Economic Policy Committee - Ageing Working Group

2024 Ageing Report

Slovenia - Country Fiche

December 14, 2023

Ministry of Finance of the Republic of Slovenia

Table of contents

List of tables

List of figures

Introduction

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

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

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

1. Overview of the pension system[1]

1.1. Description of the pension system

The public pension and disability insurance system in the Republic of Slovenia (1st pillar) is based on an intergenerational 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 covered under 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 Pension and Disability Insurance Institute of Slovenia (PDII).

The overall pension system includes, besides the first pillar, also the occupational pension scheme and a non-mandatory private individual scheme. These private schemes are not covered in the Ageing Report projections.

Compulsory insurance – 1st pillar

The compulsory insurance scheme includes old-age and early pensions, disability pensions, survivors', widow/ers' and partial pensions. The system also covers the disability insurance rights[2], the rights to the assistance and attendance allowance, the right to the part of a widow/ers' pension and other rights (annual grant). The structure of pensioners according to the type of pensions is changing, with increasing share of old-age pensioners.

The last major pension reform was introduced in 2013. The right to an old-age pension depends on two parameters which must be met simultaneously: on the age of the insured person and on the pension qualifying period3. The retirement age was gradually raised to 65 for both genders, with the transition period expired in 2019[4]. According to the current legislation, the standard retirement age is 65 years for both sexes, while the minimum age for retirement is 60 years. The required contributory period is equal for men and women: 15 years of insurance period if aged 65 or more, or 40 years of pension qualifying period without purchased period if aged 60-64. The conditions for acquiring an old-age pension are therefore equalized for men and women[5] (Table 1). In exceptional circumstances the retirement age could be lower due to childcare, compulsory military service or inclusion in the insurance scheme before the age of 18. The effective retirement age has started raising notably after the last reform. Between 2013 and 2020, the actual average retirement age increased and in 2022 it remained the same as in 2020. Most persons enter retirement fulfilling the condition of 40 years of pension qualifying period without purchased period. In 2022, women retired at an average age of 61 years and 8 months with a contributory period of 38 years and 7 months. Men retired at an average age of 62 years and 10 months with a contributory period of 37 years and 8 months (Annual report of the Institute for Pension and Disability Insurance of Slovenia 2022). In the case of old-age pensions (with partial pensions) in the year 2019, the effective retirement age was slightly above 60 years for women and 61 years and 7 months

1 For an exhaustive description of pension schemes, please consult the PENSREF database.
2 The disability insurance includes the right to en occupational rehabilitation, the right to reassignment, the right to work on a part-time basis, the right to an occupational rehabilitation benefit, the right to a temporary benefit, the right to a disability benefit and the right to a partial benefit.
3 Pension qualifying period consists of the insurance period and the so-called special period (periods which are taken into account in the pension qualifying period regardless of the payment of contributions; however, it does not provide the right to a pension without the fulfilment of the legally prescribed minimum insurance period) and serve as the basis for determining the conditions for the entitlement to a pension and as the basis for determining the accrual rate.
4 Different transitional periods take into consideration various pensions qualifying periods.
5 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.

for men. However, the average retirement age of new pensioners without early retirement in the year 2022 reached 61 years and 8 months for women and 62 years and 10 months for men. The reason for the increase in the retirement age is also the voluntary extension of employment and implementation of special bonuses for these purposes (additional accrual rate; receiving 40% (20%) of an old-age pension).

The current law still allows retirement with 40 years of pension qualifying period without purchased period and minimum retirement age 60 years without penalty, but statistical trends in the last decade show that retirees with such retirement conditions are becoming fewer and fewer, and the retirement age is rising naturally (by freely extending the career beyond 40 years and because persons fulfil the condition of the required qualifying period at a later age).

Further increasing the effective retirement age is among the main objectives of the amendments to the pension legislation which are under preparation and are expected to enter into force in 2025.

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

TABLE 1: QUALIFYING CONDITIONS FOR RETIREMENT

			2022	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		65 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		9% (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		Not applicable.					
	Minimum residence period - women							

**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.*
Source: PDII.

The time spent in retirement is increasing. In 2000, the average time spent in retirement for women was 17 years and 1 month, in 2022 it had increased to 25 years and 3 months. Similarly, in 2000 the average time spent in retirement for men was 14 years and 9 months, in 2022 it had increased to 17 years and 8 months.

In 2022, women claimed old-age pension (including partial pensions) with an average career of 38 years and 7 months, and men with 37 years and 8 months of pension qualifying period. In the year 2022 80.2% of women (85% in 2019) and 72.0% of men (68.4% in 2019) completed 40 years or more of pension qualifying period.

The ratio of insured persons to pensioners decreased from 1.8 in 2000 to 1.45 in 2016, before it increased again to 1.55 in 2019, due to the labour market recovery. In 2022, the ratio of insured persons to pensioners amounted to 1.57. The number of insured persons increased from 2021 to 2022 for 2.5%, while number of new pensioners increased for 0.5%. (PDII, 2022).

The pension rating base for an old-age pension or an early pension is calculated from the monthly average of an insured person's bases for an individual year of insurance from which the compulsory insurance contributions were paid, in any consecutive 24 years of the insurance 24 from January 1, 1970, onwards which are the most favourable for the insured person. The current period of 24 years was reached in the transition period that started in 2013 with 19 years, increasing one year annually.

The minimum pension rating base is set by 76.5% of the gross wages reduced by the average rate of paid taxes and contributions. The maximum pension rating base is limited to 4 times the minimum pension rating base. On 1 October 2017, an amended Pension and Disability Insurance Act (ZPIZC) came into force, providing a guaranteed pension amount to all those who contributed to the pension system (1st pillar) for the time required to obtain a full pension. This amount is indexed in the same way as pensions and could not be lower than 653.75 EUR in December 2022. According to the data there were 84,997 beneficiaries of guaranteed pension in December 2022 (76,271 of old-age pensioners and 8,726 of disability pensioners), (PDII, 2022).

Until 2019, the accrual rate was set at 1.25% for each contributory year beyond 15 years (for the first 15 years the accrual rate was set on 26% for men and 29% for women) and reached for 40 contributory years 57.25% of the pension rating base for men and 60.25% of the pension rating base for women. A special transitional period for women was set until 2022[6].

Since 2020 onwards, when the amendment to the pension legislation came into force, the accrual rate is set at 1.36% for each contributory year beyond 15 years (for the first 15 years the accrual rate is set on 29.5% for men and women) and reaches 63.5% of the pension rating base for men and women for 40 contributory years. A transition period to raise the accrual rate for men to 63.5% ended in 2023.

An insured person may acquire the right to an early retirement pension already at the age of 60, if he or she attains at least 40 of the pension qualifying period (including purchased periods). Due to the renewed system of permanent deductions, an early retirement affects the pension benefit. The benefit is therefore 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 set correspondingly.

The positive stimulation for staying active longer is provided with bonuses. As of 2020 the insured person can accrue an additional 1.5% for each six months of work after fulfilment of 60 years of age and completion of 40 years of pension qualifying period without purchased period, i.e., additional 4% per year against the normal yearly accrual rate of 1.36%. This bonus is available for a maximum of 3 years, which means that a person prolonging his career for 3 years can accrue an additional 9%. In addition, an insured person who meets the conditions for an old-age pension and remains insured can also claim monthly payments of 40% of the old-age pension.

Pensions are indexed by 60% of the growth in the average gross salary paid for the period from January to December of the previous year compared to the average gross salary paid for the same period in the year before, and by 40% of the average growth in consumer prices (i.e., inflation) for the period from January to December of the previous year compared to the same period in the year before. The pension indexation is expressed as a percentage and constitutes the sum of both established partial growth rates. The pension indexation should not fall below half of growth in consumer prices. In 2022, pensions were indexed twice, regularly by 4.4% and in accordance with an amended Pension and Disability Insurance Act

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

(ZPIZ-2L), with the aim to correct lower indexation due to austerity measures in the past. The percentages of indexation depended on the year of retirement as follows:

- by 3.5% if the rights were granted until December 31, 2010;
- by 1.7% if the rights were granted from January 1, 2011, to December 31, 2011, and adjusted by 1% if the rights were granted from January 1, 2012, onwards;

The minimum pension guaranteed pension and the minimum amount of disability pension were also adjusted by 1%.

The regular adjustment of pensions and other benefits for 2023 amounted to 5.2 %.

Survivor and widow(er) pensions

The pension and disability insurance shall also cover the rights to survivor**'**s benefits for surviving family members in case of the death of the breadwinner. In such cases certain conditions have to be met, on the part of both, the deceased person and the beneficiary, for the acquisition of these rights. The rights arising from cases of the death of the insured person are widow(er)'s pension and survivor's pension. They can be received by the widow or widower, their children and other family members (stepchildren, grandchildren, and other children without parents whom the insured supported and parents whom the deceased insured or beneficiary of the right was obliged to support until his death in accordance with the regulations governing marriage and family relationships).

The rules for the survivor benefits are the following. If the partner dies, the base for the survivor pension is his/her pension. If he/she was still employed (and has fulfilled the conditions for disability pension), the pension is calculated with the same assumptions as if he/she would become disabled (1st category). If the surviving partner is retired and already receives his/her own pension (or exceeds the age of 58 years or is completely incapable for work or has to take care of children), this pension is compared with 70% of the 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 part of survivor pension – 15% of the survivor's pension – in addition to his/her pension, but with two limitations: a) this partial pension should not exceed 11.7% of the minimum pension rating base (124.16 EUR), and b) the sum of both pensions should not exceed the maximum old-age pension calculated for 40 years of qualifying period (2,695.37 EUR from April 2023).

If there are surviving children, for a one-child family the pension is assessed in the amount of 70% of the base (pension of the deceased father/mother)', with two children it is 80%, with three children it is 90%, and as of 4 children it is 100%. The widow(er) counts for one child (parent + one child = 80%).

Occupational insurance within the 1st pillar

More accurately, the occupational 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 the full retirement age. This system provides certain categories of workers with a right to early retirement and so-called bridging pensions. It is part of the second pillar and was created in 2001.

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 based on the contributions paid.

Contributions for the occupational retirement provision amount to 9.25% of the insured person's salary or salary compensation.

The occupational insurance guarantees the right to an occupational pension. The occupational pension is a monthly benefit which ensures an individual a certain income from the moment

he/she leaves the labour market and until he/she meets the conditions for retirement under the general scheme. The amount of occupational pensions 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 benefit may not fall below the old-age pension benefit that the insured person would have received under a compulsory pension and disability insurance.

Conditions for acquiring the right to an occupational pension are:

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

An insured person who qualifies for an old-age pension, early retirement, 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 June 2023 there were 50,222 insured persons in the occupational scheme and there were 134 beneficiaries. The accumulated assets in the occupational insurance fund amounted to EUR 882 million in June 2023.

Before the new legislation came into force people in arduous and hazardous jobs and security and defence forces had the same formal status as other old-age pensioners within the 1st pillar. The only difference was that they could retire earlier and with a shorter contributory period.

Supplementary insurance – 2nd pillar

Voluntary supplementary pension insurance collects funds on personal accounts of persons insured under this form of insurance with the purpose of providing them, upon attaining a certain age or in other cases, defined by the pension scheme, with supplementary pensions or other rights stipulated by the Pension and Invalidity Insurance Act. This scheme is not covered in the projections.

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.

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 persons 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 5,924.08).

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

To ensure an adequate level of total pension income, the participation in supplementary pensions should be increased in the future. In December 2022, there were 598,612 persons participating in the insurance. The share of persons in supplementary pensions was 60.55% of the total number of persons in the compulsory system in 2022. At the end of 2022, the amount of resources in the supplementary funds was around EUR 3 billion (5.2% of GDP).

If the voluntary supplementary pension insurance remains unchanged in the next decades, only a small share (4.3% of all employed persons) will receive a pension rent higher than 10% of their old-age 1st pillar pensions. 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. Making participation in the 2nd pillar mandatory for all employed persons would have an important positive impact on the net replacement rates, but the assumed premiums amounting to 4% of gross salaries would, in some scenarios, increase the labour costs.

Supplementary Allowance – social protection benefit

The Supplementary Allowance is intended for those individuals, who cannot ensure their financial security due to circumstances beyond their control. It provides financial support to cover living costs over a longer period other than those required to meet minimum needs. It is intended for elderly (aged above 63 for women and 65 for men) and for individuals permanently incapable to work or are permanently unemployable. Eligibility for income support is assessed on the basis of household income. Besides pensions and other income, assets (housing and others) are also very important eligibility criteria. The primary legal responsibility for financial assistance is placed with the family in Slovenia. People with insufficient means may not be eligible for Supplementary Allowance if they have children with sufficient means to support them. This responsibility may create a) an important disincentive for people to apply for benefits and b) an extra eligibility condition: the income and wealth of those who are obliged to help the applicant to make a living (adult children) are assessed as well.

For Supplementary Allowance may be eligible a citizen of the Republic of Slovenia or a foreigner with a permanent residence permit and permanent residence in the Republic of Slovenia

- who has the status of a permanently unemployable person; or
- the status of a person who is permanently unable to work; or
- is older than 63 years (women) or older than 65 years (men) and is not active and whose own income does not exceed EUR 684.05 (valid from April 1, 2023, and for a single person living alone) and on whose side it is not possible to establish the existence of a fault-based ground (for example imprisonment).

In 2022, the number of beneficiaries amounted to 23,386 per month, on average. Spending on Supplementary Allowance represented only EUR 44.7 million, which is about 0.1% of GDP. Considering its very limited budgetary impact, Supplementary Allowance is not included in the projections.

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

The following changes to the legislation were made by the **amendments to the Pension and disability insurance act (ZPIZ-2)**[7]:

- On January 1, 2021, the amendments to the Pension and Disability Insurance Act entered into force. **ZPIZ-2H (Official Journal of the RS, No. 139/20)** thus introduced solutions for the inclusion of the period, purchased under previous regulations, into the institute of the pensionable period without purchased period. It also introduced the decision to align the status of farmers who had previously paid contributions at the same rate as prescribed for the broader scope of rights but were insured for the narrower scope of rights as if they had been insured for the broader scope of rights. This means that their pensions will generally

[7] Official Journal of the RS, No. 48/22 – officially consolidated text, 40/23 – ZČmIS-1, 78/23 – ZORR and 84/23 – ZDOsk-1.

be higher, and they will also be entitled to all the benefits of compulsory pension and disability insurance.

- The next amendment to the legislation - **ZPIZ-2I (Official Gazette of the RS, No. 51/21**, applicable from May 1, 2021) - shortened the transitional periods for raising the accrual rates, which were already introduced by the so-called mini pension reform in 2019 (ZPIZ-2G). Instead of 2025, as originally foreseen, on the basis of ZPIZ-2I the higher accrual rates for men in the amount of 63.5% were fully implemented already in 2023 and thus equalised by gender. The new minimum and guaranteed pension levels and the new minimum disability pension were also set, and the pensions of insured persons who were mostly insured for a narrower scope of rights, were also increased.
  - The new minimum pension level was thus set by the ZPIZ-2I, so that an insured person who acquires the right to an early, old-age or disability pension will be guaranteed a minimum pension of 29.5% of the minimum pension base in 2021, which at that time (on May 1, 2021) amounted to EUR 279.56. From the date of its establishment the minimum pension is adjusted in the same way as pensions (it amounts 310.11 EUR in November 2023). These amounts are available to individuals who are yet to retire, as well as to all those who meet the legal conditions and who have retired under the previous legislation. The purpose of this change is that the amount of the minimum pension will be the same for all beneficiaries and will no longer depend on the calendar year in which the entitlement was established.
  - ZPIZ-2I also provided for a faster increase in the minimum accrual rate for the assessment of disability pension and the minimum base for the assessment of the widow(er)'s or survivor's pension. It also introduced a new regulation of the amount of the minimum pension in case where pensions have been assessed for a narrower scope of rights. A new higher amount was set at 29.5% of the minimum pension base, which at that time (on May 1, 2021) amounted to EUR 279.56 and will continue to be adjusted in future years in the same way as pensions.
    Under the provisions of the ZPIZ-2I, the amount of the guaranteed pension for individuals who have retired with a so-called full pensionable period has been increased to EUR 620 as of May 1, 2021, and will continue to be adjusted in the same way as other pensions. It currently amounts to EUR 687.75.
  - The ZPIZ-2I also introduced the lowest disability pension. From May 1, 2021, onwards, insured persons who have acquired the right to a disability pension, are thus newly guaranteed a minimum disability pension in the amount which in 2021 amounted to 41% of the minimum pension base (EUR 388.54) and is then adjusted in the same way as pensions. It currently amounts to EUR 431.00.

- The next amendment to the legislation was **ZPIZ-2J (Official Gazette of the RS, No. 121/21**, applicable from August 7, 2021), which reintroduced the right to a disability allowance for physical impairment also for insured persons whose physical impairment resulting from an injury outside work or from illness, namely until the new regulations on the protection of the disabled are adopted, which would comprehensively and systematically regulate the procedures for determining the type and degree of physical impairments are adopted.

- The amendment **ZPIZ-2K (Official Gazette of the RS, No. 162/21**, applicable from November 1, 2021) expanded the definition of the ‘pension qualifying period without purchased period’ in a way that it also includes the period of voluntary inclusion in compulsory insurance after January 1, 2013, if the person voluntarily entered into the compulsory insurance before December 31, 2012, but only until the first interruption of the insurance and on the condition that contributions were paid for this period.

- With the amendment **ZPIZ-2L (Official Journal of the RS, No. 10/22**; applicable from January 1, 2022) an additional adjustment of pensions and benefits from disability insurance was introduced, aimed at eliminating the backlog in the adjustment of pensions

of beneficiaries who retired in different periods. For this reason, the percentages of adjustment were different and were increased by the following as of January 1, 2022:
- by 3.5% if the rights were granted until December 31, 2010;
- by 1.7% if the rights were granted from January 1, 2011, to December 31, 2011, and
- by 1% if the rights were granted from January 1, 2012, onwards.

The minimum pension, the guaranteed pensions and the minimum amount of the disability pension were also adjusted by 1%.

- The amendment **ZPIZ-2M (Official Gazette of the RS, No. 29/22**, applicable from 1 April 2022) established solutions for several groups of insured persons or pension beneficiaries, namely:
  - Regulation of the right to an additional accrual rate for men due to child-care: It is usually a woman who is entitled to an additional accrual rate due to taking care of a child, unless a man was the beneficiary of the right to benefits arising from parenthood for at least 120 days, which is mutually agreed upon for each child.
    In practice, there are cases when a woman could not acquire the additional accrual rate because she has not acquired the right to an early, old-age or disability pension. A ZPIZ-2M amendment thus allows a man, regardless of the condition of benefiting from parental benefits, to acquire the right to an additional accrual rate, subject to the woman's consent.
  - Ensuring the minimum pension for insured persons who performed agricultural activity if they are fulfilling the condition of the retirement age: If a person, regardless of the fact, that he/she was insured for a narrower scope of rights as a farmer, completes the pension period of 40 years by performing agricultural activity in such narrower scope of insurance, the pension is assessed at least in the amount of 41% of the minimum pension rating base.
  - The entitlement to a new pension assessment for the beneficiary of a widow(er)'s or survivor's pension, assessed on the basis of the deceased's pension, in the case when the beneficiary of a pension, which has been assessed under the effect of a narrower scope of insurance under Article 11 of the Pension and disability insurance act from the year 1983, has already died.
  - Ensuring a new assessment of the widow(er)'s and survivor's pensions and of the disability insurance benefits, which is guaranteed for beneficiaries of early, old-age or disability pensions under Article 39 of the ZPIZ-2.
  - Introduction of a regular indexation of disability allowance for physical impairment, which had not been adjusted since December 2012. As of January 1, 2022, disability allowances are thus adjusted in accordance with the Act Regulating Adjustments of Transfers to Individuals and Households in the Republic of Slovenia.

In line with the Recovery and Resilience Plan (RRP) Slovenia will implement changes to the pension and disability insurance system by the end of 2024. An intensive discussion with key stakeholders on changes to the pension system has already started. It is based on the starting points, presented by the Ministry of Labour, Family, Social Affairs and Equal Opportunities in July 2023, which include the substance of possible amendments to pension legislation. In the coming months the proposal for legislative changes will be further discussed with social partners, experts, and broader public. Legislative changes will aim to ensure the adequacy of pensions and the fiscal sustainability of the pension system as such. It is foreseen that the new law will be adopted by the Government of the Republic of Slovenia and submitted to the National Assembly for discussion and final adoption.

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

No particular constant policy assumptions have been implemented. Compared to Ageing Report 2021, assumptions regarding the length of the transition period for raising the accrual rates adopted by pension legislation changes in 2019 are different. Instead of in 2025, as originally foreseen, the higher accrual rates for men (63.5%) were fully implemented already in 2023, and thus equalised by gender. Other changes in legislation are minor and are implicitly captured in the baseline expenditures for pensions. Additionally, a decline in average contributory period over the projection period is assumed, as explained in Section 2.2.

2. Overview of the demographic and labour force projections[8]

2.1. Demographic projections

Similar to other EU Member States, Slovenia is facing demographic changes that require the entire society to adapt. Life expectancy is rising, the number of births is decreasing, and net migration is conditioned by the economic cycle and labour shortages. 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 the Europop2023 population projections, Slovenia is projected to have a population of 2.0 million in 2070, i.e., 122 000 fewer people than in 2022. The population of Slovenia is projected to increase until 2026, before declining slightly in the following 20 years and more evidently thereafter. Europop2023 represents, however, an upward revision compared with the Europop2019 figures, with the latest demographic projections implying a 0.1 pps lower average population decrease in 2022-2070.

Compared to 2022, the number of children (aged 0-14 years) is expected to fall by 19% and the people at working age (20-64) by 16%. The most substantial fall is projected for individuals in the age group with highest activity rates; in 2070 number of individuals aged between 35 and 49 will be lower by 28%, compared to 2022. On the other hand, number of individuals aged 65 or over is projected to be higher by 34%. The proportion of the population aged 20-64 will fall to 52.4% by 2070 (1991: 61.3%, 2022: 59.3%; the highest proportion was recorded in the 2005–2012 period: 64.2%).

Ageing of the Slovenian population is driven by increasing life expectancy and a decrease in the number of births. While the projections assume an increase in the fertility rate, the number of child births will continue to decline, given the decline in the number of women of reproductive age (15-49 years). In 2022, 17,627 children were born, compared to 22,343 in 2010, while on average over 2023-2070, 17,344 live births per year are projected. Life expectancy at birth is expected to increase further, at a slightly faster pace for men. In 2070 it is expected to be 90.5 years for women and 86.0 years for men (6.1 and 7.5 years more than in 2022, respectively). The gap in life expectancy between women and men is projected to narrow to 4.5 years by 2070 (compared to 8 years in 1991 and 5.9 years in 2022).

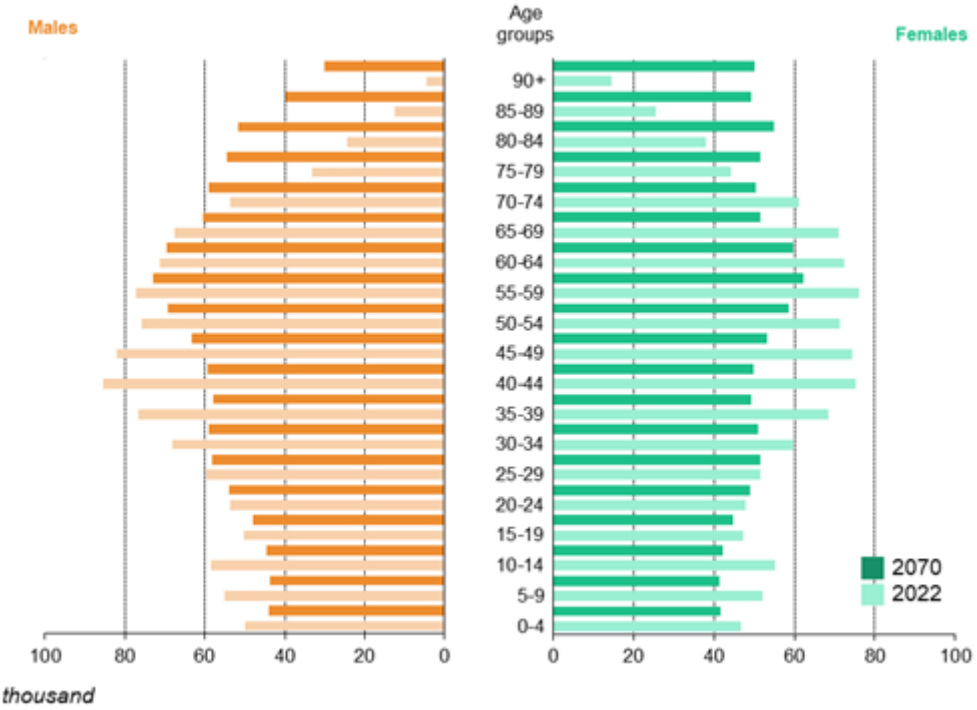
[8] For more details, see European Commission and EPC (2023), *'2024 Ageing Report: Underlying assumptions and projection methodologies'*, European Economy, Institutional Paper 257.

TABLE 2 – MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	2,112	2,118	2,110	2,092	2,047	2,000	2,121	2026	-112
Population growth rate (%)	0.2	0.0	0.0	-0.1	-0.3	-0.2	0.3	2023	-0.4
Old-age dependency ratio (pop 65+ / pop 20-64)	36.1	43.1	49.8	58.5	60.3	57.5	60.9	2056	21.5
Old-age dependency ratio (pop 75+ / pop 20-74)	13.1	17.2	21.9	25.5	30.0	30.1	30.8	2064	17.0
Ageing of the aged (pop 80+ / pop 65+)	26.5	27.3	33.8	36.1	41.1	45.7	45.7	2070	19.2
Men - Life expectancy at birth	78.5	80.0	81.7	83.2	84.6	86.0	86.0	2070	7.5
Women - Life expectancy at birth	84.4	85.7	87.0	88.2	89.4	90.5	90.5	2070	6.1
Men - Life expectancy at 65	17.8	18.9	20.1	21.2	22.3	23.3	23.3	2070	5.5
Women - Life expectancy at 65	21.7	22.8	23.9	24.9	25.8	26.7	26.7	2070	5.0
Men - Survivor rate at 65+	86.1	87.7	89.6	91.2	92.5	93.7	93.7	2070	7.6
Women - Survivor rate at 65+	93.5	94.1	94.9	95.6	96.2	96.8	96.8	2070	3.3
Men - Survivor rate at 80+	54.1	59.1	64.5	69.4	73.7	77.5	77.5	2070	23.4
Women - Survivor rate at 80+	74.2	77.4	80.8	83.7	86.1	88.3	88.3	2070	14.0
Net migration (thousand)	14.6	6.1	6.7	6.4	5.8	6.0	14.6	2022	-8.6
Net migration (% population previous year)	0.7	0.3	0.3	0.3	0.3	0.3	0.7	2022	-0.4

Source: Eurostat, European Commission.

FIGURE 1 – AGE STRUCTURE: 2022 VS 2070



Source: Eurostat, European Commission.

2.2. Labour force projections

The participation rate of the 55-64 age group rises from 57.3% in 2022 to 76.6% in 2070, with their employment rate increasing from 55.1% in 2022 to 72.4% in 2070. Compared to Agein Report 2021, participation rates and employment rates for older workers (aged between 55 and 64) have been revised upwards, particularly for the period after 2040, and are by 11.8 percentage points higher, on average, over the period 2040-2070.

In line with these dynamics, the overall participation rate (20-64) has also been revised upwards, compared to the previous exercise, and now increases from 81.4% in 2022 to 85.4% in 2070.

TABLE 3 – PARTICIPATION RATE, EMPLOYMENT RATE AND SHARE OF WORKERS

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Labour force participation rate 20-64	81.4	82.5	84.2	85.6	85.8	85.4	86.0	2056	4.0
Employment rate of workers aged 20-64	78.3	77.8	79.4	80.8	81.0	80.6	81.1	2056	2.3
Share of workers aged 20-64 in the labour force 20-64	96.1	94.4	94.3	94.3	94.4	94.3	96.3	2024	-1.8
Labour force participation rate 20-74	68.9	68.7	69.6	69.1	70.8	71.7	71.8	2067	2.7
Employment rate of workers aged 20-74	66.2	64.8	65.7	65.1	66.8	67.6	67.7	2067	1.3
Share of workers aged 20-74 in the labour force 20-74	96.1	94.4	94.3	94.3	94.3	94.3	96.3	2024	-1.8
Labour force participation rate 55-64	57.3	65.1	73.2	74.8	76.2	76.6	77.2	2067	19.4
Employment rate of workers aged 55-64	55.1	61.6	69.2	70.6	71.9	72.4	73.0	2067	17.3
Share of workers aged 55-64 in the labour force 55-64	96.3	94.6	94.5	94.3	94.4	94.5	96.4	2024	-1.8
Labour force participation rate 65-74	7.4	6.5	6.0	6.4	6.3	6.6	7.4	2022	-0.8
Employment rate of workers aged 65-74	7.0	6.0	5.5	5.9	5.8	6.1	7.0	2022	-0.9
Share of workers aged 65-74 in the labour force 65-74	94.8	91.7	92.2	92.1	92.1	92.3	95.1	2024	-2.5
Median age of the labour force	42	43	43	41	43	43	43	2026	1

Source: European Commission.

According to the current legislation, the standard retirement age is 65 years for both sexes, while the minimum age for early retirement is 60 years. The pension qualifying period is equal for men and women: 15 years if aged 65 or more, or 40 years if aged 60-64. Most persons enter retirement fulfilling the condition of 60 years of age and 40 years of contributory period. In 2022, women retired at an average age of 60.9 years with 38.5 years of contributory period (excluding disability pensioners), while men retired at 61.8 years with 37.8 years of contributory period.

Data on the contributory periods of the currently active population, maintained and published by the Slovenian Pension and Disability Insurance Institute (PDII), show that there are significant differences between the generations that have retired so far or are close to retirement and the generations that will retire in the future. All available data suggest that retirement around the age of 60 will no longer be possible for the majority of the currently active population. Younger generations have accumulated lower contributory periods than older generations, and a much smaller share of future pensioners will be able to retire before the age of 65. This is also explained by the late entry in the labour market in Slovenia. According

to Eurostat, Slovenia had one of the largest shares of students in tertiary education in population aged 20, 22 and 24 in the EU in 2021[9].

TABLE 4: CONTRIBUTORY PERIOD OF THE CURRENTLY ACTIVE POPULATION BY AGE GROUPS AND GENDER

	Female					Male				
	2002	**2010**	**2015**	**2020**	**2022**	**2002**	**2010**	**2015**	**2020**	**2022**
15-19	0.7	0.5	0.4	0.6	0.5	0.8	0.8	0.5	0.8	0.6
20-24	2.6	1.8	1.4	1.8	1.7	2.8	2.6	1.8	2.3	2.1
25-29	5.8	3.9	3.3	3.3	3.3	6.0	4.8	4.4	4.1	4.2
30-34	11.1	8.5	7.4	6.8	6.6	10.9	8.9	8.4	7.6	7.3
35-39	16.0	14.5	12.8	11.5	10.8	16.2	14.1	13.0	11.9	11.5
40-44	19.8	20.7	19.1	17.2	16.2	19.9	19.7	18.4	16.8	16.1
45-49	23.5	25.0	25.4	23.6	22.4	23.6	24.4	24.1	22.4	21.4
50-54	27.5	29.3	30.2	30.2	29.0	27.4	28.3	28.8	28.1	27.3
55-59	27.4	31.1	34.0	35.1	34.8	30.8	32.2	32.8	32.9	32.6
60-64	31.7	30.6	33.8	36.3	36.4	31.3	32.1	33.9	34.6	34.4

Source: PDII.

The data show that the length of the collected contributory period by the age of 50 has been decreasing since 2002. The collected contributory period dropped in 2002-2022 for age groups 40-49 as well, although the decrease has not been steady from year to year. The age groups 25-45 have experienced the most significant drop. For example, in 2002, the contributory period of women aged 40-44 was, on average, 19.8 years but only 16.1 years in 2022. Men in this age group had, on average, 19.9 contributory years in 2002 and only 16.1 years in 2022. The majority of persons who entered retirement in 2022 belonged to the age group 40-44 in 2002. Data in Table 4 above show that their contributory period was almost 20 years twenty years ago. The contributory period for the same age group (40-44) in 2022 is shorter by 3.7 years for women and 3.8 years for men. These facts lead to the conclusion that retirement conditions in future years will not be fulfilled around the age of 60 (the average collected contributory periods at 60 will be below 40 years). On the contrary, the retirement conditions will be fulfilled at higher ages and with lower contributory periods.

Accordingly, the average exit ages for males and females have been revised upwards so that they converge to 64 in 2040, one-year higher than in the previous projections. Additionally, contributory periods have been revised downwards and are in 2070 equal to 36.7 years, which is 2.7 years lower compared to the previous exercise. Since the upward revision of average exit ages partially offsets the fall in the contributory period, the remaining (approximately 3) years translate to a drop in the contributory period at retirement.

The downward revision of contributory periods is also in line with the fact that due to the assumed labour force participation rates in the age group from 60 to 65 years, some individuals will exit the labour market and accept the penalty for not accumulating the total pensionable period.

According to the latest projections, contributory period initially increases from 38.1 in 2022 to 39.1 in 2030 (due to retirement of cohorts with earlier entry to labour market), before it drops to 34.6 in 2050, because of later entry to the labour market. In the early 2050s, individuals who entered the labour market during the financial crisis, which was marked by higher youth

[9] https://ec.europa.eu/eurostat/databrowser/view/educ_uoe_enrt07__custom_8674039/default/table.

unemployment and consequently later labour market entry, will retire. The contributory period increases to 36.4 years by 2060 and remains at about that level until 2070.

TABLE 5 – LABOUR MARKET EXIT BEHAVIOUR

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.4	62.5	63.5	63.6	63.6	63.6	63.6	2065	2.2
Average labour market exit age (CSM)**	62.3	63.0	64.0	64.0	64.0	64.0	64.0	2040	1.7
Contributory period	38.1	39.1	36.3	34.6	36.4	36.3	39.1	2030	-1.8
Duration of retirement***	19.8	22.6	22.8	23.9	24.9	25.9	25.9	2070	6.1
Duration of retirement/contributory period	52%	58%	63%	69%	68%	71%	71%	2070	19
Percentage of adult life spent in retirement****	30%	34%	34%	35%	36%	37%	37%	2070	7
Early/late exit*****	2.6	1.8	0.9	0.7	0.8	0.7	3.0	2024	-1.9
MEN	**2022**	**2030**	**2040**	**2050**	**2060**	**2070**	**peak value**	**peak year**	**change 2022-2070**
Average effective retirement age*	61.8								
Average labour market exit age (CSM)**	62.4	63.0	64.0	64.0	64.0	64.0	64.0	2043	1.6
Contributory period	37.8	38.8	36.5	35.6	36.9	36.7	38.8	2030	-1.1
Duration of retirement***	17.0	20.5	20.9	22.0	23.1	24.1	24.1	2070	7.1
Duration of retirement/contributory period	45%	53%	57%	62%	63%	66%	66%	2070	21
Percentage of adult life spent in retirement****	27%	32%	32%	33%	34%	35%	35%	2070	9
Early/late exit*****	1.9	1.7	1.0	0.8	0.8	0.8	2.3	2025	-1.2
WOMEN	**2022**	**2030**	**2040**	**2050**	**2060**	**2070**	**peak value**	**peak year**	**change 2022-2070**
Average effective retirement age*	60.9								
Average labour market exit age (CSM)**	62.2	62.9	64.0	64.0	64.0	64.0	64.0	2045	1.8
Contributory period	38.5	39.5	36.1	33.6	35.8	35.8	39.8	2024	-2.7
Duration of retirement***	22.5	24.6	24.7	25.8	26.7	27.6	27.6	2069	5.1
Duration of retirement/contributory period	58%	62%	68%	77%	75%	77%	78%	2056	19
Percentage of adult life spent in retirement****	34%	36%	36%	37%	38%	39%	39%	2069	4
Early/late exit*****	3.4	1.9	0.9	0.7	0.7	0.7	3.8	2024	-2.7

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

Source: European Commission, EPC.

3. Pension projection results

3.1. Coverage of the pension projections

Projections include old-age pension, disability pension, survival pensions, widower pensions and 'other pensions', which include phased-out schemes for farmers' and military pensions, as well as annual allowances for pensioners[10].

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 1st pillar, private and public sectors. As mentioned above, the 'other pensions' are gradually phasing out and represent only 0.03% of GDP in 2022. Other special schemes that cover retirement conditions were defined in different laws for different groups (military, police, judiciary). They are gradually all phased out and they are covered in the old-age pensions (in terms of number and expenditures).

The projections do not cover the two private pillars in place in Slovenia, due to the lack of the data. For these reasons, mandatory collective supplementary pensions for public employees, non-mandatory collective supplementary pensions from the private sector (based on collective agreements) and private non-mandatory individual supplementary pensions are not included in the projections.

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 – ESSPROS AND AWG DEFINITION OF PENSION EXPENDITURE (% OF GDP)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013-last available year
Eurostat total pension expenditure (A)	11.5	11.2	10.9	10.6	10.1	9.8	9.6	10.6	:	-0.9
Public pension expenditure (AWG: outcome) (B)	11.6	11.6	11.4	10.8	10.3	10.0	9.9	10.8	10.3	-1.3
Difference Eurostat/AWG: (A)-(B)	-0.1	-0.4	-0.5	-0.2	-0.2	-0.2	-0.3	-0.2	:	0.4

Source: Eurostat, European Commission, EPC.

[10] The annual allowances are social transfers that receive pensioners each year in addition to the pensions. The allowance is proportionally distributed to the different pension types.

3.2. Overview of projection results

Gross public pension expenditure is projected to rise from 9.8% of GDP in 2022 to a peak of 13.8% of GDP in 2057 and remain at around that level until 2070, when it amounts to 13.7% of GDP.

When comparing net and gross pensions[11], there is no significant difference as only a very small share of pensions is subject to personal income tax (amounting to around 0.1 percentage points of GDP).

The negative balance of the public pension system in % of GDP is projected to increase from 0.7 % of GDP in 2022 to 4.5% of GDP, due the discrepancies between the number of pensioners and contributors and corresponding dynamics of total pension expenditures and revenues from the contributions.

TABLE 7 – PROJECTED GROSS AND NET PENSION SPENDING AND CONTRIBUTIONS (% OF GDP)

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Expenditure									
Gross public pension expenditure	**9.8**	**10.8**	**12.1**	**13.5**	**13.8**	**13.7**	**13.8**	**2057**	**3.8**
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	:	:	:	:	:	:	:	:	:
Net public pension expenditure*	9.7	10.7	12.0	13.4	13.6	13.6	13.7	2057	3.8
Net total pension expenditure*	:	:	:	:	:	:	:	:	:
Contributions									
Public pension contributions	9.1	9.1	9.1	9.1	9.1	9.1	9.1	2040	0.0
Total pension contributions	:	:	:	:	:	:	:	:	:
**Balance of the public pension system (% GDP) ** **	-0.7	-1.6	-3.0	-4.3	-4.6	-4.5	-4.7	2057	-3.8

**Net pension expenditure excludes taxes on pensions and compulsory social security contributions paid by beneficiaries. **Public pension contributions - gross public pension expenditure (peak value/year shows most negative value).*
Source: European Commission, EPC.

Old-age and early pensions represent by far the largest share in total pension expenditure and are driven by demographic factors – i.e., the rapidly increasing share of elderly (who receive pensions) relative to the working-age population (who pay contributions). Total public pension spending on old-age and early pensions rises from 7.9% of GDP in 2022 to 11.4% in peak year 2056 and falls slightly to 11.3% of GDP by 2070.

The share of disability pensions in GDP is expected to increase from 0.9% in 2022 to 1.2% by 2055 and stay at approximately that level until 2070. As a consequence of increasing numbers of individuals in higher age groups, the number of disability pensioners is expected to increase until 2055, at an average annual rate of 0.3%. Disability pensions do not shift into old-age pensions. Instead, disability pensioners keep their status until they die, therefore their number depends also on the number of elderlies, instead of only following the pattern of the working-age population. In the model it is assumed that probabilities of being a disability pensioner slightly decrease 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. Since 2003 the criteria

[11] See section 3.3.

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 cannot work on the previous job anymore. Since 2006 the criteria for disability pensions are being synchronized across all disability commissions in Slovenia. Furthermore, often part time employment is used instead of granting disability pension immediately. These measures, together with increasing safety at work and improving health care, have contributed to the continuous fall in disability pensions, despite the population ageing. Therefore, we assume that also in the future probabilities of being a 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 2055 and then it starts to decline. Over the period 2056-2070 the number of disability pensioners is projected to shrink at an average annual rate of 0.4%.

For survivor and widower pensions a similar approach has been used as for the modelling of the disability pensions. The probability of receiving a survivors/widower's pension is, however, slightly reduced, based on an argument 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, which are first increasing until 2057, at an average annual rate of 0.4% and then decreasing with an average annual rate of 0.8% until the end of the projection period.

Old schemes for the farmers' and military pensions are included under 'other pensions', which amounted to 0.03% of GDP in 2022 and are until 2031 projected to account for less than 0.01% of GDP. Both types of pensions are phasing out. The old schemes for farmers are phasing out, and large majority of farmers is already in the current system where they are treated as regular old-age pensioners. Under the military pensions are remaining war veterans.

TABLE 8 – GROSS PUBLIC PENSION SPENDING BY SCHEME (% OF GDP)

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Total public pensions	9.8	10.8	12.1	13.5	13.8	13.7	13.8	2057	3.8
Old-age and early pensions	7.9	8.8	10.0	11.1	11.3	11.3	11.4	2056	3.4
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	7.9	8.8	10.0	11.1	11.3	11.3	11.4	2056	3.4
Minimum pensions (non-contributory)	:	:	:	:	:	:	:	:	:
Disability pensions	0.9	1.0	1.1	1.2	1.2	1.2	1.2	2059	0.3
Survivor pensions	1.0	1.0	1.1	1.2	1.3	1.2	1.3	2063	0.3
Other pensions	0.03	0.01	0.00	0.00	0.00	0.00	0.0	2023	0.0

Source: European Commission, EPC.

3.3. Description of main driving forces behind the projection results and their implications

FIGURE 2 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE

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

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

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

Source: European Commission, EPC.

The main upward driver of pension expenditure remains the dependency ratio. The old-age dependency ratio (P65+/P20-64*100) increases from 36.1 in 2022 to 57.5 in 2070, peaking in 2056 at 60.9.

Through most of the projection period (except in the last decade), the coverage ratio lowers the pension expenditure as % of GDP. The employment rate of workers aged 55-64 increases by 17.3 percentage points between 2022 and 2070, which has a positive effect on sustainability of the pension system.

During the projection period, the benefit ratio contributes to the increase in pension expenditure relative to GDP. The changes in pension legislation introduced in 2020 have substantially increased the accrual rates (see Section 1.2). However, the projected decline in the contributory period neutralises a large share of this increase later on in the projection period. At the beginning of the projection period there is also still some negative impact on the benefit ratio because of the change in indexation from 100% to 60% real wage growth. Therefore, elderly in higher age groups who benefitted from 100% indexation during their retirement period (and therefore having higher pensions) are gradually dying off, being replaced by pensioners who retired after 2013 with on average lower pensions.

TABLE 9 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2022 AND 2070 (PPS OF GDP) – PENSIONERS[12]

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	0.9	1.3	1.4	0.3	-0.1	3.8
Dependency ratio effect	1.9	1.7	2.1	0.4	-0.6	5.4
Coverage ratio effect*	-0.8	-0.6	-0.5	-0.1	0.2	-1.7
Coverage ratio old-age	-0.2	-0.1	-0.2	0.0	0.1	-0.4
Coverage ratio early-age	-2.2	-2.2	-0.6	-1.1	0.0	-6.2
Cohort effect	-1.2	-1.3	-3.0	-0.4	1.7	-4.2
Benefit ratio effect	-0.2	0.5	0.1	0.0	0.3	0.7
Labour market effect	0.1	-0.2	-0.3	0.0	0.1	-0.3
Employment ratio effect	0.1	-0.2	-0.2	0.0	0.1	-0.3
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	0.0	0.0	0.0	0.0	0.0
Residual	-0.1	0.0	-0.1	0.0	0.0	-0.2

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

The replacement rate follows contributory period dynamics. In the beginning of the projection period replacement rate is around 36%, and then falls even below 33%, as individuals retire with ever shorter contributory periods by 2053. Toward the end of the projection period, it stabilises at around 34%.

Public benefit ratio increases from 32% in 2022 to 35% in 2070, because of change in pension legislation in 2020 that increased the accrual rates. However, the increase is smaller than in Ageing Report 2021, because it is partially offset by decreasing replacement rate until 2053. 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 interpretation the replacement rate (and benefit ratio) depends on the average wage used to calculate these indicators. In Slovenia, a net pension principle applies, as the pension rating base is calculated in net terms. Contributions for health insurance are calculated separately and paid out directly by the PDII and therefore not deducted from the pensions. This is also the main reason why the ratios of the pension (first pension and average pension) to the gross average wage of the economy and gross average wage at retirement are relatively low. In this view the net replacement rate is higher. According to Pension Adequacy Report methodology and PDII data it amounted to 67.1% in 2022 and is projected to decrease to 62.9% in 2062.

[12] For the disaggregation based on the number of *pensions*, see Table A3 in the methodological annex.

TABLE 10 – BENEFIT RATIO (BR), REPLACEMENT RATE AT RETIREMENT (RR) AND COVERAGE BY PENSION SCHEME (IN %)

	2022	2030	2040	2050	2060	2070	change 2022-2070
Public scheme (BR)	32	33	34	34	34	35	3
Coverage	100	100	100	100	100	100	0
Public scheme: old-age earnings related (BR)	34	35	36	37	37	37	3
Public scheme: old-age earnings related (RR)	35	36	34	33	34	34	-1
Coverage*	75	76	77	77	77	78	2

**Coverage of each pension scheme is calculated as a ratio of the number of pensioners within the scheme and the total number of pensioners in the country. In case data on pensioners are not available, the calculation is based on the number of pensions.*
Source: European Commission, EPC.

Pension system dependency ratio will increase during the projection period, as the total number of pensioners is expected to increase, while employment will fall.

TABLE 11 – SYSTEM DEPENDENCY RATIO AND OLD-AGE DEPENDENCY RATIO

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	630	672	714	749	739	716	86
Employment (thousand) (II)	1004	965	950	901	873	867	-137
Pension system dependency ratio (SDR) (I)/(II)	0.6	0.7	0.8	0.8	0.8	0.8	0.2
Number of people aged 65+ (thousand) (III)	450	519	581	634	632	603	153
Working-age population 20-64 (thousand) (IV)	1247	1204	1166	1083	1048	1048	-199
Old-age dependency ratio (OADR) (III)/(IV)	0.4	0.4	0.5	0.6	0.6	0.6	0.2
System efficiency (SDR/OADR)	1.7	1.6	1.5	1.4	1.4	1.4	-0.3

Source: European Commission, EPC.

The ratio between public pensioners and the inactive population exceeds 100% due to the following facts. 1) Many pensions are paid to 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 who do no longer live in Slovenia. 2) The model does not assign pensions to the people in lower age groups (children) who get pensions after their parent deceased. These pensions are assigned to higher age groups – to 'deceased people' in their hypothetical age group.

The number of pensioners relative to the total population and the inactive population is declining in the age group 60-64 throughout the whole projection period, 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.

Table 12 – Public pensioners to (inactive) population by age group (%)

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	3.1	3.1	2.8	2.7	2.8	2.7
Age group 55-59	54.2	52.4	50.8	48.9	49.7	49.3
Age group 60-64	92.1	89.8	88.2	86.0	86.6	87.1
Age group 65-69	121.8	119.5	116.9	116.7	116.8	117.9
Age group 70-74	121.7	116.9	115.2	114.0	114.0	115.2
Age group 75+	114.0	111.5	110.0	108.5	108.4	109.1
pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	1.1	1.1	1.0	1.0	1.1	1.0
Age group 55-59	11.9	9.2	7.3	6.6	6.3	6.3
Age group 60-64	59.8	47.3	34.5	30.6	30.2	30.0
Age group 65-69	109.5	107.0	105.6	104.3	104.2	105.0
Age group 70-74	116.8	114.3	112.8	111.6	111.6	112.7
Age group 75+	114.0	111.5	110.0	108.5	108.4	109.1

Source: European Commission, EPC.

TABLE 13 – FEMALE PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP (%)

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	3.0	2.9	2.5	2.4	2.6	2.5
Age group 55-59	52.8	51.1	49.6	47.8	48.9	48.5
Age group 60-64	92.2	89.9	88.0	86.1	86.5	86.9
Age group 65-69	112.8	114.1	111.5	111.5	111.4	112.4
Age group 70-74	114.7	110.9	109.6	108.2	108.1	108.9
Age group 75+	110.0	107.6	106.1	104.7	104.6	105.3
female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	1.2	1.1	1.0	1.0	1.1	1.0
Age group 55-59	13.2	10.2	8.2	7.6	7.4	7.4
Age group 60-64	64.9	50.5	35.6	32.1	31.8	31.4
Age group 65-69	105.0	102.7	101.2	99.9	99.8	100.5
Age group 70-74	111.4	108.9	107.4	106.0	105.9	106.6
Age group 75+	110.0	107.6	106.1	104.7	104.6	105.3

Source: European Commission, EPC.

The number of new pensioners fluctuates until around 2050, when it starts to consistently decline due to smaller cohorts entering retirement.

Pensionable earnings are calculated from the average contributory periods for males and females. The pension formula that in 2023 became equal for men and women is taken into account. 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: for the first 15 years of work they received 29% (instead of 29.5%) and additional working years were valued with 1.36% (instead of 1.38%). For a woman with full working period of 40 years we again derive 63.5% (29.5+25*1.36=63.5). Men, on the other hand, have reached the same formula in 2023. For the first 15 years they received 27% in 2020, and then it was planned that it would be increased by 0.5 percentage point each year, reaching 29.5% in 2025. Working years above 15 years counted for 1.25% in 2020 and it was projected that this would be gradually increased to 1.28 in 2021, 1.30 in 2022, 1.32 in 2023, 1.34 in 2024 and, finally,

1.36 in 2025. However, in 2021 the transition period was shorted by two years, so the final levels were reached already in 2023. From 2023 onwards, both men and women receive 29.5% for the first 15 years of work and then 1.36% for each additional year. For 40 years of work the total accrual rate amounts to 63.5% for both sexes. These rules are taken into account in the projections.

The average number of months paid in the first year of retirement is based on administrative data from the Pension fund for the year 2019, as at the time of preparation of the baseline scenario, new data (for 2022) was not yet available. In the meantime, the data for 2022 has become available, and it amounts to 7.43 for men and 6.58 for women. The value from the baseline year is assumed for the entire period for both men and women, and 'total' is calculated as a weighted average of the two.

The average contributory period is projected to fall from 38.1 years in 2022 to 36.3 years by 2070. This change has been introduced based on the new data on the contributory period and on the results of the microsimulation model, as explained in Section 2. As discussed, this has a substantial impact on the pension expenditure projections.

TABLE 14 – BREAKDOWN OF NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS)

TOTAL	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	97.9	155.8	227.0	345.4	435.2	606.7
I. Number of new pensions (1000)	20.1	20.3	21.0	23.1	19.8	19.9
II. Average contributory period (years)	38.1	39.1	36.3	34.6	36.4	36.3
III. Average accrual rate (%)	1.6	1.7	1.7	1.7	1.7	1.7
IV. Monthly average pensionable earnings (1000 EUR)	1.3	2.0	2.9	4.2	5.9	8.2
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	6.0	6.0	6.0	6.1	6.1	6.1
Monthly average pensionable earnings / monthly economy-wide average wage	53	53	53	53	53	53
MEN	**2022**	**2030**	**2040**	**2050**	**2060**	**2070**
Projected new pension expenditure (million EUR)*	51.7	84.2	124.5	197.2	251.6	351.4
I. Number of new pensions (1000)	10.2	10.4	10.8	12.2	10.7	10.8
II. Average contributory period (years)	37.8	38.8	36.5	35.6	36.9	36.7
III. Average accrual rate (%)	1.6	1.6	1.7	1.7	1.6	1.6%
IV. Monthly average pensionable earnings (1000 EUR)	1.3	1.9	2.9	4.2	5.9	8.2
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 (%)	53	53	53	53	53	53
WOMEN	**2022**	**2030**	**2040**	**2050**	**2060**	**2070**
Projected new pension expenditure (million EUR)*	45.9	71.1	102.0	147.7	182.9	254.4
I. Number of new pensions (1000)	9.9	9.9	10.2	10.9	9.1	9.1
II. Average contributory period (years)	38.5	39.5	36.1	33.6	35.8	35.8
III. Average accrual rate (%)	1.7	1.7	1.7	1.7	1.7	1.7
IV. Monthly average pensionable earnings (1000 EUR)	1.3	2.0	2.9	4.2	6.0	8.3
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	54	54	54	54	54	54

**New pension expenditure equals the product of I, II, III, IV, V, VI, and VII.*
Source: European Commission, EPC.

3.4. Financing of the pension system

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

TABLE 15 – FINANCING OF THE PUBLIC PENSION SYSTEM

	Public employees	Private employees	Self-employed
Contribution base	Gross wage.	Gross wage.	Profit reduced by 25%.
Contribution rate/contribution			
Employee	15.5%	15.5%	
Employer	8.85%	8.85%	24.35%
State*	n.a.	n.a.	n.a.
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	No limits – gross wage of the employee.	No limits – gross wage of the employee.	350% of average wage (WUE 7,083.72); contribution = EUR 1,724.89 per month.
Minimum contribution	60% of average wage (EUR 1,214.35); contribution = EUR 295.69 per month.	60% of average wage (EUR 1,214.35); contribution = EUR 295.69 per month.	60% of average wage (EUR 1,214.35); contribution = EUR 295.69 per month.

**Only legislated contributions are reported.*
Source: European Commission, EPC.

The employers' and employees' contributions are increasing in line with economic growth. Thus, the contributions are linked to the growth of labour input (employees) and growth of average wages (which equals labour productivity growth). The state or local communities are paying from national and local budgets social contributions for some vulnerable groups (unemployed persons, ect). In that sense the number of contributors is lower than employment.

TABLE 16 – REVENUE FROM CONTRIBUTIONS AND NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME

	2022	2030	2040	2050	2060	2070	change 2022-2070
Public pension contributions (% of GDP)	9.1	9.1	9.1	9.1	9.1	9.1	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)	989	950	936	887	859	854	-135
Employment (II) (1000)	1004	965	950	901	873	867	-137
(I) / (II)	0.98	0.98	0.98	0.98	0.98	0.98	0.0

Source: European Commission, EPC.

3.5. Sensitivity analysis

On the very long run (until 2070), lower fertility scenario has the most negative impact on the sustainability of the pension system and leads to 1.1 percentage points higher share of public pensions in GDP in 2070. The negative impact of the lower fertility scenario starts late (around 2050), when the lower number of new-borns starts to enter the labour market and increases towards the end of the projection period.

Linking retirement age to longevity, on the other hand, would decrease ratio between pension expenditure and GDP to the largest extent by 2070; by 1.6 percentage points. This scenario has a strong effect at the end of the projection period, as employment rates are constantly increasing.

The higher life expectancy scenario results in a 0.9 percentage points of GDP higher pension expenditure-to-GDP ratio in 2070. The impact, which is driven by a higher number of pensioners, is very limited at the beginning of the projection period and then increases.

On the long run (after 20 years) the higher employment rate of older workers scenario has the largest negative impact on pensions-to-GDP ratio, while constant retirement age the largest positive. The downward impact of higher employment of elderly on the expenditure-to-GDP ratio is the highest around 2040, when the ratio is lower than in the baseline by 1.0 percentage points), which is in line with increasing employment rates at older ages until 2040.

The scenario of constant retirement age does not assume a substantial increase in employment rates until 2040 (in contrast to the baseline), which results in around 1.2 percentage point higher pension expenditure in 2040. The effect then fluctuates around 1 percentage point (compared to baseline) until the end of the projection period.

Lower migration results in higher ratio of pension expenditures to GDP, because it assumes lower number of employees and thus lower GDP. The effect peaks at around 2060 and then somewhat decreases, as the immigrants start to retire, and the number of pensioners is lower as well (compared to the baseline scenario). However, this impact is relatively small, therefore by the end of projection period, the pension expenditure-to-GDP ratio is still higher than in the baseline scenario by 0.9 percentage points. On the contrary, higher migration improves the sustainability of the public pension system by lowering the pension expenditure to GDP by 0.7 percentage points in 2070, compared to the baseline.

Higher productivity assumptions lower pension expenditure in GDP by 0.2 percentage points in 2070. The effect becomes stronger towards the end of the projection period because the difference in TFP only starts in 2040 and intensifies until the end of the projection period. The impact of higher TFP is limited by the high indexation of pensions growth to the wage growth (in Slovenia indexation of pensions amounts to 60% of the growth of wages). On the contrary, lower TFP translates into a 0.3 percentage points higher pension expenditure-to-GDP ratio in 2070.

The impact of the higher inflation scenario is neutral, as pensions in Slovenia are indexed 60% to wage growth.

TABLE 17 – EXPENDITURE PROJECTIONS UNDER DIFFERENT SCENARIOS (PPS DEVIATION FROM BASELINE)[13]

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070
Baseline (% of GDP)	9.8	10.8	12.1	13.5	13.8	13.7	3.8
Higher life expectancy at birth (+2y)	0.0	0.0	0.2	0.4	0.7	0.9	0.9
Higher migration (+33%)	0.0	-0.2	-0.6	-0.9	-1.0	-0.7	-0.7
Lower migration (-33%)	0.0	0.2	0.6	1.1	1.2	0.9	0.9
Lower fertility (-20%)	0.0	0.0	0.0	0.2	0.6	1.1	1.1
Higher inflation scenario (2% by 2052)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Higher employment rate of older workers (+10 pps)	0.0	-0.5	-1.0	-0.9	-0.7	-0.7	-0.7
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.2
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.2	0.2	0.3	0.3
Policy scenario: link retirement age to longevity	0.0	0.0	0.0	-0.3	-0.9	-1.6	-1.6
Policy scenario: constant retirement age	0.0	0.3	1.2	1.2	0.9	1.0	1.0

Source: European Commission, EPC.

3.6. Changes in comparison with previous Ageing Report projections

Public pension expenditure-to-GDP ratio is projected to increase by around 2.2 percentage points of GDP less than in the 2021 Ageing Report. This is due to the following factors.

1) More favourable demographic projections, since the ratio between number of elderly and working population age is lower.
2) Higher employment rates of older workers.
3) Lower contributory period and therefore substantially lower level of pensions.

Drop in the pension expenditure-to-GDP ratio over the projection period is, to a limited extent, offset by lower productivity assumptions.

The decomposition of the increase of public pension expenditures shows that dependency ratio remains 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 between the starting years (that are increasing) and the year 2070 some of the population ageing was already realized.

Positive benefit ratio effect has halved compared to the previous exercise, in line with significant downward revision of the contributory period. Labour market and coverage ratio effect remains about the same as in Ageing Report 2021.

[13] For more information on the design of the sensitivity scenarios, see Chapter 5 of Part I in European Commission and EPC (2023), *'2024 Ageing Report: Underlying assumptions and projection methodologies'*, European Economy, Institutional Paper 257.

TABLE 18 – DISAGGREGATION OF THE CHANGE IN THE PUBLIC PENSION EXPENDITURE-TO-GDP RATIO IN CONSECUTIVE AGEING REPORTS (PPS OF GDP)

	Public pension expenditure	Dependency ratio effect	Coverage ratio effect	Benefit ratio effect	Labour market effect	Residual*
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
2024 Ageing Report (2022-2070)	**3.8**	5.4	-1.7	0.7	-0.3	-0.2

**Including interaction effect. The disaggregation for 2006/2009/2012 is on the basis of the number of pensions; for the other vintages it is on the basis of pensioners. The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.*
Source: European Commission, EPC.

Actual pension expenditure in % of GDP followed the projections very closely over the period 2019-2021, however, in 2022 pension expenditure relative to GDP fell considerably due to very favourable economic situation so that it even neutralised higher accrual rates due to shortened transition period (until 2023 instead of until 2025).

TABLE 19 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 PROJECTIONS AND ACTUAL PUBLIC PENSION EXPENDITURE IN 2019-2022 (% OF GDP)

	2019	2020	2021	2022
Ageing Report 2021 projections (% of GDP)	10.0	10.9	10.4	10.2
Assumptions (pps of GDP)	0.0	0.0	0.0	-0.2
Coverage of projections (pps of GDP)	0.0	0.0	0.0	0.1
Constant policy impact (pps of GDP)	-0.1	-0.1	-0.1	-0.2
Policy-related impact (pps of GDP)	0	0	0	0
Actual public pension expenditure (% of GDP)	9.9	10.8	10.3	9.8

Source: European Commission, EPC.

The largest negative impact on pension projections comes in the interpretation of constant policy, taking into account substantially lower contributory period. Assumed higher employment rates of older workers, together with assumed higher migrations drives the remaining decline.

TABLE 20 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 AND THE NEW PUBLIC PENSION PROJECTIONS (% OF GDP)

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	10.2	10.8	13.6	15.7	16.1	16.0
Change in assumptions (pps of GDP)	-0.2	0.1	-1.0	-1.2	-1.0	-0.9
Improvement in the coverage or in the modelling (pps of GDP)	0.1	0.0	0.0	0.0	0.0	0.0
Change in the interpretation of constant policy (pps of GDP)	-0.2	-0.1	-0.4	-1.0	-1.3	-1.4
Policy-related changes (pps of GDP)	0	0	0	0	0	0
New projections	9.8	10.8	12.1	13.5	13.8	13.7

Source: European Commission, EPC.

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

The projections were made with the same model and methodology as the previous exercise. 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 dynamic microsimulation pension model DYPENSI 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'.

Dynamic microsimulation pension model DYPENSI is a continuous-time model allowing for realistic sub-annual spell durations of processes like unemployment, maternity, and parental leave and related policies and benefits. It follows an interacting population approach and supports the alignment of various processes to external targets. DYPENSI aims to assess: a) the future pension expenditures and b) the adequacy of pensions. The model is implemented in MODGEN, a dynamic microsimulation programming technology.

4.1. Institutional context in which the projections are made

Projections were prepared jointly by the Institute of Economic Research, the Ministry of Finance and the Faculty of Economics, University of Ljubljana.

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, monitor the results of the AWG and to keep the ministries and the government informed. The members 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 internal review process in Slovenia.

4.2. 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 the Statistical office of the Republic of Slovenia (SURS), especially system of national accounts (European system of accounts – ESA). The statistical office provided also data at the micro level (Consumer Expenditure Survey and the data assembled for the dynamic microsimulation model DYPNESI, 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 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 starting population for the dynamic microsimulation pension model DYPENSI is drawn from a large cross-sectional dataset - a representative 20% sample - of the Slovenian population, combining various administrative sources from the Statistical Office of the Republic

of Slovenia, the Pension and Disability Insurance Institute and the Employment Service of Slovenia. The administrative data relate to demographic and socio-economic characteristics of individuals and families, incomes, data on employment and unemployment, work histories and data on current pensioners.

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

4.3. Reforms incorporated in the model

As described in Section 1.2.

4.4. General description of the model(s)

The chapter is divided into two parts. The first part of the chapter describes the model used for projections. The second part describes the dynamic microsimulation model DYPENSI whose results are used for the matrices, used as input for final projections.

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.

DYPENSI is a dynamic microsimulation model implemented in Modgen, freely available microsimulation technology. DYPENSI's dynamic nature implies that individuals experience changes over time. In other words, they 'live their lives' inside the simulation. In DYPENSI, time is modelled in a continuous as opposed to a discrete way: events such as births, labour market transition, unemployment, and death may occur at any time in a year. More precisely, the treatment of time as a continuous dimension implies that time is moved forward by events themselves as opposed to by a calendar being updated at periodical intervals. There are, in addition, monthly events (retirement decisions) and yearly events (such as the calculation of taxes; or poverty measures). The model has a closed interacting population. All actors are simulated simultaneously and can interact at any point in time. The model design enables us both to reproduce external scenarios through elaborate alignment routines. The baseline scenario is aligned with the demographic and macroeconomic assumptions used in the AWG projections exercise.

DYPENSI is highly modular and modules can be grouped into demographic modules, labour market modules, retirement modules, income modules and technical modules, which set out the simulation engine's basic functionalities.

Demographic modules include fertility, education, partnerships, children leaving home, immigration, emigration, disability, and mortality. Realism based on register/administrative data is added to demographic processes. For example, age-specific fertility rates by education and birth order are used to distribute children to mothers; mortality rates drive death events, but the selection depends on the education and disability status. Migration events reproduce the number of immigrants and emigrants by one-year age group, sex and year of migration according to EUROPOP2023 assumptions. On the top, we model return immigration and onward emigration within the alignment targets.

Labour market modules simulate entry into and exit from the labour market, labour market transitions between employment, unemployment and inactivity, and transition between employment sectors (private sector, public sector and self-employment). Hazard rates for transitions between all possible states are estimated with piecewise constant hazard regression models. Model results are regularly (monthly) aligned to the AWG assumptions about labour force participation rates and unemployment rates.

Income modules capture the monetary realm of the simulations. They calculate wages, taxes, and benefits, such as benefits related to parenthood, unemployment, and social exclusion. Most accounting operates in continuous time, e.g., unemployment wage compensation is calculated during unemployment; wage changes triggered by the completion of specific time intervals in employment (experience) or changes in employment status. Mincer equations for hourly wages are calculated continuously, separately by sex and employment sector (private, public, self-employed. AWG labour productivity assumptions are used as the alignment targets for real wage growth.

Retirement modules regulate old-age, disability and survivor retirement events and pensions. While disability and survivor pensions are linked to events (death of a relative or disability), old-age pensions depend on the fulfilment of retirement conditions together with retirement decisions. Individuals can retire only if their contributory period is sufficient and if they reach a legally set minimum retirement age. Additionally, individuals with fulfilled old-age retirement conditions can decide to work longer and receive higher pensions in future years. At the retirement event, the amount of the first pension is set in accordance with past earnings (calculated pension assessment base) and contributory period. Only a career spent in Slovenia counts for pension claims to the Slovenian pension system. Pensioners, as well as their population groups, are treated separately as residents or non-residents.

Exogenous data needed to run the model enter as demographic, macroeconomic, policy-related, and behavioural parameters for every simulation year. The model's structure allows for a straightforward simulation of changes in external assumptions (for example demographic parameters, labour force participation rates, etc.), policy parameters (for example the statutory retirement age, minimum age, etc.) and also parameters that drive the transitions between different labour market states or decisions (for example, coefficients for hazard rates, retirement decisions, decisions to work part-time, etc.). After the simulation, the results are written to pre-defined output tables which can be adjusted according to the needs (the content and the level of detail) before the simulation starts.

4.5. Other 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 also used a dynamic microsimulation pension model DYPENSI in order to estimate the impact of various pension parameters and transition periods.

Lower contributory period taken from the DYPENSI this time impacts the level of pensions in the age profiles-based model.

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)

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	27.9	42.1	63.0	90.6	128.0	177.6
Economy-wide average gross wage	29.2	44.0	65.9	94.8	133.9	185.8

Source: European Commission, EPC.

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 pensioners

The expenditures on disability pensions are driven by the number of disability pensions – by the disability rates and population by age groups. 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. Therefore, they move more in line with the number of people in old-age than number of employed in higher ages.

Survivors' pensions

It is expected that the share of survivor pensions will slightly 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 3.2).

Non-earnings-related minimum pension

Not applicable.

Contributions

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, same as in Ageing Report 2021.

Alternative pension spending disaggregation

Table A3 is similar to Table 8 but provides a disaggregation of the change in pension expenditure based on the number of pensions as compared to the number of pensioners in Table 8.

TABLE A2 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2022 AND 2070 (PPS OF GDP) – PENSIONS

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	0.9	1.3	1.4	0.3	-0.1	3.8
Dependency ratio effect	1.6	1.7	2.1	0.4	-0.6	5.2
Coverage ratio effect*	-0.7	-0.6	-0.5	-0.1	0.2	-1.6
Coverage ratio old-age	-0.2	-0.1	-0.2	0.0	0.1	-0.4
Coverage ratio early-age	-2.0	-2.2	-0.6	-1.1	0.0	-6.0
Cohort effect	-1.0	-1.3	-3.0	-0.4	1.7	-4.1
Benefit ratio effect	-0.4	0.5	0.1	0.0	0.3	0.5
Labour market effect	0.1	-0.2	-0.3	0.0	0.1	-0.2
Employment ratio effect	0.1	-0.2	-0.2	0.0	0.1	-0.3
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	0.0	0.0	0.0	0.0	0.0
Residual	0.2	0.0	-0.1	0.0	0.0	0.1

Source: European Commission, EPC.