Economic Policy Committee - Ageing Working Group

2024 Ageing Report

Finland - Country Fiche

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Ministry of Finance, Finland

Finnish Centre of Pensions

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Introduction

The present country fiche for Finland 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, the Finnish Centre for Pensions and the Social Insurance Institution of Finland (Kela) in agreement with the *Ageing Working Group* of the *Economic Policy Committee* and based on a common set of assumptions and methodologies. The pension expenditure projections presented in this fiche 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 Finland. 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 methodology used to produce the pension projections.

1. Overview of the pension system[1]

1.1. Description of the pension system

The Finnish public pension scheme (1st pillar) consists of two statutory pension schemes. The first is a national pension scheme that guarantees a minimum pension to all residents. The second is an employment-based pension scheme tied to individuals' earnings. These schemes are closely interrelated, as illustrated in Figure 1, which depicts the characteristics of the statutory national pension scheme. The amount of the national pension is dependent on the size of the earnings-related pension benefits. Any increase in the earnings-related pension reduces the national pension by 50 percent of this increase. Moreover, an individual is ineligible for the national pension if the earnings-related pension exceeds a specified threshold[2]. In addition, an individual is eligible for a guarantee pension if the total pension benefit would otherwise be below a certain threshold[3].

FIGURE 1 – TOTAL PENSION IN 2022
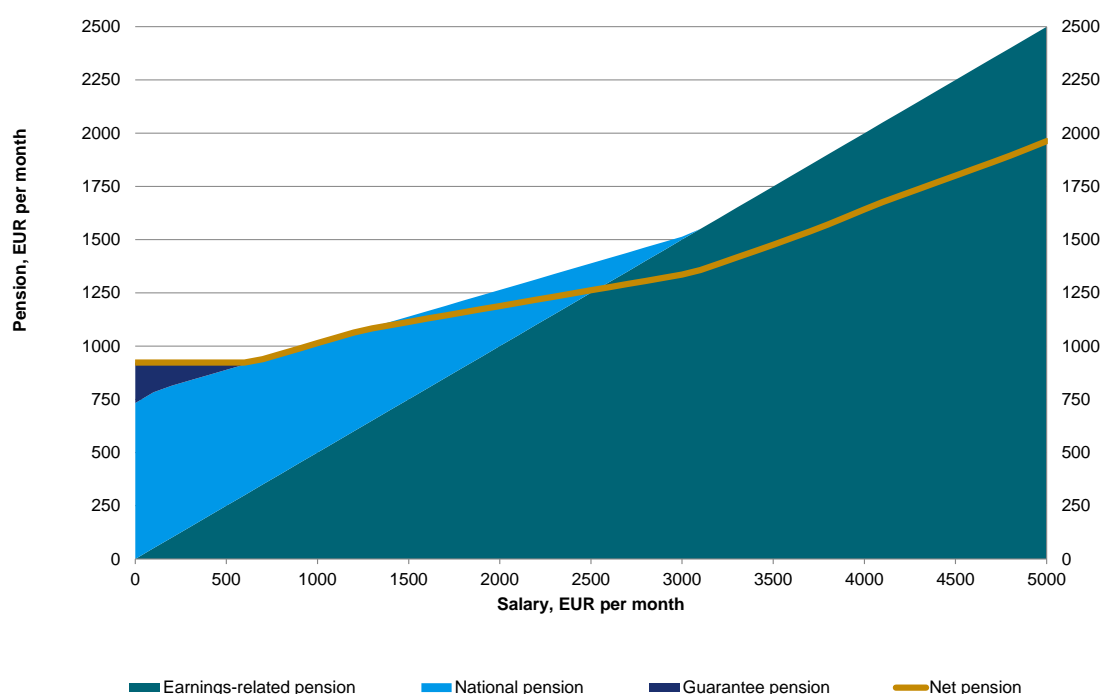
Source: Finnish Centre for Pensions.

At the end of 2022, around 1.65 million individuals were beneficiaries of the statutory pension scheme. Among these beneficiaries, approximately 580 000 individuals (constituting 30% of all beneficiaries) were recipients of both an earnings-related pension and a national pension. At the same time, 96 663 pensioners (equivalent to 6% of the total) solely received a national pension, while 115 553 (7%)

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[1] For an exhaustive description of pension schemes, please consult the PENSREF database.
[2] In 2023, this threshold is EUR 1512.38 per month for single-dwellers and EUR 1355.30 for married or a registered relationship. Full national pension for single-dwellers and those in a relationship is EUR 732.67 and EUR 654.13, respectively.
[3] In 2023, the threshold is EUR 914.97 per month.

pensioners received a guarantee pension. Considering all pension types, the total number of pension recipients amounted to around 30% of the population at the end of 2022.

The earnings-related pension system is based on a tripartite arrangement, involving employees, employers and the government. Private employees belong to four different sector-related schemes run by private pension providers. There are almost 30 pension funds and companies, varying in size. The pension companies compete with each other, and the employer chooses among the pension providers. However, there is a shared liability among the funds in the event of bankruptcy. The Finnish Centre for Pensions is the statutory central body of the private sector pension schemes. The Ministry of Social Affairs and Health is responsible for the general supervision of the earnings-related schemes.

Employees in the central government and local government as well as employees of the Finnish Evangelical-Lutheran Church are covered by a distinct earnings-related scheme, which is managed by the public sector pension provider Keva. The benefits in the different earnings-related pension schemes are harmonised, yet these schemes remain distinct mainly due to considerable disparities in their financing (see Section 3.4).

As a part of Finland's pension reform in 2017, the decision was made to gradually raise the minimum eligible age for old-age pension from 63 to 65 years and to subsequently link it to longevity, starting from the year 2030. From 2018, the lowest old-age retirement age has been incrementally raised from 63 years by three months for each successive age cohort. The increase in the minimum eligible age will continue until it reaches 65 years in 2027. For individuals born in 1957 or earlier, the insurance obligation concludes upon reaching the age of 68; for those born between 1958 and 1961, this obligation ceases at age 69; and for those born in 1962 or thereafter, it concludes at age 70. Table 1 provides a summary of the main parameters for the Finnish pension system.

TABLE 1 – QUALIFYING CONDITIONS FOR RETIREMENT

			2022	2030	2040	2050	2060	2070
Qualifying condition for retiring *with* a full pension	Statutory retirement age - men		64.5	65.4	66.2	66.9	67.6	68.3
	Statutory retirement age - women		64.5	65.4	66.2	66.9	67.6	68.3
	Minimum requirements	Contributory period - men	38	38	38	38	38	38
		Retirement age - men	63	63.4	64.2	64.9	65.6	66.3
		Contributory period - women	38	38	38	38	38	38
		Retirement age - women	63	63.4	64.2	64.9	65.6	66.3
Qualifying condition for retirement *without* a full pension	Early retirement age - men		61	62.4	63.2	63.9	64.6	65.3
	Early retirement age - women		61	62.4	63.2	63.9	64.6	65.3
	Penalty in case of earliest retirement age		0.4% per month, i.e. 4.8% per year - either 25% or 50% of the accrued pension can be drawn					
	Bonus in case of late retirement		0.4% per month, i.e. 4.8% per year - until the upper age limit of the old-age pension					
	Minimum contributory period - men		:	:	:	:	:	:
	Minimum contributory period - women		:	:	:	:	:	:
	Minimum residence period - men		National and guarantee pension: 3 years after having reached the age of 16 years					
	Minimum residence period - women		National and guarantee pension: 3 years after having reached the age of 16 years					

Source: Finnish Centre for Pensions, Ministry of Finance (Finland)

The minimum old-age retirement age is linked to life expectancy as of 2030, ensuring that the ratio of working years to retirement years remains at the 2025 level[4]. The annual increase in the retirement age is limited to a maximum of two months. In order to maintain the equilibrium between working years and retirement years, a continuous analysis of career progression, along with the economic and social sustainability of the entire earnings-related pension system, will be conducted periodically. Beginning

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[4] This ratio is kept constant through adjustments to the minimum old-age retirement age. The ratio is calculated in the following way: the difference between the minimum old-age retirement age and 18 years is divided by the life expectancy at the minimum old-age retirement age. The life expectancy is calculated using the mortality statistics from the most recent 5-year period.

in 2026, this analysis will be carried out on a tripartite basis, under the leadership of the Ministry of Social Affairs and Health, at five-year intervals.

As part of the 2017 pension reform, the years-of-service pension was introduced to provide a retirement pathway for individuals with diminished work capacity who do not meet the full disability pension criteria. This option requires a history of strenuous mental or physical work spanning at least 38 years, combined with reduced work ability. It is available to those born in 1955 or later and aged 63 or above. Starting from those born in 1965, the age limit for the career length pension will be adjusted according to changes in life expectancy, ensuring that the age limit for the years-of-service pension is two years lower than the lowest old-age retirement age of the age cohort. Notably, the years-of-service pension corresponds to the accrued pension amount at the onset of the retirement, excluding the projected pension component[5]. The projected period of the disability pension is linked to the minimum age of the old-age pension, which increases these pension benefits as the retirement age rises. Consequently, the years-of-service pension benefit is smaller in comparison to the disability pension benefit. Since its introduction in 2018, there were 104 beneficiaries of the years-of-service pension as of the end of 2022.

The earnings-related pension scheme also includes a partial early old-age pension. An individual can draw a part of the accrued old-age pension at the age of 61 years; in 2026 the minimum age limit is set to increase to 62 years. From 2027 onwards, the age limit will be three years below the minimum old-age retirement age. An individual can choose to draw either 25% or 50% of the accrued pension. The drawn part of the pension benefit is reduced permanently by 0.4% for each month the pension is drawn early, i.e. 4.8% per year. Early old-age pension is not affected by pay or working hours. The receipt of a partial early old-age pension does not prevent an individual from obtaining unemployment benefits, nor does it result in a reduction in unemployment benefits.

The accumulation of the earnings-related pension is governed by the following regulations. Pensions accumulate at a rate of 1.5 percent of wages per annum. Nevertheless, a higher accrual rate of 1.7 percent is applicable to individuals aged 53-62 until 2025, functioning as a transitional provision from the previous pension regulations[6]. There exists no upper limit for pension benefits or contributions. Upon retirement, the pension is multiplied by a life expectancy coefficient, which is computed for each birth cohort in the year they reach the age of 62 years. This serves the purpose of counteracting capital value growth in pensions attributed to increases in life expectancy after 2009. Starting in 2027, the life expectancy coefficient will be calculated in a more lenient manner than currently, coinciding with the universal retirement age of 65 years for all age groups[7]. In cases where an individual does not draw the old-age pension immediately upon reaching the minimum old-age retirement age, the accrued pension will be subjected to a 0.4% increment for each month of deferred retirement.

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[5] The projected period refers to the duration between the start of the disability pension (pension event) and the minimum old-age retirement age. In specific circumstances, the projected period is extended to enhance the disability pension. This extension aims to compensate for the pension that could not be accumulated due to the disability retirement taking place before reaching the minimum old-age retirement age.

[6] During the transition period the employee's pension contributions will be correspondingly 1.5 percentage points above the normal level.

[7] Currently, the life expectancy coefficient for a given year i is defined by the formula $E(2009,62)/E(i,62)$ where $E(i,62)$ is the longevity indicator, which refers to the capital value of a unit pension beginning at age 62 and is based on mortality data from the preceding 5 years. This calculation ensures that any effect that changes in longevity might have on pensions' capital values is neutralized in the long run. Starting from 2027, the life expectancy coefficient is re-defined as $(E(2009,62)/E(2026,62)) * (E(2026,65)/E(i,x))$ where x is the current general retirement age. This modification serves to mitigate the impact of the life expectancy coefficient, by preventing the double-counting of the rise in life expectancy due to the link between retirement age and life expectancy.

The earnings-related pension system incorporates two distinct indices. The first (pre-retirement index) valorises past earnings to the present level when computing the pension at the time of retirement. This "wage coefficient" puts a weight of 80% on wages and 20% on prices. The second index (post-retirement index) has the primary objective of preserving the purchasing power of earnings-related pensions by safeguarding them against inflation. In the "earnings-related pension index", consumer prices carry a weight of 80%, while wages are assigned a weight of 20%.

The financing of earnings-related pensions is a combination of a funded and a pay-as-you-go (PAYG) system. Pension contributions are obtained from both employers and employees. A portion of earnings-related pensions receives funding from the state budget. The central government provides financial support to supplement pension contributions for farmers and self-employed individuals, whenever the contributions fall short of the expenditures. Additionally, a fixed percentage of funding is allocated by the government to finance seafarers' pensions.

Within the private sector, the pre-funded scheme accounts for around a quarter of the total earnings-related pension expenditures. The remaining three-quarters are covered by financing through a PAYG system. Although the pension system is only partially funded, Finland's earnings-related pension scheme is categorized as a defined-benefit model. The pre-funding is collective in the sense that it has no direct effect on the pension amount. The primary objective of pre-funding is to mitigate the rise in pension contributions resulting from increased pension expenditures caused by the retirement of large age cohorts.

Pension-tested national pensions are administered by the Social Insurance Institution of Finland (Kela) and supervised by the Parliament. National pensions are designed to provide a basic retirement income for individuals with small or non-existent earnings-related pensions. All residents of Finland are eligible for the national pension if they have resided in Finland for a minimum of 3 years after turning 16 years old. The retirement age for the old-age pension corresponds to that of the earnings-related scheme. Opting to draw a pension prior to reaching the age of 65 is classified as early retirement, resulting in a permanent reduction of the pension amount by 0.4% for each month drawn prior to age 65. However, for individuals born in 1962 and onwards, early retirement is no longer feasible due to the increased retirement age of 65 years.

Similar to earnings-related pensions, the national pension can also be received as a disability or survivors' pension. The supplementary means-tested social assistance components available to pensioners include: pensioners' housing allowance, pensioners' care allowance, front-veterans' supplements, and child increase (for pensioners with dependent children). National pensions are financed by the state. The purchasing power of national pensions is maintained through indexing them to the consumer price index. The full amount of the national pension has also been occasionally increased.

The aim of the guarantee pension is to provide residents of Finland with a minimum pension if their total pension income before taxes does not exceed a certain threshold. All residents of Finland are eligible for the guarantee pension if they have resided in Finland for a minimum of 3 years after having reached the age of 16 years. Any other pension income an individual might receive from Finland or abroad affects the amount of the guarantee pension. A full guarantee pension is payable only to those with no other pension income. The sum of other pension income is subtracted from the total guarantee pension amount. However, the care allowance for pensioners, the front-veterans' supplements or the child increase supplementing a pension do not reduce the guarantee pension amount. This also applies to earnings, capital income, assets, and informal care allowance. Similar to other pensions, the guarantee pension affects both the amount of housing allowance payable and the amount of social assistance paid to a family. The guarantee pension is indexed to prices and financed by the state. The full amount of the guarantee pension has also been occasionally raised.

Voluntary pension schemes (the second and third pillars) have played only a minor role in Finland due to the relatively high net replacement ratio of public pensions, the lack of pension ceilings and full coverage of the systems. In terms of pension contributions, the statutory pension provision constituted 95% of the total pension provision, while the supplementary provision made up the remaining 5%. Therefore, when compared internationally, the proportion of supplementary pension provision in relation to the overall pension provision is relatively modest.

Finland has several *special pension schemes* classified in accordance with the commonly agreed EU methodology. Almost all special pension schemes are included in the projected total pension expenditure. The special pension schemes that are excluded from the projection only account for a minor portion of the overall pension expenditure. Consequently, their omission has a negligible impact on the outcome. Table 7 presents the expenditures of the main special pension schemes.

Years-of-service pension and the Seafarer's Pensions Act (MEL) are classified under the *difficult conditions* category. Seafarers' effective accrual rate or its equivalent used to be higher, but this is no longer the case. In addition, the State finances a third of the expenditures, as stated in the Seafarer's Pensions Act.

The State covers the share of the expenditure that is not covered by the contribution income under the Self-Employed Persons' Pensions Act (YEL) and the Farmers' Pensions Act (MYEL).Farmers' early retirement aid is fully financed by the State. However, this program closed to new participants in 2018 and it will be gradually phased out in the next two decades.

Public sector employees are classified under special pensioner schemes due to the more lenient eligibility criteria for disability pension compared to those in the private sector. Moreover, public sector employees have some more favourable provisions, which are gradually being phased out.

There are several minor pension schemes that are not separately modelled. These include the military and defence employees' pensions, MPs' adjustment pension and adjustment allowance, the pension of the President of the Republic and pension for the dancers of the Finnish National Ballet, whose retirement age is below the normal retirement age.

Finally, there are State financed supplementary pensions for (award-winning) artists and athletes, journalists (phased out) and spouses of diplomats. These supplementary pensions are not included in the projection because they are not funded from the earnings-related pension system.

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

A major pension reform was implemented in Finland from the beginning of 2017. The reform makes provision for an increase in life expectancy and its aim is to promote employment and secure the funding of earnings-related pensions, an adequate level of pensions and equality between generations and genders.

A reform to the survivor's pension scheme went into effect on 1 January 2022, impacting the survivors' pensions provided under the earnings-related pension scheme. The survivors' pensions consist of the surviving spouse's pension and the orphan's pension. The survivors' pension is granted to the legally married or common-law spouse, subject to specific conditions.

As a result of the reform, the surviving spouse's pension now has a defined limit for recipients born in 1975 and later. The surviving spouse's pension is payable for a maximum of 10 years but remains in place until the youngest child turns 18. In cases where a common-law spouse is the provider of an underage child, and the common-law relationship has persisted for at least 5 years, the surviving spouse's

pension can also be extended to them. Furthermore, the orphan's pension, which was previously limited to children up to 18 years of age, is now payable until the child reaches the age of 20. In instances where there is no surviving spouse, the computational portion of the surviving spouse's pension is directed to the children.

The reform does not apply to those born in 1974 or earlier and to survivor pensions paid in the case the deceased passed away in 2021 or earlier. For those who meet these criteria, the widow's pension will continue without any time constraints, and the eligibility criteria for widow's pensions will remain unchanged after the legislative reform. This means that the marriage must have been contracted before the deceased reached the age of 65. Additionally, if the spouses have or have had a common child, the widow is entitled to a family pension. In the absence of common children, specific conditions must be met for the widow to be eligible for a family pension.

On October 18, 2023, the Ministry of Social Affairs and Health and the Ministry of Finance established a working group to review the reform of the earnings-related pension system, as outlined in the Government Programme. The review aims to address the deterioration of the financial sustainability of the pension system, arising from a declining birth rate, an unfavourable dependency ratio, and sluggish economic growth. The key objectives of the reform include ensuring sufficient pension levels and coverage, promoting fairness between generations, and ensuring long-term fiscal sustainability.

The working group is tasked with analysing policy measures within the earnings-related pension scheme to enhance financial stability and secure adequate benefits. These changes are expected to contribute approximately 0.4 percentage points of GDP. Additionally, the group aims to develop a rules-based stabilisation system for the level of pension insurance contributions, allowing the system to adapt to potential shocks. The proposed long-term changes will not have an immediate impact on pensions. Upon concluding its term in January 2025, the working group's recommendations will serve as the foundation for the government's legislative proposal. The expected effects of this reform are not included in the pension projections.

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

The projection is based on the current pension legislation and other guiding regulations, with one exception. There is a deviation in indexation rules applied to the national pension and guarantee pension compared to the current legislation. While national pensions are adjusted by the consumer price index according to law, national pensions and guarantee pensions have been periodically adjusted to enhance their purchasing power. In the projections, starting from 2028, it is assumed that national and guarantee pensions are adjusted by a wage index, aligning with the common methodology established by the AWG. This adjustment increases the real value of national and guarantee pensions, ensuring that they keep pace with general growth in earnings. This modification is in line with the 'no-policy-change' assumption, which anticipates the continuance of the 'safety net' role of the minimum pension.

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

Chapter 2 presents an overview of the demographic and labour force projections, which constitute a foundational part of the pension projections. These projections indicate a significant trend of population ageing primarily driven by low fertility rates and increased life expectancy. This trend results in a projected increase in the elderly population and a concurrent decline in the working-age population. Furthermore, the projections indicate a continued increase in the labour force participation rate owing to increased participation among older age groups. Nevertheless, despite the increase in labour force participation it falls short of counteracting the decline in working-age population. Consequently, this leads to a decline in labour supply, impacting economic growth negatively.

The exposition of demographic and labour force projections in this chapter sets the stage for the pension projections detailed in Chapter 3.

2.1. Demographic projections

This section presents the results of the EUROPOP2023 demographic projections for Finland produced by Eurostat, used in the baseline pension projections.

Table 2 summarises the baseline projections for population, life expectancy, survival probabilities and net migration. Total population is expected to increase until the mid-2020s and then to turn to a decreasing trajectory. Population is projected to decrease from a peak of 5.64 million in 2026 to 5.23 million in 2070. In 2024-2070, total population is expected to decrease by annually by 0.16 percent on average.

TABLE 2 – MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	5,578	5,629	5,556	5,453	5,339	5,231	5,644	2026	-347
Population growth rate	0.7%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	0.8%	2023	-0.9%
Old-age dependency ratio (pop 65+ / pop 20-64)	41.2	45.4	46.5	50.3	57.1	62.4	62.4	2070	21.3
Old-age dependency ratio (pop 75+ / pop 20-74)	15.4	19.8	22.7	23.0	25.8	30.5	30.5	2070	15.1
Ageing of the aged (pop 80+ / pop 65+)	25.6	32.1	37.9	38.7	37.0	41.0	41.0	2070	15.4
Men - Life expectancy at birth	79.0	80.5	82.0	83.5	84.9	86.1	86.1	2070	7.1
Women - Life expectancy at birth	84.1	85.7	87.0	88.2	89.4	90.4	90.4	2070	6.3
Men - Life expectancy at 65	18.3	19.5	20.5	21.6	22.5	23.4	23.4	2069	5.1
Women - Life expectancy at 65	21.6	23.0	24.0	25.0	25.9	26.8	26.8	2070	5.2
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)	77.3	10.7	13.3	13.6	13.6	13.4	77.3	2022	-64.0
Net migration (% population previous year)	1.4%	0.2%	0.2%	0.2%	0.3%	0.3%	1.4%	2022	-1.1%

Source: Eurostat, European Commission.

In 2022, life expectancy at birth was 79.0 years for men and 84.1 years for women. Projections indicate that by 2070, these figures will increase to 86.1 years for men and 90.4 years for women. This represents a gain of 7.1 years for men and 6.3 years for women. Additionally, life expectancy at 65, an approximate

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

measure for the time spent in retirement, is projected to rise by 5.1 years for men and 5.2 years for women over the same period.

Figure 2 illustrates the age distribution in 2022 and the projected distribution for 2070. The proportion of individuals aged 75 and older is projected to notably expand, reflecting the expected increase in life expectancy for both genders. In contrast, the number of individuals within almost all age groups below the age of 70 are projected to decline between 2020 and 2070. This is related to low historical and projected fertility rates, as well as low net migration. In 2022, the total fertility rate was 1.39 and it is projected to increase to 1.53 by 2070. While net migration reached 77 300 in 2022, primarily driven by Ukrainian refugees, it is expected to remain at around 13 000 over the rest of the projection period.

FIGURE 2 – AGE STRUCTURE: 2022 VS 2070
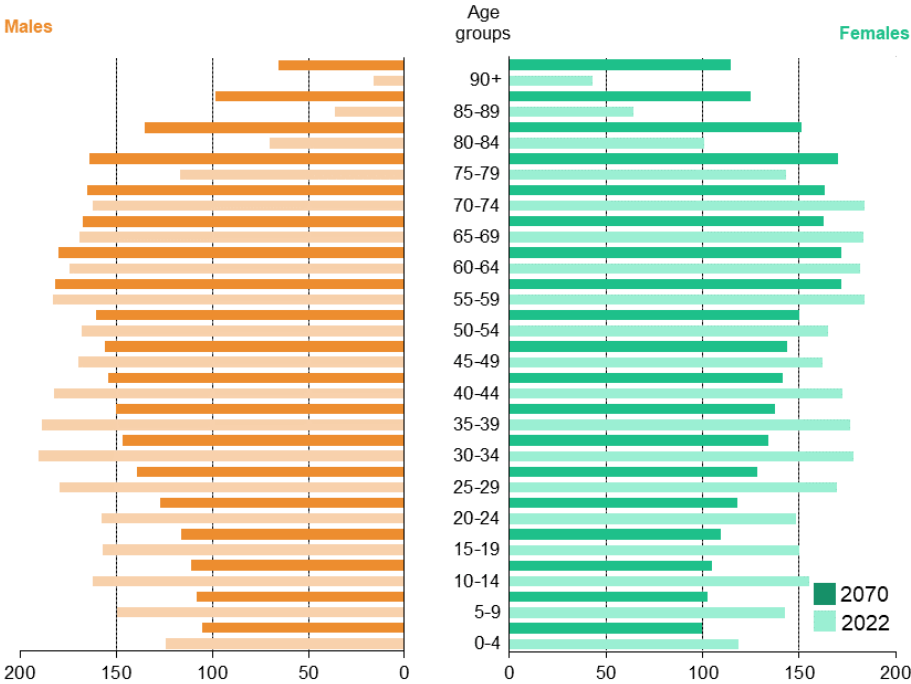
Source: Eurostat, European Commission.

Figure 3 depicts the projected share of individuals over 65 years and the 20-64 years to total population. The projected shares in the AR2018 and AR2021 are included for comparison. The share of individuals of 65 years is expected to increase steadily over the projection period. Over the same period, the share of population between 20 and 64 years is expected to decline to 51.5 percent in 2070.

Compared to AR2021, the share of older population is projected to rise at a slower rate. However, the percentage of people aged over 65 is projected to reach around 32% by 2070, consistent with the projection in AR2021. Additionally, the proportion of the working-age population (20-64 years) is also projected to decline at a slower pace. Nevertheless, the share of working-age population in 2070 is consistent with the AR2021 estimate. In contrast to AR2018, the share of older population is expected to grow at a considerably accelerated rate, although the decline in the share of working-age population is expected to take place more gradually.
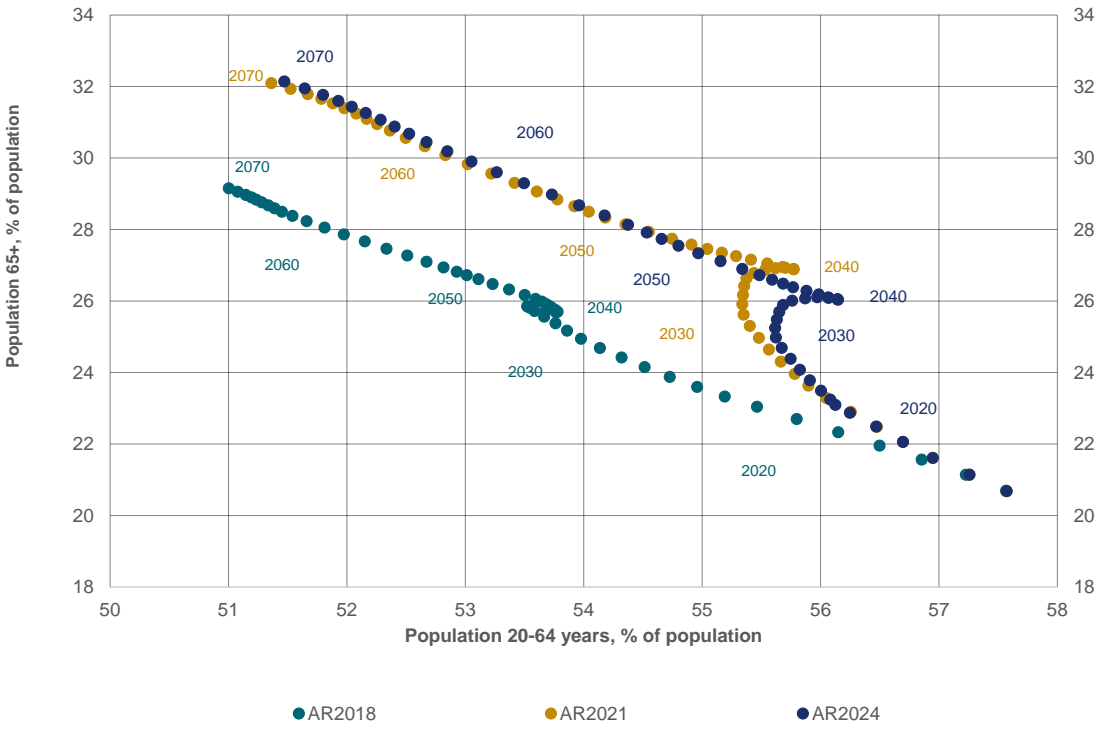
Source: Eurostat, European Commission, Ministry of Finance (Finland).

Figure 4 shows the projected old-age dependency ratio (the ratio of persons aged 65 and above to 20-64-year-olds), including a comparison to the previous projections. The old-age dependency ratio (the ratio of persons aged 65 and above to 20–64-year-olds) is projected to increase during the whole projection period. In 2022, the old-age dependency ratio was 41.2%, and it is projected to rise to 62.4% in 2070. The projected increase in the old-age dependency ratio is due to a steady increase in life expectancy, while the fertility rate is projected to remain at historically low levels.

FIGURE 4 – OLD-AGE DEPENDENCY RATIO: SHARE OF 65+ TO 20-64 YEAR-OLDS, %
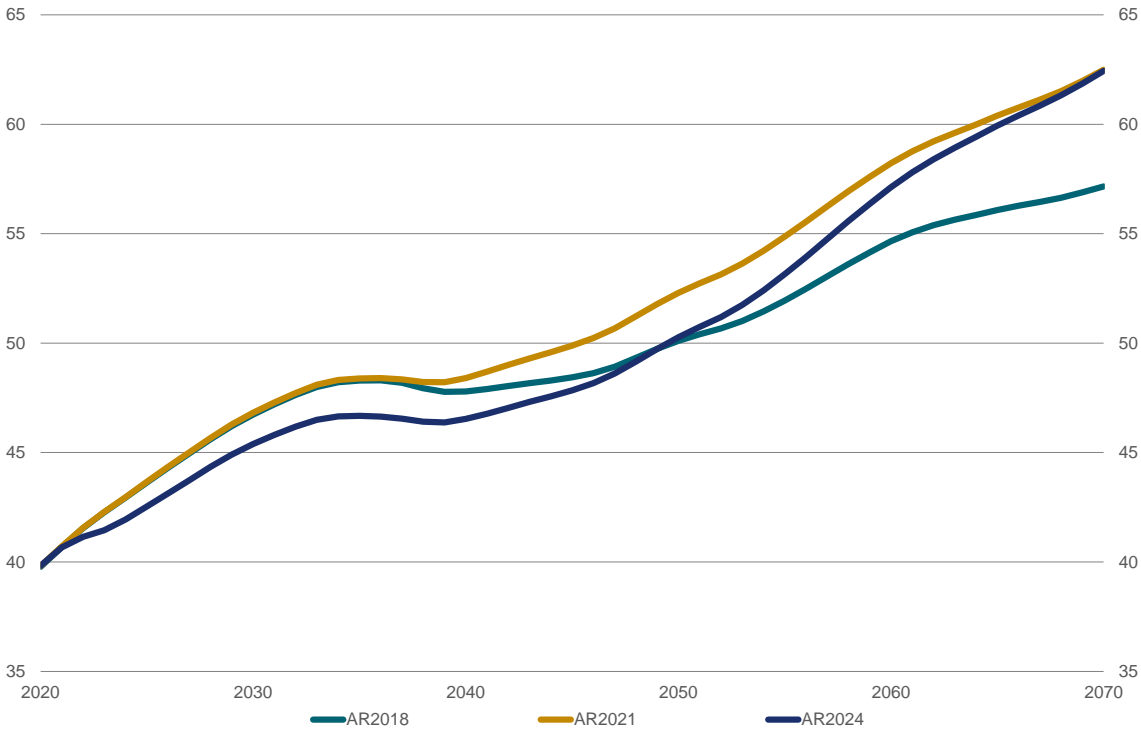
Source: Eurostat, European Commission, Ministry of Finance (Finland).

2.2. Labour force projections

The labour force is projected by the Commission on the basis of the demographic projections by Eurostat described in the previous section and the participation rates as projected by means of the Cohort Simulation Model.

Table 3 shows the expected changes in the employment and participation rates for the overall population at working age (20-64 and 20-74) and older age groups (55-64 and 65-74) that are the most affected by any pension reforms that shift retirement ages or by active labour market policies.

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	83.7	82.5	83.7	84.5	85.0	85.6	85.6	2070	1.9
Employment rate of workers aged 20-64	78.3	77.7	78.6	79.3	79.8	80.3	80.3	2070	2.0
Share of workers aged 20-64 in the labour force 20-64	93.6	94.2	93.9	93.9	93.9	93.8	94.5	2027	0.2
Labour force participation rate 20-74	70.9	70.2	72.2	72.4	72.3	73.7	73.7	2070	2.8
Employment rate of workers aged 20-74	66.5	66.2	67.8	68.1	68.0	69.3	69.3	2070	2.8
Share of workers aged 20-74 in the labour force 20-74	93.8	94.3	93.9	94.0	94.1	94.1	94.6	2027	0.3
Labour force participation rate 55-64	77.0	69.0	74.0	78.0	80.2	83.1	83.1	2070	6.0
Employment rate of workers aged 55-64	71.5	64.4	68.9	72.5	74.6	77.2	77.2	2070	5.8
Share of workers aged 55-64 in the labour force 55-64	92.7	93.4	93.0	93.0	93.0	93.0	93.7	2027	0.2
Labour force participation rate 65-74	13.8	12.2	12.8	17.8	21.3	25.2	25.2	2070	11.4
Employment rate of workers aged 65-74	13.4	11.9	12.5	17.2	20.7	24.5	24.5	2070	11.0
Share of workers aged 65-74 in the labour force 65-74	97.1	97.2	97.1	97.1	97.1	97.1	97.3	2027	0.0
Median age of the labour force	41.0	40.0	42.0	43.0	44.0	44.0	44.0	2057	3.0

Source: European Commission.

In 2022, the labour force participation rate reached record levels as the economy rebounded from the COVID-19 pandemic. However, it is expected that the labour force participation will gradually decrease across all age groups from these peak levels by 2030. Subsequently, labour force participation rates are expected to increase over the projection period, surpassing the 2022 levels.

Among the age groups, the most significant increases in labour force participation rates are expected among older workers. This trend is primarily driven by delayed retirement, as the minimum eligibility age for old-age retirement is linked to the increasing life expectancy. Additionally, as people live longer and healthier lives, they will need to prolong their careers in order to finance their living throughout their longer lifespans. For people aged 55 to 64 years, labour force participation is projected to increase steadily to 83.1% in 2070. At the same time, the participation rate for people aged 65 to 74 years will increase almost two-fold from 13.8% in 2022 to 25.2% in 2070.

Figure 5 illustrates the projected labour force participation rates within specific age groups, including a comparison with the projections in AR2021. By 2070, participation rates within these age groups are projected to surpass those of AR2021.

FIGURE 5 – LABOUR FORCE PARTICIPATION RATE IN SELECT AGE GROUPS, %
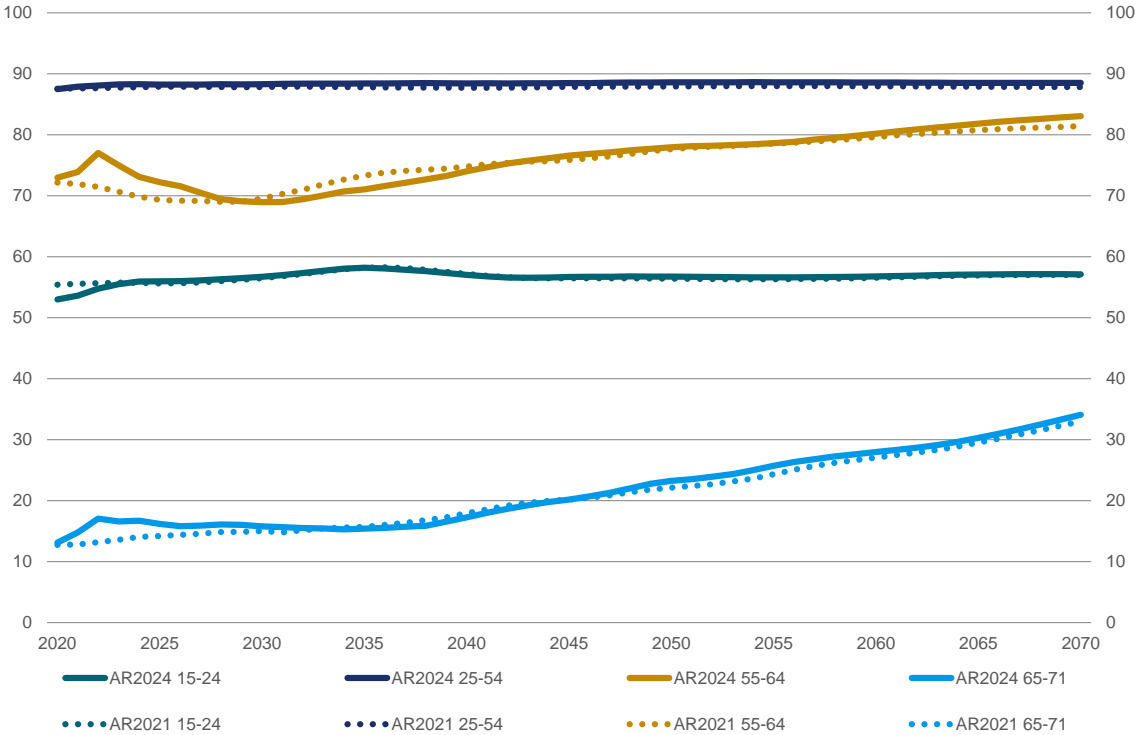
Source: European Commission.

The labour force participation among 20-74 year-olds is shown in Figure 6, including a comparison with the two previous Ageing Reports. The labour force participation rate is to rise over the projection period after an initial decrease from the current high levels. The labour force participation rate among 20-64 year-olds is expected to reach 85.6% in 2070, increasing 1.9pp from 83.7% in 2022. Owing to the increase in the labour force participation rate, the employment rate for 20-74 year-olds is expected to increase by 2.8pp over the projection period, rising from 66.5% in 2022 to 69.3% in 2023.

FIGURE 6 – LABOUR FORCE PARTICIPATION RATE 20-74 YEARS, %
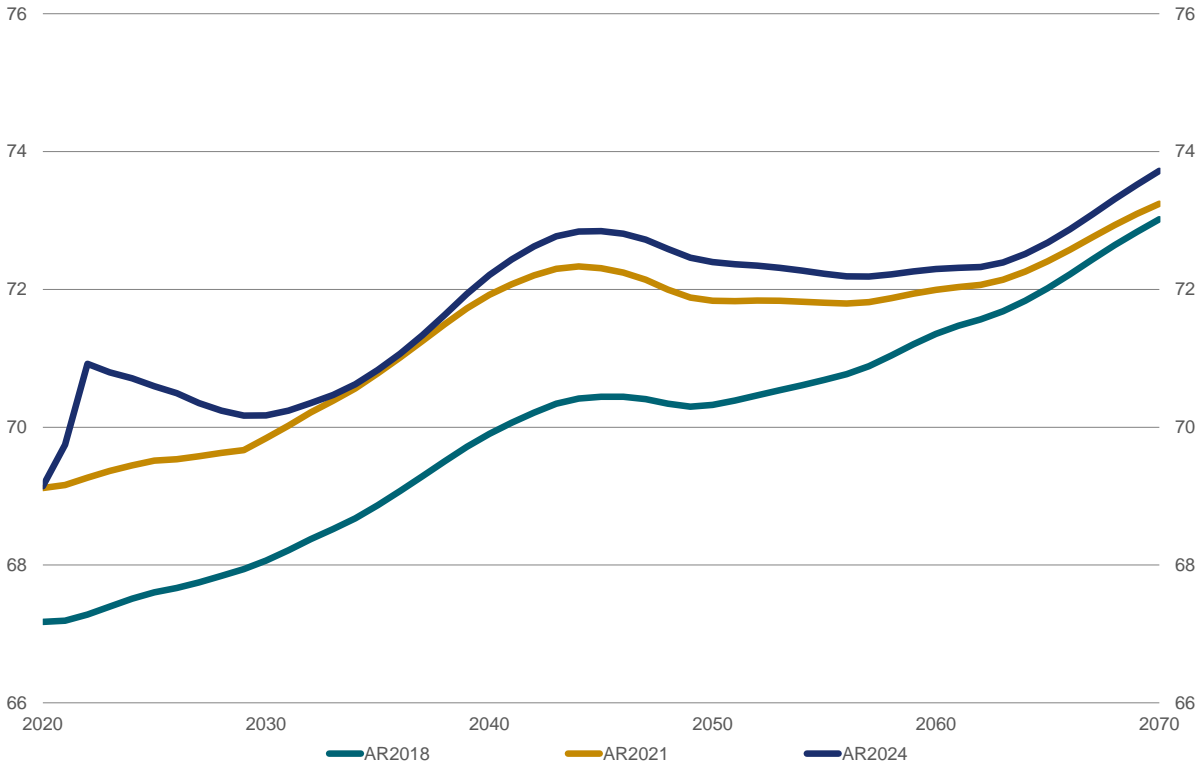
Source: European Commission.

Table 4 summarises the estimated development of career duration, the average labour market exit that corresponds with the participation rate projections, and the years spent in retirement for men and women. The average effective retirement age is expected to increase by 3.3 years between 2022 and 2070. Over the same period, the average labour market exit age is expected to increase by 4 years, with the exit from the labour market on average taking place approximately one year after one starts to draw a pension. This can be seen in Figure 7, which shows the projected average effective retirement age and the lower and upper age limits for old-age pensions. Over the projection period, the average effective exit age is expected to increase by 3.8 years for men from 2022 to 2070 and by 4.2 years for women.

The average contributory period is projected to increase by 0.9 years for men and 2.2 years for women. The duration of retirement is projected to increase by 5.7 and 9.9 years by 2070 for men and women, respectively.

TABLE 4 – LABOUR MARKET EXIT BEHAVIOUR

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.3	63.7	64.2	65.0	65.6	65.9	65.9	2070	2.6
Average labour market exit age (CSM)**	63.4	63.9	65.2	65.8	66.6	67.4	67.4	2070	4.0
Contributory period	37.6	38.0	36.7	37.7	38.3	39.2	39.2	2070	1.6
Duration of retirement***	15.5	22.1	21.9	22.4	22.9	23.3	23.3	2070	7.8
Duration of retirement/contributory period	41%	58%	60%	59%	60%	59%	61%	2048	18%
Percentage of adult life spent in retirement****	23%	33%	33%	33%	33%	33%	34%	2032	10%
Early/late exit*****	0.8	1.0	1.3	1.8	1.0	2.2	2.2	2070	1.4

MEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.3								
Average labour market exit age (CSM)**	63.7	64.2	65.6	66.2	66.8	67.4	67.4	2070	3.8
Contributory period	38.2	38.5	36.9	37.8	38.6	39.1	39.1	2025	0.9
Duration of retirement***	16.0	20.3	19.7	20.7	20.8	21.7	21.7	2070	5.7
Duration of retirement/contributory period	42%	53%	53%	55%	54%	55%	56%	2055	14%
Percentage of adult life spent in retirement****	25%	31%	30%	31%	31%	31%	32%	2032	7%
Early/late exit*****	0.8	0.9	1.2	1.6	1.0	1.8	1.8	2070	1.0

WOMEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.2								
Average labour market exit age (CSM)**	63.2	63.7	64.8	65.5	66.4	67.4	67.4	2070	4.2
Contributory period	37.0	37.5	36.4	37.5	38.0	39.2	39.2	2069	2.2
Duration of retirement***	15.0	23.9	24.0	24.1	25.0	24.9	25.1	2061	9.9
Duration of retirement/contributory period	41%	64%	66%	64%	66%	64%	67%	2048	23%
Percentage of adult life spent in retirement****	22%	35%	35%	35%	35%	34%	36%	2025	12%
Early/late exit*****	0.7	1.0	1.4	2.0	1.1	2.5	2.5	2070	1.8

*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.

FIGURE 7 – AVERAGE EFFECTIVE RETIREMENT AGE AND OLD-AGE RETIREMENT AGE, YEARS
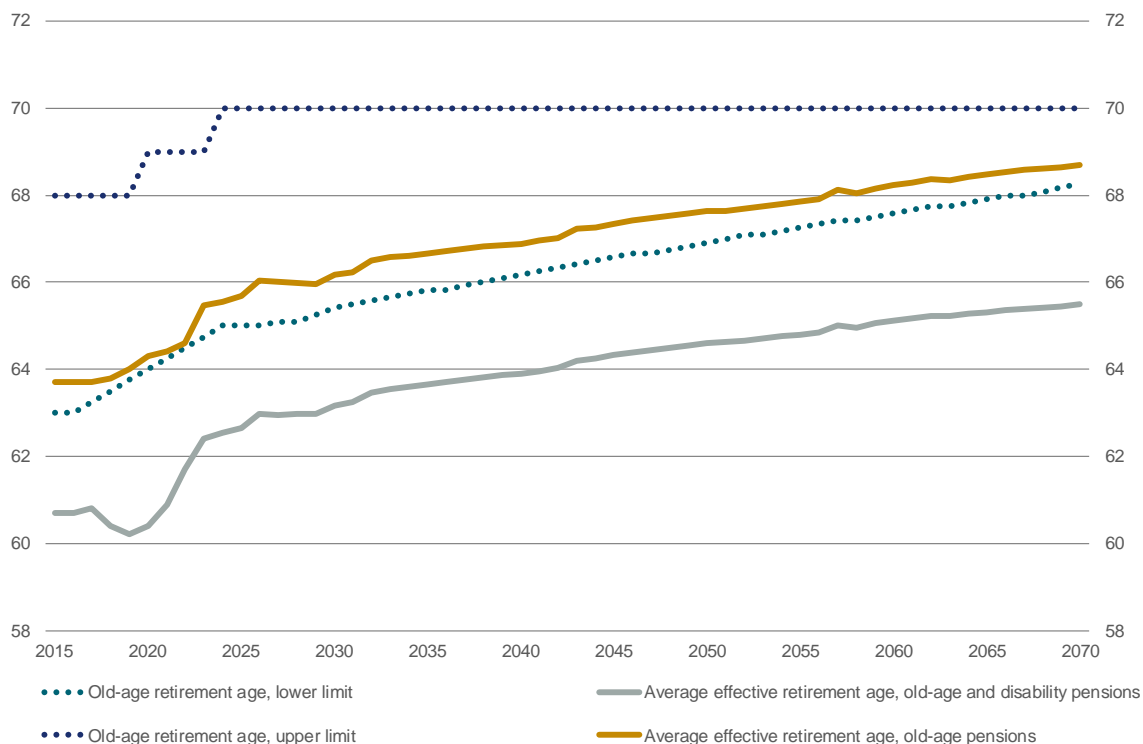
Source: Finnish Centre for Pensions.

3. Pension projection results

This part discusses the results of the pension projections.

3.1. Coverage of the pension projections

The long-term projection model consists of several interconnected modules, as detailed in Section 4.4. The model covers the earnings-related pension acts of the private and the public sectors, as well as the national pension and SOLITA pensions. SOLITA pensions include the pension provision from military injuries insurance, motor liability insurance and workers' compensation insurance. National pensions, including guarantee pensions, are simulated independently of the earnings-related pensions, using a model developed by the Social Insurance Institution of Finland.

Table 5 displays pension expenditure based on both ESSPROS and AWG definitions. The table shows that there exist only negligible discrepancies between the definitions of pension expenditure in ESSPROS and AWG.

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

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013- last available year
Eurostat total pension expenditure	12.9	13.3	13.2	13.4	13.3	13.3	13.3	13.9	:	1.0
Eurostat public pension expenditure (A)	12.7	13.1	13.0	13.2	13.1	13.1	13.1	13.7	:	1.0
Public pension expenditure (AWG: outcome) (B)	12.7	13.1	13.2	13.1	13.0	13.0	13.1	13.6	13.1	0.4
Difference Eurostat/AWG: (A)-(B)	-0.1	0.0	-0.2	0.1	0.1	0.1	0.1	0.1	:	0.2

Source: Eurostat, European Commission.

3.2. Overview of projection results

This section provides a general overview of the main projections results. A summary of the results is provided in Table 6.

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Expenditure									
Gross public pension expenditure	**12.8**	**13.3**	**12.6**	**12.4**	**13.3**	**14.1**	**14.1**	**2070**	**1.4**
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	:	:	:	:	:	:	:	:	:
Net public pension expenditure*	10.1	10.5	10.0	9.8	10.5	11.1	11.1	2070	1.1
Net total pension expenditure*	:	:	:	:	:	:	:	:	:
Contributions									
Public pension contributions	13.4	14.5	14.3	14.6	15.0	14.9	15.0	2064	1.5
Total pension contributions	:	:	:	:	:	:	:	:	:
Balance of the public pension system (%GDP)**	0.7%	1.2%	1.6%	2.2%	1.7%	0.8%	0.7%	2022	0.2%

*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.

The share of public pension expenditure to GDP stood at 12.8% in 2022 and it is projected to increase to 14.1% in 2070. Figure 7 illustrates the projected evolution of the share of public pension expenditure to GDP. The share is expected to increase to 13.3% by 2030 due to a rise in the number of pensioners. Starting in 2030, the share of public pension expenditures then declines by almost 1pp until 2050 due to the falling replacement rate at retirement. However, the pension expenditure-to-GDP ratio increases

again from the 2050s onwards by almost 2pps. This is because the benefit ratio will decrease more gradually and the number of pension recipients will continue to grow. As for net public pension expenditure, an assumption of a constant tax rate of 21.1% has been used based on simulations by the Ministry of Finance for tax revenues from pension income in 2024.

In 2022, total pension contributions were 13.4% relative to GDP. Total pension contributions are projected to rise to 14.8% relative to GDP in 2023 due to an increase in returns to property income.[9] From there onwards, contributions relative to GDP are expected to remain quite stable at 14.5% on average in 2022-2070. The private sector contribution rate is assumed to be adjusted according to current legislation. This means that the contribution rate is determined so that it covers the funded part of pension liabilities and keeps the buffer funds at their target level. Occupational and non-mandatory private pensions play a minor role in Finland, and therefore they have not been included in the projections.

FIGURE 8 – PROJECTED PUBLIC PENSION EXPENDITURE IN AR2024 AND PREVIOUS REPORTS, RELATIVE TO GDP, %.
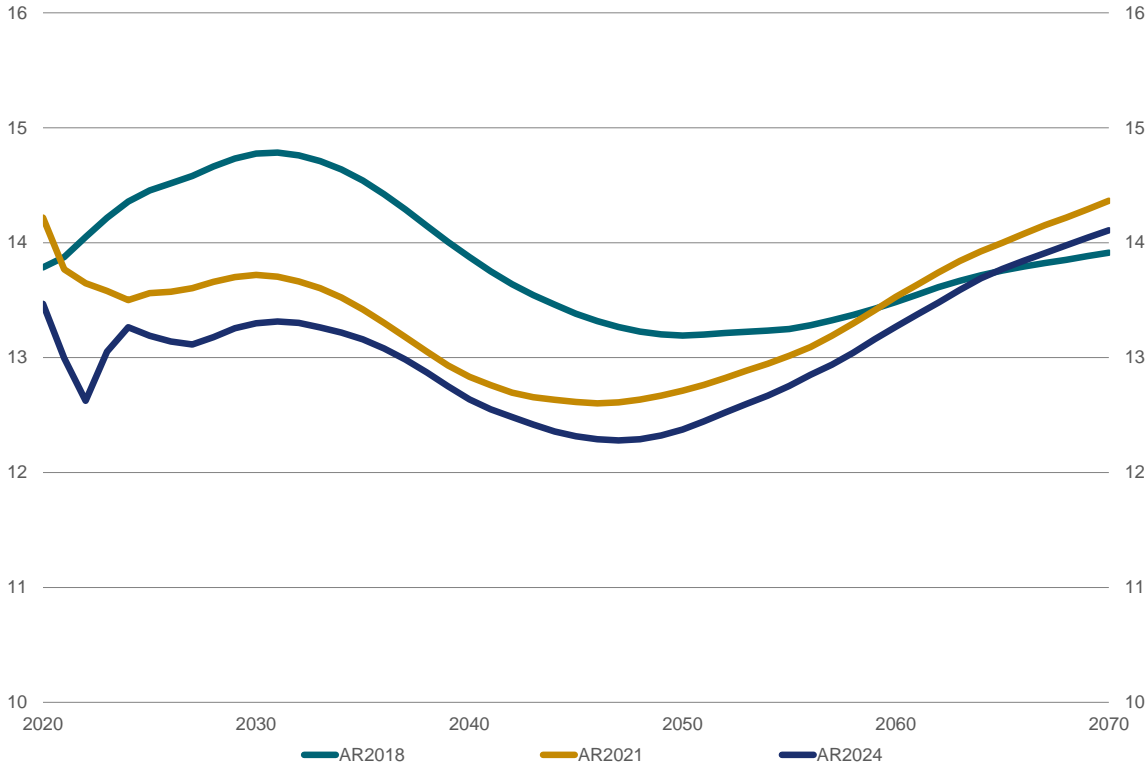
Source: European Commission, Ministry of Finance (Finland).

Table 7 shows a breakdown of gross pension expenditure projections by type of pension, including expenditures for main special pension schemes. These special schemes are fully incorporated into the projected total pension expenditure and are elaborated upon in greater detail in Section 1.1.

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[9] Revenues from the pension assets are also included in total contributions (see Section 3.5.).

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Total public pensions	**12.8**	**13.3**	**12.6**	**12.4**	**13.3**	**14.1**	**14.1**	**2070**	**1.4**
Old-age and early pensions	11.0	11.6	11.0	10.7	11.7	12.5	12.5	2070	1.5
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	10.4	11.0	10.4	10.2	11.1	11.9	11.9	2070	1.5
Minimum pensions (non-contributory)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	2070	0.0
Disability pensions	1.0	1.0	1.0	1.1	1.1	1.2	1.2	2070	0.2
Survivor pensions	0.7	0.7	0.7	0.6	0.5	0.4	0.7	2024	-0.3
Other pensions	:	:	:	:	:	:	:	:	:

| Special pension schemes	2022	2030	2040	2050	2060	2070	Peak value	Peak year	change 2022-2070
Total	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%	5.0%	2022	-1.0%
Seafarers (difficult conditions)	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0%	2024	0.0%
Years-of-service pension (difficult conditions)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	2050	0.0%
Self-employed (partially financed by state)	0.5%	0.6%	0.6%	0.5%	0.5%	0.5%	1%	2032	0.0%
Farmers	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0%	2022	-0.2%
State employees	1.9%	1.6%	1.2%	0.8%	0.6%	0.5%	2%	2022	-1.3%
Local government employees	2.3%	2.5%	2.3%	2.3%	2.4%	2.6%	3%	2070	0.3%
Other public sector employees	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0%	2024	0.0%

Source: European Commission, EPC.

Disability pension expenditure relative to GDP has decreased steadily from the 2000s from almost 2% to 1.0% in 2022. This trend is largely due to the decreasing number of people on a disability pension, as the incidence rate of disability pensions has decreased and baby boomers have reached their retirement age (disability pension is transformed into old age pension when the statutory retirement age is reached). However, disability pension expenditure relative to GDP is projected to increase slightly, as the rising retirement age results in a growing number of people retiring on a disability pension. In addition, the benefit level of disability pensions is projected to increase as a result of the 2017 pension reform.

Minimum or non-earnings-related pension (i.e. guarantee and national pensions) expenditure to GDP has almost halved in the last two decades. This is mainly due to indexation of pensions to prices, with a few exceptions, and the fact that each year more individuals are entitled to earnings-related pension schemes. Minimum pension expenditure is projected to remain stable at 0.6% relative to GDP until 2070. This is due to the assumption that these pensions are indexed to wages from 2027 onwards, and therefore, the expenditures are projected to increase at a rate close to GDP growth.

Survivors' pension expenditure relative to GDP is projected to remain quite stable until the 2040s, at which point it gradually starts to decline. This shift can be attributed in part to the increase in survivors' average earnings-related pensions, which in turn reduces their survivors' pensions, because they are means-tested. Furthermore, there is a projected decrease in the number of survivors' pensions, as illustrated in Figure 10. The majority of survivors' pensions are granted in the form of a surviving spouse's pension. The reform implemented in the survivors' pension scheme on 1 January 2022, as detailed in Section 1.2, is projected to contribute to this decrease in the number of survivors' pensions. The reform is projected to decrease the average duration of widows' pensions, while its full impact will become noticeable after the 2050s. Additionally, the mortality trends in population forecasts reduce the lifespan of widows because deaths are concentrated in narrower age ranges compared to previous trends.

FIGURE 9 – SURVIVOR PENSIONS IN PAYMENT, 1000
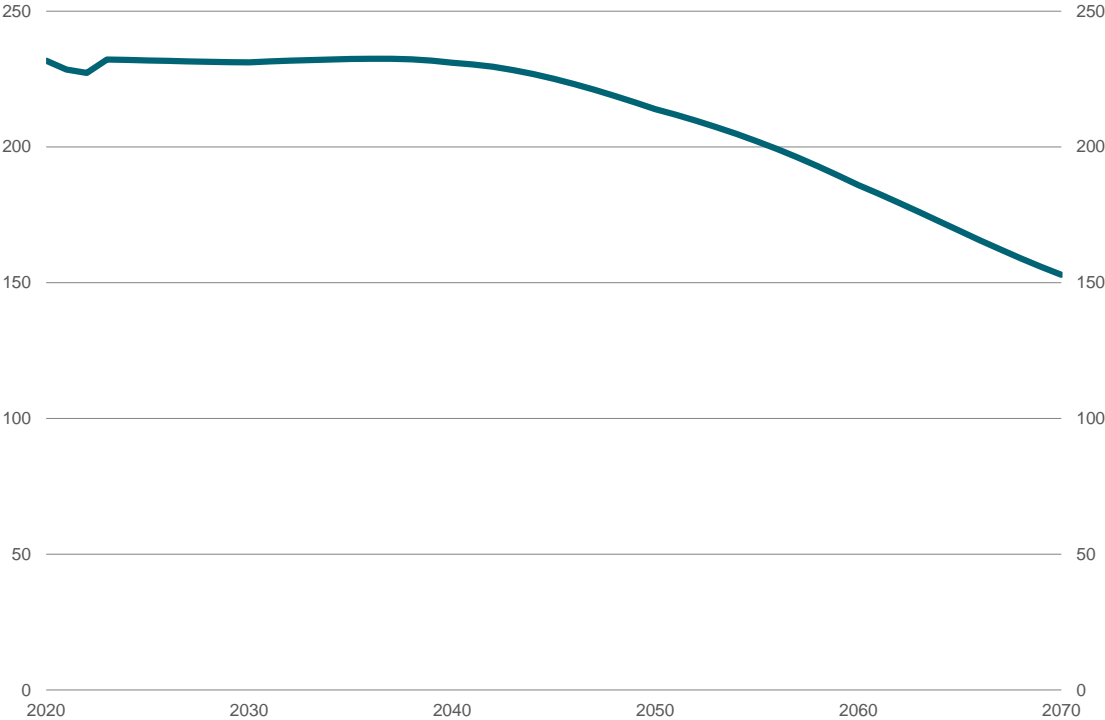
Source: European Commission, Ministry of Finance (Finland).

In Finland, there are several harmonised earnings-related pension schemes (private sector, central government, local government, entrepreneurs and farmers; these schemes are separate mainly due to considerable differences in their financing). Expenditure in the Farmers' Pension Act (MYEL) is slowly decreasing relative to GDP, as the sector has become relatively small in Finland, and this trend is projected to continue. The same holds for state employees' pensions system, as the number of employees covered by this system has declined considerably since the beginning of 1990s due to corporatisation, privatisation and changes in the legislation. In all, the Employees' Pension Act (TyEL), Self-Employed Persons' Pensions Act (YEL) and the local government pensions system are growing and, at the same time, substituting the declining pension acts.

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 to disentangle the impact of the dependency ratio, coverage ratio, benefit ratio and a labour market effect (Figure 9, first equation). The impact of the labour market effect and the coverage ratio may be further decomposed to take into account changes in the characteristics of the population and the labour market. 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 9). Second, the labour market indicator is further disaggregated according to the third equation in Figure 9.

FIGURE 10 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE

dependency ratio   coverage ratio   benefit ratio   labour market effect

$$\frac{pension\ expenditure}{GDP} = \frac{population\ 65+}{population\ 20-64} \times \frac{number\ of\ pensioners}{population\ 65+} \times \frac{average\ pension\ income}{\frac{GDP}{hours\ worked\ 20-74}} \times \frac{population\ 20-64}{hours\ worked\ 20-74} \quad [1]$$

coverage ratio old-age   coverage ratio early-age   cohort effect

$$\frac{number\ of\ pensioners}{population\ 65+} = \frac{number\ of\ pensioners\ 65+}{population\ 65+} + \left(\frac{number\ of\ pensioners\ \leq 65}{population\ 50-64} \times \frac{population\ 50-64}{population\ 65+} \right) \quad [2]$$

1/employment rate   1/labour intensity   1/career shift

$$\frac{population\ 20-64}{hours\ worked\ 20-74} = \frac{population\ 20-64}{employed\ people\ 20-64} \times \frac{employed\ people\ 20-64}{hours\ worked\ by\ people\ 20-64} \times \frac{hours\ worked\ by\ people\ 20-64}{hours\ worked\ by\ people\ 20-74} \quad [3]$$

Source: European Commission, EPC.

Table 8 presents a breakdown of the factors behind the change in public pension expenditure. The breakdown is calculated on the basis of pensioners, with the disaggregation based on pensions reported in annex Table A3.

TABLE 8 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2019 AND 2070 (PPS OF GDP) – PENSIONERS[10]

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	0.5	-0.7	-0.3	0.9	0.8	1.4
Dependency ratio effect	1.3	0.3	1.0	1.7	1.2	5.5
Coverage ratio effect*	-0.6	-0.1	-0.2	-0.3	-0.1	-1.4
Coverage ratio old-age	0.2	0.1	0.0	-0.1	0.0	0.2
Coverage ratio early-age	-3.1	-2.4	-1.3	-1.0	-0.6	-8.5
Cohort effect	-1.9	0.7	-0.2	-1.4	-0.9	-3.8
Benefit ratio effect	-0.3	-0.7	-0.7	-0.2	0.0	-1.9
Labour market effect	0.2	-0.1	-0.3	-0.3	-0.2	-0.7
Employment ratio effect	0.1	-0.1	-0.1	-0.1	-0.1	-0.3
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.1	0.0	-0.2	-0.2	-0.1	-0.4
Residual	0.0	0.0	0.0	0.0	0.0	-0.1

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

Source: European Commission, EPC.

The dependency ratio effect is by far the largest factor behind the change in the projected public pension expenditure. The old-age dependency ratio is high in comparison to other EU countries and it is projected to rise during the current decade (see Figure 4). Between 2022 and 2070 the dependency ratio effect is projected to increase public pensions to GDP by 5.5pps.

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

The coverage ratio effect contributes to lower public pension expenditures in the future. Between 2022 and 2070 the dependency ratio is effect is projected to decrease public pensions to GDP by 1.4pps. The contribution of the coverage ratio is the largest prior to 2030, after which the effect diminishes slightly. A plausible explanation is that people remain more often at work after the age of 65 due to the two year increase in the old-age retirement age between 2018 and 2027 and the link between the retirement age and life expectancy thereafter. Moreover, there may be economic incentives to continue working beyond the lowest old-age retirement age.

The benefit ratio effect is also expected to lead to a reduction in projected pension expenditure. Specifically, it is expected to result in a decrease of 1.9pps in the public pensions as share of GDP between 2020 and 2070. The most significant contribution of this effect is foreseen between 2030 and 2050. Although the contribution of the benefit ratio effect remains negative throughout much of the projection period, it diminishes significantly in the 2050s and ultimately reaches zero between 2060 and 2070.

The benefit ratio effect is primarily driven by the life expectancy coefficient (the sustainability/adjustment factor). This coefficient began to increasingly reduce new earnings-related pension benefits starting from the year 2010. It is defined so that the present value of the pension, adjusted with the coefficient, remains equivalent to the unadjusted present value of the pension in the base year of 2009. However, starting from 2027, the coefficient will be calculated in a more lenient manner to account for the increases in the statutory retirement age thereafter, as shown in Figure 11. The life expectancy coefficient, which is taken into account in all calculations, permanently reduces the new pensions. In practice, individuals can mitigate the impact of the life expectancy coefficient by delaying their retirement, but this aspect is not factored into the employment scenarios of the CSM.

FIGURE 11 – LIFE EXPECTANCY COEFFICIENT (SUSTAINABILITY FACTOR)
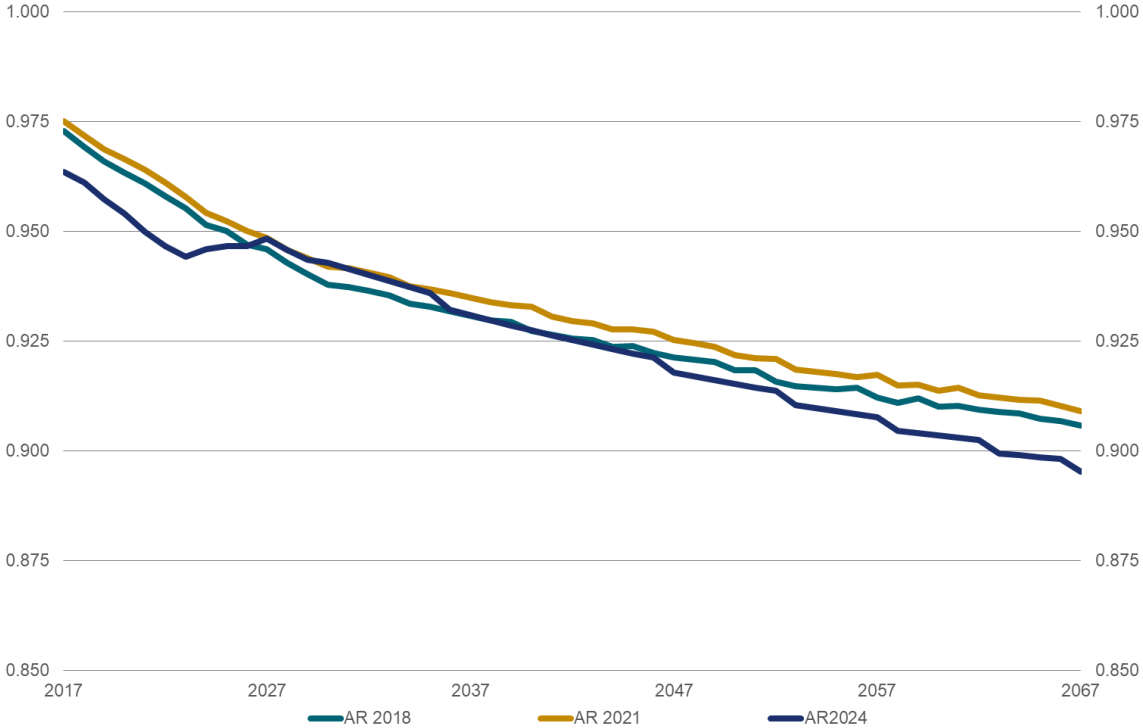
Source: Finnish Centre for Pensions.

The labour market effect also negatively contributes to the change in pension expenditure. While the effect is initially positive, the labour market effect is expected to reduce the share of public pension expenditure to GDP by 0.7pps between 2022 and 2070. The negative contribution is partly attributed to an increase in the employment rate and an increased participation rate in older age groups, as detailed in Section 2.2.

Table 9 presents the projected benefit ratio, the replacement rate at retirement and coverage by pension scheme. The replacement rate[11] is projected to decrease by 7.0pps between 2022 and 2070. The largest decline occurs in the replacement rate occurs between 2022 and 2040, after which point it remains steady until the end of the projection period. As illustrated in Figure 12, the benefit ratio[12] is likewise expected to decrease during the projection period, albeit more gradually. The benefit ratio is projected to decrease from 51% in 2022 to 44% in 2050, after which it is expected to remain relatively stable.

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)	51%	50%	47%	44%	44%	44%	-7%
Coverage	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	48%	48%	44%	42%	41%	42%	-6%
Public scheme: old-age earnings related (RR)	45%	42%	38%	39%	39%	38%	-7%
Coverage	87%	87%	88%	88%	88%	89%	2%
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	:	:	:	:	:	:	:
Private individual schemes (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Total benefit ratio	51%	50%	47%	44%	44%	44%	-7%
Total replacement rate (earnings-related benefits)	45%	42%	38%	39%	39%	38%	-7%

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.

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[11] The replacement rate at retirement (RR) is defined as the average first pension of those who retire in a given year over the average wage they earned before retirement.

[12] The benefit ratio is defined as the average public pension in relation to the average wage.

FIGURE 12 – TOTAL BENEFIT RATIO, PERCENT
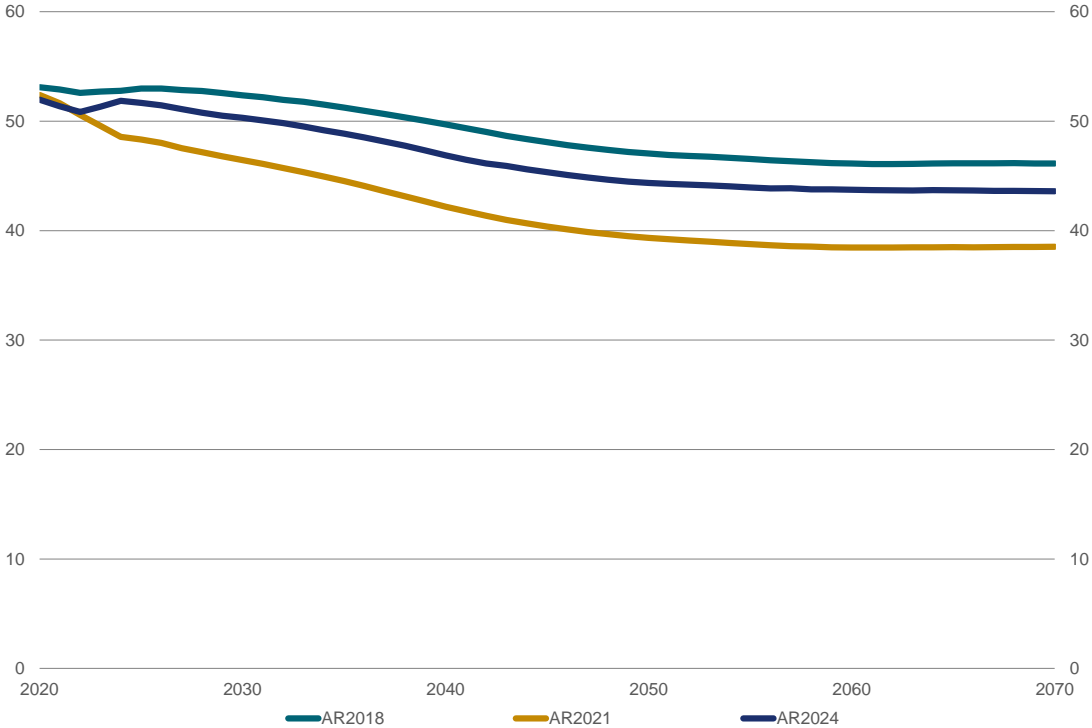
Source: European Commission, EPC, Ministry of Finance (Finland).

The evolution of the benefit ratio reflects several significant aspects of the 2017 pension reform, which enhances both the sustainability of the pension system and, to some extent, the adequacy of pensions for the age cohorts retiring from 2040s onward.

First, since 2017, the calculation of pension accrual considers higher earnings than in the past, as employees' earnings-related pension insurance contributions are no longer deducted from pensionable earnings. In 2016, on average, employees' contribution rate was slightly over 6% of earnings.

Secondly, starting in 2027, the life expectancy coefficient (also known as the sustainability/adjustment factor) will be computed in a more lenient manner compared to the current calculation. Thirdly, there is a substantial projected increase in the contributory period due to the increase in the lowest eligibility age for old-age retirement.

Table 10 presents the projected number of pensioners alongside the number of individuals in employment. The number of pensioners is set to increase significantly in the 2020s, primarily driven by the ageing of the baby boom generation, resulting in a larger population aged 65 and older. However, the increase in the number of pensioners is expected to slow down between 2030 and 2050. The number of pensioners is set to increase more rapidly after 2050s. This increase can be attributed to increases in life expectancy.

The number of employed is projected to decline by 248.000 between 2022 and 2070. This trend is primarily a result of the diminishing working age population, although this effect is partly offset by the projected increase in the labour force participation rate. The expected increase in the pension system dependency ratio can be attributed to two key factors: the decrease in the working age population and the increase in the number pensioners. However, it is worth noting that the system efficiency ratio is projected to decrease by 0.2 pps between 2022 and 2070, as the old-age dependency ratio is set to increase more than the pension system dependency ratio.

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

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	1601	1686	1703	1734	1821	1879	278
Employment (thousand) (II)	2648	2622	2610	2568	2481	2400	-248
Pension system dependency ratio (SDR) (I)/(II)	0.6	0.6	0.7	0.7	0.7	0.8	0.2
Number of people aged 65+ (thousand) (III)	1288	1421	1450	1502	1612	1681	393
Working-age population 20-64 (thousand) (IV)	3131	3131	3115	2988	2822	2693	-438
Old-age dependency ratio (OADR) (III)/(IV)	0.4	0.5	0.5	0.5	0.6	0.6	0.2
System efficiency (SDR/OADR)	1.5	1.4	1.4	1.3	1.3	1.3	-0.2

Source: European Commission, EPC.

Table 11 presents the projected share of pensioners in relation to both the inactive population and total population. For age groups 55–59 and 60–64, the share of pensioners to inactive population is projected to decrease significantly until the 2040s. The decline can be attributed to the rise in the minimum retirement age and, to some extent, restrictions on the additional days of unemployment benefits leading up to retirement. However, a shift in this trend is expected to occur starting in 2050. In the age group 65-69, the share of pensioners to inactive population is expected to fall only modestly. In older age groups (over 70 years) the share of pensioners to inactive population is projected to increase. This is primarily driven by the decrease in the size of the inactive population due to the increase in the retirement age. It's worth noting that access to disability pensions and early retirement pathways will partially reduce the rate at which the effective retirement age increases during this period.

The proportion of pensioners in relation to the total population is projected to show a consistent decline across the age groups of 55–59, 60–64, and 65–69 over the entire projection period. Conversely, an increase in this proportion is expected among older age groups (over 70 years). It is important to note that the figures in the tables may exceed 100% due to the inclusion of pensioners residing abroad. These same trends and observations can also be observed when considering the female population separately, as outlined in Table 12.

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

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	6.1	7.3	6.9	6.4	6.2	5.9
Age group 55-59	79.0	44.7	47.2	49.2	52.1	54.9
Age group 60-64	138.1	62.5	59.1	62.9	63.3	70.1
Age group 65-69	123.5	118.5	110.3	106.6	104.2	104.4
Age group 70-74	109.1	114.3	116.5	121.3	123.4	121.7
Age group 75+	105.1	105.6	108.6	112.1	114.0	114.7

pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	2.4	2.6	2.5	2.3	2.2	2.1
Age group 55-59	10.6	8.6	7.7	7.3	7.0	6.8
Age group 60-64	45.2	26.2	21.6	18.6	16.4	15.1
Age group 65-69	98.7	96.6	87.1	76.4	68.3	60.0
Age group 70-74	101.0	108.0	110.7	114.1	114.6	112.1
Age group 75+	105.1	105.6	108.6	112.1	114.0	114.7

Source: European Commission, EPC.

TABLE 12 – F<small>EMALE PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP</small> (%)

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	5.8	7.0	6.9	6.3	6.1	5.9
Age group 55-59	76.1	50.2	50.9	63.3	68.9	75.5
Age group 60-64	132.5	64.7	60.7	67.7	72.0	86.9
Age group 65-69	118.2	110.6	103.9	99.7	101.5	103.7
Age group 70-74	106.8	110.2	112.1	116.4	121.0	119.4
Age group 75+	104.4	104.9	107.4	110.4	111.9	113.6

female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	2.3	2.6	2.4	2.3	2.2	2.1
Age group 55-59	10.3	9.0	7.8	7.5	7.2	7.0
Age group 60-64	42.9	26.2	22.0	19.2	17.1	16.3
Age group 65-69	98.7	94.9	85.0	74.3	67.4	58.5
Age group 70-74	101.0	106.6	108.7	111.6	113.8	110.2
Age group 75+	104.4	104.9	107.4	110.4	111.9	113.6

Source: European Commission, EPC.

The projected new old-age and early earnings-related pension expenditure and its disaggregation is reported in Table 13.

The average contributory period is expected to increase from 37.6 years in 2022 to 39.2 years in 2070. However, it is important to highlight that, during this period, the contributory period for both females and males initially experiences a decrease beginning in the 2030s before rebounding.

In 2022 the contributory period for females stood at 37.0 years. It is expected to fall to 36.3 years in the 2040s after which it begins to rise again, ultimately reaching 39.2 years by 2070. In the case of males, the contributory period was 38.2 years in 2022. It is likewise first expected to decline to 36.8 years in the 2040s before gradually increasing to 39.1 years in 2070.

This temporary decline in contributory periods can be attributed to the rising employment rates among older individuals and the fact that the careers of newly employed individuals are, on average, shorter than the overall average.

In 2022, the average accrual rate stood at 1.57%, although the normal accrual rate is 1.5%. Additionally, it is important to note that until 2016, the accrual rate was 1.9% for individuals aged 53-63 and for those aged 63-68 years it was 4.5%. This discrepancy can be attributed to the practice in place until 2016, where employees' earnings-related pension insurance contributions were deducted from their pensionable earnings before applying the accrual rate as defined by the law. In 2016, the average employee contribution rate was slightly over 6% of their earnings. Hence, the average accrual rate has been lower than the accrual rates set in law.

The projected trend for the average accrual rate shows an initial decrease, primarily due to the discontinuation of higher accrual rates for older workers as of 2017, with an exception during the transition period. From 2017 onward, the standard accrual rate is set at 1.5% for all workers. For 53-62 year-olds, the accrual rate is 1.7% until the end of 2025.

However, it is important to note that this higher accrual rate is insufficient to fully compensate for the lower accrual rates that were in place before the reform. As a result, the average accrual rate temporarily drops below 1.5%. This occurs because some generations neither receive the higher accrual rates at the end of their careers under the old system nor the improved accruals at the beginning of their careers under the new system. This transitional phase creates a temporary dip in the average accrual rate.

The average accrual rate starts to increase in 2040s because as of 2017 the accrual of pension is calculated for higher earnings than previously as the earnings-related pension insurance contribution of employees will no longer be deducted from pensionable earnings. Hence, the 1.5% accrual rate set in law will become gradually effective. However, the accrual rate increases to a bit over 1.5% in the long term, because the increase of the statutory retirement age raises the level of disability pension benefits as the projected period (the period between retirement on disability pension and the lowest old-age retirement age) lengthens. The higher level of disability benefits results in an increase in new old-age pensions because the disability pension is replaced by an old-age pension upon reaching the statutory retirement age.

TABLE 13 – 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)*	604	831	1080	1753	2480	3125
I. Number of new pensions (1000)	60.0	64.0	64.0	71.0	72.0	65.0
II. Average contributory period (years)	37.6	38.0	36.7	37.7	38.3	39.2
III. Average accrual rate (%)	1.6%	1.5%	1.4%	1.5%	1.6%	1.6%
IV. Monthly average pensionable earnings (1000 EUR)	2.9	4.0	5.7	8.0	10.6	14.5
V. Sustainability/adjustment factors	1.0	1.0	0.9	0.9	0.9	0.9
VI. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0
Monthly average pensionable earnings / monthly economy-wide average wage	0.8	0.9	0.9	0.9	0.8	0.8

MEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	327	470	607	960	1400	1754
I. Number of new pensions (1000)	30.0	32.0	33.0	37.0	37.0	34.0
II. Average contributory period (years)	38.2	38.5	36.9	37.8	38.6	39.1
III. Average accrual rate (%)	1.5%	1.5%	1.4%	1.4%	1.5%	1.5%
IV. Monthly average pensionable earnings (1000 EUR)	3.3	4.5	6.4	8.9	12.0	16.3
V. Sustainability/adjustment factors	1.0	1.0	0.9	0.9	0.9	0.9
VI. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0
Monthly average pensionable earnings / monthly economy-wide average wage	0.9	1.0	1.0	1.0	1.0	0.9

WOMEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	264	383	469	787	1064	1311
I. Number of new pensions (1000)	30.0	32.0	31.0	34.0	35.0	31.0
II. Average contributory period (years)	37.0	37.5	36.4	37.5	38.0	39.2
III. Average accrual rate (%)	1.6%	1.6%	1.5%	1.6%	1.6%	1.6%
IV. Monthly average pensionable earnings (1000 EUR)	2.6	3.5	5.0	7.0	9.2	12.5
V. Sustainability/adjustment factors	1.0	1.0	0.9	0.9	0.9	0.9
VI. Average number of months paid the first year	6.0	6.0	6.0	6.0	6.0	6.0
Monthly average pensionable earnings / monthly economy-wide average wage	0.7	0.8	0.8	0.8	0.7	0.7

*New pension expenditure equals the product of I, II, III, IV, V & VI.

Source: European Commission, EPC.

3.4. Financing of the pension system

The financing of earnings-related pensions varies considerably between the pension schemes (private sector, local government and state employees, self-employed persons and farmers) although the benefits are currently almost harmonised. The Employees' Pension Act (TyEL) is a partially funded system, whereas the Self-Employed Persons' Pensions Act (YEL) and the Farmers' Pensions Act (MYEL) are financed from the PAYG system, with the State covering the expenditure not met by contribution

income. The local government and state employees' pension schemes are PAYG schemes, bolstered by significant buffer funds. The Seafarer's Pensions Act (MEL) is a partially funded scheme, with one third of its expenditure financed by the State. Table 14 provides a summary of the legislated financing sources of the pension system.

	Public employees	Private employees	Self-employed
Contribution base	Wages and salaries	Wages and salaries	Pensionable income
Contribution rate/contribution			
Employer	17.39% for private sector, including the 0.44% repayment installment of the employer's contribution reduction; 16.84% for local government (in 2023).	17.39% for private sector, including the 0.44% repayment installment of the employer's contribution reduction; 16.84% for local government (in 2023).	:
Employee	7.15% (17-52y and +63y); 8.65% (53-62y)	7.15% (17-52y and +63y); 8.65% (53-62y)	24.1% (17-52y and +63y); 25.6% (53-62y); applicable if pensionable income exceeds a certain threshold
State*	State-employees: 60% of earning-related expenditure; State pension fund receives income from pension contributions (contribution rate 17.11% in 2023) and finances 40% of pensions National pensions: 100% Pensions accrued during child-care and study: 100%	Seafarers: 1/3 of earnings-related expenditure National pensions: 100% Pensions accrued during child-care and study: 100%	Share of earnings-related expenditure not covered by contributions National pensions: 100% Pensions accrued during child-care and study: 100%
Other revenues*	Earnings-related pensions accrued during unemployment: Unemployment insurance contributions Earnings-related pensions: Property income from buffer funds	Earnings-related pensions accrued during unemployment: Unemployment insurance contributions Earnings-related pension: Around 25% of private sector pensions are prefunded.	:
Maximum contribution	:	:	:
Minimum contribution	:	:	:

*Only legislated contributions are reported.

Source: European Commission, EPC.

Contribution rates for private sector employees' pension scheme (TyEL) are determined so that they cover the funded part of pension liabilities and, in addition, keep the buffer funds at their target level. In the projections, the contribution rate for the private sector employees' scheme (TyEL) evolves according to the current legislation. Figure 13 illustrates the projected contribution rate, increasing considerably from the current level of 24.85% of the wage sum in 2022. The contribution rate of entrepreneurs and farmers is the same as the average contribution rate for private sector employees' pension scheme, if their pensionable income is above a certain threshold. The sum of employee and employer contribution rate for local government and state employees' pension schemes is fixed in the future.
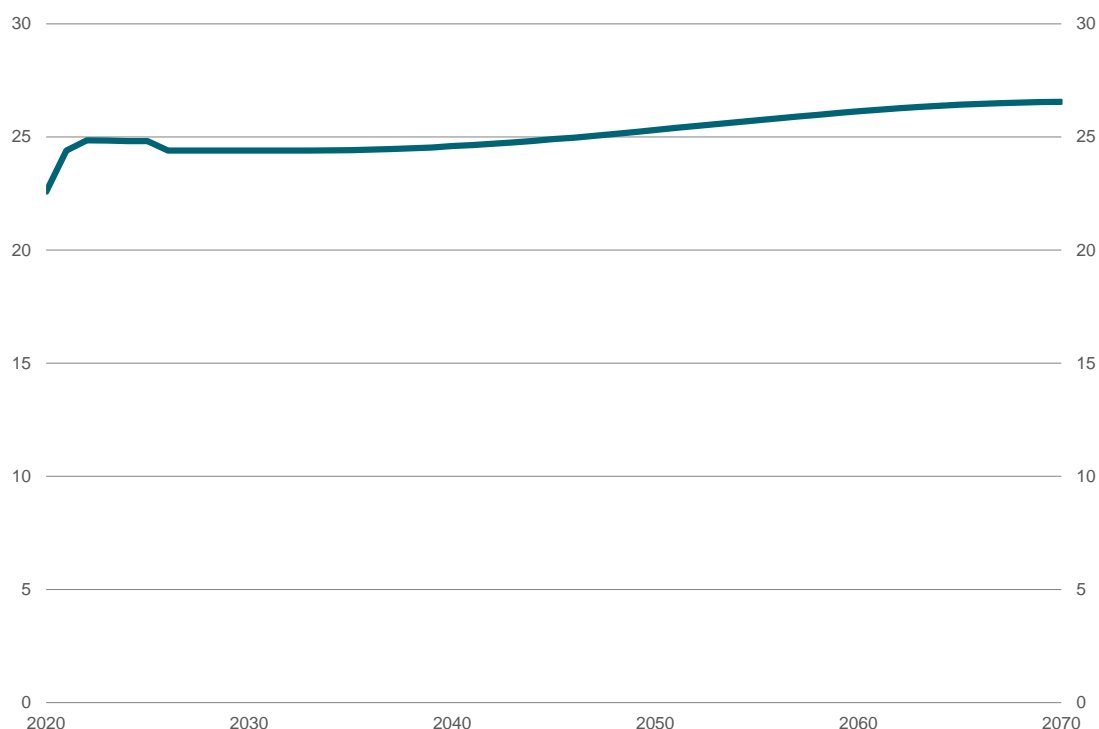
Source: European Commission, EPC, Ministry of Finance (Finland)

Table 15 displays the revenue from contributions within the public pension scheme. The pension contributions paid by local government and state employers are classified as employer contributions. State contribution only comprises direct transfers form the state budget to the pension system. State contribution includes several components: 100% funding of the national pension scheme; 60% funding of the state employees' pension scheme13 and the shares of the expenditure in self-employed persons' and farmers' pensions schemes that the contribution income does not cover, one third of expenditure in the seafarers' pensions scheme and 100% of pensions accrued during child-care and studying.

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)	13.4	14.5	14.3	14.6	15.0	14.9	1.5
Employer contributions	*6.4*	*6.5*	*6.6*	*6.6*	*6.7*	*6.8*	*0.3*
Employee contributions	*3.2*	*3.2*	*3.2*	*3.4*	*3.6*	*3.7*	*0.5*
*State contribution**	*2.5*	*2.3*	*2.0*	*1.7*	*1.7*	*1.7*	*-0.8*
*Other revenues**	*1.3*	*2.5*	*2.5*	*2.9*	*3.0*	*2.9*	*1.5*
Number of contributors (I) (1000)	2475	2413	2404	2372	2298	2236	-239
Employment (II) (1000)	2648	2622	2610	2568	2481	2400	-248
(I) / (II)	0.93	0.92	0.92	0.92	0.93	0.93	0.0

Includes only legislated contributions.
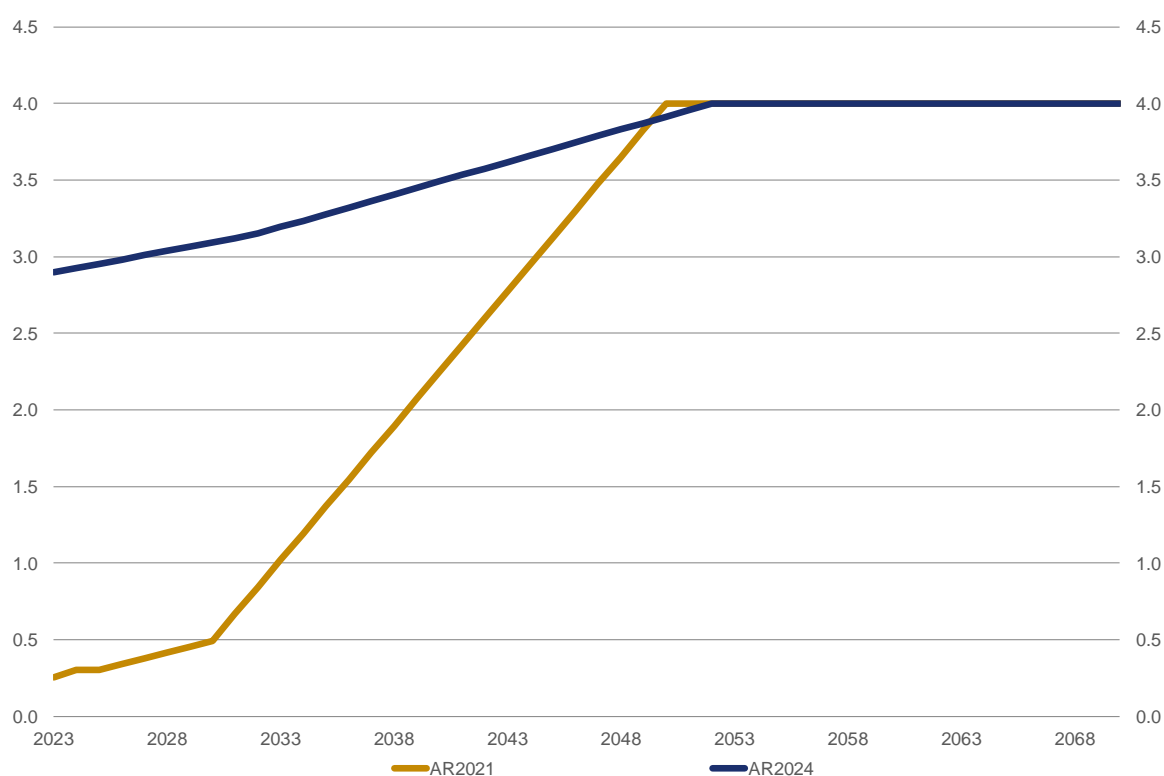
Source: European Commission, EPC.

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[13] The State pension fund receives all central government pension contributions. The fund pays 40% of yearly pension expenditure to the State budget and the rest of contributions and interest revenues after expenses are funded.

3.5. Public pension funds

Property income derived from pension assets plays a pivotal role in financing the Finnish public pension system. The public pension system is overseen by various pension providers, adhering to regulations that determine the total level, type, and diversification of assets. As of the end of 2022, the total amount of investment assets[14] in the earnings-related pension system stood above 90 percent of GDP.

Following a transition period, the real return on pension assets is assumed to align with the long-term interest rate on government bonds, which is set at 2.0%, as agreed by the AWG[15]. Figure 14 shows the assumed path of the nominal interest rate used in the current projections and as assumed in the Ageing Report 2021. Notably, the nominal interest rate is assumed to be considerably higher in the first decades of the projection compared to the previous report, resulting from the recent increase in long-term interest rates. Nevertheless, the long-term assumption of 4% nominal interest rate aligns with the previous report. This constitutes the total return on pension assets, since the change in asset valuation is assumed to be zero throughout the projection period.

FIGURE 14 – NOMINAL INTEREST RATE USED IN PROJECTIONS, PERCENT

Source: Eurostat, European Commission, EPC.

The surplus of earnings-related pension schemes accumulates pension assets. It is assumed that the surplus of earnings-related pension schemes is calculated by adding up the property income and

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[14] As of June 30, 2023, pension assets were allocated as follows: equity and equity-type investments accounted: 54%; fixed income investments: 27%; real estate investments: 10%; alternative investments: 9%.
[15] The annual real return of pension fund assets in 1997-Q2/2023 was 3.8%, which exceeds the 2.0% implicit real interest rate on government securities of Finland over the same period.

employer, employee and state contributions and subtracting the earnings-related pension expenditure and the administrative costs[16].

From the inception of the earnings-related pension schemes until the 2010s, the pension contributions have consistently exceeded the pension expenditure. However, in recent years, pension expenditure has at times surpassed contribution income and it also projected to do so over the projection period with, for instance, the gap reaching around 14% by 2070. To bridge this gap, the difference is covered through the returns generated from the continuously growing flow of accumulated pension assets. In the projection, in partly due to assumptions about future returns, the share of pension assets to GDP is projected to be at around 72.5% by 2070. At the end of 2022, private sector (TyEL) pension assets were 62% of all pension assets and were 167% of the private sector annual wage sum.

TABLE 16 – PENSION FUNDS' POSITION AND RESERVES (%GDP) AND RETURN ON ASSETS (%)

	average 2012-2021	2022	2030	2040	2050	2060	2070	average 2022-2070
Stock of assets (end-of-year; %GDP)	87.6	91.6	81.3	74.1	75.9	78.1	72.5	77.9
Fund balance (billion EUR)		2.3	5.4	10.5	18.4	19.4	14.9	
Fund expenditure		30.5	41.9	55.2	74.9	107.6	152.7	
Disbursements (to pension scheme)		29.2	40.2	52.9	71.7	103.3	146.9	
Other expenditure (incl. administrative costs)		1.3	1.7	2.3	3.2	4.3	5.8	
Fund revenues		32.8	47.3	65.7	93.3	127.0	167.6	
Return on assets		3.6	8.7	12.2	19.3	27.5	34.5	
Other income (incl. pension contributions)		29.3	38.6	53.5	74.0	99.5	133.0	
Nominal rate of return (%)	2.1%	1.4%	3.1%	3.5%	3.9%	4.0%	4.0%	3.6%
Change in asset valuation (billion EUR)		-14.5	0	0	0	0	0	

Source: European Commission, EPC.

3.6. Sensitivity analysis

Sensitivity analysis is used to demonstrate how public pension expenditure evolves in alternative economic, demographic and policy scenarios. Table 17 presents the results of the alternative scenarios as deviations (percentage points of GDP) from the baseline.

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[16] Total expenditure of earnings-related pension schemes except pension expenditure (according to national accounts).

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	12.8	13.3	12.6	12.4	13.3	14.1	1.4
Higher life expectancy at birth (+2y)	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Higher migration (+33%)	0.0	-0.1	-0.2	-0.3	-0.5	-0.5	-0.5
Lower migration (-33%)	0.0	0.1	0.2	0.4	0.5	0.6	0.6
Lower fertility (-20%)	0.0	0.0	0.0	0.3	0.6	1.0	1.0
Higher inflation scenario (2% by 2052)	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Higher employment rate of older workers (+10 pps)	0.0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	-0.1	-0.2	-0.4	-0.4
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.3	0.5	0.6	0.6
Policy scenario: link retirement age to longevity	:	:	:	:	:	:	:
Policy scenario: constant retirement age	0.0	0.2	0.5	0.8	1.0	1.0	1.0
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.2	0.3	0.2	0.2

Source: European Commission, EPC.

Figure 15 illustrates the projected population in selected demographic scenarios, which serve as the basis of demographic sensitivity analysis. The figure includes the EUROPOP2023 baseline projection as well as sensitivity scenarios, accounting for higher and lower migration, higher life expectancy and low fertility. Across all scenarios, total population is projected to turn to a downward trajectory by the beginning of the 2030s at the latest. Notably in the lower fertility and lower migration scenarios, population is projected to start decreasing as early as 2025.

FIGURE 15 – TOTAL POPULATION IN DEMOGRAPHIC SCENARIOS, MILLION
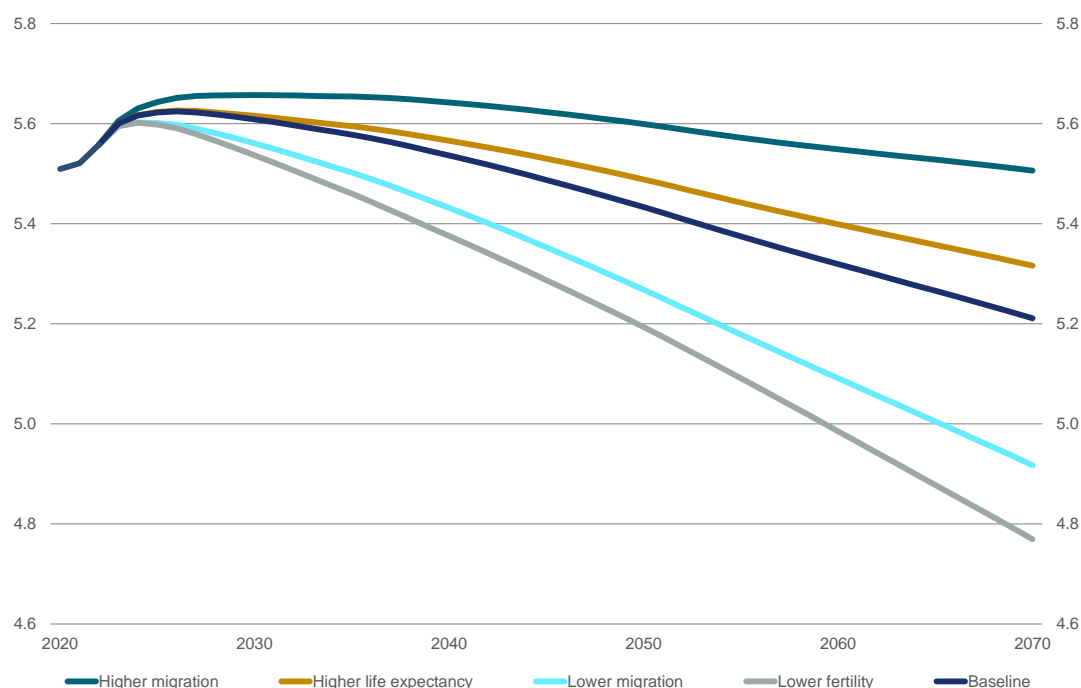
Source: Eurostat, European Commission, EPC.

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[17] 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.

In the *higher life expectancy scenario*, projected pension expenditure is expected to increase by 0.1pps relative to GDP compared to the baseline projection. This increase is due to a longer average retirement period. However, the impact on public pension spending is moderated by two key factors. Firstly, the retirement age is linked to life expectancy, which encourages older individuals to stay in the workforce, thus increasing labour force participation among older age groups. Additionally, the life expectancy coefficient (sustainability/adjustment factor) mitigates the impact of rising life expectancy by adjusting pension benefits downwards as life expectancy increases.

Nevertheless, these mechanisms are unable to completely offset the effects of increasing life expectancy on pension expenditure. First, the retirement age for older individuals does not rise as much as life expectancy because the linkage is designed to maintain a constant ratio between time spent working and time spent in retirement. Secondly, the life expectancy coefficient does not affect the pension levels of individuals who have already retired. Furthermore, it does not apply to minimum pensions, including national and guarantee pensions.

In the scenario with *higher migration*, pension expenditure as a percentage of GDP decreases by 0.5pps compared to the baseline scenario. This decline is primarily attributed to the increase in GDP, while the impact on pension expenditure itself remains relatively modest. This outcome occurs because immigrants, who usually arrive in the country at a young age, expand the labour force, but they do not qualify for old-age pensions until after 2070. On the other hand, in the scenario with *lower migration*, pension expenditure has the opposite effect of a similar magnitude, increasing pension expenditure by 0.6pps relative to GDP compared to the baseline. It is worth emphasizing that these results are highly sensitive to the assumed employment rate of migrants.

The *lower fertility scenario* leads to a substantial increase in public pension expenditure, amounting to 1pps relative to GDP compared to the baseline scenario. This effect can be primarily attributed to the fall in GDP, which is only partially offset by a slightly negative effect on pension expenditure through disability and survivor schemes. However, the decline in fertility rates does not impact other pension schemes, as none of the new-borns reach the eligibility age for old-age pensions before 2070.

In the scenario with *higher inflation*, public pension expenditure relative to GDP decreases by 0.2pps in 2030 compared to the baseline scenario. Because earnings-related pensions are indexed 80% to inflation and 20% to wages, higher inflation reduces the real value of pensions in payment, resulting in a lower benefit ratio.

In the scenario with *higher employment rate of older workers*, public pension expenditure relative to GDP decreases by 0.3pps in 2040 compared to the baseline scenario. However, this effect gradually diminishes over time, resulting in a reduction of 0.1pps lower in 2070 relative to the baseline. The decrease in public pension expenditure can be attributed to two main factors. Firstly, it contributes to higher GDP growth by expanding the labour force. Secondly, it reduces both the size of the inactive population and pensioners in the older age groups, thereby leading to a decrease in pension expenditure. However, higher employment also results in higher accrued pension benefits, which means that the downward effect on pension expenditure gradually diminishes over time (i.e. after 2030). The magnitude of this effect is significant, as it requires the probabilities to retire on old-age and disability pensions to decrease by some 80% in certain age groups to achieve the remarkable change in employment among older workers assumed in this scenario. The impact is most pronounced for disability pension expenditure, whereas the effect on old-age pension expenditure is more limited due to the actuarially neutral increment for deferred retirement.

In the *higher productivity scenario*, pension expenditure relative to GDP decreases by 0.4pps in 2070 compared to the baseline scenario. This effect can primarily be attributed to a higher long-term growth rate in GDP. The purchasing power of the earnings-related pensions in payment would increase to some extent due to partial (20%) indexation to wages. However, this indexation mechanism ensures that purchasing power of earnings-related pensions would decrease relative to average earnings over time. It is worth noting that the minimum pensions would increase at the same rate as real earnings. Nevertheless, the level of new pensions will increase due to higher pensionable earnings. In the long term, the contribution rate for private sector employees' pension scheme (TyEL) would be lower in comparison to the baseline projection. In the *lower productivity scenario*, the effect on pension expenditure is similar, but in the opposite direction, resulting in an increase in pension expenditure relative to GDP by 0.6pps in 2070 compared to the baseline.

The *first policy scenario linking retirement age to life expectancy* closely resembles the baseline scenario, as the national legislation includes a linkage between the retirement age and increases in life expectancy starting in 2030. Consequently, this scenario is omitted from Table 17.

In the *second policy scenario with constant retirement age*, the share of pension expenditure to GDP increases by 1.0pps relative to the baseline scenario towards the end of the projection period. The increase in share of pension expenditure can be attributed to two main factors. First, the increase in the number of pensioners contributes to the growth in pension expenditures. Second, the reduction in labour force participation leads to slower GDP growth.

In the *third policy scenario with a constant benefit ratio,* policy measures are assumed to ensure that the earnings-related public pension benefit ratio does not fall below 90% of its level in year 2022. In this scenario, the benefit ratio of old-age earnings-related pensions is slightly under 45% between 2030 and 2070. This scenario is modelled such that that the pensions in payment are indexed more generously than should be done according to the current law. In this scenario the share of pension expenditure to GDP increases compared to the baseline scenario from the 2040s onwards. The long-term impact is relatively modest, amounting to just 0.2 percentage points relative to GDP when compared to the baseline scenario. This can be partially attributed to the slow growth in real earnings within the baseline scenario, which prevents the benefit ratio from declining significantly below 90% of its 2022 level.

3.7. Changes in comparison with previous Ageing Report projections

In the current projections, the public pension expenditure relative to GDP is expected to increase by 1.4pp over the projection period. This increase is of a similar magnitude as in AR 2021, as can be seen in Table 18. The subcomponents of the pension expenditure projections show that the considerable negative dependency ratio effect has decreased slightly since the previous report. This can be attributed to the rapid increase in the dependency ratio over the past three years, while the dependency ratio is projected to remain at similar levels at the end of the projection period.

Nonetheless, the combined effects of the coverage ratio, benefit ratio, and employment rate contribute to a somewhat less adverse impact on expenditures when compared to the findings of AR 2021. Notably, the coverage ratio effect has shown a diminishing trend in successive reports. This distinction is particularly evident in the 2020s, primarily attributable to the higher growth rate in the number of pensioners at the outset of the projection period.

The benefit ratio effect applies less downward pressure on pension expenditures compared to the previous report. This is predominantly influenced by the assumption of a sluggish GDP growth rate,

which decelerates the decline in the benefit ratio when compared to previous reports. Moreover, the employment rate among the older workforce is higher in comparison to the last projection round, further dampening the negative effect on pension expenditure.

The labour market effect is now less negative than in AR 2021. This can be attributed to recent increase in the employment rate, as can be seen in Figure 16. At the same time, the increase in the employment rate at the end of the projection period has been more subdued, leading to a more moderate increase in the employment rate over the projection period.

FIGURE 16 – EMPLOYMENT RATE (20-74 YEARS), PERCENT
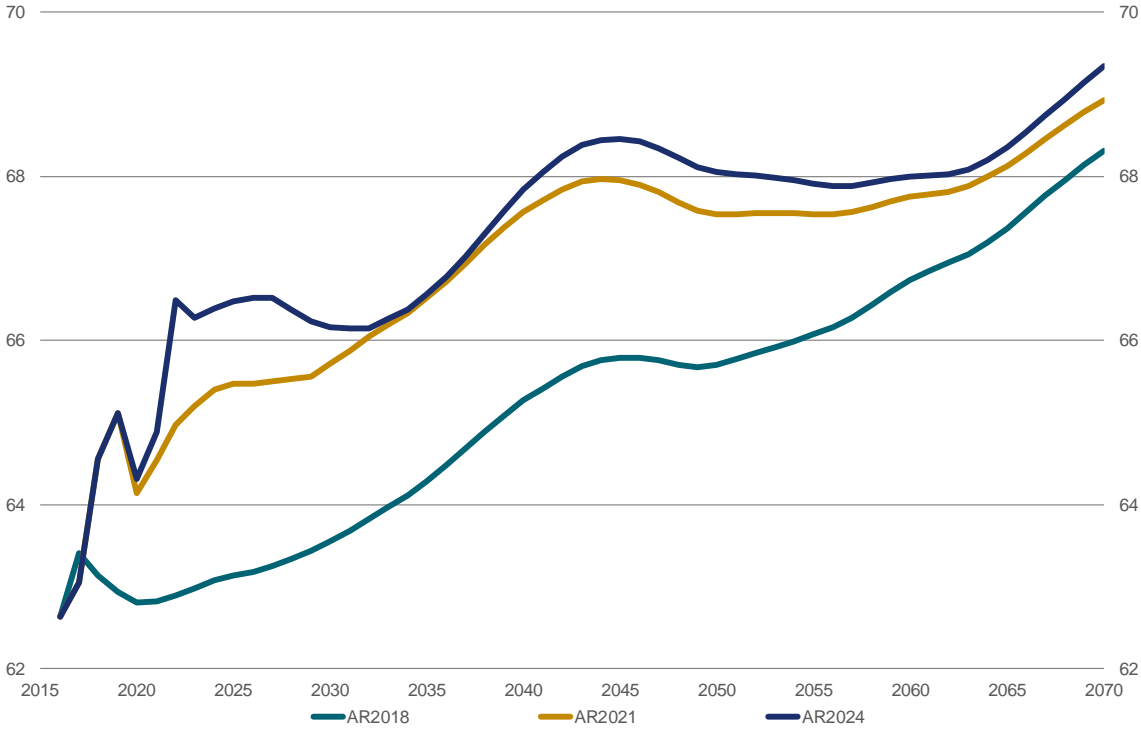
Source: Eurostat, European Commission, EPC.

Prolonging the projection period from 2060 in AR 2015 to 2070 in AR 2018 was a key factor underlying the higher projected pension expenditure in AR 2018, as pension expenditure relative to GDP was projected to rise markedly between 2060 and 2070. In addition, the 2017 pension reform was for the first time included in the AR 2018 projections, although its effects were counteracted by the less favourable projection assumptions compared to projections in AR 2015. When comparing the projections in AR 2015 to those in AR 2012, lower pension expenditure in AR 2015 was mainly due to more favourable population projections. The projected changes in public pension expenditure were quite stable in the AR 2006, AR 2009 and AR 2012 projections.

	Public pension expenditure	Dependency ratio effect	Coverage ratio effect	Benefit ratio effect	Labour market effect	Residual (incl. interaction effect)
2006 Ageing Report (2004-2050)	**3.3**	8.8	-3.1	-0.8	-0.9	-0.6
2009 Ageing Report (2007-2060)	**3.3**	8.7	-3.1	-0.9	-0.6	-0.7
2012 Ageing Report (2010-2060)	**3.2**	8.6	-3.2	-0.9	-0.5	-0.7
2015 Ageing Report (2013-2060)	**0.1**	6.0	-2.5	-2.7	-0.5	-0.2
2018 Ageing Report (2016-2070)	**0.6**	6.6	-2.5	-2.0	-1.3	-0.2
2021 Ageing Report (2019-2070)	**1.3**	6.5	-1.7	-2.4	-1.0	-0.2
2024 Ageing Report (2022-2070)	**1.4**	5.5	-1.4	-1.9	-0.7	-0.1

- 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.

Table 19 compares the projections of the 2021 Ageing Report with actual public pension expenditure between 2019 (the previous base year) and 2022 (the new base year). Between 2019 and 2021, pension expenditure as a share of GDP has been 1.1 percentage points lower than forecasted in the 2021 Ageing Report. This can be primarily attributed to a stronger-than-expected economic rebound and record high levels of employment, following the COVID-19 pandemic. This has resulted in more robust GDP growth than previously estimated in the 2021 Ageing Report. Furthermore, the increased participation of the older population has raised the average effective retirement age, leading to a more gradual growth in pension expenditure than anticipated in the 2021 Ageing Report.

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

	2019	2020	2021	2022
Ageing Report 2021 projections (%GDP)	13.0	14.2	13.8	13.6
Assumptions (pps of GDP)	0.0	-0.5	-0.7	-1.1
Coverage of projections (pps of GDP)	0.0	0.0	0.0	0.0
Constant policy impact (pps of GDP)	0.0	0.0	0.0	0.0
Policy-related impact (pps of GDP)	0.0	0.0	0.0	0.0
Actual public pension expenditure (%GDP)	13.1	13.6	13.1	12.8

Source: European Commission, EPC.

Table 20 presents the decomposition of the differences between public pension projections in the 2024 Ageing Report and the 2021 Ageing Report. The change in assumptions (i.e. labour productivity, demographic development and employment) is the most important reason for the differences.

In the 2021 Ageing Report, the projected level of GDP in current prices was underestimated for the near future, and thus the pension expenditure relative to GDP is lower until 2022. Furthermore, the record high level of employment decreases pension expenditure relative to GDP until the end of the 2030s. However, the pension expenditure relative to GDP will increase in the long term (by almost 1pp in 2070) due to more rapidly increasing old-age dependency ratio compared to the AR 2018 projection.

Improvements in the modelling have resulted in gradually lower pension expenditures over the projection period. In 2070, the pension expenditure is some 0.6pps lower compared to AR 2021. This projected decrease can be mainly attributed to lower take-up rates of disability pensions than previously expected, owing to a more accurate assessment of the incidence of disability based on updated statistical

data. Consequently, the increase in retirement age has a less pronounced impact on the incidence of work-related disability than what was estimated in AR 2021.

There have been no changes in the interpretation of constant policy. Finally, there has been two moderate policy-related changes. First, the minimum pensions (national and guarantee pensions) were increased in total by 0.1pps relative to GDP in the beginning of 2023. This effect is assumed to be the same relative to GDP for the whole projection period because the minimum pensions are assumed to be indexed according to wages from 2028 onwards. Second, a reform to family pensions that came in effect on 1 January 2022, decreases the pension expenditure somewhat starting in the 2050s, by limiting the duration of surviving spouses' pensions.

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	13.6	13.7	12.8	12.7	13.5	14.4
Change in assumptions (pps of GDP)	-0.9	-0.3	-0.2	-0.2	0.1	0.4
Improvement in the coverage or in the modelling (pps of GDP)	0.0	-0.1	0.0	-0.1	-0.3	-0.6
Change in the interpretation of constant policy (pps of GDP)	0.0	0.0	0.0	0.0	0.0	0.0
Policy-related changes (pps of GDP)	0.0	0.0	0.0	0.0	-0.1	-0.1
New projections	12.8	13.3	12.6	12.4	13.3	14.1

Source: European Commission, EPC.

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

The projections described in this pension fiche have been calculated using the long-term projection models of the Finnish Centre for Pensions and the Social Insurance Institution of Finland. The models simulate the functioning of the Finnish pension system and can be used to make projections for the purposes of planning and forecasting.

4.1. Institutional context in which the projections are made

The Finnish Centre for Pensions runs the earnings-related model, and the Social Insurance Institution of Finland runs the national pension model. There is no formal national peer review of the projections other than review experts in the Ministry of Finance, Finnish Centre for Pensions and the Social Insurance Institution of Finland. However, the national long-term projections by the Finnish Centre for Pensions have been evaluated externally. The Finnish Centre for Pensions has requested the Actuarial Society of Finland to select one or two persons to review the content of the two latest projection reports. The evaluations made by the appointed persons have also been published[18].

4.2. Data used to run the model

The earnings-related projection model requires the following data to describe the initial state, specified by pension act as well as by the age and gender of the insured:

1. population distribution over different acts and different states under the acts

2. salaries of the insured

3. amounts of pension accrued

4. technical provisions and the amount of pension assets

5. amounts of the pensions payable

6. transition probabilities between different states

Figures describing the initial values for the projection (year 2022) have been provided by the Finnish Centre for Pension's employment and pension registers, the joint statistics of the Social Insurance Institution and the Finnish Centre for Pensions, the Local Government Pension Institution and the State Treasury.

4.3. Reforms incorporated in the model

Please see above (Section 1.2.) for reforms made into the earnings-related model and to the national pension scheme.

4.4. General description of the model(s)

The projections for the earnings-related pensions have been calculated using the long-term planning model of the Finnish Centre for Pensions. The model is deterministic and replicates the functioning of the earnings-related pension scheme. The model consists of several interconnected modules (Figure 16).

FIGURE 17 – MODULES OF THE PROJECTION MODEL
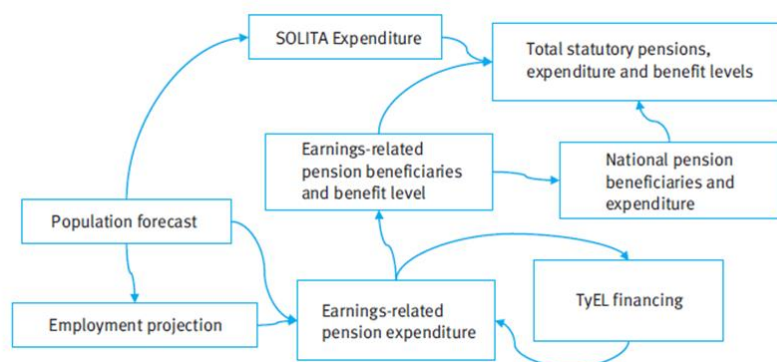
Source: Finnish Centre for Pensions.

The earnings-related pension expenditure module. Earnings-related pension expenditure is projected separately for each earnings-related pension act. Pensions are paid out to pensioners on an annual basis, insured persons accrue future pensions, and persons move between different states (employed, unemployed, pensioner etc.) according to given probabilities. The model's states and transitions between these states are presented in Figure 16. Unemployment pensions were eliminated in 2011. In the future, the transition from unemployment will be made directly to old-age pension.

FIGURE 18 – PROJECTION MODEL'S STATES AND TRANSITIONS BETWEEN STATES
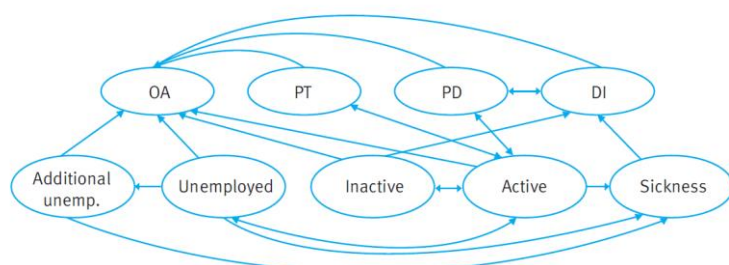
OA = old-age pension   PT = part-time pension   PD = partial disability pension   DI = disability pension

Source: Finnish Centre for Pensions.

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[18]   https://www.etk.fi/tutkimus-tilastot-ja-ennusteet/ennustelaskelmat/pitkan-aikavalin-laskelmat/laskelmien-arviointi/   (in Finnish).

Those active in the model are in gainful employment, their earnings accrue a pension, and their contributions are levied on the basis of the earnings. The unemployed are divided into three different states in the model. Persons aged less than 61 who receive an earnings-related unemployment allowance are categorized as unemployed. Long-term unemployed persons aged over 61 years are entitled to an earnings-related unemployment allowance for additional days until their pension starts. These two groups of unemployed accrue an earnings-related pension during their periods of unemployment.

Other unemployed persons do not accrue a pension (currently about half of the unemployed) and they are categorized as inactive. Persons transferred to the category of inactive also include those who exit the labour force, and those who transfer from work covered by the act under observation to work covered by some other act. The inactive are those persons who have accrued a pension under the act under observation, but who no longer work in a job covered by this act, and who are not drawing a pension.

In addition to the transitions presented in Figure 16, new employees are added, on an annual basis, to the active category in accordance with population and employment forecasts. Persons in each state also die over the course of a year, and some of these deaths result in the award of a survivor's pension to the surviving family member(s).

Within the model's states, people are grouped by the age and gender. An average technique is applied in these groups. For example, all 50-year-old men working in employment contracts covered by TyEL are assumed to be identical to each other. It is easier to use an average modelling technique as opposed to an individual-level projection, but at the same time it produces less information. For example, a distribution of pensions by size cannot be calculated.

The average technique used by the model does not prevent capturing the selectiveness of transitions between different states. The following phenomena have been included to the model:

1. Accrued pension and salary for projected pensionable service for those transferring to disability pension are typically lower than for those continuing in gainful employment.

2. The mortality for persons drawing a disability pension is higher than the average for the population in general, while the mortality for non-disabled persons is correspondingly lower.

3. Among old-age pensioners, a large pension is associated with low mortality when age and gender are taken in the account.

4. Pension accruals for those dying while still within the active age range are lower than average for the insured.

The private sector employees' act (TyEL) financing module is used to calculate the development of TyEL's contribution rate, technical provisions and assets. It contains a detailed description of the legislation and the bases of calculation pertaining to TyEL financing.

The financing module is joined to the TyEL expenditure module via a two-way connection: TyEL expenditure and wage sums affect the contribution level and the formation and dissolution of technical provisions. Conversely, the size of the employee's pension contribution affects pension accrual and therefore pension expenditure. Premium income is composed of a pooled component, a funded component and a remaining component, which contains operating expenses and client bonuses. The pooled component is used to finance pay-as-you-go pensions, and the funded premium income is accumulated into technical provisions for the pension providers. Technical provisions are also dissolved to finance annually paid pensions. Since the required amounts of technical provisions are calculated per age group for each calendar year, the age-specific allocation of old-age pension liability supplements can be investigated with the help of the model.

The number of earnings-related pension recipients and the average earnings-related pension are calculated once the pension expenditure of all earnings-related pension acts is known. The number of insured persons and earnings-related pension recipients is calculated by pooling all the earnings-related pension schemes together. This projection is analogous to the scheme-specific projections, but it encompasses all the insured persons and all pensioners in Finnish earnings-related pension schemes.

In the national pension module, the number and the size of national pensions is calculated. The earnings-related pension projection serves as a basis for determining the national pensions. However, the model does not provide information on the size distribution of earnings-related pensions. Therefore, in order to calculate national pensions, it is assumed that the shape of the commencing earnings-related pension distribution remains unchanged across time.

The model allows the national pension index to be a pure price index, a pure earnings-level index or a weighted average of these indexes. Since the 2008 increase, no decisions have yet been made regarding the next general increase in the national pension scheme. Historically, however, the practice has been to increase occasionally the real value of national pensions. In the baseline projection, increases have been taken into account by assuming that the national pension index is equal to half of price growth plus half of average earnings growth.

The SOLITA[19] module is a simple description of the development of SOLITA expenditure based on a population forecasts. The starting point for the projection is current SOLITA expenditure, by age and gender. For those of active age (18-62-year olds), SOLITA pensions grow at the same rate as the general wage level. For those who are 63 or older, SOLITA pensions grow at the same rate as the earnings-related pension index.

The national pension expenditure module. The national pension model run by the Social Insurance Institution of Finland estimates the total national pension expenditure and the number of recipients of the national pension. Old-age, disability, survival and guarantee pensions are treated separately. The model is deterministic and uses the population and employment forecasts as well as the information of changes in consumer prices and average earnings growth.

In order to determine the number of recipients of the national pension and guarantee pension, the total number of pensioners is first estimated. The number of the new national pensioners is calculated from the total number of the new pensioners using the distribution of earnings-related pension income. The shape of the distribution is not assumed to change over the time. The level of average earnings-related pensions is assumed to evolve as in the near past, considering the changes in average income and employment rates.

In the calculation of the average level of the national pension in different age groups, both long-term changes in the level of employment and average wages are taken into account. In the model, the level of the national pension is indexed to one half of the price growth plus one half of the average earnings growth. Using the earnings growth in the indexation simulates the occasional increases of the real level of the national pension.

4.5. Other features of the projection model

• Number of different persons modelled per generation.

The model is an average aggregate model, in which people are divided into two genders and ca. 20 population states corresponding to workers, unemployed persons, retirees etc. Persons are not simulated on an individual level.

• How is the replacement rate of new retirees calculated?

Replacement rate of the old-age earnings-related pensions is calculated by dividing the new old-age earnings-related pension expenditure (multiplied by two because the new pensioners receive the pension in the first year only in 6 months on average) by the number of new old-age earnings-related pensioners. This number is divided by the economy-wide average wage at retirement.

• How are careers modelled?

The employment projection is based on the population forecast, the assumed long-term equilibrium unemployment rate, and estimated entry and exit rates that depict changing labour force participation.

• How are survivors' pensions calculated?

The average size and number of new earnings-related survivors' pensions is calculated based on pensioners and people with pension entitlements dying during the same year. The age of the surviving spouse depends on the age and gender of the deceased. Survivors' pensions are indexed to the earnings-related pension index and the mortality difference of survivors and the whole population is assumed to stay unchanged.

• How is the retirement age and its development over the projection period computed?

The statutory retirement age is raised from 63 to 65 during the years 2018-2027. After 2030, the statutory retirement age is linked to life expectancy as described in Section 1.1. The expected effective retirement age for a given year is calculated as the age at which people would retire on average, if the age-specific retirement and mortality rates would remain unchanged. Hence, it is not affected by changes in demography.

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[19] SOLITA-pensions refer to military accident and injury, traffic insurance and accident insurance laws.

4.6. Methodological annex

Economy-wide average wage at retirement

In the projection, it is assumed that economy-wide average wage at retirement grows faster than the economy-wide average wage as the retirement age increases over time and the average wage increases with age for older employees.

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

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	44.2	62.2	87.7	127.5	178.2	250.2
Economy-wide average gross wage	41.9	55.2	77.0	108.2	150.6	208.3

Source: European Commission, EPC.

Pensioners vs pensions

Total number of pensioners summed from the subcategories, such that people receiving some type of minimum pension are calculated only once. Hence, the number of pensioners that receive minimum pensions is the number of people receiving only a guarantee pension or national pension. These pensioners do not receive an earnings-related pension at all. Those who additionally receive an earnings-related pension are included only in the category of earnings-related pensioners. The same logic is used with disability pensioners.

The number of pensions is handled in an opposite manner: If the pensioner simultaneously receives an earnings-related pension and national or guarantee pension he/she is calculated twice. However, if the pensioner simultaneously receives a guarantee pension and national pension (the two types of minimum pension) the pensioner is calculated only once.

Pension taxation

As for net total pension expenditure, an assumption of a constant tax ratio of 21.1% has been used based on simulations by the Ministry of Finance for the effective tax rate on pensions for year 2024.

Disability pensioners

Age-specific incidence rates for disability pensions have decreased steadily since the 1990s. This trend is assumed to continue. However, as the retirement age rises, more people face the risk to retire on a disability pension. Consequently, the average age and the number of people retiring on a disability pension increases. Disability pensions are transformed into old-age pensions at the statutory retirement age or at most two years later for public sector pensions.

The assessment of the risk of work-related disability has become more accurate since the previous Ageing Report, due to the utilisation of new statistical data. The findings indicate that the increase in retirement age has a less significant impact on the risk of work-related disability than what was estimated three years ago.

	2022	2030	2040	2050	2060	2070
Age group -54	0.2	0.2	0.2	0.2	0.2	0.2
Age group 55-59	1.6	1.5	1.4	1.4	1.3	1.3
Age group 60-64	2.0	2.6	2.7	2.6	2.7	2.6
Age group 65-69	0.0	0.0	0.2	0.6	1.0	1.4
Age group 70-74	0.0	0.0	0.0	0.0	0.0	0.0
Age group 75+	0.0	0.0	0.0	0.0	0.0	0.0

Source: Finnish Centre for Pensions.

Survivors' pensions

The factors affecting the projections of survivors' benefits are described in Section 4.5.

Non-earnings-related minimum pension

After the maturation of the earnings-related pension scheme, the level and coverage of the earnings-related pensions have increased. The share of the minimum pensions provided by the Social Insurance Institution of Finland has dropped to some 7% of total pension expenditure. In addition, the ratio of minimum pension expenditure to GDP has nearly halved since 1990 despite the fact that a new minimum pension benefit, the guarantee pension, was introduced in 2011.

Mortality among persons receiving a national old-age pension is, standardised for age and sex, higher than in the general population. Mortality is assumed to follow the same rate of decline as estimated in the population projection. The relative difference to mortality in the general population is retained. Furthermore, particularly among men, mortality is more pronounced in those receiving a higher-than-average national pension.

The main factors that influence the expenditure on minimum pensions are indexation and the pension reform of 2017. The projection assumes that the minimum pensions are increased by real wage growth starting from 2028 The higher level of minimum pensions leads to higher number of recipients and higher total expenditure. On the other hand the pension reform affects the other direction with the higher level of the earnings-related pensions and the rising age limits decreasing the number of minimum pension recipients.

With the wage indexation assumption used in the projection, the ratio of minimum pension expenditure to GDP will remain roughly at its current level during the projection period.

Contributions

The assumptions and the calculation of the contributions are described in Section 3.4.

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 A3 – 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	0.5	-0.7	-0.3	0.9	0.8	1.4
Dependency ratio effect	1.2	0.3	1.0	1.7	1.2	5.4
Coverage ratio effect*	-0.8	-0.2	-0.3	-0.5	-0.5	-2.3
Coverage ratio old-age	-0.1	0.1	0.0	-0.1	-0.1	-0.2
Coverage ratio early-age	-2.7	-2.4	-1.3	-1.0	-0.4	-7.8
Cohort effect	-1.6	0.7	-0.2	-1.4	-0.9	-3.5
Benefit ratio effect	-0.2	-0.7	-0.6	0.1	0.3	-1.1
Labour market effect	0.1	-0.1	-0.3	-0.3	-0.2	-0.8
Employment ratio effect	0.1	-0.1	-0.1	-0.1	-0.1	-0.4
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	0.0	-0.2	-0.2	-0.1	-0.5
Residual	0.3	0.0	0.0	0.0	0.0	0.1

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

Source: European Commission, EPC.