Economic Policy Committee - Ageing Working Group

2024 Ageing Report
Slovak Republic - Country Fiche

01-12-2023

Ministry of Finance of the Slovak Republic
Institute for Financial Policy

Štefanovičova 2968/5
811 04, Bratislava, Slovakia

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INTRODUCTION

The present country fiche for the Slovak Republic is part of the 2024 Ageing Report, which provides long-term projections of the economic and budgetary impact of population ageing at unchanged policy. The 2024 edition is the eighth update and covers the period up to 2070.

This fiche was prepared by the Institute for Finacial Policy of the Ministry of Finance of the Slovak Republic. The pension projections presented in this fiche incorporate the macroeconomic assumptions and methodologies agreed within the *Ageing Working Group of the Economic Policy Committee*. The projections have been peer reviewed by the other Member States and the European Commission within the *Ageing Working Group*. The projections were finalised in the autumn of 2023 and represent the situation of the pension system on 01/12/2023.

Section 1 provides a general overview of the pension system in the Slovak Republic. Section 2 describes the demographic and labour market assumptions underlying the pension expenditure projections presented in Section 3, which also discusses the sensitivity scenarios around the baseline. Finally, Section 4 gives an overview of the model used to produce the pension projections, with complementary data provided in the methodological annex.

1.   OVERVIEW OF THE PENSION SYSTEM[1]

1.1.   Description of the pension system

The Slovak pension system consists of the following:

- **Universal pension system** – covers almost all pensioners in Slovakia (regular employees, self-employed, etc.)
- **Pension system of armed forces** – covers police officers, soldiers, intelligence service, etc.
- **Pre-pension scheme of the municipal police** – covers members of the municipal and local police
- **Voluntary fully funded "third pillar"** – no restriction on participation.

Add. Table 1 - Overview of the Slovak pension system

Universal pension system	Special pension schemes
I. pillar – PAYG, mandatory, defined-benefit (point system – earnings related), **public**	**Pension system of the armed forces** – PAYG, mandatory, defined-benefit, **public**
II. pillar – fully-funded, quasi-mandatory, defined-contribution, **private**	**Pre-pension scheme of the municipal police** – PAYG, mandatory, defined-benefit, **public**
Voluntary fully-funded "third pillar"	
III. pillar – voluntary, DC, **private**	
Social assistance	
0. pillar – universal benefit, means-tested, **public**	

The following table shows the approximate number of universal and armed forces pensioners. Compared to the universal system, the armed forces system is about 40 times smaller. As of 2022, the pre-pension scheme of the municipal police has no pensioners, as it is set to pay out the first benefits in 2024. It is important to note that one pensioner can receive multiple pensions. The most common combination of pensions is a widow and old age pension.

Add. Table 2 - Number of pensioners (2022)

Universal system	old-age	1 061 070
	disability	233 952
	survivor	347 680
Armed forces	pensioners	42 580
Municipal police	pensioners	0
Population	inhabitants	5 479 308

Source: MFSR

1.1.1. Universal pension system

Currently, **the first pillar** is the primary source of income for the elderly. It includes old-age, early old-age, and disability and survivor benefits. It is a public, mandatory, pay-as-you-go (PAYG), defined benefit and earnings-related pension scheme (point system). The minimum period of participation to become entitled to pension benefits from the first pillar is 15 years.

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[1] For an exhaustive description of pension schemes, please consult the PENSREF database.

The second pillar is a fully funded, defined contribution, private pension scheme[2] operational from the beginning of 2005. The whole system is strongly regulated (more restrictions compared to, e.g., mutual funds), and the National Bank of Slovakia carries out the supervision.

The participation in the second pillar for newcomers to the labour market has been changed several times. It started as mandatory (with no possibility to opt out) and was changed to voluntary in 2008. In 2012, participation in the second pillar was changed back to mandatory (but with the possibility to opt out of the system within 2 years), and from January 2013, entry into the second pillar was changed to voluntary again with the possibility to defer entry until age 35. In May 2023, the participation for newcomers has changed to mandatory again, with an option to opt out within 2 years and re-enter the second pillar again until the age of 40.

A **default investment strategy (DIS)** was introduced in 2023 to address overly conservative saving strategies in the second pillar. The DIS defines portfolio allocation based on the investor's age and extends the investment horizon of savers beyond the retirement age[3]. Participation in the DIS is mandatory for newcomers to the labour market and selected groups of existing pensioners whose portfolio allocation was deemed overly conservative, with a possibility to opt out for both groups. However, there is an upper limit on the share of equities in the portfolio, which is dependent on the individual's age, even in the case of an opt-out from the DIS.

Pension management companies (PMC) are legally bound to offer two funds – **a guaranteed bond fund** and a **non-guaranteed index fund**. However, the law allows the PMC to create an arbitrary number of other pension funds. The mandatory funds serve as a basis for the DIS, as the required portfolio allocation is achieved by a set percentage of assets allocated in each fund based on the individual's age. Initially, all the assets of younger savers are allocated to the non-guaranteed index fund. After reaching the age of 50, the savings in non-guaranteed index funds will be moved automatically into a guaranteed bond fund such that the share of savings in the guaranteed bond fund will gradually increase by 4 p.p. a year. At retirement, the assets are split into two parts, the larger one being in the guaranteed bond fund (around 60 percent). The first part of assets, allocated in safer guaranteed bond funds, is gradually withdrawn during a period corresponding to half the years the saver is expected to spend in retirement. In contrast, the second half is being invested in more risky assets. Afterwards, the gradual withdrawal period concludes, and an annuity is purchased from a life insurance company using the second part of the accumulated savings.

Pension contributions

Social Security contributions (SSC) are levied as a percentage of the assessment base (gross wage) and are paid by both employee and employer. The system is earnings-related; however, contributions paid from earnings above the level of three times the average wage are not considered in calculating the awarded pension.

Pension contributions are tax-exempt, as Slovakia does not tax pension contributions nor pension benefits to/from the first and second pillar. The sum of an individual's pension contributions is the same regardless of whether they participate in the **mixed system** (in the first and second pillars) or only in **the first**. If one participates in the mixed system, the employer's contributions are split into contributions paid into the first pillar and contributions that the Social Security Agency remits to the second pillar. If a person does not participate in the second pillar, all employers' contributions are paid into the first pillar.

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[2] Private pension companies managing pension savings of individuals.
[3] A more detailed description of the DIS is available in the subchapter 1.2. Recently adopted reforms.

Add. Table 3 - Pension contributions (% of assessment base)

	public scheme only (first pillar)	mixed pension scheme (before 2012 reform)	mixed pension scheme (2013-2016)	mixed pension scheme (after 2027)
Paid by employer	**21.75**	**21.75**	**21.75**	**21.75**
Pension insurance	17.00	17.00	17.00	17.00
- old-age insurance[*]	14.00	5.00 to the first pillar 9.00 to the second pillar	10.00 to the first pillar 4.00 to the second pillar	8.00 to the first pillar 6.00 to the second pillar
- disability insurance	3.00	3.00	3.00	3.00
Reserve fund of solidarity	4.75	4.75	4.75	4.75
Paid by employee	**7.00**	**7.00**	**7.00**	**7.00**
Pension insurance	7.00	7.00	7.00	7.00
- old-age insurance[*]	4.00	4.00	4.00	4.00
- disability insurance	3.00	3.00	3.00	3.00
Total	**28.75**	**28.75**	**28.75**	**28.75**

[*] *For those participating in both pillars, the employer had to pay 5% to the first pillar and the remaining 9% to the second pillar before the 2012 reform. Between 2013 and 2016, the contribution rate to the second pillar decreased to 4%, positively impacting GG revenues. As of 2017, contributions to the second pillar gradually rose by 0.25 p.p. per year until 5.25 percent in 2021. After this period, the contributions increased, reaching the final level of 6 percent in 2027.*

Figure 1 - Evolution of old age contribution
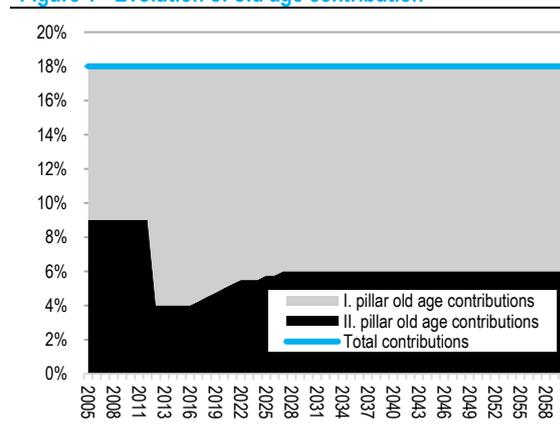
Source: MFSR

Add. Table 4 - Old-age insurance rates – I. and II. pillar

Period	II. pillar contributions (% of assessment base)
2005-8/2012	9.00%
09/2012–2016	4.00%
2017	4.25%
2018	4.50%
2019	4.75%
2020	5.00%
2021	5.25%
2022–2024	5.50%
2025–2026	5.75%
2027+	**6.00%**

Source: MFSR

Statutory retirement age and early retirement

The statutory retirement age (SRA) is defined on a cohort basis. As of 2023, the SRA for the 1960 cohort of men and women with no children is 63 years, whereas the SRA for women with children is decreased based on the number of children raised[4]. The SRA for cohorts born before 1967 is firmly determined by the law (Add. Table 10 and Add. Table 11 in the Annex) and is set to increase by two months for each subsequent cohort until the retirement age for men and women with no children reaches 64 years in 2030. Subsequently, the retirement age of cohorts born after 1966 is linked to life expectancy, which increases by approximately one to two months per year[5], with the provision for lower retirement age for women with children slightly altered[6]. The new mechanisms (Equation 6 in the Annex) introduced a notable lag in the retirement age after 2030, which is caused by the fact that the years in which COVID-19 negatively impacted life expectancy enter into the formula determining the retirement age.

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[4] The retirement age is decreased by 6 months for one child, 12 months for two children, and 18 months for three or four children, and 30 months for five or more children. If the mother can't benefit from such an early retirement possibility, the right is transferred to the father.
[5] Under the assumption of the current life expectancy growth rate.
[6] The retirement age is decreased by 6 months for one child, 12 months for two children, and 18 months for three or more children. If the mother is unable to benefit from such an early retirement possibility, the right is transferred to the father.

Figure 2 - Projected statutory retirement age[7]
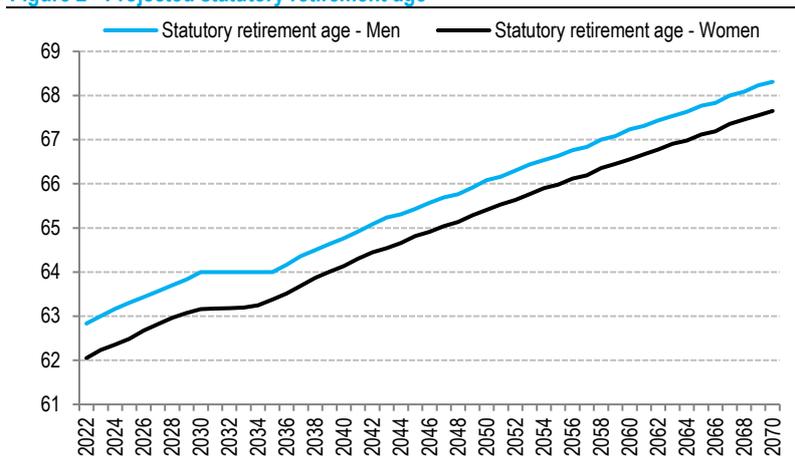
Source: MFSR

Concerning early retirement, two options are currently available. Since 2023, individuals with contributory periods of 40 years or more can retire, regardless of their age, before reaching the SRA. In this case, their pension is to be reduced by approximately 3.9% per year or 7.5% per two years[8]. On the contrary, for individuals that have not accrued a contributory period of at least 40 years, another form of early retirement exists, i.e., the possibility to retire two years before reaching the SRA. In this case, their pension is to be reduced by approximately 6.5% per year or 12.5% per two years[9]. In either case, should a person decide to work beyond the foreseen SRA, the pension is to be increased by 6% per year for every additional working year[10].

Table 1 - Qualifying conditions for retirement

			2022	2030	2040	2050	2060	2070
Qualifying condition for retiring **with** a full pension	Statutory retirement age - men		62.8	64.0	64.8	66.1	67.2	68.3
	Statutory retirement age - women		62.0	63.2	64.1	65.4	66.6	67.7
	Minimum requirements	Contributory period - men	15.0	15.0	15.0	15.0	15.0	15.0
		Retirement age - men	62.8	64.0	64.8	66.1	67.2	68.3
		Contributory period - women	15.0	15.0	15.0	15.0	15.0	15.0
		Retirement age - women	62.0	63.2	64.1	65.4	66.6	67.7
Qualifying condition for retirement **without** a full pension	Early retirement age - men		60.8*	62.8*	62.8*	64.1*	65.2*	66.3*
	Early retirement age - women		60.0*	61.2*	62.1*	63.4*	64.6*	65.7*
	Penalty in case of earliest retirement age		12.5%**	12.5%**	12.5%**	12.5%**	12.5%**	12.5%**
	Bonus in case of late retirement		6%***	6%***	6%***	6%***	6%***	6%***
	Minimum contributory period - men		15.0****	15.0****	15.0****	15.0****	15.0****	15.0****
	Minimum contributory period - women		15.0****	15.0****	15.0****	15.0****	15.0****	15.0****
	Minimum residence period - men		-	-	-	-	-	-
	Minimum residence period - women		-	-	-	-	-	-

*Individuals are also entitled to early retirement if they accrued **at least 40 years of pensionable work.**
**Reduced by 0.3% for every 30 days starting prior to reaching the retirement age, if one has accrued at least 40 years of service.
***6% per year for every additional working year above the retirement age, if drawing the pension is postponed.
****Minimum contributory period under early retirement with 40 years of work is 40 years.

Source: MFSR

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7 For women, average statutory retirement age is calculated as the retirement age depends on number of children.
8 More specifically, in the law, the „malus" is defined as 0.3% for every started 30-day period below the retirement age (i.e., if one retires 61 days before reaching the statutory retirement age, his/her pension is lower by 0.9%).
9 More specifically, in the law, the „malus" is defined as 0.5% for every started 30-day period below the retirement age (i.e., if one retires 61 days before reaching the statutory retirement age, his/her pension is lower by 1.5%).
10 More specifically, in the law, the „bonus" is defined as 0.5% for every whole 30-day period above the retirement age (i.e., if one retires 59 days after reaching the statutory retirement age, his/her pension is higher by 0.5%).

Pension entitlement – if one participates in first pillar only and not in the second pillar

The calculation of the awarded pension benefit in the first pillar is based on a point system, i.e., earnings-related principle. Three variables determine the amount of pension benefit – **contributory period**, **average pension point,** and **current pension point value.**

The **average pension point** is roughly an individual's average lifetime position relative to the average wage in the economy (according to law, it cannot exceed the value of 3[11]). The calculated pension point is adjusted based on a solidarity formula. The pension point below value 1 is increased, and the pension point above 1.25 is reduced, as shown in Figure 3.

Figure 3 - Pension point - solidarity adjustment (earnings-related old-age pension)

Source: MFSR
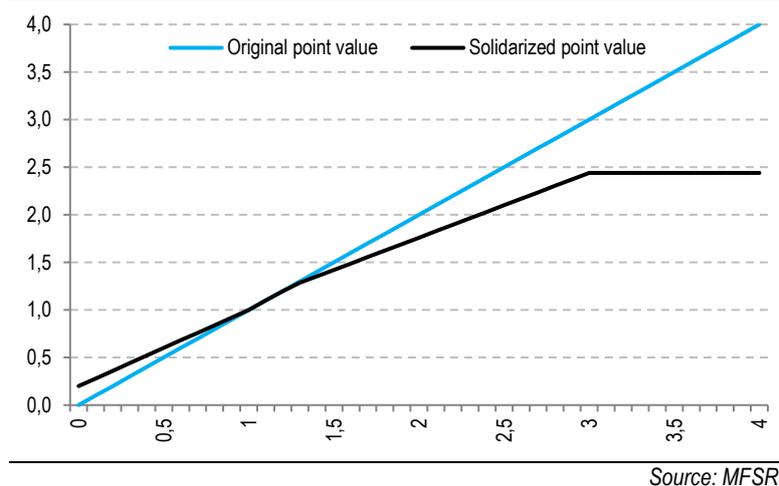
In 2004, when the system was introduced, the current pension point value (CPPV) was calculated as a residual so that a person with 40 years of service and an average personal wage point equal to 1 (person earning an average wage for the whole career) receives a pension benefit amounting to circa 50% gross replacement rate. To keep the replacement rate stable for all new pensioners, the current point value was annually indexed to the average wage. Since 2023, **the link of the current point value was adjusted to 95% of the rate of growth of the average wage** due to concerns about long-term sustainability.

Old-age pensions are calculated as the product of the contributory period, average pension point, and current pension point value.

Early old-age pensions are calculated as old-age pensions; however, the early old-age pension is reduced by 0.3% for every started 30-day period below the retirement age for individuals with contributory periods of 40 years or more and 0.5% for individuals that have not gained contributory period of at least 40 years. Moreover, early old-age pension must be higher than the minimum subsistence level (SM)[12] by at least 60%.

Disability pensions are calculated as old-age pensions; however, the disability pension is affected by the loss of work capability. One qualifies for the disability pension only if their ability to work decreases by more than 40%, in which case, the pension is reduced according to the decrease in ability to work. The full disability pension is granted if the ability to work decreased by more than 70%. Moreover, for the calculation of the disability pensioner, full career length until legal retirement age is always assumed in the benefit calculation.

Widow and widower benefits - the entitlement for a widow/widower arises if her/his deceased spouse was a recipient or entitled to an old-age pension, early old-age pension, or disability pension or dies because of an occupational disease or accident. The entitlement lasts for 2 years thereafter, unless the recipient takes care of a

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[11] This originally reflected that the assessment base ceiling was 3 times the average wage. An increase of the ceiling to 4 times the average wage in 2008, 5 times the average wage in 2013, and 7 times the average wage in 2017 did not lead to any change in the limit on average personal wage point.

[12] As of July 1, 2023, the minimum subsistence level is 268.88 euros per month for a single person of legal age.

dependent child, is disabled (more than 70% loss of working capacity), reaches the retirement age, has raised more than 3 children, reaches 52 years, and has raised 2 children or reaches 57 years and has raised one child. The entitlement also expires if the widow/widower remarries. The benefit amounts to 60% of the old-age pension, early old-age pension, or disability pension of the deceased. If the widow or widower was a pensioner already, they would receive the higher pension in full amount and the lower pension in 50%.

Orphan's pensions - the entitlement arises for a dependent child whose parent (or custodian) has died. The entitlement arises only if the parent was an old-age pension, early old-age pension, or disability pension recipient (or entitled person). A dependent child in foster care cannot receive the pension. The benefit is 40% of the deceased parent's old-age, early old-age, or invalidity pension.

Parental pension is a new pension benefit introduced in 2023 paid out by the Social Insurance Agency. It is paid out to recipients of old-age, disability[13], and armed forces pensions[14] if their child[15] was socially insured (employed) two years before receiving the benefit. The parental pension is calculated as 1.5% of the assessment base of the eligible child, with an upper limit for the assessment base set at 120% of the average wage[16]. As of 2023, the maximum monthly parental pension from a single child is 21.80 euros. One child can provide a parental bonus for both parents without penalty (i.e., 3% of the assessment base), and the amount of parental pension that the pensioner receives from multiple children is also not capped. Moreover, the future pension entitlements of the child will not be affected by the decision to take part in the parental pension[17].

The thirteenth pension is a one-time annual payment that usually takes place in November[18] and is paid out to all pension beneficiaries[19]. Retirees with the total value of their pension benefits lower than the current subsistence level qualify for a maximum thirteenth pension of 300 euros. The value of the thirteenth pension decreases with higher pensions until it reaches a minimum benefit of 50 euros. In 2022, as a reaction to the high inflation rates, a one-time fourteenth pension was administered, with the benefit value set at 70% of the thirteenth pension.

Figure 4 - The value of the thirteenth pension based on the regular pension (2023, in euros)
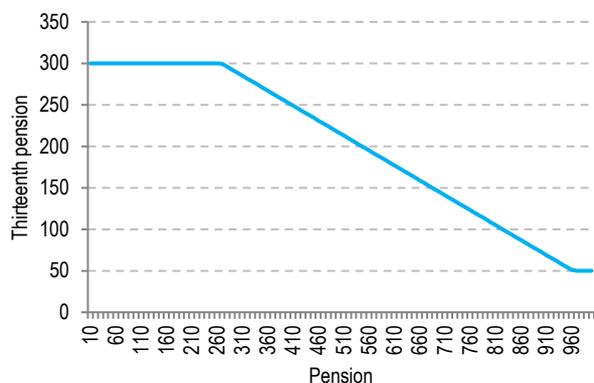
Add. Table 5 – Calculation of the thirteenth pension based on the regular pension (2023, in euros)

Pension	Thirteenth pension (euros)
Up to 268.88 euros (100% of SM)	300
268.88 euros to 963.32 euros	300 - 0.36*(Pension - SM)
963.32 euros and more	50

Source: MFSR

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[13] Provided they reached the retirement age.
[14] Provided they reached the retirement age.
[15] This applies to one's biological, adopted, or legally entrusted children.
[16] The value of the average wage from two years ago.
[17] Effectively, the parental pension is only a new type of expenditure which is not covered by any new contributions (the amount of contributions for contributors that participate in parental pension stays the same) and there is no provision to reduce the value of future pensions of those contributors who participate. Therefore, this measure increases expenditures in the long run and has a negative effect on the long term-sustainability of public finance.
[18] In 2022, the 13th pension was administered in July, and in November, the 14th pension was administered.
[19] Recipients of old-age pension, early retirement pension, disability pension, survivor pension, or armed forces pensions.

Minimum pension is a provision to ensure a minimum level of pension support for individuals who have reached the retirement age and are currently receiving old-age or disability pensions. This provision comes into effect when the total value of their pension benefits[20] falls below a certain predefined threshold (145% of the established minimum subsistence level for a single adult), provided the recipient gained a contributory period of at least 30 years[21]. Additionally, there are incremental increases of 2.5 percentage points (p.p.) per year for up to 39 years of pensionable career, followed by 3 p.p. up to 49 years, 5 p.p. up to 59 years, and 7.5 p.p. for each extra year of career beyond 59 years.

At present, there is no legally mandated minimum pension provision for individuals who did not reach the minimum contributory period of at least 30 years. However, these individuals can apply for **means-tested social assistance**, which is a percentage of the minimum subsistence level (currently less than 40% of the minimum wage). The officially defined minimum subsistence level is adjusted for inflation based on a selection of essential goods and services relevant to low-income households.

Pension benefits in the mixed system - if one participates in both the first and the second pillar

In the mixed system, the **pension benefit awarded from the first pillar is reduced by a percentage of social security contributions (SSC) paid (redirected) to the private pension funds for the years of participation.** The reduction calculation considers contributions to old-age insurance (18% of gross wage) and the contribution to the reserve fund of solidarity (4.75% of gross wage) that is used to pay out first pillar pensions. If one contributes 22.75% of his gross wage towards his old-age insurance and 6% is redirected to the second pillar, his first pillar pension for this year of contribution is reduced by 26.4% (i.e., 6% / 22.75%).

The second pillar savings are paid out to savers in two ways.
- The accumulated funds are divided into two parts. The first part is used for pension benefits **scheduled payments** from the PMC. The second part is reinvested and continues to be appreciated.
- After the last scheduled payment, the second part of the accumulated funds is used to conclude a contract with an insurance company for a **lifetime annuity**.
  The pension fund management company will also allow scheduled payments if no insurance company is willing to conclude a contract with a pensioner because their savings are insufficient.
- It is also possible to withdraw the scheduled payments as a lump sum, but only if the pension benefits from the first pillar are higher than the reference amount[22].

Pension indexation

Pensions are indexed to pensioner's inflation. To ensure timely pension adjustment in a high-inflationary environment, an extraordinary valorisation due to high inflation was introduced in 2023 and administered on July 1, 2023. The provision is permanent and will be activated whenever the pensioner's inflation exceeds five percent since the last indexation was administered. The value of the extraordinary valorisation is the recorded pensioner's inflation in the same period. If the extraordinary valorisation is administered in a given year, the value of the next standard valorisation will account for the fact and decrease accordingly (Equation 7, Annex 5).

1.1.2. Pension system of the armed forces

The pension system of the armed forces applies to professional soldiers, members of the Police Corps, Fire and Rescue Brigades, Mountain Rescue Service, Slovak Information Service, National Security Authority, Corps of Prison, Court Guards, Railway Police, and Customs Officers. This system exists along with the universal mandatory scheme, which covers the predominant part of the population of the Slovak Republic. It is a closed PAYG, mandatory, defined benefit pension system. There has been a major system reform in 2013 to ensure its sustainability.

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[20] Old-age pension, early retirement pension, disability pension, survivor pension, and pension of the armed forces scheme.
[21] Only those years with contributions from a contributory base above 24.1% of the average wage are considered to determine the minimum pension value.
[22] For the year 2023, 521.30 euros.

Pension contributions

Pension contributions are levied as a percentage of the individual's gross wage. No ceiling is applied, in contrast to the first pillar of the universal system.

Add. Table 6 - Pension contributions to the system of armed forces (% of assessment base)

	employee	employer	TOTAL
Old-age contributions	7.0	20.0	27.0
Temporary pension contribution	1.0	1.0	2.0
Disability contributions	3.0	3.0	6.0
TOTAL	**11.0**	**24.0**	**35.0**

Source: MFSR

Pension entitlement

The system is similar to the universal first pillar (although it is not a point system). A member of the armed forces is entitled to a pension upon their termination of employment, and it is not conditioned on reaching a specific retirement age.

Before the 2013 reform, the minimum contributory period for a new member to acquire pension rights was 15 years. Since the reform, the minimum contributory period is gradually increased until 2032, at which point it will converge to 25 years. For 25 years of service, the pension is calculated as 37.5% of their average monthly wage in the past 10 years before terminating service employment—the replacement rate increases depending on the length of the career up to 65%. A transitory period between the two regimes (old legislation and new legislation) is in place to ensure the change to the new legislation is gradual.

Add. Table 7 - Contributory period and replacement rates for the pension system of the armed forces (including the impact of the 2013 reform)

	Minimum contributory period	Replacement rate	
		Contributory period	Replacement rate
Old legislation (before 2013)	15 years	15	30%
		16 - 20	Raised by 2 p.p. per each year
		21 - 25	Raised by 3 p.p. per each year
		26 - 30	Raised by 1 p.p. per each year (maximum 60%)
New legislation (2032+)	25 years	25	37.5%
		26 - 30	Raised by 2 p.p. per each year
		31 - 35	Raised by 3 p.p. per each year
		> 36	Raised by 0.5 p.p. per each year (maximum 65%)

Source: MFSR

A temporary pension can be received if the contributory period is insufficient for retirement pension entitlement. It is received for 1 – 3 years, and the amount is 1% of the assessment base for each year of service.

Add. Table 8 - Temporary pension of the armed forces (including the impact of the 2013 reform)

	Length of service	Period of receiving	Amount
Old legislation	5 – 9 years	1 – 3 years	2% of assessment base for each year
Transition period	Increases from 5 years by one every year until reaching 10 years	1 – 3 years	2% of assessment base for each year before 1.5.2013, then 1% of assessment base for each year (maximum 28%)
New legislation	10 – 17 years	1 year	1% of assessment base for each year (maximum 28%)
	17 – 22 years	2 years	
	22 – 25 years	3 years	

Source: MFSR

Pension indexation

Pensions of the armed forces are indexed to the pensioner's inflation in the same way as in the universal system.

1.1.3. Pre-retirement system of the municipal police

The Social Insurance Agency administers the system of early retirement for members of municipal and police, which is a new scheme that has been in effect since April 1, 2020. It is a relatively small special scheme (there are about 2 400 municipal and local police members) intended to cover members of the municipal and local police until they reach retirement age, as afterwards, the coverage is provided by the universal pension system.

The entitlement arises if the police officer has reached the age of at least 56 and their period of employment[23] lasted for at least 25 years. The benefit amount represents 60% of the individual's assessment base, calculated as the highest average wage within the last 10 years. Thereafter, the allowance is indexed by pensioner inflation as in the universal pension system. The benefit ceases upon reaching the retirement age, granting early old-age pension, resuming employment in the local police, or the event of death. The system is financed by contributions set at 3% of the assessment base, although these are unlikely to cover the expenditures fully. Provisions related to the payment of contributions are effective from April 1, 2020, while benefits from the scheme will begin to be provided from January 1, 2024[24].

1.1.4. Voluntary fully funded "third pillar"

The third pillar was introduced in 1996 as a supplementary part of the pension system. It is a voluntary, fully funded, contribution-defined, privately managed pension scheme. As of 2014, a tax allowance for supplementary pension insurance has been reintroduced. Supplementary pension contributions are tax-deductible up to the maximum limit of 180 euros per year. The tax allowance applies only to new third pillar participants or older participants who accepted stricter regulations of the payoff phase (e.g., higher minimum payoff age). As of December 2023, the number of contributors reached 948 281 with the overall assets of 3 245 million euros.

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[23] The period of basic military service, alternative military service, or preparatory military service is also included in the employment period.

[24] The goal is to accumulate financial resources in the special fund during the first (nearly) 4 years, which will later be used for disbursing benefits.

Interactions between different types of pensions

Concurrent pensions

It is possible to receive pensions from both the universal and armed forces system if necessary conditions for the entitlement have been fulfilled. If receiving pensions from both systems, the benefit is calculated as follows:

- The pension from the system of armed forces will be calculated only from the contributory period and salaries received during the service in the armed forces.
- The old-age pension from the universal system is calculated as the theoretical amount of old-age pension in the universal system using the full contributory period and salaries (received in both systems) minus the theoretical amount of old-age pension using the contributory period in the system of armed forces.

A **widow/er's** pension can be received on top of the old-age or disability pensions. In that case, the higher pensions will remain in full amount, whereas the lower of the two will be reduced to 50%.

As for the **third pillar**, it is open for anyone to participate; however, it is mandatory for some occupations that are considered risky. Around one-third of the labour force currently participates in the third pillar.

Social assistance is available for everyone who passes the means and property test. However, pensioners' income in the armed forces system usually exceeds the minimum subsistence level; therefore, their share in the social assistance scheme is negligible.

Reclassification of existing pensions

When reaching the statutory retirement age, disability pensioners can claim an old-age pension. They will be entitled to the higher of the two benefits, and the entitlement to the smallest pension will be cancelled. If the two benefits are of the same amount, the pensioner has the right to choose which pension will be paid out.

1.2. Recently adopted reforms

The following measures have been adopted since the Ageing Report 2021. The impact of the legislative changes is described in section 3.6.

1.2.1. Thirteenth pension and one-time disbursement of fourteenth pension in 2022

As a response to the exceptionally high inflation of consumer goods in Slovakia, an early full payment of the thirteenth pension was administered in July while, traditionally, the thirteenth pension is scheduled to be paid in November of each calendar year. The government approved further financial assistance for seniors through a one-time 'fourteenth pension' in November 2022. The amendment paid out 70% of the amount of the thirteenth pension. The maximum amount for the November fourteenth pension was 210 euros, while the minimum was 35 euros.

Figure 5 - Comparison of thirteenth pension paid in July and fourteenth pension paid in November 2022
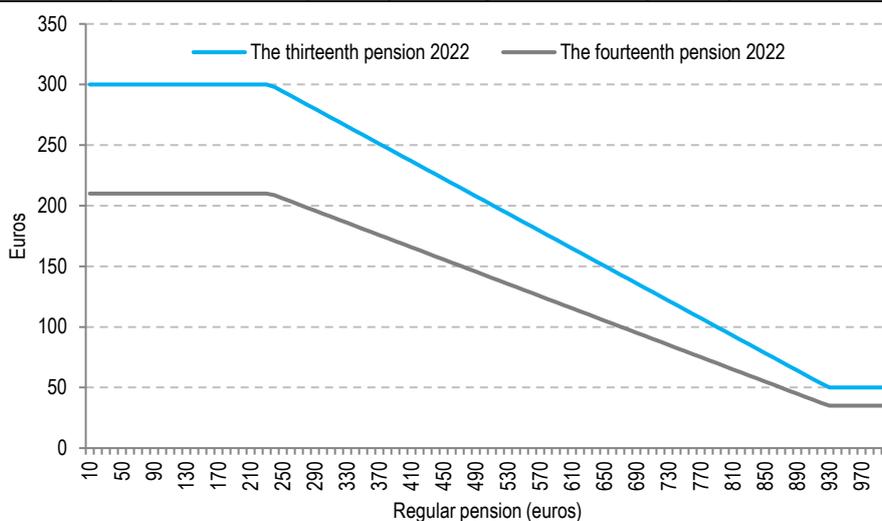
Source: MF SR

1.2.2. First pillar reform

In October 2022, the Slovak parliament passed a reform[25] of the first pillar containing several measures. Some of these measures (i.e., parental pension; early retirement after 40 years of service) have an immediate expenditure-increasing impact. On the contrary, other measures (i.e., re-introduction of a link between retirement age and life expectancy; reduction of the rate of growth of the current pension point value (see section 1.1.1)) are expected to exert a gradual expenditure-decreasing impact, leading to an overall improvement in the long-term sustainability of the pension system.

Relinking the retirement age to life expectancy

The 2022 reform abolished the previous cap on the retirement age (set at 64 years by 2030[26]) and reintroduced a link to life expectancy for insured persons born in 1967 or later[27]. In addition, for women who have raised a child, retirement age will be reduced by 6 months for raised each child, up to a maximum of 18 months (applies to women who have raised three or more children). The 2022 reform also changes the way that retirement age is linked to life expectancy. Compared to the past, that is before the retirement age cap was introduced, the new mechanism links retirement age to life expectancy by using a median of seven five-year periods (Equation 6 in

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[25] Act no. 352/2022 Coll. which amends the Act no. 461/2003 Coll. on Social Insurance.
[26] Decreased by 6 months for every children raised up to 18 months for 3 children. This preferentially applies to women, but if she is unable to draw this benefit (e.g., deceased before retirement) or only a man took care of the child, the six months are deducted from the retirement age of the man.
[27] The SRA for cohorts born before 1967 is firmly determined by the law (Add. Table 10 in the Annex) and is set to increase by two months for each subsequent cohort until the retirement age for men and women with no children reaches 64 years in 2030.

Annex). Moreover, the general retirement age will be set 6 years in advance to make it more predictable. Both conditions, introduce a notable lag in the retirement age after 2030. This is because, under the new mechanism, the first year entering into the calculation is 2012, and the years in which COVID-19 negatively affected life expectancy also impact the calculation.

Introduction of parental pension

Recipients of an old-age, invalidity or armed forces pension who have reached retirement age are entitled to a parental pension[28] if their child was socially insured (employed) two years before receiving the benefit. The child's future pension entitlements will not be affected by the assignment of part of the contributions to the parental pension[29].

The parental pension is calculated as 1.5% of the assessment base of the eligible child, with an upper limit for the assessment base set at 120% of the average wage. As of 2023, the maximum monthly parental pension from a single child is 21.80 euros. One child can provide a parental bonus for both parents without any penalty (i.e., 3% of the assessment base), and the amount of parental pension that the pensioner receives from multiple children is not capped as well. If a child decides to cancel the benefit after it has started, the pay-out is terminated in six years' time.

Early retirement after 40 years of service

As of 2023, individuals with contributory periods[30] of 40 years or more are allowed to retire before reaching retirement age. In this case, their old-age pension is reduced by approximately 3.9% per year or 7.5% per two years[31]. The minimum number of contribution years required to qualify for early retirement is set at 40, with no mechanism in place to raise it over time. The previous early retirement option stays in place for individuals who have not accrued a contributory period of at least 40 years, i.e., the option to retire two years before reaching the statutory retirement age[32]. Moreover, the condition for a minimal value a pensioner can retire within early retirement was increased from 120% of the subsistence minimum to 160% of the subsistence minimum.

Reduction in the rate of growth of the current pension point value

The current pension point value is one of the basic variables that enter the formula (Equation 8) calculating the value of new pensions, and up until the reform, it has been linked to the year-on-year change in the average nominal monthly wage in the economy in the third quarter of the preceding year. The reform reduced the link to 95% of the rate of growth of the average wage in the interest of addressing concerns about long-term sustainability.

Adjustment of contributions to the second pillar

The reform changed the increasing trajectory in the rate of contributions going to the second pillar, postponing the convergence to the long-term rate of 6% until 2027. The measure will have the effect of an improved balance of the pension system in the short term, as a higher percentage of contributions will be used to finance the first pillar; however, in the long term, this will be offset by higher expenditures, as the reduction of new pensions for second pillar participants also reflects past contributory rates to the second pillar.

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[28] Entitlement to a parental pension for biological and adopted children is automatic, while the child must actively object in order for the pension not to be paid. Conversely, children placed in alternative care must actively express their consent before the entitlement arises.

[29] Effectively, the parental pension is only a new type of expenditure which is not covered by any new contributions (the amount of contributions for contributors that participate in parental pension stays the same) and there is no provision to reduce the value of future pensions of those contributors that participate. Therefore, this measure increases expenditures in the long run and has a negative effect on the long term-sustainability of public finance.

[30] Periods during which the insured person was objectively unable to work (such as periods of military service or childcare) are counted towards the accumulated years of work.

[31] More specifically, in the law, the „malus" is defined as 0.3% for every started 30-day period below the retirement age (i.e., if one retires 61 days before reaching the statutory retirement age, his/her pension is lower by 0.9%)

[32] In that case, their old-age pension is reduced by approximately 6.5% per year or 12.5% per two years.

Figure 6 - Legislative changes in second pillar contributions
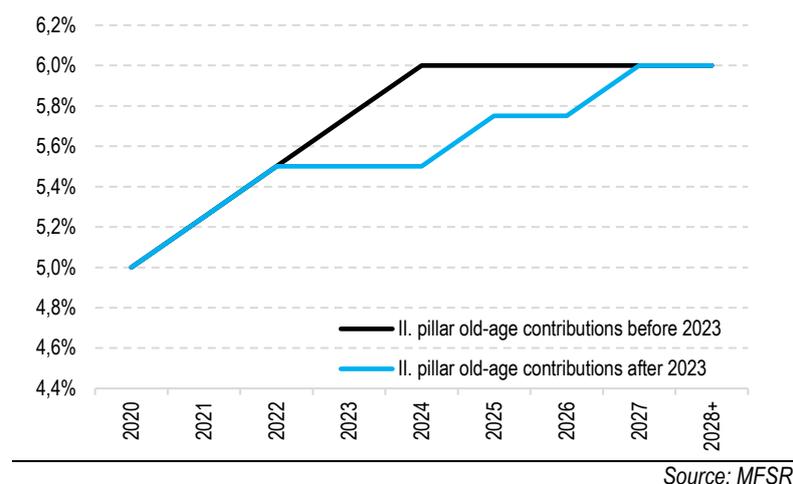
1.2.3. Second pillar reform

The second pillar reform has been passed in November 2022 by the Slovak parliament in order to address an overly conservative asset allocation. The most notable changes are the introduction of the Default investment strategy, changes in the pay-out phase, mandatory participation for labour market newcomers, in the fee structure, and in an individual guarantee structure.

Introduction of the Default investment strategy (DIS) and changes in the pay-out phase

To maximise the efficiency of the second pillar and increasing retirement financial security, the so-called **default investment strategy (DIS)** was introduced. The DIS defines portfolio allocation based on the investor's age and extends the investment horizon of savers beyond the retirement age. Participation in the DIS is mandatory for newcomers to the labour market and selected groups of existing pensioners whose portfolio allocation was deemed overly conservative[33], with a possibility to opt-out for both groups.

The goal of the DIS is to pursue a more aggressive investment strategy in case of long investment horizons (i.e., young savers) and gradually adjust to a more conservative allocation with the approaching retirement age. During the initial savings phase, the participant's assets will be exclusively allocated to a non-guaranteed index fund. Beginning at the designated age[34] and upon reaching each subsequent year of the participant's age, the proportion of the net asset value in the non-guaranteed index fund compared to the previous year's proportion of this net asset value will decrease by 4 percentage points in favour of the proportion of the net asset value in the guaranteed bond fund[35]. Upon retirement age, 60% of the net asset value will be allocated to the guaranteed bond funds.

Furthermore, the default investment strategy does not conclude upon reaching retirement age; rather, it ensures the participant's continued investment of accumulated funds until a lifetime annuity is purchased. At the point of retirement, the assets are split into two parts[36], the larger one being in the guaranteed bond fund (60 percent). The first part of assets, allocated in safer guaranteed bond funds, is after gradually withdrawn during a period that corresponds to half of the total years the saver is expected to spend in retirement (currently around 10 years). Meanwhile, the second part of assets continues to be invested in more risky assets that are gradually reallocated

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[33] Savers 54 years old or younger (born in 1969 or later) who were transferred to the guaranteed bond pension fund in 2013 and since then did not actively change the allocation of their portfolio will have their assets adjusted to the DIS. Savers older than 54 years (born in 1968 or earlier) who were transferred to the guaranteed bond fund in 2013 and since then did not actively change the allocation of their portfolio will have their new contributions allocated in the non-guaranteed index fund until the allocation of their assets converges to the DIS.

[34] This threshold is currently 50 years.

[35] For example, a participant at the age of 50 will have 4% of their assets in the guaranteed bond fund and 96% in the non-guaranteed index fund. At the age of 51, this ratio will be 8%:92% and so on.

[36] There is also an option withdraw savings in a lump sum, provided pensioner demonstrates a pension income that is higher than the average pension.

towards safe guaranteed bond funds. After the gradual withdrawal period, a lifetime annuity is purchased from a life insurance company using the second part of the accumulated savings[37].

Figure 7 - Assets under the DIS (assets at retirement = 100%)
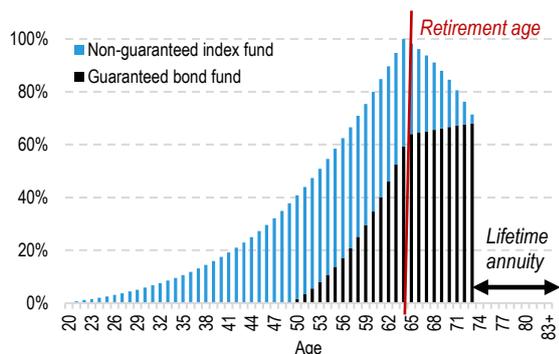
Figure 8 - Share of savings in the non-guaranteed index fund
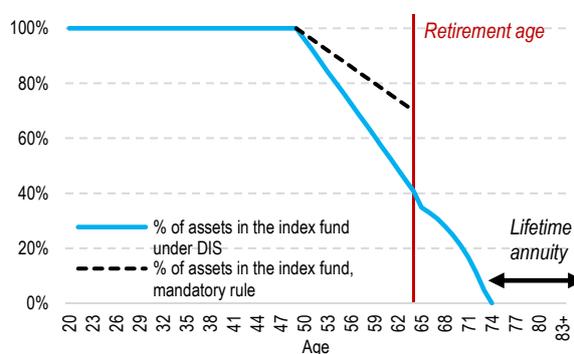
Source: MFSR

Source: MFSR

Changes in the fee structure

The reform also abolished two of the three fees levied by the PMCs – the individual account management fee and the performance fee. On the other hand, the management fee levied from assets under management was increased from 0.3% to 0.4%, with a transitory increase to 0.45% in 2023 and 0.425% in 2024.

Mandatory participation for newcomers

After May 1, 2023 every newcomer[38] to the labour market under the age of 40 automatically joins the second pillar[39]. The saver has the option to opt out within two years of the start of his initial participation, and he will also have the right to voluntarily re-join the pillar once more, at the latest by the age of 40.

Change to an individual guarantee structure

The previous legal framework contained an obligation of the PMC to replenish the assets in the guaranteed bond funds from its resources if the value of the **pension fund unit** falls during an observed[40].

The previous guarantee system, based on fund units, was replaced with a more targeted system of **individual guarantees**[41]. PMC will guarantee to the saver that the sum of pensions paid through scheduled payments and the sum of a one-time insurance premium transferred to the life insurance company will not be lower than the amount of their individual guarantee; otherwise, the difference will be covered from PMC's resources.

1.2.4. Changes in widow and widower pensions

A small adjustment in the eligibility of the widow's and widowers' pensions was made, effective from 2023. Previously, if the widow or widower did not belong to one of the specified groups[42], the widow's/widower's entitlement was granted only for one year. The amendment changed the period to two years and added widows with one child older than 57 years to the specified groups for whom a lifetime entitlement is granted. However, as

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[37] Up until the start of the lifetime annuity paid by the life insurance company, it is possible to inherit savings from a deceased saver.

[38] Person who will begin paying their first pension insurance (e.g., someone who started working for the first time).

[39] Within 180 days of the date of his initial enrolment in the Social Security System, this person can finalize his first old-age pension savings contract with any PMC. If they fail to do so, the Social Insurance Agency will assign them to a PMC at their discretion.

[40] The value of pension unit is evaluated in the first and last month of a 10 year period.

[41] Therefore, the guarantees are now also applicable during the pay-out phase.

[42] Widows taking care of at least one dependent child; disabled widows with a decline in earnings activity due to health impairment of more than 70%; widows who have raised at least three children (regardless of her age); widows that reached the age of 52 and raised two children or widows who have reached the retirement age.

the large majority of survivor beneficiaries belong to the old-age pensioners (this being one of the specified groups), this change has only a minor impact on the expenditures of 9 mil. euros in 2023.

1.2.5. Extraordinary valorisation due to high inflation

To ensure timely pension adjustment in a high-inflationary environment, an extraordinary valorisation due to high inflation was introduced in 2023 and administered on July 1, 2023. Due to the new measure, old-age pensions, disability pensions and survivors' pensions were increased by 10.6%. The provision is permanent and will be activated whenever the pensioner's inflation exceeds five percent since the last indexation was administered. The value of the extraordinary valorisation is the recorded pensioner's inflation in the same period and will be administered in 3 months since the recorded inflation crossed the 5% threshold[43]. If the extraordinary valorisation is administered in a given year, the value of the next standard valorisation will account for the fact and decrease accordingly (Equation 8, Annex 5). The same amendment also changed the period in which the rate of pensioner's inflation is assessed for the standard indexation from the first six months to the first nine months of the previous year.

1.2.6. Unfreezing the value of the minimum pension

As a part of a consolidation effort to address the growing budget deficit in the public finances during 2020, the government froze the minimum pension amount starting next year. Therefore, the amounts effectively remained unchanged from 2020 to 2023. Previously, the minimum pension was linked to the average wage[44] for 2020 and the subsistence minimum in the preceding period between 2015 and 2019.

In July 2023, the value of the minimum pension was unfrozen and tied to the value of the subsistence minimum with a minor change to the increments in the minimum pensions received for an additional year of the contributory period. The legal change has diversified these increments to encompass 2 p.p. for up to 39 years of career, 3 p.p. up to 49 years, 5 p.p. up to 59 years, and an additional 7 percentage points for every year of work beyond 59 years.

Starting from October 2023, these increments were once again changed and increased, now encompassing a raise of 2.5 p.p. per year for up to 39 years of work, 3 p.p. up to 49 years, 5 p.p. up to 59 years, and an increased increment of 7.5 p.p. for each year of work beyond 59 years, as illustrated in Add. Table 12 and Figure 9.

Figure 9 – Minimum pensions since 2015 (monthly in EUR)
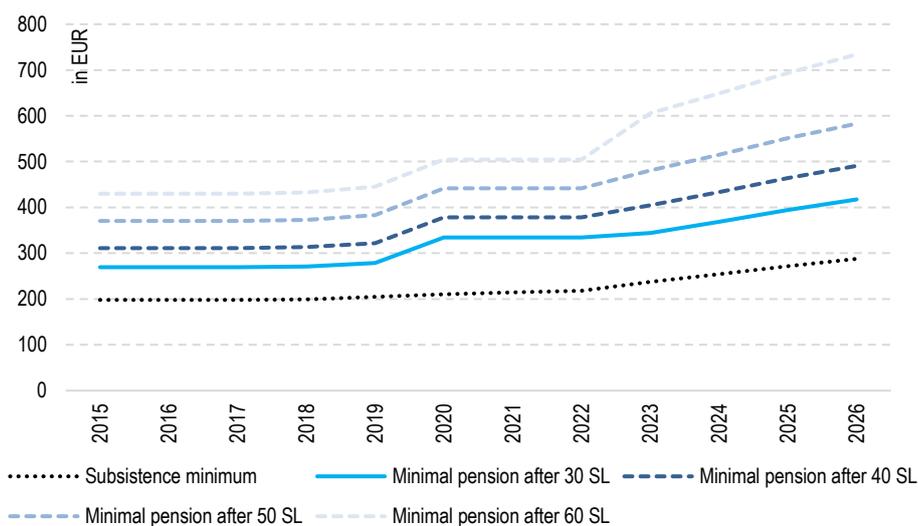
Source: MFSR

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[43] This rule doesn't apply in the last quarter of the year.
[44] The level of minimum pension for workers with at least 30 years of qualified pension insurance is 33% of the average wage (AW) from two years ago.

1.2.7. Change in the assessment of the degree of disability

The entitlement to the disability pension[45] and the value of the disability pension[46] are dependent upon the rate of decline in earnings activity due to health impairment. Each health condition has a range of values for the rate of decline that are assigned by the law. As of 2023, these rates were adjusted which will lead to more people becoming eligible for disability pensions and an increase in the existing disability pensions.

1.2.8. One-time thirteenth pension disbursement in 2023

Following the elections, the new government declared that there will be an additional one-off thirteenth pension disbursement in December 2023, which will be administered subsequent to the granting of the standard thirteenth pension. The measure has been passed by the parliament in November, prior to the final endorsement of the pension projections, and has been included in the baseline projections for AR2024. For every pensioner, the additional pension benefit will be a lump sum of 300 euros. The overall additional costs associated with this measure are estimated at 440 mil. euros (0.36% GDP).

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[45] The disability pension is granted if the rate of decline in earnings activity is at least 40% and the condition is deemed to last at least one year.
[46] If the rate of decline in earnings activity is at least 70% one is entitled to a full disability pension. If the rate of decline in earnings activity lower than 70% one is entitled to a partial disability pension the value of which depends on the rate of decline in earnings activity.

Box 1: Anticipated measures in the pension system

After the September 2023 elections, the newly established government announced a new set of measures that it aims to implement in the upcoming months. The proposed changes will affect the thirteenth pension, which will first be appended by a lump sum payment in 2023 (a one-off measure) and redefined and increased from 2024 onwards; and also the second pillar contributions, which will in turn be decreased as a compensation measure. At the time of the finalisation of the document, only the one-off thirteenth pension disbursement has been passed by the parliament and this measure has been included in the baseline projections. The exact specification of the remaining measures has not yet been definitively settled and therefore Box 1 contains only preliminary projections of the scenario that has been publicly presented.

Permanent thirteenth pension increase

The proposed change to the thirteenth pension scheme involves moving from the current scheme, in which the thirteenth pension decreases for higher pensions, to a lump-sum payment. The lump sum will be determined based on the average pension from the preceding year and calculated separately for each type of pension (i.e. old-age, disability, etc.) separately, with a minimum set at 300 euros. The eligibility criteria remain unchanged from the existing system. The elimination of the old thirteenth pension and the reduction of the current parental pension are expected to cover around 62% of the new thirteenth pension expenditure in the first year and 72% in the long run with the remaining extra expenditure presently not being covered. The declining impact of the measures over time is the consequence of the old thirteenth pension and parental being indexed to the average wage growth, whereas growth of the new thirteenth pension is linked to the growth of the average pension.

Second pillar contributions decrease

In order to find resources for the increased thirteenth pension, the second pillar contributions are intended to be permanently lowered to 4.0% as of 2024, to decrease the contributions remitted to the PMCs. This will increase the share of contributions to the first pillar and revenues of the public pension scheme. However, the measure also has a negative effect on the expenditures which will, however, materialise with a delay. Newly granted pensions will be reduced to a lesser extent due to the participation in the second pillar, gradually increasing public pension expenditure. As the impact of the measure on the expenditure side is delayed, decreasing second pillar contributions will have a positive effect on the balance of the pension system and the impact will turn neutral only beyond the 2070 horizon.

Figure 10 - Impact of the anticipated measures on the balance of the pension system (% GDP)
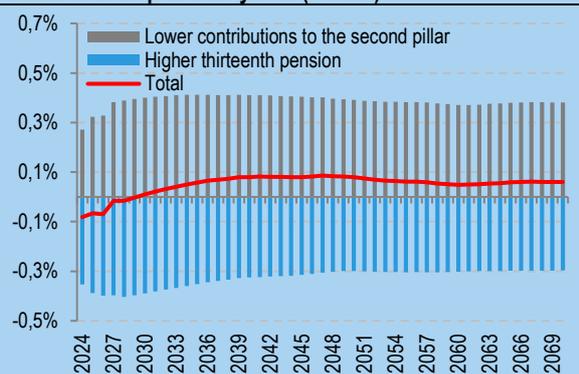
Source: MFSR

Figure 11 - Impact of the anticipated measures on the pension system expenditure (% GDP)

Source: MFSR

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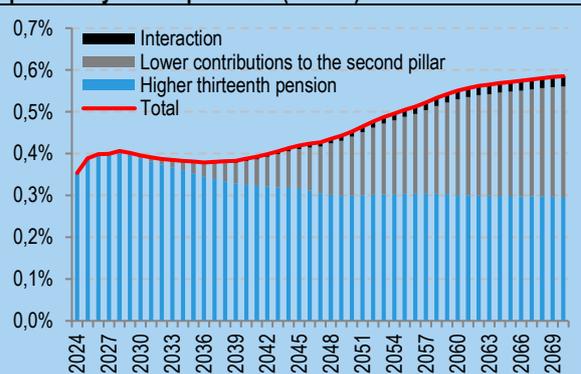
1.3. Description of the actual "constant policy" assumptions used in the projection

1.3.1. Universal system

The complete set of demographic and macroeconomic assumptions, as supplied by Eurostat and the Commission, are used in the projections.

The **indexation** assumed in the projections is the following:
- First pillar pensions are indexed according to legislation (i.e., pensioners' CPI, which is estimated as CPI+, the difference between CPI and pensioners CPI in the last 10 years. For the period 2006 – 2016, it was 0.11 p.p.).
- Non-contributory minimum pensions are indexed to the average wage. This is due to the assumption that the level of subsistence level compared to the average wage should not decrease over time.
- The earnings-related minimum pensions have been, as of 2023, again tied to the value of the subsistence minimum. Consistently with the case of non-contributory minimum pensions, the earnings-related minimum pensions are indexed to the average wage.

Due to the mandatory entry (with the possibility of an opt-out) for newcomers to the labour market legislated in 2023, the model assumes **that 85% of population will enter the second pillar by the age of 25.** This assumption, in turn, implies that the ratio of participants to contributors **will gradually rise and reach 95% by 2070** (the number of contributors is lower than the populace in a given cohort).

1.3.2. System of armed forces

In the projections, the demographic and macroeconomic assumptions supplied by Eurostat and the Commission are fully incorporated.

The average **contributory period** reflects the legislated minimum contributory period and is based on assumptions on how employees will leave the system in view of the changes foreseen by the 2013 reform[47]. The number of **contributors** (active members) of the system of armed forces is estimated as a weighted average of two scenarios: status quo and constant number of active members per capita of the whole population.

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[47] In this respect, the main change consists of increasing the years needed to receive a pension. Whereas in 2013, the necessary contributory period was only 15 years, this increases to 25 years in 2032.

2. OVERVIEW OF THE DEMOGRAPHIC AND LABOUR FORCE PROJECTIONS[48]

2.1. Demographic development

Table 2 - Main demographic variables

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	5 479	5 442	5 295	5 173	5 020	4 817	5 529	2023	-662
Population growth rate	0.6%	-0.3%	-0.2%	-0.2%	-0.4%	-0.4%	0.9%	2023	-1.0%
Old-age dependency ratio (pop 65+ / pop 20-64)	28.5	35.1	42.0	54.7	63.7	59.7	63.7	2060	31.2
Old-age dependency ratio (pop 75+ / pop 20-74)	8.8	13.2	17.5	21.2	28.9	32.5	32.6	2069	23,6
Ageing of the aged (pop 80+ / pop 65+)	19.5	22.6	30.4	29.7	36.9	46.0	46.0	2070	26.6
Men - Life expectancy at birth	73.4	75.8	78.1	80.3	82.3	84.1	84.1	2070	10.7
Women - Life expectancy at birth	80.4	82.4	84.3	86.0	87.7	89.1	89.1	2070	8.7
Men - Life expectancy at 65	15.1	16.7	18.2	19.6	21.0	22.2	22.2	2070	7.1
Women - Life expectancy at 65	19.0	20.6	22.0	23.4	24.6	25.8	25.8	2070	6.8
Men - Survivor rate at 65+	76.6	80.2	83.8	86.8	89.3	91.2	91.2	2070	14.7
Women - Survivor rate at 65+	89.2	91.0	92.5	93.8	94.9	95.7	95.7	2070	6.5
Men - Survivor rate at 80+	37.0	45.4	53.0	60.0	66.2	71.7	71.7	2070	34.7
Women - Survivor rate at 80+	61.0	67.8	73.1	77.7	81.6	84.8	84.8	2070	23.8
Net migration (thousand)	96.2	-0.7	7.6	8.5	6.8	7.7	96.2	2022	-88.5
Net migration (% population previous year)	1.8%	0.0%	0.1%	0.2%	0.1%	0.2%	1.8%	2022	-1.6%

Source: Eurostat

Table 2 shows an overview of the demographic development in Slovakia until 2070 according to the Eurostat projection. The population size will start to decrease from 2023, and the growth is expected to be negative until the end of the projection. One of the drivers of population decrease is a low level of the total fertility rate, which will change from 1.60 in 2022 to 1.66 in 2070. Compared to the previous projection, the initial level of fertility in 2022 increased from 1.57 to 1.60. However, a lower long-term growth rate causes the fertility rate to converge to a similar level by 2070 as in EUROPOP2019. Compared to the previous report, a slightly lower level of life expectancy is anticipated through 2030, but the difference is negligible over the long run. New population projections assume a significant impact on migration in 2022 due to the war in Ukraine. However, the majority of those affected will gradually depart by 2033. Overall, the population size at the projection horizon is expected to be about 2% higher than in the previous round due to more favourable fertility and migration assumptions.

Life expectancy is expected to increase substantially by 2070. Migration in Slovakia has a minor effect on the population size based on data from Eurostat. However, it will increase throughout the entire projection. The past low fertility rates and a significant increase in projected life expectancy result in a substantial increase in the old-age dependency ratio, which will increase by 31 p.p. between 2022 and 2070. The old-age dependency ratio covering people above 65 years is set to increase up to the year 2060 and slightly decrease after that. On the other hand, the old-age dependency ratio covering people over 75 years is set to increase until 2069.

Figure 12 depicts the age pyramid comparison between the years 2022 and 2070. The current population is characterized by relatively less populated cohorts of 65 years or older and sizeable cohorts between the ages of 30 and 50 years. The age cohorts of 25 years or younger are relatively small due to a persistent decline in fertility rates after 1990. As the strong cohorts' age and the life expectancy increases, the share of people older than 65 years in the entire population will increase substantially. Because the fertility rate is not expected to increase significantly, cohorts aged 65-84 years will be larger than those under 20 years by 2070.

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[48] For more details, see European Commission and EPC (2023), *'2024 Ageing Report: Underlying assumptions and projection methodologies'*, European Economy, Institutional Paper 257.

Figure 12 - Age pyramid comparison: 2022 vs. 2070
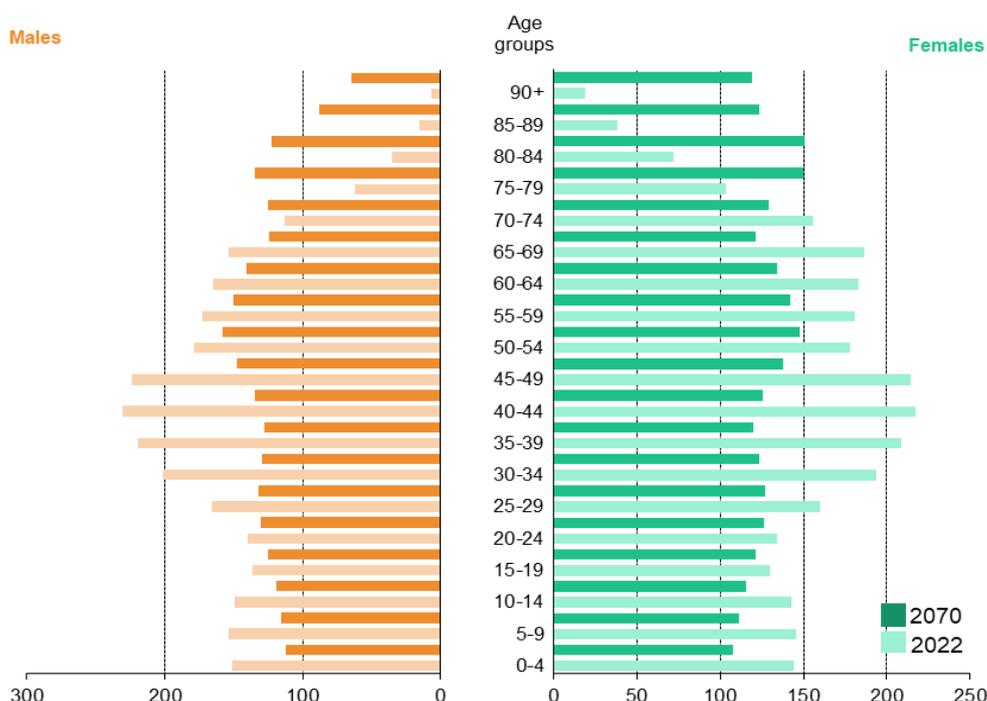
Source: Eurostat

2.2. Labour force

Table 3provides an overview of the projection of labour force developments. The labour force participation for workers between 20-64 years old remains above 80% throughout the projection period. The most notable effect in the labour market development is the increase in participation in the older ages, caused by the continuous retirement age increase. This is most pronounced in the development of participation rates of the 65-74 age cohort, which will increase by about 13 pp. by 2070 and 55-64 age cohort which increase by about 16 pp. by 2070. The re-introduction of the retirement age link to the life expectancy and its effect on participation is also the most significant effect compared to the previous assumptions. The participation rate of 65-74 age cohorts in 2070 increased from 6%. To 20% between the projection rounds and the participation rate of 55-64 age cohorts from 60% to 83%.

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Labour force participation rate 20-64	81.7	81.9	80.9	82.5	84.3	84.8	84.8	2070	3.1
Employment rate of workers aged 20-64	76.8	77.3	76.0	77.5	79.2	79.7	79.7	2070	2.9
Share of workers aged 20-64 in the labour force 20-64	94.0	94.4	94.0	93.9	94.0	94.0	94.9	2025	-0.1
Labour force participation rate 20-74	70.3	69.9	68.7	67.4	69.7	73.8	73.8	2070	3.5
Employment rate of workers aged 20-74	66.1	66.1	64.6	63.4	65.6	69.5	69.5	2070	3.3
Share of workers aged 20-74 in the labour force 20-74	94.1	94.5	94.1	94.1	94.2	94.2	95.0	2025	0.1
Labour force participation rate 55-64	67.1	66.5	69.4	73.7	78.4	82.8	82.8	2070	15.7
Employment rate of workers aged 55-64	64.0	63.6	66.3	70.5	75.1	79.2	79.2	2070	15.2
Share of workers aged 55-64 in the labour force 55-64	95.5	95.8	95.6	95.7	95.8	95.7	96.2	2025	0.3
Labour force participation rate 65-74	7.0	8.1	10.3	12.6	15.5	19.9	19.9	2070	12.9
Employment rate of workers aged 65-74	6.8	8.0	10.1	12.3	15.2	19.5	19.5	2070	12.6
Share of workers aged 65-74 in the labour force 65-74	98.3	98.1	97.9	97.9	98.0	97.9	98.3	2024	-0.4
Median age of the labour force	42.0	43.0	45.0	43.0	43.0	44.0	45.0	2037	2.0

Source: MFSR

The average labour market exit is assumed to increase in the upcoming years, although at a slower pace compared to the expected increase in statutory retirement age. This is true for both men and women.

Table 4 - Labour market effective behaviour

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.0	61.9	62.4	63.6	64.5	64.7	64.7	2070	3.7
Average labour market exit age (CSM)**	62.4	63.2	63.8	64.8	65.6	66.4	66.4	2070	4.0
Contributory period	42.0	42.7	43.3	44.2	44.9	45.7	45.7	2070	3.8
Duration of retirement***	17.5	19.9	21.4	21.5	22.4	22.8	22.8	2063	5.3
Duration of retirement/contributory period	42%	46%	49%	49%	50%	50%	50%	2063	8%
Percentage of adult life spent in retirement****	28%	31%	33%	32%	33%	33%	33%	2063	5%
Early/late exit*****	0.8	1.0	1.9	1.4	1.7	5.2	5.2	2070	4.5

MEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.3	62.3	62.8	64.0	64.8	65.1	65.1	2070	3.8
Average labour market exit age (CSM)**	62.8	63.6	64.2	65.2	65.9	66.8	66.8	2070	4.0
Contributory period	42.0	42.9	43.4	44.2	45.0	45.9	45.9	2070	3.8
Duration of retirement***	15.1	17.4	18.9	19.6	20.2	20.6	20.9	2066	5.5
Duration of retirement/contributory period	36%	41%	44%	44%	45%	45%	46%	2066	9%
Percentage of adult life spent in retirement****	25%	29%	30%	30%	31%	31%	31%	2066	6%
Early/late exit*****	0.9	1.2	2.3	1.6	1.6	4.7	4.7	2070	3.8

WOMEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	60.7	61.6	62.1	63.3	64.1	64.2	64.2	2070	3.5
Average labour market exit age (CSM)**	62.1	62.8	63.5	64.5	65.3	66.1	66.1	2070	4.0
Contributory period	41.9	42.6	43.2	44.2	44.8	45.6	45.6	2070	3.7
Duration of retirement***	19.9	22.3	23.8	23.4	24.6	24.9	25.0	2063	5.0
Duration of retirement/contributory period	48%	52%	55%	53%	55%	55%	55%	2063	7%
Percentage of adult life spent in retirement****	31%	34%	35%	34%	35%	35%	35%	2063	4%
Early/late exit*****	0,6	0.8	1.5	1.2	1.8	5.8	5.8	2069	5.9

* The 'average effective retirement age' is the age at which people start receiving a pension benefit (old-age, early or disability). It is calculated on the basis of the administrative data on new pensioners for 2022, showing projected data for the other years for the total. ** 'Average labour market exit age (Cohort Simulation Model)' refers to 2023 instead of 2022. *** 'Duration of retirement' is the remaining K254life expectancy at the average labour market exit age. **** The 'percentage of adult life spent in retirement' is calculated as the ratio between the duration of retirement and the life expectancy minus 20 years. ***** 'Early/late exit' is the ratio between those who exit the labour market before reaching the statutory retirement age and those who exit at or beyond the statutory retirement age. For 2022, the value refers to 2023.

Source: MFSR, Eurostat, EC

3. PENSION PROJECTION RESULTS

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

The long-term pension projections cover the majority of pension expenditures in Slovakia, i.e., old-age and early old-age pensions, disability and survivor pensions from the first pillar of the universal pension system. The second pillar, the pension expenditure is not fully covered due to data issues. Nevertheless, some information on the private scheme has been implemented in the projection[49]. The pension system of the armed forces is fully covered. The third pillar and the pre-pension system of the municipal and local police is not included in the projection because of data unavailability.

Table 5 compares past pension expenditures according to ESSPROS and AWG. We have satisfactory data about armed forces expenditures from 2012, which are included in historical data and projections.

Table 5 - Eurostat (ESSPROS) and AWG definition of pension expenditure (% GDP)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013-2021
Eurostat total pension expenditure	8.4	8.7	8.5	8.5	8.5	8.4	8.3	8.8	8.7	0.3
Eurostat public pension expenditure (A)	8.4	8.7	8.5	8.5	8.5	8.4	8.3	8.8	:	0.4
Public pension expenditure (AWG: outcome) (B)*	8.4	8.6	8.4	8.6	8.5	8.3	8.3	9.0	8.8	0.4
Difference Eurostat/AWG: (A)-(B)	0.0	0.1	0.1	-0.1	0.0	0.1	0.0	-0.2	:	-0.2
Expenditure categories not considered in the AWG definition										

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[49] The current model lacks module covering the pay-out phase of the second pillar, however for calculation purposes of benefit ratio a procedure described in the appendix is used.

3.2.   Overview of projection results

Table 6 presents the results of the projections. The comparison to the previous round is shown in the subsequent section. Gross public pension expenditure is projected to increase from 8.5% of GDP in 2022 to 12.1% in 2070. Gross public pension expenditure equals net public pension expenditure, as Slovak pensions are not subject to taxation. Public pension contributions decline due to the increasing number of private pillar participants; however, the total contributions remain stable. Due to increasing expenditures and decreasing contributions, the balance of the public pension system will worsen, from -1.1% of GDP in 2022 to -5.0% in 2070.

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Expenditure									
Gross public pension expenditure	8.5	10.2	10.8	11.5	12.1	11.3	12.1	2058	2.8
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	8.5	10.2	10.8	11.5	12.1	11.3	12.1	2058	2.8
Net public pension expenditure*	:	:	:	:	:	:	:	2058	:
Net total pension expenditure*	:	:	:	:	:	:	:	2058	:
Contributions									
Public pension contributions	7.4	7.0	6.9	6.7	6.5	6.4	7.4	2022	-1.0
Total pension contributions	8.4	8.2	8.3	8.3	8.3	8.3	8.4	2022	-0.1
Balance of the public pension system (%GDP)	-1.1%	-3.2%	-3.9%	-4.9%	-5.6%	-5.0%	-5.6%	2061	-3.9%

Net pension expenditure excludes taxes on pensions and compulsory social security contributions paid by beneficiaries.
**Public pension contributions - gross public pension expenditure.*

Source: MFSR

Figure 13 - Decomposition of pension expenditure projection by pension type
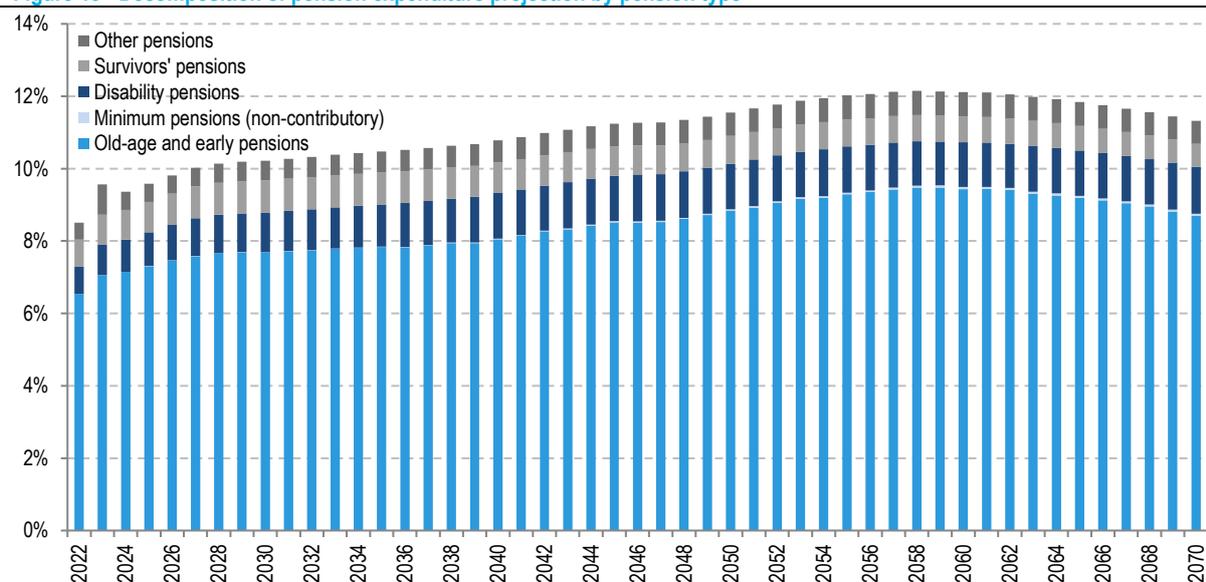
Source: MFSR

Earnings-related old-age and early pensions account for the bulk of pension expenditures. The projected expenditure to GDP is expected to increase from 6.5% in 2022 to 8.7% in 2070 (Table 7), affected mainly by the

ageing population. Continuously larger cohorts enter retirement after 2040, peaking at 2058 with expenditure at 9.5% of GDP. A decrease of expenditure after the peak is caused by the diminishing number of people in these cohorts over time. Similarly to the previous projection round, earnings-related minimum pensions are included in the projections as old-age and early pensions, as this benefit does not represent the lowest guarantee for pensioners.

Earnings-related disability pension expenditure is projected to increase from approximately 0.7% of GDP in 2022 to 1.3% in 2070 (Table 7). The increase in disability pension expenditure is also affected by changing population structure and legislative change[50]. Effective from 2023, an updated disability assessment system has been legislated, increasing the number of disability pension recipients and their benefits. Increasing the retirement age also allows for a more significant number of disability pensioners. We assume that upon reaching retirement age, the disability pension benefit is transformed into the old-age pension. In the previous projection round, the retirement age cap, due to this assumption, decreased the number of disability pensioners.

Earnings-related survivors' pension expenditure is projected to slightly decrease from 0.8% GDP in 2022 to 0.6% in 2070 (Table 7). This is mostly driven by increase in life expectancy of men, as they live longer they tend to draw widower's pension for longer time. There is also an opposite effect, as men live longer, take-up of widows' pensions decreases. After year 2037, the second effect prevails, decreasing the expenditure.

Minimum guarantees for retired expenditures are projected to increase from 0.0% GDP in 2022 to 0.1% GDP in 2070 (Table 7). This expenditure is a safety net guaranteeing the minimum income at the level of subsistence level. These minimum guarantees are used only by persons who do not qualify for the means-tested minimum pension, i.e., do not have at least 30 years of paid pension insurance contributions. The level of expenditure is already low in the base year, and a more significant part of pensioners is compensated by the means-tested minimum pension, so the expenditure does not increase by a lot.

Other pensions include a one-off fourteenth pension paid out in 2022, thirteenth pension, additional one-off thirteenth pension paid out in 2023, newly legislated parental pension and temporary benefits provided to armed forces if one did not reach the minimum contributory period. The fourteenth pension increases expenditure in the base year. At the same time, the parental bonus comes into effect in 2023 with a similar level of expenditure, keeping the other pension expenditure relatively stable during the projection horizon (see Figure 22).

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Total public pensions	8.5	10.2	10.8	11.5	12.1	11.3	12.1	2058	2.8
Old-age and early pensions	6.5	7.7	8.1	8.9	9.5	8.8	9.5	2059	2.2
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	6.5	7.7	8.0	8.8	9.4	8.7	9.5	2059	2.2
Minimum pensions (non-contributory)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	2062	0.0
Disability pensions	0.7	1.1	1.3	1.3	1.2	1.3	1.3	2046	0.6
Survivor pensions	0.8	0.9	0.8	0.8	0.7	0.6	0.9	2031	-0.1
Other pensions	0.5	0.5	0.6	0.6	0.7	0.6	0.8	2023	0.2

Special pension schemes	2022	2030	2040	2050	2060	2070	Peak value	Peak year	change 2022-2070
Total	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	2063	0.0%
- armed forces	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	2063	0.0%

Source: MFSR

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[50] The increase in expenditure is partly caused by a technicality in the model. At its current stage, the model does not account for the fact that partial disability pensions are being recalculated to higher old-age pensions when reaching retirement age. A balancing assumption is therefore used for the rate of disability of new pensioners. This coefficient, which determines also the amount of new pensions granted, is set higher in the projections than in the administrative data to offset this limitation.

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

Public pension expenditure to GDP is decomposed into four major driving forces - dependency ratio, coverage ratio, benefit ratio and a labour market indicator according to formula [1] below. The coverage ratio and the labour market effects are further decomposed according to formulas [2] and [3].

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

$$
\frac{number\ of\ pensioners}{population\ 65+} = \overbrace{\frac{number\ of\ pensioners\ 65+}{population\ 65+}}^{coverage\ ratio\ old-age} + \left(\overbrace{\frac{number\ of\ pensioners\ \leq65}{population\ 50-64}}^{coverage\ ratio\ early-age} \times \overbrace{\frac{population\ 50-64}{population\ 65+}}^{cohort\ effect} \right) \quad [2]
$$

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

Over the projection horizon 2022-2070, the public pension expenditure is projected to increase by 2.8 p.p. of GDP (Table 8). The main driving force behind the increase is the unfavourable development of the dependency ratio, which is projected to contribute by 8.6 p.p. of GDP to the overall change. The coverage ratio will contribute by -2.5 p.p. of GDP. The benefit ratio will also have a mitigating effect of -1.4 p.p., and the effect of the labour market indicator further contributes to the decline by 0.8 p.p. This suggests that population ageing will be the main factor behind the pension expenditure increase.

The increase in the **dependency ratio** reflects longer life expectancy of the population as well as low fertility rates. The ratio of elder people (65+) to the population 20-64 is projected to increase from 28.5% in 2022 to 59.7% in 2070 (Table 2). The mitigating effect of the **coverage ratio** is present throughout the projection horizon and is most significant between 2040 - 2050 period in which, after a temporary pause, the retirement age resumes its increase. Moreover, the effect is strengthened by a cohort effect as strong cohorts that age beyond 65 years in this period are replaced by smaller cohorts in the population younger than 65 years. The benefit ratio is set to decrease up to 2060, which is reflected in development of **the benefit ratio effect** over time in Table 8. Significant driver of the decline is the inflation indexation of pensions in Slovakia as the growth of the average wage is usually higher than inflation. The benefit ratio will also be affected by pensions paid out from the second pillar. This is apparent from the diverging trajectories of the public scheme replacement rate and the total replacement rate. As the share of pensioners with income from both the first and the second pillar is expected to rise, the replacement rate from the first pillar and thus the benefit ratio will decline. This effect will be further reinforced by the mandatory entry to the second pillar for current newcomers on the labour market who will start to retire in the last decade of the projection horizon. Further negative impact to the benefit ratio will also come from the recently implemented reduction in the rate of growth of the current pension value and from an increase in the uptake of early pensions due to the introduction of the option to retire early after 40 years of service. The growth in expenditures is additionally offset

by a modest **labour market effect** which is attributable to the increase in retirement age that leads to higher participation in the older ages.

Table 8 - Factors behind the change in public pension expenditures between 2022 and 2070 (in p.p. of GDP) - pensioners

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.7	0.6	0.8	0.6	-0.8	2.8
Dependency ratio effect	2.0	2.0	3.1	1.9	-0.8	8.2
Coverage ratio effect*	-0.2	-0.3	-1.1	-0.7	-0.1	-2.5
Coverage ratio old-age	0.3	0.2	0.0	-0.2	-0.2	0.1
Coverage ratio early-age	-0.8	-1.1	-1.2	-0.3	-1.4	-4.8
Cohort effect	-0.6	-0.7	-3.6	-2.9	1.8	-5.9
Benefit ratio effect	0.1	-1.0	-0.6	-0.1	0.1	-1.6
Labour market effect	-0.1	0.1	-0.4	-0.3	-0.1	-0.8
Employment ratio effect	0.0	0.2	-0.2	-0.3	-0.1	-0.4
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	-0.1	-0.2	-0.1	0.0	-0.4
Residual	0.0	-0.1	-0.2	-0.1	0.0	-0.5

* Subcomponents of the coverage ratio effect do not have to add up to the total coverage ratio effect.

Source: MFSR, EC

Table 9 - Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme (in %)[51]

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public scheme (BR)	38%	39%	35%	33%	33%	33%	-5%
Coverage	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	37%	38%	33%	32%	32%	32%	-5%
Public scheme: old-age earnings related (RR)	40%	41%	37%	36%	34%	35%	-5%
Coverage	79%	79%	79%	80%	81%	80%	1%
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	:	:	:	:	:	:	:
Private individual schemes (RR)	6%	7%	11%	13%	15%	19%	13%
Coverage	:	:	:	:	:	:	:
Total benefit ratio	38%	39%	35%	33%	33%	33%	-5%
Total replacement rate (earnings-related benefits)	41%	44%	43%	44%	45%	46%	5%

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 case data on pensioners are not available, the calculation is based on the number of pensions.

Source: MFSR, EC

The downward trend in the **public scheme replacement rate** reflects many of the factors impacting the benefit ratio mentioned above. The indicator shows the replacement rate for the retirees, which did not participate in the second pillar. The average replacement rate of all retirees from the public scheme would decline in time due to the fact that public pension for retirees from both pillars would be supplemented by the second pillar pension. The replacement rate is additionally adversely affected by implemented reduction in the rate of growth of the current pension point and by pensioners retiring earlier due to the new early retirement scheme.

The total replacement rate shows the replacement rate of a person in both first and second pillar and is projected to increase from 41% in 2022 to 46% in 2070. This is a more favourable result relative to the previous round in

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[51] The indicators are not reported relative to the average wage but the income provided by the Commission.

which the replacement rate converged to the same value by 2070 and shows the positive effects of the reform of the second pillar. The object of the reform was to change the overly conservative portfolio allocation in the second pillar by enrolling conservative savers into the newly implemented DIS and making the DIS mandatory for newcomers to the labour market.

Table 10 - System dependency ratio and old-age dependency ratio

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	1 390	1 584	1 733	1 829	1 823	1 669	279
Employment (thousand) (II)	2 634	2 523	2 360	2 195	2 061	2 045	-590
Pension system dependency ratio (SDR) (I)/(II)	0.5	0.6	0.7	0.8	0.9	0.8	0.3
Number of people aged 65+ (thousand) (III)	960	1 118	1 266	1 481	1 571	1 453	494
Working-age population 20-64 (thousand) (IV)	3 367	3 191	3014	2 706	2 467	2 436	-931
Old-age dependency ratio (OADR) (III)/(IV)	0.3	0.4	0.4	0.5	0.6	0.6	0.3
System efficiency (SDR/OADR)	1.9	1.8	1.7	1.5	1.4	1.4	-0.5

Source: MFSR

The pension system dependency ratio (number of pensioners relative to the number of workers) is set to increase from 53% in 2022 to 82% (Table 10). In other words, this means that whereas today there are 2 employed persons relative to one pensioner, in 2070, the ratio will change to 1.25 employed per pensioner. This is a more favourable result compared to the previous projection round in which the ratio was set to decrease to one employed per pensioner and reflects the positive impact of the increase in retirement age on the labour market. This figure includes all types of pensioners in all age groups. The trend is primarily caused by an increase in the number of old-age pensioners, as the population above 64 years increases from 959.7 thousand in 2022 to 1 453.3 thousand in 2070.

Table 11 - Public pensioners to (inactive) population by age group (%)

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	12.1	13.4	12.8	11.4	11.2	10.9
Age group 55-59	147.4	121.3	124.2	134.4	154.9	161.6
Age group 60-64	117.3	115.3	105.7	86.1	87.8	101.1
Age group 65-69	102.6	116.2	122.0	124.4	122.0	118.9
Age group 70-74	100.4	100.9	106.2	107.6	108.5	110.6
Age group 75+	98.0	98.6	100.2	101.6	101.6	101.3

pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	4.8	5.4	5.3	4.8	4.8	4.6
Age group 55-59	21.8	21.8	19.5	18.4	18.0	16.9
Age group 60-64	60.3	60.4	48.0	32.6	27.2	24.8
Age group 65-69	92.9	101.1	103.0	99.4	90.9	79.7
Age group 70-74	96.4	98.1	102.5	102.4	102.0	102.7
Age group 75+	98.0	98.6	100.2	101.6	101.6	101.3

Source: MFSR

Table 12 - Female public pensioners to (inactive) population by age group (%)

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	10.9	12.2	12.0	10.6	10.4	10.2
Age group 55-59	152.7	113.5	107.2	142.4	174.2	198.9
Age group 60-64	116.3	118.6	106.5	91.7	85.9	96.6
Age group 65-69	101.7	112.4	116.1	120.9	122.9	118.6
Age group 70-74	99.5	99.6	103.5	104.2	105.4	106.4
Age group 75+	98.2	98.3	99.2	99.6	99.3	99.1

female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	4.7	5.2	5.1	4.7	4.6	4.5
Age group 55-59	22.8	21.1	19.2	18.4	17.4	16.6
Age group 60-64	65.2	66.2	52.4	36.2	27.2	24.1
Age group 65-69	93.0	99.8	100.1	99.8	94.1	82.1
Age group 70-74	96.8	97.2	100.4	100.1	100.1	100.1
Age group 75+	98.2	98.3	99.2	99.6	99.3	99.1

Source: MFSR

In the cohorts **up to 54 years** of age, the percentage of pensioners to inactive population and overall population is relatively small, consisting of disability and survivor pensioners. The ratios rise to 2030 mainly due to the decline of the population in younger cohorts that do not yet receive any disability pensions. A slight decrease in the ratios after that is caused by the shift of the probability of disability by half of the life expectancy. The ratio of pensioners **between 55 and 59 years old** to the inactive population is currently above 100%. It is mainly caused by the disability pensioners working while receiving a disability pension. The initial decline results from a temporary decline in participation rates and an increase in inactivity (although the retirement age is increasing in this period). After that, the ratio rises again, owing to improved participation and a decline in inactivity due to the increasing retirement age.

The share of pensioners to the inactive population for cohorts **between 60 and 64 years old** is set to decline up to 2050 as the retirement age increases slower than the exit age. This effect becomes pronounced by 2050 as the retirement age rises well beyond the age bracket (the retirement age for men in 2050 is projected at 66.1 years). After that, the ratio is projected to increase again due to improved labour market participation rates.

The ratio of pensioners **65 - 69 years old** to inactive population is higher than 100% in 2022. It increases to 2050 as higher projected participation rates imply more people will work while drawing pensions. Afterwards, the modest decrease is attributable to a slight increase in people exiting the labour market but not yet applying for a pension. In practice there may be several reasons as to why an individual might not apply for an early retirement after exiting the labour market: some individuals may not qualify for the new early retirement scheme or their pension would not clear the minium of 160% subsistence minimum. Moreover, as for every year of retirement prior to the SRA the value of a new pension gets reduced by the early age retirement malus and the foregone growth of CPPV, some individuals may choose to wait until reaching the SRA. However, the decrease in ratio and the impact of this effect is very modest and the level of coverage for these cohorts remains high. **The ratio of 75 years or older** to inactive population rises slightly above 100%, due to the concurrent withdrawal of universal and armed forces pensions.

Table 13 - Breakdown of new public pension expenditure (old-age and early earnings-related pensions)[52]

TOTAL	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	303	506	878	1221	1286	1369
I. Number of new pensions (1000)	43.2	44.8	55.7	52.5	39.9	29.9
II. Point value (EUR/month)	15.1	24.3	36.8	54.3	78.1	108.1
III. Average accrual rate (points/year) (IV/V)	0.9	0.9	0.8	0.8	0.8	0.8
IV. Total pension points at retirement	39	39	36	36	34	35
V. Average contributory period (years)	42	43	43	44	45	46
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	12.0	12.0	12.0	12.0	12.0	12.0

MEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	153	263	454	613	608	751
I. Number of new pensions (1000)	19.6	21.2	27.0	25.3	18.4	15.9
II. Point value (EUR/month)	15.1	24.3	36.8	54.3	78.1	108.1
III. Average accrual rate (points/year) (IV/V)	1.0	1.0	0.9	0.8	0.8	0.8
IV. Total pension points at retirement	43	43	38	37	35	37
V. Average contributory period (years)	42	43	43	44	45	46
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	12.0	12.0	12.0	12.0	12.0	12.0

WOMEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	150	244	425	608	678	618
I. Number of new pensions (1000)	23.6	23.6	28.6	27.2	21.4	14.1
II. Point value (EUR/month)	15.1	24.3	36.8	54.3	78.1	108.1
III. Average accrual rate (points/year) (IV/V)	0.8	0.8	0.8	0.8	0.8	0.7
IV. Total pension points at retirement	35	35	34	34	34	34
V. Average contributory period (years)	42	43	43	44	45	46
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	12.0	12.0	12.0	12.0	12.0	12.0

New pension expenditure equals the product of I, II, IV, VI, VII & VIII.

Source: MFSR

The number of **new pensioners** increases as large cohorts retire between 2035 and 2055. After that, the number of new pensioners declines as the relatively less populated cohorts born after 1990 start to retire. **The point value** represents the value of the monthly pension for one point earned, and since 2023, it has been indexed to 95% of average wage growth.

The **average contributory period** is set to increase at the pace of the average exit age, partially reflecting the increase in retirement age. We note that this is a somewhat simplified approach, as it does not take into account the fact that there are several types of non-contributory periods (education, unemployment, military service) in Slovak pension system that are counted as contributory periods up to 2004, but not afterwards. As these non-contributory periods will gradually phase-out of the contributory periods of future pensioners, the average

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[52] The projected new pension projection considers only universal scheme pensions, because the benefit calculation for armed forces differs from the universal scheme.

contributory period will be negatively affected. However, at the time of the preparation of the projections there have not been sufficient data available to correctly simulate the impact of this factor.

The average number of points earned annually (**average accrual rate**) decreases significantly up to 2040 and increases afterwards. This is because the reported indicators only consider accrued pensions in the public system. Therefore, as more people retire with supplementary pensions from the second pillar, their first pillar pension is reduced, and this shows in the decreasing average accrual rate.

3.4. Financing of the pension system

The pension system is financed by contributions of employees and self-employed. The public pension scheme contributions projections also include the social insurance contributions of armed forces. Besides the contributions from the economically active population, there are also legislated contributions made by the state. These are paid for people insured by the state, including, for example, mothers on maternity leave. Transfers from the state budget are also used to finance the expenditures on minimum pensions, thirteenth pension (previously Christmas bonus) and expenditures on disability pensioners from a young age[53]. The projections do not consider these additional contributions as they are equivalent to a state budget transfer. Therefore, only contributions of the economically active population are considered in the following section. If the sum of contributions for old-age insurance, disability insurance and reserve fund of solidarity is not sufficient to cover first pillar expenditures, the deficit is covered by surplus from other social security funds (e.g., from the unemployment fund). If the balance remains negative, a transfer from the state budget covers the deficit.

Table 14 - Financing of the public pension system

	Public employees	Private employees	Self-employed
Contribution base	Gross wage (=Total labour cost/1.352)	Gross wage (=Total labour cost/1.352)	(Revenue-costs)/1.486
Contribution rate			
Employer	Total: 21.75% Old-age insurance: 14% (if employee is in the second pillar, the contribution is split between the two pillars), Disability insurance 3%, Reserve fund of solidarity: 4.75%	Total: 21.75% Old-age insurance: 14% (if employee is in the second pillar, the contribution is split between the two pillars), Disability insurance 3 %, Reserve fund of solidarity: 4.75%	Total: 28,75% Old-age insurance: 18% (if self-employed is in the second pillar, the contribution is split between the two pillars), Disability insurance 6%, Reserve fund of solidarity: 4.75%
Employee	Total: 7% Old-age insurance: 4%, Disability insurance 3%	Total: 7% Old-age insurance: 4%, Disability insurance 3%	-
*State**	-	-	-
*Other revenues**	-	-	-
Maximum contribution	700% of average wage from 2 years ago	700% of average wage from 2 years ago	700% of average wage from 2 years ago
Minimum contribution	-	-	50% of the average wage from 2 years ago, if yearly income exceeds 7 266 euros.

Only legislated contributions are reported.

Source: MFSR

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[53] If a person becomes disabled while under 18 or up to 26 and studying, he/she receives so called disability pension from young age.

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

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public pension contributions (%GDP)	7.4	7.0	6.9	6.7	6.5	6.4	-1.0
Employer contributions	1.8	1.7	1.7	1.7	1.6	1.6	-0.2
Employee contributions	5.6	5.2	5.2	5.0	4.9	4.8	-0.8
*State contribution**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*Other revenues**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of contributors (I) (1000)	2 264	2 169	2 032	1 893	1 779	1 765	-499
Employment (II) (1000)	2 634	2 523	2 360	2 195	2 061	2 045	-590
(I) / (II)	0.86	0.86	0.86	0.86	0.86	0.86	0.0

Includes only legislated contributions.

Source: MFSR

Figure 14 displays the comparison between public, private and overall pension contributions. The total contributions remain stable across projections, decreasing slightly from 8.4% of GDP in 2022 to 8.3% in 2070 after an initial decline attributable to the convergence of macroeconomic variables to their potential. A slight additional variance is due to the contributions within the armed forces system in which the number of contributors is not strictly tied to the labour market. This is because increasing labour productivity will offset a decrease in contributors, however the decomposition of contributions between public and private systems changes. With the introduction of automatic entry into the second pillar, an increasing volume of contributions are remitted to the PMCs. The second factor with the same direction of effect is the increasing share of contributions sent to the private second pillar, from 5.5% of the gross wage in 2022 to 6.0% in 2027.

Figure 14 - Public, private and total pension system contributions (% GDP)
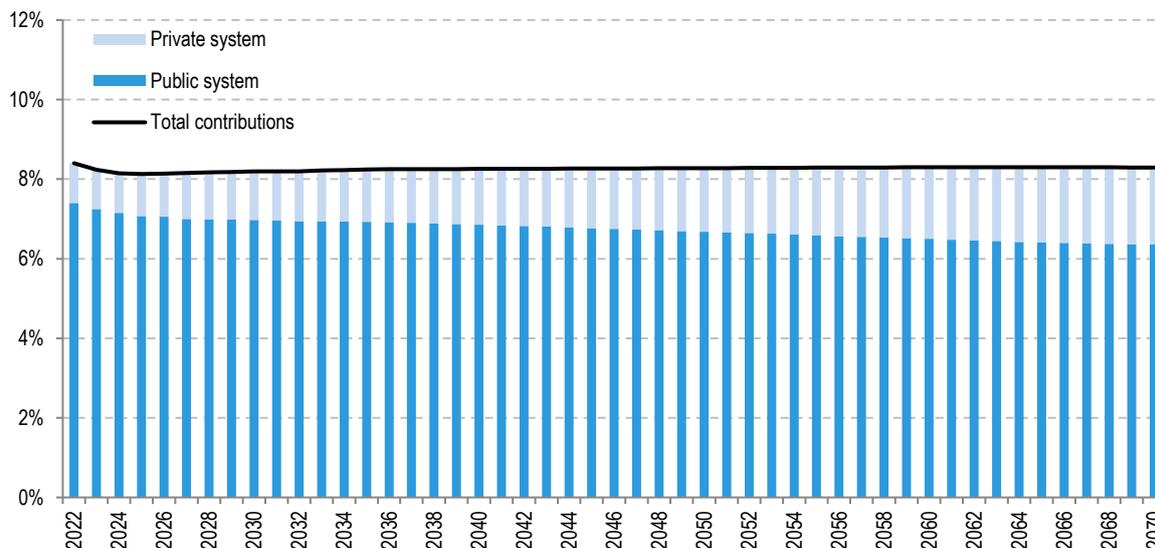
Source: MFSR

The pension system deficit was already at 1.1% of GDP in 2022. However, high inflation was not yet fully reflected in nominal expenditures as indexation of pensions is administered with a lag of one year. However, high rates of pension indexation, together with the administration of extraordinary valorisation and the introduction of the parental bonus, will increase the deficit to 2.0% of GDP in the following year. As the public scheme contributions continuously decline and expenditures increase, the pension system deficit is set to increase until 2060, when it reaches maximum value at 5.6% GDP. In other words, only slightly more than half of the expenditures will be financed by contributions. After 2060, as the largest generations diminish in numbers and the long-term savings measures that become more effective over time persist, expenditures will decrease toward the end of the horizon.

Figure 15 - Gross public expenditures, contributions and balance (% GDP)
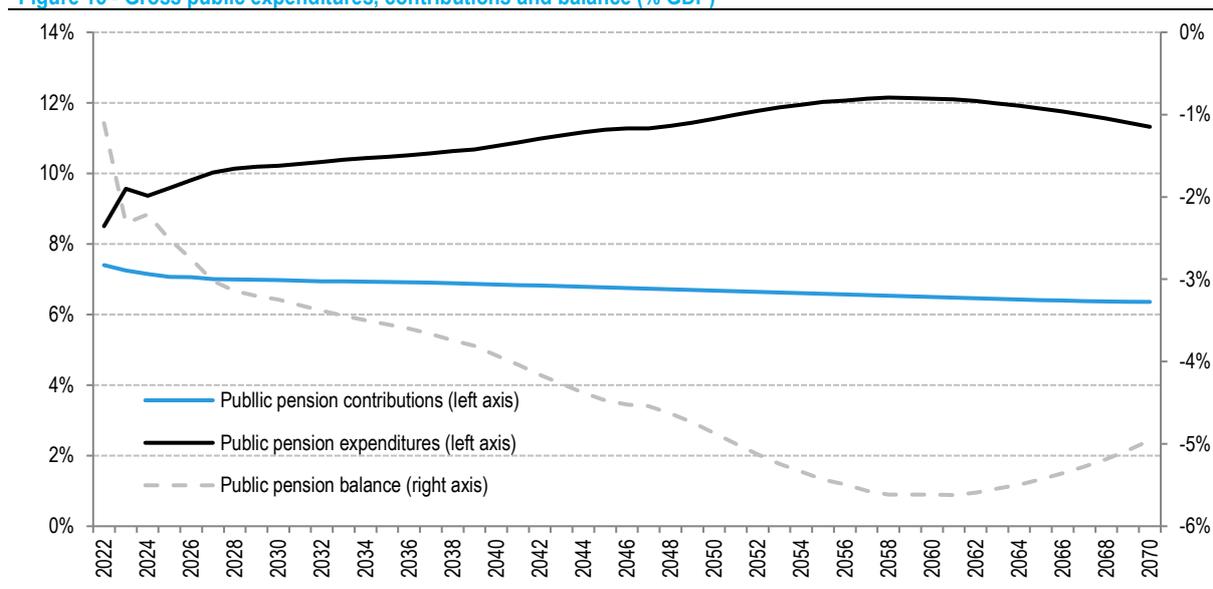
Source: MFSR

Table 16 - Public pension assets and reserves (% GDP) and return on assets (%)

	average 2012-2021	2022	2030	2040	2060	2060	2070	average 2022-2070
Stock of assets (end-of-year; %GDP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fund balance (million EUR)		0.0	0.0	0.0	0.0	0.0	0.0	
Fund expenditure		0.0	0.0	0.0	0.0	0.0	0.0	
Disbursements (to pension scheme)		0.0	0.0	0.0	0.0	0.0	0.0	
Other expenditure (incl. administrative costs)		0.0	0.0	0.0	0.0	0.0	0.0	
Fund revenues		0.0	0.0	0.0	0.0	0.0	0.0	
Return on assets		0.0	0.0	0.0	0.0	0.0	0.0	
Other income (incl. pension contributions)		0.0	0.0	0.0	0.0	0.0	0.0	
Nominal rate of return (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in asset valuation (million EUR)		0.0	0.0	0.0	0.0	0.0	0.0	

Source: MFSR

3.5.   Sensitivity analysis

Together with the baseline scenario discussed throughout the document, various sensitivity scenarios have been carried out to account for the uncertainty of long-term projections. Since the second pillar expenditure is not fully covered, the effects on public and total pensions are the same.

Table 17 - Public pension expenditure under different scenarios (p.p. deviation from the baseline)[54]

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	8.5	10.2	10.8	11.5	12.1	11.3	2.8
Higher life expectancy at birth (+2y)	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Higher migration (+33%)	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
Lower migration (-33%)	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Lower fertility (-20%)	0.0	0.0	0.0	0.2	0.6	1.0	1.0
Higher inflation scenario (2% by 2052)	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1
Higher employment rate of older workers (+10 pps)	0.0	-0.2	-0.4	-0.4	-0.3	-0.2	-0.2
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.2	0.3	0.4	0.4
Policy scenario: link retirement age to longevity	:	:	:	:	:	:	:
Policy scenario: constant retirement age	0.0	0.3	0.9	1.5	1.6	1.5	1.5
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.4	0.6	0.4	0.4

Source: MFSR

Higher life expectancy introduces two opposing effects. On one hand, pensioners live longer, and thus, the period of receiving pensions is extended. On the other hand, increasing life expectancy is reflected in the growth of statutory retirement age, slowing down the increase in the number of pensioners. Due to the formula used to calculate retirement age[55], two periods of decreased expenditure are present despite the overall trend of increasing expenditure in this scenario. However in the long run, the negative effect of higher life expectancy on expenditures prevails, increasing expenditures by 0.2 p.p. of GDP in 2070.

Higher and **lower migration** scenarios have opposite effects compared to the baseline. Due to low overall migration rates in Slovakia, the effects are moderate.

The most negative effect across demographic sensitivity scenarios, and the second overall, would materialize under the **lower fertility** assumptions. Lower fertility would substantially affect the GDP, but only after the cohorts born after 2022 enter the labour market, making the impact neutral until 2040. Moreover, as these cohorts do not retire until the projection's end, the fertility decrease will only show in the lower numbers of disability and survivor pensions.

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[54] For more information on the design of the sensitivity scenarios, see Chapter 5 of Part I in European Commission and EPC (2023), *'2024 Ageing Report: Underlying assumptions and projection methodologies'*, European Economy, Institutional Paper 257.
[55] The main offsetting effect of the link of the retirement age to life expectancy occurs after 2040 and not very smoothly. Due to the median formula used to determine the retirement age, the SRA reacts with a delay and thereafter shifts significantly. This leads to some cohorts to retire later and temporarily suppresses expenditures.

Figure 16 - Comparison of pension expenditure under sensitivity scenarios and the baseline (% GDP)
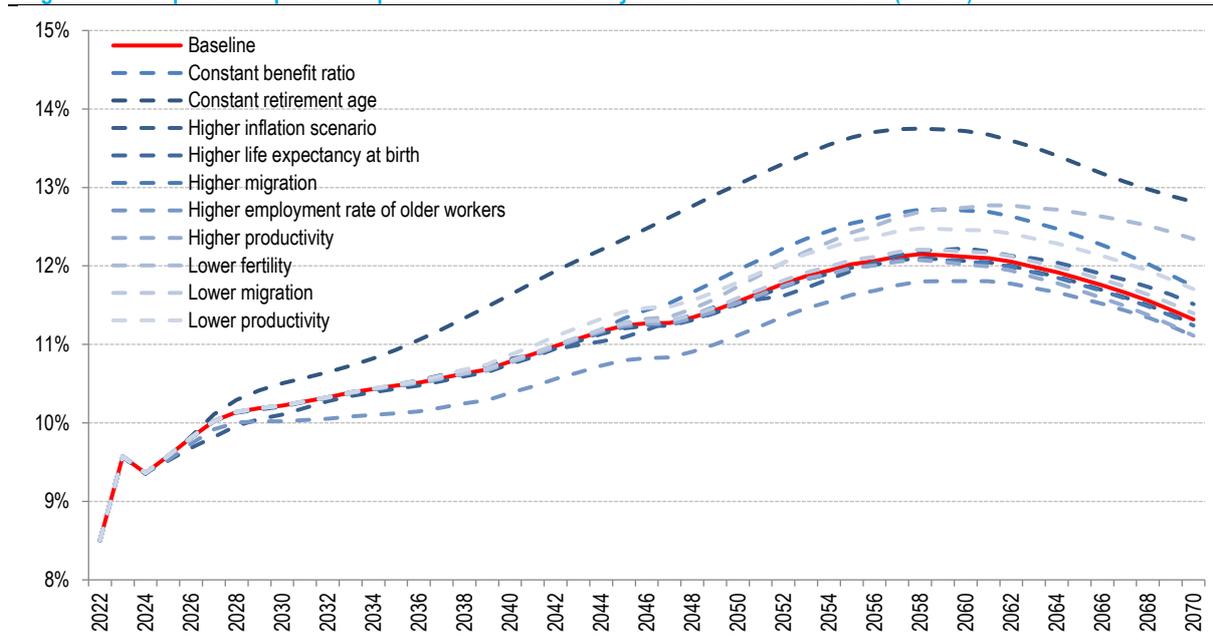
Largest effect of the **higher inflation scenario** is present before 2030 at -0.2 p.p. of GDP. The reason for the temporarily reduced expenditures is the fact that pensions are indexed with a lag of one year. In the event of increased inflation in a given year, pensions are indexed by the inflation from previous year, whereas the inflation is implicitly present in GDP of the current year. Therefore, the effect on the already existing pensions is temporary. However, due to the newly introduced reduced growth of the current point value to 95% of wage growth, this is not the case for newly granted pensions. With higher inflation the CPPV declines more rapidly relative to the average wage, and therefore pushes down expenditures.

Higher employment of older workers brings the highest positive effect on pension expenditure out of all sensitivity scenarios. More extended periods in the labour market cause GDP to grow faster, decreasing pension expenditure. They also mean higher accumulated pension rights, diminishing the positive effect on expenditure towards the end of the projection horizon.

Similarly to migration scenarios, **higher** and **lower productivity** represent opposing effects. The negative effect of lower productivity on GDP is higher due to a faster decrease of TFP, compared with the gradual increase in TFP in higher productivity scenarios.

The policy scenario of linking retirement age to life expectancy is obsolete, as this is already legislated in the pension system. However, keeping the **retirement age constant** would increase pension expenditure by 1.5 p.p. of GDP by 2070, having the most significant adverse effect of all sensitivity scenarios. The number of pensioners would increase substantially, together with decreasing GDP. The impact on expenditures is growing steadily, in line with the demographic development. More significant increase at around 2045 occurs due to strong cohorts going into retirement. Afterwards, much smaller cohorts follow.

The constant benefit ratio scenario assumes that the earnings-related benefit ratio cannot decrease by more than 10% compared to the base year. The benefit ratio is expected to decrease by more than 10% after 2040, making the effect neutral until now. Later compensation of decreased benefit ratio amounts to an increase in expenditure

by 0.4 p.p. of GDP by 2070. It is worth noting that the benefit ratio does not consider private pensions. This means that the benefit ratio is, in reality, going to be higher due to additional benefits from the second pillar[56].

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[56] In our model, we can assume that the second pillar does not exist. The model calculates the full pension for all new old-age pensioners and subsequently reduces the pensions based on the period spent in the second pillar. Since we do not have the future second pillar pensions, we use this former calculation as a proxy of a pension equivalent from both pillars. Such proxy assumes that the combined pension from the first and second pillar will be the same as the one from the first pillar. This is not necessarily true; however, it is an adequate approximation. When running this scenario, the benefit ratio does not decrease by more than 10% compared to the base year.

3.6.   Changes in comparison with previous Ageing Report projections

Like the previous projection rounds, the dependency ratio is the main driving force of the increase in pension expenditure. Compared to the previous projection, the coverage ratio in this round of projections has a slightly smaller mitigating effect. However, the minor effect is only a consequence of a smaller denominator (expenditures to GDP) as the ratio of pensioners to the population 65 or older exhibits a higher decline than in the previous round. On the other hand, the labour market effect is opposite compared to the previous projection round, mitigating expenditure rather than increasing. This is caused by different legislative settings, as continuously increasing retirement age supports better development in the labour market.

Table 18 - Overall change in public pension expenditure to GDP under consecutive projection exercises

	Public pension expenditure	*Dependency ratio effect*	*Coverage ratio effect*	*Benefit ratio effect*	*Labour market effect*	*Residual (incl. interaction effect)*
2006 Ageing Report (2004-2050)	1.5	9.0	-2.5	-3.1	-1.3	-0.6
2009 Ageing Report (2007-2060)	3.4	11.7	-3.9	-2.4	-0.6	-1.4
2012 Ageing Report (2010-2060)	2.7	11.6	-4.5	-2.0	-1.0	-1.5
2015 Ageing Report (2013-2060)	2.1	11.3	-4.2	-2.6	-1.3	-1.0
2018 Ageing Report (2016-2070)	1.2	8.8	-4.1	-1.5	-1.2	-0.8
2021 Ageing Report (2019-2070)	5.9	10.4	-2.6	-1.6	0.2	-0.6
2024 Ageing Report (2022-2070)	2.8	8.2	-2.5	-1.6	-0.8	-0.5

- The disaggregation for 2006/2009/2012 is on the basis of the number of pensions; for the other vintages it is on the basis of pensioners.
- The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.

Source: MFSR

Real data between 2019 and 2022 show a lower evolution of pension expenditure in comparison with the 2021 Ageing report. The main difference is given by more favourable macroeconomic developments. In the previous projection round, a more significant drop in GDP in 2020 was expected, causing a leap in expenditure from 8.3% of GDP to 9.5%. The year 2022 was also impacted by the pay-out of the fourteenth pension, not yet present in the previous round.

Table 19 - Breakdown of the difference between the 2021 projections and outcome figures (% of GDP)

	2019	2020	2021	2022
Ageing Report 2021 projections (% GDP)	8.3	9.5	9.5	9.5
Assumptions (pps of GDP)	0.0	-0.5	-0.7	-0.8
Coverage of projections (pps of GDP)				-0.4
Constant policy impact (pps of GDP)				
Policy-related impact (pps of GDP)				0.2
Actual public pension expenditure (% GDP)	8.3	9.0	8.8	8.5

Source: MFSR

Compared to the previous 2021 Ageing Report projections, the public pension expenditures are projected to reach a lower level in this round (Figure 17 and Table 20). According to the previous projections, the pension expenditure was projected to grow from 8.3% of GDP in 2019 to 14.2% in 2070. In this round, the growth is significantly lower, from 8.5% of GDP in 2022 to 11.3% in 2070. The evolution is similar during the first decade, but after 2032, the difference will increase, reaching 2.9 p.p. of GDP by the end of the projection. The public pension expenditures in 2070 will decrease from 14.2% of the GDP projected in the previous round to 11.3% of GDP projected in the current round.

Figure 17 - Pension expenditures comparison between projection rounds (% GDP)
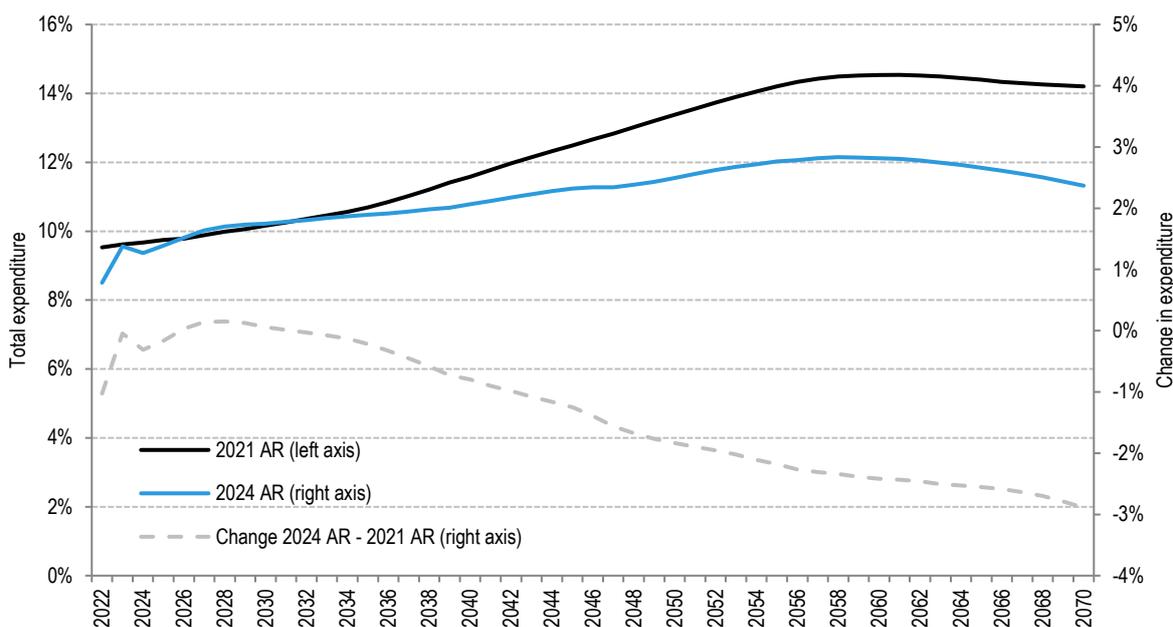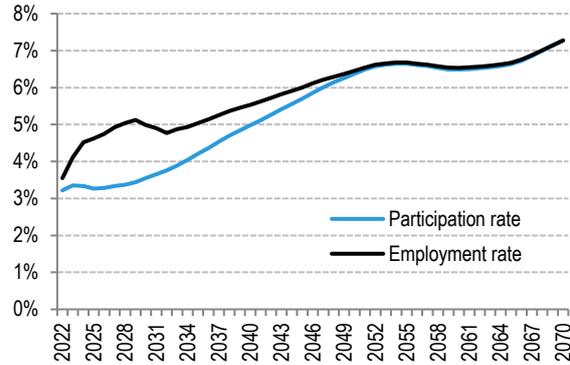

Source: MFSR

New macroeconomic assumptions are essential drivers of the change in pension expenditure between projection rounds, impacted significantly by legislative changes. Linking retirement age to life expectancy gradually increases participation and employment rates by up to 7.3 p.p. in 2070 compared to the retirement age ceiling in the previous round. Another critical difference in macroeconomic assumptions comes from the higher inflation levels in the projection's first years. In 2022, the CPI was 10.7 p.p. higher than was expected in the previous round, reaching the common assumption of a long-term level of 2% by 2027.

Figure 18 - Comparison of the CPI growth between projection rounds
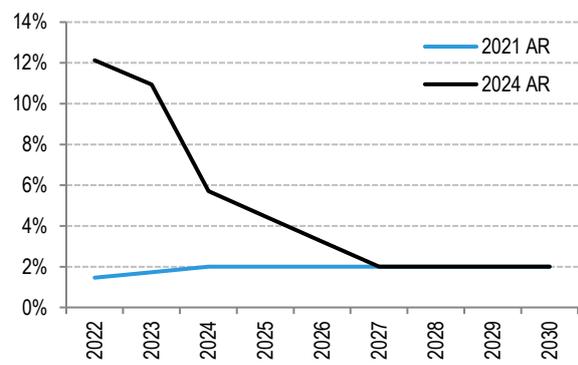
Source: MFSR

Figure 19 - Comparison of participation and employment rate growth change between projection rounds

Source: MFSR

Since the new macroeconomic assumptions already include the new legislative setting, individual effects cannot be fully separated. The impact of new macroeconomic assumption is therefore overvalued, compared with the impact of new legislation in the decomposition, which is undervalued (Figure 20). The improved situation in the labour market counteracts slightly slower productivity growth compared to the 2021 Ageing Report. In conclusion, the overall effect on GDP growth is positive, having the effect of reducing pension expenditure.

Figure 20 - Decomposition of the difference in pension expenditures between projection rounds (% GDP)
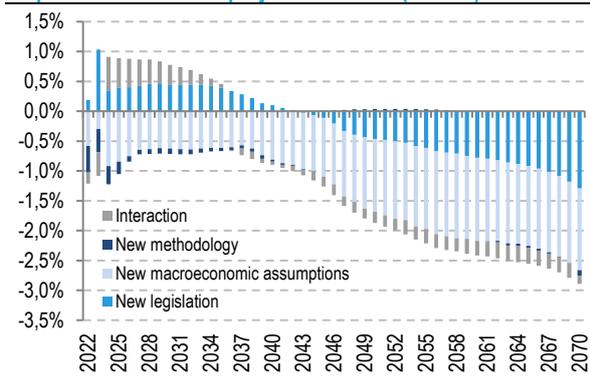
Source: MFSR

Figure 21 - Decomposition of the new methodology in pension expenditure between projection rounds (% GDP)
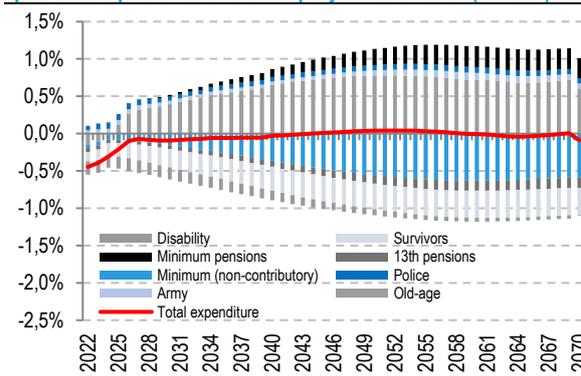
Source: MFSR

The pension expenditure projections differ from the previous round due to methodological updates (Figure 21). The level of non-contributory minimum pension expenditure was revised in the base year from 21.3 mil. euros to 4.6 mil. euros for 2022, due to availability of new data. The remaining methodological changes include several smaller modifications of the model performed in between the projection rounds, related to model inaccuracies or discovered errors[57]. A significant decrease in the growth of expenditure is explained by various factors, mainly related to legislative changes. In the environment of retirement age cap present in 2021 Ageing Report, shorter careers resulted in lower pension benefits, pushing more people into minimum pension schemes. With the freezing of earnings-related minimum pensions, more people had to take up the non-contributory minimum pensions. However earnings-related minimum pensions have been unfrozen earlier than previously expected, already in 2023, covering a larger share of pensioners. Another temporary factor in 2023 is the extraordinary valorisation, increasing pension benefits significantly above the level of minimum pension.

Figure 22 - Impact of legislative changes implemented between projection rounds on pension expenditure (% GDP)
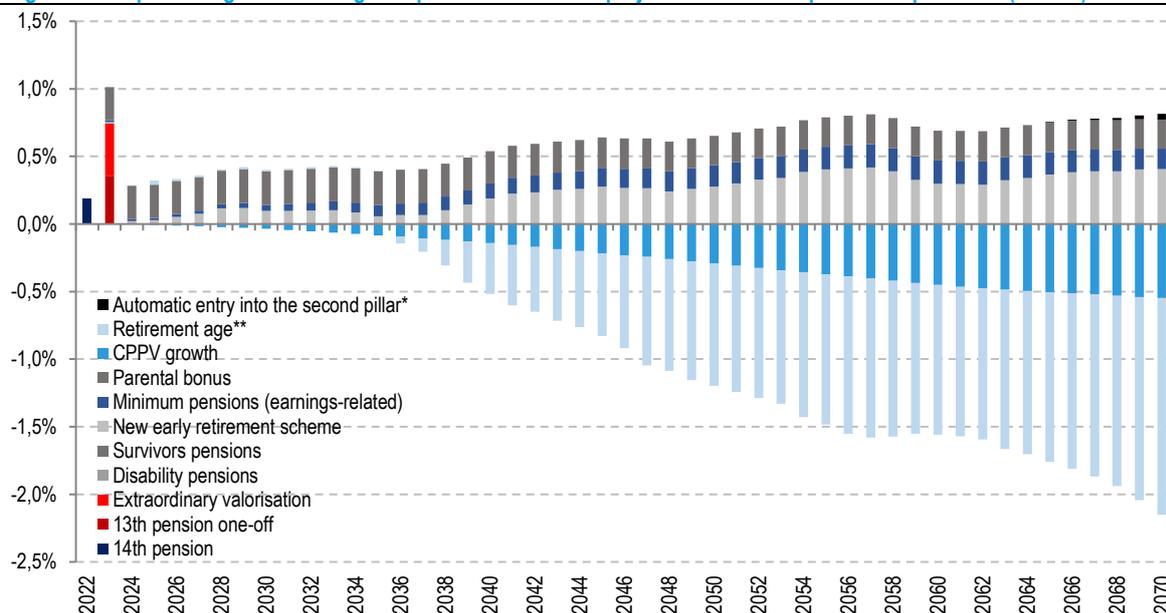
* Only the savings effect on expenditure of automatic entry into the second pillar is shown here, which is minimal (0.04 p.p. of GDP in 2070). The measure also has a negative effect on the income side, with the overall effect being negative on pension fund balance by 2070 of 1.4 p.p. of GDP. With the full maturity of the system, the impact is neutral.

** The effect of linking retirement age to life expectancy cannot be fully separated, as it is already present in the macroeconomic assumptions. Therefore the actual effect of the measure is higher. Similarly, the effect of new macroeconomic assumptions in Figure 20 is lower.

Source: MFSR

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[57] The model fix with the biggest impact concerned the calculation of service life, driving the old-age and minimum (as the value increases with service life as well) pension expenditure upwards.

The adopted reform of the first pillar of the pension system contributes to improving long-term sustainability but creates additional pressures in the short run. Measures increasing expenditure include the introduction of a new early retirement scheme, increasing expenditure by 0.4 p.p. of GDP in 2070, and parental pension scheme, increasing expenditure by 0.2 p.p. of GDP constantly during the projection horizon. Relinking the retirement age to life expectancy and a slowdown in the current pension point value growth will improve long-term sustainability. Further reform of the first pillar unfroze the level of earnings-related minimum pensions, together with a new mechanism to calculate its level, increasing expenditure by 0.2 p.p. of GDP in 2070. Adjustment of entitlements to disability pension increases expenditure by 0.1 p.p. in 2070. Efforts to reduce the negative impact of high inflation for pensioners led to the one-off pay-out of 14th pensions in 2022, amounting to 0.2% of GDP in 2022, and to the introduction of extra valorisation. While a permanent mechanism, the extra valorisation comes into effect only in 2023, increasing expenditure by 0.4 p.p. of GDP.

Reform of the second pillar did not aim to affect long-term sustainability but to improve the adequacy of the system by making the pension saving schemes more efficient. However, introducing automatic entry into the second pillar impacted the pension system balance. While decreasing public pension expenditure by reducing new pensions (by only 0.04 p.p. of GDP as of 2070), the measure also decreases revenues (by 1.4 p.p. by 2070) as more pension contributions are redirected towards PMCs. In a long enough horizon (longer than 50 years), these conflicting influences cancel each other out, having a neutral effect on the public pension balance.

Table 20 - Breakdown of the difference between the 2021 and the new public pension projection (% GDP)

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	9.5	10.2	11.6	13.4	14.5	14.2
Change in assumptions (pps of GDP)	-0.8	-0.3	-0.9	-1.4	-1.6	-1.5
Improvement in the coverage or in the modelling (pps of GDP)	-0.4	-0.1	0.0	0.0	0.0	-0.1
Change in the interpretation of constant policy (pps of GDP)	:	:	:	:	:	:
Policy-related changes (pps of GDP)*	0.2	0.4	0.1	-0.5	-0.8	-1.3
New projections	8.5	10.2	10.8	11.5	12.1	11.3

*Policy-related changes cannot be fully separated from changes in assumptions. Impact of policy-related changes reported here is actually higher, as they also impact macroeconomic assumptions. Similarly, the impact of change in assumptions is therefore lower.

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

4.1. Institutional context

The model of the Slovak pension system (**SLOPEM)** was developed by Mr. Ludovit Odor and is further being developed by the Slovak Council for Budget Responsibility (CBR) and the Institute for Financial Policy. In addition, there are two models for the system of armed forces: one for the **police** and one for the **army**. They were developed by Mr. Ludovit Odor and the Council for Budget Responsibility (an independent body for monitoring and evaluating the fiscal performance of the Slovak Republic). The projections are run by the Ministry of Finance. The models were developed to run long-term projections and to simulate the impact of changes in relevant parameters of the current system.

4.2. Assumptions and methodologies applied

SLOPEM
- The model takes fully into account AWG assumptions as supplied by Eurostat and the Commission.
- Pension benefits are divided into 4 schemes by gender (old-age pensions, disability pensions, widow/er pensions, and orphans pension). Additionally, the minimum pension benefits, thirteenth pension benefits and parental pension benefits are calculated.
- Model does not work with age specific earnings profile – average wage is used for all age cohorts.
- The first pillar pensions are indexed according to law (i.e., pensioners' CPI estimated as CPI+0.0011, that is ten year average difference between CPI and pensioners' CPI), while minimum pensions (social assistance), thirteenth pension and parental pension are fully indexed to wages.
- Contributory period estimated from empirical data is assumed to increase at the rate of the average exit age from the CSM output calculated by the Commission.
- The model works on a cohort level, as people retire, the cohort-specific contributory period and income distributions are calculated. Based on these assumptions, the pension level is calculated.

ARMED FORCES
- The models takes into account all of the AWG assumptions that are applicable to the system.
- Pension benefits are divided into 5 schemes not differentiated by gender (retirement pensions, temporary pensions, disability pensions and widow/er and orphans' pension).
- Models do not work with age specific earnings profile – average wage is used for all age cohorts.
- The average contributory period reflects the legislated minimum contributory period and makes assumption on how the employees will leave the system after changes in the law.
- The number of contributors (active members) of the system of armed forces are estimated as weighted average of two scenarios: status quo and constant number of active members per capita of the whole population.

4.3. Data used to run the models

SLOPEM
The data used in the model have been provided by the Social Insurance Agency, which collects contributions and pays out all first pillar benefits. The model uses the following data:
- The number of pensions disaggregated by type of pension, age, gender and income bracket.
- The number of new pensions by type of pension, age, gender and income bracket.
- The number of contributors by gender and income bracket.
- The number of the second pillar participants by age.
- Assumptions about the macroeconomic framework and population projection are those of the AWG.

ARMED FORCES
The data used in the models have been provided by the Ministry of Interior for the police and the Ministry of Defence for the army. The model uses the following data:
- The number of pensions disaggregated by type of pension, age and income bracket.

- The number of new pensions by type of pension, age, gender and income bracket.
- The number of contributors by income bracket.
- Assumptions about the macroeconomic framework and population projection are those of the AWG.

4.4. General description of the models

Both models are cohort-based simulation models written in MATLAB. The SLOPEM model covers the first pillar of the universal pension system but partly calculates the second pillar. At the same time, it also calculates social assistance to those with pension below the minimum subsistence level and the thirteenth pension. The models for the armed forces cover the majority (ca. 85%) of the pension system of the armed forces.

5. ANNEX

5.1. Pension formulas

Equation 1 – Old-age pension formula

$$OP = APPV \times T \times CPPV$$

OP = old-age pension benefit (monthly).
APPV = Average pension point is the lifetime average of pensioner's wages (in each year of the career) relative to average wage in the economy in that year, e.g., if someone's wage was equal to average wage over the entire career, the APPV will be 1. Maximum value of the APPV is 3. APP is subject to solidarity adjustment.
T = number of years of the working career.
CPPV = current pension point value is a value in terms of money for one APP

$$APPV = \frac{1}{t} \sum_{1}^{t} \frac{individual's\ wage_t}{average\ age\ in\ economy_t}$$

Equation 2 - Deferred old-age pension in the first pillar

After reaching the retirement age, the economic activity affects the amount of pension.

$$OP' = (OP + OP_1) \times (1 + \%)$$
$$OP_1 = PP \times CPPV$$

OP´ = total sum of the pension.
OP = the amount of pension acquired at the date of reaching the retirement age.
OP_1 = the amount of pension acquired by the economic activity at the date of reaching the retirement age.
% = 0.5% for every 30 days of the economic activity after reaching the retirement age i.e., 6% per year.

Equation 3 - Early old-age pension in the first pillar

The entitlement for early old-age pension arises to an insured person who:
- Has been old-age insured for at least 15 years
- Has less than 2 years missing until reaching statutory retirement age or has reached 40 years of service
- Becomes eligible for early old-age pension that is higher than 1.6 x minimum level of subsistence for one adult
- As of January 2011, it is not possible to receive early old-age pension and work at the same time.

$$EOP = OP \times (1 - \%)$$

EOP – early old-age pension.
OP = the amount of pension acquired at the date of reaching the retirement age.
% = 0.5% for every 30 days of the economic activity before reaching the retirement age i.e., 6% per year if the insured person hasn't reached 40 years of service or 0.3% otherwise, i.e., 3.6% per year.

Equation 4 - Disability pension in the first pillar

Calculation of the disability pension for a person with a 41%-70% decline of work capability:

$$DP = [APPV \times (T + T_1) \times CPPV] \times M$$

Calculation of the disability pension for a person with <u>more than 70% decline of work capability</u>:

$$DP = APPV \times (T + T_1) \times CPPV$$

<u>DP</u> = disability pension.
<u>APPV</u> = average pension point value.
<u>T</u> = number of years of insurance as of the date of the rise of disability.
<u>T₁</u> = number of years of insurance from the rise of disability until reaching the retirement age.
<u>CPPV</u> = current pension point value.
<u>M</u> = percentage rate of reduction in the capacity to carry out gainful activity.

Equation 5 - Initial determination of the current pension point value in 2004

$$PP2004 = \frac{RR\% \times AW\,2003}{Years} \quad \text{...............} \quad 4{,}72 = \frac{50\% \times 377{,}75}{40} \text{ in EUR}$$

<u>PP2004</u> = current pension point value in 2004
<u>RR%</u> = replacement rate (gross pension over gross average wage)- set at 50%
<u>AW2003</u> = Average wage in the economy (estimated at the time of writing law)
<u>Years</u> = years of service
1 EUR = 38.734 SKK (in December 31 2004)

Equation 6 - Formula for determining the unadjusted general retirement age for the respective birth cohort

$$UGRA_{cohort} = UGRA_{cohort-1} \quad +$$
$$median\left\{ \begin{array}{c} \frac{LE_{y-2;ra} - LE_{y-7;ra}}{5}, \frac{LE_{y-3;ra} - LE_{y-8;ra}}{5}, \frac{LE_{y-4;ra} - LE_{y-9;ra}}{5}, \\ \frac{LE_{y-5;ra} - LE_{y-10;ra}}{5}, \frac{LE_{y-6;ra} - LE_{y-11;ra}}{5}, \frac{LE_{y-7;ra} - LE_{y-12;ra}}{5}, \frac{LE_{y-8;ra} - LE_{y-13;ra}}{5} \end{array} \right\}$$

<u>UGRA</u> = unadjusted general retirement age determined in years rounded to four decimal places.
<u>cohort</u> = respective birth cohort for which the unadjusted general retirement age is determined.
<u>LE</u> = life expectancy in the calendar year and at the reference age reported by the statistical office, common for both men and women.
<u>y</u> = calendar year for which the unadjusted retirement age is determined for the respective birth cohort for the purpose of establishing the general retirement age for the respective birth cohort by a generally binding legal regulation according to § 65 section 8.
<u>ra</u> = reference age, which is the unadjusted general retirement age of individuals born in the calendar year immediately preceding the respective birth cohort, rounded down to whole years.

Equation 7 - Formula for determining the percentage increase of the pension benefit

$$p_{january} = max\left\{ 0; \left[\frac{(1 + p_z)}{\prod_{i=1}^{n}(1 + p_i)} \right] - 1 \right\}$$

<u>p_{january}</u> = percentage increase of the pension benefit in the respective calendar year according to § 82 section 1 letter b), rounded up to one decimal place.
<u>p_z</u> = percentage of year-on-year growth of consumer prices for pensioners' households reported by the statistical office for the first nine months of the calendar year immediately preceding the respective calendar year.
<u>p_i</u> = percentage increase of the pension benefit according to § 82 section 2 in the calendar year immediately preceding the respective calendar year.
– number of pension benefit increases according to § 82 section 2 in the calendar year immediately preceding the respective calendar year.

Equation 8 - Formula for determining the pension point value

$$CPPV_y = CPPV_{y-1} \times 1 + \frac{AM_{y-1}}{AM_{y-2}} - 1 \times 0{,}95$$

CPPV = current pension point value.

AM = average monthly wage in the economy of the Slovak Republic determined by the statistical office for the third quarter of the calendar year.

y = the calendar year from which the current pension value is adjusted.

5.2. Calculation of the second pillar benefit

The value of assets in the second pillar is calculated using assumptions on the share of savings invested in equity and assumption on gross returns on investment in the second pillar. For the share of savings in equity, we assume distribution based on the data reported in 2021 for base year (Figure 23). We further assume gradual shift of the share of equity to the default investment strategy, remaining constant upon reaching its level. Only two asset classes are assumed in the projection – equity and bonds. The return on both equity and bonds assumes the development of interest rate, increasing from 2.1% in 2022 to 4.0% from 2033 until the end of the projection.

Figure 23 - Share of savings invested in equity in 2022 and in default investment strategy (%)
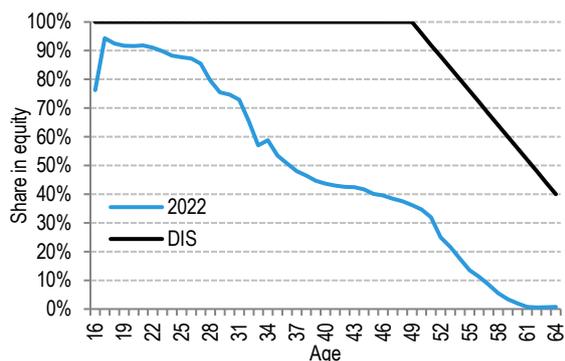
Source: MFSR

Figure 24 - Assumption on gross returns on equity and bonds (% p.a.)
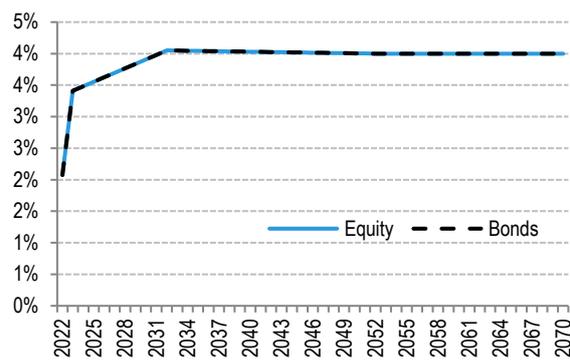
Source: MFSR

The default strategy on pay-out phase splits accumulated assets of a pensioner into two parts. First part, allocated in the guaranteed fund, is paid out gradually during half of the years expected to be spent in retirement. After the first period, a lifetime annuity is purchased from the second part of the assets. When calculating the replacement rate for the second pillar, we assume pension benefit to be determined as a fair annuity – the amount of savings at retirement are divided by the number of months individual is expected to live[58]. This represents a simplified version of the legislated default pay-out phase.

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[58] We do not use the life tables for single year but we make use of the expected mortality rates to calculate the expected lifetime at retirement.

5.3.   Additional tables

Table 21 Annex - Economy wide average wage (1000 EUR)

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	17.7	27.8	42.9	64.5	94.1	131.9
Economy-wide average gross wage	17.7	27.8	42.9	64.5	94.1	131.9

Source: MFSR

Table 22 Annex - Disability rates by age groups for the universal system

	2022	2030	2040	2050	2060	2070
Age group -54	4%	4%	4%	4%	4%	3%
Age group 55-59	17%	17%	16%	16%	15%	15%
Age group 60-64	10%	16%	21%	23%	22%	22%
Age group 65-69	0%	0%	0%	3%	11%	17%
Age group 70-74	0%	0%	0%	0%	0%	0%
Age group 75+	0%	0%	0%	0%	0%	0%

Source: MFSR

Table 23 Annex - Factors behind the change in public pension expenditure between 2019 and 2070 (percentage points of GDP) – pensions

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.7	0.6	0.8	0.6	-0.8	2.8
Dependency ratio effect	1.8	2.0	3.1	1.9	-0.8	8.0
Coverage ratio effect*	-0.1	-0.3	-1.3	-0.8	-0.1	-2.6
Coverage ratio old-age	0.3	0.1	-0.5	-0.4	-0.1	-0.5
Coverage ratio early-age	-1.0	-1.5	-1.7	-0.7	-1.5	-6.3
Cohort effect	-0.4	-0.7	-3.6	-2.9	1.8	-5.8
Benefit ratio effect	-0.5	-0.7	-0.8	-0.7	-0.1	-2.8
Labour market effect	0.0	0.1	-0.4	-0.3	-0.1	-0.7
Employment ratio effect	0.0	0.2	-0.2	-0.3	-0.1	-0.4
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.5	-0.8	-1.0	-0.8	-0.1	-3.1
Residual	0.6	-0.5	0.1	0.5	0.2	0.9

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

Source: MFSR

Add. Table 9 Annex - Minimum pension level from 2023 (in euros)

Years of contributions	Minimum pension	Years of contributions	Minimum pension
30	389.9	56	625.2
31	396.6	57	638.6
32	403.4	58	652.1
33	410.1	59	665.5
34	416.8	60	685.7
35	423.5	61	705.9
36	430.3	62	726.0
37	437.0	63	746.2
38	443.7	64	766.4
39	450.4	65	786.5
40	458.5	66	806.7
41	466.6	67	826.9
42	474.6	68	847.0
43	482.7	69	867.2
44	490.8	70	887.4
45	498.8	71	907.5
46	506.9	72	927.7
47	515.0	73	947.9
48	523.0	74	968.0
49	531.1	75	988.2
50	544.5	76	1008.3
51	558.0	77	1028.5
52	571.4	78	1048.7
53	584.9	79	1068.8
54	598.3	80	1089.0
55	611.8	81	1109.2

Source: MFSR

Add. Table 10 Annex - Retirement age valid as of January 2023 for cohorts born before 1967

Year of birth	Male	Female	Female who raised one child	Female who raised two children	Female who raised three of four children	Female who raised five or more children
1943 and less	60y	57y	56y	55y	54y	53y
1944	60y 9m	57y	56y	55y	54y	53y
1945	61y 6m	57y	56y	55y	54y	53y
1946	62y	57y	56y	55y	54y	53y
1947	62y	57y 9m	56y	55y	54y	53y
1948	62y	58y 6m	56y 9m	55y	54y	53y
1949	62y	59y 3m	57y 6m	55y 9m	54y	53y
1950	62y	60y	58y 3m	56y 6m	54y 9m	53y
1951	62y	60y 9m	59y	57y 3m	55y 6m	53y 9m
1952	62y	61y 6m	59y 9m	58y	56y 3m	54y 6m
1953	62y	62y	60y 6m	58y 9m	57y	55y 3m
1954	62y	62y	61y 3m	59y 6m	57y 9m	56y
1955	62y 76d	62y 76d	62y 76d	60y 3m	58y 6m	56y 9m
1956	62y 139d	62y 139d	62y 139d	61y	59y 3m	57y 6m
1957	62y 6m	62y 6m	62y	61y 6m	60y	58y 3m
1958	62y 8m	62y 8m	62y 2m	61y 8m	60y 9m	59y
1959	62y 10m	62y 10m	62y 4m	61y 10m	61y 4m	59y 9m
1960	63y	63y	62y 6m	62y	61y 6m	60y 6m
1961	63y 2m	63y 2m	62y 8m	62y 2m	61y 8m	61y 3m
1962	63y 4m	63y 4m	62y 10m	62y 4m	61y 10m	61y 7m
1963	63y 6m	63y 6m	63y m	62y 6m	62y	61y 11m
1964	63y 8m	63y 8m	63y 2m	62y 8m	62y 2m	62y 2m
1965	63y 10m	63y 10m	63y 4m	62y 10m	62y 4m	62y 4m
1966	64y	64y	63y 6m	63y	62y 6m	62y 6m

Abbreviations used: y-year, m-month, d-day

Source: MFSR

Add. Table 11 Annex - Retirement age as of September 2023 for men (with children) born before 1967

Year of birth	Male who raised one child	Male who raised two children	Male who raised three or more children
1957	62y	61y 6m	61y
1958	62y 2m	61y 8m	61y 2m
1959	62y 4m	61y 10m	61y 4m
1960	62y 6m	62y	61y 6m
1961	62y 8m	62y 2m	61y 8m
1962	62y 10m	62y 4m	61y 10m
1963	63y	62y 6m	62y
1964	63y 2m	62y 8m	62y 2m
1965	63y 4m	62y 10m	62y 4m
1966	63y 6m	63y	62y 6m

Abbreviations used: y-year, m-month, d-day

Source: MFSR

Add. Table 12 - Changes in minimum pension

Career length in years	Level of minimum pension from 1.1.2020 to 1.7.2023 (euro)	Level of minimum pension (1.7.2023 to 30.9.2023)	Level of minimum pension, 1.7.2023 to 30.9.2023 (euro)	Level of minimum pension (October 2023)	Level of minimum pension, October 2023 (euro)
30	334.3	136% SM	365.7	145.0% SM	389.9
31	338.5	138% SM	371.1	147.5% SM	396.6
32	342.7	140% SM	376.5	150.0% SM	403.4
33	347.0	142% SM	381.9	152.5% SM	410.1
34	351.2	144% SM	387.2	155.0% SM	416.8
35	355.4	146% SM	392.6	157.5% SM	423.5
36	359.6	148% SM	398.0	160.0% SM	430.3
37	363.8	150% SM	403.4	162.5% SM	437.0
38	368.0	152% SM	408.7	165.0% SM	443.7
39	372.2	154% SM	414.1	167.5% SM	450.4
40	378.5	157% SM	422.2	170.5% SM	458.5
41	384.8	160% SM	430.3	173.5% SM	466.6
42	391.1	163% SM	438.3	176.5% SM	474.6
43	397.4	166% SM	446.4	179.5% SM	482.7
44	403.7	169% SM	454.5	182.5% SM	490.8
45*	410.0	172% SM	462.5	185.5% SM	498.8

*The calculation only shows results for career length up to 45 years. In reality, the career could be longer and the level of minimum pension will increase by the information described in 1.2.

Source: MFSR