

Economic Policy Committee - Ageing Working Group

# 2024 Ageing Report

## Estonia - Country Fiche

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## Introduction

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

This fiche was prepared by The Ministry of Finance of Estonia. 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 Estonia. 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<sup>1</sup>

## 1.1. Description of the pension system

The Estonian pension system is based on the widely used **three-pillar approach**. The first pillar is a point system public pension scheme with a flat rate. The second pillar was a mandatory (now with an opt-out possibility)<sup>2</sup> defined-contribution scheme. The third pillar is a voluntary private pension scheme. The second pillar is included in this EPC-AWG projection exercise because it has a significant impact on future overall pensions.

A multi-pillar pension scheme rests on the assumption that income after retirement comes from several different sources, each with its own legal, organizational, and financial principles. Current broad legal principles of the pension system are used since 1999-2000 with some changes from 2021 (see section 1.2). It was then established that the right to and the amount of future old-age pension is tied to the amount of social tax paid by or on behalf of the person over their career. The state pension is based on the principle of solidarity, which means that the current pensions are paid from the taxes of people who are currently working. The mandatory funded pension scheme was launched in 2002. The aim of the second pillar is to reduce the future stress of pension expenditure on taxation arising from a changing population composition by making people accrue pension assets themselves. The third pillar, the possibility for a voluntary supplementary funded pension, was created in 1998, even before the second pillar. It was established with the aim of providing people with an opportunity to ensure their retirement years are even more financially sound.

**The first pillar** of the Estonian pension scheme is a state pension insurance based on a pay-as-you-go financing principle and covers three social risks: old age, permanent incapacity for work (this is being phased out, see section 1.2 for more detail) and loss of a provider (survivor pension).

Protection ensured by state pension insurance includes two levels:

1. National, flat-rate, pension ensured for all residents of Estonia;
2. old-age and survivor pension based on working career.

Right to a “national” pension (**minimum pension**) starts at the statutory pension age, on the condition that the pension applicant has lived in Estonia for at least 5 years. The benefit is flat, the same for every applicant, and is currently 336.39 euro per month (from 1.04.2023). It is indexed annually along with other pension types with the same index (see below). The aim of the national pension is to ensure a basic income for retired people who have not earned the right to an old-age pension.

In 2024, the **statutory retirement age** for men and women is 64 years. The retirement age will gradually continue to increase for both sexes to 65 years by 2026. As of 2027, it will be **linked to changes in life expectancy** (average remaining life expectancy at 65y). For each year, an average of 5 years of life expectancy (at 65) increase (or decrease) is added. For any given year  $t$ , years  $t-4$  to  $t-8$  are used and compared to base years 2018-2022. There is an upper limit of three months for the annual pension age increase and each increase will be announced two years before coming into effect (see Table 1 below).

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<sup>1</sup> For an exhaustive description of pension schemes, please consult the [PENSREF database](#).

<sup>2</sup> See below and section 1.2 for more detail.

The qualification period for receiving an old-age pension is 15 years of pension system contributions or pensionable service (see Table 1 below).

**The old-age pension consists of four parts:** (1) base amount, (2) length-of-service component, (3) insurance component and (4) compound insurance and solidarity component.

1. The base amount is a flat-rate element.
2. The length-of-service component applies to periods of pensionable service until the end of 1998 and depends only on the length of service (in years).
3. The insurance component applies to pensionable service from 1999 to 2020 and depends on social tax paid by the insured (self-employment) or on their behalf by the employer or by the state.
4. Compound insurance and solidarity component applies to pensionable service from 2021 onwards. It also depends on social tax paid by the insured (self-employed) or on their behalf by the employer or by the state but has a flat element which is described below.

The pension system is a point system and includes a gradual transition through several rule changes which have tweaked the conditions with which pension points are accumulated. Depending on the period when a person has worked, he/she can have three different types of pension points accumulated in addition to the flat component of the pension.

**The pension formula** is as follows:

$$P = B + V \cdot \sum \left( s + A + \frac{A + s_2}{2} \right)$$

where:

$P$  – amount of pension (in euro);

$B$  – base amount (in euro);

$s$  – pensionable length of service<sup>3</sup> (until 1998, in years);

$A$  – pension insurance coefficients<sup>3</sup> (from 1999 to 2020);

$s_2$  – pensionable length of service with minimum contribution requirement<sup>3</sup> (the solidarity component) (from 2021);

$V$  – cash value of one year of pensionable length of service, the pension insurance coefficient (1.0 for average contribution) and the solidarity component (1.0 for a minimum or above contribution) (in euro).

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<sup>3</sup> These can be considered points in pension system terminology but are usually referred to as something resembling seniority or tenure in Estonian.

To calculate the annual pension insurance coefficient ( $A$ ) for a given individual, the pension contribution<sup>4</sup> in the specific calendar year is divided by the annual average pension contribution. These are proportional to earned wages. Hence, the annual pension insurance coefficient ( $A$ ) reflects the ratio of earnings of the person to the average earnings. The solidarity component ( $s_2$ ) is the same for all people earning the current minimum wage or more and is proportionally smaller for people who earn less (e.g., part-time workers, seasonal workers). This component was added to address projected pension inequality in the future arising from general wage inequality and the gender wage gap, which is large in Estonia.

Real values of pensions are influenced by the values of the base amount ( $B$ ) and the cash value of the annual score ( $V$ ), which are subject to regular indexation (see next two paragraphs). From 01.04.2023, the base amount ( $B$ ) is €317.92, which is about 45% of the average old-age pension and the cash value of the annual score ( $V$ ) is €8.68.

Adjustment of the pension benefit is done through regular **indexation**. The current pension index is used since 2008. Its aim is to guarantee a stable increase of pensions in line with economic developments and to diminish the need for *ad hoc* increases, as governments tended to do before the change.

The indexation system is based on social taxes (wages) and inflation. The pension index is a sum of 80% of the growth in social tax revenue and 20% of the annual change in the consumer price index. In addition, when applying the index to the four parts of the pension formula, different coefficients are used – 0.9 for the cash value  $V$  and 1.1 for the base pension amount, to further increase the solidarity in the system. When the index is negative, it is not applied (except for Members of Parliament pensions).

The index is calculated as follows:

$$i_{YearN} = 0.8 \cdot \left( \frac{SocialTax_{Year(N-1)}}{SocialTax_{Year(N-2)}} - 1 \right) + 0.2 \cdot CPI_{Year(N-1)}$$

**Early retirement** is possible for up to 5 years before the statutory retirement age. The minimum requirement for early retirement is 20 years of contribution to retire a single year early. For 2 years, 25 years of contribution are required and so forth with 5-year increments for each additional year of early retirement. The maximum early retirement of 5 years requires 40 years of contributions. Pension can be postponed indefinitely. Each year, new penalty and bonus rates for early or late retirements are calculated based on pension benefits, life expectancy and interest rates<sup>5</sup> so that the expected payouts for the overall public scheme remain neutral. The idea here is that whether a person retires early or late will not have an effect, on average, on pension spending. No restrictions or penalties are in place for working during early retirement or afterwards.

In addition to early and late retirement, the old-age pension has a **flexibility system** where a pensioner can take out half of the pension or halt the pension payments altogether. In this case, the unused pension share will increase in the same way as if a person had postponed retirement. People can

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<sup>4</sup> Pension part of the social tax.

<sup>5</sup> Interest rates are used to calculate a discount rate to determine the net present values of early or late pension benefits compared to the statutory pension.

change their mind or even halt pension payments once a month – or 12 times in a calendar year. Changes take effect from the following month. This is a recent change which could possibly increase old-age employment.

Besides the general state pension insurance, the Estonian pension system also includes some **special schemes** – old-age pensions with favourable conditions and superannuated pensions, enabling representatives of specific professions or persons with specific social status to retire before the general retirement age. Also, some categories of civil servants (for example judges, prosecutors, officials of the State Audit Office, police officers, members of the Defence Forces, Chancellor of Justice) have a right to favourable special pensions. The size of special pensions, although increasing, has remained limited (close to 0.1% of GDP). The government has committed to reduce the special rights. The pension addition paid to the public sector workers based on the length of service was for example abolished in 2013. The pension projections include all special schemes.

Public pensions are **financed** mainly from the state pension insurance part of the social tax (33% of the gross wage). The effective rate of the state pension insurance part of the social tax is 16% for persons having joined the 2<sup>nd</sup> pension pillar and 20% for those who have not joined. Any deficit is covered by the State budget. Surpluses cannot be used for other purposes than the financing of public pensions (see section 3.4 for a more detailed description).

According to the Pension Insurance Act, the Government of Estonia must analyse the impact of the increase in pension expenditure on the financial and social sustainability of the pension system every five years<sup>6</sup>. There is no strict mandate for the government to propose changes to the Parliament when problems arise, but the analysis is public, and the government and the Parliament usually discuss the results and proposals.

**The second pillar** of the Estonian pension system is a mandatory (voluntary as of 2021) funded scheme based on full pre-financing and covering only the risk of old age. Private asset management companies administer the second pillar pension funds. The second pillar is, in essence, an individual savings scheme, where the size of the pension depends on the total contributions over the career and rate of return of the pension fund.

Participation in the second pillar was mandatory for people born in 1983 or later. People born prior to 1983 and participating in the labour market could and can join the second pillar on a voluntary basis. The rate of second pillar contribution is 6% of wages – the employee pays 2% of his gross wage, which is supplemented by the state with 4% of gross wage on the account of social tax paid by the employer. In 2021, different opt-out options were introduced, making the pillar, in effect, voluntary. New entrants to the labour market are still automatically added to the second pillar but have the same opt-out options.

The retirement age in the second pillar is the same as in the first pillar. An additional requirement to receive a funded pension is that at least 5 years need to have passed since the first contribution to the scheme. The second pillar was launched in July 2002. Thus, the first benefits were paid in 2009 (benefits based on inheritance started from 2007). According to the law the main payment modality is a compulsory lifetime annuity. Insurers can offer only base (insurance) products for policy holders. Joint products are also allowed but they must meet the requirements of the base product. A guaranteed

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<sup>6</sup> The latest analysis was published in 2022. Estonian language links: <https://sm.ee/media/2733/download>; <https://sm.ee/pension-ja-tulevikuks-valmistumine/pension>



period may be stipulated so that the beneficiary or beneficiaries specified in a contract are entitled to payments made pursuant to the contract if the insured dies during the guaranteed period.

Table 1 presents the qualifying conditions for retirement in Estonia. These are used for projecting pension expenditure.

**TABLE 1 – QUALIFYING CONDITIONS FOR RETIREMENT**

		2022	2030	2040	2050	2060	2070	
Qualifying condition for retiring <b>with</b> a full pension	Statutory retirement age - men*	64y2m	65y6m	66y7m	67y8m	68y8m	69y10m	
	Statutory retirement age - women*	64y2m	65y6m	66y7m	67y8m	68y8m	69y10m	
	Minimum requirements	Contributory period - men	15y	15y	15y	15y	15y	15y
		Retirement age - men	64y2m	65y6m	66y7m	67y8m	68y8m	69y10m
		Contributory period - women	15y	15y	15y	15y	15y	15y
		Retirement age - women	64y2m	65y6m	66y7m	67y8m	68y8m	69y10m
Qualifying condition for retirement <b>without</b> a full pension	Early retirement age - men	59y2m	60y6m	61y7m	62y8m	63y8m	64y10m	
	Early retirement age - women	59y2m	60y6m	61y7m	62y8m	63y8m	64y10m	
	Penalty in case of earliest retirement age**	30.1%	:	:	:	:	:	
	Bonus in case of late retirement***	:	:	:	:	:	:	
	Minimum contributory period – men****	15y	15y	15y	15y	15y	15y	
	Minimum contributory period - women	15y	15y	15y	15y	15y	15y	
	Minimum residence period - men	5y	5y	5y	5y	5y	5y	
	Minimum residence period - women	5y	5y	5y	5y	5y	5y	

\* Reported retirement ages are calculated on the basis of life expectancy expectation in the Eurostat population projections (EUROPOP2023).

\*\* Future penalty and bonus rates are age-specific and depend on mortality and interest rate curve, see section 1.2 for a more detailed description.

\*\*\* This is highly dependent of how long the pension is postponed.

\*\*\*\* Early retirement requires 20 years of contribution as outlined above.

Source: Ministry of Finance of Estonia.

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

There have been several major changes to the pension system in recent years, most of which were already included in the 2021 Ageing Report (AR2021). The first four of these were passed as law in December 2018 as part of a broad pension reform.

1. Starting from 2027, the pension age will be **linked to changes in life expectancy** (average remaining life expectancy at 65y).
2. Starting from 2021, the **pension formula has been changed**. The old formula did not have the solidarity component, consisting of three components.

The old pension formula was as follows:

$$P = B + V \cdot s + V \cdot \sum A$$

where:

$P$  – amount of pension (in euro);

$B$  – base amount (in euro);

$s$  – pensionable length of service (until 1998, in years);

$A$  – pension insurance coefficients (1999-2020) (points);

$V$  – cash value of one year of pensionable length of service and the pension insurance coefficient 1.0 (in EUR).

Changes in the formula (see section 1.1 for the new formula) influenced pension distribution rather than on the overall pension expenditure.

3. Starting from 2021, the **early and late retirement rules** were changed. Previously, early retirement was possible 3 years before the official retirement age, but the benefit received (pension) would have been reduced by 0.4% for each month of early retirement. One could have also postponed retirement, after reaching the statutory retirement age, with a 0.9% higher pension benefit for each month of postponement. Working during early retirement would interrupt pension payments. Changes in these rules had little effect on the overall public pension expenditure projections.
4. Starting from 2021, a new **flexibility system** was introduced where an old-age pensioner can take out half of the pension or halt the pension payments altogether.

Two recent changes will affect **the second pillar**. Firstly, as a response to the COVID-19 pandemic, the State stopped paying the additional 4% into the second pillar for all people from 1 July 2020 until 31 August 2021. People had the option to stop their own payments from 1 December 2020 until 31 August 2021. Those who continued their payments are compensated by the State in 2023-2024 with the unpaid 4%.

Secondly, the Estonian Parliament passed a law reforming the second pillar on 11 March 2020. The law was not announced by the president and she petitioned the Estonian supreme court to declare the law unconstitutional. The supreme court rejected the petition on 20 October 2020<sup>7</sup> and the president announced the law on the same day. The reform allows people to opt out of the mandatory second pillar scheme as of 2021. People had four basic options:

1. Continue as is;
2. The accumulated pension assets were transferred to a special private investment account, the 2% and 4% payments go to that account, people basically became their own second pillar pension fund investment manager;
3. Stop the payments into the pillar, existing assets remain invested in the fund, the person can opt in again after 10 years;
4. Stop the payments and take out the assets (pay income tax), the person can opt in again after 10 years.

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<sup>7</sup> <https://www.riigikohus.ee/en/news-archive/supreme-court-did-not-declare-pension-reform-unconstitutional>

Following the 2020 changes, new entrants to the labour market are automatically added to the second pillar but they have the same four options as previously joined people.

By the end of 2022, 214,000 people had opted out of the second pillar, which is 31% of those who had previously joined. Out of those, 186,000 opted to do so in the first year available, in 2021, with only 29,000 people leaving the second pillar in 2022. Over the two-year period, 1,8 bn € was taken out of the second pillar funds. This is ~30% of the 2020 peak value of the funds of 5,8 bn €.

**Disability pensions** have been reformed. Disability pensions moved to the unemployment office (Estonian Unemployment Insurance Fund) and rebranded as **work ability benefits** (or work capability benefits). The last pensioners received the disability pension at the end of 2021. The reform started in 2016. Disability pensions were assigned to people based on a list of medical diagnoses rather than an assessment of their work capability. This led to an excess of disability pensioners, especially in areas with higher unemployment.

The work ability assessment procedures and guidelines were overhauled, made much more thorough and oriented towards people's potential in the labour market, rather than their ability to continue in their previous job.

Briefly, the new scheme is as follows. The unemployment office evaluates whether an applicant has full work ability, partial work ability loss or full work ability loss. The first group gets no benefit and are treated as regular unemployed. The second group is assigned a partial benefit and are also treated as unemployed (to receive the benefit, certain conditions have to be met, like seeking work, participating in services etc). The third group gets the full benefit with no special conditions. Most are assigned the partial benefit. The partial and full benefits are the same for almost all people. If you earn a high wage, the benefit is reduced, but most benefits are not affected by this. Full average benefit in 2023 is 558 euro and partial average benefit is 318 euro a month. Work ability benefits have the same indexation as old-age pensions. Following this reform, we have seen some employment and labour participation gains. Also, the overall number of benefit recipients has dropped by about a tenth, which has implications on the overall spending outlook. When a person reaches the pensionable age, he/she can no longer claim the work ability benefit. Also, their personal old-age pension cannot be smaller than his/her previous work ability benefit.

This reform has resulted in stabilisation and equalisation of inflows and outflows of people into and out of the disability, or work ability, system. Before the reform, a constant growth of disability pensioners was observed and projected. Considering this, for this projection, we are keeping the ratio of work ability benefit recipients to labour force constant for the whole projection horizon.

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

On top of changes to the second pillar which are described in sections 1.1 and 1.2 and are included in this projection, another minor change was legislated between AR2021 and the current projection. It was not covered in AR2021 since was not known in time of writing and will not be covered in this round as well.

The change was legislated in late 2022. Starting from 2025, second pillar contributors will have an option to increase their own<sup>8</sup> second pillar payments from the standard 2% to 4% or 6%. This option can be used once per year and will be in effect for the whole calendar year. The reasoning behind this is to give people more freedom to save for their retirement. Also, to give people who have opted out of the second pillar a change to catch up if and when they decide to rejoin. However, this change is not included in the projections since we have no solid basis to predict the behaviour of people. In the next projection round, this change will be included.

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<sup>8</sup> Not the portion that is contributed by the State.

## 2. Overview of the demographic and labour force projections<sup>9</sup>

Part 2 contains a description of the main demographic changes implied by EUROPOP2023 and the changes in the labour force as projected by the Cohort Simulation Model. These provide the framework for the pension expenditure projections.

### 2.1. Demographic projections

Since regaining independence at the beginning of the 1990s, the Estonian population has been declining due to various reasons. In 1990-1999 we had a very sharply declining fertility rate (from 2.1 to 1.3); emigration (more than 10% of the population left); flat or even declining life expectancy at birth (from 70y to 68y to 70y). Population decline is expected to continue, although the more recent EUROPOP projections have softened the fall considerably compared to earlier projections and compared to other Baltic states, which are also facing a negative demographic outlook. The reason is that there has been considerable remigration in recent years which has resulted in a small uptick in the overall population. Ageing of the population is more rapid in comparison with other European countries as the starting levels of life expectancy are currently relatively low but are expected to converge closer to EU average levels by 2070. Overall, Estonia's population would decrease only slightly in the next 50 years while gaining 6.8 and 9.8 years of life expectancy for women and men respectively (see Table 2).

Compared to AR2021, the population decrease has remarkably slowed down over the projection period (close to -10% in AR2021), with an improvement coming from a more positive net migration outlook. Life expectancy has been revised slightly downwards. Old-age dependency ratios have been revised also slightly downwards compared to the projections in the AR2021. The takeaway from these projections is that as the old-age dependency ratio is set to increase rapidly, pressure is added to the public pension system.

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<sup>9</sup> For more details, see European Commission and EPC (2023), [‘2024 Ageing Report: Underlying assumptions and projection methodologies’](#), European Economy, Institutional Paper 257.

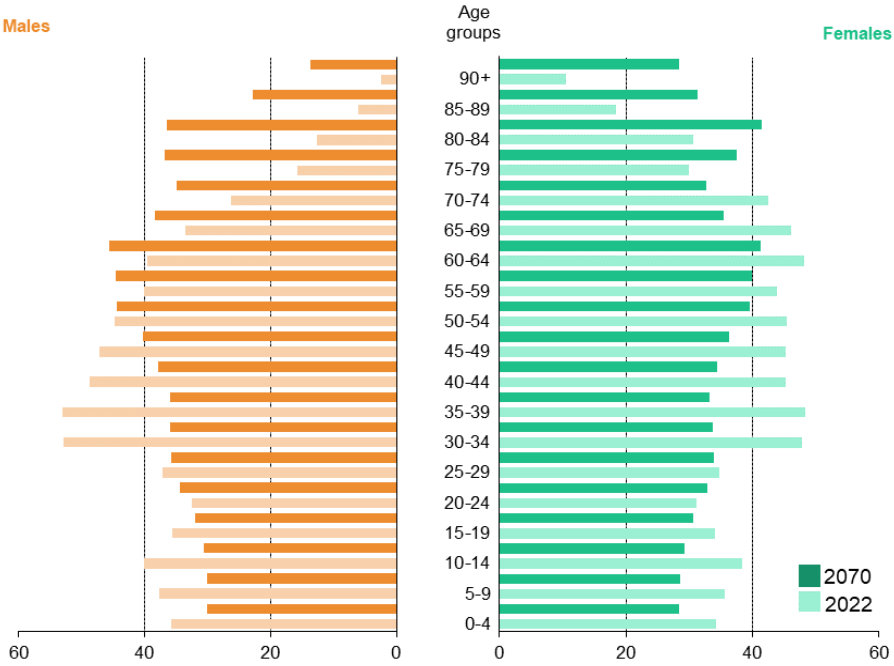
**TABLE 2 – MAIN DEMOGRAPHIC VARIABLES**

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	1 352	1 357	1 342	1 340	1 329	1 310	1 379	2024	-42
Population growth rate	1.6%	-0.3%	0.0%	0.0%	-0.1%	-0.1%	1.8%	2023	-1.7%
Old-age dependency ratio (pop 65+ / pop 20-64)	34.9	38.6	43.2	50.6	59.3	57.3	59.3	2059	22.4
Old-age dependency ratio (pop 75+ / pop 20-74)	13.5	15.6	18.8	21.6	25.9	30.2	30.4	2068	16.7
Ageing of the aged (pop 80+ / pop 65+)	29.3	28.2	32.6	33.4	35.3	44.7	44.7	2070	15.4
Men - Life expectancy at birth	74.3	76.0	78.3	80.4	82.3	84.1	84.1	2070	9.8
Women - Life expectancy at birth	83.0	84.3	85.8	87.2	88.5	89.8	89.8	2070	6.8
Men - Life expectancy at 65	15.8	16.9	18.3	19.7	21.0	22.2	22.2	2070	6.4
Women - Life expectancy at 65	20.9	21.9	23.1	24.2	25.3	26.3	26.3	2070	5.4
Men - Survivor rate at 65+	77.0	80.0	83.7	86.6	89.1	91.1	91.1	2070	14.1
Women - Survivor rate at 65+	91.3	92.5	93.7	94.6	95.5	96.2	96.2	2070	4.8
Men - Survivor rate at 80+	40.2	46.1	53.6	60.5	66.6	72.0	72.0	2070	31.8
Women - Survivor rate at 80+	69.2	73.0	77.2	80.9	84.0	86.6	86.6	2070	17.4
Net migration (thousand)	45.4	1.0	3.8	4.1	3.6	3.9	45.4	2022	-41.5
Net migration (% pop previous year)	3.4%	0.1%	0.3%	0.3%	0.3%	0.3%	3.4%	2022	-3.1%

Sources: Eurostat; European Commission, EPC.

The age pyramid (Figure 1) shows a typical ageing population outlook. Currently, cohorts representing more than 3% of the total population (25-59 for men and 25-69 for women) are mostly of working-age people. Age groups older than that decrease rapidly. The fertility rate is well below the natural replacement rate of 2.1 births per woman (1.41 in 2022) and thus, younger cohorts are considerably smaller than the current largest age groups. In the far future a much more uniform picture emerges with much smaller differences between age groups. This will add pressure on the pension system and the whole social protection system since fewer people are working relative to those that are dependent.

**FIGURE 1 – AGE STRUCTURE: 2022 VS 2070 (THOUSAND)**



Sources: Eurostat; European Commission, EPC.

### 2.2. Labour force projections

Labour force participation in Estonia has been increasing steadily for the past decade. The employment rate is well above the EU average and set to increase over the projection horizon. The ratio of employment and participation rate are expected to grow at almost similar rates. Overall, the labour market outlook is strong. One of the main reasons for this, is the recent reform linking the retirement age to life expectancy gains starting 2027. Labour force participation of older people (65-74) is projected to rise from 28% to 33%, while they are expected to be at almost full employment.

Since these assumptions might seem quite optimistic, especially compared to many other countries, some context is needed. Estonian labour market development has exceeded expectations of most economic analysts and forecasters with employment figures reaching records highs regularly and unemployment staying mostly below all the estimated levels of NAWRU which have regularly been revised down. However, this does not mean that Estonia is close to peak employment since we still see some room for improvement. There are regions in Estonia with constant high unemployment, also, skilled worker shortages in some sectors. Additionally, part-time work is on the rise, as well as new forms of employment. Longer term, more people are leaving the workforce than enter it, which would drive the employment rate up as well. Overall, we consider these assumptions realistic or at least possible.

**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	86.5	86.5	87.6	89.3	91.0	91.7	91.7	2070	5.1
Employment rate of workers aged 20-64	81.8	81.5	82.3	83.8	85.6	86.1	86.1	2070	4.3
Share of workers aged 20-64 in the labour force 20-64	94.6	94.2	93.9	93.9	94.0	94.0	94.6	2022	-0.6
Labour force participation rate 20-74	77.3	75.0	76.2	77.1	77.6	81.6	81.6	2070	4.3
Employment rate of workers aged 20-74	73.3	70.8	71.7	72.6	73.2	76.9	76.9	2070	3.6
Share of workers aged 20-74 in the labour force 20-74	94.8	94.4	94.1	94.2	94.3	94.3	94.8	2022	-0.5
Labour force participation rate 55-64	77.1	73.1	75.1	80.2	86.2	89.7	89.7	2070	12.6
Employment rate of workers aged 55-64	73.4	69.5	71.2	75.9	81.7	85.0	85.0	2070	11.6
Share of workers aged 55-64 in the labour force 55-64	95.3	95.1	94.8	94.7	94.8	94.8	95.3	2026	-0.5
Labour force participation rate 65-74	28.7	17.3	20.5	26.0	27.2	33.3	33.3	2070	4.6
Employment rate of workers aged 65-74	28.3	17.1	20.2	25.6	26.8	32.7	32.7	2070	4.4
Share of workers aged 65-74 in the labour force 65-74	98.8	98.6	98.3	98.2	98.3	98.2	98.8	2022	-0.5
Median age of the labour force	42.0	42.0	43.0	43.0	43.0	44.0	44.0	2062	2.0

Source: European Commission, EPC.

Table 4 summarise the estimated evolution of working career duration (contributory period) and life spent at retirement. It also provides evidence of the effectiveness of active labour market policies and penalties on early retirement on prolonging the working career. The average effective retirement age for both men and women is close to the statutory pension age (64 years and 2 months in 2022). The average labour market exit age is projected to rise by about 5 years for both men and women over the projection horizon. Considering recent reforms raising the pension age and life expectancy outlook, this seems plausible. Both men and women will see an increase in years spent in retirement, but men's increase is almost double that of women. This is in line with life expectancy projections – Estonian men are catching up with women. Also, men are expected to see a larger share of life spent in retirement while the ratio for women would stay roughly the same. Changes to the statutory retirement age will increase the ratio of early to late labour market exit.



**TABLE 4 – LABOUR MARKET EXIT BEHAVIOUR**

<b>TOTAL</b>	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.2	67.7	68.4	68.6	70.4	72.5	72.5	2065	9,4
Average labour market exit age (CSM)**	63.8	64.6	65.8	67.0	67.7	68.4	68.4	2070	4.6
Contributory period***	40.0	40.0	40.0	40.0	40.0	40.0	40.0	2022	0.0
Duration of retirement****	15.3	19.4	19.9	20.4	20.6	21.6	21.6	2070	6.4
Duration of retirement/contributory period***	38%	49%	50%	51%	52%	54%	54%	2070	16%
Percentage of adult life spent in retirement*****	24%	30%	30%	30%	30%	31%	31%	2028	7%
Early/late exit*****	0.5	1.4	1.7	1.5	1.3	2.9	3.1	2068	2.5

<b>MEN</b>	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	62.9								
Average labour market exit age (CSM)**	63.6	64.6	65.8	67.0	67.7	68.4	68.4	2070	4.8
Contributory period***	40.0	40.0	40.0	40.0	40.0	40.0	40.0	2022	0.0
Duration of retirement****	12.8	16.9	17.6	18.2	18.6	19.7	19.7	2070	6.9
Duration of retirement/contributory period***	32%	42%	44%	46%	47%	49%	49%	2070	17%
Percentage of adult life spent in retirement*****	20%	27%	28%	28%	28%	29%	29%	2070	8%
Early/late exit*****	0.5	1.7	2.1	1.6	1.3	3.1	3.2	2068	2.6

<b>WOMEN</b>	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.4								
Average labour market exit age (CSM)**	63.9	64.7	65.9	67.1	67.7	68.4	68.4	2070	4.5
Contributory period***	40.0	40.0	40.0	40.0	40.0	40.0	40.0	2022	0.0
Duration of retirement****	17.7	21.9	22.2	22.5	22.6	23.5	23.5	2069	5.8
Duration of retirement/contributory period***	44%	55%	56%	56%	57%	59%	59%	2069	15%
Percentage of adult life spent in retirement*****	27%	33%	33%	32%	32%	33%	34%	2028	6%
Early/late exit*****	0.4	1.1	1.4	1.4	1.3	2.7	2.9	2068	2.3

\* 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

Estonian AWG projections include old-age pension, deferred old-age pension, early retirement pension, old-age pension under favourable conditions; survivor's pension; pension for incapacity for work (disappears from the system<sup>10</sup>), “national” pension (minimum pension), Pension under Favourable Conditions for Different Professions (Police Officer's Pension, Prosecutor's Working Ability Benefit, Military Service Pension, Judge's Pension, National Audit Pension and Chancellor of Justice's Pension) - only the part financed from social tax, superannuated pension.

The differences between Eurostat and AWG pension expenditure are mostly small and not persistent over time. One possible reason might be some special pensions (not the favourable conditions mentioned previously), which are not financed from the social tax and are not managed by the Social Insurance Board and are not included in AWG projections but might be in ESSPROS database. These have no real impact on AWG projections, since these are in the process of being phased out. However, this would result in a persistent gap between two datasets. Other possibility is that some temporary COVID-19 measures to pensioners from both the state and the local governments have been classified as pension expenditure in the ESSPROS data, which would more likely explain the differences in 2020 and 2021. These would also have no impact on AWG projections.

**TABLE 5 – ESSPROS AND AWG DEFINITION OF PENSION EXPENDITURE (%GDP)**

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013-2021
Eurostat total pension expenditure	7,6	7,5	8,0	7,9	7,6	7,7	7,8	8,7	8,1	0,5
Eurostat public pension expenditure (A)	7,6	7,5	8,0	7,9	7,6	7,7	7,8	8,7	8,1	0,5
Public pension expenditure (AWG: outcome) (B)	7,7	7,7	7,9	8,1	7,7	7,9	7,8	8,3	7,8	0,2
Difference Eurostat/AWG: (A)-(B)	-0,1	-0,2	0,1	-0,2	-0,1	-0,2	0,0	0,4	0,3	0,5
<i>No expenditure categories not included in the AWG definition</i>										

Sources: Eurostat; European Commission, EPC.

### 3.2. Overview of projection results

Gross public pension expenditure (see Table 6) is expected to decrease over the projection horizon by less than 1 percentage point by 2070, from 7.4% of GDP in 2022 (peaking at 7.9% in 2028) to 6.7% of GDP in 2070. This has several reasons. Firstly, there is a gradual shift towards the second pillar. This is the main driving force behind the ratio of public spending between 2022 and 2070 (along with the demographic one). As the first payments from the funded pillar started in 2009, the impact on the benefit ratio will magnify with time (resulting in more and more of the retired persons receiving pension from both pillars). Secondly, the disability pension system has been reformed with the expected outcome of curbing some costs (and boosting labour market participation). The reformed disability pension (the new work ability allowance paid by the unemployment office, see section 1.2)

<sup>10</sup> The new work ability allowance which replaced the disability pension is added to the projections but is not fully incorporated into the pension projection model.

is included in these projections. Thirdly, the legal pension age will be linked to life expectancy increases so that people are projected to leave the labour market at a later age. However, comparing this result to AR2021 shows that in this round, this shift from first to second pillar is more gradual. The peak value for private contributions was 1.9% in 2070 in AR2021. The new peak is 1.2%, over a third less. This is attributable to some people opting out of the second pillar. The public pension expenditure had a steeper decline in AR2021 – from 7.8% in 2019 to 5.4% in 2070. This is also because of changes to the second pillar, which raises the first pillar pensions for those who have opted out. In addition, several discretionary increases in the flat rate pension were recently adopted to alleviate the impact of the rising cost of living in Estonia.

The overall balance of the public pension system shows a persistent deficit, but this is misleading to some extent. Indeed, the work ability allowance is included in the expenditure projections, but it is financed from other government revenue sources. Excluding this expenditure shows a smaller actual pension system deficit of around 0.5% of GDP, expected to reach balance by 2070.

**TABLE 6 – PROJECTED GROSS AND NET PENSION SPENDING AND CONTRIBUTIONS (%GDP)**

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
<b>Expenditure</b>									
<b>Gross public pension expenditure</b>	<b>7.4</b>	<b>7.8</b>	<b>7.6</b>	<b>7.5</b>	<b>7.5</b>	<b>6.7</b>	<b>7.9</b>	<b>2028</b>	<b>-0.7</b>
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	0.2	0.1	0.4	0.6	1.0	1.2	1.2	2070	1.1
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	7.6	8.0	7.9	8.1	8.5	8.0	8.5	2060	0.4
Net public pension expenditure*	7.1	7.7	7.4	7.3	7.3	6.6	7.8	2028	-0.5
Net total pension expenditure*	7.3	7.9	7.8	8.0	8.3	7.8	8.3	2060	0.5
<b>Contributions</b>									
Public pension contributions	6.1	6.1	6.1	6.1	6.0	6.0	6.3	2023	-0.2
Total pension contributions	7.4	7.3	7.3	7.2	7.2	7.2	7.4	2023	-0.2
<b>Balance of the public pension system (%GDP)**</b>	<b>-1.3%</b>	<b>-1.7%</b>	<b>-1.5%</b>	<b>-1.4%</b>	<b>-1.4%</b>	<b>-0.8%</b>	<b>-1.7%</b>	<b>2028</b>	<b>0.5%</b>

\*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.

Compared to AR2021, the overall gross public pension expenditure (see Table 7) has a slightly different scheme dynamic. While in the last projection, the spending was projected to decrease steadily, the new projections remain relatively flat in 2030-2070 (see also section 3.6). Also, compared to AR2021, the overall public spending is projected to decrease less. In AR2021 it was projected to fall to 5.4% of GDP by 2070 while in this projection, the value is 6.7% of GDP. The flat rate dynamic is influenced by recent flat rate increases while the earnings-related dynamic is influenced by the changes to the second pillar.

Peak values in spending in 2028 are influenced by current price and wage dynamics which drive up the pension indexation compared to GDP for several years. This effect abates in a few years' time and a steadier development follows.

Disability pensions (work ability allowance) are projected to decrease as a share of GDP since the working-age population is decreasing and the allowance is indexed (the same as old-age pensions) at a rate below wage growth. Survivor pensions and other pensions (which include the “national” pension and special occupational schemes, see section 3.1 for more details) have little effect on the overall

picture. The projections show that the flat component of old-age pensions remains at a steady level while the earnings-related portion is declining, mitigating some of the unequal distributional effects of the old formula and the increasing inequality from projected second pillar payouts.

**TABLE 7 – GROSS PUBLIC PENSION SPENDING BY SCHEME (%GDP)**

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
<b>Total public pensions</b>	7.4	7.8	7.6	7.5	7.5	6.7	7.9	2028	-0.7
Old-age and early pensions	6.0	6.5	6.3	6.3	6.4	5.7	6.5	2028	-0.3
<i>Flat component</i>	2.6	3.1	3.1	3.2	3.4	3.2	3.4	2061	0.6
<i>Earnings-related</i>	3.4	3.4	3.2	3.1	2.9	2.5	3.4	2025	-1.0
<i>Minimum pensions (non-contributory)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2024	0.0
Disability pensions (work ability allowance)	1.1	1.1	1.0	0.9	0.9	0.8	1.1	2024	-0.3
Survivor pensions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2024	0.0
Other pensions	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2022	-0.1

Source: European Commission, EPC.

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

This part provides more details about the development of public pension expenditure (Table 8). It uses a standard arithmetic disaggregation of the pension expenditure-to-GDP ratio into the dependency ratio, coverage ratio, benefit ratio and a labour market effect (Figure 2, first equation). Two further sub-decompositions have been agreed in the past. First, the coverage ratio can be split to look into the take-up ratios for old-age pensions and early pensions (second equation in Figure 2). Second, the labour market indicator is further disaggregated according to the third equation in Figure 2.

**FIGURE 2 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE**

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

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

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

Source: European Commission, EPC.

The breakdown of the pension expenditure evolution is shown in Table 8. The dependency ratio effect is positive – i.e., increasing pension expenditure by 3.9 pps of GDP by 2070 – and in line with demographic projections which show a large increase in old-age dependency ratios. Only in the last decade of the projection horizon is this effect negative, which is also in line with demographic projections.

The coverage ratio effect is negative. This is due to three reasons. Firstly, there is an ongoing increase of the statutory retirement age until 2026 and thereafter through the link to life expectancy gains. Secondly, recent changes in the early retirement rules, which make the penalty for early retirement larger and will therefore decrease spending. And thirdly, affecting the early-age coverage ratio, there is the disability pension reform. As they have been moved out of the pension system and the pension projection model, they have an effect on coverage numbers. The new work ability benefits are included in the expenditure projections but not in the number of pensioners and hence distort this ratio.

The benefit ratio effect is negative and is explained by the pension index which is consistently lower than average wage growth. This is partly offset by benefits from private pension schemes (see Table 9). The labour market effect is small.

**TABLE 8 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2019 AND 2070 (PPS OF GDP) – PENSIONERS<sup>11</sup>**

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
<b>Public pensions to GDP</b>	0.4	-0.3	-0.1	0.0	-0.7	-0.7
<b>Dependency ratio effect</b>	0.8	0.9	1.2	1.2	-0.2	3.9
<b>Coverage ratio effect*</b>	-0.7	-0.6	-0.6	-0.2	-0.2	-2.4
<i>Coverage ratio old-age</i>	-0.3	-0.5	-0.5	-0.2	-0.3	-1.7
<i>Coverage ratio early-age</i>	-3.9	-2.5	-0.5	-0.2	-0.7	-7.9
<i>Cohort effect</i>	-0.6	0.1	-1.5	-1.4	0.8	-2.6
<b>Benefit ratio effect</b>	0.2	-0.4	-0.4	-0.7	-0.2	-1.5
<b>Labour market effect</b>	0.2	-0.1	-0.3	-0.2	0.0	-0.4
<i>Employment ratio effect</i>	0.0	-0.1	-0.1	-0.2	0.0	-0.4
<i>Labour intensity effect</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect</i>	0.2	-0.1	-0.2	-0.1	0.0	-0.1
<b>Residual</b>	0.0	0.0	-0.1	-0.1	0.0	-0.2

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

Source: European Commission, EPC.

Table 9 illustrates the gradual shift from mainly first pillar spending to increasing second pillar spending. Accordingly, replacement rates from the PAYG scheme will fall and payments from private schemes will increase.

The overall public benefit ratio is low and coverage 100% because the work ability allowance (replacement for disability pensions) is included in these projections. The work ability allowance is smaller than old-age pensions. A more representative picture of public pension spending is in the old-

<sup>11</sup> For the disaggregation based on the number of *pensions*, see Table A3 in the methodological annex.

age section. Here we see a larger benefit ratio. However, the overall level of the ratio remains low. One of the reasons for this is that younger people tend to earn more than older people in Estonia, driving up the economy-wide gross wage. This is also reflected in slightly higher replacement rates, which show that compared to their last wages, the drop in income after retiring is not that steep. Still, the at-risk-of-poverty rate for pensioners has been one of the highest in the EU<sup>12</sup> for the past decade and is an ongoing policy issue in Estonia.

Total benefit ratio and total replacement rate at retirement remain steady over the projection horizon. Compared to AR2021, the replacement rate is at a slightly lower level, just under the 40% threshold. In AR2021 it reached a peak value of 44% by 2070. The benefit ratio is mostly the same for both projections.

**TABLE 9 – BENEFIT RATIO (BR), REPLACEMENT RATE AT RETIREMENT (RR) AND COVERAGE BY PENSION SCHEME (IN %)**

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public scheme (BR)	29%	30%	29%	28%	26%	24%	-4%
Coverage	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	32%	34%	32%	31%	28%	27%	-4%
Public scheme: old-age earnings related (RR)	36%	38%	36%	35%	32%	31%	-6%
Coverage	74%	74%	75%	75%	77%	76%	2%
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	6%	3%	5%	7%	9%	11%	5%
Private individual schemes (RR)	1%	3%	5%	8%	10%	13%	12%
Coverage	13%	23%	30%	34%	39%	40%	27%
Total benefit ratio	30%	31%	30%	30%	29%	29%	-1%
Total replacement rate (earnings-related benefits)	37%	39%	38%	38%	37%	37%	1%

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.

Table 10 shows some key factors describing the sustainability of the pension system. The number of pensioners projected is rather stable, changing only by about 5% from peak to bottom. This is the result of life expectancy gains, rising statutory pension ages, and increasing old-age employment rates. Employment for all age groups is projected to decrease by about 8%.

Compared to AR2021, employment projections are more favourable and thus the pension system dependency ratio increases more slowly, indicating that the sustainability has slightly improved.

<sup>12</sup> Estonia had the highest at-risk-of-poverty for people 65 and over in the EU in 2022, according to Eurostat data.

**TABLE 10 – SYSTEM DEPENDENCY RATIO AND OLD-AGE DEPENDENCY RATIO**

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	419	418	421	429	448	427	8
Employment (thousand) (II)	693	672	667	656	635	640	-54
Pension system dependency ratio (SDR) (I)/(II)	0.6	0.6	0.6	0.7	0.7	0.7	0.1
Number of people aged 65+ (thousand) (III)	275	301	329	365	401	390	115
Working-age population 20-64 (thousand) (IV)	786	780	762	722	676	680	-106
Old-age dependency ratio (OADR) (III)/(IV)	0.3	0.4	0.4	0.5	0.6	0.6	0.2
System efficiency (SDR/OADR)	1.7	1.6	1.5	1.3	1.2	1.2	-0.6

Source: European Commission, EPC.

The ratios presented in Tables 11 and 12 are slightly distorted by the disability reform. The replacement for the old disability pensions, the new work ability allowance is not projected by age groups, since no detailed breakdown by age group is available. Therefore, figures cover only old-age (and survivor and other) pension schemes.

For the age groups 60-64 and 65-69 (and somewhat for age group 70-74), we see a quite dramatic decrease in the ratio of pensioners to inactive and to the whole population indicating increasing labour activity due to increasing retirement ages. Differences between men and women are not substantial.

**TABLE 11 – PUBLIC PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP (%)**

<i><b>pensioners / inactive population</b></i>	2022	2030	2040	2050	2060	2070
Age group -54	2.8	2.7	2.9	2.9	2.9	3.0
Age group 55-59	19.4	16.2	15.6	19.1	26.7	28.7
Age group 60-64	96.6	34.7	20.3	14.9	17.7	20.9
Age group 65-69	170.1	128.3	104.9	79.8	51.4	27.2
Age group 70-74	131.2	117.6	117.9	119.9	120.3	111.1
Age group 75+	102.5	100.2	100.3	100.3	100.3	100.4

<i><b>pensioners / total population</b></i>	2022	2030	2040	2050	2060	2070
Age group -54	1.1	1.0	1.0	1.1	1.0	1.1
Age group 55-59	2.5	2.8	2.5	2.3	2.4	2.2
Age group 60-64	31.3	13.0	7.1	3.9	3.3	2.7
Age group 65-69	107.9	97.2	73.4	48.4	28.1	12.6
Age group 70-74	105.6	106.1	106.8	107.0	106.6	99.1
Age group 75+	102.5	100.2	100.3	100.3	100.3	100.4

Source: European Commission, EPC.

**TABLE 12 – FEMALE PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP (%)**

<b>female pensioners / inactive population</b>	2022	2030	2040	2050	2060	2070
Age group -54	2.4	2.8	3.1	3.1	3.0	3.1
Age group 55-59	16.7	13.5	13.1	19.8	28.9	31.5
Age group 60-64	95.6	34.1	17.0	13.2	18.7	22.7
Age group 65-69	165.9	131.8	104.8	77.9	50.2	25.1
Age group 70-74	130.7	119.4	120.7	120.8	120.4	110.4
Age group 75+	102.2	100.3	100.4	100.4	100.5	100.6

<b>female pensioners / total population</b>	2022	2030	2040	2050	2060	2070
Age group -54	0.9	1.0	1.1	1.1	1.1	1.1
Age group 55-59	1.7	2.8	2.5	2.5	2.6	2.4
Age group 60-64	31.0	12.2	6.3	3.6	3.4	2.7
Age group 65-69	107.2	97.6	73.8	48.7	27.9	11.7
Age group 70-74	105.3	106.7	108.2	107.3	107.0	99.5
Age group 75+	102.2	100.3	100.4	100.4	100.5	100.6

Source: European Commission, EPC.

Table 13 shows a more detailed picture of new pension expenditure. The accrual rate is decreasing because the pension insurance coefficient value is indexed with the standard pension index, the value of which is lower than the increase in wages. The low amount of new pension spending stems from the fact that the basic pension is not included in the calculation of accrual rates and that the share of pension rights in the first pillar is decreasing due to the implementation of the funded pillar. The difference in terms of average wages of men and women is over time transferred to the pension system and will result in lower pensions for women.



**TABLE 13 – BREAKDOWN OF NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS)**

<b>TOTAL</b>	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	34	47	71	87	115	111
I. Number of new pensions (1000)	17.9	16.8	17.4	18.4	18.9	14.1
II. Point value (EUR/month)	7.7	11.6	15.7	21.4	28.3	37.6
III. Average accrual rate (points/year) (IV/V)	1.0	1.0	1.1	0.9	0.9	0.9
IV. Total pension points at retirement	41	40	44	37	36	35
V. Average contributory period (years)	40	40	40	40	40	40
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0

<b>MEN</b>	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	14	22	37	47	64	61
I. Number of new pensions (1000)	7.6	7.5	8.5	9.2	9.9	7.3
II. Point value (EUR/month)	7.7	11.6	15.7	21.4	28.3	37.6
III. Average accrual rate (points/year) (IV/V)	1.0	1.0	1.2	1.0	0.9	0.9
IV. Total pension points at retirement	40	42	46	40	38	37
V. Average contributory period (years)	40	40	40	40	40	40
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0

<b>WOMEN</b>	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	20	25	34	40	51	49
I. Number of new pensions (1000)	10.3	9.3	8.9	9.1	9.0	6.8
II. Point value (EUR/month)	7.7	11.6	15.7	21.4	28.3	37.6
III. Average accrual rate (points/year) (IV/V)	1.0	1.0	1.0	0.8	0.8	0.8
IV. Total pension points at retirement	41	39	41	34	33	32
V. Average contributory period (years)	40	40	40	40	40	40
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0

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

Source: European Commission, EPC.

### 3.4. Financing of the pension system

Public pensions are financed mainly from the social tax, which is 33% of gross wage. This is paid by the employer; in case of self-employed, themselves; or by the State in some special cases. 13% of the social tax goes to health insurance and the other 20% is allocated purely to pension insurance. The full 20% is collected through the taxation system from all workers, but for those, who have joined the

second pillar, 4%<sup>13</sup> is transferred back to their private pension fund. So, the public pension contribution rate is, in effect, 16% for those that have joined the second pillar.

There is no hard link between public pension expenditure and social tax revenue. With the State Pension Insurance Act, the state has taken on the explicit obligation to cover any financing gap within the public pension scheme. There is no rule that the pension system cannot be in a current deficit. The state budget will automatically cover any current deficit of the pension insurance budget, i.e., any difference between social tax revenues and expenditures on public pensions. Surpluses cannot be used for other purposes than public pensions. In case there is a surplus, it will go into a pension reserve for future use. Expenditure on national pensions, pension supplements and work ability benefits (disability pensions) are covered from other state budget revenues. The main link between contributions and pension expenditure, which keeps the two in a long-term balance, is through indexation (see section 1.1 for details).

**TABLE 14 – FINANCING OF THE PUBLIC PENSION SYSTEM**

	Public employees	Private employees	Self-employed
Contribution base	Wage	Wage	Business income
Contribution rate/contribution			
<i>Employer</i>	20% (if not participating to 2 <sup>nd</sup> pillar); 16% (if participating to 2 <sup>nd</sup> pillar)	20% (if not participating to 2 <sup>nd</sup> pillar); 16% (if participating to 2 <sup>nd</sup> pillar)	20%
<i>Employee</i>	-	-	-
<i>State*</i>	-	-	-
<i>Other revenues*</i>	-	-	-
Maximum contribution	No limit	No limit	No limit
Minimum contribution	Minimum wage (previous year)	Minimum wage (previous year)	Minimum wage (previous year)

\*Only legislated contributions are reported

Sources: European Commission, EPC; Ministry of Finance of Estonia.

Public pension contributions are projected to remain very stable and to decline only by 0.2pp of GDP over the projection horizon. The public contributions and expenditure are projected to be almost in balance by 2070 (see Table 6 in section 3.2).

<sup>13</sup> There were periods when 3%+6% was possible.

**TABLE 15 – REVENUE FROM CONTRIBUTIONS AND NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME**

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public pension contributions (%GDP)	6.1	6.1	6.1	6.1	6.0	6.0	-0.2
<i>Employer contributions</i>	6.0	6.0	5.9	5.9	5.8	5.8	-0.2
<i>Employee contributions</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>State contribution*</i>	0.2	0.2	0.2	0.2	0.2	0.2	0.0
<i>Other revenues*</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of contributors (I) (1000)	668	672	667	656	635	640	-28
Employment (II) (1000)	693	672	667	656	635	640	-54
(I) / (II)	0.96	1.00	1.00	1.00	1.00	1.00	0.0

\*Includes only legislated contributions.

Source: European Commission, EPC.

### 3.5. Sensitivity analysis

Table 16 presents 9 alternative pension expenditure scenarios, each with its own different economic assumptions. Two scenarios, *linking the retirement age to longevity* and *constant benefit ratio* are covered by the base scenario and not presented in Table 16.

*Higher life expectancy scenario* would increase the part of life spent in retirement, thus resulting in higher spending in both the public and private part of the pension system. Although the retirement age will be linked to life expectancy increases, there is an adjustment cap. There is no built-in mechanism in the pension system to compensate for the increase in the number of pensioners.

*Higher/lower migration scenarios* have little effect on pension expenditure. The first will increase pension expenditure slightly in the long run, since more people work and earn pension rights. At the same time, the lower migration scenario will decrease pension expenditure slightly, but from the output side.

*The higher employment rate of older workers scenario* would increase pension expenditure slightly because they earn more pension points. We assume that they still take out the pension at the same age as in the baseline, because except for raising the statutory pension age, from our experience, very little behavioural effect can be expected in this regard.

*Higher/lower total factor productivity scenarios* would affect the payments from the 2<sup>nd</sup> pillar more than those from the PAYG scheme, as the 2<sup>nd</sup> pillar pensions are linked directly to contributions and PAYG pensions have also the flat rate component and the part related to number of years worked as well as a solidarity component. Since pensions are indexed to both social tax contributions and prices, the index is usually smaller than the nominal GDP growth. Hence, higher productivity will lower pension expenditure and lower productivity will increase expenditure (in relative terms).

*The constant retirement age scenario* would have largest effect on pension expenditure out of all the scenarios presented here. This is because the baseline projection includes a gradual retirement age increase from 65 to almost 70 years. Linking the retirement age to life expectancy gains is one of the main factors keeping the pension expenditure in check and this is illustrated clearly by this scenario.

**TABLE 16 – EXPENDITURE PROJECTIONS UNDER DIFFERENT SCENARIOS (PPS DEVIATION FROM BASELINE)<sup>14</sup>**

<i>Public pension expenditure</i>	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	7.4	7.8	7.6	7.5	7.5	6.7	-0.7
Higher life expectancy at birth (+2y)	0.0	0.0	0.1	0.2	0.4	0.5	0.5
Higher migration (+33%)	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Lower migration (-33%)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2
Lower fertility (-20%)	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Higher inflation scenario (2% by 2052)	0.0	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Higher employment rate of older workers (+10 pps)	0.0	-0.1	0.0	0.0	0.1	0.1	0.1
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.0	0.1	0.1	0.2	0.2
Policy scenario: link retirement age to longevity	:	:	:	:	:	:	:
Policy scenario: constant retirement age	0.0	0.5	1.2	1.9	2.1	2.4	2.4
Policy scenario: constant benefit ratio	:	:	:	:	:	:	:

<i>Total pension expenditure</i>	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	7.6	8.0	7.9	8.1	8.5	8.0	0.4
Higher life expectancy at birth (+2y)	0.0	0.1	0.3	0.4	0.5	0.6	0.6
Higher migration (+33%)	0.0	0.0	0.1	0.1	0.2	0.2	0.2
Lower migration (-33%)	0.0	0.1	0.1	0.1	0.1	-0.1	-0.1
Lower fertility (-20%)	0.0	0.1	0.1	0.2	0.3	0.3	0.3
Higher inflation scenario (2% by 2052)	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1
Higher employment rate of older workers (+10 pps)	0.0	0.0	0.1	0.2	0.2	0.1	0.1
Higher productivity (TFP converges to 1%)	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Lower productivity (TFP converges to 0.6%)	0.0	0.1	0.2	0.3	0.5	0.5	0.5
Policy scenario: link retirement age to longevity	:	:	:	:	:	:	:
Policy scenario: constant retirement age	0.0	0.6	1.4	2.4	2.6	2.9	2.9
Policy scenario: constant benefit ratio	:	:	:	:	:	:	:

Source: European Commission, EPC.

<sup>14</sup> 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.

### 3.6. Changes in comparison with previous Ageing Report projections

Table 17 shows the evolution of Estonian pension projections for subsequent Ageing Reports over the last 15 years.

Some trends emerge. Starting from 2009, each projection shows a larger decline in public pension expenditure. This is in line with raising the statutory pension age. However, in AR2024 this trend is broken due to changes in the second pillar, some discretionary flat rate increases in 2020, 2021 and 2023, and the current macroeconomic development (high inflation and wage growth) as outlined in section 3.2.

Dependency ratio effects are in a slight decline. This is in line with slightly improving population projections resulting from a more favourable migration outlook. The coverage ratio has a considerable downward effect on pension expenditure but there is no clear trend over time. The benefit ratio effect is clearly smaller than in all other previous projections. This is in line with the smaller decline of overall pension expenditure which has been explained in section 3.2. The labour market effect and the residual have less impact.

**TABLE 17 – 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 (incl. interaction effect)
2006 Ageing Report (2004-2050)	<b>-3.0</b>	3.1	-1.5	-3.8	-0.6	-0.2
2009 Ageing Report (2007-2060)	<b>-0.7</b>	4.6	-1.6	-3.1	-0.2	-0.4
2012 Ageing Report (2010-2060)	<b>-1.1</b>	6.7	-2.7	-3.3	-1.1	-0.6
2015 Ageing Report (2013-2060)	<b>-1.3</b>	5.4	-2.0	-3.8	-0.5	-0.4
2018 Ageing Report (2016-2070)	<b>-1.8</b>	4.6	-3.0	-3.0	0.2	-0.7
2021 Ageing Report (2019-2070)	<b>-2.3</b>	4.1	-2.4	-3.4	-0.4	-0.2
2024 Ageing Report (2022-2070)	<b>-0.7</b>	3.9	-2.4	-1.5	-0.4	-0.2

Source: European Commission, EPC.

Table 18 compares the projections of the 2021 Ageing Report with actual pension expenditure between 2019 (the previous base year) and 2022 (the new base year). We attribute most of the changes to the assumptions in the previous report. By 2022, the nominal GDP was 19% larger than predicted in AR2021 with similar changes in other assumptions like wages and inflation. However, this carries over to pension expenditure with some lag. We also attribute some of the change to unforeseen policy decisions in 2020 and 2021. These were two discretionary flat rate pension increases.

Table 18 – Disaggregation of the difference between the 2021 projections and actual public pension expenditure in 2019-2022 (%GDP)

	2019	2020	2021	2022
<b>Ageing Report 2021 projections (%GDP)</b>	7.8	8.7	8.2	7.7
<i>Assumptions (pps of GDP)</i>	0	-0.5	-0.7	-0.6
<i>Coverage of projections (pps of GDP)</i>	0	0	0	0
<i>Constant policy impact (pps of GDP)</i>	0	0	0	0
<i>Policy-related impact (pps of GDP)</i>	0	0.1	0.3	0.3
<b>Actual public pension expenditure (%GDP)</b>	7.8	8.3	7.8	7.4

Sources: European Commission, EPC; Ministry of Finance of Estonia.

Table 19 compares and disaggregates AR2024 projections to AR2021 projections. We attribute some of the changes to the discretionary flat rate increases in 2020, 2021 and 2023 as a policy related change (0.3pps of GDP in 2022 and 0.6pps of GDP from 2024 onwards). Some we attribute to changes to the second pillar which increases the cost to the first pillar (0.2pps of GDP in 2030, rising gradually to 0.5pps of GDP by 2070). This is a change to the constant policy assumption we made in AR2021. The rest stems from changes in the macroeconomic and demographic assumptions. We have made no changes to the model coverage.

**TABLE 19 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 AND THE NEW PUBLIC PENSION PROJECTIONS (%GDP)**

	2022	2030	2040	2050	2060	2070
<b>Ageing Report 2021 projections</b>	7.7	6.9	6.5	6.1	5.8	5.4
<i>Change in assumptions (pps of GDP)</i>	-0.6	0.1	0.3	0.5	0.8	0.2
<i>Improvement in the coverage or in the modelling (pps of GDP)</i>	0	0	0	0	0	0
<i>Change in the interpretation of constant policy (pps of GDP)</i>	0	0.2	0.2	0.3	0.3	0.5
<i>Policy-related changes (pps of GDP)</i>	0.3	0.6	0.6	0.6	0.6	0.6
<b>New projections</b>	7.4	7.8	7.6	7.5	7.5	6.7

Sources: European Commission, EPC; Ministry of Finance of Estonia.

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

### 4.1. Institutional context in which the projections are made

The pension projection model is managed by the Insurance Policy Department of the Ministry of Finance of Estonia. There is no formal review process for these projections inside the ministry, but the projections are open for scrutiny both within the ministry and outside, mainly to the Fiscal Policy Department of the Ministry of Finance and to the Ministry of Social Affairs. The projections are regularly used for budgeting and policy discussions.

In 2022, a regular 5-year update to the pension system sustainability was completed by the Ministry of Finance and the Ministry of Social Affairs<sup>15</sup> with input from many experts in the field.

### 4.2. Data used to run the model

In addition to the macroeconomic assumptions, the model uses pension and pensioner data from the Social Insurance Board and the national Pension Centre (Pensionikeskus).

### 4.3. Reforms incorporated in the model

See sections 1.1 and 1.2.

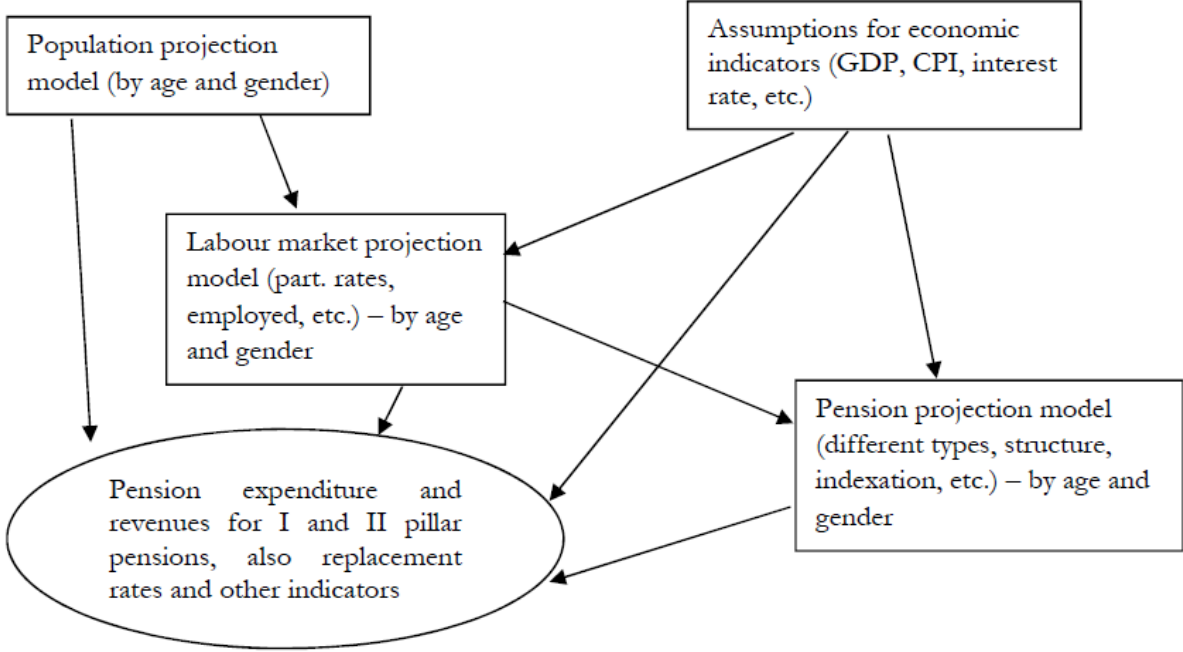
### 4.4. General description of the model(s)

The basic model structure is presented in Figure 3.

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<sup>15</sup> Estonian language links: <https://sm.ee/media/2733/download>; <https://sm.ee/pension-ja-tulevikuks-valmistumine/pension>

**FIGURE 3 – BASIC MODEL STRUCTURE**



**4.5. Other features of the projection model**

The model differentiates between men and women and different types of pensions. No differentiation is done by other socio-demographic variables.

For each age (and sex) cohort and for each year, an average pension right is calculated using the pension formula, labour statistics, wage statistics, second pillar participation etc.

Pension age is projected according to the law (see section 1.2). Early and late retirement ratios are assumed to be constant over time, e.g., when 10% of the people retire 3 years before the statutory retirement age, this is assumed fixed relative to the new statutory retirement age.



## Methodological annex

### Economy-wide average wage at retirement

Table A1 shows the economy wide gross wage at retirement and the economy-wide average wage. These are in line with productivity assumptions since they are largely evolving together. We have no different productivity assumptions for different age groups. What we observe is that younger workers earn considerably more than older, and this has remained largely unchanged over the past few decades. Although everyone's wages still rise.

**TABLE A1 – ECONOMY-WIDE AVERAGE WAGE AT RETIREMENT (1000 EUR)**

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	15.1	22.3	33.2	49.2	70.8	98.9
Economy-wide average gross wage	22.2	33.2	48.7	72.2	104.4	145.9

Source: European Commission, EPC.

### Pensioners vs pensions

The pension projections are broadly in line with the commonly agreed labour force projections but are not precisely derived from them. For the baseline projections of the number of pensioners and working pensioners, a constant ratio is assumed (except for the sensitivity tests). In our model, the number of pensions is exactly equal to the number of pensioners times 12.

### Pension taxation

The pension taxation projection assumes that the average pension is tax free which has been the historical norm in Estonia. Since the pension distribution changes somewhat over time, the taxation also varies accordingly to reflect the basic assumption.

### Disability pensioners

As stated in the body text, the disability part of the pension system has been phased out and replaced with a different system which is not part of the pension system. Although we have included the main aggregate projections of the new work ability allowance into the questionnaires. The projection was done by the Ministry of Finance and does not include disability rate by age groups, i.e., the rates are assumed to be the same for all ages. The allowance ends at the statutory retirement age.

### Survivors' pensions

The assumptions regarding the survivor pension projections are relatively straight-forward since the overall cost is quite small. A constant ratio of beneficiaries is assumed for each age group. No additional assumptions are made regarding household structure, different survival rates or reforms.

## Non-earnings-related minimum pension

In the nearer term, the take-up and expenditure will not grow considerably since most new pensioners have the minimum rights for a full pension met. However, in the longer term, the take-up will grow, with the expenditure since more people will not be able to meet the minimum requirements for full pension. This will also skew the pension distribution towards the lower end.

## Contributions

Implicit contribution rate is assumed to be constant over the projection horizon.

## Alternative pension spending disaggregation

Table A2 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
<b>Public pensions to GDP</b>	0.4	-0.3	-0.1	0.0	-0.7	-0.7
<b>Dependency ratio effect</b>	0.8	0.9	1.2	1.2	-0.2	3.9
<b>Coverage ratio effect*</b>	-0.6	-0.6	-0.6	-0.4	-0.1	-2.3
<i>Coverage ratio old-age</i>	-0.2	-0.5	-0.5	-0.2	-0.3	-1.6
<i>Coverage ratio early-age</i>	-3.2	-2.5	-0.5	-0.2	-0.7	-7.1
<i>Cohort effect</i>	-0.6	0.1	-1.5	-1.4	0.8	-2.6
<b>Benefit ratio effect</b>	0.0	-0.4	-0.3	-0.6	-0.4	-1.6
<b>Labour market effect</b>	0.1	-0.1	-0.3	-0.2	0.0	-0.5
<i>Employment ratio effect</i>	0.0	-0.1	-0.1	-0.2	0.0	-0.4
<i>Labour intensity effect</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect</i>	0.1	-0.1	-0.2	-0.1	0.0	-0.1
<b>Residual</b>	0.1	0.0	-0.1	-0.1	0.0	-0.1

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

Source: European Commission, EPC.