Ageing working group
Country fiche on 2018 pension projections of the Slovak republic

October 2017

Contents

List of tables

List of additional tables

List of figures

1.   OVERVIEW OF THE PENSION SYSTEM

1.1.   Description

The Slovak pension system consists of the:

- **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.
- **Voluntary fully funded "third pillar"** – no restriction on participation.

Add. table 1 - Overview of the Slovak pension system

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

The next table shows the approximate number of pensioners in the universal scheme and in the armed forces scheme. Compared to the universal system, the system of armed forces is currently about 40-times smaller. It is important to note that one pensioner can receive multiple pensions. The most common is a widow and old age pension received at the same time.

Add. table 2 - Number of pensioners (2016)

universal system	old age	1 071 569
	disability	237 861
	widow/widower's	303 719
	orphan's	20 235
armed forces system	retirement	32 143
	temporary	554
	disability	458
	widow/widower's	5 609
	orphan's	58
population		**5 430 637**

Source: MFSR

1.1.1. Universal pension system

Currently, **the first pillar** is the main source of income for elderly. It includes old age, early old age, 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. In 2016 the average contributory period for new pensioners was 42 years for men and 41 for women.

The second pillar is a fully funded, defined contribution, private pension scheme[1] operational from beginning of 2005. During its existence, the participation in the second pillar for newcomers to the labor market has been changed several times. It started from mandatory (with no possibility to opt out) and was changed to voluntary (with the default participation only in the first pillar) in 2008. Then in 2012 back to mandatory (but with the possibility to opt out of the system within 2 years). From January 2013, entry into second pillar is again voluntary with the possibility to defer entry until the age of 35.

Figure 1 - New entrants in Pillar II as a percentage of all new entrants in the labor market, by year of labor market entry [1]
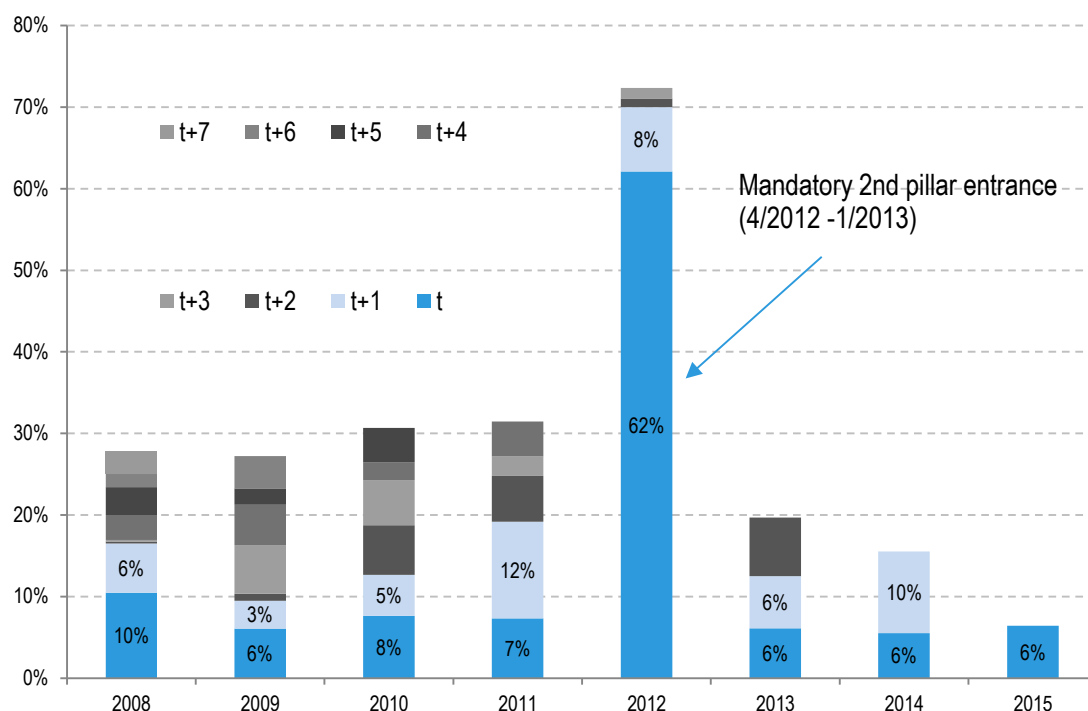
Source: MFSR

Pension contributions

Pension (social security) contributions (SSC) are levied as a percentage of the assessment base, which is the gross wage, and are paid by both employee and employer. The maximum assessment base in 2017 **equals to seven times the average wage in the economy (with a two years lag).** The maximum was increased from 4 to 5 times the average wage as a result of the 2012 pension reform. Recently, the maximum has been increased again from 5 to 7 times the average wage as from January 2017. The system is earnings related; however, contributions paid from earnings above the level of three times the average wage are not taken into account in the calculation of 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 individual's pension contributions (paid by employee) is the same regardless of whether he/she participates in **the mixed system** (in both the first and second pillar) or **only in the first pillar**. The introduction of the second pillar in 2005 only split the employer's contribution (14%) into a part that goes to the first pillar and a part that goes to second pillar, if one participates. If not, all employers' contributions are paid into the first pillar.

---

1 Private pension companies managing pension savings of individuals.
[1] t- Entered 2nd pillar in the same calendar year as they entered labor market, t+1- Entered 2nd pillar one calendar year after they entered labor market etc.

Add. table 3 - Pension contributions (% of assessment base) according to participation in pension pillars

	public scheme only (first pillar)	mixed pension scheme (before 2012 reform)	mixed pension scheme (2013-2016)	mixed pension scheme (after 2024)
Paid by employer	**21.75**	**21.75**	**21.75**	**21.75**
Pension insurance	17.00	17.00	17.00	17.00
- old age insurance[1]	14.00	5.00 to first pillar 9.00 to second pillar	10.00 to first pillar 4.00 to second pillar	8.00 to first pillar 6.00 to 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[1]	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**

[1] *For those who participate in both pillars, employer was required to pay 5% to the first pillar and the remaining 9% to the second pillar before the 2012 reform. Between 2013 and 2016, contribution rate to the second pillar has been decreased to 4% with positive impact on GG revenues. As of 2017, contributions to the second pillar gradually rise by 0.25 p.p. per year until the final level of 6 percent in 2024.*

Figure 2 - II. pillar contributions

Legend: I. pillar old age contributions / II.pillar old age contributions / total contributions
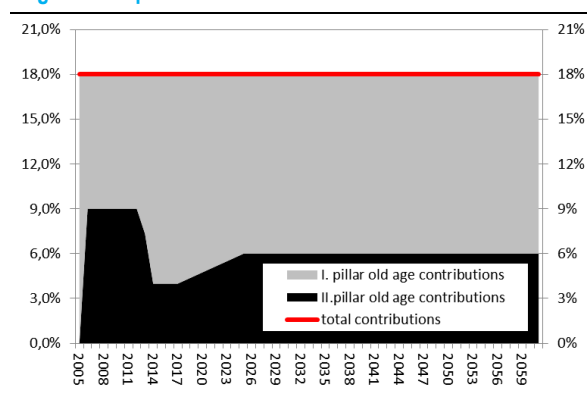
Source: MFSR

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

Period	Second 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	5.50%
2023	5.75%
2024+	**6.00%**

Source: MFSR

Participants in the **second pillar** can choose to invest their accumulated savings (from SSC) in at least two funds – **guaranteed** bond fund and **non-guaranteed** equity fund (mostly passively managed funds) according to their preference. These two are offered mandatorily by pension fund management companies. Decisions about creating an arbitrary number of other pension funds (including or excluding guarantees) have been left up to private pension companies. Before reaching the pension age, the savings in non-guaranteed funds will be moved automatically into a guaranteed fund such that the share in the guaranteed fund will gradually increase by 10% a year up to 100%. The assessment period for providing guarantees in a bond-based guaranteed fund is 10 years. The whole system is strongly regulated (more restrictions compared to, e.g., mutual funds) and the supervision is carried out by the National Bank of Slovakia.

Statutory retirement age and early retirement

Until 2003, the retirement age was 60 years for men and 53-57 years for women (depending on the number of children raised). As from 2004, the retirement age is gradually converging to 62 for both men and women. Based on the 2012 pension reform, effective **as from 2017, the retirement age is automatically annually increased by the y-o-y difference of 5-year moving average of the unisex life expectancy** according to formula

$$Retage_t = Retage_{t-1} + (ALE_{t-7.t-3} - ALE_{t-8.t-4})$$

where

Retage$_t$ is the retirement age at time t, ALE $_{t-7. t-3}$ is the average life expectancy (unisex) between years t-7 and t-3 at the age of rounddown (Retage$_{t-1}$).

Due to the existing legislation, the retirement age was prolonged by 76 days in 2017 and in 2018, it should be lengthen by 63 days again. Based on Eurostat's projections, the statutory retirement age will reach 65 in 2038. Until then, it will increase by 52 days per year on average, i.e. slower than today. Thanks to the linkage of the retirement age to life expectancy, similar part of adult life is spent in retirement. It was 31% on average in 2016 and based on current projection it should be 31% also in 2070.

Figure 3 - Statutory retirement age in Slovakia
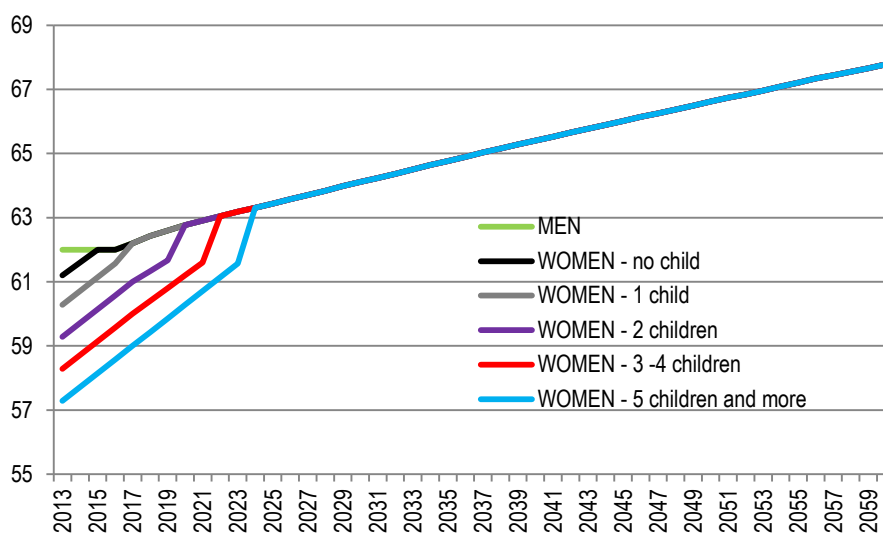
Source: MFSR

Pensioners are allowed to retire two years before reaching the statutory retirement age. In that case, their old age pension is reduced by approximately 6.5% per year or 12.5% per two years[2]. On the other hand, the pension is increased by 6% per year for every additional working year[3] above the retirement age.

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

Calculation of 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 relatively to the average wage in the economy (according to law it cannot exceed the value of 3[4]). In order to ensure solidarity, the calculated pension point is adjusted based on a solidarity formula. Pension point below value 1 is increased and pension point above 1.25 is reduced. The 2012 pension reform further strengthened the solidarity principle (see graphs below).

---

[2] 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%)

[3] 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%)

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

The solidarity principle in the calculation of pension benefit was strengthened from 2013 to 2016. In particular, the coefficient used for calculation of the adjusted average pension point value, for values above 1.25 was reduced from 0.8 to 0.68. This increase in solidarity was fiscally neutral both in short and long term.

Figure 4 - Pension point - solidarity adjustment (earnings related old age pension)
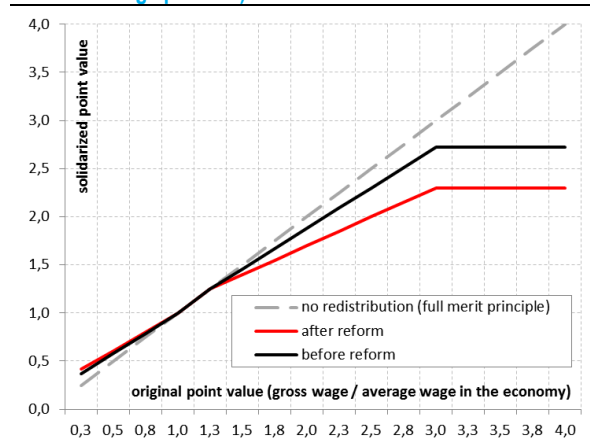
Source: MFSR

Figure 5 - Replacement rate – 2012 pension reform impact (earning related old age pension)
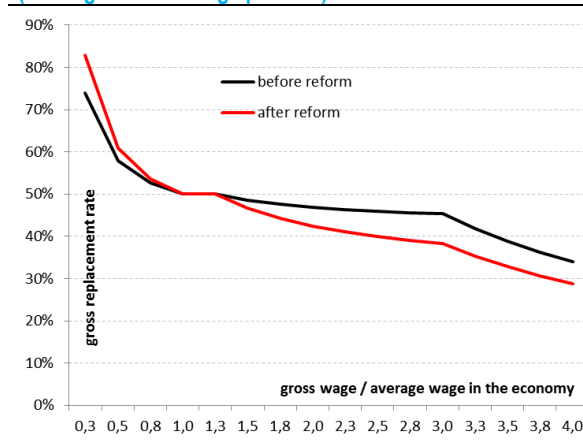
Source: MFSR

Since 2004, the current point value is calculated as a residual so that a person with 40 years of service and average personal wage point equal to 1 (person earning average wage for the whole career) receives pension benefit amounting to circa 50% replacement rate. In order to keep the replacement rate stable for all new pensioners, the **current point value is annually indexed to the average wage.** More details about the pension formulas are provided in the annex.

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 0.5% for every started 30-day period below the retirement age. Moreover early old age pension must be higher than the minimum subsistence level[5] by at least 20%.

Disability pensions are calculated as old age pension; however the disability pension is affected by the loss of work capacity. 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 old age pension, early old age pension or disability pension or dies as a result of an occupational disease or accident. The entitlement lasts for 1 year thereafter, unless the recipient takes care of a dependent child, is disabled (more than 70% loss of working capacity), reaches the retirement age, raises more than 3 children or reaches 52 years and has raised 2 children. The entitlement also expires if widow/ widower becomes married. 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, he/she will 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). Dependent child in foster care cannot receive the pension. The benefit amounts to 40% of the old age pension, early old age pension or disability pension of the deceased parent.

Minimum pension

---

[5] See also https://www.employment.gov.sk/sk/rodina-socialna-pomoc/hmotna-nudza/zivotne-minimum/

A new minimum pension scheme was introduced in 2015, effective from July 2015. Pensioners with at least 30 years of qualified pension insurance are entitled to a minimum pension (MP) calculated as follows:

MP = subsistence minimum * coefficient
Where coefficient is equal to 1.36 for 30 years of social insurance and increases by 0.02 for every additional career year until 39 years and increases by 0.03 for every additional year thereafter.

In 2016, the scheme covered 5% of old age pensioners, with average pension benefit of recipients higher by 10% and annual costs 20 mil. EUR. An increase in low pensions brought some savings on material need benefit, as some MP recipients no longer qualify for other social benefits (2 mil. EUR).

There is currently no minimum pension benefit legislated for people without 30 years of pension insurance. However, individuals may apply for means-tested social assistance which is provided at the minimum subsistence level (less than 60% of the minimum wage). Minimum subsistence level is, according to law, indexed to inflation (measured on low income households' basket of goods and services).

Table 1 (1) - Statutory retirement age. earliest retirement age and penalties for early retirement

			2016	2020	2030	2040	2050	2060	2070
Qualifying condition for retiring with a full pension	Minimum requirements	Contributory period - men	15	15	15	15	15	15	15
		Retirement age - men	62,0	62,9	64,5	65,8	67,0	68,1	68,8
		Contributory period - women	15,0	15,0	15,0	15,0	15,0	15,0	15,0
		Retirement age - women	60,5	62,3	64,5	65,8	67,0	68,1	68,8
	Statutory retirement age - men		62,0	62,9	64,5	65,8	67,0	68,1	68,8
	Statutory retirement age - women		60,5	62,3	64,5	65,8	67,0	68,1	68,8
Qualifying condition for retirement WITHOUT a full pension	Early retirement age - men		60,0	60,9	62,5	63,8	65,0	66,1	66,8
	Early retirement age - women		58,5	60,3	62,5	63,8	65,0	66,1	66,8
	Penalty in case of earliest retirement age		12,5%	12,5%	12,5%	12,5%	12,5%	12,5%	12,5%
	Bonus in case of late retirement		6%	6%	6%	6%	6%	6%	6%
	Minimum contributory period - men		15	15	15	15	15	15	15
	Minimum contributory period - women		15	15	15	15	15	15	15
	Minimum residence period - men		:	:	:	:	:	:	:
	Minimum residence period - women		:	:	:	:	:	:	:

Source: MFSR

Table 2 (2a) - Number of new pensioners by age group - administrative data (MEN, 2016)

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	4 501	0	3 520	981	0
50 - 54	2 286	17	2 067	202	0
55 - 59	3 852	359	3 118	375	0
60 - 64	26 279	25 083	577	619	0
65 - 69	831	127	0	704	0
70 - 74	665	5	0	660	0

Table 3 (2b) - Number of new pensioners by age group - administrative data (WOMEN, 2016)

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	5 310	0	3 934	1 376	0
50 - 54	3 088	0	2 259	829	0
55 - 59	12 863	9 094	2 383	1 386	0
60 - 64	12 797	10 678	68	2 051	0
65 - 69	2 359	15	0	2 344	0
70 - 74	2 335	10	0	2 325	0

Table 4 (2c) - Number of new pensioners by age group - administrative data (TOTAL, 2016)

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	9 811	0	7 454	2 357	0
50 - 54	5 374	17	4 326	1 031	0
55 - 59	16 715	9 453	5 501	1 761	0
60 - 64	39 076	35 761	645	2 670	0
65 - 69	3 190	142	0	3 048	0
70 - 74	3 000	15	0	2 985	0

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

In the mixed system, **awarded pension benefit from the first pillar is reduced by a percentage of pension contributions (SSC) paid (redirected) to the private pension funds for the years of participation in the mixed system**[6]. If, for example, a worker participates during his whole career in both pillars and contributes 4.5%[7] (i.e. 25% of all old age SSC contributions) to the second pillar, his accrued rights from the first pillar will be reduced by 25%. If one participates for only half of his career, the reduction in awarded pension benefit would be 12.5%.

The second pillar savings can be paid out to savers in several ways.
- The basic option is to conclude a contract with an insurance company for a **lifetime annuity**.
- Receiving a **temporary annuity** (concluding a contract with an insurance company for certain number of years) or a **programmed withdrawal** (withdrawing the savings without concluding an insurance contract) requires that the pensioner's income from the two-pillar system is higher than the average old age pension attributed after the 2004 reform. This was legislated in 2017 as a response to many people who did not buy any annuity.
- The pension fund management company will allow programmed withdrawal also in case that no insurance company is willing to conclude a contract with a pensioner because his/her savings are not sufficient.

Pension indexation

Until 2013, first pillar pensions were indexed by the "Swiss formula", i.e. 50 percent of inflation growth (measured by CPI) and 50 percent of nominal wage growth. Between 2014 and 2017, the weight of inflation indexation grows by 10 percent a year and weight of nominal wage decreases by 10 percent a year. However, during this period pensions are temporarily increased by a fixed amount rather than percentage of individual pension benefit. This amount is calculated as the percentage applied to the average pension by type of pension benefit. For each type of pension (old age, disabled, orphan, widow, etc.) separate fixed (nominal) amount will be calculated, in order to avoid redistribution among different types of pensions.

In 2017, the legislated indexation would have reached 0.37%, as inflation was low in the previous period. Instead, in 2016 the government adopted a one-off change in the indexation mechanism for 2017 where each pension was increased by a fixed amount of 2% by type of pension.

As from 2018, pensions will be indexed by pensioner's inflation and a further temporary minimum indexation criterion is applied. By default, individual pensions increase by pensioner's inflation. Government adopted a temporary minimum indexation for 2018-2021. Individual pensions have to increase by at least 2% of average pension by the same type of pension. This will mostly affect lower pensions in years when inflation is also low as the percentage calculated by default will be lower than 2% of an average pension.

---

[6] Until September 2012, the ratio between pension contributions paid to the first and second pillar (9%) was 50:50. As of September 2012, just 22% of pension contributions (4%) are paid to the second pillar and the rest is paid to the first pillar. Between 2017 and 2024, the percentage of contributions paid to the second pillar will grow to 33% (6%).

[7] Describes situation before 2012 pension reform

Add. table 5 - Indexation mechanism from Swiss method to inflation indexation

Period	Indexation mechanism	Indexation – weights		
		Nominal average wages growth	CPI	CPI pensioners*
2012	Percentage indexation	50%	50%	-
2013	**Fixed amount**	**50%**	**50%**	**-**
2014	Fixed amount	40%	60%	-
2015	Fixed amount	30%	70%	-
2016	Fixed amount	20%	80%	-
2017	Fixed amount (2% of AP)			-
2018-2021	**Percentage indexation****	**-**	**-**	**100%**
2022+	**Percentage indexation**	**-**	**-**	**100%**

* CPI measured in the households of pensioners – consumption basket of pensioners
** At least by 2% of average pension of the same type

Source: MFSR

1.1.2. Pension system of armed forces

Pension system of 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 and 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 reform of the system in 2013 to ensure its sustainability. Only the systems of police and professional soldiers is covered by the projections, however these are the most significant categories (more than 80% of total armed forces pension expenditure).

Pension contributions

Pension contributions are levied as a percentage of the individual's gross wage. Compared to the first pillar of the universal system no ceiling is applied. The contribution rates are higher, as they were increased by the 2013 reform.

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: IFP

Pension entitlement

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

The minimum contributory period for a new member to acquire pension rights is 25 years. For 25 years of service, the pension is calculated as 37.5% of his/her average monthly wage in the past 10 years prior to the termination of service employment. The replacement rate increases depending on the length of career up to 65%.

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%)
Transition period (2013 - 2028)	Increases from 15 years by one every year until reaching 25 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
		> 31	Raised by 0.5 p.p. per each year (maximum 65%)
New legislation (2028+)	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

There is a temporary pension that can be received if the contributory period is not sufficient 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

Based on the 2013 reform, the indexation will be unified with the general pension system as from 1.7.2018. Until then the existing pensions will be indexed by the fixed amount calculated in the same way as in the universal system adjusted by a coefficient taking into account the length of contributory period. In 2017, the ad-hoc change to indexation in first pillar was also applied to the armed forces.

Add. table 9 - Indexation mechanism for pensions of armed forces

Period	Indexation mechanism	Indexation formula
2013 – 30.6.2018	Fixed amount + adjustment	(fixed amount / 30 * (1 + (contributory period above 15 years)/2))
1.7.2018 - 2060	Percentage indexation	CPI pensioners (as in the universal system)

Source: MFSR

1.1.3. 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 EUR per year. The tax allowance is however applicable only to new third pillar participants or older participants who accepted stricter regulations of the payoff phase (e.g. higher minimum payoff age).

1.1.4. Christmas bonus

The so-called Christmas bonus is a non-contributory benefit, means-tested, not being a part of the pension system. It was first introduced in year 2006 as a temporary measure to increase solidarity in the first pillar. The benefit is paid once a year in December. Only pensioners are eligible for the benefit. The benefit currently amounts to EUR 87.26 (circa 10% of the average gross monthly wage in Slovakia) and is gradually falling for pensioners with higher pension income. Pensioners whose pension is above 60% of average wage in the economy are not entitled to the Christmas bonus. There is no stable indexation mechanism for the Christmas benefit and it is raised irregularly by changing the law. Since 2014, it was also increased by 12.74 EUR for everybody, in order to offer maximum Christmas bonus amounting to 100 EUR for people with lowest pension income.

Figure 6 - Christmas bonus amount (EUR)
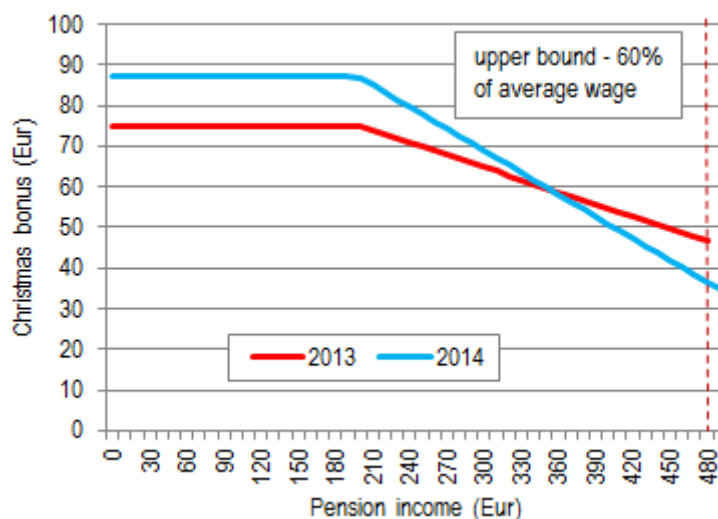
Source: MFSR

1.1.5. Interactions between different types of pensions

Concurrent pensions

It is possible to receive pensions from **both** of 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 contributory period and salaries received during the service in 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 theoretical amount of old age pension using the contributory period and salaries in the system of armed forces.

A **widow/er's** pension can be received on top of the old age or disability pensions. However, only the higher of the two will be received in the full amount. The pensioner will receive 50% of the amount of the lower one.

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 labor force is currently participating in the 3rd pillar.

Social assistance is available for everyone that passes the means and property test. However, income of pensioners in the system of armed forces 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 smaller pension will be cancelled. In case the two benefits are of the same amount, the pensioner has the right to choose which pension will be paid out.

1.2.   Recent reforms of the pension system

The 2012 reform – changes in general pension system

There has been a major reform of the general pension system in 2012.

The first pillar
- As of 2017, the **retirement age** is automatically adjusted according to changes in the life expectancy.
- **Indexation mechanism** has been gradually changing from Swiss indexation to inflation indexation (based on pensioners' consumption basket) in 2018. Between 2013 and 2017, pensions were indexed by a fixed amount.
- The average pension point value calculation was revised in order to increase solidarity in the first pillar. This measure has a neutral fiscal impact both in short and long term.
- As of 2013, the **maximum assessment base** for pension contributions was increased to five times the average wage in economy (before it was four times the average wage).

The second pillar
- The second pillar became **voluntary for newcomers to the labor market.**
- Minimum participation period in the second pillar changed from 15 to 10 years.
- As of September 2012, contribution rates to the second pillar have been reduced from 9 to 4 percent of the assessment base. Starting in 2017, contribution rates are gradually increased by 0.25 p.p. until they reach the final level of 6 percent in 2024.

Miscellaneous
- Between September 2012 and January 2013, the second pillar was "opened" again (for the third time). During this period participants were given a possibility to return to solely first pillar with full pension rights (the condition was to transfer all savings into the first pillar). In addition, people who did not participate in the second pillar were given a chance to enter it. As more people exited the system than entered it, this had an immediate impact on the first pillar revenue, but in the future, it will also lead to higher first pillar expenditures.

The 2013 reform – changes in pension system of armed forces

There have been major changes for the new coming members of armed forces. A transition period has been introduced for the armed forces members that have already been in the system when the reform came into force (1.5.2013) and have not yet fulfilled requirements to retire at that time. This is in order to smoothen transition to the new system and to guarantee a fair approach to the members that entered the system when more favorable rules were in force.

Temporary pension

- Before the reform, the temporary pension could be received for up to three years if the length of service was between 5 - 9 years. Due to the reform, one-year temporary pension is attributed for service length 10-17 years, 2 year for 17-22 and 3 year for 22-25 years of service. The amount of the benefit has been reduced from 2% to 1% per year of service.
- In the transition period, the minimum contributory period for entitlement of a temporary pension is increased for 5 years every year by one until it reaches 10 years.

Retirement pension
- The minimum contributory period has been increased from 15 to 25 years. The maximum replacement rate has been increased in order to motivate prolongation of service.
- In the transition period, the minimum contributory period will converge to 25 years.

Indexation mechanism
- Before the reform, no indexation rule was strictly defined. Over the past couple of years, the indexation varied among different groups. For police it was close to inflation indexation, for soldiers it was more generous and their indexation was close to wages (these two groups represent majority of the armed forces pension system).
- Due to the reform, the indexation will be unified with the general pension system as from 1.7.2018. Until then the existing pensions will be indexed by the fixed amount calculated in the same way as in the universal system adjusted by a coefficient taking into account the length of contributory period.

Assessment base
- The assessment base for calculation of retirement and temporary pension benefit has been changed from the "best year" within the period of the past 10 years prior to the termination of service to the average of last 10 years of career.

Contributions
- The retirement pension contribution has been increased from 17% to 20% for the employer (this is fiscally neutral) and from 5% to 7% for the employee.

The 2014 reforms – the second pillar annuity payout and changes in Christmas bonus

The second pillar
- The first pensions from the second pillar was paid out as from 2015. There had been no legislation stating exact rules before 2014. The amendment introduces three schemes of pension benefits from the second pillar – lifetime annuity, temporary annuity and programmed withdrawal – and defines rules for entitlement and procedural side of the payout.

Christmas bonus
- The maximum amount of the Christmas bonus was increased to 87.26 EUR. The coefficient determining the slope of decrease with pension income was increased from 0.1 to 0.18 and thus increasing the solidarity aspect of the benefit.

2015 reforms – Minimum pensions for people with 30 or more years of pension insurance

- Pensioners with at least 30 years of qualified pension insurance are entitled to a minimum pension (MP). The scheme is relatively small as in 2016; the scheme covered only 5% of old age pensioners. It is calculated as a coefficient times the living wage, where the coefficient is equal to 1.36 for a person with 30 years of pension insurance and increases with every additional year by 0.02 and by 0.03 after the 35th year of pension insurance.
- Conditions for receiving a widow/widower pension were harmonized. As for the reform in 2004, there were many people not eligible to a survivor benefit, just because their spouse died after 2004, while those who had become widows/widowers before 2004 were. It was caused by a time limit (2 to 5 years)

for a widow/widower to fulfil the conditions necessary to receive a survivor benefit. As from 2015, this limit was removed and conditions harmonized. This resulted in more widows and widowers and costs yearly around 10 million EUR.

Miscellaneous

- The second pillar was re-open again in 2015 for a period of several months, which resulted in more people leaving the scheme than entering.

2016 reforms- ad hoc indexation for 2017 and second pillar programmed withdrawal, increase in the maximum assessment base

- Government increased indexation of all pensions to 2% of an average pension of the same type for 2017 only
- The programmed withdrawal conditions in the second pillar were changed and conditions for faster withdrawal of savings were relaxed. Participants no longer compare their theoretical income/benefit from pillar I with their pillar II income and they only need to have pension income higher that the new threshold – average old age pension attributed after 2015.
- The maximum assessment base for pension contributions was increased (again) from 5 to 7 times the average wage in the economy with a two year lag.
- As for the 2004 pension reform, the solidarity of the system was changed quite substantially. This resulted in a fact that some people with similar careers have been attributed very different pensions, just because they have retired shortly prior or shortly after 2004. An adjustment to compensate for this unjust pension calculations was prepared by the government. The cost will amount to roughly 50 million EUR and will fade out, as it concerns mainly older pensioners.

2017 reforms- minimum indexation of pensions for 2018-2021

- For the period 2018-2021, a minimum indexation of 2% of an average pension of a selected type was introduced. By default, individual pensions increase by pensioner's inflation. From 2018 to 2021, individual pensions have to increase by at least 2% of average pension by the same type of pension. This will mostly affect lower pensions in years when inflation is also low as the percentage calculated by default will be lower than 2% of an average pension.

The table below provides a brief overview of the fiscal impact of recent changes in pension legislation.

Add. table 10 - Pension measures adopted since 2012 and their impact on public finance (EUR mil.)						
	2013	2014	2015	2016	2017	2018
Consolidation Measures, savings						
Lower indexation (in comparison with the Swiss model of indexation[4])	0,00%	0,01%	0,08%	0,13%	0,22%	0,30%
Statutory retirement age increase (life expectancy)	0,00%	0,00%	0,00%	0,00%	0,03%	0,07%
Adequacy Measures, costs						
"Christmas" pension increase	0,00%	0,01%	0,01%	0,01%	0,01%	0,01%
Minimum pension	0,00%	0,00%	0,01%	0,03%	0,03%	0,03%
Widow's pensions alignment	0,00%	0,00%	0,00%	0,01%	0,01%	0,01%
Widower's pensions alignment	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Higher pension indexation in 2017	0,00%	0,00%	0,00%	0,00%	0,14%	0,13%
Minimum valorization 2018-2021	0,00%	0,00%	0,00%	0,00%	0,00%	0,09%
Recalculation of pensions of pensioners, who retired before 2004 (version from the MPK of March 2017)	0,00%	0,00%	0,00%	0,00%	0,00%	0,06%
Total	0,00%	0,02%	0,10%	0,18%	0,44%	0,70%

Cumulative	1,45%	1,45%	1,43%	1,33%	1,14%	0,70%
Cumulative saving (1)	0,00%	0,01%	0,08%	0,21%	0,47%	0,84%
Cumulative post-reform expenses (2)	0,00%	0,01%	0,04%	0,09%	0,28%	0,61%
Ratio (2)/(1)		156%	42%	41%	59%	73%
Contribution Measures, savings						
Higher assessment base 3-5 times AW	0,14%	0,15%	0,15%	0,16%	0,16%	0,17%
Higher assessment base 5-7 times AW	0,00%	0,00%	0,00%	0,00%	0,08%	0,08%
Cumulative measures on the contribution side	0,14%	0,29%	0,44%	0,60%	0,84%	1,09%

Source: MFSR

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

Universal system

Full 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 law (i.e. pensioners' CPI, which is estimated as CPI+ the difference between CPI and pensioner's' CPI in the last 10 years. For the period 2006 – 2016, it was 0.11 p.p. In previous round of projection, we have assumed the pensioner's CPI to be 0.3 p.p. higher than CPI as this reflected the difference at the time of the 2012 reform.).
- Minimum pensions are fully indexed to wages (indexed by CPI in legislation).
- Christmas bonus is indexed to wages. (No indexation is legislated. Since 2006, the maximum bonus has been increased by 13% in 2013 and by 16% in 2014, where also another flat component amounting to 12.74 EUR was added in order to have a 100 EUR bonus for pensioners with lowest income.

The model assumes that in the long run approximately 45% of contributors will be in pillar II. That implies a 31% **voluntary entry rate** to the **second pillar** (31% of population compared to 45% of contributors).[8]
The model also assumes that 95% of employed persons pay **contributions** to pensions in the universal system.
It is assumed that the **Christmas bonus** is a permanent part of the system and will not be cancelled throughout the projection period.

Figure 7 - % of people entering pillar II (observed and forecasted) out of new LM entrants, by the year of labor market entry, when the pillar II was voluntary (2008-2011 and 2013-2015)

---

[8] This was revised based on a recent analysis available online at: http://www.finance.gov.sk/Default.aspx?CatID=44
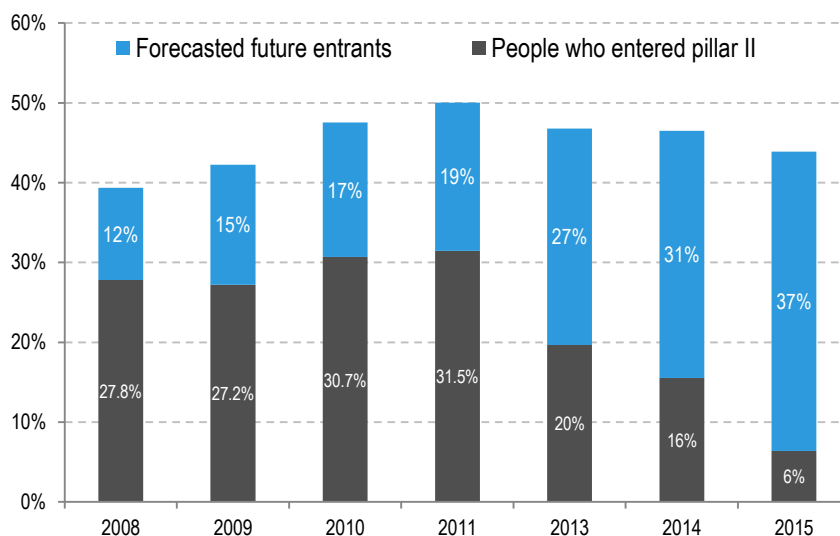
Source: MFSR

System of armed forces

In the projection, the demographic and macroeconomic assumptions as supplied by Eurostat and the Commission is fully taken into account.

Pensions are **indexed** in line with the universal system (unified with the universal system as of 2018). 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. 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.

2. OVERVIEW OF THE DEMOGRAPHIC AND LABOR FORCE PROJECTIONS

2.1. Demographic development

Table 5 (3) - Main demographic variables evolution

	2016	2020	2030	2040	2050	2060	2070
Population (thousand)	5 431	5 462	5 461	5 368	5 255	5 105	4 898
Population growth rate	0,1	0,1	-0,1	-0,2	-0,2	-0,4	-0,4
Old age dependency ratio (pop65/pop15-64)	21,0	24,9	32,9	39,7	51,5	59,4	56,8
Ageing of the aged (pop80+/pop65+)	21,5	20,2	23,7	31,7	30,6	37,5	46,1
Men - Life expectancy at birth	73,7	74,6	76,8	78,9	80,8	82,6	84,2
Men - Life expectancy at 65	15,3	15,8	17,2	18,5	19,8	21,0	22,1
Women - Life expectancy at birth	80,7	81,4	83,2	84,8	86,3	87,8	89,1
Women - Life expectancy at 65	19,1	19,7	21,0	22,2	23,4	24,6	25,6
Men - Survivor rate at 65+	76,9	78,6	82,3	85,4	88,0	90,1	91,9
Men - Survivor rate at 80+	39,8	42,9	50,2	57,1	63,3	68,9	73,7
Women - Survivor rate at 65+	89,6	90,3	91,9	93,3	94,4	95,3	96,0
Women - Survivor rate at 80+	64,0	66,3	71,6	76,1	80,0	83,3	86,1
Net migration	6,0	5,9	5,0	6,8	6,5	3,8	3,2
Net migration over population change	0,9	0,9	-0,9	-0,7	-0,5	-0,2	-0,1

Table 3 shows an overview of the demographic development in Slovakia until 2070 according to Eurostat projection. The population size will start falling from 2025 and the growth will be negative until the end of the projection period. The total fertility rate will change from 1.4 in 2015 to 1.8 in 2070. In relative terms, it will converge from a value well below the EU average in 2015 to a value above the EU average in 2070. Compared with the last round of population projections, it has had the second biggest increase. Life expectancy will increase substantially. Migration in Slovakia has a minor effect on the population size based on data from Eurostat and National statistical office. Alternative administrative data source looking at number of health-insured persons suggests that migration flows have been more substantial then suggested by permanent residence data. If the outflow of population persists, the demographic projection would overestimate the population size.

The old age dependency ratio will increase by 36 p.p. between 2016 and 2070. This change is projected to be the second least favorable in the EU. Based on dependency ratio Slovakia will change from the youngest country in the EU in 2016 to the 8th oldest by 2070.

Figure 8 - Age pyramid comparison: 2013 vs. 2070
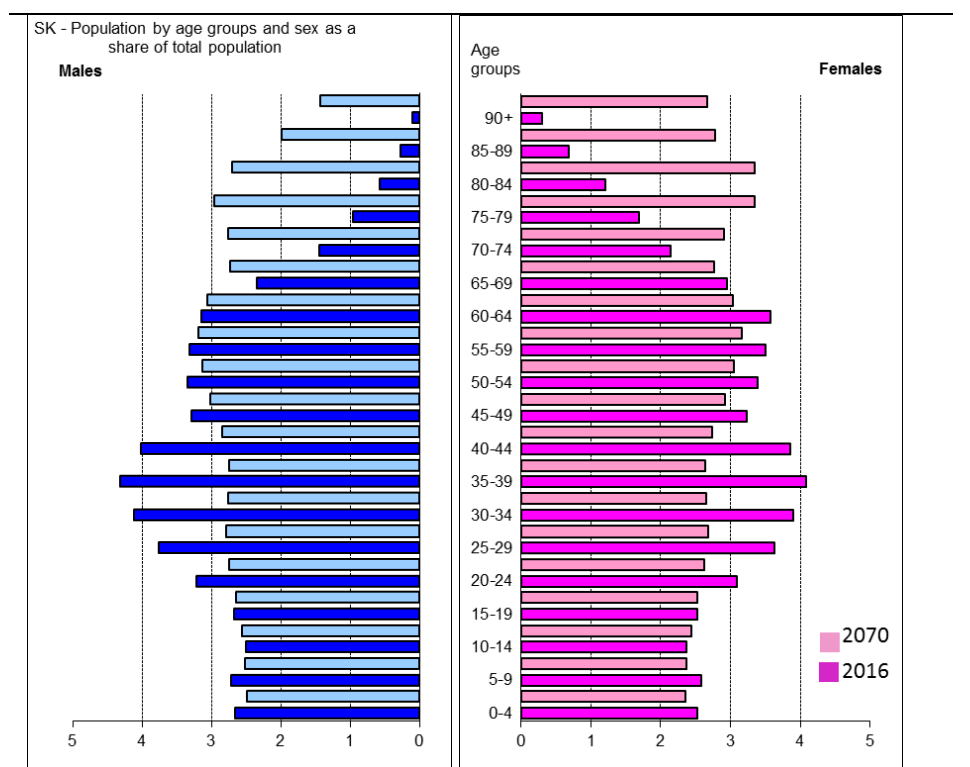
Source: Espop2015

2.2. Labor forces

Table 6 (4) - Participation rate. employment rate and share of workers for the age groups 55-64 and 65-74

	2016	2020	2030	2040	2050	2060	2070
Labor force participation rate 55-64	54,4	55,7	63,3	66,5	71,1	74,5	76,3
Employment rate for workers aged 55-64	49,6	51,4	58,0	61,6	66,4	69,6	71,2
Share of workers aged 55-64 on the labor force 55-64	91,1	92,2	91,6	92,6	93,3	93,4	93,3
Labor force participation rate 65-74	4,3	4,8	5,4	9,4	14,6	21,4	29,3
Employment rate for workers aged 65-74	4,2	4,7	5,3	9,3	14,5	21,2	29,0
Share of workers aged 65-74 on the labor force 65-74	98,2	98,9	98,8	98,9	98,8	98,9	99,0
Median age of the labor force	39,0	40,0	43,0	44,0	43,0	43,0	44,0

Source: MFSR

Table 4 provides an overview of the projection of labor force developments. Participation of older workers will gradually increase mostly due to the increase of retirement age.

Table 7 (5a) - Labor market entry age. exit age and expected duration of life spent at retirement - MEN

	2017	2020	2030	2040	2050	2060	2070
Average effective exit age (CSM) (II)	61,9	62,0	62,7	63,9	65,0	66,2	67,3
Contributory period	42,0	41,9	42,3	43,6	44,8	46,0	46,8
Duration of retirement	17,4	17,9	18,6	19,3	19,8	20,2	20,5
Duration of retirement/contributory period	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Percentage of adult life spent at retirement	28,4	28,9	29,4	29,6	29,7	29,5	29,4
Early/late exit	1,0	1,6	1,5	1,5	1,7	1,0	4,4

Source: MFSR

Table 8 (5b) - Labor market entry age. exit age and expected duration of life spent at retirement - WOMEN

	2017	2020	2030	2040	2050	2060	2070
Average effective exit age (CSM) (II)	61,0	61,5	62,4	63,6	64,9	66,1	67,1
Contributory period	41,0	41,3	42,1	43,3	44,6	45,8	46,6
Duration of retirement	22,6	22,2	23,5	23,1	23,4	23,7	23,8
Duration of retirement/contributory period	0,6	0,5	0,6	0,5	0,5	0,5	0,5
Percentage of adult life spent at retirement	34,5	33,8	34,6	33,6	33,3	33,0	32,7
Early/late exit	1,2	2,6	1,7	1,3	1,9	1,1	4,9

Source: MFSR

Compared to the previous projection round, the contributory period for both men and women was revised up. The average **contributory period** in the base year was estimated from administrative data for current population of pensioners as 42 for men and 40.9 for women. It is assumed that the average contributory period will converge to the average effective working career simulated by the Commission on the horizon of one contributory period for men. It remains however constant in the first decade because of the reform implemented in 2004. (Any spells of tertiary education or unemployment after 2004 are no longer considered as eligible contributory period for pension calculation).

Recent data suggest that men and women have similar working careers. For women, we assume a convergence towards the average contributory period of men together with the unification of statutory retirement age (ending in 2024). This is supported by latest administrative data. The statutory retirement age was already unified for women without children in 2015. For new old age pensioners in 2015 and 2016, the difference between the average contributory period for males and females without children was negligible (0.2 years). We expect the same to happen for women with children. The child-care period of life is not a direct reason to cause difference in the contributory period. The state is paying pension social contributions for parents up to 3 years while they are on parental leave, if they apply for it. From 2017, all parents are automatically enrolled as state insurees in pension social contributions.

Figure 9 - Contributory period used in projections compared with AR 2015, years
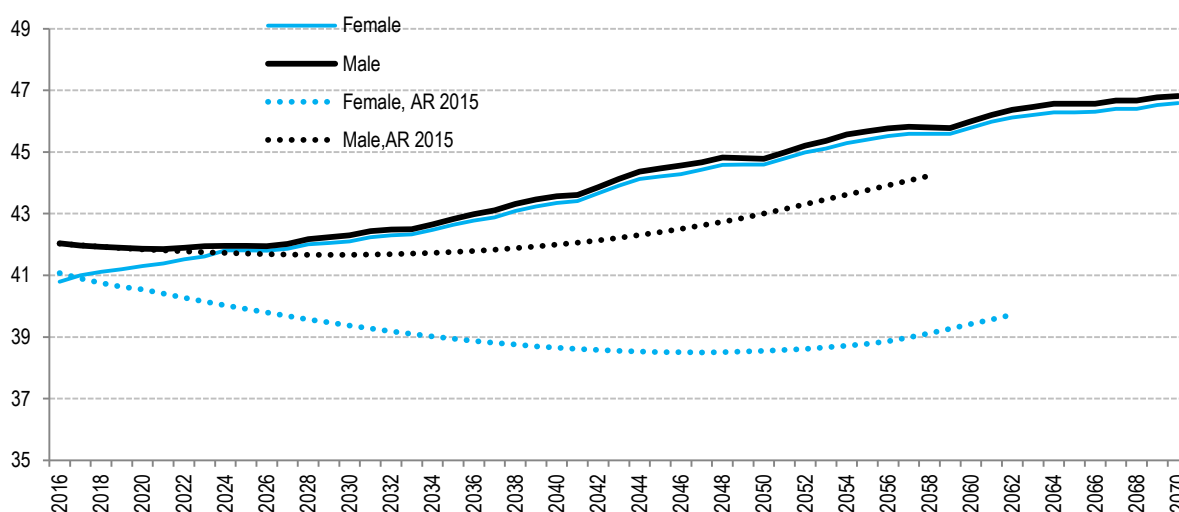
Source: MFSR

Add. table 11 - Observed difference in the average contributory period

	2014	*2015*	*2016*
Males (1)	43,1	43,2	43,2
Females (2)	40,2	41	41,2
Females, without children (3)	41,8	42,9	43,1
Difference (1)-(2)	2,9	2,3	2
Difference (1)-(3)	1,3	0,3	0,1

Source: MFSR

3. PENSION PROJECTION RESULTS

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

The long-term pension projection covers 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. Social assistance expenditure, that represents non-earnings related pensions in Slovakia, have been included in the current projection similarly as in the previous rounds. The second pillar pension expenditure is not fully covered due to data issues; however, some information on the private scheme has been implemented in the projection. Similarly as in the previous rounds, the third pillar is not included in the projection because of data unavailability. The Christmas pension bonus is also covered.

Moreover, the current projection explicitly quantifies pension expenditure of the armed forces in all the sensitivity scenarios. Given that the pension scheme of armed forces is a closed system parallel to the universal scheme, it is treated in the model such that the two schemes do not interact. However the outcomes are integrated wherever possible.

Table 9 (6) - Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)

	2007	2008	2009	2010	2011	2012	2013	2014
1 Eurostat total pension expenditure	7,1	7,0	8,3	8,2	8,1	8,3	8,4	8,7
2 Eurostat public pension expenditure	7,0	7,0	8,3	8,2	8,1	8,2	8,4	8,7
3 Public pension expenditure (AWG)	7,0	6,8	8,0	8,0	8,0	8,0	8,3	8,7
4 Difference (2) - (3)	0,0	0,2	0,3	0,2	0,1	0,2	0,1	0,0
5 Expenditure categories not considered in the AWG definition, please specify:	:	:	:	:	:	:	:	:
5.1 Armed forces	:	:	:	:	:	:	:	0,4

Source: Eurostat. MFSR

In contrast to the ESSPROS data, the AWG public pension expenditure did not include pensions of armed forces before 2014. On the other hand, the AWG public pension expenditures includes social assistance for old age pensioners and the Christmas bonus.

3.2. Overview of projection results

Gross public pension expenditure (including the expenditure on the pension system of armed forces) is projected to increase from 8.6% of GDP in 2016 to 9.8% GDP in 2070. An overall increase of 1.2 GDP p.p. over the projection horizon is smaller than in the previous Aging report.

Table 10 (7) - Projected gross and net pension spending and contributions (% of GDP) **

Expenditure	2016	2020	2030	2040	2050	2060	2070	Peak year*
Gross public pension expenditure	8,6	8,3	7,6	7,8	8,8	9,9	9,8	2063
Private occupational pensions	:	:	:	:	:	:	:	:
Private individual pensions	:	:	:	:	:	:	:	:
Mandatory private	:	:	:	:	:	:	:	:
Non-mandatory private	:	:	:	:	:	:	:	:
Gross total pension expenditure	8,6	8,3	7,6	7,8	8,8	9,9	9,8	2063
Net public pension expenditure	8,6	8,3	7,6	7,8	8,8	9,9	9,8	2063
Net total pension expenditure	:	:	:	:	:	:	:	:
Contributions	2016	2020	2030	2040	2050	2060	2070	Peak year*

|								
Public pension contributions	6,9	6,8	6,6	6,7	6,8	6,8	6,8	2016
Total pension contributions	7,5	7,5	7,5	7,5	7,5	7,5	7,5	2017

* peak year. i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060

Source: MFSR

Gross public pension expenditure equals net public pension expenditure, as Slovak pensions are not subject to taxation. The overall expenditure comprises earnings related pensions (old age and early pension benefits, disability and survivors pensions), non-earnings related pensions and pension benefits of the armed forces.

The gross pension expenditure is projected to fall relative to GDP during the next two decades. From circa 2030 onwards, an increasing number of pension recipients, together with longer careers and consequently higher benefits start to drive expenditure as a share on GDP up again. In the same period, a slowdown in GDP growth (driven by TFP) is projected.

Figure 10 - Projected gross public pension expenditure (% GDP)
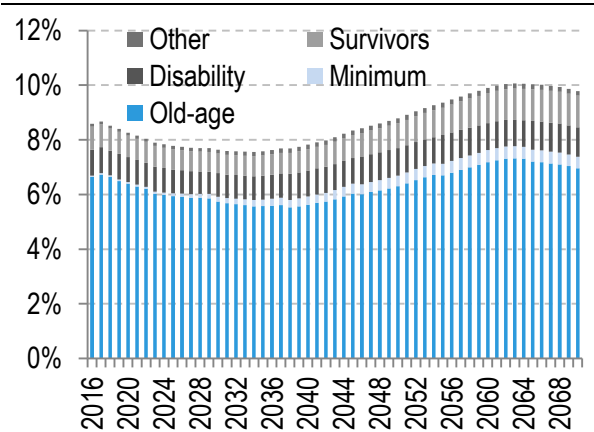
Source: MFSR

Figure 11 - Number of new old age pensions (thousands)
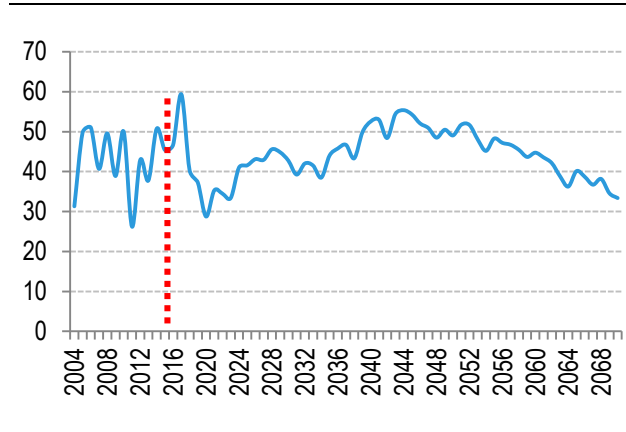
Source: MFSR

<u>Earnings related old age and early pensions</u> account for bulk of pension expenditures, with a relatively stable share of almost 80%. The projected expenditure to GDP is expected to increase from 6.7% GDP in 2013 to 7.0% in 2070.

<u>Earnings related disability</u> pension expenditure is projected to remain around 1% of GDP. In the model, we assume that upon reaching retirement age, the disability pension benefit is transformed into old age pension. This is reflected in the projection, since the outflow of disability pensioners slows down as the retirement age rises. The share of disability pensioners younger than 55 declines during the whole projection period due to declining inflow of new disability pensioners observed in last years. The older age groups behave in line with the statutory retirement age (as disability pensioners are reclassified as old age when they reach the statutory retirement age). There is a spike in the age group of 18 year olds due to accumulation of disable people from younger ages. It is not legally possible to receive disability pensions before turning 18 years old.

Figure 12 - Number of disability pensioners (% of population by age groups)
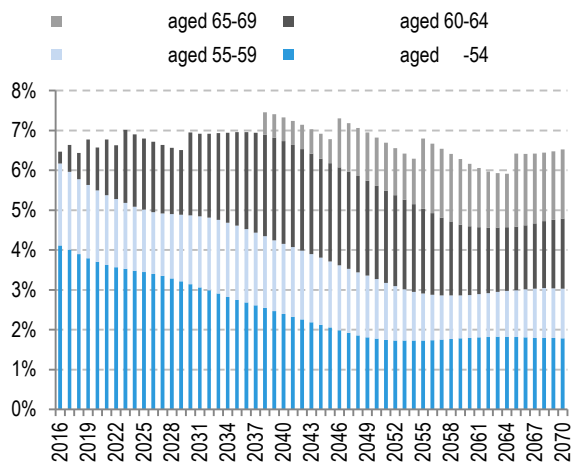
Source: MFSR

Figure 13 - New disability pensioners as a share of population by age

Source: MFSR

<u>Earnings related survivors pension</u> expenditure is projected to increase steadily from 0.8% GDP in 2013 to 1.2% in 2070. This is mostly driven by higher number of survivor pensions as well as the assumption on percentage of pension being reduced due to concurrent pensions (i.e. when there are people who receive multiple pension, that is old age and widow pension, one of them is cut to half and the other is fully received.)

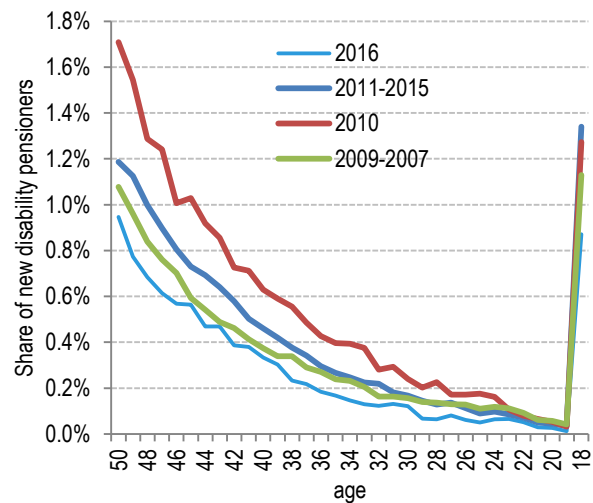<u>Non-earnings related pension expenditure</u> comprises minimum and early old age pensions and the Christmas bonus. Non-earnings related old age and early old age pensions are projected to increase from 0.01% GDP in 2016 to 0.4% GDP in 2070 due to the modelling assumption that the minimum pension entitlement is indexed by the wage growth while majority of pensions increase by inflation only. The Christmas bonus expenditure is expected to increase from 0.10% GDP in 2013 to 0.17% GDP in 2070, as we assumed wage indexation in line with minimum pensions.

Table 11 (8) - Projected gross public pension spending by scheme (% of GDP)

Pension scheme	2016	2020	2030	2040	2050	2060	2070	Peak year *
Total public pensions	8,6	8,3	7,6	7,8	8,8	9,9	9,8	2063
of which								
Old age and early pensions:	6,7	6,5	5,9	5,9	6,7	7,6	7,4	2063
Flat component	:	:	:	:	:	:	:	:
Earnings related	6,7	6,5	5,9	5,9	6,7	7,6	7,4	2063
Minimum pensions (non-contributory) i.e. minimum income guarantee for people above 65	0,0	0,1	0,2	0,3	0,4	0,4	0,4	2062
Disability pensions	0,95	0,90	0,87	0,96	1,00	0,99	1,08	2070
Survivor pensions	0,84	0,79	0,72	0,78	0,91	1,10	1,16	2069
Other pensions	0,10	0,11	0,14	0,16	0,18	0,19	0,17	2060
of which								
Armed forces	0,41	0,40	0,42	0,43	0,42	0,45	0,44	2064

* This column represents a peak year. I.e. the year in which the particular variable reaches its maximum over the projection period 2010 to 2060.)

Source: MFSR

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 labor market indicator, as follows:

$$\frac{\text{Pension Exp}}{\text{GDP}} = \underbrace{\frac{\text{Population } 65+}{\text{Population } 20-64}}_{DependencyRatio} \times \underbrace{\frac{\text{Number of Pensioners (Pensions)}}{\text{Population } 65+}}_{CoverageRatio}$$

$$\times \underbrace{\frac{\text{Average income from pensions (Average Pension)}}{\dfrac{\text{GDP}}{\text{Hours Worked } 20-74}}}_{Benefit\ Ratio} \times \underbrace{\frac{\text{Population } 20-64}{\text{Hours Worked } 20-74}}_{Labour\ Market\ /\ LabourIntensity} \quad [1]$$

The coverage ratio is further split as follows:

$$\underbrace{\frac{\text{Number of Pensioners}}{\text{Population } 65+}}_{CoverageRatio} =$$

$$= \underbrace{\frac{\text{Number of Pensioners } 65+}{\text{Population } 65+}}_{CoverageRatio\ Old\text{-}Age} + \left(\underbrace{\frac{\text{Number of Pensioners} \leq 65}{\text{Population } 50-64}}_{CoverageRatio\ Early\text{-}Age} \times \underbrace{\frac{\text{Population } 50-64}{\text{Population } 65+}}_{Cohorteffect} \right) \quad [2]$$

The labor market indicator is further decomposed as follows:

$$\underbrace{\frac{\text{Population } 20-64}{\text{Hours Worked } 20-74}}_{Labour\ Market\ /\ LabourIntensity} =$$

$$\underbrace{\frac{\text{Population } 20-64}{\text{Working People } 20-64}}_{1\ /\ Employment\ Rate} \times \underbrace{\frac{\text{Working People } 20-64}{\text{Hours Worked } 20-64}}_{1\ /\ Labourintensity} \times \underbrace{\frac{\text{Hours Worked } 20-64}{\text{Hours Worked } 20-74}}_{1\ /\ Career\ shift} \quad [3]$$

Over the projection horizon 2016-2070, the public pension expenditure is projected to increase by 1.2 percentage points of GDP (Table 9b). The main driving force behind the increase is the unfavorable development of the dependency ratio, which is projected to contribute by 8.5 GDP p.p. to the overall change. The remaining three drivers are expected to have a mitigating effect. The coverage ratio will contribute by -4.1 GDP p.p., the benefit ratio by -1.5 GDP p.p. and the labor market indicator by -1.2 GDP p.p. The public pension expenditure ratio is also affected by the GDP dynamics, especially before 2040 when the GDP is expected to grow in real terms at relatively high annual rates of 1.9 – 3.6%, with a 2.6% average.

Figure 14 - Evolution of the main driving forces behind the projection results (year 2016=1)
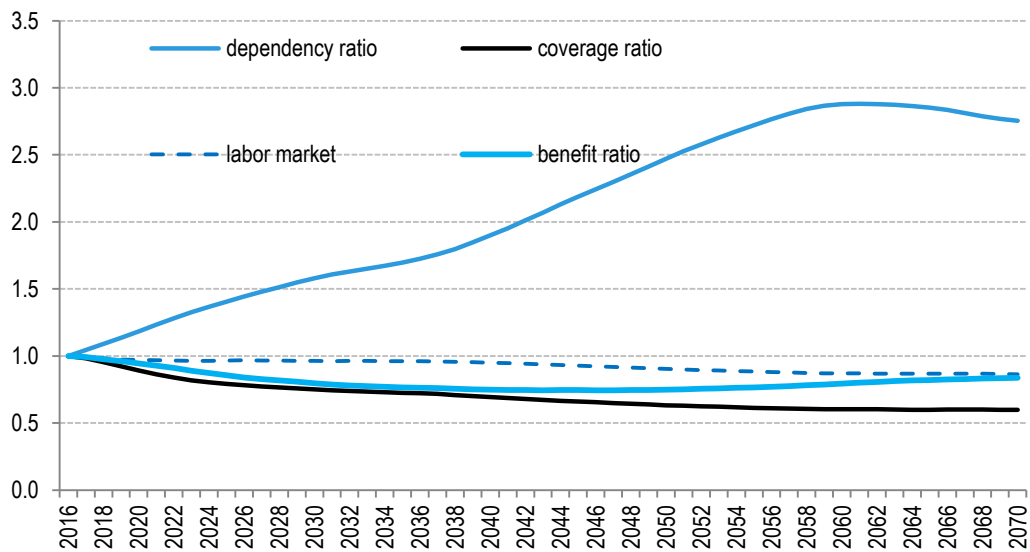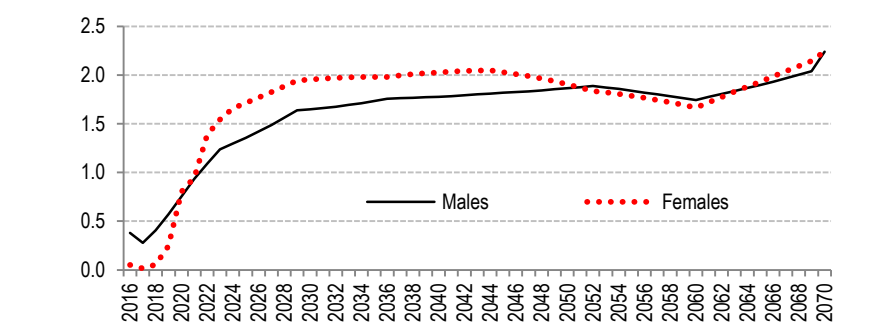
Source: MFSR

Increase in the **dependency ratio** reflects longer expected lives 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 21% in 2013 to 56.8% in 2070.

The mitigating effect of the **coverage ratio** is mainly due to higher effective retirement age of the workers. Following the reform in 2012, statutory retirement age is linked to unisex life expectancy from 2017. At the same time, the early retirement and disability rates are projected to remain relatively low. Altogether it implies a falling share of pensioners in elder population 65+. This is reflected in particular in the decreasing early-age coverage ratio and in the cohort effect.

Figure 15 - The difference between statutory and effective retirement age, years

Source: MFSR:

The **benefit ratio** is projected to decrease until 2040 albeit from an above EU average level. This is due to the difference in the dynamics of average wage and pension indexation (pensioners' CPI). The mitigating effect of the benefit ratio is however lower, compared with previous rounds, due to the change in the assumptions about average contributory period. On the other hand the revision of assumption about pensioner's inflation has a reverse effect (it was revised from CPI +0.003 to CPI +0.0011, as it is the average observed in last ten years.)

The **labor market indicator** has a mitigating effect too. Due to higher statutory retirement ages and incentives to stretch careers, the cohorts of 65-74 years are expected to deliver an increasing number of hours worked even after retirement.

Table 12 (9a) - Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensions

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	-0,3	-0,6	0,2	1,0	1,1	-0,1	1,2	0,022
Dependency ratio effect	1,6	2,5	1,5	2,3	1,4	-0,4	8,8	15,5%
Coverage ratio effect	-0,8	-0,1	-0,1	-0,8	-0,4	-0,1	-2,3	-4,4%
*Coverage ratio old age**	*0,0*	*1,4*	*0,3*	*-0,6*	*-0,3*	*-0,2*	*0,7*	*1,2%*
*Coverage ratio early-age**	*-0,9*	*-3,4*	*-1,9*	*-0,6*	*-0,1*	*-0,4*	*-7,2*	*-14,1%*
*Cohort effect**	*-1,4*	*-1,1*	*-0,5*	*-2,5*	*-2,1*	*1,0*	*-6,6*	*-13,2%*
Benefit ratio effect	-0,7	-2,6	-1,0	0,1	0,5	0,5	-3,2	-6,3%
Labor Market/Labor intensity effect	-0,3	-0,1	-0,1	-0,4	-0,3	-0,1	-1,2	-2,3%
Employment ratio effect	*-0,2*	*0,0*	*0,0*	*-0,2*	*-0,2*	*0,0*	*-0,6*	*-1,2%*
Labor intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0%*
Career shift effect	*0,0*	*0,0*	*-0,1*	*-0,2*	*-0,2*	*-0,1*	*-0,6*	*-1,1%*
Residual	-0,2	-0,4	-0,1	-0,1	0,0	0,0	-0,9	-0,4%

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

Source: MFSR

Table 13 (9b) - Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensioners

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	-0,3	-0,6	0,2	1,0	1,1	-0,1	1,2	0,022
Dependency ratio effect	1,6	2,5	1,5	2,3	1,4	-0,4	8,8	15,5%
Coverage ratio effect	-0,9	-1,3	-0,6	-0,7	-0,4	-0,1	-4,1	-7,9%
*Coverage ratio old age**	*0,0*	*0,0*	*-0,2*	*-0,3*	*-0,2*	*-0,2*	*-0,9*	*-1,7%*
*Coverage ratio early-age**	*-1,0*	*-3,4*	*-1,6*	*-0,4*	*-0,1*	*-0,3*	*-6,8*	*-13,3%*
*Cohort effect**	*-1,4*	*-1,1*	*-0,5*	*-2,5*	*-2,1*	*1,0*	*-6,6*	*-13,2%*
Benefit ratio effect	-0,5	-1,4	-0,5	0,0	0,5	0,5	-1,5	-2,8%
Labor Market/Labor intensity effect	-0,3	-0,1	-0,1	-0,4	-0,3	-0,1	-1,2	-2,3%
Employment ratio effect	*-0,2*	*0,0*	*0,0*	*-0,2*	*-0,2*	*0,0*	*-0,6*	*-1,2%*
Labor intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0%*
Career shift effect	*0,0*	*0,0*	*-0,1*	*-0,2*	*-0,2*	*-0,1*	*-0,6*	*-1,1%*
Residual	-0,2	-0,3	-0,1	-0,1	0,0	0,0	-0,8	-0,3%

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

Source: MFSR

The decomposition using the number of pensions (Table 9a) is not quite appropriate for Slovakia, as there are pensioners receiving multiple pension benefits at the same time. In 2016, there were 1 785 thousands pensions while only 1 364 thousands pensioners.

Table 14 (10) - Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme (in %)

	2016	2020	2030	2040	2050	2060	2070
Public scheme (BR)	47%	44%	37%	35%	35%	37%	38%
Public scheme (RR)	49%	51%	47%	43%	43%	52%	50%
Coverage	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Public scheme old age earnings related (BR)	45%	43%	35%	32%	31%	32%	33%
Public scheme old age earnings related (RR)	49%	51%	47%	43%	43%	52%	50%

Coverage	:	:	:	:	:	:	:
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual scheme (BR)	:	0%	1%	3%	5%	5%	4%
Private individual scheme (RR)	:	6%	9%	11%	14%	15%	18%
Coverage	:	0,8	8,8	23,3	36,0	34,9	27,7
Total (BR)	47%	44%	37%	35%	35%	37%	38%
Total (RR)	49%	52%	51%	51%	53%	56%	57%

Source: MFSR

The **total replacement rate** will increase slightly. Since the new pensions are indexed by the wage growth through the point value channel, the factor that increases the replacement rate is the longer average contributory period. Between 2016 and 2040, the replacement rate of public pensions is expected to decrease gradually due to the growing amount of pensions paid out from the second pillar after 2015. After 2040. However, the replacement rate will increase slightly again, copying the demographic structure of Slovak population.

The decrease of the **benefit ratio** is caused by the change in the indexation of pensions following the 2012 reform (indexation of the existing pensions is based on pensioners' inflation instead of the Swiss formula). The benefit ratio will also be affected by pensions paid out from the second pillar as from 2015. As the share of pensioners with income from both first and second pillar rising, the replacement rate from the first pillar and thus the benefit ratio in the public system will be smaller. This effect will be mitigated later by the low voluntary entry rate to the second pillar and lower contribution rates. Consequently, the reduction in awarded first pillar pension will be smaller.

Figure 16 - Benefit ratio[9]
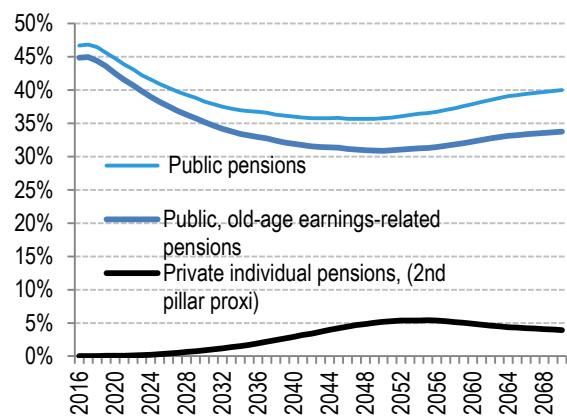
Source: MFSR

Figure 17 - Replacement rate
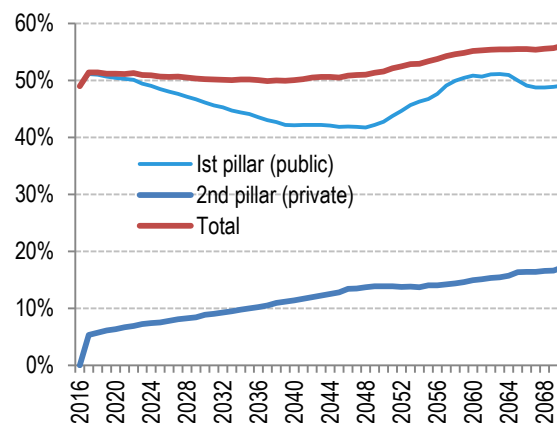
Source: MFSR

Table 15 (11) - System dependency ratio and old age dependency ratio

	2016	2020	2030	2040	2050	2060	2070
Number of pensioners (thousand) (I)	1364,4	1401,0	1480,2	1557,6	1653,4	1673,2	1545,6
Employment (thousand) (II)	2495,1	2507,7	2382,9	2289,5	2157,4	2043,9	2006,8
Pension System Dependency Ratio (SDR) (I)/(II)	54,7	55,9	62,1	68,0	76,6	81,9	77,0
Number of people aged 65+ (thousand) (III)	798,6	921,9	1158,9	1319,1	1537,4	1633,2	1524,0

[9] The benefit ratio for pillar II, is de afcto the amount of pillar I pension reduction induced by pillar II. That is if there was no pillar II, the pensions would by higher by this amount for the 2nd pillar participants. In reality the BR for pilla II can be higher or lower depending on lots of circumstances.

Working age population 15 - 64 (thousand) (IV)	3799,1	3696,1	3520,9	3324,8	2983,0	2750,0	2681,1
Old age Dependency Ratio (ODR) (III)/(IV)	21,0	24,9	32,9	39,7	51,5	59,4	56,8
System efficiency (SDR/ODR)	2,6	2,2	1,9	1,7	1,5	1,4	1,4

Source: IFP

The **pension system dependency ratio** (number of pensioners relative to number of workers) reaches 82% in 2060. That means there will be almost one pensioner for each employed person. This figure, however, includes all type of pensioners in all age groups. For old age pensioners, the system dependency ratio is also considerably high, being the main driver of the pension expenditure.

Table 16 (12a) - Pensioners (public scheme) to inactive population ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Age group -54	11,5	11,1	10,1	8,6	6,9	6,9	6,9
Age group 55-59	113,2	89,4	75,8	65,3	68,7	64,7	68,0
Age group 60-64	117,8	104,8	66,9	55,8	60,7	68,5	71,9
Age group 65-69	106,7	106,9	109,8	107,2	100,6	97,0	96,2
Age group 70-74	100,9	102,0	101,9	102,7	104,6	107,9	112,5
Age group 75+	98,9	97,9	98,4	98,4	98,2	98,3	96,9

Source: MFSR

Table 17 (12b) - Pensioners (public scheme) to total population ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Age group -54	4,6	4,4	4,1	3,6	3,0	3,0	3,0
Age group 55-59	24,1	19,6	16,4	15,1	14,7	13,3	13,4
Age group 60-64	82,6	69,7	36,7	24,4	21,7	20,6	20,0
Age group 65-69	100,6	99,6	100,2	91,3	75,8	61,8	50,0
Age group 70-74	98,8	100,0	100,0	99,9	100,0	100,0	100,0
Age group 75+	98,9	97,9	98,4	98,4	98,2	98,3	96,9

Source: MFSR

Table 18 (13a) - Female pensioners (public scheme) to inactive population ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Age group -54	10,5	10,0	9,2	7,9	6,4	6,4	6,4
Age group 55-59	104,9	83,9	71,6	61,7	67,7	65,1	68,1
Age group 60-64	116,0	102,9	57,9	50,5	58,9	68,0	71,9
Age group 65-69	105,9	104,9	109,0	104,5	96,2	91,7	88,7
Age group 70-74	100,7	101,5	101,5	102,5	104,2	107,0	110,9
Age group 75+	99,4	98,7	98,9	98,9	98,5	98,5	97,1

Source: MFSR

Table 19 (13b) - Female pensioners (public scheme) to total population ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Age group -54	4,7	4,5	4,1	3,6	3,0	3,1	3,1
Age group 55-59	25,6	20,7	17,0	15,5	15,1	13,9	14,0
Age group 60-64	90,5	72,4	32,7	23,3	21,9	20,9	20,5
Age group 65-69	101,0	99,4	100,3	89,9	73,9	59,4	47,6
Age group 70-74	99,0	100,1	100,0	99,9	100,0	100,0	100,0
Age group 75+	99,4	98,7	98,9	98,9	98,5	98,5	97,1

Source: MFSR

Due to the increase of the statutory retirement age, the **coverage ratio** (share of pensioners on the population in particular age cohort) is falling. In the cohort below -54 years, the changes are relatively small since there are almost no pensioners. There can be more pensioners than inactive population due to **concurrent work and pension** (i.e. person is receiving pension benefit but he/she is not counted as inactive since he/she is still working). The total pension points at retirement as well as average accrual rate[10] are influenced by pillar II as they fall while there are many pensions drawn from the second pillar and then grow again, when the share of second pillar participants declines.

Table 20 (14a) - Projected and disaggregated new public pension expenditure (old age and early earnings-related pensions)

New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	273,0	173,5	399,0	768,5	1100,7	1629,6	1713,6
II Number of new pensions (in 1000)	50,6	28,7	42,7	52,5	49,1	44,7	33,4
Total pension points at retirement	40,9	39,9	36,8	36,3	37,3	41,8	41,3
III Average pension points accumulated per year or average contributory period	41,5	41,6	42,2	43,4	44,7	45,9	46,7
IV Average accrual rate (=V/K)	117,9	122,6	112,1	100,0	97,3	113,1	107,6
Point value (V)	11,0	12,6	21,1	33,6	50,1	72,6	103,7
Point cost (K)	9,3	10,3	18,9	33,6	51,5	64,2	96,3
V Sustainability/adjustment factors	:	:	:	:	:	:	:
VI Average number of months paid the first year	12,0	12,0	12,0	12,0	12,0	12,0	12,0
Monthly average pensionable earnings / Monthly economy-wide average wage	42,01%	39,23%	35,76%	35,56%	37,07%	41,68%	41,18%

Source: MFSR

Table 21 (14b) - Disaggregated new public pension expenditure (old age and early earnings-related pensions) - MEN

New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	178,4	95,6	197,7	375,3	558,0	867,3	841,9
II Number of new pensions (in 1000)	30,1	15,5	20,7	24,6	23,7	23,0	15,8
Total pension points at retirement	44,9	40,9	37,7	37,8	39,2	43,3	42,7
III Average pension points accumulated per year or average contributory period	42,0	41,9	42,3	43,6	44,8	46,0	46,8
IV Average accrual rate (=V/K)	123,4	122,3	111,5	100,8	98,0	112,3	107,9
Point value (V)	11,0	12,6	21,1	33,6	50,1	72,6	103,7
Point cost (K)	8,9	10,3	19,0	33,3	51,1	64,6	96,1
V Sustainability/adjustment factors	:	:	:	:	:	:	:
VI Average number of months paid the first year	12,0	12,0	12,0	12,0	12,0	12,0	12,0
Monthly average pensionable earnings / Monthly economy-wide average wage	46,16%	40,19%	36,62%	37,08%	38,89%	43,14%	42,61%

Source: MFSR

Table 22 (14c) - Disaggregated new public pension expenditure (old age and early earnings-related pensions) – WOMEN

New pension	2016	2020	2030	2040	2050	2060	2070
I Projected new pension expenditure (millions EUR)	94,6	78,0	201,3	393,2	542,7	762,2	871,7
II Number of new pensions (in 1000)	20,5	13,3	22,1	27,9	25,4	21,7	17,5
Total pension points at retirement	34,9	38,8	36,0	34,9	35,6	40,3	40,0
III Average pension points accumulated per year or average contributory period	40,8	41,3	42,1	43,3	44,6	45,8	46,6
IV Average accrual rate (=V/K)	124,4	122,9	112,6	99,2	96,7	113,9	107,3
Point value (V)	11,0	12,6	21,1	33,6	50,1	72,6	103,7

---

[10] The average replacement rate accrued per year of pension insurance.

Point cost (K)	8,8	10,3	18,8	33,9	51,8	63,7	96,6
V Sustainability/adjustment factors	:	:	:	:	:	:	:
VI Average number of months paid the first year	12,0	12,0	12,0	12,0	12,0	12,0	12,0
Monthly average pensionable earnings / Monthly economy-wide average wage	35,91%	38,12%	34,95%	34,23%	35,36%	40,14%	39,89%

Source: MFSR

The average **accrual rate** declines between 2020 and 2040 because of starting payout of pensions from the second pillar (lower rights accrued in the first pillar). After 2040, the average accrual rate in the first pillar will begin to increase. This dynamics is caused by the increase in the contributory period and the voluntary character of the second pillar as well as the demographic structure of the population.

Number of **new old age pensions** will decrease mostly during the period while statutory retirement age of women converges with males. This is a period when the average statutory retirement age grows the fastest, as it is a combination of linkage to life expectancy and convergences between men and women.

3.4. Financing of the pension system

Table 23 (16) - Revenue from contribution (Millions), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2016	2020	2030	2040	2050	2060	2070
Public contribution	5601,2	6515,0	10279,0	15740,2	22272,1	30629,9	42787,5
Employer contribution	*4237,4*	*4928,8*	*7776,3*	*11907,8*	*16849,3*	*23172,2*	*32369,7*
Employee contribution	*1363,8*	*1586,3*	*2502,7*	*3832,4*	*5422,8*	*7457,7*	*10417,8*
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)	2175,6	2201,4	2121,5	2035,8	1902,5	1800,0	1766,5
Employment (II)	2495,1	2507,7	2382,9	2289,5	2157,4	2043,9	2006,8

Source: MFSR

The pension system **revenue** (contributions received) is projected to remain quite stable throughout the whole projection period. It first decreases slightly, as the contribution rates to the second pillar started to increase from 4% to 6%. Since the number of contributors to the second pillar will fall, the revenues will gradually increase again.

Figure 18 - Gross public expenditure. revenue and balance (% of GDP)

Source: IFP
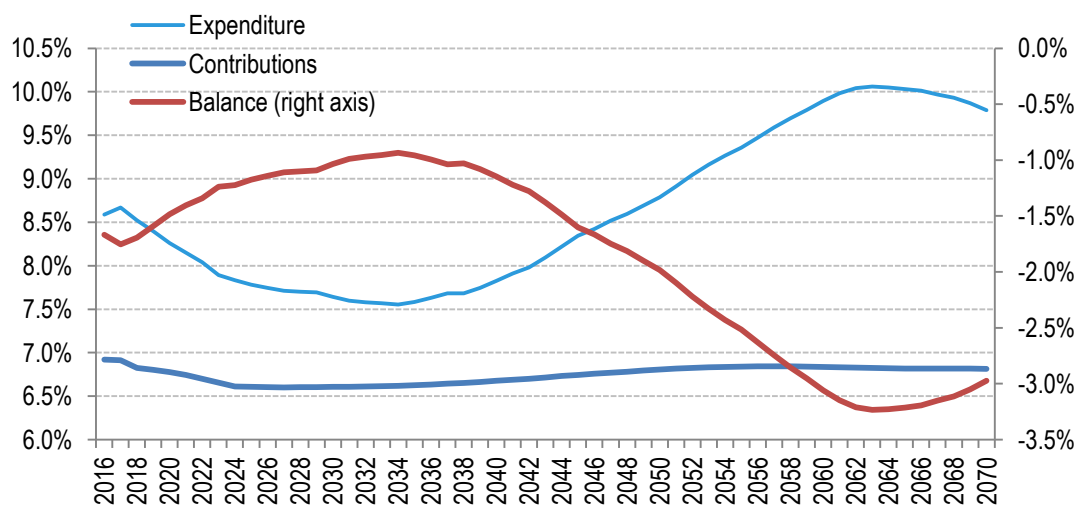
3.5. Sensitivity analysis

Table 24 (17) - Public pension expenditure under different scenarios (p.p. deviation from the baseline)

Public Pension Expenditure	2013	2020	2030	2040	2050	2060	2070
Baseline	8,6	8,3	7,6	7,8	8,8	9,9	9,8
Higher life expectancy (2 extra years)	0,0	0,0	0,0	0,0	-0,1	-0,1	0,2
Higher TFP growth (+0.4 pp.)	0,0	0,0	0,0	-0,2	-0,5	-0,7	-0,8
Lower TFP growth (-0.4 pp.)	0,0	0,0	0,0	0,1	0,5	0,7	0,9
Higher emp. rate (+2 pp.)	0,0	0,0	-0,1	-0,1	-0,1	-0,1	-0,1
Lower emp. rate (-2 pp.)	0,0	0,0	0,1	0,1	0,1	0,1	0,0
Higher emp. of older workers (+10 pp.)	0,0	-0,1	-0,4	-0,5	-0,6	-0,6	-0,6
Higher migration (+33%)	0,0	0,0	0,0	-0,1	-0,2	-0,2	-0,2
Lower migration (-33%)	0,0	0,0	0,0	0,1	0,2	0,2	0,2
Lower fertility	0,0	0,0	0,0	0,1	0,5	1,0	1,6
Risk scenario	0,0	0,1	0,4	0,6	0,5	0,6	0,5
Policy scenario: linking retirement age to increases in life expectancy	:	:	:	:	:	:	:

Source: MFSR

In the **higher employment scenario** (overall increase of the public pension expenditure over 2013-2060 lower by 0.1 GDP p.p. compared to the baseline scenario). Higher employment is contributing to higher GDP, which is the denominator in the expenditure ratio without a concurrent impact on the pension expenditure. In the **higher employment rate of older workers** scenario (-0.7 GDP p.p.), this effect on GDP is strengthened further by comparatively less people being entitled an old age pension. However, one should be prudent while interpreting these results, as this scenario did not incorporate higher benefits in the future, accumulated due to longer careers, due to modelling issues.

The public pension expenditure ratio is rather sensitive to the assumption about TFP growth. This regards two sensitivity scenarios. **Higher TFP growth** (-0.4 GDP p.p. compared to baseline) and **lower TFP growth** (+0.5 GDP p.p. compared to baseline). On the one hand, higher TFP growth implies boost to the GDP growth. On the other hand, it increases the pension benefits through higher wages. Pension benefits are indexed by CPI; therefore, the overall impact of higher TFP growth is favorable, owing to the productivity-GDP model channel. In the lower labor productivity scenario, this mechanism works the opposite way.

The impact in the **higher life expectancy** scenario is not too high due to linkage of the statutory retirement age to life expectancy. Therefore, the expenditure deviation from baseline in this scenario is caused by the size of different cohorts. Firstly, it is positive due to higher statutory retirement age and then negative due to higher number of pensioners going for retirement later.

Due to low overall rates of migration, the assumption of a **lower/higher migration** would only result in an additional increase of +/-0.2 GDP p. p. over 2013-2070 compared to baseline.

Finally. Performing a **risk scenario with a lower TFP growth** has been suggested. Causing lower GDP growth. The lower TFP growth will be reflected in the pension expenditure as an additional increase of 0.5 GDP p.p. in 2070 compared to baseline.

Figure 19 - Comparison of pension expenditure under sensitivity scenarios and the baseline
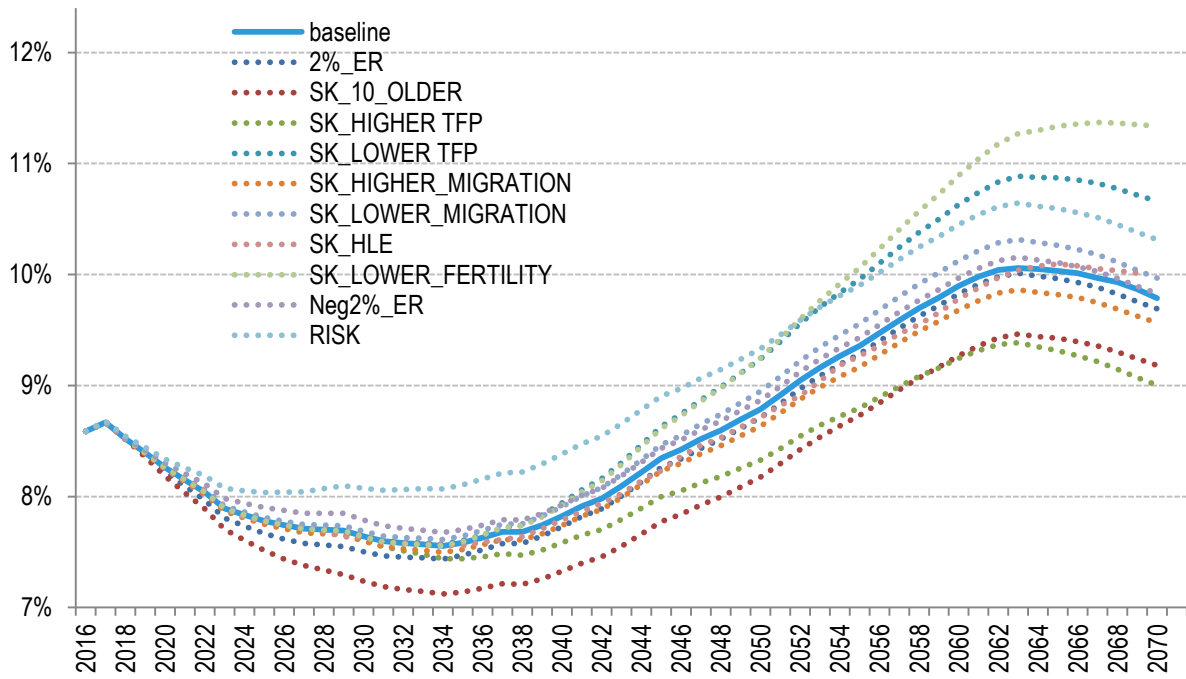
Source: MFSR

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

This chapter describes main drivers to changes in the projection results across the current and the previous projection rounds.

Table 25 (18) - Overall change in public pension expenditure to GDP under the2006. 2009. 2012 and 2015 projection exercises

	Public pensions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labor intensity	Residual (incl. Interaction effect)
2006 *	1,51	9,03	-2,48	-1,27	-3,13	:	-0,64
2009 **	3,43	11,70	-3,91	-0,56	-2,45	:	-1,35
2012 ***	5.21	13.50	-3.92	-0.48	-2.84	0.002	-1.04
2012, reform update ***	2,66	11,61	-4,46	-0,97	-2,03	0,00	-1,50
2015****	2,11	11,27	-3,31	-0,79	-3,53	0,00	-1,53
2018*****	1,20	8,82	-2,28	-0,65	-3,20	0,02	-1,51

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

Source: MFSR

Compared to the last projection, the public pension expenditure in the current projection round will be lower at the end of projection horizon. Moreover, the projected slope is flatter. As in the previous projection round, the dependency ratio is the main driving force of the pension expenditure increase. The coverage ratio and employment again have a mitigating effect on the pension expenditure, though not as strong as in the previous round.

Current projection features a better demographic assumption profile with a lower dependency ratio over the whole projection horizon.

Figure 20 - Dependency ratio and total Slovak population (in millions) according to europop2015 and esspop2017 projection
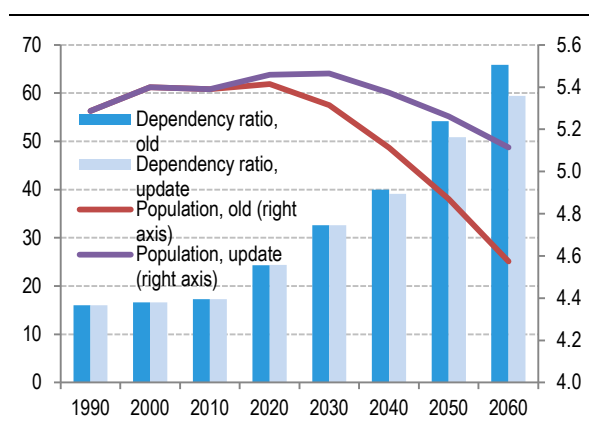
Figure 21 - Real GDP growth – comparison (%)
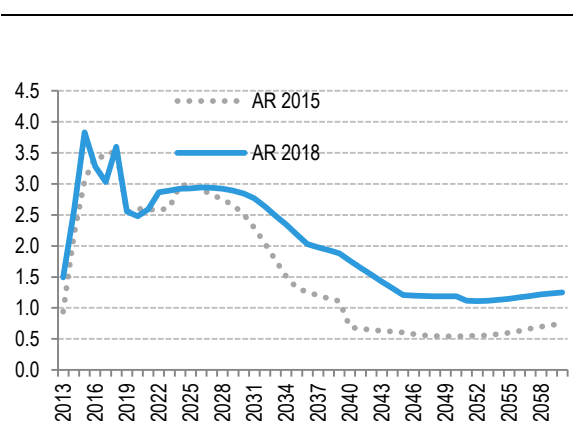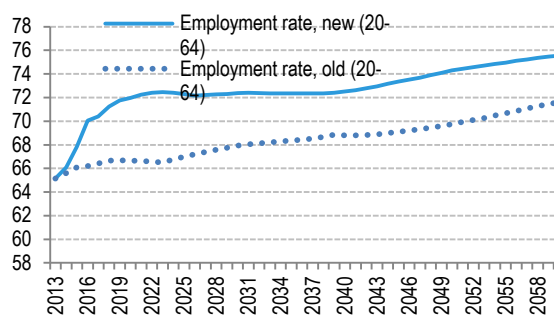

Source: MFSR

Source: MFSR

The average employment rate and participation rate of persons 20-64 is projected to be higher during the whole projection horizon. It is driven by a more realistic implementation of the reform impact on participation of older workers.

Figure 22 - Participation rate (15-64) - comparison

Figure 23 - Employment rate (15-64) - comparison
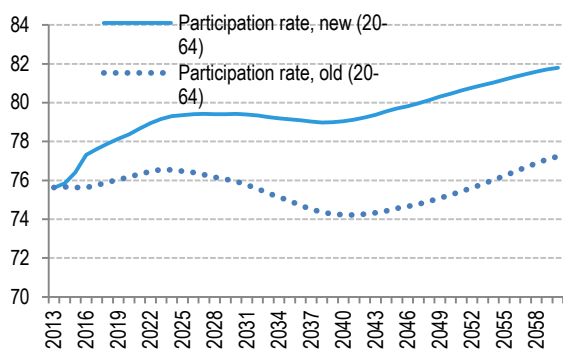
Source: MFSR

Source: MFSR

Compared with Ageing report 2015, the most of the difference is due to better common assumptions, mainly lower GDP in the short term and higher GDP towards the end of the projection horizon. Overall, the impact of more favorable assumptions is 1.6 p.p. of GDP in 2060.

The positive revision is however mitigated by several changes made on the modelling side. We have revised the average contributory period, which is now longer and can explain most of the change in modelling. (It grows linearly from 0 to 0.7% of GDP in 2070) The rest is explained by new-pension profiles, assumptions about the Christmas pension indexation as well as a new assumption about the deviation of CPI and pensioners' CPI (a 10-year average is now used). On the policy perspective, the pension expenditure will be higher by 0.2% in 2020, which is caused by minimum indexation legislated until 2021. The effect of it will fade out slowly. The new minimum pension scheme has rather negligible impact as it is currently around 0.02% of GDP.

Table 26 (19) - Decomposition of the difference between Ageing report 2015 and the new public pension projection (% of GDP)

	2013	2016	2020	2030	2040	2050	2060
Ageing report 2015	8,5%	8,7%	8,4%	8,0%	8,5%	9,5%	10,7%
Change in assumptions	:	-0,03%	0,4%	0,1%	-0,4%	-1,0%	-1,6%
Improvement in the coverage or in the modelling	:	-0,10%	-0,74%	-0,63%	-0,36%	0,24%	0,78%
Change in the interpretation of constant policy	:	:	:	:	:	:	:
Policy related changes	:	0,00%	0,22%	0,17%	0,13%	0,06%	0,01%
New projection	:	8,6%	8,3%	7,6%	7,8%	8,8%	9,9%

Source: MFSR

The data used in the models have been provided by the Ministry of Interior for the police and the Ministry of Defense 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. Reforms incorporated in the models

The model takes into account the 2005's introduction of the second pillar together with further significant reforms of the pension system adopted later. The 2012 pension reform takes into account very significant parametric changes of the first pillar and also changes in the second pillar. The 2014 amendment determining the payout from the second pillar did not require any additional modifications of the model. Changes in Christmas bonus formula have been incorporated in this projection. The models of armed forces count fully with the 2013 reform. Minimum pension introduced in 2015 as well as minimum indexation of pensions for the years 2018-2021 are also included.

4.5. 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 calculates partly also the second pillar. At the same time, it calculates also social assistance to those with pension below minimum subsistence level and the Christmas bonus. The models for the armed forces cover majority (cca 85%) of the pension system of the armed forces.

4.6. Planned future developments

- Fully cover projections for second pillar of universal pension system and include third pillar pensions to calculate old age income.
- Use age-specific earnings profiles in the models.

5. ANNEX

5.1. Pension formulas

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

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

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.

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
- Becomes eligible for early old age pension that is higher than 1.2 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.

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.

Initial determination of the current pension point value in 2004

$$PP2004 = \frac{RR\% \times AW2003}{Years} \quad .... \quad 4,72 = \frac{50\% \times 377,75}{40} \; in \; EUR$$

<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 = 38.879 SKK

5.2. Additional tables:

Table 27 (A1) - **Factors behind the change in public pension expenditures between 2016 and 2070 using pension data (in percentage points of GDP) - pensions**

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70
Public pensions to GDP	-0,3	-0,6	0,2	1,0	1,1	-0,1	1,2
Dependency ratio effect	1,6	3,4	2,7	4,9	3,5	-1,1	15,1
Coverage ratio effect	-0,8	0,0	-0,1	-0,8	-0,3	-0,1	-2,1
*Coverage ratio old age**	*0,0*	*1,6*	*0,4*	*-0,7*	*-0,3*	*-0,2*	*0,8*
*Coverage ratio early-age**	*-0,9*	*-2,9*	*-1,1*	*-0,3*	*0,0*	*-0,1*	*-5,3*
*Cohort effect**	*-1,4*	*-0,9*	*-0,4*	*-1,7*	*-0,9*	*0,3*	*-5,0*
Benefit ratio effect	-0,7	-2,3	-0,7	0,0	0,3	0,3	-3,2
Labor Market/Labor intensity effect	-0,3	-0,1	-0,1	-0,4	-0,3	0,0	-1,2
Employment ratio effect	*-0,2*	*0,0*	*0,0*	*-0,2*	*-0,1*	*0,0*	*-0,6*
Labor intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Career shift effect	*0,0*	*0,0*	*-0,1*	*-0,2*	*-0,2*	*0,0*	*-0,6*
Residual	-0,2	-1,6	-1,6	-2,8	-2,0	0,8	-7,4

Table 28 (A2) - Factors behind the change in public pension expenditures between 2016 and 2070 using pensioners data (in percentage points of GDP) - pensioners

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70
Public pensions to GDP	-0,3	-0,6	0,2	1,0	1,1	-0,1	1,2
Dependency ratio effect	1,6	3,4	2,7	4,9	3,5	-1,1	15,1
Coverage ratio effect	-0,9	-1,2	-0,5	-0,5	-0,3	-0,1	-3,5
*Coverage ratio old age**	*0,0*	*0,0*	*-0,2*	*-0,3*	*-0,2*	*-0,2*	*-0,9*
*Coverage ratio early-age**	*-1,0*	*-2,9*	*-1,0*	*-0,2*	*0,0*	*-0,1*	*-5,1*
*Cohort effect**	*-1,4*	*-0,9*	*-0,4*	*-1,7*	*-0,9*	*0,3*	*-5,0*
Benefit ratio effect	-0,5	-1,4	-0,4	0,0	0,3	0,3	-1,7
Labor Market/Labor intensity effect	-0,3	-0,1	-0,1	-0,4	-0,3	0,0	-1,2
Employment ratio effect	*-0,2*	*0,0*	*0,0*	*-0,2*	*-0,1*	*0,0*	*-0,6*
Labor intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Career shift effect	*0,0*	*0,0*	*-0,1*	*-0,2*	*-0,2*	*0,0*	*-0,6*
Residual	-0,2	-1,4	-1,5	-3,0	-2,2	0,7	-7,5