REPUBLIC OF SLOVENIA
MINISTRY OF FINANCE

Country fiche on pension for the Republic of Slovenia – the 2021 round of projections for the Ageing Working Group, September 2020

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1.   Overview of the pension system

1.1.   Description

Pension and disability insurance system in Republic of Slovenia (1. pillar) is based on inter-generational contract and is therefore a pay-as-you-go system. The system is uniform and mandatory for all employed persons and other persons generating certain income from employment or other gainful activity, while inactive persons can join the system voluntarily. They are all included in the compulsory insurance scheme under the same act, i.e. the Pension and Disability Insurance Act (ZPIZ-2), and covered by the same insurance provider - the Institute of Pension and Disability Insurance of Slovenia (ZPIZ).

Pension system in general includes, besides 1. pillar, also occupational pension scheme and second non mandatory private scheme.

Compulsory insurance – first pillar

The compulsory insurance scheme includes old age and early pensions, disability pensions, survivors', widow/ers' and partial pensions. The system covers also the disability insurance rights[1], rights on assistance and attendance allowance, part of a widow/ers' pension and other rights (annual grant). Outside the compulsory insurance the system covers also special rights for farmers and military pensions, part of the military widow/ers' pension, advance pension payment and other pensions and rights under special acts. The structure of pensioners according to the type of pensions is changing, with increasing share of old age and early pensioners.

The last major reform of pension system was introduced in 2013. The right to an old-age pension depends on two parameters which must be met cumulatively; the age of the insured person and the pension qualifying period. The retirement age was gradually raised to 65 for both genders, with the transition period expired in 2019[2]. The conditions for acquiring an old-age pension are therefore equalized for men and women[3] (the table below). In exceptional circumstances the retirement age could be lower due to child care, compulsory military service or inclusion in the insurance scheme before the age of 18[4]. Actual retirement age[5] has started raising notably after the last reform. In the case of old age pensions (with partial pensions) in the year 2019 reached slightly about 60 years for women and 61 years and 7 months for men. However, the average retirement age of new pensioners without early retirement In the year 2019 reached 60 years and 8 months for women and 62 years and 6 months for men

The latest changes of the pension system in 2019 are described in detail in next chapter.

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1 The disability insurance include occupational rehabilitation, reassignment work on a part-time basis for no less than four hours daily or twenty hours weekly, reimbursement of travel expenses and benefits from disability insurance: for the duration of occupational rehabilitation, temporary benefit, right to disability benefit and right to partial benefit.

[2] Different transitional periods take into consideration various pensions qualifying periods.

[3] This is reasonable due to the longer lifespan of women and consequently longer pension receipt span, as well as the necessity to equalise the genders formally. The different conditions for retirement in the past contributed to lower pensions for women due to the shorter pension qualifying period.

[4] See Country Fiche on Pension Projections, Slovenia, 2013.

[5] The retirement age for entering the old age pension without other pensions and rights under special acts.

Table 1: Transitional periods for different pension qualifying periods

Transitional periods	The transitional period to reach 65 retirement age and 15 year contribution period		The transitional period to 65 retirement age with at least 20 years of contribution*		The transitional period to 60 retirement age to 40 years of contribution[6]		
	Men	Women	Men	Women	Men	Women	Contribution period, women
2013	65Y	63 Y 6M	63Y 6	61Y 6M	58Y 4M	58Y	38Y 4M
2014		64Y	64Y	62Y	58Y 8M	58Y 4M	38Y 8M
2015		64 Y 6M	64Y 6	62Y 6M	59Y	59Y 8M	39Y
2016			65Y	63Y	59Y 4M	59Y	39Y 4M
2017				63Y 6M	59Y 8M	59Y 4M	39Y 8M
2018				64Y		59Y 8M	
2019				64Y 6M			

Source: Pension and Disability Insurance Act (ZPIZ-2)
* When reaching the retirement age 65 for both genders in 2020, this provision will be abolished.

Table 2: Qualifying condition for retiring

			2019	2030	2040	2050	2060	2070
Qualifying condition for retiring with a full pension		Statutory retirement age - men	65 y	65 y	65 y	65 y	65 y	65 y
		Statutory retirement age - women	64,5 y	65 y	65 y	65 y	65 y	65 y
	Minimum requirements	Contributory period - men	40 y	40 y	40 y	40 y	40 y	40 y
		Retirement age - men	60 y	60 y	60 y	60 y	60 y	60 y
		Contributory period - women	40 y	40 y	40 y	40 y	40 y	40 y
		Retirement age - women	60 y	60 y	60 y	60 y	60 y	60 y
Qualifying condition for retirement *without* a full pension		Early retirement age – men*	60 y	60 y	60 y	60 y	60 y	60 y
		Early retirement age – women*	60 y	60 y	60 y	60 y	60 y	60 y
		Penalty in case of earliest retirement age	18 % (early pension)	18%	18%	18%	18%	18%
		Bonus in case of late retirement	12 % (old age pension)	9 %	9 %	9 %	9 %	9 %
		Minimum contributory period - men	15 y	15 y	15 y	15 y	15 y	15 y
		Minimum contributory period - women	15 y	15 y	15 y	15 y	15 y	15 y
		Minimum residence period - men	n.e.	n.e.	n.e.	n.e.	n.e.	n.e.
		Minimum residence period - women	n.e.	n.e.	n.e.	n.e.	n.e.	n.e.

Source: ZPIZ
Note: *Statutory and early retirement age are the same. The difference is in the definition of the contributory period. For early retirement the total pension qualifying period includes also purchased contributory period.

The time spent in pension is increasing. In 2000, the average time spent in retirement for women was 17 years and 1 month, while in the year 2016 it was 24 years and 1 month and in the year 2019 it was 24 years and 11 month. Similarly, in 2000 average time spent in retirement for men was 14 years and 9 months, while in both 2016 and in 2019 it was 17 years and 7 months.

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[6] Particularly for persons who began to work early in life – the effect of the structural changes in the economy in the long run.

The impact of the reform is evident also in gradually increasing contributory periods but only for women. In 2019, the average contributory period of new pensioners increased in comparison with 2016 – the increase for women was 1 year and 10 months while the decrease for men was 8 months.

In the year 2019 85% of women and 68.4% of men completed 40 years of pensionable age.

The ratio of insured persons to pensioners decreased from 1.8 in year 2000 to 1.45 in year 2016. In 2019 the ratio increased again and reached 1.55 due to labour market recovery - the number of insured persons increased from 2016 to 2019 at an average annual rate of 2.5% - new pensioners were increasing at average annual rate of just 0.3%.

When calculating the pension base for an old-age pension or an early pension the period of 24 most favourable consecutive years of insurance from 1 January 1970 onwards are taken into accounts. The current period of 24 years was reached in the transition period that started in 2013 with the 19 years, increasing one year annually.

The lowest pension base is set by 76.5% of the gross wages reduced by average rate of paid taxes and contributions. The maximum pension base is limited to 4 times of the minimum pension base. On October 1, 2017 an amended Pension and Disability Insurance Act (ZPIZ-C), which provides a guaranteed pension amount to all those who contributed to the pension system (1st pillar) for the time required to obtain a full pension, came into force. This amount is indexed and in December 2019 could not be less than 538.53 EUR (555,76 EUR in 2020). According to the data there were 55,269 pensioners who received it.

Until December 31, 2019 the accrual rate was set to 1.25% for each year after contributory period of 15 years (for the first 15 years the accrual rate was 26% for men and 29% for women) and reached for 40 contributory years 57.25% of the pension base for men and 60.25% of the pension base for women. A special transition period for women was set until 2022[7].

From January 1, 2020, when the amendment to the pension legislation came into force, the accrual rate is set to 1.36 % for each year after contributory period of 15 years (for the first 15 years the accrual rate is 29,5 % for men and women) and reaches 63.5% of the pension base for men and women for 40 contributory years. A transition period of six years was set to raise the assessment rate for men to 63.5%.

An insured person may acquire the right to early retirement already at age 60, if he or she attains at least 40 years of the pension qualifying period (with purchased period included). However, it must be emphasized that due to the renewed system of permanent deductions, early retirement affects the amount of pension received. A pension with regard to the pension qualifying period achieved is lowered by 0.3% (maximum 18%) for each month of retirement before the age of 65. Since the statutory age was raised gradually to 65 and the pension qualifying period for early retirement was also raised gradually (from 38 to 40 years for women), deductions were determined correspondingly.

The positive stimulation for staying active longer time is provided with bonuses. Until December 31, 2019, the pensioner could accrue additional 1% for each three months of work after fulfilment of 60 years of age and completion of 40 years of pensionable service without purchasing years (including transitional periods), i.e. additional 4% per year against the normal yearly accrual rate of 1.25% (from 1 January 2020 1.5% for every 6 months of work after fulfilling the retirement

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[7] See Country Fiche on Pension Projections, Slovenia, 2013.

conditions, i.e. additional 3% per year). This bonus is available for maximum of 3 years, which means that a person prolonging his career for 3 years can accrue additional 12% (reduced to 9% by the novel from January 1, 2020). In addition, an insured person who meets the conditions for an early or old-age pension and remains insured will receive monthly payments of 20% (40% from January 2020) of the early or old-age pension, but only if insured persons remains insured 40 hours per week (this condition was added in 2016).

Pensions are indexed to 60% of the increase in the average gross salary and to 40% of the average increase in the cost of living (i.e. inflation). The pension indexation should not fall below half of the increase of the cost of living. In the year 2019 the pensions were indexed twice, regularly by 2.7% and 1.5% due to yearly increase of GDP by 4.1% .

The total contribution rate for pension and disability insurance is 24.35% of gross wage without ceiling. The employee´s contribution rate is 15.50% and the employer´s contribution rate is 8.85%.

In overall, the positive economic developments in last years and the impact of last pension reform have reduced the share of pension expenditures in GDP from above 11% in 2013, to 9.96%[8] in 2019.

Survivor and widow(er)'s

The pension and disability insurance shall also cover the rights arising in the event of death of the insured person. Those pensions are received by the widow or widower, his children, stepchildren and other children without parents of the insured person who died.

The rules for survivor pensions: if the partner dies the base for survivor pension is his/her pension or if he/she was employed (and has fulfilled the conditions for disability pension), the pension is calculated with the same assumptions as it would become disabled (1st category). If survivor partner is already retired and already receives his/her own pension (or exceeds the age of 57 years (2020), or is completely incapable for work or has to take care of children), this pension is compared with the 70% pension of the deceased partner and if it is lower he/she can get 70% of the pension of the deceased partner. If it is higher, he/she can get a partial survivor pension – 15% of survivor pension – in addition to his/her pension (with two limitations: a) this partial pension should not exceed 11.7% of the minimum pension assessment base (from 1st January 2020 this limitation is set to 104.70 EUR), and b) the sum of both pensions (his/her own + the partial survivor pension) should not exceed old age pension of a man, calculated from the highest pension assessment base and 40 years of pensionable period (2,094.02 EUR from 1st January 2020).

If there are children left, for one child family pension is 70% of pension of deceased father/mother, for two children it is 80%, for three children it is 90%, and for 4 and more children it is 100%. The widow(er) counts the same as one child (mother + one child = 80%).

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[8] The percentage correspond to the definition used in the model.

Occupational insurance

More precisely this system should be called "mandatory" supplementary pension system as its purpose was and still is to replace the old 'insurance period with increase (bonus)' and is intended for people working in demanding jobs and professions where due to the specifics of their work they cannot be expected to work until their full retirement age. This system provides certain categories of workers with a right to early retirement and so-called bridging over pension.

Occupational insurance covers the compulsory admission to the occupational retirement provision, and the rights and obligations arising from the insurance in the event of old-age and death determined on the basis of the contributions paid there into.

The basis for the payment of contributions for the occupational retirement provision is the insured person's salary or salary compensation. Occupational insurance pension plan determines uniform occupational insurance contribution in amount of 9.25% of an insured person's salary. In addition, for the transitional period from January 1, 2017 to December 31, 2021, the uniform occupational insurance contribution rate for all jobs is set at 8% of the occupational insurance base, except for insured persons without insurance period with an increase, until December 31, 2000, for which the contribution rate is:

- in the workplace from groups 1 and 2: 8.2% of the occupational insurance base;
- in the group 3 workplace: 8.4% of the occupational insurance base;
- in the workplace from groups 4 and 5: 8.8% of the occupational insurance base from 1.1.2019 onwards (between 1.1.2017 and 1.1.2019 it is 8.00%).

The occupational insurance guarantees the right to an occupational pension. Occupational pension is a benefit which ensures an individual a certain income from the moment he/she leaves the labour market until he/she meets the conditions for retirement under the compulsory pension and disability insurance. The amount of occupational pension depends on the amount of funds deposited on a person's personal account, and of the expected length of the period of receiving the occupational pension. The occupational pension may not fall below the old-age pension which the insured person would have received under a compulsory pension and disability insurance.

A beneficiary receives occupational pension in monthly amounts from the time of the acquisition of the occupational pension until the fulfilment of conditions for the acquisition of an early retirement benefit or an old-age pension under the compulsory insurance, depending on the beneficiary's choice.

Conditions for acquiring the right to an occupational pension are:

- the years of pensionable service together with the added pensionable service amount to 42 years and 6 months in accordance with the provisions, and if the funds collected on their personal account suffice for the pay-out of the occupational pension or
- when their years of pensionable service together with the added pensionable service amount to no less than 40 years and when, depending on the level of the job they attain certain age (52 to 56).

An insured person who fulfilled the conditions for the entitlement to an old-age pension, an early retirement benefit, widow(er)'s pension or disability pension prior to enforcing the right to an occupational pension have the right to the pay-out of the surrender value or may request that

the funds are transferred free-of-charge to the supplementary insurance where the insured person shall acquire the right to a supplementary pension.

In May 2020 there were 48,297 insured persons in occupational insurance and there were 302 occupational pensions' beneficiaries. The amount of collected resources in the occupational insurance fund in May 2020 was 794 million EUR.

However, before the new legislation the employees on the jobs with difficult conditions (arduous & hazardous) and security and defence forces had the same formal status as other old age pensioners within the pillar 1. The only difference was that they could retire earlier and with shorter contributory period.

Special pension schemes

Special pensions are defined as in [Box II.1.2] of European Commission (DG ECFIN), Economic Policy Committee (Ageing Working Group) (2019) 'The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070)'. The occupational insurance scheme described above is part of the special pension schemes reported in previous round of projections. The old special schemes for farmers and military are projected separately and are phasing out. Other special schemes or favorable conditions for pensions defined by different laws and for different groups (police, judiciary ect.) are also phasing out. All these categories are included in the projections.

Supplementary insurance

Voluntary supplementary pension insurance represents collecting of funds on personal accounts of persons insured under this form of insurance with the purpose of providing them, upon attaining certain age or in other cases, defined by the pension scheme, with supplementary pensions or other rights stipulated by Pension and Invalidity Insurance Act.

Supplementary insurance represents the depositing of funds on the personal account of a member of such form of insurance with the aim of ensuring additional income for the person when he/she acquires the rights under the compulsory pension and disability insurance (early retirement benefit or old-age pension, disability pension, widow/widower's pension or occupational pension). Only an insured person or beneficiary of the rights arising from the compulsory pension insurance may join the supplementary insurance.

This form of insurance may be established as collective insurance with an employer, who partially or completely funds the insurance for all his employees, or by entering an individual insurance retirement plan under which every member pays his/her own premium and may join it independently.

Pension scheme (plan) must be approved by the minister, responsible for labour. Only then the payer of the supplementary insurance premium is entitled to tax relief for the premiums paid.

The two rights ensured by this form of insurance are as follows:

- the right to supplementary old-age pension and
- the right to early supplementary old-age pension.

Insured person may also (under certain conditions) demand the withdrawal of all the funds on his/her personal account in one payment (if the funds do not exceed EUR 5,000) .

A pension fund may be established and managed by a pension company, an insurance company and banks.

The pension fund's management company shall manage the collected funds:

- in compliance with the life-cycle investment policy of a Member or
- in compliance with the investment policy ensuring guaranteed return on net contributions.

To ensure adequate level of pensions, the participation in supplementary pensions should be increased in the future. In December 2019 there were 560,722 persons participating in the insurance. In 2019 the share of persons in supplementary pensions was 58.2% of the total number of persons in the compulsory system. In the end of 2019 the amount of resources in the supplementary funds was around 2.6 billion EUR (2.1 billion EUR in 2016). The average premium paid into supplementary pension insurance was 77.50 EUR by pension company, 58.51 EUR by insurance companies and 58.46 by umbrella pension funds.

If the voluntary supplementary pension insurance remains unchanged in the next decades, only a small share (4.3% of all employed person) will be receiving the pension rent higher than 10% of their old age pensions form the 1st pillar. Beside the relatively low share of insured persons, the main problem are the low shares of insured persons in younger cohorts and thus the short period of premium payments. An introduction of the mandatory 2nd pillar for all employed persons would have an important positive impact on the increase in the net replacement rates, but the assumed premiums amounting to 4% of gross salaries would, in some scenarios, increase the labour costs. Consequently, it is very unlikely that such a scenario would obtain a green light.

Social assistance

National means tested pension rights used to be national (state) pensions in the past. In 2012 this type of pension was redefined and moved from the pension system to the social assistance legislation. As such they do not represent pension related expenditures and are excluded from the projections.

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

At the end of year 2019, amendments to the Pension and Disability Insurance Act were adopted. The Act entered into force on January 1, 2020. Legislative changes pursue two basic goals:

- the extension of employment and
- the provision of an adequate income for a safe age or the improvement of the social position of all beneficiaries of compulsory pension and disability insurance.

Key amendments to the legislation:

- Dual status - upgrade of possibilities to combine pension with income from work:

Insured persons who have fulfilled the conditions for an old-age pension (60 years of age and 40 years of pensionable service without purchased periods) are entitled to receive 40% of the old-age pension to which they would be entitled on the day of fulfilment of the conditions for the first three years of further inclusion in compulsory full-time insurance. At the end of this period, if they remain in compulsory full-time insurance, they are entitled to a 20% old-age pension.

- Favourable valuation of years after meeting the conditions for retirement:

A favourable valuation of 3% per year has been set for a maximum of 3 additional years of insurance for those individuals who have already met the conditions for old-age retirement (60 years of age and 40 years of pensionable service without purchased periods).

- Increasing the total accrual rate for 40 years of pension period to 63.5% for both genders:

The old-age pension is assessed from the pension base in a percentage depending on the length of the pension period. For 15 years of insurance period, it is assessed in the amount of 29.5% of the base. For each subsequent year, however, 1.36% is added, with no upper limit. For a 40-year completed pension period, the pension is set at 63.5% for both genders.
  - for men: gradual increase of the percentage rate from 57.25% in 2019 (previous pension law) to 63.5% in 2025. After 2025 it remains at 63.5%.
  - for women: in the previous law the total accrual rate for women with 40 years of contributory period would decrease from 63.5% in 2019 to 60.25% in 2023 and then it would stabilize on that level. With the new pension law it remains at 63.5% in 2020 and onwards. With new pension low minor changes are also for contributory periods between 15 and 39 years - for example, for 15 years it was 29% in 2019 whereas in 2020 and onwards it is 29.5%).

- Determination of additional accrual rate for child care:

An insured person (male or female) who cared for a child (born or adopted) in the first year of his or her life may receive an additional accrual rate of 1.36% per child (for up to three children – i.e. in total up to 4.08%) when claiming a pension.

- Higher accrual rate in the case of assessment of disability pension in case of disability due to injury at work or occupational disease:

The assessment has so far been considered to be set in the amount of the assessment percentage that applies to a man with 40 years of pensionable service, which means that it has risen from the current 57.25% to 63.5%.

- New minimum assessment of disability pension for insured persons who became disabled before reaching the age of 65:

The disability pension for these insured persons is at least 41% of the pension base, for both genders. (Before: 36% for men and 39% for women.)

- Widow's and survivor's pension:

The lowest basis for the assessment of a widow's or survivor's pension is a pension assessed at least in the amount of 38% of the pension base (before: 33%).

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

In the last round of projections (AR2018), there were just few individuals taking up the possibility to continue working after they fulfil the retirement conditions, although the stimulus was strong. Namely, already from 2013 an individual who continued to work was receiving 20% of the pension (that she or he would receive in the case of retirement) and the accrual rate was increased by 4 percentage points for each year of additional work (up to three years) beyond the full working career. Thus, for working three years longer an individual received 12 percentage points higher total accrual rate, which means about 20% higher pension. Nevertheless, after having this option available for three years, in 2015 only 2,000 individuals were involved in this option. Also in 2016, for which the data was available when preparing AR2018, the number was only 4,000 and the jump could be only one-year event. Therefore, in AR2018 this effect was not separately modelled. It was assumed there will not be much individuals using this option. Namely, already before 2013 there was a high stimulus in form of high accrual rates for prolonging work after fulfilling retirement conditions but it was very rarely used.

However, in the meantime there is a steady trend of increasing number of individuals who continue working. These individuals who receive a fraction of a pensions are not accounted as old-age, disability or survivor pension(er)s. The number of such individuals increased to 10,000 in 2019. Also, as explained, in 2020 the percentage of pension individuals receive while working has been raised from 20% to 40% (for up to 3 years and then 20%), which is expected to further motivate individuals to continue working. In this round of projections (AR2021) it is now assumed that the number of people that continue working will increase by 1,000 each year, reaching 12,600 in 2025. After 2025 no further increase in share of people taking up this option is assumed. After 2025 the number fluctuates with the number of people at retirement age. It is further assumed that in average individuals stay in employment for additional 1.8 years, which results in 21.4 thousand individuals in 2025 and then it fluctuates in line with the number of people who enter this option, as described earlier. However, the individuals who voluntarily prolong the employment are in the model treated as employees and not as pensioners (although they are rewarded with 40% of the pension, which they would receive in the case they would retire). This is in line with the Pension fund who does not include those pensions in the reported total number of pensions when they sum up the pension categories into the total number of pensions. Still, the number of those pensions is followed and reported by the Pension fund. Thus, in the model those individuals are reported as employees and not (at the same time) also as pensioners. This has to be kept in mind when interpreting the coverage ratios. In 2019 these expenditures were representing 0.04% of GDP in 2019 but they are projected to increase to 0.20% of GDP in 2070 – due to the higher number of individuals using this option and receiving 40% instead of 20% of the pension that they would receive in the case they would retire. Nevertheless, those amounts are distributed to the individuals who retire, therefore also these pension expenditures are included in the pension expenditure projections.

The results show that this improves the sustainability of pension expenditures in the beginning of the projection period, but eventually the impact becomes negative when increasing share of individuals receive substantially higher pensions. However, the results included here (pension expenditures as % of GDP) do not show the entire picture. There is positive effect on the amount

of collected contributions (including pension and health contributions) that are paid on wages of people who continue to work. Furthermore, higher personal income tax is collected which improves the public. If we consider the total impact of this measure (working longer), then the net impact on sustainability is clearly positive. We have informed about that measure the European commission, who modified the employment rates accordingly.

2.   Overview of the Demographic and labour forces projections

2.1.   Demographic development

Just like other European countries Slovenia is facing demographic changes that require entire society to adapt. Life expectancy is rising, the number of births is decreasing and net migration is conditioned by economic cycle. In next decades, the number of working age population will strongly decrease and the number of elderly will strongly increase. Demographic change will reduce the supply of labour and is already affecting labour market trends. In the coming years, the pace of these changes will only intensify. According to EUROPOP2019 population projections, the population of Slovenia is going to rise slowly until 2024 and then fall by 8% by 2070. By 2070 the age structure is expected to change substantially. While the number of children (0–14 years) and people in working age (20–64) will decrease by 20% each, the share of the elderly will increase by 40% (2070 compared to 2019). The increase in the number of the elderly will be driven by 1) larger generations born between the end of WWII and 1980 and 2) the increasing life expectancy.

Table 3: Main demographic variables

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Population (thousand)	2.088	2.105	2.080	2.041	1.987	1.936	2115,1	2024	-152,1
Population growth rate	0,7	-0,1	-0,1	-0,2	-0,3	-0,2	0,7	2019	-0,9
Old-age dependency ratio (pop 65+ / pop 20-64)	33,2	43,5	51,0	59,9	61,7	58,8	62,3	2056	25,5
Old-age dependency ratio (pop 75+ / pop 20-74)	12,9	17,4	22,4	26,2	30,5	30,6	31,2	2065	17,7
Ageing of the aged (pop 80+ / pop 65+)	26,9	27,4	33,9	36,5	41,2	45,4	45,4	2070	18,6
Men - Life expectancy at birth	78,7	80,3	81,8	83,3	84,6	85,9	85,9	2070	7,2
Women - Life expectancy at birth	84,5	85,8	87,1	88,2	89,4	90,4	90,4	2070	5,9
Men - Life expectancy at 65	18,1	19,2	20,3	21,3	22,3	23,2	23,2	2069	5,1
Women - Life expectancy at 65	22,0	23,0	24,0	25,0	25,9	26,8	26,8	2070	4,8
Men - Survivor rate at 65+	86,1	88,4	90,1	91,6	92,8	93,9	93,9	2070	7,8
Women - Survivor rate at 65+	93,3	94,3	95,1	95,8	96,3	96,8	96,8	2070	3,6
Men - Survivor rate at 80+	56,8	62,7	67,5	71,8	75,6	79,0	79,0	2070	22,1
Women - Survivor rate at 80+	75,6	79,3	82,3	84,8	87,1	89,0	89,0	2070	13,4
Net migration (thousand)	15,7	4,5	4,6	4,9	5,2	5,2	15,7	2019	-10,5
Net migration over population change	1,1	-2,2	-1,6	-1,0	-0,9	-1,2	20,0	2024	-2,3

Source: Eurostat and Commission services

The age-dependency ratio has been rising rapidly in recent years due to the declining number of working-age population and the increasing number of elderly. This situation intensified around 2012 not only because large post-war generations were going from working age to age 65+ but also because smaller cohorts born in early 1990s started joining the working-age population. In 2019 24.9 children and 32.7 elderly (together 57.6) depended on 100 people in working age. Slovenia is currently not exceeding the EU average, but the values of ageing indicators will start to increase in the future and they will peak during 2050s. Projections show that the number of the elderly will continue to increase until 2054, when the generations born in the 1980s (with

still almost 27,000 children born annually, compared to the 1990s when this number was 19,500) will be transitioning into old age. In 2019 there were already 1.3 times more older people than children in Slovenia (in 2070 there will be 2.3 times more older people).

Figure 1: Age pyramid of Slovenian population 2019 vs 2070
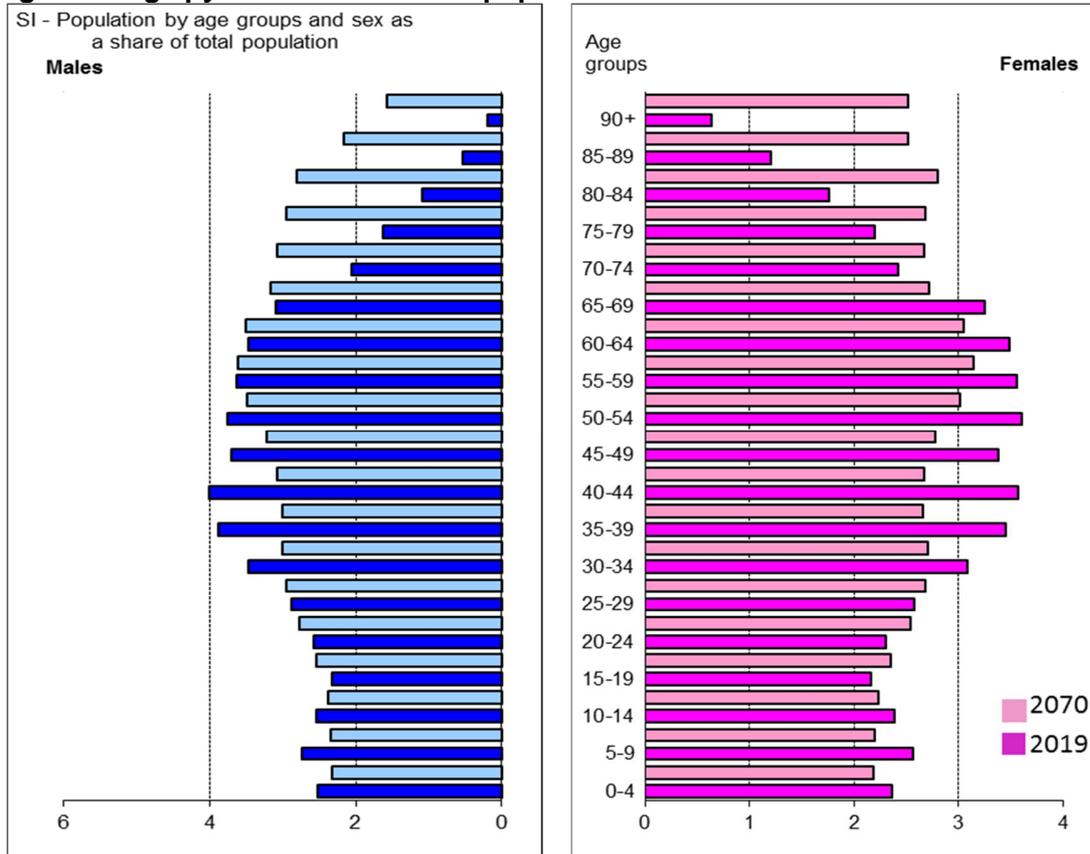
Source: Eurostat and Commission services

2.2. Labour force

Table 4 summarises the developments of participation and employment rates of elderly workers in the period 2019-2070. The participation and employment rates for elderly have substantially improved in the base year (2019) compared to the base year in the previous round (2016), but they are still low, particularly at the beginning of the observed period. In 2019 the participation and employment rates for the age group 55–64 are 50.3% and 48.0% respectively. The higher rates in the base year is a result of strong economic growth in last years and elderly staying longer in the labour market. By 2034 the projected participation and employment rates will increase to 64.6% and 60.8%, respectively. Thereafter, they are almost stable until the end of the projection period when they reach 64.6% and 60.7%, respectively. Compared to the AR2018 projections both rates are higher in the end of the projected period.

Table 4: Participation rate, employment rate and share of workers

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Labour force participation rate 20-64	79.9	82.5	82.2	83.1	83.5	83.0	83.6	2057	3.1
Employment rate of workers aged 20-64	76.4	77.9	77.5	78.4	78.8	78.3	78.9	2057	1.9
Share of workers aged 20-64 in the labour force 20-64	95.6	94.4	94.3	94.3	94.4	94.3	95.6	2019	-1.3
Labour force participation rate 20-74	68.4	68.9	68.4	67.5	69.2	69.9	70.0	2067	1.5
Employment rate of workers aged 20-74	65.5	65.1	64.6	63.8	65.4	66.1	66.2	2067	0.6
Share of workers aged 20-74 in the labour force 20-74	95.7	94.5	94.5	94.5	94.5	94.5	95.7	2019	-1.2
Labour force participation rate 55-64	50.3	63.6	63.7	62.9	64.1	64.6	65.1	2066	14.3
Employment rate of workers aged 55-64	48.0	59.8	59.9	59.2	60.3	60.7	61.3	2066	12.8
Share of workers aged 55-64 in the labour force 55-64	95.4	94.0	94.1	94.0	94.0	94.1	95.4	2019	-1.3
Labour force participation rate 65-74	4.6	8.0	9.5	9.3	9.1	9.4	9.7	2044	4.8
Employment rate of workers aged 65-74	4.6	8.0	9.5	9.3	9.1	9.4	9.7	2044	4.8
Share of workers aged 65-74 in the labour force 65-74	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2067	0.0
Median age of the labour force	41.0	43.0	42.0	41.0	42.0	42.0	43.0	2027	1.0

Source: Eurostat and Commission services

Tables 5a and 5b show the dynamic of the careers lengths and duration of retirement for men and women. The average effective age of retirement increases in the projected period by 0.9 years for men and 0.8 years women.

Table 5a: Labour market effective exit age and expected duration of life spent at retirement – MEN

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	61.6								
Average labour market exit age (CSM)**	62.1	63.0	63.0	63.0	63.0	63.0	63.0	2028	0.9
Contributory period	39.2	39.1	39.5	39.4	39.5	39.5	39.5	2062	0.3
Duration of retirement***	20.3	20.8	21.9	23.0	24.1	25.0	25.0	2070	4.7
Duration of retirement/contributory period	0.5	0.5	0.6	0.6	0.6	0.6	0.6	2070	0.1
Percentage of adult life spent in retirement****	31.5	31.6	32.7	33.8	34.9	35.7	35.7	2070	4.2
Early/late exit*****	5.5	2.0	1.8	1.5	1.5	1.5	5.5	2020	-4.0

Source: Commission services

Table 5b: Labour market effective exit age and expected duration of life spent at retirement – WOMEN

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	60.0								
Average labour market exit age (CSM)**	62.0	62.8	62.8	62.8	62.8	62.8	62.8	2030	0.8
Contributory period	38.9	39.0	39.2	38.9	39.0	39.1	39.5	2034	0.2
Duration of retirement***	24.6	24.8	25.8	26.8	27.7	28.6	28.6	2070	4.0
Duration of retirement/contributory period	0.6	0.6	0.7	0.7	0.7	0.7	0.7	2070	0.1
Percentage of adult life spent in retirement****	35.9	35.6	36.5	37.4	38.2	39.0	39.0	2070	3.1
Early/late exit*****	6.3	1.8	1.5	1.3	1.4	1.2	6.9	2021	-5.0

Source: Commission services

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

In Slovenia the average effective exit age is low whereas the longevity is relatively high, therefore duration of retirement is high. This is a key driver of high pension expenditures relative to GDP under no-policy change scenario. The pressure could be potentially mitigated with indexation, but this is not the case for the moment, since the indexation is relatively high – pensions are in 60% linked to the growth of wages and in 40% to inflation.

3.   Pension projection results

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

In the model are included old age pension, disability pension, survival pensions, widower pensions and "others pensions" that include former schemes for farmers' and military pensions. The expenditures include also annual allowances for pensioners as social security type of expenditure. The projections do not cover the two private pillars in place in Slovenia, due to the lack of data. Total accumulated assets under these schemes are currently relatively small, individuals can choose among several insurance providers (with no central data available) or data on actual contributors may be inacurate (for instance, if people change jobs and the new employer no longer supports the private scheme, these individuals are still counted, despite their no longer being active contributors). For these reasons, mandatory collective supplementary pensions for public employees, non-mandatory collective supplementary pensions (private sector) - based on collective agreements and private non-mandatory individual supplementary pensions (private and public sector) are not included in the projections.

Conversely, special pensions are fully covered by the projections. In particular, occupational insurance schemes for difficult conditions (arduous and hazardous jobs), security and defence forces (military and police personnel), state employees of all branches and farmers, are all covered by the projections. In particular, the model includes special compulsory (occupational) pensions for workers in high risk occupations (arduous and hazardous jobs) once they fulfil the condition for retirement in the first pillar, private and public sectors. Like mentioned above, the two groups of special pensions gradually phasing out (farmers and civil servants are also included). Combined, military and farmers schemes represent only 0.3% of the total number of pensions and 0.05% of pension expenditure to GDP in the base year 2019. In particular, in 2019, the number of pensions was 2039 for military and 124 for farmers' pensions. Other special schemes that cover retirement conditions were defined in different laws for different groups (military, police, judiciary,…). They are gradually all phasing out and they are covered in the old age pensions (number and expenditures).

Both Eurostat and AWG public pension expenditure include the same expenditure; the minor difference between the two data sets is explained by the different accounting principles used (cash flow principle in case of AWG data and ESA principle in case of Eurostat data).

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

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	change 2009-2018
Eurostat total pension expenditure	10.6	11.0	11.2	11.3	11.5	11.2	10.9	10.6	10.1	:	:
Eurostat public pension expenditure (A)	:	:	:	:	:	:	:	:	:	:	:
Public pension expenditure (AWG: outcome) (B)	10.6	11.0	11.2	11.4	11.7	11.4	11.1	10.8	10.3	:	:
Difference Eurostat/AWG: (A)-(B)	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	:	:
Expenditure categories not considered in the AWG definition	:	:	:	:	:	:	:	:	:	:	:
- [please specify]	:	:	:	:	:	:	:	:	:	:	:
- [please specify]	:	:	:	:	:	:	:	:	:	:	:
- …	:	:	:	:	:	:	:	:	:	:	:

Source: Commission services and Member states

3.2. Overview of projection results

The total gross public pension expenditure rises from 10% of GDP in 2019 to 16.1% in 2057 and slightly decreases to 16.0% in 2070. Until 2030 the expenditures increase only slightly, because of increasing employment rates, especially at higher age groups, including the longer stay in employment that is by assumption fostered by the increasing benefit from 20% to 40% of pension. Also, the demographic situation worseness less in EUROPOP2019 than in the previous round (ESSPOP2015). A strong increase from 2030 till 2053 is driven by demographic development. Compared to the previous round there will be additional increase because of the higher benefit ratio due to higher accrual rates coming from the pension amendments in 2020. Also, the impact of staying longer in the labour market will eventually turn negative, because the increasing share of pensioners will receive higher pensions. In particular, baby-boom generations and generations up to 1980-s (when the fertility was still above the replacement level), will represent pensioners, whereas young cohorts born during the low fertility in last several decades will be on the labour market. In the last decade of the projection period the demographic pressure will slightly decrease, but less than this was the case in previous round. Compared to the 2018 projections the pension expenditure as % of GDP are higher because of the net effect of the following drivers:

- legislative changes in pension system described earlier – especially because of higher accrual rates that will increase by around 10% compared to the previous round of projections after the transition period 2020-2025 is over.
- different demographic projections, that will have lower pressure on pension expenditures in the first part of the projection period (compared to AR2018 projections), but it will turn to higher pressure towards the end of the projection period.
- different starting point and positive impact of the strong economic growth in last years (2016–2019) including high GDP, lower number of pensioners and pension expenditures than projected in AR2018 – this will contribute to lower pension expenditures relative to GDP compared to the AR2018.
- other (macroeconomic assumptions, modelling the impact of individuals staying longer on the labour market, changes in the model etc.).

The difference between gross and net pension in Slovenia is insignificant because small percentage of pensions are eligible for personal income tax.

Table 7: Projected gross and net pension spending and contributions (% of GDP)

Expenditure	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Gross public pension expenditure	10.0	10.8	13.6	15.7	16.1	16.0	16.1	2057	6.0
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	10.0	10.8	13.6	15.7	16.1	16.0	16.1	2057	6.0
Net public pension expenditure*	9.9	10.7	13.4	15.5	15.9	15.8	16.0	2057	5.9
Net total pension expenditure*	9.9	10.7	13.4	15.5	15.9	15.8	16.0	2057	5.9
Contributions	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Public pension contributions	9.3	9.3	9.3	9.3	9.3	9.3	9.3	2019	0.0
Total pension contributions	9.3	9.3	9.3	9.3	9.3	9.3	9.3	2019	0.0

Source: Commission services

The pension expenditures as % of GDP level-off in this round but not in AR2018. This is because of different Eurostat population projections – the dependency ratio is now lower than in AR2018 in the first part of the projection period, whereas it is higher towards the end of the projection period.

Total public pension spending on old age and early pensions rises from 7.8% of GDP in 2019 to 12.9 % in a peak year 2057 and in 2070 reaches 12.9% of GDP (what is 1 p.p. higher than in previous projection). These pensions represent by far the largest share in total pension expenditures and they are driven by the factors explained above.

Disability pension expenditures in % of GDP is first increasing because the number of persons with disability pensions increases due to demographic development – i.e. increasing number of individuals in higher age groups. Eventually, around 2050, the number of disability pensioners start to decrease again because of the declining number of elderly. In Slovenia the disability pensions are not eventually translated into old-age pensions. Instead, disability pensioners keep their status until they die, therefore their number depends also on the number of elderly, instead of only following the pattern of working age population. In the model it is assumed that probabilities of being disability pensioner slightly decreases over time. The rationale behind this assumption are a better health and safety at work, structure of the job types and stricter use of the eligibility criteria for disability pensions which leads to less people using this "exit" path to (disability) retirement. From 2003 the criteria for disability retirement is the individual's occupation instead of his or her concrete job. Therefore, attempts are made to find an adequate job within the individual's occupation instead of granting the person the disability pension because he or she can't work on the previous job any more. From 2006 the criteria for disability pensions are strived to be synchronized across all disability commissions in Slovenia. Furthermore, often a part-time employment is used instead of granting disability pension immediately. All those measures, together with increasing safety at work and improving medicine, have contributed to the continuously falling number of disability pensions in Slovenia in the past, despite the population ageing. Therefore, we assume that also in the future probabilities of being disability pensioner slightly decrease over time. Still, the demographic impact prevails and drives the results, so in total the number of disability pensioners is increasing until 2050's and then it starts to decline.

For survivor and widowers pensions the similar approach has been used as for the disability pensions. We slightly reduce the probability of survivors/widowers pensions by arguing that individuals (particularly women because of higher employment rates and wages) will be entitled to their own pension instead of the spouse. Again, the demographic factors determine the number of pensioners – first increasing and eventually decreasing number of elderly.

The actual number of survivor and disability pensions in 2019 (the base year in AR2021) is lower than in the AR2018 projections. Projections build on the actual number (and retirement rates) of pensioners in 2019 and therefore they are shifted downwards.

Old schemes for the farmers' and military pensions are included under other pensions. Both types of pensions are phasing out – they include the old scheme for farmers that is phasing out

and the farmers who treated in the current system as regular old age pensioners. Under the military pensions are remaining war veterans.

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

Pension scheme	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Total public pensions	10.0	10.8	13.6	15.7	16.1	16.0	16.1	2057	6.0
Old-age and early pensions	7.8	8.6	10.8	12.6	12.8	12.8	12.9	2057	5.1
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	7.8	8.6	10.8	12.6	12.8	12.8	12.9	2057	5.1
Minimum pensions (non-contributory) i.e. minimum income guarantee for people above 65	:	:	:	:	:	:	:	:	:
Disability pensions	1.07	1.11	1.37	1.58	1.63	1.56	1.6	2057	0.5
Survivors' pensions	1.08	1.12	1.36	1.54	1.61	1.56	1.61	2060	0.5
Other pensions	0.05	0.00	0.00	0.00	0.00	0.00	0.05	2020	-0.1

Special pension schemes	2019	2030	2040	2050	2060	2070	Peak value	Peak year	change 2019-2070
Country-specific scheme 1 [please specify]									
Country-specific scheme 2 [please specify]									
…									

Source: Commission services

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

The main upward driver of pension expenditure remains dependency ratio. The old-age dependency ratio ($P_{65+}/P_{20-64}*100$) increases from 33.2 in 2019 to 58.8 in 2070, peaking in 2056 with 62.3.

Through most of the projection period (except in the last decade), the coverage ratio lowers the pension expenditure as % of GDP. The employment rates are increasing during the projection period, therefore they have positive effect on sustainability of the pension system. In the new projections the activity rates are slightly higher than in the previous projections, therefore the negative impact of this factor on pension expenditure in 2019-2070 is greater than in AR2018. However, the 2016 to 2019 period, in which the impact was strongly negative, is already the past, therefore cumulative negative effect for 2019-2070 period is now lower (-1.8 pps) than it was for 2016-2070 period (-2.1 pps) in AR2018.

During the projection period, the benefit ratio contributes to the increase in pension expenditure relative to GDP due to the policy measure. The changes in pension legislation introduced in 2020 are substantially increasing accrual rates. The transition period for men starts in 2020 and the final level will be reached in 2025. For women, the changes are in a form of preventing drop in accrual rates that were foreseen by 2023. For women, the final new set of accrual rates is implemented already in 2020. At the beginning of the projection period the benefit ratio is still decreasing because of the drop from 100% to 60% indexation of real growth of pensions to the real growth of wages in the past. Therefore, elderly in higher ages who were facing 100% indexation during their retirement period (and therefore having high pension) are gradually dying

off. On the other hand, pensioners who retired after 2013 are (and will be) facing 60% indexation and therefore they will have lower pensions.

The replacement rate is strongly increasing between 2019 and 2025 because of increasing accrual rates due to the described changes in the pension legislation. Some additional increase during the projection period comes from slightly increasing contributory period. Increasing replacement rate gradually translates into higher benefit ratio as there are more and more individuals with higher accrual rates among all pensioners.

Table 9: Factors behind the change in public pension expenditures between 2019 and 2070 (in percentage points of GDP) – pensioners

	2019-30	2030-40	2040-50	2050-60	2060-70	2019-70
Public pensions to GDP	0.9	2.7	2.1	0.4	-0.1	6.0
Dependency ratio effect	3.0	1.9	2.4	0.5	-0.8	7.0
Coverage ratio effect*	-1.2	-0.2	-0.5	-0.2	0.3	-1.8
Coverage ratio old-age	-0.2	0.0	-0.1	0.0	0.1	-0.3
Coverage ratio early-age	-2.9	0.3	0.4	-0.9	0.1	-3.0
Cohort effect	-2.1	-1.5	-3.3	-0.7	1.6	-5.9
Benefit ratio effect	-0.4	1.0	0.5	0.2	0.3	1.4
Labour market effect	-0.3	0.0	-0.2	0.0	0.1	-0.4
Employment ratio effect	-0.2	0.1	-0.2	-0.1	0.1	-0.3
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.1	-0.1	0.0	0.1	0.0	-0.1
Residual	-0.2	0.1	0.0	0.0	0.0	-0.2

* Subcomponents of the coverage ratio effect do not add up necessarily.
Source: Commission services

The employment ratio effect is the main driver of labour market effect and it lowers the pension expenditure relative to GDP. The positive impact comes through somewhat higher employment rates of those in prime age but even more due to staying longer in the labour market, which holds especially for women. Slight improvement is also because of entering the labour market earlier. During the projection period 2020 to 2070 the effect (i.e. relative change) is about the same in both AR2018 and AR2021. However, the strong negative impact of -0,5 pps for 2016-2019 period is present only in AR2018, therefore the cumulative negative impact for the entire projection period is lower in AR2018 than in AR2021.

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

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public scheme (BR)	31%	30%	32%	33%	34%	34%	3
Coverage	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Public scheme: old-age earnings related (BR)	33%	32%	35%	36%	36%	37%	4
Public scheme: old-age earnings related (RR)	33%	37%	38%	38%	38%	38%	4%
Coverage	73.0	73.9	74.3	74.4	74.3	75.3	2.3
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	;	;	;	;	;	;	;
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	;	;	;	;	;	;	;

Private individual schemes (RR)	;	;	;	;	;	;	;
Coverage	:	:	:	:	:	:	:
Total benefit ratio	:	:	:	:	:	:	:
Total replacement rate	:	:	:	:	:	:	:

Source: Commission services

Table 10 shows the evolution of replacement rate at retirement and benefit ratios. The interpretation of the values depends on the average wage used for calculation. In Slovenia net pension principle is in place as the pension rating base is calculated in net terms. When comparing net and gross pension, there is no significant difference as only small percentage of pensions are eligible for personal income tax. Contributions for health insurance are calculated separately and paid out directly by the Institute for pension and disability insurance and therefore not deducted from the pensions. This is also the main reason why the ratios of the pension (first pension and average pensions) to the gross average wage of the economy and gross average wage at retirement are relatively low. In this view the net replacement rate would be higher.

The public scheme benefit ratio is lower than old age related benefit ratios because the public scheme benefit ratio includes not only old age pensions but also disability, widowers, survivor and other pensions that are lower than old-age pensions. Therefore, the total average for all those pensions combined is lower than for old-age pensions. The average pensions are increasing slower during the projected period than the wages, because already mentioned changes in the indexation of pensions (only 60% of the increase of the wages).

The projected total number of pensioners is lower than in previous projection due to the lower number of actual pensioners in 2019 compared to the AR2018 projections for the year 2019. The administrative data from the Pension and Disability Insurance Institute of Slovenia show that the number of disability and survivor pensioners is steadily decreasing in Slovenia – this was also the case between the 2016 (base year in AR2018) and 2019 (base year in AR2021).

In Slovenia, the labour market conditions were very favourable in 2019. The increase in the number of contributors was from 891,000 in 2016 (base year for AR2018) to 961,000 in 2019 (base year for AR2021). This increase is in line with the increase of the number of employees in this period (923,000 projected for 2019 in AR2018 and 983,000 as a base year in AR2021).

Table 11: System dependency ratio and old-age dependency ratio

	2019	2030	2040	2050	2060	2070	change 2019-2070
Number of pensioners (thousand) (I)	622.6	688.0	758.0	789.3	771.0	743.2	120.6
Employment (thousand) (II)	982.6	962.1	918.8	855.7	824.6	813.9	-168.7
Pension system dependency ratio (SDR) (I)/(II)	63.4	71.5	82.5	92.2	93.5	91.3	28.0
Number of people aged 65+ (thousand) (III)	418.6	519.2	581.9	628.2	621.5	588.8	170.2
Working age population 20-64 (thousand) (IV)	1260.5	1194.7	1141.3	1047.9	1006.9	1002.2	-258.3
Old-age dependency ratio (OADR) (III)/(IV)	33.2	43.5	51.0	59.9	61.7	58.8	25.5
System efficiency (SDR/OADR)	1.9	1.6	1.6	1.5	1.5	1.6	-0.4

Source: Commission services

The numbers in Tables 12a and 12b are obtained by dividing the number of pensions (not pensioners) by the number of (inactive) people. As in explanations to previous projections the numbers are above 100% for: i) many pensions are paid to the pensioners abroad (especially to ex-Yugoslavia's republics) and the model does not differentiate between the number of

pensioners (Slovenian) and the number of pensions that are paid as "proportional" pensions to individuals that collected some contribution period in Slovenia, but they do not live in Slovenia anymore; ii) the model does not assign pensions to the people in lower age groups (children) who get pensions after their deceased parent. These pensions are assigned to higher age groups – to "deceased people" in their hypothetical age group.

The coverage ratios in lower age groups have lower profiles in comparison to the previous projections. The main reasons is the different starting points of the projections. Recently the Slovenian economic situation is much better than projected in AR2018 (Ageing report 2018). Employment rates are much higher and the trend of rapidly increasing number of pensioners has slowed down or almost stopped in recent years. By the year 2035 the number of pensioners to total population ratio is declining in the age group 60-64 because of increasing employment rates in higher age groups, which translates into later retirement and consequently lower number of pensioners. Declining pension coverage reflects the increase in employment rates coming from the macroeconomic assumptions. For the age group 60–64 the increase in employment rates is assumed from 24% in 2019 to 46% in 2035.

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

	2019	2020	2030	2040	2050	2070
Age group -54	3.7	3.6	3.6	3.4	3.2	3.2
Age group 55-59	62.0	60.9	61.5	61.3	61.7	61.9
Age group 60-64	94.6	98.4	96.5	96.0	93.9	96.6
Age group 65-69	119.7	119.4	126.2	129.1	127.6	129.2
Age group 70-74	125.3	124.5	122.1	124.3	123.7	125.1
Age group 75+	111.6	111.0	108.8	108.9	107.9	108.9

Source: Commission services

Table 12b: Pensioners (public schemes) to total population ratio by age group (%)

	2019	2030	2040	2050	2060	2070
Age group -54	1.3	1.3	1.3	1.2	1.3	1.2
Age group 55-59	16.2	13.7	13.7	13.5	13.4	13.5
Age group 60-64	70.1	49.2	48.1	47.7	47.8	47.8
Age group 65-69	112.3	109.5	109.7	108.8	109.0	109.8
Age group 70-74	122.3	119.5	119.8	119.1	119.4	120.5
Age group 75+	111.6	108.8	108.9	107.9	108.1	108.9

Source: Commission services

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

	2019	2030	2040	2050	2060	2070
Age group -54	3.6	3.4	3.1	3.0	3.2	3.0
Age group 55-59	61.6	59.4	58.7	59.1	59.1	58.7
Age group 60-64	94.7	97.8	96.7	94.3	97.1	97.8
Age group 65-69	111.3	120.9	123.4	121.7	122.1	123.4
Age group 70-74	116.2	113.4	115.2	114.2	114.3	115.3
Age group 75+	106.1	103.4	103.6	102.6	102.8	103.6

Source: Commission services

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

	2019	2030	2040	2050	2060	2070
Age group -54	1.4	1.3	1.2	1.2	1.3	1.2
Age group 55-59	18.2	14.0	14.1	13.9	13.7	13.6
Age group 60-64	75.5	51.1	50.2	49.7	49.8	49.7
Age group 65-69	106.7	104.0	104.2	103.2	103.4	104.2
Age group 70-74	114.4	111.5	111.6	110.6	110.8	111.6
Age group 75+	106.1	103.4	103.6	102.6	102.8	103.6

Source: Commission services

Although no link of statutory retirement age to life expectancy is foreseen, it is expected that in the future people will retire later. Individuals can retire already at age 60 if they have 40 years of contributory period. However, without having 40 years of contributory period, they must work until age 65. In the future, these 40 years will represent increasingly limiting condition to retire. Namely, the individuals who will retire in the future, will have in a given age fewer years of contributory period because they enter the labour market later due to much higher enrolment into tertiary education. This is expected to push the effective retirement age upwards. Also, staying voluntary in the labour market after fulfilling the retirement conditions is becoming increasingly important.

 In the age group 55-59 and age group 60-64 the coverage ratios are higher for females than for males because women retire earlier than men. In higher age groups it is the other way around – the coverage ratios are higher for males than for females because males are more often involved in migrations and therefore the "proportional" pensions that are paid to individuals living abroad are more common among males than among females.

The number of new pensioners is decreasing at the beginning of the projection period because of increasing employment rates explained earlier. Later the number of new pensioners is driven by demography, i.e. the number of people at retirement age. According to the projections the highest numbers will be in 2030's and 2040's when there will be the strongest demographic pressure of population ageing. After 2045 the generations born after the year 1980 will retire. These generations were born during the sharp fertility decline that started in 1980 and therefore the number of new pensioners will start to decline.

Pensionable earnings are calculated from the average contributory periods for men and woman. We take in the account the pension formula that is at the moment still different for men and women. In particular, in 2019 the accrual rate for the first 15 years of work was 29% for women but only 26% for men. Working years above 15 years were valued with 1.25% for men and 1.38% for women. For full career of 40 years the total accrual rate was therefore 29+25*1.38%=63. 5% for women, but for men it was only 26+25*1.25%=57.25%. For women a transition period of decreasing accrual rate (for the working years after the first 15 years) from 1.41% in 2013 to 1.25% in 2023 was foreseen, but this has been stopped with the pension legislation change in 2020. In 2020, for women, there was just a slight change compared to 2019: the for the first 15 years of work they receive 29% (instead of 29.5%) and working years above are valued with 1.36% (instead of 1.38%). For a women with full working period of 40 year we again derive 63.5% (29.5+25*1.36=63.5). Men, on the other hand, will reach the same formula in 2025, but in the meantime they are facing transition period. For the first 15 years they receive 27% in 2020, and then this is increased by 0.5 percentage point each year, reaching 29.5 in 2025. Working years above 15 years count 1.25% in 2020, but this will gradually increase to 1.28 in 2021, 1.30 in 2022, 1.32 in 2023, 1.34 in 2024 and, finally, 1.36 in 2025. These rules are taken into account in the projections.

The average number of months paid in the first year of retirement is given by Pension fund– 6.6 for men and 5.5 for women (6.1 for both genders combined). The value from the baseline year is assumed for the entire period for both, men and women, while for the both genders combined ("total") it is calculated as a weighted average of both genders.

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	84,1	163,8	260,5	357,0	444,9	634,0
I. Number of new pensions (1000)	20.4	22.5	23.5	22.1	19.2	19.2
II. Average contributory period (years)	38.8	39.0	39.3	39.2	39.3	39.3
III. Average accrual rate (%)	1,6	1,7	1,7	1,7	1,7	1,7
IV. Monthly average pensionable earnings (1000 EUR)	1.1	1.8	2.7	3.9	5.6	8.0
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	6.1	6.0	6.1	6.1	6.1	6.1
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	54.3%	54.2%	54.4%	54.5%	54.5%	54.4%

New pension expenditure equals the product of I, II, III, IV, V & VI
Source: Commission services

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	51,1	94,6	154,8	217,7	271,7	381,8
I. Number of new pensions (1000)	11.4	11.5	12.4	12.0	10.4	10.3
II. Average contributory period (years)	38.9	39.1	39.5	39.4	39.5	39.5
III. Average accrual rate (%)	1,5	1,7	1,7	1,7	1,7	1,7
IV. Monthly average pensionable earnings (1000 EUR)	1.2	1.9	2.8	4.1	5.9	8.4
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	6.6	6.6	6.6	6.6	6.6	6.6
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%

New pension expenditure equals the product of I, II, III, IV, V & VI
Source: Commission services

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

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	33,0	69,2	105,7	139,3	173,2	252,1
I. Number of new pensions (1000)	9.0	10.9	11.1	10.1	8.7	8.9
II. Average contributory period (years)	38.6	39.0	39.2	38.9	39.0	39.1
III. Average accrual rate (%)	1,6	1,8	1,8	1,8	1,8	1,8
IV. Monthly average pensionable earnings (1000 EUR)	1.1	1.7	2.5	3.7	5.3	7.5
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	5.5	5.5	5.5	5.5	5.5	5.5
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%

*New pension expenditure equals the product of I, II, III, IV, V & VI
Source: Commission services

The new pension expenditures are now much lower than in AR2018. One crucial factor is shorter "average number of months paid the first year". In the AR2018 it was 7.3 months in the base year (and similar also during the projection period) and in AR 2021 it is 6.1 months. Another factor is lower pension base compared to AR2018. However, we are waiting for detailed micro data on pensioners including working careers, calculation of pension base etc. to fully understand what drives this process.

3.4. Financing of the pension system

The pillar 1 pension system is financed through the contributions and supplementary funds transferred from the state budget.

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

	Public employees	Private employees	Self-employed
Contribution base	0	0	0
Contribution rate/contribution			
Employer	8.9%	8.9%	24.4%
Employee	15.5%	15.5%	
State	-	-	-
Other revenues	State provides funds from the national budget and other sources to cover shortfalls.	State provides funds from the national budget and other sources to cover shortfalls.	State provides funds from the national budget and other sources to cover shortfalls.
Maximum contribution	0	0	0
Minimum contribution	0	0	0

The employers' and employees' contributions are increasing in line with the growth rate of the economy. Thus, the contributions are linked to the growth of labour input (employees) and growth of average wages (that equals labour productivity growth).

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

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public pension contributions (%GDP)	9.3	9.3	9.3	9.3	9.3	9.3	0.0
Employer contributions	*3.6*	*3.6*	*3.6*	*3.6*	*3.6*	*3.6*	*0.0*
Employee contributions	*5.4*	*5.4*	*5.4*	*5.4*	*5.4*	*5.4*	*0.0*
*State contribution**	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.0*
*Other revenues**	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Number of contributors (I) (1000)	960.8	940.7	898.3	836.7	806.3	795.8	-165.0
Employment (II) (1000)	982.6	962.1	918.8	855.7	824.6	813.9	-168.7
(I) / (II)	1.0	1.0	1.0	1.0	1.0	1.0	0.0

3.5. Sensitivity analysis

Higher life expectancy

- With the assumption of higher life expectancy projected results show higher ratio of pension expenditure to GDP in 2070 (17%) that is driven by higher number of pensioners since they live longer and therefore they stay longer in retirement.

Lower and higher migration

- Lower migration has results in higher ratio of pension expenditures because it decreases the number of employees and therefore the GDP. Eventually, when the immigrants start to retire, the number of pensioners is lower as well (compared to the baseline scenario), which somewhat elevates the pressure on the pension system. However, this impact is relatively small, therefore the pension expenditure-to-GDP ratio is still higher than in the baseline scenario (16.5%). In contrary, the higher migration improves the sustainability of the public pension system by lowering the pension expenditure to GDP to 15.6% in 2070.

Lower fertility

- The lower fertility scenario has the highest impact on the increase of expenditure to GDP in comparison to the baseline scenario (18.1% GDP in 2070). Compared to the baseline scenario the negative impact starts late – only when the lower number of new-borns start to enter the labour market – but around 2050 the negative impact becomes increasingly strong.

Higher employment rate of older workers

- Higher employment of older workers has positive impact on pension system and outcomes in the labour market. The impact of higher employment of elderly on lowering the ratio of expenditures phases in faster than in previous scenarios and then it remains about parallel to the baseline projections. Eventually the positive impact slightly diminishes because pensions are higher due to higher contributory periods. Overall this results in higher employment of the elderly persons and longer working careers, more contributors and lower number of pensioners, in particularly in the age group of 55-59 and 60-64 years of age. All this results in the 14.5% ratio of expenditure to the GDP in 2070.

Higher TFP growth and TFP risk scenario

- Higher TFP translates into higher productivity and has an impact on higher GDP and wages, but without changes in the number of contributors and number of pensioners. Higher TFP reduces the ratio of expenditure to GDP as compared to the baseline projections (15.6% instead of 16.0% in 2070) because indexation of pensions amounts to 60% of the growth of wages. Thus, the remaining 40% of the increase in productivity increases GDP (and wages) but not pensions of existing pensioners, therefore improving the sustainability of the pensions system. Nevertheless, for the 60% of increase in TFP there is no positive impact on sustainability because higher production and wages is followed by the higher wages. Thus, the impact of higher TFP and labour productivity is limited by the high indexation of pension growth to the wage growth.

- On contrary, lower TFP in the risk scenario translates into higher ratio of expenditure to GDP, but with lower impact as compared to the baseline projections (16.2% instead of 16.0% in 2070). Although the converge values in "higher TFP growth" and "TFP risk scenario" are the same in 2070, with just the opposite signs, the difference compared to baseline projections is lower in "TFP risk scenario". This is due to the fact that earlier (especially during 2030s and 2040s) the difference is much smaller for TFP risk scenario.

Table 17: Public and total pension expenditure under different scenarios (p.p. deviation from the baseline)

Public pension expenditure	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	10.0	10.8	13.6	15.7	16.1	16.0	51.0
Higher life expectancy at birth (+2y)	0.0	0.1	0.2	0.5	0.8	1.0	6.0
Higher migration (+33%)	0.0	-0.1	-0.3	-0.5	-0.5	-0.4	-0.4
Lower migration (-33%)	0.0	0.1	0.3	0.6	0.6	0.5	0.5
Lower fertility (-20%)	0.0	0.0	0.1	0.6	1.2	2.1	2.1
Higher employment rate of older workers (+10 pps.)	0.0	-1.0	-1.6	-1.9	-1.6	-1.4	-1.4
Higher TFP growth (convergence to 1.2%)	0.0	0.0	-0.2	-0.3	-0.4	-0.4	-0.4
TFP risk scenario (convergence to 0.8%)	0.0	0.0	0.1	0.1	0.2	0.2	0.2
Policy scenario: linking retirement age to change in life expectancy	0.0	0.0	-0.4	-1.0	-1.4	-1.9	-1.9
Policy scenario: unchanged retirement age	0.0	0.5	0.6	0.6	0.4	0.5	0.5
Policy scenario: offset declining pension benefit ratio	:	:	:	:	:	:	:
Lagged recovery scenario	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Adverse structural scenario	0.0	0.4	0.6	0.8	1.0	1.0	1.0

Total pension expenditure	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	10.0	10.8	13.6	15.7	16.1	16.0	6.0
Higher life expectancy at birth (+2y)	0.0	0.1	0.2	0.5	0.8	1.0	1.0
Higher migration (+33%)	0.0	-0.1	-0.3	-0.5	-0.5	-0.4	-0.4
Lower migration (-33%)	0.0	0.1	0.3	0.6	0.6	0.5	0.5
Lower fertility (-20%)	0.0	0.0	0.1	0.6	1.2	2.1	2.1
Higher employment rate of older workers (+10 pps.)	0.0	-1.0	-1.6	-1.9	-1.6	-1.4	-1.4
Higher TFP growth (convergence to 1.2%)	0.0	0.0	-0.2	-0.3	-0.4	-0.4	-0.4
TFP risk scenario (convergence to 0.8%)	0.0	0.0	0.1	0.1	0.2	0.2	0.2
Policy scenario: linking retirement age to change in life expectancy	0.0	0.0	-0.4	-1.0	-1.4	-1.9	-1.9
Policy scenario: unchanged retirement age	0.0	0.5	0.6	0.6	0.4	0.5	0.5
Policy scenario: offset declining pension benefit ratio	:	:	:	:	:	:	:
Lagged recovery scenario	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Adverse structural scenario	0.0	0.4	0.6	0.8	1.0	1.0	1.0

Source: Commission services

Policy scenario: linking retirement age to increases in life expectancy and unchanged retirement age

- Before 2030 the activity rates in "linking retirement age to change in life expectancy" scenario are assumed to be the same as in the baseline scenario. The difference then gradually increases until the end of the projected period and have impact on decreasing number of pensioners in age group 55-59, 60-64 and 65-69 years old decrease and on increase of contributory period. Therefore, the impact on the ratio of expenditures to GDP starts only in 2040 with the increasing positive impact on sustainability in the remaining projection period. In 2070 the expenditures for public pensions amount to 14,1% of GDP.

- In "unchanged retirement age" scenario the increase in activity rates is more modest than in baseline projections. The difference between unchanged retirement age scenario and baseline projections take place in 2019-30 since also in baseline projections the increase in activity rates is limited to this period. After 2030 the difference just slightly fluctuates around this 0.5 pps difference reached in the year 2030.

Policy scenario: offset declining pension benefit ratio

- For Slovenia this scenario is not relevant since during the projection period there is no drop in the pension benefit ratio of the magnitude that would trigger this scenario.

Lagged recovery scenario

- This scenario assumes a drop in employment rates in the initial years of projections. However, most of the recover in employment rates is assumed by 2027, whereas the full recovery to the baseline assumptions is reached in 2036. Lower employment rates translate into lover GDP in this period, therefore pension expenditure represent higher % in GDP. Later, the employment recovers and the pension expenditures as % of GDP again return to the results from baseline projections.

Adverse structural scenario

- In the adverse structural scenario results show an increase of expenditures to GDP to 17.0%

3.6. Description of the changes in comparison with the 2006, 2009, 2012, 2015, 2018 and 2021 projections

Table 18 compares the rise in the public pension to GDP ratio in this round of projections to previous ones. The decomposition of the increase of public pension expenditures shows that dependency ratio is the main driving force behind the increases of the pension expenditures relative to GDP. However the impact of dependency ratio is decreasing over the course of projections because 1) between the starting years (that are increasing) and the year 2060 some of the population ageing was already realized and 2) since in 2018 and 2021 projections the final year is 2070 when the demographic pressure is already lower. Other drivers have less clear trend, except the benefit ratio effect that became positive in 2021 projections exercise (see the explanation above).

Table 18: Overall change in public pension expenditure to GDP under the 2006, 2009, 2012, 2015, 2018 and 2021 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)	**7,3**	13,3	-3,6	-0,9	-1,0	-0,6
2009 Ageing Report (2007-2060)	**8,8**	13,7	-3,5	-0,7	-0,1	-0,7
2012 Ageing Report (2010-2060)	**5,9**	12,3	-3,0	-1,6	-0,9	-0,9
2015 Ageing Report (2013-2060)	**3,5**	9,7	-2,7	-1,4	-1,5	-0,6
2018 Ageing Report (2016-2070)	**3,9**	7,5	-2,1	-0,3	-0,7	-0,5
2021 Ageing Report (2019-2070)	**6,0**	7,0	-1,8	1,4	-0,4	-0,2

Source: Commission services , Member states

The reform effects were already included in the previous projection. The additional decrease of the ratio is caused by the changes in assumptions, improvement in the modelling and factors to the lower ratio in basic year.

Table 19a: Breakdown of the difference between the previous 2018 projections and outcome figures (% of GDP)

	2016	2017	2018	2019
Ageing Report 2018 projections	10.9	10.8	10.7	10.8
Assumptions (pps of GDP)	-0.1	-0.5	-0.7	-0.8
Coverage of projections (pps of GDP)	0.0	0.0	0.0	0.0
Constant policy impact (pps of GDP)	0.0	0.0	0.0	0.0
Policy-related impact (pps of GDP)	0.0	0.0	0.0	0.0
Actual public pension expenditure	10.8	10.3	10.0	10.0

Table 19b: Breakdown of the difference between the previous 2018 and the new 2021 public pension projection (% of GDP)

	2019	2030	2040	2050	2060	2070
Ageing Report 2018 projections	10.8	12.0	14.2	15.6	15.2	14.9
Change in assumptions (pps of GDP)	-0.8	-1.4	-1.6	-1.4	-0.7	-0.5
Improvement in the coverage or in the modelling (pps of GDP)	0.0	0.0	-0.1	-0.2	-0.3	-0.3
Change in the interpretation of constant policy (pps of GDP)	0.0	-0.1	0.1	0.3	0.4	0.3
Policy-related changes (pps of GDP)	0.0	0.3	1.0	1.4	1.6	1.5
New projections	10.0	10.8	13.6	15.7	16.1	16.0

Source: Member states

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

The projections were made with the same model and methodology as the previous exercise[9]. Model used for the projections has been technically derived from the "generational accounting" model, however the focus has been changed from cohort perspective to calendar years. Age profiles are combined with population projections and projections of employment rates. The impacts of expected future changes (like parameters of the pension reforms) are entering through the set of matrices, whereby we follow each cohort of pensioners separately since some matrices differ for each cohort of pensioners. Some matrices are derived by the microsimulation pension model that we run in parallel. Because it predominantly rests on the age profiles from the base year, we refer to the model as an "age-profiles-based model".

4.1.   Institutional context in which those projections are made

–   Who actually runs the model?

Projections were made in cooperation with the Institute of Economic Research, the Ministry of Finance and the Faculty of Economics, University of Ljubljana.

–   Are those projections submitted to a peer review in your country?

All activities linked to the long-term projections are led by the government working group for the preparation of long term projections of the expenditures related to ageing population. The aim of the group is to prepare the inputs, monitors the results of the AWG and to keep the ministries and the government informed. The member of the group are relevant ministries, experts (Faculty of Economics, University of Ljubljana, Institute of Economic Research), Institute for macroeconomic analysis and development, Statistical office of the Republic of Slovenia, Pension and Disability Insurance Institute of Slovenia, Health insurance institute of Slovenia. There is no special peer review in Slovenia.

4.2.   Assumptions and methodologies applied

The calculations follow the assumptions on budgetary projections provided by the European Commission. The level of pensions is based on the pensions of older cohorts and adjusted with the matrices from the microsimulation model.

4.3.   Data used to run the model

In the calculations many different data sources have been used, so we will just point out those most extensively used. At the aggregate level the key data source is Statistical office of the Republic of Slovenia (SURS), especially system of national accounts (European system of accounts – ESA). Statistical office provided also data at the micro level (Consumer Expenditure Survey and the data assembled for the "Microsimulation Model of the Taxes and Transfers") which have been used for creating age profiles. For the pension part the key institution is the Institute of Pension and Disability Insurance of Slovenia (ZPIZ). Which annually and monthly

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[9] The projections are made by Institute for Economic Research, Faculty of Economics in Ljubljana in relation to the government's working group for the preparation of projections of the population ageing effects activities.

reports have been used as the source of aggregate data and they provided also numerous age profiles based on the data with complete coverage. The obtained results are in synthetic form entering the age-profiles-based model. Another important source is Ministry of finance with detailed aggregate data about categories of public revenues and expenditures.

The macroeconomic assumptions and demographic and labour market projections are from European Commission and used as exogenous variables in the model.

4.4.   Reforms incorporated in the model

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4.5.   General description of the model(s)

Technically, the age-profiles-based model builds on age profiles matrix, population matrix and a coefficient matrix. The age profiles matrix includes average values of projected categories (contributions, pensions etc.) by age. It builds on the situation from the base year. The key assumption of the model is that next generations "inherit" the situation of the previous ones in the base year, on which the further matrices (of legally enforced changes etc.) are applied. The population matrix for the 2021 projections is based on the Eurostat population projections EUROPOP2018, and included in the set of assumptions, submitted by the European Commission.

The coefficient matrix (C) summarizes the effects of future departures from the basic age profile, assumed in the matrix of age profiles. Data for coefficient matrices have also been obtained from various simulations on micro data. For instance, for simulating the effects of the changes in pension law on pension expenditures we have taken individual data about pension years, age, pensions at the time of retirement etc. about individuals that are already retired. We have simulated their retirement age and their pensions under the new conditions. Weighted averages by age groups enter the coefficient matrix.

Technically, the matrices have age (a) in their rows and calendar years (t) in their columns. The matrix of pension profiles ($PROF$) has the pension levels in its cells; the population matrix (P) has the number of people in its cells; and the coefficients matrix (C) contains the coefficients of adjustments. Pensions paid to individuals aged k in year t are thus calculated as (matrices are multiplied in an element-by-element manner):

$$PENS_{a,t} = PROF_{a,t}P_{a,t}C_{a,t}G_t \qquad (1)$$

where G contains coefficients of the cumulative growth of wages from the base year to time t. According to the Slovenian pension legislation the growth of pension is indexed 60% to wages and 40% to consumer price index. Pension expenditures in year t are calculated as the sum of projected pension expenditures by all age groups:

$$PENS_t = \sum_{a=0}^{D} PENS_{a,t} \qquad (2)$$

where index a runs from 0 to D; with D denoting the maximum length of life (in our model it is the age group 100+).

This pension module is linked to the macroeconomic assumptions provided by the European Commission. In the model demographic changes thus affect public pension expenditures expressed as a share of GDP through the pension expenditures and through GDP, since GDP depends on the labour input, which is influenced by the demographic development. Labour productivity growth enters into the calculations exogenously.

The Model covers all kinds of public pensions since they are all contained in the pension age profiles from the base year.

The Institute of the Macroeconomic Analysis and Development's sub-model for simulating retirement process (depending on the set of employment and unemployment rates, provided by the European Commission) has been used and incorporated into the age-profiles-based model.

4.6.   Additional features of the projection model

The persons are not presented and analysed individually, i.e. each individual is not modelled separately. The units of analysis are age cohorts.

Due to the limitation of the model, we used also a dynamic microsimulation pension model (with static ageing procedure) in order to estimate the impact of various pension parameters and transition periods.

Disability and Survivor's pensions are modelled together with other pensions – being a part of all pensions.

The retirement age is not explicitly modelled. The sub-model of the Institute of the Macroeconomic Analysis and Development is used to link employment rates with the retirement rates.

Methodological annex

Economy- wide average wage at retirement

The economy-wide average wage at retirement is evolving in line with productivity growth and the consumer price index (inflation). Therefore, it follows the growth of the economy-wide average wage. Small differences at the beginning of the projection period are due to the fact that economy-wide average wage provided in the questionnaire is not exactly the sum productivity growth and inflation that are provided in the macro assumptions of the European commission.

Table A1: Economy wide average wage at retirement (1000 EUR)

	2019	2030	2040	2050	2060	2070	% change 2019-2070
Economy-wide average gross wage at retirement	24,5	38,3	57,6	83,7	120,4	171,6	600,5
Economy-wide average gross wage	24,9	39,4	59,4	86,5	124,4	177,2	610,5

Source: Commission services , Member states

Pensioners vs Pensions

The pensioners vs. pensions are equal by assumption.

Pension taxation

The tax revenues as a share of pension expenditures are constant over time. Thus, implicitly it is assumed that tax allowances are adjusted in line with pension expenditures and the implicit average tax rate on pensions is assumed to remain unchanged during the projection period. There is no contribution ceiling in the Slovenian tax system. In Slovenia net concept of pensions is used. Gross pensions are calculated only in special cases when needed and in those rear cases the ratio between gross and net concept is applied. Pensioners almost do not pay any taxes on their net pensions. Taxes are paid only in the case of high income (usually if they also receive substantial amount of other income beside pensions).

Disability pension

The disability benefits are expected to increase in the future in line with the increased accrual rated that will gradually increase over the 2020-2025 period. Therefore, the expenditures on disability pensions are driven by the number of disability pensions – by the disability rates and population by age groups. The pension disability rates by age groups are assumed to gradually decline because of the factors described in section 3.2 (tightening conditions for granting disability pension, part-time employment, increasing safety at work and improving medicine).

The disability pensions are not transformed into old age pensions when statutory retirement age is reached. Thus, once granted, the disability pensions retain this status.

Table A2: Disability rates by age groups (%)

	2019	2030	2040	2050	2060	2070
Age group -54	0.7	0.6	0.7	0.6	0.5	0.6
Age group 55-59	6.6	6.6	6.4	6.3	6.1	5.9
Age group 60-64	10.4	10.4	10.1	9.9	9.7	9.5
Age group 65-69	12.1	12.1	11.7	11.6	11.3	11.1
Age group 70-74	14.5	14.5	14.2	14.0	13.8	13.5
Age group 75+	11.9	11.9	12.0	11.8	11.6	11.5

Source: Member states

Survivor pensions

For survivor pensions the level of pensions is expected to increase in the future in line with the increased accrual rated that will gradually increase over the 2020-2025 period as described earlier. On the other hand it is expected that the share of survivor pensions will decrease because widowers (in particular women) will receive their own (old-age) pensions instead of taking up the pensions of the spouse (more in section 1.1). However, those probabilities are not explicitly modelled.

The new pensions for disability and survivors are not reported. In the model, the new pensioners are calculated as residual between the total number of pensioners in a given year and the survived pensioners from the previous year. A breakdown the pensions by the type of pensions would include noise in the data and the variability from one year to another could be substantial. Therefore, also in previous Ageing reports this decomposition was not provided for Slovenia.

Non-earnings related minimum pension   Not applicable.

Contribution

The contribution rate is assumed to be constant over the projection horizon. Therefore, the collected contributions relative to GDP are constant over the projection period. This is now different compared to the AR2018 where we were using the actual age distribution of contributions paid. In such case, the collected contributions relative to GDP have varied slightly during the projection period, since age structure of the population (with different levels of contributions paid) was changing changes. However, since in GDP projections different wages in different age groups are not taken into account (each employee increases GDP in the same extent, regardless of age), now we rather take the same approach also to project contributions.

Alternative pension spending decomposition

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

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

Residual	-0,4	-0,2	-0,5	-0,1	0,4	-0,9

Source: Commission services

Administrative data on new pensioners

Table A4a Administrative data on new pensioners (2019) - men

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	513	0	106	407	0
50 - 54	308	134	167	7	0
55 - 59	2690	2345	312	33	0
60 - 64	4341	4121	172	48	0
65 - 69	2406	2355	3	48	0
70 - 74	66	44	0	22	0
75+	56	15	0	41	0

Source: Commission services

Table A4a: Administrative data on new pensioners (2019) - women

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	529	0	100	429	0
50 - 54	247	16	161	70	0
55 - 59	4126	3612	242	272	0
60 - 64	3601	3225	94	282	0
65 - 69	716	366	1	349	0
70 - 74	362	21	0	341	0
75+	954	8	0	946	0

Source: Commission services

Table A4a: Administrative data on new pensioners (2019) - total

Age group	All	Old age	Disability	Survivor	Other (including minimum)
15 - 49	1042	0	206	836	0
50 - 54	555	150	328	77	0
55 - 59	6816	5957	554	305	0
60 - 64	7942	7346	266	330	0
65 - 69	3122	2721	4	397	0
70 - 74	428	65	0	363	0
75+	1010	23	0	987	0

Source: Commission services