participant out of the state budget. In order to encourage participation with the person's private means, the general tax and contribution level was reduced by 1.55 p.p. (that corresponds to 2 p.p. before the tax reform). The old scheme 2+2+2 or 2+0+0 was transformed in the reform to the scheme 4+2 with the reduced tariffs of 3+1.5 due to the tax reform. For those participants who started contributing from their salary for the first time, the minimum contribution of 1.8% paid out of their own earnings and a supplementary contribution of 0.3% paid out of the state budget will be increased to the full amount by 2023. The maximum tariff is possible if chosen from the beginning. Employers and employees can voluntarily contribute more than 3%, qualifying for a tax relief.

The contributions from the state budget are also transferred for parents that are raising children of age under three years and receiving maternity (paternity) social insurance benefits or that are covered by the state social pension insurance by state means. Contributions equal 1.5 per cent of the

country's average monthly gross wage two years earlier. If these parents are raising more than one child under 3 years of age, a fixed payment to the parents' account is credited for each child.

The members already participating in the pension accumulation were given the possibility during the 2019 transition period to suspend contributions but remain in the pension fund until the pensionable age (with the possibility to renew contributions at any time in the future) or to terminate the contract and transfer all assets to the public scheme (subject to restoration of the previously reduced pensions rights). When the assets transferred to the social insurance budget exceed the amount of the contributions, people acquire additional pension points in the public scheme. At the beginning of 2019, more than half of participants were paying additional contributions on top of the transferred social security pension contributions. After the choice made in July 2019, the number of active participants has fallen from 850 000 (58% of labour force) at the end of 2018 to 700 000 (48% of labour force) in 2019 and 645 000 (44% of labour force) in April 2020 due to COVID-19.

Participation in the funded defined contribution system reduced the part of contributions going to the social insurance budget before 2019. The social insurance pension benefit formula reflects this part of "absent" contributions by the fact that fewer pension points are accumulated under the point system. The earning-related part of pension reduction is not applicable anymore for years of accumulation since 2019 and the pension rights were restored for those who have made the decision to transfer all assets back to the public scheme. At retirement, a participant has an obligation to purchase a pension annuity from Life Insurance Company. With the new legislation in force since 2020, a single centralized public annuity provider was introduced. A lower threshold (EUR 10,000) of assets in a pension fund is required for obligatory annuity purchase and less than EUR 3000 – for a lump sum benefit. Unisex life tables are used for annuity calculation since December 2012.

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

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

C. The voluntary private 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. Participation in the system remains very low comprising a mere 5% of the labour force and savings are generally small. 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 the 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.

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

The reform included in the projections was 2018 amendments in the social insurance pension system. The main components of this reform are the automatic indexation of pensions to the overall wage sum, the switch from DB to point system, the change of calculation of the general part of pension, the increase of eligibility requirements for the "full" general pension component from 30

years in 2017 to 35 years by 2027. Those measures were reflected in the 2018 Ageing Report. But after the implementation of the reform, mainly the recalculation of all pensions in 2018 and 2019 there were additional effects (not reflected in the 2018 Ageing Report, but included in the projections now) that increased the number of old-age pensioners and average pension comparing to pure formula effect:

- The service years before 2018 were incorporated more precisely (all factual values of service years were automatically taken). Before the 2018 Law, a pension was subject to recalculation exclusively after the request of a working pensioner and only full years of service were taken into account.
- A more favourable calculation of old-age pension for the formerly disabled. The years spent in disability now are treated as normal service years when calculating the general pension. This had an impact on the starting position of the projections comparing to previous 2018 Ageing Report projections. There was a big shift in 2019 (there was an automatic recalculation for the old-age disabled) from disability to old-age as the recalculated pensions according to the old-age pension formula was higher. The starting position of the projection shows this shift in the increased number of old-age pensioners and the decreased number of old-age disability pensioners. Only the most severe disability groups will not shift to the old-age scheme as the disability formula is more favourable for them.

Pension supplements for small social insurance old-age and disability pensions were included in the projections under “Other pensions”.

With the shifting of the general pension component to the State budget in 2019, the State emerged as a third insurer in pension contributions. Changes in financing of the general pension component, social insurance contributions and the personal income tax system were implemented in the projections.

The 2019 reform of the private 2nd pillar pension scheme is included in the projections with its effect on the increased expenditure of 1st pillar pensions and lower expenditure of 2nd pillar annuities. As since 2019 no contributions from the social insurance fund are paid, the lowering effect of participation in pension accumulation will gradually disappear by about 2050.

On the other hand, the revised Law on Social Insurance Pensions of June 2016 also contains a requirement that, in the event of a decrease in the average old-age pension in relation to the country’s average wage (de facto the benefit ratio) in the previous year, the Government shall provide proposals to Parliament with the measures necessary for the increase of the income of the budget of the State Social Insurance Fund and long-term reduction of the demographic impact on the pension system. If such measures would result in average pensions not falling relative to the average wage (namely an unchanged benefit ratio), pension expenditure would be higher than in the baseline scenario (see Graph 8), representing an upside risk to the current projection (see section 3.2).

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

The constant policy scenario is applied. The basic pension amount and point value are fully aligned to the wage sum evolution (the seven-year average of the wage sum growth over the previous three, current and next three years). The historical values of the growth of the annual gross remuneration since 2016 were used for the calculation of the index in the first years of projection and the model

output “Total wage sum of contract workers” was used as a basis for the calculation of the projected pension index. Non earnings-related state pensions are not indexed as there is no indexation in the Law and few ad hoc increases for some of them were enacted in the past. Indexing to nominal wage growth is applied to the social assistance pensions, though there is no automatic indexation in the Law.

The below table summarises the indexation rules applied in the projections:

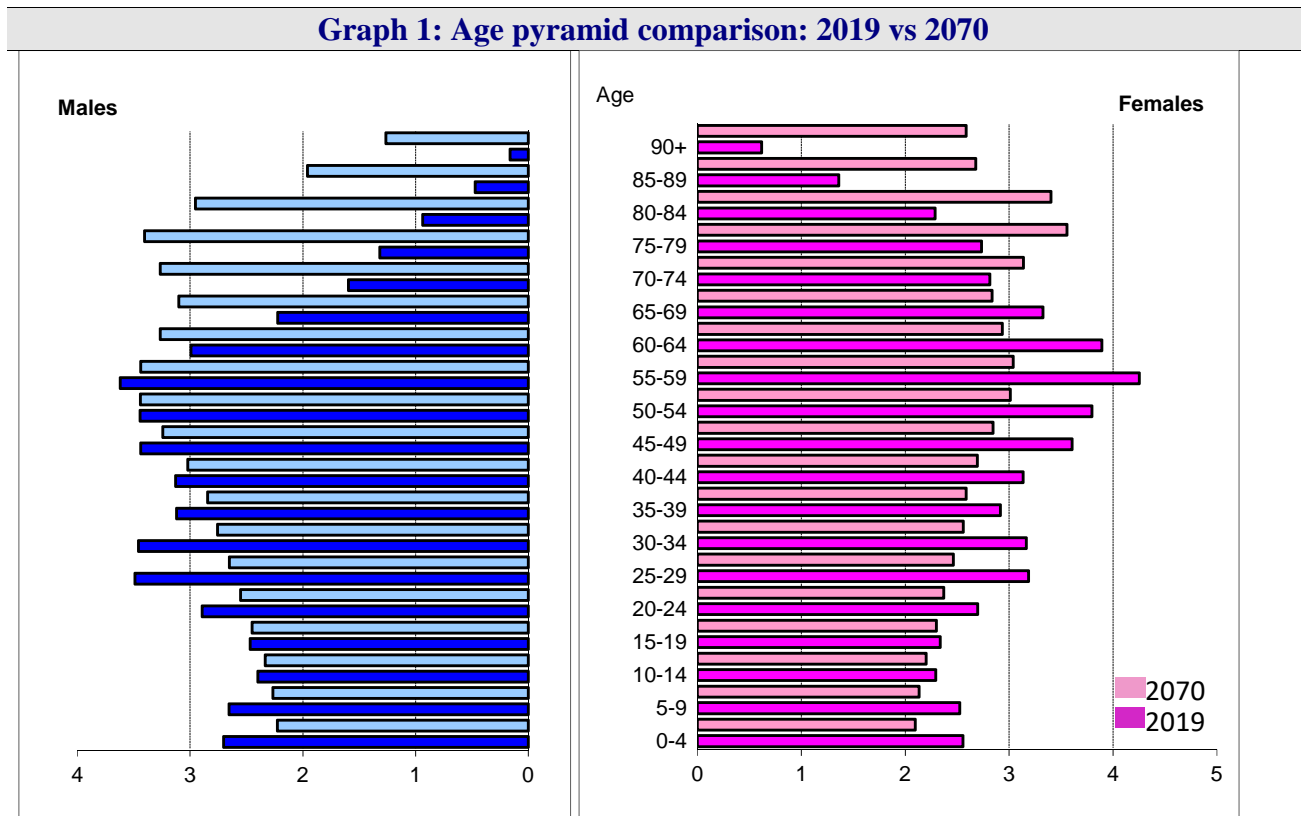
Social security pensions	
Old-age pensions	Basic pension and pension point value and widows’ pension are indexed by the seven-year average of the wage sum growth over the previous three, current and (projected) upcoming three years
Disability pensions	
Widows/widowers’ and orphans’ pensions	
State (special) pensions	
Pensions of the Republic of Lithuania of I and II degree	not indexed
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

The proportions (by age cohort and sex) of the quasi-mandatory private pension scheme participants who transferred contributions to the pension funds at the beginning of 2019 and those who have suspended contributions was used for the base year. All new entrants to the scheme transfer additional contributions; hence the proportion changes through all projection period and comes close to 100% towards the end of the projection period. The evolution of contribution tariffs is specified in the description of the private pension scheme.

2. Overview of the demographic and labour forces projections

2.1. Demographic developments

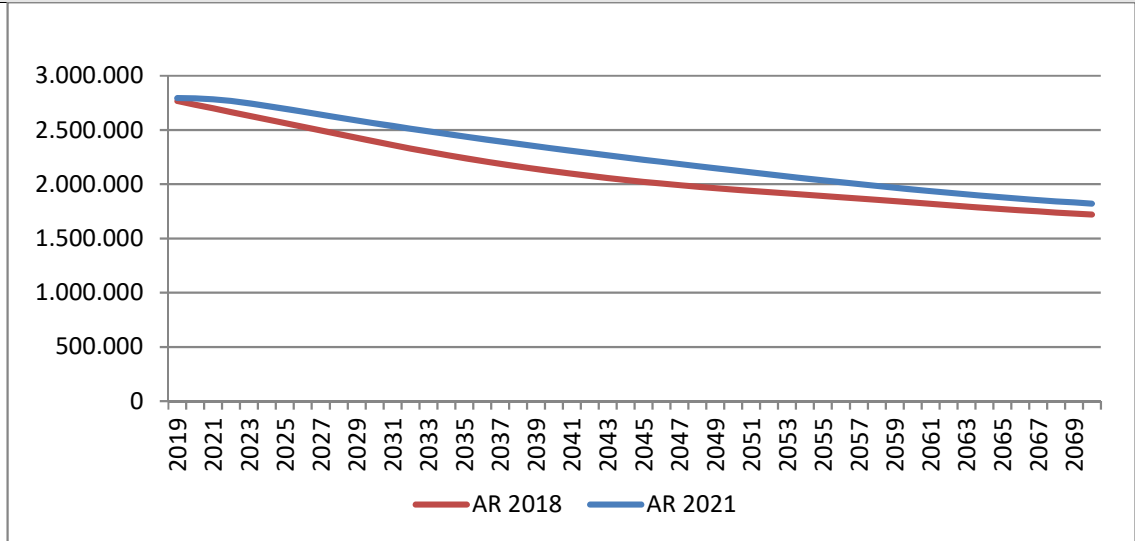
The Lithuanian population is still relatively young and most of the people are of working ages. However, a large part of population born during the baby boom is in age groups between 50-60 years and will retire during the next 5-15 years. According to the EUROPOP2019 projections by Eurostat, the total population is expected to shrink by 34.5% over the projection period and the age pyramid to flatten by 2070.



Source: EUROSTAT (Europop2019)

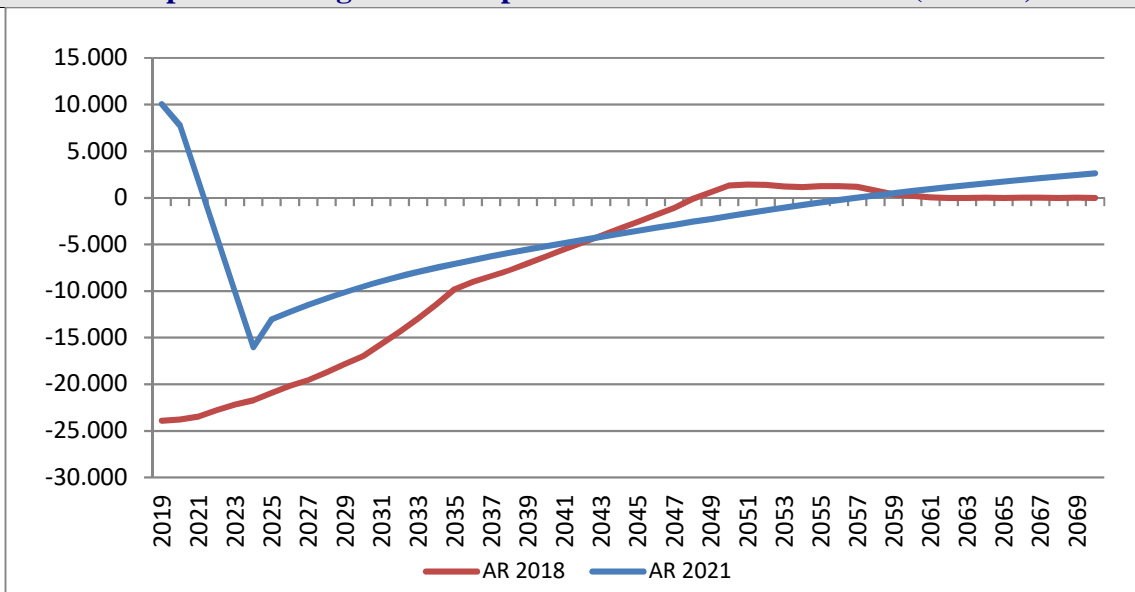
Recently there has been an increase in the number of immigrants, especially of foreigners. Furthermore, the increase of return migration (Lithuanian nationals who returned) is notable compared with the previous years. 2019 was the first year with the positive (10794 persons) net migration (Graph 3). Comparing to the ESSPOP2015 demographic projection underlying the 2018 Ageing Report projections, the new population projection is very similar, though with a less pronounced negative net migration distributed for a longer period (Graphs 2 and 3).

Graph 2: Population comparison: AR 2021 vs AR 2018 (in units)



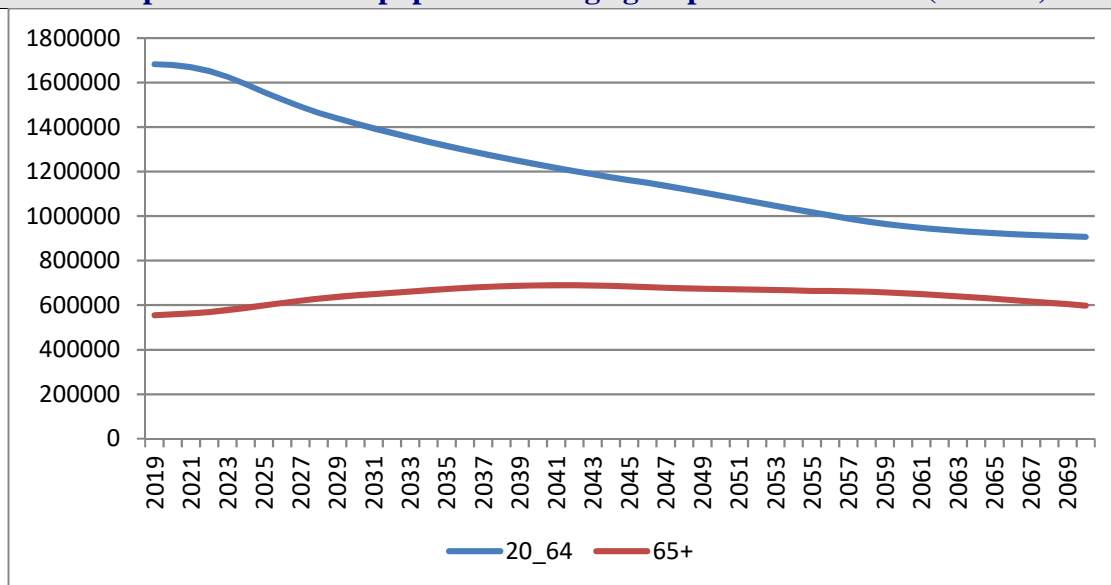
Source: EUROSTAT (Europop2019)

Graph 3: Net migration comparison: AR 2021 vs AR 2018 (in units)



Source: EUROSTAT (Europop2019)

As a result of high emigration among younger people and low fertility rates, in particular during the late-1990s and early-2000s, Lithuania is ageing at a fast pace.

Graph 4: Number of population in age groups 20-64 and 65+ (in units)

Source: EUROSTAT (Europop2019)

The decrease in younger age groups is expected to continue until around 2060. This is why the dependency ratio rises dramatically during this period and peaks at 68.6% in 2062 (Table 2) when the second baby boomers generation (persons born in 1984-1994) gets retired (Graph 4).

Thereafter, when the projected net migration becomes positive and the number of pensioners decreases as baby boomers enter retirement, the dependency rate slightly decreases to 66% in 2070.

From 2019 to 2070 life expectancy at 65 years would rise by 6.9 years for men and 5.7 years for women.

However, the increase in the dependency ratio is caused mostly by the falling number of younger people (because of projected high emigration and fertility below the natural replacement rate) rather than by increasing longevity.

Table 2 – Main demographic variables evolution

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Population (thousand)	2.794	2.563	2.329	2.128	1.952	1.821	2.794	2019	-973
Population growth rate	-0,3	-1,0	-0,9	-0,9	-0,8	-0,6	-0,1	2020	-0,3
Old-age dependency ratio (pop 65+ / pop 20-64)	32,9	45,4	55,9	61,5	68,4	66,0	68,6	2062	33,1
Old-age dependency ratio (pop 75+ / pop 20-74)	14,1	16,4	23,8	29,0	30,6	34,0	34,0	2070	20,0
Ageing of the aged (pop 80+ / pop 65+)	29,4	26,6	31,9	39,0	39,2	43,5	43,5	2070	14,1
Men - Life expectancy at birth	71,3	73,8	76,4	78,8	80,9	82,9	82,9	2070	11,6
Women - Life expectancy at birth	81,1	82,8	84,4	86,0	87,4	88,8	88,8	2070	7,7
Men - Life expectancy at 65	15,0	16,4	17,9	19,3	20,6	21,9	21,9	2070	6,9
Women - Life expectancy at 65	20,0	21,2	22,4	23,5	24,6	25,7	25,7	2070	5,7
Men - Survivor rate at 65+	68,9	75,0	79,7	83,5	86,7	89,3	89,3	2070	20,5
Women - Survivor rate at 65+	88,1	90,4	92,0	93,4	94,5	95,5	95,5	2070	7,3
Men - Survivor rate at 80+	34,5	43,5	51,3	58,5	65,0	70,7	70,7	2070	36,2
Women - Survivor rate at 80+	65,7	71,5	76,0	79,9	83,2	86,0	86,0	2070	20,3
Net migration (thousand)	10,1	-9,5	-5,2	-1,9	0,7	2,6	10,1	2019	-7,4
Net migration over population change	-1,3	0,4	0,2	0,1	0,0	-0,2	0,6	2024	1,1

Source: EUROSTAT and European Commission

The participation rates and employment rates are projected higher this round as there was a sizeable increase of the rates in recent years, especially for pre-retirement age groups. After 2023, the participation rates in age group 55-64 are increasing in line with the retirement age and stay comparatively stable thereafter. In 2019, participation among the age group 66-74 reached its highest historical level, but in the projections it decreases rapidly and stays at this low level because the increase in retirement age stops at 65 years in 2026.

Table 3 – Participation rate, employment rate and share of workers

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Labour force participation rate 20-64	83,6	84,4	85,4	85,6	86,3	86,4	86,6	2066	2,8
Employment rate of workers aged 20-64	78,3	78,5	79,4	79,7	80,4	80,4	80,6	2066	2,2
Share of workers aged 20-64 in the labour force 20-64	93,6	93,0	93,0	93,1	93,1	93,1	93,9	2024	-0,5
Labour force participation rate 20-74	74,2	69,5	69,9	70,6	69,4	71,8	74,2	2019	-2,4
Employment rate of workers aged 20-74	69,6	64,8	65,2	65,8	64,8	67,0	69,6	2019	-2,6
Share of workers aged 20-74 in the labour force 20-74	93,8	93,1	93,2	93,3	93,3	93,3	94,0	2024	-0,5
Labour force participation rate 55-64	73,8	70,2	72,4	73,1	73,4	74,5	74,5	2068	0,7
Employment rate of workers aged 55-64	68,7	65,0	67,1	67,8	68,1	69,1	69,1	2068	0,4
Share of workers aged 55-64 in the labour force 55-64	93,1	92,6	92,7	92,7	92,8	92,8	93,4	2024	-0,3
Labour force participation rate 65-74	17,5	9,9	10,4	11,1	10,9	10,7	17,5	2019	-6,7
Employment rate of workers aged 65-74	17,4	9,8	10,3	11,0	10,8	10,7	17,4	2019	-6,7
Share of workers aged 65-74 in the labour force 65-74	99,4	99,2	99,3	99,2	99,3	99,3	99,4	2024	-0,1
Median age of the labour force	43,0	43,0	44,0	43,0	43,0	43,0	44,0	2038	0,0

Source: European Commission

The average effective exit age calculated by CSM rises by 1 year for men and by 1.6 years for women. The increase for women is higher because of a more rapid increase of retirement age (4 months per year for women and 2 months per year for men). Their values are slightly lower than the statutory retirement age, taking into account the early retirement. The pattern of contributory period calculated by the model for both women and men are very similar to the exit age.

Table 4a – Exit ages and expected duration of retirement (Men)

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	63,7								
Average labour market exit age (CSM)**	63,4	64,4	64,4	64,4	64,4	64,4	64,4	2026	1,0
Contributory period	41,2	42,8	42,8	42,8	42,8	42,8	42,9	2058	1,6
Duration of retirement***	16,0	17,0	18,6	20,0	21,4	22,7	22,7	2070	6,7
Duration of retirement/contributory period	0,4	0,4	0,4	0,5	0,5	0,5	0,5	2070	0,1
Percentage of adult life spent in retirement****	26,1	26,8	28,6	30,1	31,6	32,9	32,9	2070	6,8
Early/late exit*****	0,8	0,9	0,8	0,9	0,7	0,9	1,3	2023	0,1

Table 4b – Exit ages and expected duration of retirement (Women)

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	62,4								
Average labour market exit age (CSM)**	62,1	63,8	63,8	63,8	63,8	63,8	63,8	2032	1,6
Contributory period	40,5	42,6	42,6	42,6	42,6	42,6	42,6	2061	2,1
Duration of retirement***	22,4	22,0	23,3	24,4	25,5	26,6	26,6	2070	4,2
Duration of retirement/contributory period	0,6	0,5	0,5	0,6	0,6	0,6	0,6	2070	0,1
Percentage of adult life spent in retirement****	33,7	32,5	33,7	34,8	35,8	36,8	36,8	2070	3,1
Early/late exit*****	1,0	1,0	0,8	0,9	0,8	1,1	1,4	2022	0,0

Source: European Commission

* The effective retirement age shows the age at which people on average start receiving an old-age pension benefit. It is calculated on the basis of the administrative data for 2019 (see Annex Tables A4a and A4b); ** The labour market exit age as calculated based on Labour Force Survey data for the base year and estimated by the Cohort Simulation Model thereafter; *** 'Duration of retirement' is calculated as the difference between the life expectancy at the average labour market exit age and that exit age itself; **** The 'percentage of adult life spent in retirement' is calculated as the ratio between the duration of retirement and the life expectancy minus 18 years; ***** Early/late exit is the ratio between those who retire and are below the statutory retirement age and those who retire at the statutory retirement age or above.

3. Pension projection results

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

All contributory social insurance and non-contributory state pensions (financed from the state budget) are explicitly introduced in the country's pension model (social assistance and pension supplements as well). Disability pensions paid out to people past the standard retirement age are attributed to the category "disability pensions". Projections cover the quasi-mandatory private pensions.

The Ageing Working Group definition of pension expenditure (%GDP) is identical to EUROSTAT official figures (ESSPROS) in the case of Lithuania.

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

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Eurostat total pension expenditure	9,5	8,5	7,6	7,6	7,2	7,0	6,9	6,8	6,7
Eurostat public pension expenditure (A)	9,5	8,5	7,6	7,6	7,2	7,0	6,9	6,8	6,7
Public pension expenditure (AWG: outcome) (B)	9,5	8,5	7,6	7,6	7,2	7,0	6,9	6,8	6,7
Difference Eurostat/AWG: (A)-(B)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Source: EUROSTAT and Ministry of Social Security and Labour

3.2. Overview of projection results

Gross public pension spending in proportion to GDP is projected to increase by 0.4 percentage points between 2019 and 2070 (from 7.1% to 7.5% with a peak year in 2041 when pension expenditure reaches 8.4% of GDP). This increase results from the expenditure in the old-age category.

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

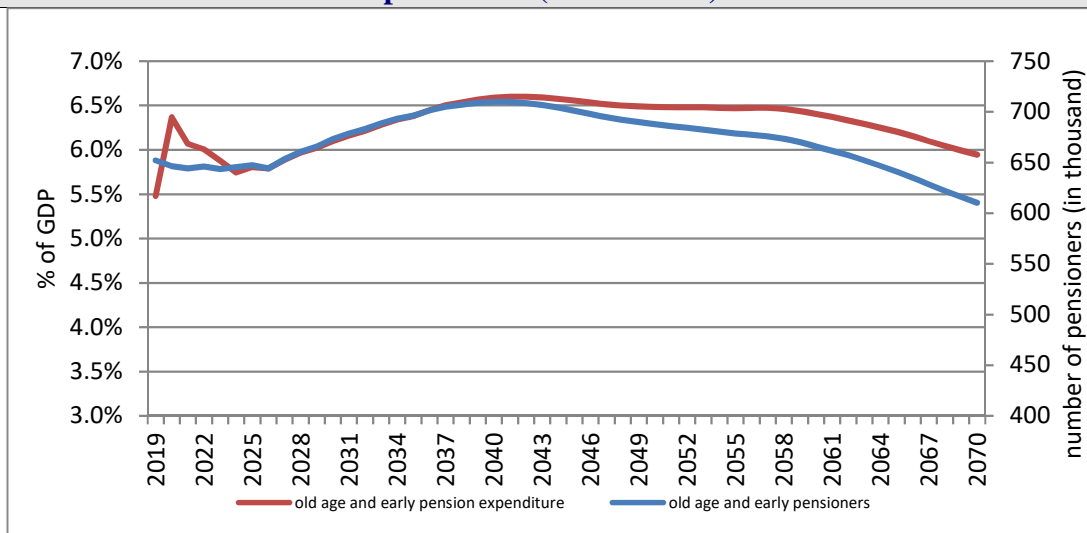
Expenditure	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Gross public pension expenditure	7,1	7,9	8,4	8,2	8,1	7,5	8,4	2041	0,4
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	0,0	0,1	0,2	0,4	0,8	1,0	1,0	2070	1,0
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	7,1	8,0	8,6	8,7	8,8	8,5	8,9	2058	1,4
Net public pension expenditure*	7,1	7,9	8,4	8,2	8,1	7,5	8,4	2041	0,4
Net total pension expenditure*	7,1	8,0	8,6	8,7	8,8	8,5	8,9	2058	1,4
Contributions	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Public pension contributions	7,2	7,2	7,4	7,4	7,2	6,9	7,5	2020	-0,2
Total pension contributions	8,1	8,3	8,6	8,6	8,5	8,2	8,6	2042	0,1

Source: Ministry of Social Security and Labour

The sharp increase in old-age pension expenditure in 2020 is caused by the high indexation coefficient resulting from very high growth of wage sum in the last years with ad hoc additional increase of basic pension index by 1.83 p.p in 2020 and the drop in GDP on the other side due to COVID-19.

The demographic situation will change after 2020 when large post-war baby-boomer cohorts will retire, low birth rate cohorts replace them and the biggest flow of emigrants will be leaving the country (-12 600 net migration per annum in 2023-2027 according to the EUROPOP2019 projections). But the pension age increase till 2026 does not allow for the situation to worsen and keeps the number of pensioners at a stable level. The peak in pension expenditure in 2041 therefore coincides with the peak in the number of pensioners (Graph 5).

Graph 5: Old-age and early pension expenditure (% of GDP) vs number of old-age and early pensioners (in thousand)

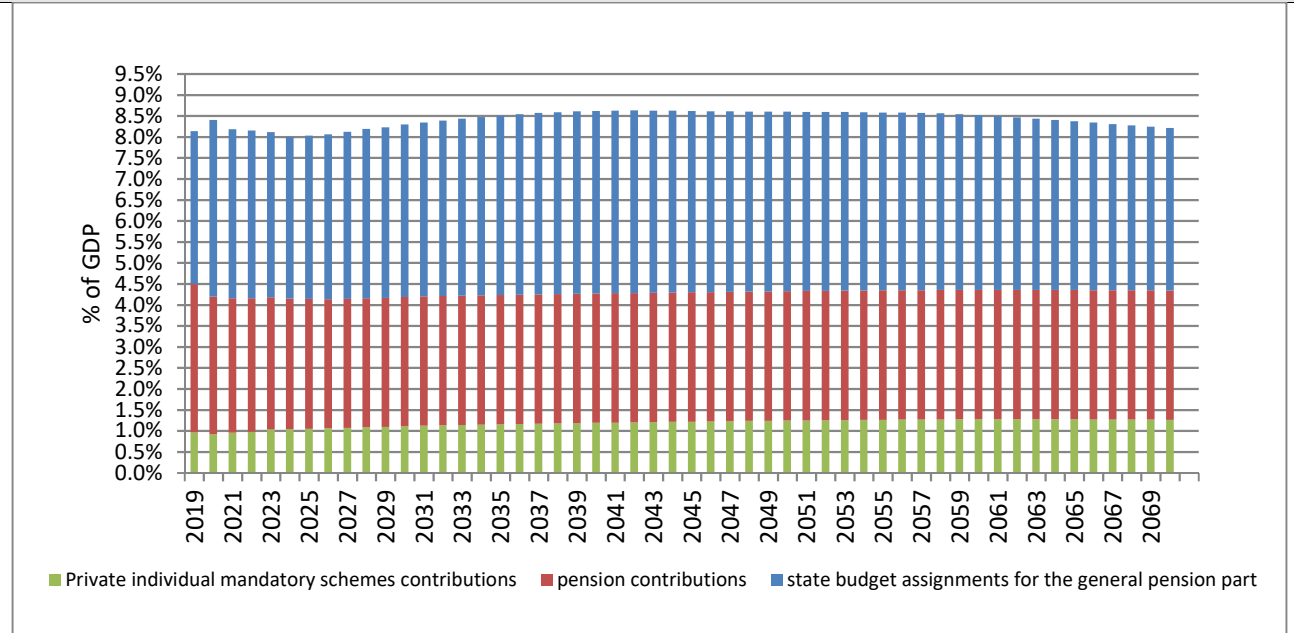


Source: Ministry of Social Security and Labour

Pension benefits (from public and quasi-mandatory private schemes) are not subject to taxation so that gross and net pension expenditure are the same in Lithuania.

The public pension revenues are projected to shrink from the current 7.2% to 6.9% of GDP in 2070. The main differences with the 2018 Ageing Report are that there are no more private pension contributions transferred from the social insurance tariff and the general pension part is financed from taxes. It is worth to analyse all 3 components of pension revenues: Social insurance pension contributions, state budget assignments for general pension part and quasi-mandatory private pension contributions (Graph 6).

Graph 6: Components of pension revenues (% of GDP)

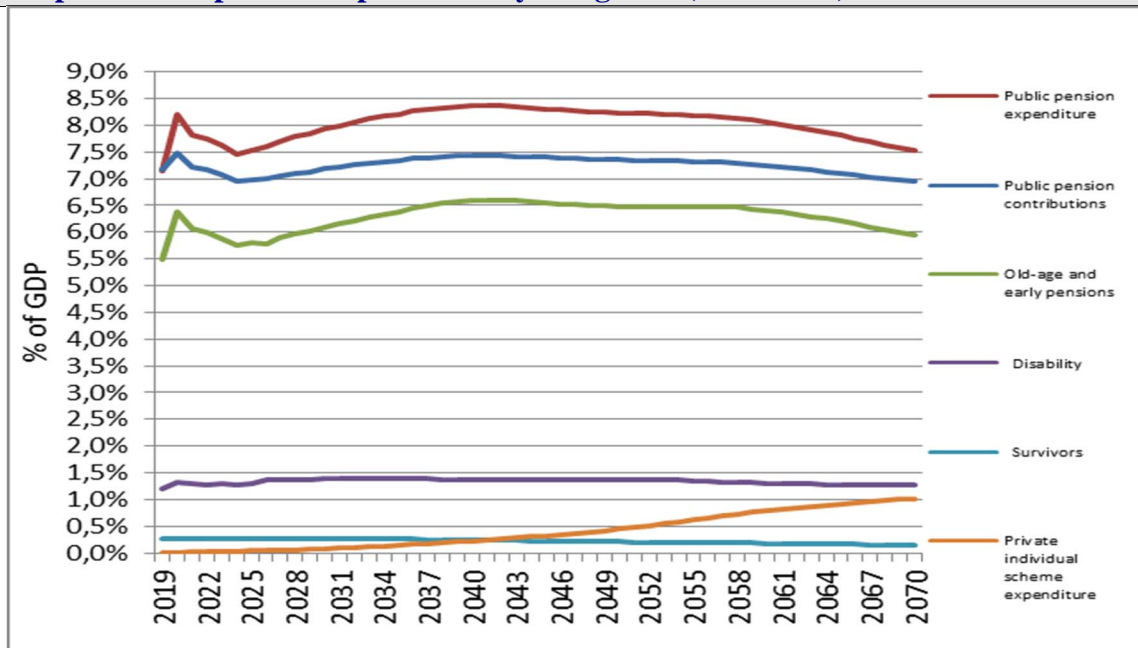


Source: Ministry of Social Security and Labour

Social insurance pension contributions are now diverted only for the individual pension part. The downward shape of the curve, visible in the beginning of the period, is caused by a gradual introduction of the contributions' ceiling from 120 to 60 times monthly average wages. The state budget assignments for the general pension part are calculated as 55.43% of all social insurance pensions in current years and this proportion was kept constant in the projections. Overall contributions to quasi-mandatory private pension scheme increase from 0.96% of GDP in 2019 to 1.26% of GDP in 2070.

The contributions from participant's salary (since 2019 the social insurance contributions to pension funds of quasi-mandatory private pension scheme are no more transferred) and state budget are now lower due to lower contribution tariff and smaller number of active pension accumulation contributors. The assumption was made that about 15% of active participants suspended their contributions in 2019 (a rough proportion, based on financial reports). This proportion lowers to zero in the long run as newcomers to the scheme do not have such an option. In the first 5 years of the transition period a lower tariff is allowed for those accumulating for the first time from their own means (new participants pay the full tariff).

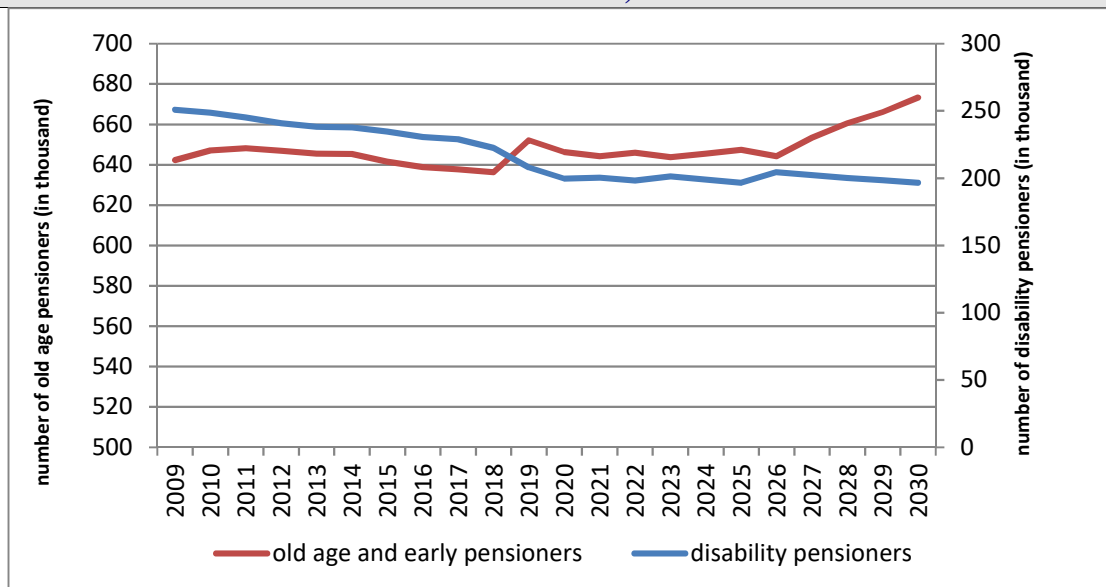
Graph 7: Total pension expenditure by categories (% of GDP)



Source: Ministry of Social Security and Labour

Pension expenditure of *earnings-related Old-age and early pensions* is projected to increase by 0.5 percentage points with a maximum of 6.6% in the peak year following the path of the public pension expenditure with the same factors behind it (described above) (Graph 7). There was a structural shift from disability to old-age in 2018-2019 when an automatic pension recalculation shifted the disability pensioners of retirement age to the old-age category as their pensions according to the new Law were higher when calculated using the old-age pension formula. This shift for most disability pensioners in old-age except for the most severe disability groups is assumed to continue in the projections (Graph 8).

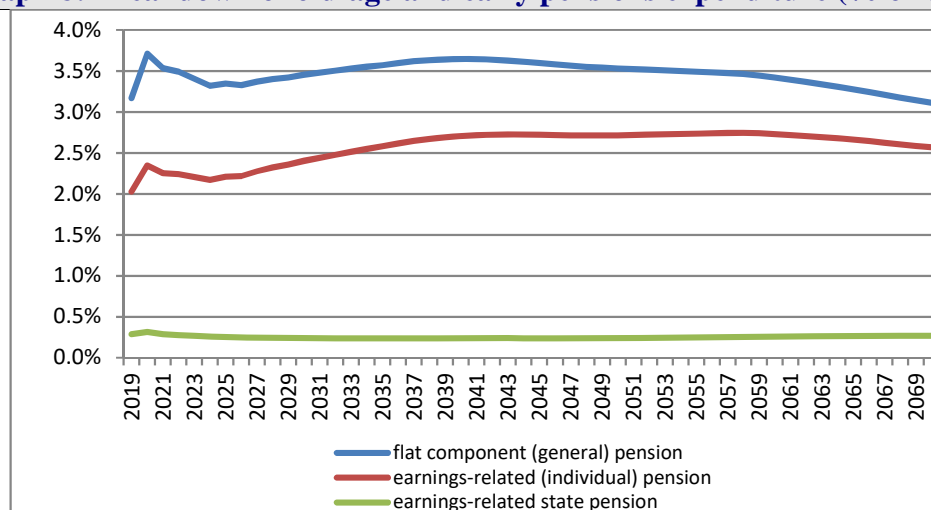
Graph 8: Structural shift from disability to old-age category (number of pensioners in thousands)



Source: Ministry of Social Security and Labour

Graph 9 shows how the flat-rate component (general) old-age pension and the earnings-related (individual) old-age pension expenditure evolve over time. In the first year the basic pension growth is higher due to higher (additional) indexation. Before 2026, the general pension part expenditure decreases faster as an increase in the number of service years does not have an impact on the amount of general pension because of the increase in the requirement of obligatory number of service years opposite to the earnings-related pension. In the second half of the projection the reform in quasi-mandatory private pension scheme has an impact on the increasing pensions for the participants in pension accumulation.

Graph 8: Breakdown of old-age and early pensions expenditure (% of GDP)



Source: Ministry of Social Security and Labour

Certain earnings-related state pensions – namely pensions for security and defence, judges and scientists – were included into the category of *earnings-related old-age and early pensions*. The pension expenditure for those state pensions comprises 0.18% GDP and increases to 0.25% in 2070. The number of beneficiaries is increasing from 25.9 to 35 thousand (the schemes have not yet matured). The reform of an increased requirement for service years from 20 to 25 is incorporated into the projections of security and defence pensions and the retirement age increase for judges and scientists. New pensions for security and defence and judges are indexed by nominal wage growth but the stock is not indexed. Pensions of scientists depend only on service years and are not indexed. All those pensions are paid alongside the social security old-age pensions.

Unlike the old-age pensions, *earnings-related disability pension* expenditure decreases at the start of the projections because of the structural shift to the old-age pension type of the disabled of retirement age. Later it 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.

The expenditure of the *survivors pensions* is very low and expected to shrink 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 the young age population and the old 'Loss of breadwinner' type pension vanishes.

Minimum pensions (non-contributory, i.e. minimum income guarantee) show Social assistance pension scheme expenditure. Most of social assistance pension 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. On the other hand the old-age social assistance pension expenditure increases along with the ageing of the population. Despite of much higher indexation of social assistance pensions they stay at a very low and stable level of about 0.2% GDP.

State pension expenditure for non-earnings-related pension categories is included under the category *Other pensions*. Such pension types as victims and deprived persons, stage artists, I and II degree pensions are calculated on the amount of the state pension base. It is not indexed. The non-earnings-related state pension expenditure decreases from 0.11% to 0.02% of GDP till 2070. The beneficiaries of the pensions of victims and deprived persons are dying and the pensions for the persons with distinguished achievements for the state are progressively vanishing.

The new type of minimum income guaranty pension – a pension supplement to small social insurance old-age and disability pensions was included under the category *Other pensions*. The expenditure is negligible and comprises 0.07% GDP in 2019 and 0.08% in 2070 despite of wage indexation used.

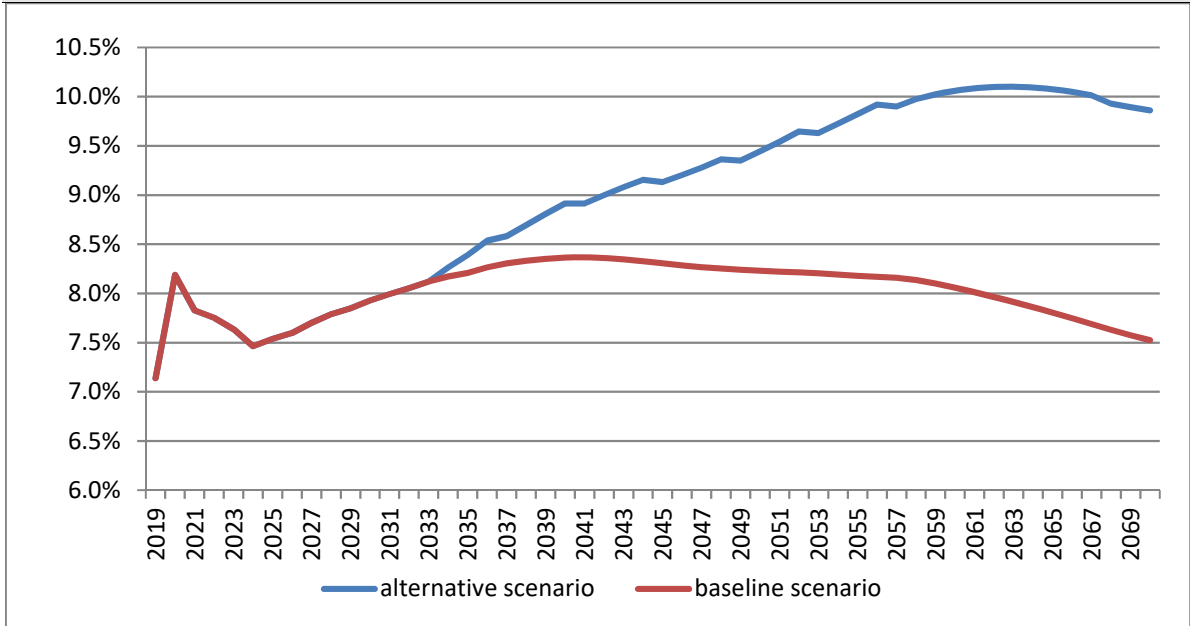
Table 7 - Projected gross public pension spending by scheme (% of GDP)

Pension scheme	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Total public pensions	7,1	7,9	8,4	8,2	8,1	7,5	8,4	2041	0,4
Old-age and early pensions	5,5	6,1	6,6	6,5	6,5	6,0	6,6	2042	0,5
<i>Flat component</i>	3,2	3,5	3,6	3,5	3,4	3,1	3,7	2020	-0,1
<i>Earnings-related</i>	2,3	2,6	2,9	3,0	3,0	2,8	3,0	2058	0,5
<i>Minimum pensions (non-contributory) i.e. minimum income guarantee for people above 65</i>	0,0	0,0	0,0	0,0	0,1	0,1	0,1	2063	0,0
Disability pensions	1,2	1,4	1,4	1,4	1,3	1,3	1,4	2034	0,1
Survivors' pensions	0,3	0,3	0,2	0,2	0,2	0,1	0,3	2020	-0,1
Other pensions	0,2	0,1	0,1	0,1	0,1	0,1	0,2	2020	-0,1
Special pension schemes	2019	2030	2040	2050	2060	2070	Peak value	Peak year	change 2019-2070
Earnings-related state pensions (security and defence, judges and scientists)	0,2	0,2	0,2	0,2	0,2	0,3	0,3	2070	0,1
Non earnings-related (victims and deprived persons, stage artists, I and II degree)	0,1	0,1	0,0	0,0	0,0	0,0	0,1	2019	-0,1

Source: Ministry of Social Security and Labour

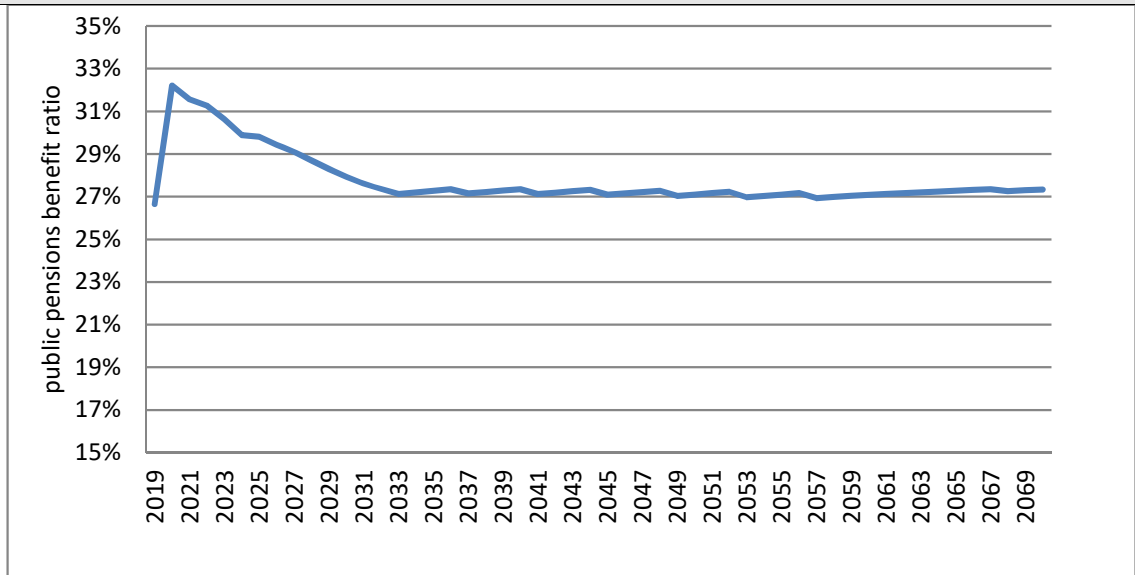
As noted in section 1.2, according to the revised Social Insurance Pension Law of June 2016 the Government shall provide a proposal with necessary measures in the case where the benefit ratio decreased the previous year. Assuming valorisation and indexation of pensions to average wage growth (with every four year inclusion of wage bill growth) instead of wage bill growth in the period from 2034 to 2058 and full wage growth thereafter (with wage bill indexation in 2068) would result in the public benefit ratio remaining at the 2019 value of around 27% (Graph 9). This scenario results in higher pension expenditure of 9.8% of GDP in 2070 (Graph 8) vis-à-vis the current baseline projection of 7.5% of GDP (see Tables 6-7), representing a sizeable upside risk.

Graph 8: Public pension expenditure under the assumption of partial wage indexation from 2034 to 2070 (% of GDP)



Source: Ministry of Social Security and Labour

Graph 9: Public Benefit ratio under the assumption of partial wage indexation from 2034 to 2070



Source: Ministry of Social Security and Labour

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

Figure 1 – Disaggregation of public pension expenditure

$$\frac{\text{pension expenditure}}{\text{GDP}} = \overset{\text{dependency ratio}}{\downarrow} \frac{\text{population } 65+}{\text{population } 20-64} \times \overset{\text{coverage ratio}}{\downarrow} \frac{\text{number of pensioners}}{\text{population } 65+} \times \overset{\text{benefit ratio}}{\downarrow} \frac{\text{average pension income}}{\frac{\text{GDP}}{\text{hours worked } 20-74}} \times \overset{\text{labour market effect}}{\downarrow} \frac{\text{population } 20-64}{\text{hours worked } 20-74} \quad [1]$$

$$\frac{\text{number of pensioners}}{\text{population } 65+} = \overset{\text{coverage ratio old-age}}{\downarrow} \frac{\text{number of pensioners } 65+}{\text{population } 65+} + \left(\overset{\text{coverage ratio early-age}}{\downarrow} \frac{\text{number of pensioners } \leq 65}{\text{population } 50-64} \times \overset{\text{cohort effect}}{\downarrow} \frac{\text{population } 50-64}{\text{population } 65+} \right) \quad [2]$$

$$\frac{\text{population } 20-64}{\text{hours worked } 20-74} = \overset{1/\text{employment rate}}{\downarrow} \frac{\text{population } 20-64}{\text{employed people } 20-64} \times \overset{1/\text{labour intensity}}{\downarrow} \frac{\text{employed people } 20-64}{\text{hours worked by people } 20-64} \times \overset{1/\text{career shift}}{\downarrow} \frac{\text{hours worked by people } 20-64}{\text{hours worked by people } 20-74} \quad [3]$$

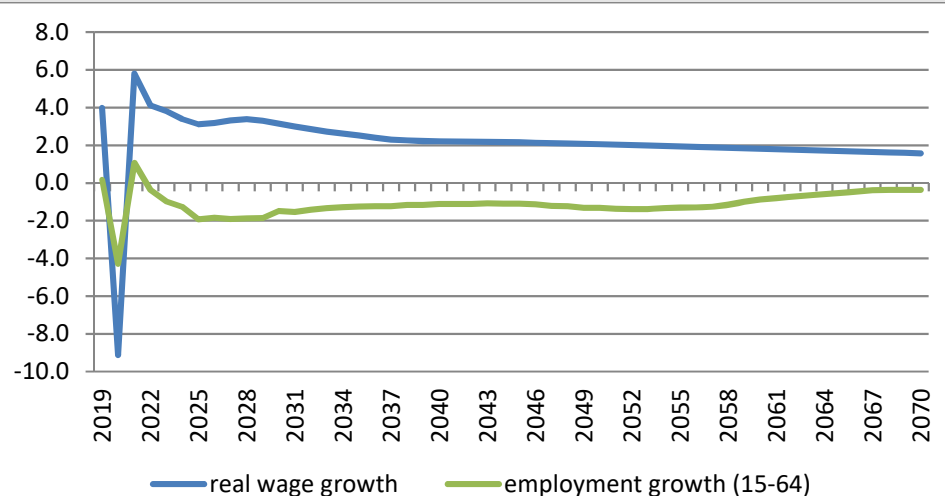
Source: European Commission

Based on the decomposition shown in Figure 1 and reported in Table 8, the main driving force behind the change in the ratio of public pension expenditure to GDP between 2019 and 2070 is the *dependency ratio* that pushes up pension expenditure by 5.9 p.p.. The effect of a rise in the dependency ratio factor is influenced not only by specific features of cohorts retiring but also by a negative net migration (especially of young employees). The improving picture in the last decades could be explained by projected large negative net migration flows in the years 2022-2040. This decreases the number of people that could become old-age pensioners in the years thereafter. Another no less important reason is the gradual disappearance of a large baby-boom generation of pensioners. Nevertheless, in the last decade the dependency ratio serves as a factor pushing the expenditure down illustrating the outflow of the second baby boomers generation.

The *coverage ratio* has an offsetting effect, especially in the first decade. The main reason is the postponement of the retirement age.

The comparatively stable pension expenditure as a share of GDP is largely driven by the decline in the *benefit ratio* over almost the entire horizon (see Graph 11) due to the valorisation and indexation of pensions to the wage bill, which is growing at a slower pace than wage growth in most years due to the projected reduction of the working-age population and employment (Graph 10). In the last decade the projection of employment improves and pensions are no more lowered due to participation in the private pension scheme.

Graph 10: Real wage growth and employment growth (15-64) (in %)



Source: European Commission

The *labour market* factor is small. It helps mitigate the pension expenditure growth mainly due to higher employment which increases the GDP. As the overall employment growth is negative between 2020 and 2060, it lowers the pension index as well as pension expenditure in that period.

Table 8 – Factors behind the change in public pension expenditure between 2019 and 2070 (in percentage points of GDP) – pensioners

	2019-30	2030-40	2040-50	2050-60	2060-70	2019-70
Public pensions to GDP	0,8	0,4	-0,1	-0,2	-0,5	0,4
Dependency ratio effect	2,7	1,8	0,8	0,9	-0,3	5,9
Coverage ratio effect*	-1,1	-0,4	-0,2	-0,2	0,0	-1,9
<i>Coverage ratio old-age</i>	-0,3	0,0	0,0	0,0	0,0	-0,4
<i>Coverage ratio early-age</i>	-0,7	-0,4	-0,4	0,3	-0,4	-1,5
<i>Cohort effect</i>	-2,1	-1,4	-0,5	-1,6	0,5	-5,1
Benefit ratio effect	-0,6	-0,7	-0,7	-0,7	-0,3	-2,9
Labour market effect	0,0	-0,1	0,0	-0,1	0,1	-0,2
<i>Employment ratio effect</i>	0,0	-0,1	0,0	-0,1	0,0	-0,3
<i>Labour intensity effect</i>	0,0	0,0	0,0	0,0	0,0	0,0
<i>Career shift effect</i>	0,0	0,0	0,0	0,0	0,1	0,0
Residual	-0,3	-0,1	0,0	0,0	0,0	-0,5

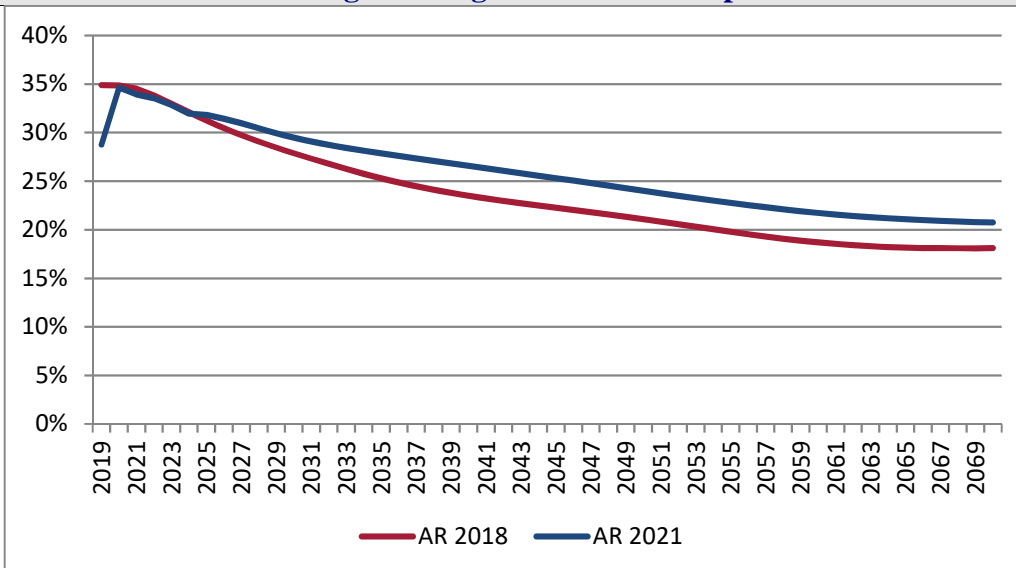
Source: European Commission, Ministry of Social Security and Labour

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

The old-age earnings-related public benefit ratio (Graph 11) is rising at first (from 26.7% in 2019 to 34.6% in 2020) because of the nominal wage growth assumption (-8.2% in 2020). Later on, the increasing eligibility requirements for the “full” general pension component from 31 years in 2019 to 35 years by 2027 and the lowering pension index due to a sharp decrease in employment will push the replacement rate of social insurance old-age pensions down, offsetting the result of a higher contribution period with the increase of the statutory retirement age till year 2027. The AMECO wage series (they do not include the tax reform) were used to calculate benefit ratios instead of national figures for the sake of consistency with the 2018 projection round. The

difference in the benefit ratio from the previous projection round is visible – it is higher mostly because of better employment performance and quasi-mandatory private funded scheme reform.

Graph 11: Public scheme old-age earnings-related BR comparison: AR 2018 vs AR2021

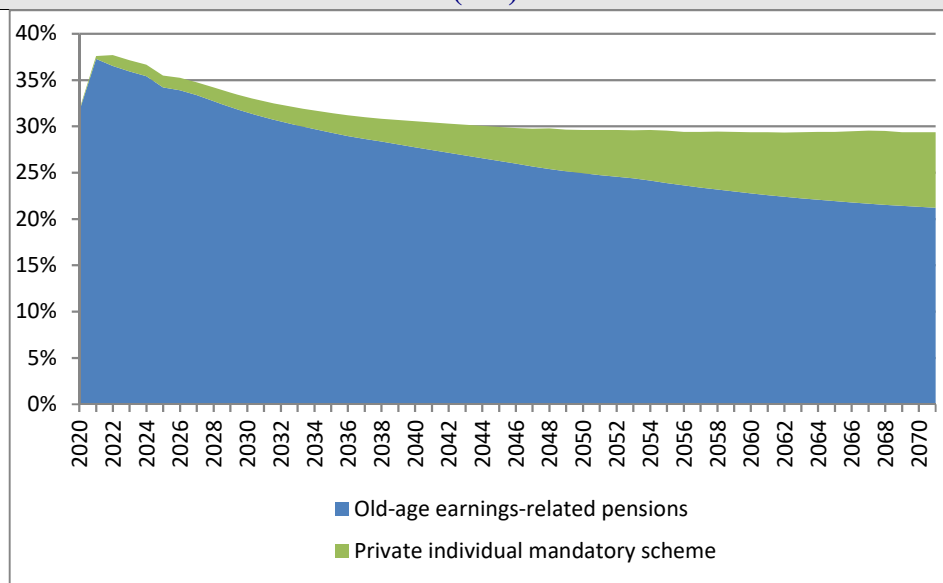


Source: Ministry of Social Security and Labour

The public old-age earnings-related pension replacement rate (RR) will be complemented by a steadily rising replacement rate (from 1% to 8%) from the quasi-mandatory private pension scheme for 67% of new pensioners at the end of the projection period (Graph 16).

The public old-age earnings-related pension benefit ratio, relating average public pension benefits to the economy-wide average wage, follows the pattern of the RR as new pensions and all pensions are indexed by the same index. The RR denominator– the average wage at retirement – is slightly lower than the economy-wide average wage used for the benefit ratio.

Graph 12: Public scheme old-age earnings-related and private individual mandatory scheme (RR)



Source: Ministry of Social Security and Labour

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

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public scheme (BR)	27%	28%	26%	24%	22%	21%	-6%
Coverage	100,0	100,0	100,0	100,0	100,0	100,0	0,0
Public scheme: old-age earnings related (BR)	29%	29%	27%	24%	22%	21%	-8%
Public scheme: old-age earnings related (RR)	32%	31%	27%	25%	23%	21%	-10%
Coverage	71,1	72,9	76,1	77,5	79,3	79,3	8,2
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	0%	1%	1%	2%	3%	4%	4%
Private individual schemes (RR)	0%	2%	3%	5%	7%	8%	8%
Coverage	8,9	29,9	49,7	60,7	66,2	66,6	57,7
Total benefit ratio	27%	28%	26%	25%	24%	24%	-3%
Total replacement rate	32%	32%	30%	29%	28%	28%	-4%

Source: Ministry of Social Security and Labour

(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.)

In the first decade, the number of pensioners is stable due to the increase in the legal retirement age. Thereafter, it increases before it starts declining in the second half of the projection period as described in Chapters 2.1 and 3.1. Employment decreases dramatically (because of negative net migration till 2060); however, the number of the employed decreases at a slower pace in the last decade. This increases the System dependency ratio to more than 100 percent in 2060, with a slight improvement in the last decade. The observed slower increase in the system dependency ratio comparing to old-age dependency ratio is the result of the increase of the retirement age till 2026 and improved employment rate. This results in an improving of the system's efficiency till 2040, which remains at a constant level afterwards.

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

	2019	2030	2040	2050	2060	2070	change 2019- 2070
Number of pensioners (thousand) (I)	900	906	917	873	825	756	-144
Employment (thousand) (II)	1376	1155	1019	907	804	758	-617
Pension system dependency ratio (SDR) (I)/(II)	65,4	78,5	90,0	96,3	102,6	99,7	34,3
Number of people aged 65+ (thousand) (III)	554	644	689	672	654	598	44
Working age population 20-64 (thousand) (IV)	1683	1417	1232	1092	956	907	-776
Old-age dependency ratio (OADR) (III)/(IV)	32,9	45,4	55,9	61,5	68,4	66,0	33,1
System efficiency (SDR/OADR)	2,0	1,7	1,6	1,6	1,5	1,5	-0,5

Source: European Commission

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. The ratio is higher than 100 in most cases due to 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-resident pensioners increase this ratio above 100 as well.

The ratio of pensioners to the inactive population in the age group 55-59 between 2019 and 2030 is decreasing. It is mainly affected by a legal postponement of the retirement age which postpones the early retirement later as well. So early old-age pensioners in this age group completely disappear until 2020 and the number of the disability pensioners slightly increases as a reaction to that. The upward trend of the ratio since 2030 is a result of a shrinking inactive population as compared to the entire population of that age group because of a very sharp increase in employment rate (from 74 to 78 percent), while the number of disability pensioners is calculated using a constant probability to be disabled at a specific age (this probability is thus increasing with a shifting retirement age to older cohorts).

The stable decrease of the ratio in the age group 60-64 between 2019 and 2030 is caused by the increase of the statutory retirement age. After it reaches 65 in 2026, the ratio becomes close to 100 with a slight increase after as increase of employment in this group is projected. 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 non-disabled population. The coverage ratio for older age groups is always not less than 100 percent as the model covers the beneficiaries of social assistance pension scheme, who have not acquired enough their own pension rights and non-residents.

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

	2019	2030	2040	2050	2060	2070
Age group -54	16.8	19.2	20.1	17.8	17.2	16.8
Age group 55-59	125.5	119.1	131.7	136.2	144.6	145.3
Age group 60-64	170.8	94.4	99.8	101.6	103.2	104.2
Age group 65-69	147.6	125.2	127.2	128.8	128.5	129.1
Age group 70-74	128.5	110.6	109.9	110.2	110.3	110.4
Age group 75+	106.8	104.5	104.7	104.3	104.1	104.1

Source: European Commission

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

	2019	2030	2040	2050	2060	2070
Age group -54	6,5	7,5	7,5	6,7	6,5	6,3
Age group 55-59	20,7	22,4	21,7	21,8	21,9	21,9
Age group 60-64	63,7	38,4	38,8	38,2	38,1	38,0
Age group 65-69	112,0	105,3	105,4	105,4	105,5	105,5
Age group 70-74	116,8	107,2	106,1	106,3	106,3	106,3
Age group 75+	106,8	104,5	104,7	104,3	104,1	104,1

Source: European Commission

The same evolution of the female ratio can be seen in Tables 12a and 12b.

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

	2019	2030	2040	2050	2060	2070
Age group -54	15,1	16,6	17,0	14,9	14,2	13,8
Age group 55-59	122,6	107,6	107,1	108,0	118,0	118,3
Age group 60-64	169,6	84,1	88,5	88,2	88,7	88,6
Age group 65-69	142,0	120,4	122,9	123,2	122,9	123,5
Age group 70-74	125,0	108,3	108,4	108,5	108,5	108,4
Age group 75+	107,1	104,1	104,3	103,9	103,7	103,8

Source: European Commission

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

	2019	2030	2040	2050	2060	2070
Age group -54	6,0	6,8	6,6	5,9	5,6	5,4
Age group 55-59	18,6	18,3	18,2	17,8	17,9	17,8
Age group 60-64	68,6	34,4	34,8	34,5	34,2	33,6
Age group 65-69	111,0	104,4	104,5	104,5	104,5	104,5
Age group 70-74	115,3	106,1	105,3	105,4	105,3	105,3
Age group 75+	107,1	104,1	104,3	103,9	103,7	103,8

Source: European Commission

The evolution of the number of new pensioners reflects two effects: size of cohorts retiring and the increase of retirement age. While the large retiring cohorts (with a peak in 2027) increase the number of new pensioners, the postponement of the retirement age, offsets this effect slightly. After 2027, the number of new pensioners continuously decreases due to demographic reasons explained above. The evolution of the projected new pension expenditure is directly affected by the evolution of the number of new pensioners, the pension indexation coefficient, stricter eligibility conditions and the maturation of the second pillar scheme with the 2019 reform coming into effect.

New public pension expenditure for the point pension system can be checked by the factors in Tables 13a, 13b and 13c. This includes only the earnings-related part of the pension, which represents about 40% of the total pension.

The number of average pension points at retirement is affected by two factors – the increasing contributory period till 2026 as a result of the increased statutory retirement age and decreasing accrual rate for those who contribute to quasi-mandatory private pension scheme. The number of average pension points accumulated per year is slightly reduced in proportion to the size of the contributions transferred to a private pension fund only for the years of accumulation till 2019. Around 2050 the number of average pension points accumulated per year start increasing again due to an increasing number of years of participation in pension accumulation since 2019. This could be seen from the gradual increase of the number of average pension points accumulated per year as of 2050).

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	31,0	55,7	65,9	85,3	101,9	112,3
I. Number of new pensions (1000)	34,0	36,7	31,7	29,9	25,8	21,0
II. Point value (EUR/month)	3,5	5,5	7,6	10,2	13,3	17,9
III. Average accrual rate (points/year) (IV/V)	1,06	1,08	1,07	1,10	1,16	1,17
IV. Total pension points at retirement	43,1	45,9	45,6	46,8	49,6	49,9
V. Average contributory period (years)	40,7	42,7	42,7	42,7	42,7	42,7
VI. Sustainability/adjustment factors	1,0	1,0	1,0	1,0	1,0	1,0
VII. Correction coefficient	1,0	1,0	1,0	1,0	1,0	1,0
VIII. Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0

Source: Ministry of Social Security and Labour

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	14,3	26,7	33,3	46,3	56,1	62,2
I. Number of new pensions (1000)	14,3	16,2	14,8	15,1	13,2	10,8
II. Point value (EUR/month)	3,5	5,5	7,6	10,2	13,3	17,9
III. Average accrual rate (points/year) (IV/V)	1,15	1,17	1,16	1,18	1,25	1,26
IV. Total pension points at retirement	47,3	50,0	49,4	50,4	53,5	53,7
V. Average contributory period (years)	41,2	42,8	42,8	42,8	42,8	42,8
VI. Sustainability/adjustment factors	1,0	1,0	1,0	1,0	1,0	1,0
VII. Correction coefficient	1,0	1,0	1,0	1,0	1,0	1,0
VIII. Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0

Source: Ministry of Social Security and Labour

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 in the beginning because of lower pension age and lower income for females.

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	16,7	29,0	32,5	39,0	45,8	50,1
I. Number of new pensions (1000)	19,7	20,5	16,9	14,9	12,6	10,2
II. Point value (EUR/month)	3,5	5,5	7,6	10,2	13,3	17,9
III. Average accrual rate (points/year) (IV/V)	1,00	1,00	0,99	1,01	1,07	1,08
IV. Total pension points at retirement	40,1	42,7	42,3	43,1	45,6	45,9
V. Average contributory period (years)	40,3	42,6	42,6	42,6	42,6	42,6
VI. Sustainability/adjustment factors	1,0	1,0	1,0	1,0	1,0	1,0
VII. Correction coefficient	1,0	1,0	1,0	1,0	1,0	1,0
VIII. Average number of months paid the first year	6,0	6,0	6,0	6,0	6,0	6,0

Source: Ministry of Social Security and Labour

3.4. Financing of the pension system

The financing of the pension system was changed in 2019. The financing of the general part of the 1st pillar pension was shifted to the State budget. This shift in financing was accompanied by a reform of the social insurance contributions and personal income tax. The burden of payment of the larger part, i.e. 28.9% of social insurance contributions paid by employers, was transferred to employees. In turn, employers were obliged to recalculate the gross wage for employees by increasing it by a factor of 1.289. The social insurance contribution and tax tariffs were recalculated using the new (higher) base. The pension insurance tariff was decreased whilst the income tax was increased. The individual pension part is financed out of contributions: 0% of gross wage is paid by the employer and 8.72% by the employee. Self-employed people also have an obligation to insure themselves for the social insurance pension with the contribution rate of 8.72%. There are several population groups for which contributions for the full pension calculated on the minimum wage are covered by the state budget, namely people taking care of children below the age of three or of disabled people, individuals having the status of an artist.

State pensions and social assistance pensions and pension supplement are financed from the state budget. There are no more transfers to the quasi-mandatory private funded pension scheme starting from 2019.

Table 14 – Financing of the system

	Public employees	Private employees	Self-employed
Contribution base	gross salary		50% of declared earnings
Contribution rate/contribution			
Employer	0,0%	0,0%	8.72% - based on 50% of declared earnings
Employee	8,7%	8,7%	
State*	-	-	-
Other revenues*	State provides funds from the national budget to cover the general pension part of public pension scheme	State provides funds from the national budget to cover the general pension part of public pension scheme	State provides funds from the national budget to cover the general pension part of public pension scheme
Maximum contribution	contribution ceiling from 120 in 2019 to 60 times monthly average wage amount till 2021	contribution ceiling from 120 in 2019 to 60 times monthly average wage amount till 2021	contribution ceiling 43 times monthly average wage amount of previous year
Minimum contribution	12 monthly minimum wages	12 monthly minimum wages	-

*only legislated contributions are reported

Source: Ministry of Social Security and Labour

The number of persons employed decreases during the entire projection period. The largest decrease can be seen in the years till 2060 because of high projected emigration. Later on, the decrease slows down as the positive net migration is projected and the employment rate increases. The rate of contributors to employed remains stable over the projection period. The rate of contributors to employment (0.9) is below 1 due to different data sources used: for the employment national statistics data and for the number of contributors' data from the Social insurance fund board database.

Table 15 – Revenue from contribution (million), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public pension contributions (%GDP)	7,2	7,2	7,4	7,4	7,2	6,9	-0,2
<i>Employer contributions</i>	:	:	:	:	:	:	:
<i>Employee contributions</i>	3,5	3,1	3,1	3,1	3,1	3,1	-0,4
<i>State contribution*</i>	3,6	4,1	4,3	4,3	4,2	3,9	0,2
<i>Other revenues*</i>	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Number of contributors (I) (1000)	1263	1058	934	831	737	694	-568
Employment (II) (1000)	1376	1155	1019	907	804	758	-617
(I) / (II)	0,92	0,92	0,92	0,92	0,92	0,92	0,0

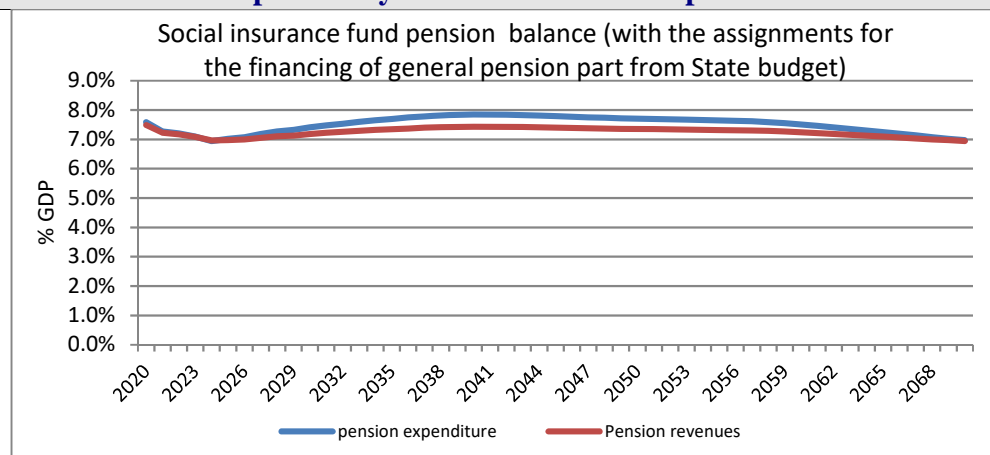
*only legislated contributions are reported

Source: Ministry of Social Security and Labour

The social insurance pension system is balanced at the start of the projections (until 2026). A minor system deficit (maximum 0.4% of GDP) occurs in the period 2027-2069 because of a very high pension index (8.1%) and ad hoc indexation (+1.83%) of basic pension in 2020 (on top of automatic indexation) compared to a very low wage bill growth assumed in 2020 (-12.5%) and the stop in the increase of the statutory retirement age since 2026. The Law states that the calculated pension index is applied unless it generates a pension system deficit. If this would be the case, central pension indicators – the amount of basic pension and the pension point value – are left unchanged. This is how the balancing mechanism (introduced in 2018) works in principle. Therefore, this projected gap should be covered by suspending indexation. However, what seems more likely is that alternative balancing measures would be implemented under such circumstances, e.g. a further increase of the pension age based on the increased longevity.

It was decided to depart in the projections from this stipulation in the Law and to present a baseline scenario not fully consistent with the balancing rule, also because it is not easy to implement into the model. Moreover, if the balancing mechanism would indeed be applied in accordance to the Law, the suspension of indexation would mean benefit ratios fall, requiring the government to put forward counteracting, expenditure increasing measures (see Section 3.2). Keeping both elements outside of the baseline projections thus appears a balanced approach.

Graph 13: Social insurance pension system revenues and expenditure in % of GDP (baseline)



Source: Ministry of Social Security and Labour

3.5. Pension assets and return on assets

Since its conception in 2005, the private individual mandatory scheme accumulated assets representing 8% of GDP in 2019. These would grow to almost 30% of GDP in 2070, with an assumed average nominal rate of return of 2.8% in 2019-2070 (in line with the commonly-agreed long-term interest rates assumptions). Pension assets are managed by 4 assets managing companies and one life assurance company. Every manager is obliged by law to have 8 pension funds. They are 7 life cycle target date funds and 1 assets preservation fund for those who are reached the retirement age and receiving programmed withdrawals from the fund. It is up to the manager to decide on the specific investment strategy of the fund, but the general requirements are in the law. All investment strategies must be approved by the national bank.

Table 16 – Pension assets and reserves (% GDP) and return on assets (%)

	2019	2030	2040	2050	2060	2070	average 2019- 2070
Private individual mandatory schemes							
assets and reserves (%GDP)	8,0	12,6	17,2	22,6	26,8	29,3	19,4
average return (%)	0,3%	1,3%	2,7%	4,0%	4,0%	4,0%	2,8%

Source: Ministry of Social Security and Labour

3.6. Sensitivity analysis

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

A *higher net migration* for negative net migration means a lower number of the employed. It decreases the pension expenditure (due to lower pension index) and GDP till 2060. The decrease of the pension index is slightly higher due to postponement (the effect of 7 years' average) comparing to GDP decrease. The number of pensioners is not affected until 2040 as most of emigrants are from younger age groups. Afterwards, the number of pensioners' decreases as a result of a lower number of employed before and lowers the pension expenditure. The *lower migration* scenario has similar effects, but in the opposite direction.

The *lower fertility* scenario is quite neutral for the public scheme due to the indexation rule that reacts to a shrinking employment to the same extent as the GDP with the postponement due 7 year average. This is the reason of a slightly higher expenditure in the very end of the projection period. Nevertheless, it increases the pension expenditure to the GDP ratio in the private pension scheme.

Higher employment of older workers' scenario increases the number of employed in older age groups and their contributions. But at the same time they accrue additional pension rights, leading to higher pension benefits.

The *higher TFP productivity* scenario does not affect the public pension expenditure but decreases the pension expenditure-to-GDP ratio in the quasi-mandatory private pension scheme due to a difference in the rate of return and productivity growth.

The *TFP risk scenario* increases the pension expenditure-to-GDP ratio as the GDP decreases more than the nominal pension expenditure due to the pension indexation to 7 year average of the wage sum growth. Another factor that has an impact on higher deviation in the long run is the fact that on

average only 40 percent of pension amount (the earnings-related pension part) depends on wages. The impact is stronger in the private pension scheme.

The scenario of *linking retirement age to life expectancy* does not affect the public pension expenditure until 2030 as there is a legislated increase of the pension age until 2026 in the baseline scenario. After 2030, the linking of retirement age reduces public pension expenditure.

Unchanged retirement age policy scenario has a strong and rapid effect on public pension expenditure. Under current legislation, the retirement age is gradually postponed for the biggest cohorts. Absent these changes in the legal retirement age, the number of pensioners would therefore increase very rapidly, pushing up the public pension expenditure-to-GDP ratio. Staying longer in retirement increases expenditure as well but its impact is smaller than the cohort effect. This is why the deviation from the baseline narrows over time.

Offset declining benefit ratio policy scenario would have the strongest effect on public pension expenditure, raising spending by as much as 1.7 p.p. of GDP by 2070 as compared to the baseline projection. This is less than for the ad hoc scenario discussed in section 3.2 (see Graph 13) because the sensitivity scenario tolerates a 10% decline in the benefit ratio.

In both *lagged recovery* and *adverse structural scenarios* pension expenditure is higher than the baseline because the pension index as 7-year average of wage sum growth works with postponement and during the 2030-2040 period it slightly exceeds the GDP growth giving higher pension expenditure comparing to GDP. The difference increases to 0.2 p.p. in lagged recovery and to 0.4 p.p. of GDP in adverse structural scenarios and stays constant after when the growth of pension index and GDP become identical.

**Table 17 - Public and total pension expenditure under different scenarios
(deviation from the baseline)**

<i>Public pension expenditure</i>	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	7,1	7,9	8,4	8,2	8,1	7,5	0,4
Higher life expectancy at birth (+2y)	0,0	0,1	0,2	0,3	0,4	0,5	0,5
Higher migration (+33%)	0,0	0,0	0,0	-0,1	-0,2	-0,2	-0,2
Lower migration (-33%)	0,0	0,0	0,0	0,1	0,2	0,2	0,2
Lower fertility (-20%)	0,0	0,0	0,0	0,0	0,1	0,1	0,1
Higher employment rate of older workers (+10 pps.)	0,0	0,0	0,1	0,0	0,0	0,0	0,0
Higher TFP growth (convergence to 1.2%)	0,0	0,0	0,0	0,0	0,0	0,0	0,0
TFP risk scenario (convergence to 0.8%)	0,0	0,1	0,0	0,1	0,1	0,1	0,1
Policy scenario: linking retirement age to change in life expectancy	0,0	-0,1	-0,3	-0,5	-0,7	-0,6	-0,6
Policy scenario: unchanged retirement age	0,0	0,6	0,4	0,4	0,3	0,2	0,2
Policy scenario: offset declining pension benefit ratio	0,0	0,0	0,0	0,6	1,5	1,7	1,7
Lagged recovery scenario	0,0	0,2	0,3	0,2	0,2	0,2	0,2
Adverse structural scenario	0,0	0,2	0,4	0,4	0,4	0,4	0,4
<i>Total pension expenditure</i>	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	7,1	8,0	8,6	8,7	8,8	8,5	1,4
Higher life expectancy at birth (+2y)	0,0	0,0	0,1	0,3	0,4	0,4	0,4
Higher migration (+33%)	0,0	0,0	0,0	0,0	-0,1	-0,2	-0,2
Lower migration (-33%)	0,0	0,0	0,0	0,1	0,1	0,2	0,2
Lower fertility (-20%)	0,0	0,0	0,0	0,1	0,1	0,3	0,3
Higher employment rate of older workers (+10 pps.)	0,0	0,0	0,1	0,0	0,0	0,0	0,0
Higher TFP growth (convergence to 1.2%)	0,0	0,0	0,0	-0,1	-0,1	-0,1	-0,1
TFP risk scenario (convergence to 0.8%)	0,0	0,1	0,1	0,1	0,1	0,2	0,2
Policy scenario: linking retirement age to change in life expectancy	0,0	-0,1	-0,4	-0,6	-0,8	-0,7	-0,7
Policy scenario: unchanged retirement age	0,0	0,6	0,5	0,5	0,3	0,2	0,2
Policy scenario: offset declining pension benefit ratio	0,0	0,0	0,0	0,6	1,5	1,7	1,7
Lagged recovery scenario	0,0	0,2	0,3	0,2	0,2	0,2	0,2
Adverse structural scenario	0,0	0,2	0,4	0,4	0,5	0,5	0,5

Source: Ministry of Social Security and Labour

3.7. Description of the changes in comparison with the 2006, 2009, 2012, 2015 and 2018 projections

Table 18 shows the evolution pension projections for AWG and Ageing Reports over the last 15 years.

Looking at the dynamic of pension expenditure the upward trend was stopped in 2015 projections with raising the statutory pension age and improving dependency ratio. Coverage ratio has a stable lowering effect through all projection rounds.

Before the 2018 Ageing Report the benefit ratio effect was very weak as the wage growth assumption was used for pension indexation. After 2018 reform the benefit ratio works as a strongest offsetting factor due new indexation rule (according to wage sum growth). It pushes pension expenditure down.

The labour market effect and the residual have less impact.

In current projection round the dependency ratio effect increased by 0.9 p.p., coverage ratio and employment effects are quite similar. However, the benefit ratio effect has decreased by 1.1 p.p. This is due to the reform of the quasi-mandatory private pension scheme in 2019. Private pension accumulation contributions are no longer transferred from social insurance contributions' tariff and therefore the earnings-related individual pension part is not lowered for the years of accumulation after 2019.

Table 18 - Change in the public pension expenditure-to-GDP ratio and disaggregation for consecutive projection exercises (pps of GDP)

	Public pension expenditure	Dependency ratio effect	Coverage ratio effect	Benefit ratio effect	Labour market effect	Residual (incl. interaction effect)
2006 Ageing Report (2004-2050)	1,9	5,4	-2,1	-0,2	-1,0	-0,2
2009 Ageing Report (2007-2060)	4,6	9,6	-2,4	-1,8	0,0	-0,8
2012 Ageing Report (2010-2060)	3,5	8,2	-2,9	-0,2	-1,1	-0,5
2015 Ageing Report (2013-2060)	0,3	4,3	-2,2	-0,9	-0,6	-0,4
2018 Ageing Report (2016-2070)	-1,7	5,0	-1,8	-4,0	-0,3	-0,6
2021 Ageing Report (2019-2070)	0,4	5,9	-1,9	-2,9	-0,2	-0,5

Source: European Commission

- The disaggregation for 2006/2009/2012 is on the basis of pensions; for 2015/2018/2021 it is on the basis of pensioners.

- The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.

Table 19A compares the projections of 2018 Aging report and the new public pension projection. The ratio of pension spending to GDP increased by 0.2 percentage points in 2019 as compared to 2018 Aging report due to much better demographic and economic situation comparing to what was assumed in 2016 that was transformed to the pension index (applied since 2017) and the factual differences that happened after the recalculation of all pensions in 2018 and 2019 (see section 1.2).

Table 19a - Decomposition of the difference between 2018 and the new public pension projection (% of GDP)

	2016	2017	2018	2019
Ageing Report 2018 projections	6,9	6,7	6,9	6,9
Assumptions (pps of GDP)	-0,1	0	0,1	0,2
Coverage of projections (pps of GDP)				
Constant policy impact (pps of GDP)				
Policy-related impact (pps of GDP)				
Actual public pension expenditure	6,8	6,7	7,0	7,1

Source: Ministry of Social Security and Labour

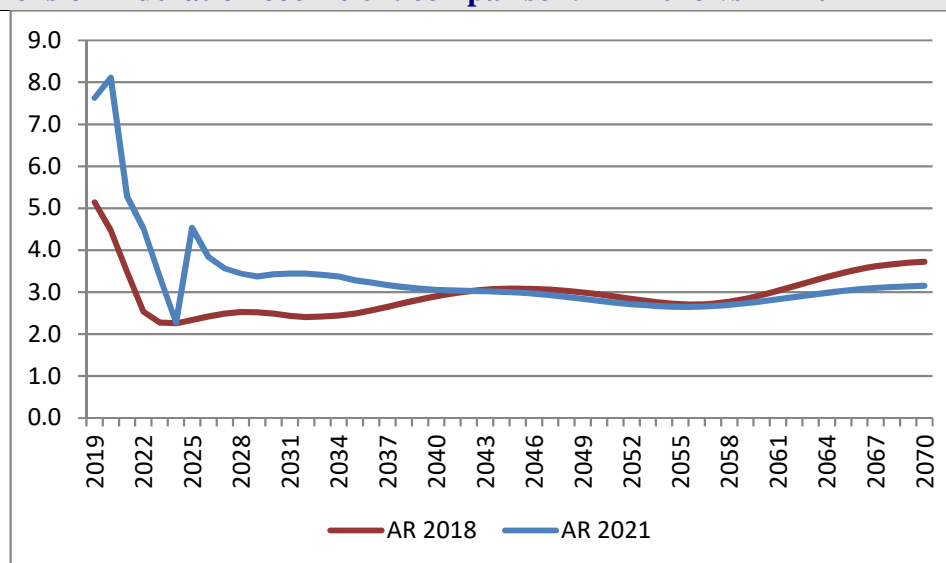
The difference of pension expenditure by 2070, as compared to the 2018 exercise, is an increase by 2.3 percentage points of GDP.

The main drivers generating higher pension projections are:

- *Change in assumptions:* a less pronounced negative net migration distributed for a longer period have smoothed out the shape and shifted the peak year of the dependency ratio by 4 years (from 2058 to 2062); less negative net migration resulted in the higher number of working age population and as a consequence – the higher number of pensioners in the end of the projection period.
- *Policy-related changes:* factual differences that happened after the recalculation of all pensions in 2018 and 2019, higher pension index for the general pension part in 2020 and quasi-mandatory private pension scheme reform in 2019.
- *Improvement in the coverage or in the modelling:* special pensions schemes are precisely modelled under the same set of assumptions with the new Lithuanian State Pension Model LITPEN developed in 2018 (each scheme separately).

The pension indexation coefficient is considerably higher in the first half of the period than in the 2018 Ageing Report but slightly lower in the end (Graph 14).

Graph 14: Pension indexation coefficient comparison: AR 2018 vs AR2021



Source: Ministry of Social Security and Labour

Table 19b - Decomposition of the difference between 2018 and the new public pension projection (% of GDP)

	2019	2030	2040	2050	2060	2070
Ageing Report 2018 projections	6,9	7,1	7,0	6,5	6,0	5,2
<i>Change in assumptions (pps of GDP)</i>	0,2	0,3	0,6	0,9	1,0	1,5
<i>Improvement in the coverage or in the modelling (pps of GDP)</i>	0	0,1	0,1	0,1	0,1	0,1
<i>Change in the interpretation of constant policy (pps of GDP)</i>						
<i>Policy-related changes (pps of GDP)</i>	0	0,4	0,7	0,8	0,9	0,8
New projections	7,1	7,9	8,4	8,2	8,1	7,5

Source: Ministry of Social Security and Labour

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

4.1. 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 (except special state pensions): social insurance, 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 special pensions are precisely modelled under the same set of assumptions with the new Lithuanian State Pension Model LITPEN developed by Tallinn University experts in the framework of the project SRSS/C2018/11 “Assessment of the Lithuanian State Pension System” in 2018 using the financing of the European Commission.

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 July 2020 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 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 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.

The last update of the model was done in July 2020 when the new pension reform of 2019 was incorporated.

4.2. Assumptions and methodologies applied

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

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 individual 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 number of points accumulated per year) 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.

An automatic pension indexation is applied - old-age, disability, widow's and orphan's pensions are increased by the seven-year average of the wage sum growth over the previous three, current and (projected) upcoming three years. The historical values of the growth of the Annual gross remuneration since 2016 were used for the calculation of the index in the first years of projection and the model output "Total wage sum of contract workers" was used as a basis for the calculation of the projected pension index.

Real rate of return (agreed AWG assumption) was used when accumulating the contributions diverted to the quasi-mandatory private funded pension scheme. As regards pay-outs from this scheme, a single annuity was assumed, calculated by unisex life expectancy (from EUROPOP2019) 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 2019-2070:

- Number of officials and military personnel employees and judges is projected using a share in population (age and gender specific). Population mortality tables are applied to determine number of dead pensioners. Newly granted pensions in the specific year are calculated using pension formula of newly granted pension (the 2018 reform of the increase of the requirement for the service years from 20 to 25 is included). Age and gender specific number service years and average wage are projected every year using average nominal wage growth assumptions. 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 kept constant as there is no indexation in the Law.

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 wage growth in consecutive years.

4.3. 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 2019.

4.4. Reforms incorporated in the model

All reforms described in section 1.2 are incorporated in the model.

4.5. 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 expenditure 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.

4.6. 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 its 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 number of points accumulated per year). 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 (general and individual) 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.

$$rrPublic(y) = (tot_NewPensionExpenditure(y) / (6 * tot_NewPensioners(y))) / (avgWage(y) / 12)$$

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 then obtained by summing orphans and their benefits by death of mother and death of father.

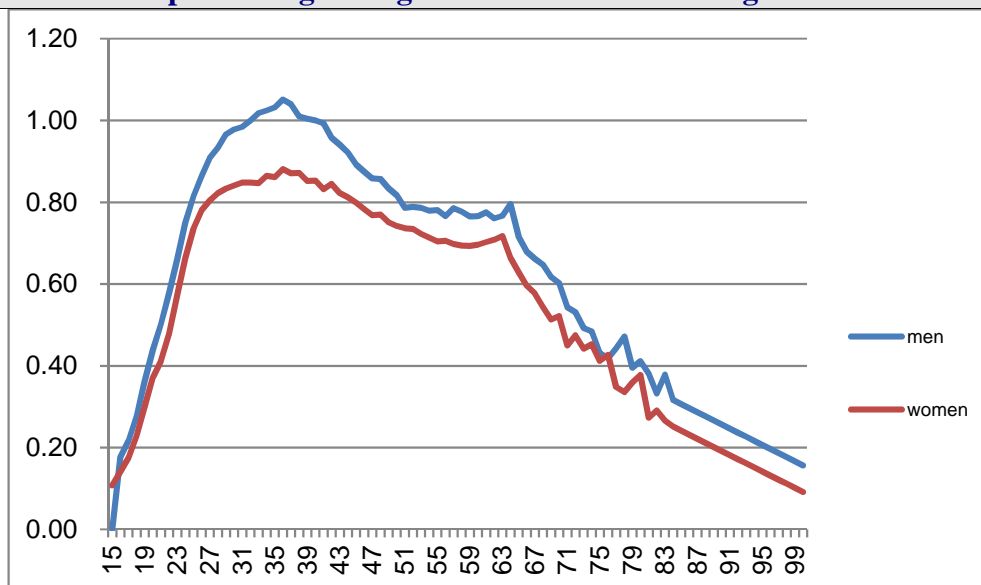
New widow (-er)s are calculated by applying rate of marriage and survival rates for partners on average population. Projection takes into consideration remarriages and deaths of widow (-er)s. Number of different persons modelled per generation.

5. 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 slightly lower than economy-wide average wage (Table A1). 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 15 – Age and gender distribution of wages in 2019



Source: Ministry of Social Security and Labour

Table A1 – Economy wide average wage at retirement evolution (in thousands euro)

	2019	2030	2040	2050	2060	2070	% change 2019-2070
Economy-wide average gross wage at retirement	14,0	22,1	34,4	51,6	75,9	108,9	677,1
Economy-wide average gross wage	14,4	22,7	35,3	53,0	77,9	111,8	676,7

Source: Ministry of Social Security and Labour

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 quite stable over the projection horizon and decreases from 1.4 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 (%)

	2019	2030	2040	2050	2060	2070
Age group -54	3,1	3,3	3,5	3,3	3,3	3,4
Age group 55-59	17,7	17,6	17,5	17,9	17,5	17,4
Age group 60-64	20,2	25,4	25,2	25,4	25,3	24,9
Age group 65-69	6,4	10,0	9,9	10,3	10,0	10,1
Age group 70-74	7,2	5,8	7,0	7,2	7,2	7,2
Age group 75+	5,7	5,8	5,7	5,9	5,9	6,0

Source: Ministry of Social Security and Labour

Survivor pensions

A detailed description of the driving forces behind the evolution of the survivor benefit is described in chapter 4.6. 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 8.72% is assumed over the projection horizon, fully paid by the employee.

Alternative pension spending decomposition

Table A3 - Factors behind the change in public pension expenditure between 2019 and 2070 (in percentage points of GDP) - pensions

	2019-30	2030-40	2040-50	2050-60	2060-70	2019-70
Public pensions to GDP	0,8	0,4	-0,1	-0,2	-0,5	0,4
Dependency ratio effect	2,7	2,3	1,2	1,5	-0,5	7,2
Coverage ratio effect*	-1,0	-0,5	-0,2	-0,2	-0,1	-2,0
<i>Coverage ratio old-age</i>	-0,5	-0,3	-0,1	-0,1	-0,1	-1,1
<i>Coverage ratio early-age</i>	-0,8	-0,3	-0,3	0,2	-0,3	-1,5
<i>Cohort effect</i>	-1,8	-0,9	-0,3	-0,7	0,2	-3,5
Benefit ratio effect	-0,4	-0,4	-0,5	-0,4	-0,1	-1,8
Labour market effect	0,0	-0,1	0,0	-0,1	0,0	-0,2
<i>Employment ratio effect</i>	0,0	-0,1	0,0	-0,1	0,0	-0,2
<i>Labour intensity effect</i>	0,0	0,0	0,0	0,0	0,0	0,0
<i>Career shift effect</i>	0,0	0,0	0,0	0,0	0,0	0,0
Residual	-0,5	-0,9	-0,7	-0,9	0,1	-2,8

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

Source: European Commission

Administrative data

Table A4a – Number of new pensioners by age group - administrative data (MEN)

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	1138	0	810	328	0
50 - 54	547	0	522	25	0
55 - 59	1012	22	866	21	103
60 - 64	11280	9793	759	417	311
65 - 69	276	32	0	244	0
70 - 74	324	4	0	320	0
75+	1311	3	0	1308	0

Table A4b – Number of new pensioners by age group - administrative data (WOMEN)

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	1300	0	964	336	0
50 - 54	574	0	543	31	0
55 - 59	1054	122	787	85	60
60 - 64	13549	11201	422	1861	65
65 - 69	1045	10	0	1035	0
70 - 74	1167	3	0	1164	0
75+	2873	12	0	2861	0

Table A4c – Number of new pensioners by age group - administrative data (TOTAL)

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	2438	0	1774	664	0
50 - 54	1121	0	1065	56	0
55 - 59	2066	144	1653	106	163
60 - 64	24829	20994	1181	2278	376
65 - 69	1321	42	0	1279	0
70 - 74	1491	7	0	1484	0
75+	4184	15	0	4169	0

Source: Ministry of Social Security and Labour