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Economic
Policy Committee
Ageing Working Group

2024
Ageing Report

PORTUGAL
COUNTRY FICHE
March 2024

Economic Policy Committee
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March 2024

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INTRODUCTION

The present country fiche of the Portuguese pension system 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. The fiche was prepared by Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais (GPEARI) of Ministry of Finance, Gabinete de Estratégia e Planeamento (GEP) of Ministry of Labour, Solidarity and Social Security and Autoridade de Supervisão de Seguros e Fundos de Pensões (ASF). The pension projections presented in this fiche incorporate the macroeconomic assumptions and methodologies agreed within the Ageing Working Group of the Economic Policy Committee. The projections have been peer reviewed by the other Member States and the European Commission within the Ageing Working Group. The projections were finalised in the autumn of 2023 and represent the situation of the pension system according to legislation applicable in October 2023.

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

1. OVERVIEW OF THE PENSION SYSTEM

1.1 Description

The Portuguese Social Security system provides social protection through three systems that correspond to different social protection levels: i) the **Sistema Previdencial, a *contributory welfare*** system, designed to replace earnings lost when specific contingencies occur, and could either be a public or private scheme; ii) the **Sistema Proteção Social e Cidadania, a *social solidarity protection*** system, which, by definition, covers all Portuguese citizens and is mainly funded by taxes; iii) and the ***complementary*** system.

The public ***contributory welfare*** system is mainly a defined benefit (DB) system, working on a pay-as-you-go (PAYG) financing basis. It incorporates two distinct schemes: the general

Social Security scheme (hereafter referred as *Social Security (SS) pension system*), for most workers, and *CGA* (Caixa Geral de Aposentações subsystem), that covers employees committed to public functions who have started working in the public sector until 2005.

At the end of 2022, the *contributory welfare* regime of **Social Security**, that includes new public employees since January 2006 after the CGA closure in 2005, covered more than 3 million pensions and 4.2 million contributors, while the *social solidarity protection* system (a non-contributory regime financed by the State Budget) covered 134 thousand pensions and 151 thousand complements, called Solidarity supplement for the elderly (Complemento Solidário para Idosos - CSI).

At the end of 2022, the *CGA* closed scheme still encompassed 409 thousand of contributors and about 648 thousand of pensions. The number of contributors will converge to zero in the 2050s, and the number of pensions will decrease until the end of the projection period. However, at the declining pace is not expected to be steady given that in some years there is a concentration of new pensioners as the last contributors retire (between 2028-2030, new pensioners increase, and from 2038 onwards the number of pensioners decreases).

The **complementary system** comprises three strands: a) the public capitalisation scheme, b) the collective initiative schemes funded by employers or professional groups for the benefit of their employees and c) the optional individual initiative that includes retirement saving plans, life insurance, capitalisation insurance and mutual schemes.

The public complementary system, organized and managed by State, of individual and voluntary initiative, works on a capitalised base – the *public capitalisation* scheme. This complementary scheme works in a funded defined contribution base, whereby the worker decides the contributory rate (2%, 4% or 6%[1]) levied on wages registered by *SS* scheme or CGA. The capitalised amount could be paid monthly or in a lump sum when the worker starts to receive an old-age or disability pension from a mandatory scheme. At the end of 2022 the public personal complementary system exceeds 52 million euro of net assets and 8,400 subscribers.

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[1] If the worker joins the system at age of 50 or over, the contributory rate is 6%.

Figure 1 | PORTUGUESE PENSION SYSTEM

Pensions System in Portugal

	Earning Related	Non-Earning Related	Complementary Systems
Public Systems			
Social Security	**Previdential system** ● Old-age pensions ● Disability pensions ● Survivor pensions	**Citizenship Social Protection system** ● Social supplement to Earning Related pensions (top-up) ● Means-tested pensions (old-age; disability and survivor) ● Extraordinary Solidarity complement ● Social Special Systems ● Solidarity supplement for eldery (CSI)	**Public Funded System** ● Public capitalisation personal scheme (voluntary)
	Public Reserve Fund (FEFSS)		
Caixa Geral de Aposentações (CGA)	**Pension scheme for public sector workers** (until 31 Dec 2005) ● Old-age pensions ● Disability pensions ● Survivor pensions	**Special benefits**	
Private Systems			
			Occupational pensions schemes (quasi-mandatory*)
			Personal pensions schemes

Note: * These schemes can be (quasi) mandatory in the sense that, based on collective bargaining agreement, employers are obliged to provide their employees with an occupational pension scheme. FEFSS – Fundo de Estabilização Financeira da Segurança Social.
Source: ASF, GEP and GPEARI.

Additionally, there is a private pensions system that consists of occupational and personal pension schemes. Occupational pension schemes, which can be of a defined benefits (DB) or defined contributions (DC) nature, are mainly financed by pension funds (covering 3.4% of the employed population at end of 2022[2], with an amount of assets corresponding to 7,8% of GDP). DB schemes financed by pension funds represent about 92% of the assets under management, with a total of 69,456 members and 131,961 beneficiaries. On the other hand, DC schemes cover a total of 136,599 members.

Private pension schemes also include occupational schemes funded by group insurance policies (the corresponding amount for technical provisions represented 0.1% of GDP at end-2022) and personal schemes. Personal schemes include individual adhesions to open pension funds and retirement saving schemes (known as PPR – *Planos de Poupança Reforma* – that can have insurance contracts, pension funds or investment funds as financing vehicles), and the respective amount of assets represented 8.5% of GDP by the end of 2022.

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[2] The coverage rate is overestimated, as the same person may be counted more than once (e.g., when a scheme is financed by more than one pension fund).

Public system: Social Security (SS) System and Caixa Geral de Aposentações (CGA)

Old-age pension

Qualifying conditions

Under the general contributory regime, an insured person is entitled to an old-age pension if he/she has reached the statutory retirement age (SRA) and fulfilled the required qualifying period (15 years with earnings registration). In 2014, the SRA was raised from 65 to 66 years, and, since 2015, it increases in the proportion of two thirds of the evolution of life expectancy at the age of 65. In 2022, the SRA was set to 66 years and 7 months (in 2023 and 2024 it was set to 66 years and 4 months).

However, a person can retire earlier without penalty according to his/her personal retirement age. This is obtained by subtracting from the SRA four months for each year over 40 of contributory career when the beneficiary turns 60 years old, with a 60-year threshold.

Table 1 | QUALIFYING CONDITIONS FOR RETIREMENT

			2022	2030	2040	2050	2060	2070
Qualifying conditions for retirement <u>with</u> a full pension	Statutory retirement age - men/women		66y & 7m	66y & 11m	67y & 6m	68y & 1m	68y & 7m	69y & 2m
	Minimum requirements	Contributory period - men/women	40y	40y	40y	40y	40y	40y
		Retirement age - men/women	For each year behond 40y of contributory period is discounted 4 months in the statutory retirement age					
Qualifying conditions for retirement <u>without</u> a full pension	Early retirement age - men/women*		>=60 years old & >=40y of contributory period	>=60 years old & >=40y of contributory period	>=60 years old & >=40y of contributory period	>=60 years old & >=40y of contributory period	>=60 years old & >=40y of contributory period	>=60 years old & >=40y of contributory period
	Penalty in case of early retirement age**		-0.5%/month	-0.5%/month	-0.5%/month	-0.5%/month	-0.5%/month	-0.5%/month
	Bonus in case of late retirement		[0.33% - 1%] /month	[0.33% - 1%] /month	[0.33% - 1%] /month	[0.33% - 1%] /month	[0.33% - 1%] /month	[0.33% - 1%] /month
	Minimum contributory period - men/women		15y	15y	15y	15y	15y	15y
	Minimum residence period - men/women		-	-	-	-	-	-

* Except for special pensions, cases of long term unemployment or the flexibility scheme in force in 31/12/2018 (with 60 years or more or with 40 years or more of contributory period) or for the special scheme for long careers.
** In the case of the early retirement scheme in force in 31/12/2018 (with 60 years or more or with 40 years or more of contributory period), the sustainability factor is also applied.
y-year, m-month, SF - sustainability factor.
Note: Full pension is the first retirement age at which people can retire without paying a penalty.
Source: Instituto da Segurança Social.

Pension benefit formula

The monthly pension's value is calculated by multiplying the reference earnings (RE) by the global accrual rate (GAR):

P = RE * GAR

Reference earnings correspond to the average monthly salary of the best 40 years with earning's registration (adjusted by the Consumer Price Index – CPI - excluding housing[34]). These rules apply to those registered into **SS** system since 2002 and in **CGA** since 2006. As for the others, the pension is obtained as a weighted average between the pensions resulting from the old formula (best 10 out of last 15 years earnings for Social Security system, and only 80% the last salary for CGA) and the new clauses.

Table 2 | PENSION BENEFIT FORMULA

20 years or less of contributory period	21 years or more of contributory period	
	RE versus SSI	Formula of pension
P = RE x 2% x N	RE <= 1.1 SSI	RE x 2.3% x N
	1.1 SSI < RE <= 2 SSI	(1.1 SSI × 2.3% × N) + [(RE–1.1 SSI) × 2.25% × N]
	2 SSI < RE <= 4 SSI	(1.1 SSI × 2.3% × N) + (0.9 SSI × 2.25% × N) + [(RE – 2 SSI) × 2.2% × N]
	4 SSI < RE <= 8 SSI	(1.1 SSI × 2.3% × N) + (0.9 SSI × 2.25% × N) + (2 SSI × 2.2% × N) + [(RE – 4 SSI) × 2.1% × N]
	RE > 8 SSI	(1.1 SSI × 2.3% × N) + (0.9 SSI × 2.25% × N) + (2 SSI × 2.2% × N) + (4 SSI × 2.1% × N) + [(RE – 8 SSI) × 2% × N]

Note: SSI - Social Support Index; RE – Reference Earning; N – Contributory period.
Source: Instituto da Segurança Social.

The global accrual rate is the product of the accrual rate and the number of contribution years (N). The accrual rate, which varies between 2% and 2.3% (Table 2), is applied to certain reference earning brackets, indexed to the Social Support Index (SSI). The SSI is a reference amount (€480.83 in 2023 and €443.20 in 2022) for payments to the State and benefits granted by the State, which is updated every year on the basis of a rule similar to the pension's indexation formula (Table 3, i.e., according to the real GDP growth and CPI excluding housing) [5]. [6]

Table 3 | SOCIAL SUPPORT INDEX UPDATE FORMULA

	Real GDP growth < 2%	2% ≤ Real GDP growth < 3%	Real GDP growth ≥ 3%
SSI update[1]	CPI change rate	CPI + 20% real GDP growth [min.: CPI + 0.5 p.p.]	CPI + 20% real GDP growth

Note: SSI - Social Support Index; CPI –Average change of Consumer Price Index excluding housing over last 12 months available in December; GDP – average annual Gross Domestic Product growth rate in the last two years ending in the 3rd quarter of the previous year; min – minimum. 1. In 2021 was approved a Decree-law stating that the SSI in year t could not be lower than in year t-1.
Source: Instituto da Segurança Social.

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[3] When the pension is calculated taking into account the entire contributory career, salaries earned from 2002 onwards are updated by applying an index in which CPI excluding housing has a weight of 0.75 and the earnings reported to Social Security has a weight of 0.25, with a ceiling of CPI excluding housing plus 0.5.

[4] In 2021, a Decree-law stated that if the rule of updating the earning's registration results in a negative value, the last year's adjusted coefficient should be applied.

[5] In 2022 the SSI was updated by 1%.

[6] For example, in 2023, considering that the average annual GDP growth rate of the last two years ending in the 3rd quarter of 2022 was 4.78% and the average change of CPI excluding housing in last 12 months available in November 2022 was 7.46%, the SSI was updated by 8.4%: 7.46%+Max(0.2*4.78%; 7.46%+0.5%)=8.44%, rounded to one decimal place. If the GDP growth rate was below 2%, the SSI would be updated by 7.46%.

Hence the GAR ranges from 30% to 92%, as the minimum contributory period is 15 and the maximum for pension benefit calculation is 40 years.

The automatic annual update of the pension benefit (indexation rule) is done according to the amount of the pension benefit and the GDP real growth, alongside with the CPI (excluding housing), as described in Table 4[7]. For pensions in the first bracket, the update follows the SSI rule.

Table 4 | PENSION BENEFIT INDEXATION FORMULA

	Real GDP growth < 2%	2% ≤ Real GDP growth < 3%	Real GDP growth ≥ 3%
Pensions ≤ 2 SSI (= SSI Update)	CPI	CPI + 20% real GDP growth [min.: CPI + 0.5 p.p.]	CPI + 20% real GDP growth
2 SSI < Pensions ≤ 6 SSI	CPI – 0.5 p.p.	CPI	CPI + 12.5% real GDP growth
6 SSI < Pensions ≤ 12 SSI	CPI - 0.75 p.p.	CPI - 0.25 p.p.	CPI

Note: SSI - Social Support Index; CPI –Average change of Consumer Price Index excluding housing over last 12 months available in December; GDP – average annual Gross Domestic Product growth rate in the last two years ending in the 3rd quarter of the previous year; min – minimum.
Source: Instituto da Segurança Social.

For example, in 2022, pensions below or equal two times the SSI (2x€443.20=€886.40) were updated by 1% (equal to SSI update), pensions above 2 times SSI and below or equal 6 times SSI (€2659.20) were updated by 0.49% (equal to CPI) and pensions above 6 times SSI and below or equal 12 times SSI were updated by 0.24%.

However, in 2022, to mitigate the inflation effects on the family's budgets, Government decided to anticipate half of the 2023 total update, paid to pensioners in October, with a one-off lump-sum corresponding to 50% the monthly pension benefit. The updated indexation rule was not applied in January 2023. Instead, it was decided to update the pensions below or equal two times the SSI (2x€480.43=€960.86) by 4.83%, pensions above 2 times SSI and below or equal 6 times SSI (€2882.58) by 4.49% and pensions above 6 times SSI and below or equal 12 times SSI by 3.89%. In April 2023, due to higher than expected inflation, Government decided to implement a mid-term update of pensions, from July 2023, to the same extent as if the indexation formulas has been applied (more 3.57%, corresponding to 8.4% for pensions equal or below twice SSI, 8.06% for pensions above 2 times SSI and below or equal 6 times SSI, and 7.46% above 6 times SSI and below or equal 12 times SSI).

Early retirement pension

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[7] The GDP and inflation follow the same specifications as for SSI.

Before reaching the statutory retirement age, an early old-age pension may be claimed under certain conditions:

- Workers with very long careers (i.e., workers with at least 60 years of age and a career length of 48 years or more; or workers with at least 60 years of age with 46 years or more of career, provided they started working and paying contributions at the age of 16 or before)[8];

- Workers under long-term unemployment;

- "Old-flexibility" scheme, if the insured person has at least 40 years of contributory period and 60 years or more of age (but he/she has attained less than 40 years of contribution at the age of 60)[9];

- "New-flexibility" scheme, if the insured person has at least 40 years of contributory period at the age of 60 (except for workers with long careers and workers in a very specific set of arduous jobs)[10];

- Retirement regime for workers in arduous or hazardous jobs;

- "Early retirement due to disability" scheme, if a disabled person is older than 59, and, at least, 15 of contributory career with 80% or more of reduction in capacity for work.

Sustainability factor, penalty and bonus

A sustainability factor, penalty or bonus may be applied to the value of the accrued pension. The sustainability factor (SF) is an adjustment feature of the pension system to the demographic evolution, applied exclusively to i) an early old-age pension that falls under the "old flexibility" scheme, that is, in case the contributor has not attained at least 40 years of contributions at the age of 60; ii) early pensions, which fall under the long-term unemployment scheme. This sustainability factor is equal to the ratio between the life expectancy at 65 years of age in 2000 and the life expectancy at 65 years of age in the year prior to the pension attribution. The SF in 2022 was 14.06% and 13.83% in 2023.

Early-retirement pensions may also be subject to a pension penalty. The personal retirement age is a key concept to compute this penalty. The pension is subject to a penalty of 0.5% for each month of anticipation to the personal retirement age. Both the sustainability factor and

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[8] Decree-law no. 73/2018, of September 17, extended the scope of Decree-Law no. 126-B/2017, of October 6, to workers with at least 60 years of age with a minimum of a 46 years contributory career, provided they started working and paying contributions at the age of 16 or before.

[9] In CGA, beneficiaries that are not eligible for apply to early pension under the "old flexibility" could apply to an early pension at age of 55 years and 30 years of contributory career.

[10] This was approved by Decree-Law no. 119/2018, of December 27, and entered into force on 1st January 2019.

the pension penalty are applied under the "old-flexibility" scheme. For workers falling under the "new-flexibility" scheme, only the pension penalty (but no sustainability factor) applies.

For workers who retire after the personal retirement age, a bonus is applied depending on the contributory period calculated up to the age limit of 70. The bonus is obtained by multiplying the bonus rate (Table 5) by the number of months completed between the one in which the pension is granted and when the person reached the personal retirement age. The pension benefit, including bonus, cannot be higher than 92%[11] of the highest monthly salary used in the calculation of the reference earning.

Table 5 | BONUS REGIME FOR WHO RETIRE AFTER PERSONAL OR STATUTORY RETIREMENT AGE

Contributory career (years)	Monthly bonus rate (%)
15 - 24	0,33
25 - 34	0,5
35 - 39	0,65
>= 40	1

Source: Instituto da Segurança Social.

For example, someone applying for an old-age pension at age of 67 years with 44 years of contributory period is entitled to a bonus corresponding to the difference in months between the age of the contributor at retirement and the personal retirement age[12]. More detailed examples of pension benefit calculations are given in the annex.

Minimum pensions (earning-related)

Under the general contributory regime, minimum pension amounts are guaranteed according to the pensioner's insurance career. When the pension amount, calculated according to the pension benefit formula, is lower than the guaranteed minimum amount, a "social supplement" corresponding to the differential is applied. The social supplement granting is not means-tested. The minimum pension amount depends on the contributory career, as shown in table below, and is not applied to early pensions.

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[11] In CGA it should not exceed 90% of last monthly wage.

[12] The personal retirement age is obtained by discounting 16 months (4, the number of years of contributory period above 40 years, multiplied by 4 months) , to the statutory retirement age (in 2023 the statutory retirement age is 66 years and 4 months, and the personal retirement age is given by statutory retirement age minus 16 months, which gives 65 years). If the contributory career is higher than 40, the bonification is 1% multiplied by 24 months).

Table 6 | Minimum pension amount in 2022 (and 2023)

Social Security		CGA	
Contributory career (years)	**Pension in 2022 (2023)**	**Contributory career (years)**	**Pension in 2022 (2023)**
< 15	€278.05 (Jan - €305.77 Jul - €301.41)	5 - 12	€259.85 (Jan - €272.40 Jul - €282.12)
		13 - 18	€270.84 (Jan - €283.92 Jul - €294.06)
15 - 20	€291.68 (Jan - €305.77 Jul - €316.18)	19 - 24	€289.53 (Jan - €303.51 Jul - €314.35)
21 - 30	€321.86 (Jan - €337.41 Jul - €348.90)	25 -30	€324.00 (Jan - €339.65 Jul - €351.78)
> 30	€402.32 (Jan - €421.75 Jul - €436.11)	> 30	€429.29 (Jan - €450.02 Jul - €466.09)

Source: Instituto da Segurança Social.

Non-earnings related pensions

When a person reaches the statutory retirement age but is not covered by any compulsory social protection scheme, or does not have the required contributory period, he/she may be entitled to a social pension, under the non-contributory regime. Benefits provided by this scheme are means-tested, ensuring that a person's income does not exceed the legally prescribed pension value: 40% of the SSI for singles (in 2023, the gross monthly income could not exceed €192.17; €177.28 in 2022) - or 60% of SSI if in a couple (€288.26 in 2023, €265.92 in 2022). The basic social pension value is €231.88 in 2023 (€224.24 in 2022). A supplement is added according to the pensioner's age: €20.18 (€19.52 in 2022) for pensioners below 70 years of age, and €40.36 (€39.03 in 2022) for pensioners aged 70 years or more. This pension is indexed to the SSI and is updated according to the lower earning-related pensions rule (Table 3).

There is also a means-tested benefit granted to resident[13] low-income elderly (aged SRA or above) that did not have access to a social pension due to has an income above the social pension amount, the Solidarity supplement for the elderly (Complemento Solidário para Idosos - CSI). The amount granted depends on the person's income (should be lower or equal to €5858.63 annually) and on the household's income (lower or equal to €10252.60), if applicable. The amount granted ranges between one twelve of the maximum amount (€5858.63 in 2023, €488.22 monthly) and this amount minus the beneficiary annual income). CSI is paid twelve times a year.

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[13] For at least for six continuous years prior to the date of the request.

Disability pension

Disability pensions have qualifying periods of 5 years for relative disability cases and 3 years for total disability cases. The disability is deemed as "relative" when the insured person cannot earn more than one third of the current salary in that year, or 50% of regular earnings in the following 3 years. On the contrary, the disability is considered as "total" when the insured person loses the capacity to work in any profession in that year, or if it is expected not to recover that capacity until the age of 65. The disability pension benefit formula follows the formula of the old-age pension.

The minimum pension benefit amount in case of "relative" disability depends on the contributory period (see Minimum Pension Amount in Table 6). In case of "total" disability, it corresponds to a minimum old-age pension benefit, or to a minimum relative disability pension benefit with 40 years of contributory career.

In 2017, a new Social Inclusion Benefit (PSI) was created[14]. The PSI aims to integrate all types of disability benefits into a single one targeting all population up to 56 years old. Most of the social disability pensions were transferred to this new benefit. The PSI is not included in the projections because this benefit covers also other age groups and contingencies. However, a special social disability pension may be granted when some specific diseases (AIDS, Parkinson's disease, Alzheimer's disease, etc.) cause permanent incapacity to work with a prognosis of rapid evolution towards loss of autonomy, with negative impacts on the profession.

Survivor's pension

Survivor's pension is a benefit paid to a spouse, a former spouse, a person with whom the beneficiary was living in a de facto relationship, descendants and relatives in the ascending line, when there are no other family members with an entitlement. The amount paid corresponds to certain percentages multiplied by the amount of disability or old-age pension that the beneficiary was receiving or was going to receive. In the non-contributory regime, heirs of an old-age or disability social pensioner (or of a person that did not pay contributions to any pension regime) can receive a survivor social pension if the income is lower or equal to 40% of SSI. The amount allocated to each is equal to the social pension multiplied by the correspondent percentage (see Table 7).

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[14] For more information, see 1.2 Recent reforms of the pension system included in the projections.

Table 7 | SURVIVOR PENSION BENEFIT DISTRIBUTION BY LEGAL HEIRS

Beneficiary	% of pension
Spouse, ex-spouse and de-facto relationship	60% if there is one
	70% if there is more than one
Descendants	20% if there is one*
	30% if there are two*
	40% if there are three or more*
Ascending line	30% if there is one
	50% if there are two
	80% if there are three or more

* The descendant's percentages are doubled if there is no spouse or former spouse entitled to the pension.
Source: Instituto da Segurança Social.

Survivor pensions are granted for a period of five years if spouses, former spouses and unmarried partners have less than 35 years of age when the beneficiaries died, except in cases of total and permanent incapacity to work. Descendants earn a pension up to turning 18, 25 if they are students, or 27 if enrolled in postgraduate, master's degree, doctoral studies or its internships, or disabled.

Financing of the public pension system

The public social security pension system is financed on PAYG basis. The overall rate for the social security system is structured as follows: 11% of gross earnings paid by the employee, and 23.75% paid by the employer[15]. Self-employed pay 21.4% (or 25.2% for those with management functions) and the contracting entities pay 7% (or 10% if economic dependence exceeds 80% on taxable income of the previous year). The social security contribution rate is levied on the relevant income, that corresponds to 70% of the provision services amount or 20% of sales of goods and services of last quarter or of taxable profit of last year (divided by twelve, with a minimum amount of 1.5 times the SSI), if under organised accounted regime. The self-employer can change the relevant income by 5% up to a ceiling of 25% retaining the minimum amount (€20- or twelve-times the SSI - €720.65 in 2023).

Out of the total 34.75% of gross earnings paid by the insured person and employer to **SS**, 20.21% finance old-age benefits, 4.29% go to disability benefits, and 2.44% to survivor benefits of contributory regime. The non-contributory regime is financed by State transfers (tax revenues).

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[15] See Annex for other special contributory rates.

In the case of **CGA** contributors, 73% of the contribution revenue finances old-age and disability pensions and the remaining is allocated to survivor's pensions. The State budget finances the gap between CGA's revenue and expenditure[16].

Even though the system is run on a PAYG basis, in recent years, with the aim of diversifying the sources of funding, an additional tax over property was introduced, as well as earmarked contributions to **SS** (ranging between 0.5 p.p. and 2 p.p.) from the Corporate Income Tax, a Solidarity tax on the banking sector, rents paid by public services and a share of the Personal Income Tax. Between 2017 and 2022, these revenues (2,106.4 million euro, 0.9% of 2022 GDP) have been earmarked to the Social Security Public Reserve Fund (FEFSS).

The FEFSS was created to ensure the coverage of foreseeable pension expenditure for a minimum period of two years. This Fund[17] is annually financed through the sale of public assets and gains from financial investments. Furthermore, to meet the coverage objective, the surplus of the general contributory regime of Social Security is transferred to FEFSS, as well as 2 to 4 pps. of the employee's contributions, whenever the general contributory regime of **SS** registers a surplus or the economic situation allows. In 2022 FEFSS had 22.992 billion euro of assets (9.6% of 2022 GDP).

Taxation

Pensions are subject to taxation. For pensioners not living in Portugal, the pension benefit originating in Portugal is subject to personal income tax (PIT), at a withholding rate of 25%. When residing in Portugal, all income is subject to PIT and the pension income incorporates the household total gross income, which comprises wages, pensions, capital and property income. Some automatic deductions are made according to the type of income of the taxpayer (dependent worker, retirement pension) and the composition of the household.

Tax rates on pensions are applied to the annual income starting at €4,104. Specific deductions are granted, namely, 150% of trade union fees up to 1% of gross income, and the amount of mandatory contributions – to social protection systems and health subsystems – that exceeds €4,104. Only 90% of pension income (85% of business and professional and employment income) granted to a disabled person (at least with 60% of incapacity) are included on the tax base. The tax rate and tax deductions are determined according to pensions and other types of income and the family situation of each pensioner.

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[16] Article no. 139 of Decree-law no. 498/72, December 9th.
[17] FEFSS is classified in General Government (S13) under ESA2010 methodology.

Special pensions

The main special pensions[18] included in the **CGA** scheme are provided to security and defence forces that have a different statutory retirement age (6 years earlier), to ambassadors, plenipotentiary ministers and magistrates, whose pension benefit is calculated by taking into account the last salary and the contributory period length. **CGA** also pays other special pensions on behalf of the State. These are not earnings-related pensions which are paid for relevant services rendered to the country and have been included in the "Other pensions" category. They include disability and survivor pensions paid to military personnel or civil servants working for the Armed Forces, the National Civil Protection Service or the National Fire Service, and the great majority are pensions paid to colonial war veterans. It also includes pensions paid to former political officeholders.

Under the **SS** scheme, there are some special pensions paid to workers with professional activities characterized by difficult conditions, such as workers of merchant navy, mine workers, dancers of classic and contemporary ballet, embroiders from Madeira Island, or specific sectors as security and defence forces, fire workers, air traffic controllers and civil aviation pilots. Pensions are also granted to long-term unemployed workers. The no-earning closed Agriculture Social Security pension scheme (RESSAA) is also included in the special pensions, but its importance has been decreasing. Additionally, there are some complementary pensions paid to specific persons, such as war veterans.

Special pension expenditure in percentage of GDP has been decreasing, reaching 1.1% of GDP in 2022. Expenditure on special pensions related to security and defence has increased by 0.2 p.p. of GDP between 2012 and 2022, but this was offset by the decrease in spending on the RESSAA; included in Other[19]). The share of special pensions in the total number of pensions has also been decreasing (from 7.6% to 4.5%) due to the RESSAA phasing-out.

**Figure 2** | SPECIAL PENSIONS – EXPENDITURE (% GDP)
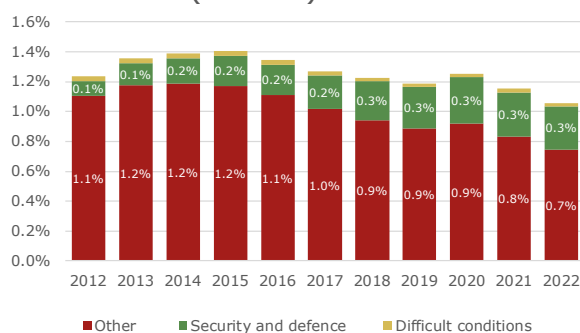
Figure 3 | SPECIAL PENSIONS –NUMBER OF PENSIONS (% PUBLIC PENSIONS)

Source: CGA and GEP.

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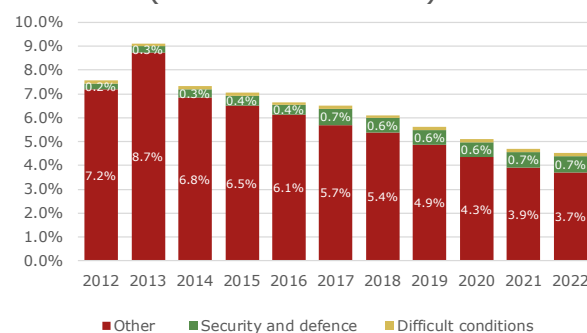
[18] For definition of special pensions see Box II.1.2 in 2018 Ageing Report, part II.
[19] This special scheme was closed in 1987. The new entrants have been registered in the general scheme.

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

There were some minor changes in the pension system between 2019-2022 with no significant impact on projection:

- From 2017 to 2022, for adequacy reasons, lower pensions have been updated on an extraordinary basis. Thus, from 2017 to 2021 pensions below or equal to 1.5 SSI has been increased monthly by EUR 10 (limited to EUR 6 for pensioner that had been increased between 2011 and 2015). In 2022, the monthly update of €10 was paid to pensions below or equal to 2.5 SSI.
- Since 2020, the retirement regime for workers in arduous or hazardous jobs is not subject to the sustainability factor.
- Starting in January 2021, if the rule of updating the Social Support Index results in a negative value, the Social Support Index remains unchanged.
- Starting in January 2021, if the rule for updating the reference earnings results in a negative value, the annual update is suspended and coefficients of the previous year remain in force. In the following years after the suspension, the devaluation is deducted from the new annual coefficients until compensated.
- Since January 2021, the contributory periods carried out under **CGA** system, if there is no overlapping, are taken into account as qualifying conditions to apply for a pension under the very long careers regime.
- In the beginning of 2022, a new early old-age pension scheme was created for disabled persons older than 59, with 80% or more of reduction in capacity for work and at least 15 years of contributory career. These pension benefits are not subject to sustainability factor and penalties.
- In September 2022, included in the package of measures to support families and mitigate the impacts of inflation, a lump-sum was paid corresponding to 50% of the monthly benefit.
- Since February 2022, **SS** System implemented an automatic service that, under certain conditions (to have residence in Portugal, have reached the personal retirement age, have a contributory career only in **SS** System, qualify for a pension, do not belong to a special pension scheme, etc) could provide a provisional pension benefit.
- In October 2022 a transitional regime was approved for updating pension benefits entering into force in January 2023. Accordingly, pensions update was set at i) 4.43% for pensions below or equal to twice the SSI; ii) 4.07%, for pensions between twice the SSI and below 6 times the SSI; and iii) 3.53%, to pensions above 6 times and below 12 times the SSI.

- In April 2023 a mid-term update of 3.57% was approved for pensions below 12 times the SSI, entering into force in July 2023.
- In February 2023, a decree-law was approved stating the transfer into CGA of the liabilities financed via the Caixa Geral de Depósitos Employees' Pension Fund and the corresponding assets.
- Since April 2023, the forester of Madeira and Azores are under the same conditions as other special pensions (applicable to defence and security forces). The main change was to apply to these careers a retirement age equal to the statutory retirement age minus 6 years.
- Establishment of "Pensão na hora", a new online service that allows to simulate and request the old-age pensions, with a provisional pension being granted in 24 hours.
- The minimum wage has been updated: €635 in 2020, €665 in 2021, €705 in 2022 and €760 in 2023.
- Because of a Court decision, from 2023 onwards workers that had been enrolment in the CGA before 2006 and work to a public entity could be enrolled again in CGA even if they had breaks in the period of work.

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

The projections presented in this country fiche are anchored in 2022 data and standard "constant policy" assumptions.

In this exercise, the non-contributory pensions (minimum pensions) were updated according to the Portuguese rule of indexation until 2032 but linked to wage growth from 2033 onwards, as per the Ageing Working Group agreement for the 2018 Ageing Report pension projections.

Moreover, the impact of the Court's decision on the re-enrolment of former contributors to **CGA** was not taken into account in the projection, since no quantified impact is available.

It is also worth stressing that the **CGA** and **SS** models are based on the number of pensions. However, the number of pensioners is obtained as a proxy for the number of pensioners that (i) have a survivor pension and an old-age/disability pension, and (ii) receive pensions from **CGA** and **SS**. Hence, the result by cohort is then controlled by the population in each cohort, such that the number of total pensioners is computed by adding the public pensioners with the private occupational scheme and capped by population in each cohort.

2. OVERVIEW OF THE DEMOGRAPHIC AND LABOUR FORCE PROJECTIONS

2.1. Demographics developments

According to the Eurostat's 2023 population projections, with 2021 as base year, total population is expected to pursue a downward trend, despite the increase in last years. The population is projected to decrease 13.7%, from 10,4 million in 2022 to almost 9 million in 2070, less 4 pps. than what was projected in the EUROPOP2019. The old-age dependency ratio (pop 65+/pop 20-64) increases from 40.7 in 2022 to 68.7 in 2051 and then slightly decreases to 67.8 in 2070. It evolves almost in line with the last projection, showing slightly higher values up to 2042 and then in the last 5 years of the projection.

Table 8 | MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Population (thousand)	10 372	10 236	9 975	9 631	9 253	8 956	10 392	2023	-1 416
Population growth rate	0.5	-0.2	-0.3	-0.4	-0.4	-0.3	0.5	2022	-0.7
Old-age dependency ratio (pop65+/pop20-64)	40.7	48.2	59.8	68.6	67.8	67.8	68.7	2051	27.0
Old-age dependency ratio (pop75+/pop20-74)	16.5	19.9	25.4	31.2	34.9	33.1	34.9	2059	16.6
Ageing of the aged (pop80+/pop65+)	29.2	30.9	34.1	38.0	45.1	44.0	45.8	2063	14.8
Men - Life expectancy at birth	79.6	81.9	83.3	84.6	85.8	86.9	86.9	2070	7.3
Women - Life expectancy at birth	85.0	86.0	87.2	88.3	89.4	90.4	90.4	2070	5.4
Men - Life expectancy at 65	18.9	20.5	21.5	22.4	23.2	24.0	24.0	2069	5.1
Women - Life expectancy at 65	22.3	23.0	24.0	24.9	25.8	26.7	26.7	2070	4.4
Men - Survivor rate at 65+	86.3	89.1	90.6	92.0	93.2	94.2	94.2	2070	7.9
Women - Survivor rate at 65+	93.9	94.5	95.3	95.9	96.4	96.9	96.9	2070	3.0
Men - Survivor rate at 80+	59.1	66.3	70.5	74.2	77.6	80.5	80.5	2070	21.5
Women - Survivor rate at 80+	76.9	79.3	82.2	84.8	87.0	88.9	88.9	2070	12.0
Net migration (thousand)	81.6	16.2	25.9	27.3	32.7	38.5	81.6	2022	-43.1
Net migration (% population previous year)	0.8	0.2	0.3	0.3	0.4	0.4	0.8	2022	-0.4

Source: EUROSTAT and European Commission.

Figure 4 | OLD AGE DEPENDENCY RATIO
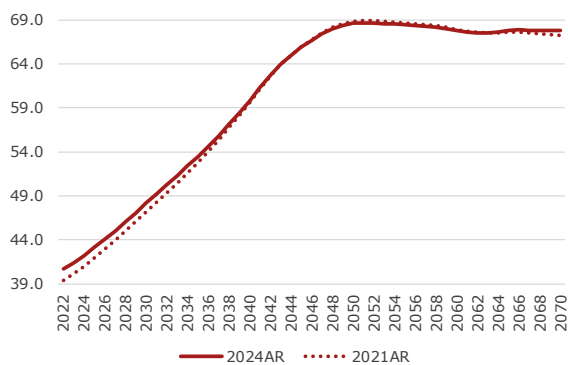
Life expectancy at birth, for men, increases 7.3 years (6.9 years in EUROPOP2019), from 79.6 years in 2022 to 86.9 years in 2070, and, for women, it increases 5.4 years (5.5 years in EUROPOP2019), from 85 in 2022 to 90.4 in 2070. Life expectancy at 65 years, an important indicator for pension projections, increases, for men, 5.1 years (4.6 years in EUROPOP2019), from 18.9 in 2022 to 24 in 2070, and, for women, it increases 4.4 years (4.3 years in EUROPOP2019), from 22.3 in 2022 to 26.7 in 2070.

Besides the last decades of low fertility rates, the EUROPOP2023 population projections assumes that fertility rate increases throughout the projection horizon, reaching 1.55 in 2070. Compared to EUROPOP2019, it shows almost the same increase, but it starts at a lower level (1.41 versus 1.44 in EUROPOP2019).

Figure 5 | FERTILITY RATE
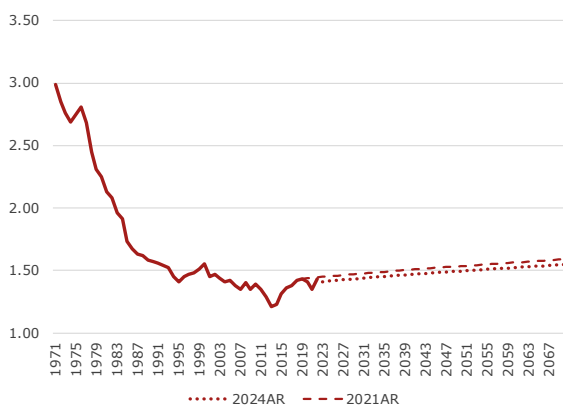
Net migration over the population of last year decreases from 0.8% in 2022 to 0.13% in 2027, rising until the end of projection, when it reaches 0.43%. This profile is more optimistic than the previous one: after the decrease of the first years, from 0.17% of population in 2002 to 0.8%, it increases only 0.13p.p. up to 2070.

Figure 6 | Net migration over population of last year
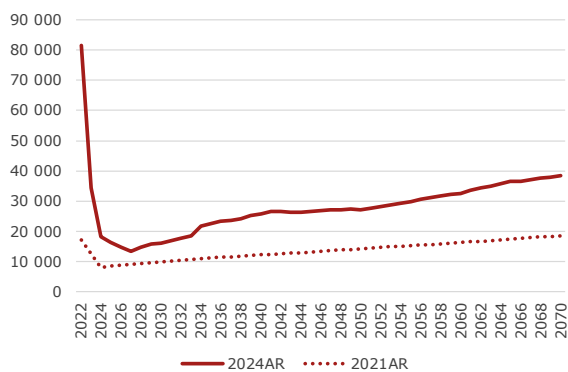
Source: EUROSTAT

The effect of these trends can be seen in the structural upward shift of the demographic pyramid (Figure 7). Between 2022 and 2070, the pyramid highlights the shrinkage of the share of all cohorts below 64 years, particularly on the cohorts between 40 and 64, and the consequent widening of the top.

Figure 7 | Age pyramid, comparison between 2022 and 2070
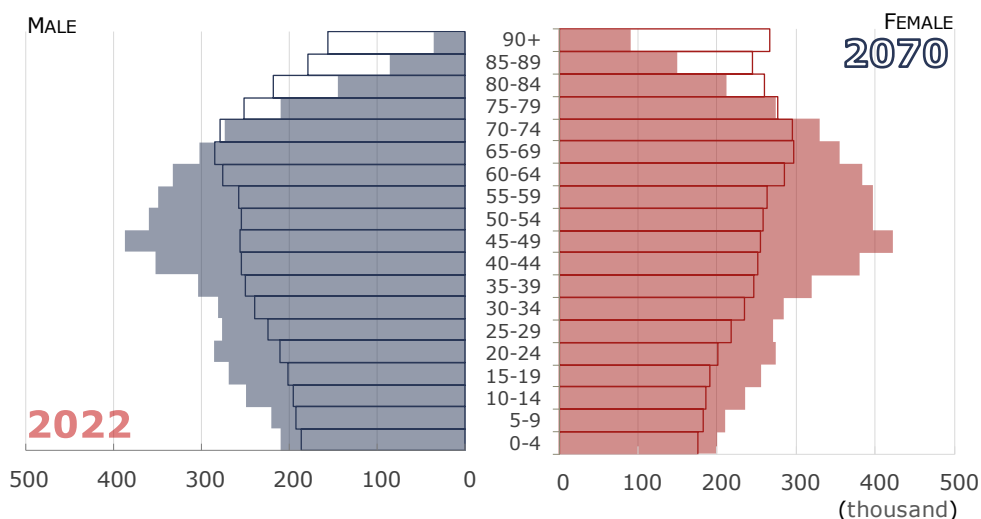
Source: EUROSTAT.

2.2. Labour force

Resulting from Eurostat's demographic projections, the labour force aged 20-74 is projected to decrease by 20.5% between 2022 and 2070 (27.7% in the last projection round). The reduction of the labour force is less pronounced than the decrease of population in this age bracket (23.5%) due, mainly, to the increase in the participation rate of the older population, in particular as regards women: participation rates of the 55-64 and 65-74 age groups rise by around 11 pps. over the period 2022-2070. Compared to the last exercise, the increase of the participation rate of the age group 20-74 is almost the same in the whole period of the

projection (2.8% versus 2,6%), with men showing smaller increases while women have a smaller increase on the 55-64 age group.

Figure 8 | PARTICIPATION RATES 20-74
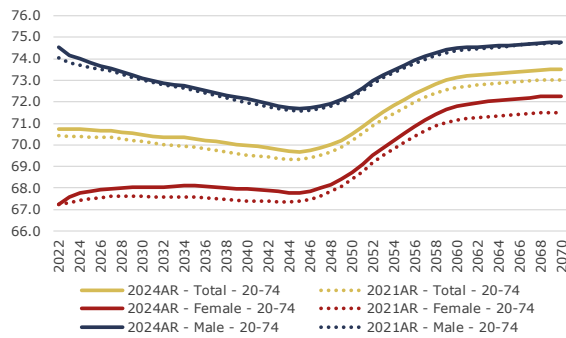
Figure 9 | PARTICIPATION RATES 20-54
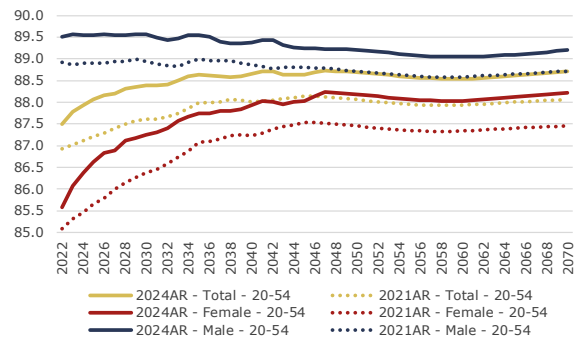
Figure 10 | PARTICIPATION RATES 55-64
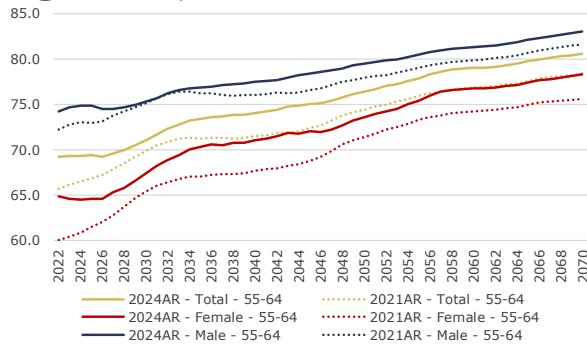
Figure 11 | PARTICIPATION RATES 65-74
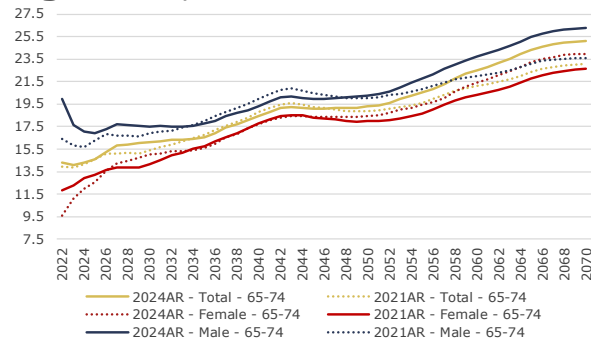
Source: EUROSTAT, EPC.

Given that the unemployment rate of the age group 20-74 maintains an identical profile to the last exercise, the same occurs with the employment rate of this group, although its level is 4 pps. lower.

Figure 12 | EMPLOYMENT RATES
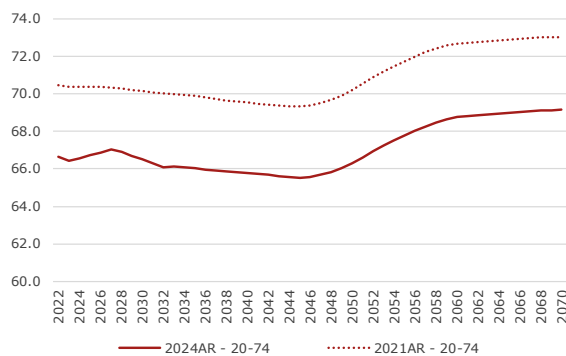
Figure 13 | UNEMPLOYMENT RATES
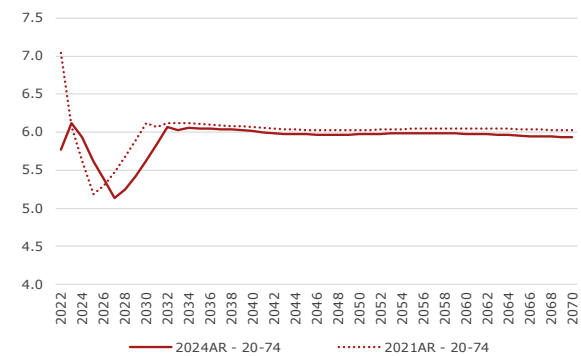
Source: EUROSTAT, EPC.

Table 9 | Participation rate, employment rate and share of workers for the age groups 20-64, 20-74, 55-64 and 65-74

|	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Labour force participation rate 20-64	82.5	83.3	84.1	85.1	85.5	86.1	86.1	2070	3.6
Employment rate for workers aged 20-64	77.6	78.5	78.9	79.8	80.1	80.7	80.7	2070	3.1
Share of workers aged 20-64 on the labour force 20-64	94.1	94.2	93.8	93.8	93.8	93.8	94.7	2027	-0.3
Labour force participation rate 20-74	70.7	70.5	70.0	70.5	73.1	73.5	73.5	2070	2.8
Employment rate for workers aged 20-74	66.7	66.5	65.8	66.3	68.8	69.2	69.2	2070	2.5
Share of workers aged 20-74 on the labour force 20-74	94.2	94.4	94.0	94.0	94.0	94.1	94.9	2027	-0.2
Labour force participation rate 55-64	69.3	71.1	74.1	76.5	79.0	80.6	80.6	2070	11.3
Employment rate for workers aged 55-64	65.8	67.7	70.1	72.5	74.9	76.4	76.4	2070	10.6
Share of workers aged 55-64 on the labour force 55-64	95.0	95.2	94.7	94.7	94.8	94.7	95.6	2027	-0.3
Labour force participation rate 65-74	14.3	16.1	18.4	19.3	22.5	25.1	25.1	2070	10.8
Employment rate for workers aged 65-74	14.0	15.8	18.1	18.9	22.1	24.6	24.6	2070	10.6
Share of workers aged 65-74 on the labour force 65-74	97.9	98.1	97.9	98.1	98.1	98.1	98.2	2028	0.2
Median age of the labour force	44.0	44.0	44.0	44.0	44.0	44.0	44.0	2022	0.0

Source: EUROSTAT and European Commission.

As shown in Tables 11 and 12, women's contributory period is shorter than men's. This feature will remain as women's contributory career increases by 3.1 years between 2022 and 2070 and men's contributory career increases by 4.2 years. It should be noticed that the statutory retirement age increases by 2.6 years in the same period.

The average 4 years increase in career length does not mean that the average exit age will increase to the same extent (it only increases 1 year), but that there is a different behaviour. For example, men enter later in the labour market because they study longer, and women spend less time out of the labour market (to take care of children or dependent relatives). Comparing to the Cohort Simulation Model (CSM), that assumes a rise of 2.3 years of the average exit, the average exit in 2070 is almost in line (the national figure is lower by 0.8 year).

Figure 14 | AVERAGE EXIT AGE AND STATUTORY RETIREMENT AGE
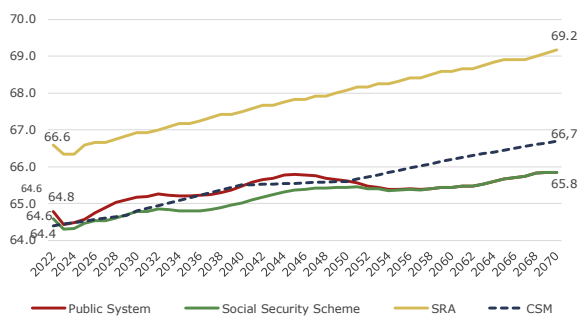
Source: European Commission, GPEARI and GEP.

The closure of CGA means that the last new pensioners are going to retire around the end of 2040s. This has an effect on the average contributory career as public employees have longer careers and higher exit ages than other workers. On the other hand, the reduction in the number of public employees that happened between 2002 and 2014 implies a reduction of the average exit age of the public system after 2045, followed by a recover in the last three years of the projection. This pattern is different from the results of the CSM because CSM keep entry/exit rates constant over projection horizon of the base year (an average of 10 years) adjusted by the increase in the SRA.

Figure 15 | NEW REGISTRATIONS IN SOCIAL SECURITY SCHEME AND STOCK OF PUBLIC EMPLOYEES

Source: Pordata e DGAEP.

Table 10 | LABOUR MARKET EXIT AGE, EFFECTIVE RETIREMENT AGE AND EXPECTED DURATION OF LIFE SPENT IN RETIREMENT - TOTAL

Total	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Average effective exit age (administrative data)*	64.8	65.2	65.5	65.6	65.4	65.8	65.8	2070	1.1
Average labour market exit age (CSM)**	64.4	64.8	65.2	65.7	66.2	66.7	66.7	2070	2.3
Contributory period	34.3	35.8	36.8	36.1	37.8	38.3	38.3	2069	3.9
Duration of retirement***	21.5	21.8	22.8	22.8	23.7	24.0	24.0	2070	2.5
Duration of retirement/contributory period	62.6	60.7	61.8	63.0	62.6	62.7	64.0	2049	0.1
Percentage of adult life spent in retirement****	32.6	32.7	33.5	33.2	33.9	34.0	34.0	2062	1.3
Early/late exit*****	1.4	1.5	2.3	1.5	2.2	2.2	2.3	2040	0.8

* 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, GPEARI and GEP.
Source: European Commission, GPEARI and GEP.

Table 11 | LABOUR MARKET EXIT AGE, EFFECTIVE RETIREMENT AGE AND EXPECTED DURATION OF LIFE SPENT IN RETIREMENT - MALE

Men	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Average effective exit age (administrative data)*	64.6	-	-	-	-	-	-	-	-
Average labour market exit age (CSM)**	64.6	64.9	65.4	65.8	66.4	66.9	66.9	2070	2.3
Contributory period	36.8	38.9	40.0	39.0	41.0	41.0	41.0	2058	4.2
Duration of retirement***	19.8	20.5	21.5	21.5	22.4	22.3	22.5	2062	2.5
Duration of retirement/contributory period	53.9	52.7	53.8	55.1	54.6	54.4	55.6	2052	0.5
Percentage of adult life spent in retirement****	30.7	31.3	32.1	31.9	32.6	32.2	32.6	2062	1.5
Early/late exit*****	1.0	1.5	2.5	1.6	2.2	2.2	2.5	2040	1.2

* 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, GPEARI and GEP.

Table 12 | LABOUR MARKET EXIT AGE, EFFECTIVE RETIREMENT AGE AND EXPECTED DURATION OF LIFE SPENT IN RETIREMENT - FEMALE

Women	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Average effective exit age (administrative data)*	65.1	-	-	-	-	-	-	-	-
Average labour market exit age (CSM)**	64.2	64.7	65.1	65.5	66.0	66.4	66.4	2070	2.3
Contributory period	31.9	33.0	33.8	33.0	34.0	35.0	35.0	2066	3.1
Duration of retirement***	23.2	23.0	24.0	24.0	24.9	25.7	25.7	2070	2.5
Duration of retirement/contributory period	72.7	69.7	71.1	72.7	73.2	73.4	73.4	2068	0.7
Percentage of adult life spent in retirement****	34.4	34.0	34.7	34.5	35.1	35.6	35.6	2070	1.2
Early/late exit*****	1.7	1.6	2.1	1.4	2.2	2.2	2.3	2025	0.5

* 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, GPEARI and GEP.

3. PENSION PROJECTIONS RESULTS

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

The present projections consider the main Portuguese pension systems: the public system (Social Security and CGA) and the private occupational system implemented through pension funds. Other types of private pension schemes have not been included in the projection exercise due to lack of data with a level of granularity allowing for deriving assumptions and modelling cash flows for the future.

The public pensions projection differs from Eurostat figures (ESSPROS). This is explained by the transfer of assets and responsibilities from the banking sector's pension funds to Social Security and the financial cost of complementary retirement pension benefits paid to pensioners of transport companies STCP and Carris[20]. These transfers, that represent 0.2% of GDP in 2022, were not considered in this exercise.

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[20] This exercise does not consider the payment of pensions and supplements of pensions or revenue due to transfers of responsibility to the Social Security scheme or CGA of pensions of banks, BPN, CGD, STCP and Carris employees as they are considered neutral from an actuarial point of view, bearing no impact on the long-term public finance sustainability analysis.

Table 13 | EUROSTAT (ESSPROS) versus Ageing Working Group definition of pension expenditure (% GDP)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	Change 2013- last available year
Eurostat total pension expenditure	15.7	15.6	14.9	14.6	14.2	13.8	13.7	15.0	14.2	-1.5
Eurostat public pension expenditure (A)	14.7	14.7	14.1	13.7	13.3	13.0	12.9	14.2	13.4	-1.3
Public pension expenditure (AWG outcome) (B)	14.3	14.2	13.7	13.4	13.0	12.7	12.5	13.8	13.1	-1.1
Difference EUROSTAT/AWG: (A) - (B)	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	-0.2
Expenditure categories not considered in the AWG definition, please specify:										
BPN, bank, CGD, STCP and Carris pension benefits and complements	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	-0.1

Source: European Commission, INE, Social Security Accounts.

3.2 Overview of the projection results

Under the AWG baseline implicit assumptions, total pension (public and private occupational pensions) expenditure is expected to decrease by 2 pps. of GDP, from 12.5% in 2022 to 10.6% in 2070, after reaching a peak of 15.4% of GDP in 2046. This behaviour is explained by public pension expenditure, as occupational pension expenditure plays a minor role.

Although, in absolute values, occupational pensions spending is expected to increase in the future, the ratio to GDP is expected to slightly decrease over the whole projection horizon (from around 0.3% of GDP in 2022 to 0.2% of GDP in 2070). A downward trend of pension spending relative to DB schemes is expected due to a gradual reduction of the number of beneficiaries. On the other hand, the share of pension spending pertaining to DC schemes is expected to significantly increase over the years.

Net pension expenditure follows the behaviour of gross pension expenditure as the personal income tax on pensions was kept unchanged along the projection period. The tax rate of 2021 (8.24%) was calculated based on gross income of pension benefits reported by tax contributors under the annual income tax declarations.

Table 14 | 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	**12.2**	**13.5**	**14.7**	**14.6**	**11.8**	**10.4**	**15.2**	**2046**	**-1.8**
Private occupational pensions	0.3	0.2	0.2	0.2	0.2	0.2	0.3	2022	-0.2
Private individual mandatory pensions	-	-	-	-	-	-	-	-	-
Private individual non-mandatory pensions	-	-	-	-	-	-	-	-	-
Gross total pension expenditure	12.5	13.8	14.9	14.8	11.9	10.6	15.4	2046	-2.0
Net public pension expenditure*	11.2	12.4	13.5	13.4	10.8	9.6	13.9	2046	-1.7
Net total pension expenditure*	11.5	12.6	13.7	13.6	10.9	9.7	14.1	2046	-1.8
Contributions									
Public pension contributions	**14.2**	**14.1**	**14.2**	**14.2**	**11.9**	**10.3**	**14.6**	**2046**	**-3.8**
Total pension contributions	14.3	14.2	14.4	14.3	12.1	10.5	14.8	2046	-3.9
Balance of the public pension system (%GDP)**	**1.9**	**0.5**	**-0.5**	**-0.4**	**0.2**	**-0.1**	**-0.6**	**2045**	**-2.0**

*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 public pension system expenditure (Table 14) is projected to decrease by 1.8 p.p. of GDP up to the end of the projection period (from 12.2% of GDP in 2022 to 10.4% in 2070), after reaching a peak of 15.2% of GDP in 2046).

On the revenue side, the contributions shall decrease by 3.8 pps. of GDP up to the end of the projection period (from 14.2% of GDP in 2022 to 10.3% in 2070), after reaching a peak of 14.6% of GDP in 2046).

As result, a negative balance is expected for the first time in 2034. In 2056, the balance is anticipated to become positive, turning back to negative at the end of the horizon.

Until 2046 a similar trend is projected in the *SS* system and *CGA*, whose pension expenditures increase by 2.4 pps. of GDP and 0.5 pps. of GDP in the first 24 years, respectively. Afterwards, this trend is reverted up to 2070, with pension spending diminishing by 0.4 pps. in *SS* system and more markedly in *CGA* (4.3 pps.) as it is a closed subsystem.

It should be highlighted that the State budget transfers to fund the non-contributory scheme and the deficit of CGA are included in public contributions in Table 14[21].

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[21] The breakdown is shown on Table 28.

Figure 16 | PUBLIC PENSION EXPENDITURE (% GDP)
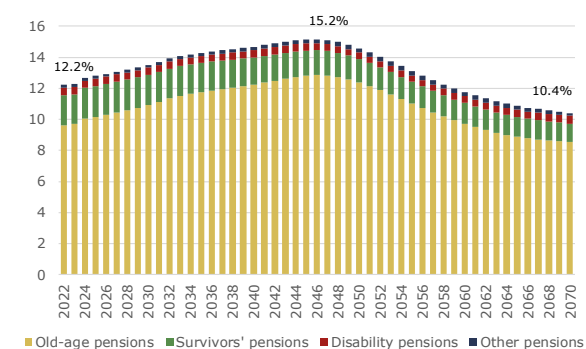
Source: GPEARI and GEP.

The evolution of old-age pension expenditure mainly explains the behaviour of public pension expenditure, as it represents the largest share: it increases from 9.6% of GDP in 2022 to 12.9% of GDP in 2046, then gradually falling to 8.5% of GDP by the end of the projection horizon. The old-age expenditure evolves almost in line with the number of pensions.

In this exercise both the number and expenditure are higher than in the 2021 exercise because, for the first time, the number of pensioners from public entities registered in **SS** was taken into account in the new pensions' projection. In the first years after the closure of **CGA**[22] in 2005, the number of new contributors in **SS** from public entities was negligible. Over the last years, this number has risen and the number of new public employees' pensions was projected on the basis of the current number of public entities' contributors. In the past exercises, the number of pensions of public employees, already in the base year, was assumed to evolve in line with demographics. Besides that, the phasing-out of the effect of old rules in the stock of pensions[23] also plays a role in the expenditure developments.

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[22] Since 2007, the number of new public employees has been subject to rules that restrict its increase. Thus, according Pordata, between 2005 (the last year of subscriptions to CGA, and 2014 there was an annual reduction of the number of public employees of about 75 thousand. Between 2014 and 2022, according DGAEP, the number of public employees increases about 86 thousand.

[23] Under the principle of the most favourable treatment, the older rules remain applicable to some contributors, under certain conditions. For example, in Social Security (for those enrolled in SS until 31/12/2001) and CGA (for those enrolled between 01/09/1993 and 31/12/2001 and that qualified for an old-age pension until 31/12/2005), the calculation of the reference earnings could consider the best 10 out of last 15 years' earnings. In CGA, there are also other conditions according to the time of the enrolment and when the contributor qualifies to a pension benefit. For example, those enrolled before 1/9/1993 and that do not qualify to a pension in 31/12/2005, the reference earning corresponds to 90% of the last salary, whereas it corresponds to 80% of the last salary for those qualifying for a pension between 1/1/2006 and 31/12/2007.

**Table 15** | PROJECTED GROSS PUBLIC PENSION SPENDING BY SCHEME (% GDP)

Pension scheme	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Total public pensions	12.2	13.5	14.7	14.6	11.8	10.4	15.2	2046	-1.8
Old age and early pensions:	9.6	10.9	12.2	12.4	9.7	8.5	12.9	2046	-1.1
Flat component	-	-	-	-	-	-	-	-	-
Earnings related	9.4	10.8	12.0	12.1	9.4	8.2	12.6	2046	-1.2
Minimum pensions (non-contributory)	0.2	0.2	0.2	0.3	0.3	0.3	0.3	2070	0.1
Disability pensions	0.5	0.4	0.5	0.4	0.4	0.5	0.5	2070	0.0
Survivor	1.9	1.9	1.8	1.5	1.3	1.2	2.0	2025	-0.7
Other pensions	0.2	0.2	0.2	0.3	0.3	0.2	0.3	2053	0.0
Special pension schemes		-	-	-	-	-	-	-	-

Country-specific schemes	2022	2030	2040	2050	2060	2070	Peak value	Peak year	Change 2022-2070
Social Security System	7.7	9.0	10.0	10.0	9.5	9.8	10.2	2046	2.0
Caixa Geral de Aposentações (CGA)	4.5	4.5	4.7	4.6	2.3	0.7	5.0	2046	-3.8

* Net pension expenditure excludes taxes on pensions and compulsory social security contributions paid by beneficiaries. The projections does not have a breakdown for special pensions.
Source: European Commission, GPEARI and GEP.

Concerning minimum (non-earning related) old-age pensions, in the first 10 years of the projections the expenditure decreases as a percentage of GDP (i.e., from 0.2 in 2022 to 0.17 in 2030) due to the increase in the statutory retirement age and an increase in labour market participation rates. Between 2030 and 2054, there is a sustained increase of expenditure, driven by the indexation rule for minimum pensions, in line with the agreed Ageing Working Group assumptions (linking them to wage growth), stabilizing up to the end of the period.

Figure 17 | MINIMUM PENSION EXPENDITURE (% GDP) AND PENSIONS (10^3)
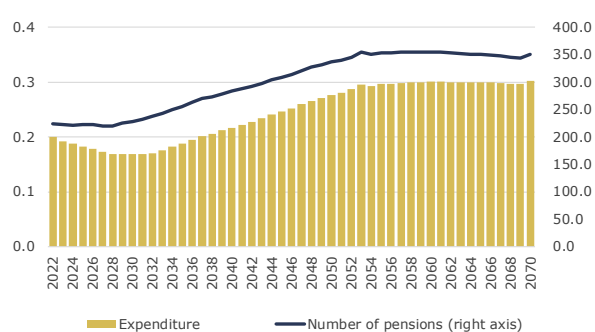
Source: GPEARI and GEP.

Expenditure on disability pensions[24] remains almost stable over the projection period as a percentage of GDP (at 0.5% of GDP). This is explained by the fact that disability pensions are converted into old-age pensions when pensioner reaches the SRA. It means that the change

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[24] The disability pensions in CGA are included in old-age pensions.

in the number of disability pensions follows the evolution of population aged between 20 years and the SRA.

Figure 18 | DISABILITY PENSION EXPENDITURE (% GDP) AND PENSIONS (10^3)
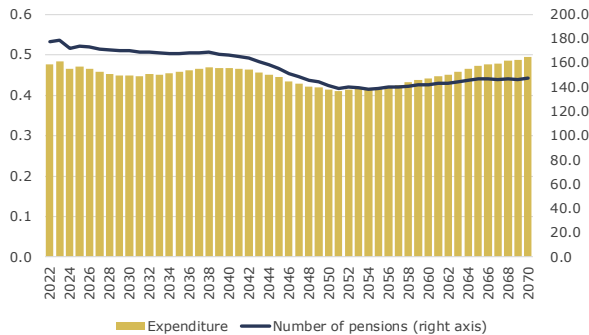
Source: GPEARI and GEP.

Figure 19 | CHANGE OF NUMBER OF DISABILITY PENSIONS AND POPULATION BETWEEN 20 YEARS OLD AND SRA
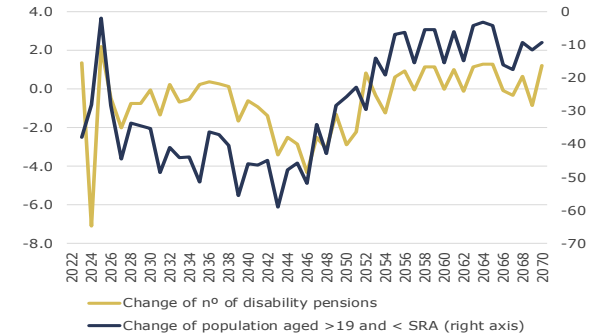
As show in Table 16, the prevalence of disability by cohorts is stable throughout the projection except for the 65-69 cohort that has an increase explained by the higher SRA.

Table 16 | PREVALENCE OF DISABILITY (NEW DISABILITY PENSIONS OVER ACTIVE POPULATION - %)

	2022	2030	2040	2050	2060	2070
under 50	0.1	0.1	0.1	0.1	0.1	0.1
50-54	0.3	0.3	0.3	0.3	0.3	0.3
55-59	0.7	0.7	0.7	0.7	0.7	0.7
60-64	1.3	1.4	1.4	1.4	1.3	1.3
65-69	0.7	0.9	1.1	1.1	1.2	1.2

Source: GEP.

The survivors' pension expenditure, after reaching a peak of 2% of GDP in 2025, follows a downward trend up to 2070. This behaviour can be explained by the evolution of the number of pensions, the increase in life expectancy and, in particular in CGA, by the reduction in the ratio between the new pension benefit and the average old-age pension benefit in the base year.

Figure 20 | SURVIVOR PENSION EXPENDITURE (% GDP) AND PENSIONS (10^3)
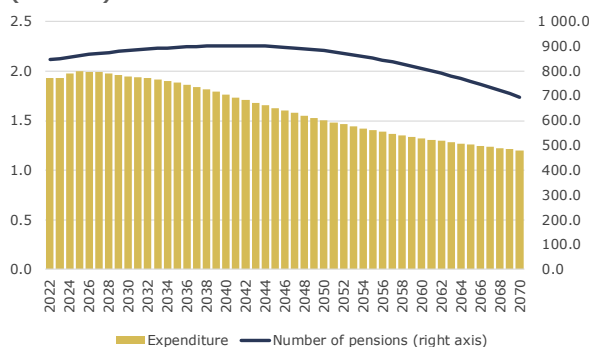
Source: GPEARI and GEP.

Figure 21 | CHANGE OF SURVIVOR PENSIONS EXPENDITURE AND OF NUMBER OF PENSIONS
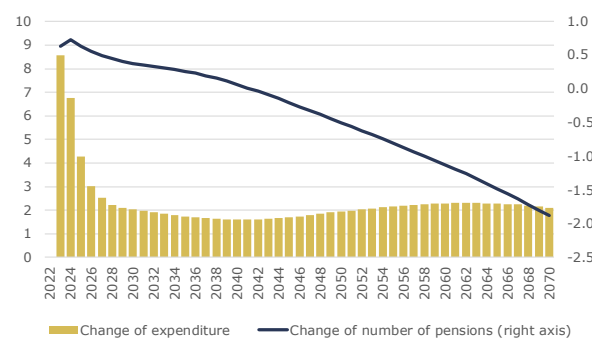
Other pension expenditure has a residual importance, account for about 0.2% of GDP over the whole projection.

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

The main factor driving public pension expenditure upwards is the ageing population (Figure 22). In particular, pension expenditure increases reflecting a rise in the dependency ratio[25] from 40.7 in 2022 to 67.8 in 2070 (Table 8). This effect is offset by those stemming from the benefit ratio and, to a much smaller extent, the coverage ratio and the labour market effects.

Figure 22 | FACTORS BEHIND THE CHANGE IN PUBLIC EXPENDITURE (PPS. OF GDP)
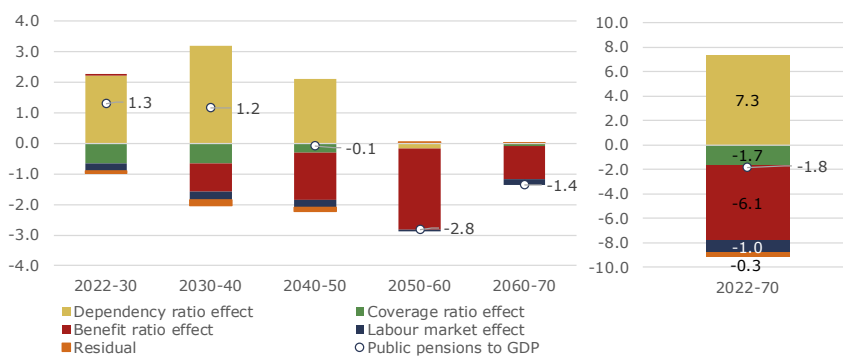
Source: GPEARI and GEP.

The analysis by decades reveals that demographic pressures (as illustrated by the dependency ratio) have a more aggravating impact up to 2051. Up to 2027, the benefit ratio effect mildly contributes to increase expenditure, but this reverts afterwards and up to the end of the horizon. The mitigating impact of the benefit ratio is particularly important in the 2040s and 2050s due to the decrease in pension expenditure in *CGA*.

The coverage ratio[26] effect has a negative contribution on pension expenditure in the first 30 years of the projection, mainly due to the early-age coverage ratio[27] and cohort effect[28].

The labour market effect[29] has a small negative contribution throughout the projection period due to the employment ratio effect and the career shift effect.

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[25] Dependency ratio is the population with 65 years or more over population between 20 and 64 years.
[26] The old-age coverage ratio is given by the number of pensions of pensioners with 65 years or more over the population with 65 years or more.
[27] The early-age coverage ratio is given by the number of pensions of pensioners with less than 65 years over the population in 50-64 cohorts.
[28] The cohort effect is given by the population in 50-64 cohorts over the population with 65 years or more.
[29] The labour market effect is given by the ratio of the population aged between 20 and 64 over the hours worked by employees between 20 and 74 years old.

Table 17 | Factors behind the change in public pension expenditure between 2022 and 2070 (pps. of GDP) - Pensioners

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.3	1.2	-0.1	-2.8	-1.4	-1.8
Dependency ratio effect	2.2	3.2	2.1	-0.2	0.0	7.3
Coverage ratio effect*	-0.7	-0.6	-0.3	0.0	-0.1	-1.7
Old-age coverage ratio	-0.2	-0.3	0.1	0.0	0.0	-0.5
Early-age coverage ratio	-2.1	0.1	-1.1	-0.5	0.1	-3.4
Cohort effect	-1.1	-3.2	-2.6	0.5	-0.5	-6.9
Benefit ratio effect	0.1	-0.9	-1.6	-2.6	-1.1	-6.1
Labour market effect	-0.2	-0.3	-0.2	-0.1	-0.2	-1.0
Employment ratio effect	-0.1	-0.1	-0.2	-0.1	-0.1	-0.5
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.1	-0.2	-0.1	0.0	-0.1	-0.5
Residual	-0.1	-0.2	-0.1	0.0	0.0	-0.3

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

The benefit ratio of public pensions remains almost stable until the end of the 2040s, when a downward trend begins, from 49.3%, in 2046, to 34.3% in 2070. This is explained by a more significant decrease in the average pension benefit reflecting a decline in the number of CGA pensions and the respective expenditure (Figures 23 and 24). The phasing-out of the CGA scheme has an impact on the overall public pension spending reflecting higher average pensions due to both average higher wages and longer contributory periods amongst CGA contributors.

Figure 23 | Relative weight of the number of total pensions of SS and CGA and Benefit ratio
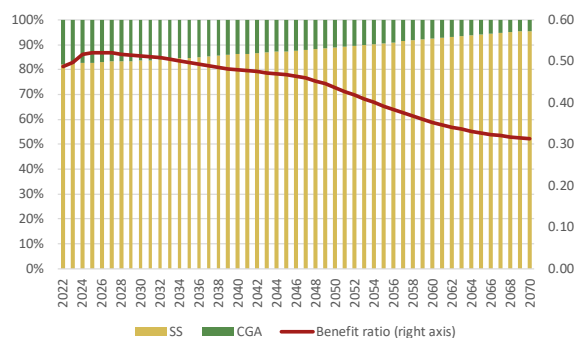
Figure 24 | Relative weight of expenditure of total pensions of SS and CGA and Benefit ratio

Source: GPEARI and GEP.
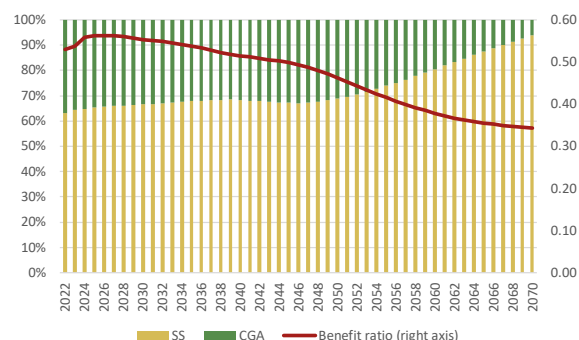
Table 18 | Benefit ratio (BR), replacement rate at retirement (RR) and coverage by pension scheme (in %)

	2022	2030	2040	2050	2060	2070	Change 2022-2070
Public scheme (BR)	52.9	55.3	51.4	46.2	37.8	34.3	-18.6
Coverage	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Public scheme old-age earnings related (BR)	48.7	51.2	47.9	43.7	35.3	31.3	-17.4
Public scheme old-age earnings related (RR)	69.4	79.9	90.1	38.5	40.1	38.9	-30.5
Coverage	84.0	86.1	87.8	87.8	85.8	86.8	2.7
Private occupational scheme (BR)	29.1	24.5	21.0	16.6	13.1	10.8	-18.3
Private occupational scheme (RR)	30.9	28.4	26.2	19.7	16.5	16.0	-14.8
Coverage	4.8	3.9	3.6	3.7	4.0	4.6	-0.2
Total benefir ratio	54.3	56.3	52.1	46.8	38.4	34.8	-19.5
Total replacement rate (earnings-related benefits)	67.3	77.4	86.5	37.0	38.0	37.0	-30.4

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.

The benefit ratio of old-age earning-related pensions follows the same trend as the benefit ratio of public pensions, however it is lower because the CSI, a means-tested benefit, is included in expenditure on minimum pensions.

The replacement ratio of old-age earning-related pensions exhibits an increase in the first years of the projection until 2041, due to the projected new pensions of the last contributors of the **CGA** scheme. With the decrease in the number of new **CGA** pensions, the ratio sharply declines after 2048, when the profile of the **SS** scheme is assumed. Although at the beginning the behaviour of the replacement ratio is influenced by the phasing-out of the new **CGA** pensions, its evolution closely mirrors the relation between the denominator (the average gross wage at retirement) and the numerator (the average pension of **SS**), with the latter increasing at a slower pace. It should be noted that the average gross wage at retirement used to compute the ratio is the one referring to the whole economy, as provided by the European Commission.

The coverage ratio of public pensions is 100% throughout the projection period, while the coverage of old-age earning-related pensions is 86.9% in 2022, rising to around 89% in the 2040s and 2050 as almost all **CGA** contributors reach retirement. In the 2060s, the old-age earning-related coverage ratio decreases to around 87% as the number of **CGA** pensioners decreases. Up to the end of the projection period, this ratio rises again driven by the increase in **SS** pensioners (some of which workers of public entities).

Regarding private occupational schemes, the benefit ratio and the replacement rate at retirement are expected to decrease over time, due to a progressively larger proportion of DC schemes and the fact that the average pension is lower than in DB schemes.

It should be noted that the number of pensioners is not an output of the models. For that reason, and for the purpose of this exercise, the number of pensioners was estimated from the number of pensions by deducting the number of pensioners that receive two types of pensions (an old-age/disability pension and a survivor pension) and controlling for the population in each cohort.

Table 19 | SYSTEM DEPENDENCY RATIO AND OLD-AGE DEPENDENCY RATIO

	2022	2030	2040	2050	2060	2070	Change 2022-2070
Number of public pensioners (thousand) (I)	2 776	2 955	3 169	3 263	3 123	2 987	210
Employment (thousand) (II)	4 901	4 746	4 377	4 079	3 961	3 886	-1 015
Pension System Dependency Ratio (SDR) (I)/(II)	57	62	72	80	79	77	20
Number of people aged 65+ (thousand) (III)	2 467	2 769	3 110	3 271	3 123	3 008	541
Working age population 20 - 64 (thousand) (IV)	6 055	5 748	5 200	4 766	4 609	4 438	-1 616
Old-age Dependency Ratio (OADR) (III)/(IV)	41	48	60	69	68	68	27
System efficiency (SDR/OADR)	1.4	1.3	1.2	1.2	1.2	1.1	-0.3

Source: European Commission, EPC.

The pension system dependency ratio increases from 56.7% in 2022 to 80.5% in 2053 (Table 19), because the number of employed people decreases more than the number of pensioners. After that, the ratio has a slight decrease until the end of horizon as the number of pensioners drops to a greater extent than the number of employed. Because the old-age dependency ratio grows less than the system dependency ratio until 2051, the efficiency of the system drops in this period. Over the remainder of the projection period, efficiency continues to decrease but at a slower pace, since the old-age dependency ratio remains almost stable and the pension system dependency ratio records a milder reduction.

Figure 25 | PENSION SYSTEM DEPENDENCY
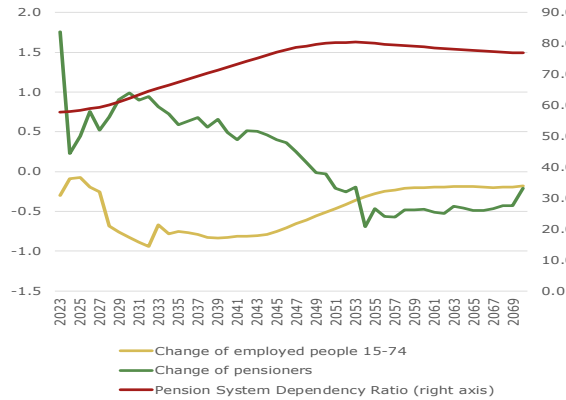
Figure 26 | PENSION SYSTEM EFFICIENCY

Source: GPEARI and GEP.
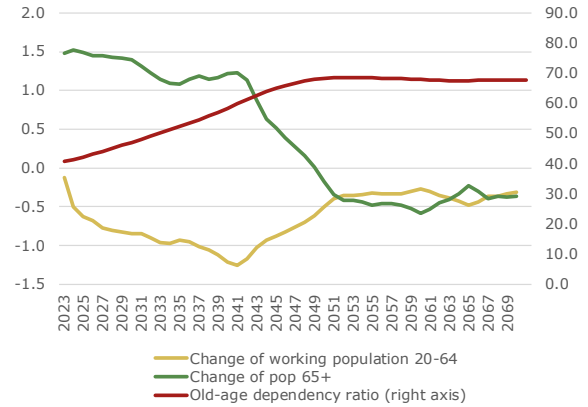
Table 20 | PENSIONERS (PUBLIC SCHEME) TO INACTIVE POPULATION RATIO BY AGE GROUP (%)

	2022	2030	2040	2050	2060	2070
Age group -54	4.8	4.4	3.8	3.9	3.9	3.6
Age group 55-59	55.9	56.2	62.8	60.7	67.8	74.9
Age group 60-64	75.8	65.8	68.5	72.3	74.8	81.5
Age group 65-69	105.0	100.8	92.7	97.5	100.7	108.7
Age group 70-74	106.5	105.0	105.1	99.9	99.1	104.8
Age group 75+	100.0	100.0	100.0	100.0	100.0	98.8

Source: European Commission and EPC.

Table 21 | PENSIONERS (PUBLIC SCHEME) TO TOTAL POPULATION RATIO BY AGE GROUP (%)

	2022	2030	2040	2050	2060	2070
Age group -54	1.8	1.6	1.5	1.5	1.5	1.4
Age group 55-59	11.2	9.2	8.6	7.9	7.5	7.4
Age group 60-64	31.8	27.8	25.1	24.5	23.0	23.0
Age group 65-69	82.0	74.1	64.6	64.9	63.1	63.6
Age group 70-74	100.0	100.0	99.3	93.4	91.7	95.9
Age group 75+	100.0	100.0	100.0	100.0	100.0	98.8

Source: European Commission, and EPC.

Table 22 | PENSIONERS (PUBLIC SCHEME) TO INACTIVE POPULATION RATIO BY AGE GROUP (%) - FEMALE

	2022	2030	2040	2050	2060	2070
Age group -54	5.5	5.0	4.5	4.5	4.5	4.1
Age group 55-59	52.3	54.2	59.8	60.0	67.2	71.1
Age group 60-64	70.3	58.2	60.5	64.5	66.9	70.9
Age group 65-69	101.4	93.8	85.9	90.3	92.4	97.4
Age group 70-74	101.1	103.9	102.1	94.5	92.7	96.3
Age group 75+	100.0	100.0	100.0	100.0	97.9	95.1

Source: European Commission and EPC.

Table 23 | Pensioners (public scheme) to total population ratio by age group (%) - Female

	2022	**2030**	**2040**	**2050**	**2060**	**2070**
Age group -54	2.1	1.9	1.7	1.7	1.7	1.6
Age group 55-59	12.9	10.3	9.6	9.2	8.5	8.3
Age group 60-64	32.3	27.3	24.3	24.0	22.5	22.0
Age group 65-69	83.7	70.4	60.8	61.3	59.4	58.8
Age group 70-74	100.0	99.5	96.9	88.7	86.1	88.4
Age group 75+	100.0	100.0	100.0	100.0	97.9	95.1

Source: European Commission and EPC.

The number of new old-age earning-related pensions increases until 2032, after which it decreases until 2054 and then rises again up to 2070. The impact on expenditure is sharper in the first 25 years because part of these pensioners belongs to the closed **CGA** scheme, which provides higher average pensionable earnings due to higher wages and longer contributory periods (Figures 27 and 28). This explains the increase in the replacement ratio till the beginning of the 2040s and the sharp drop afterwards (Table 18).

Figure 27 | Average contributory period of SS and CGA (years)
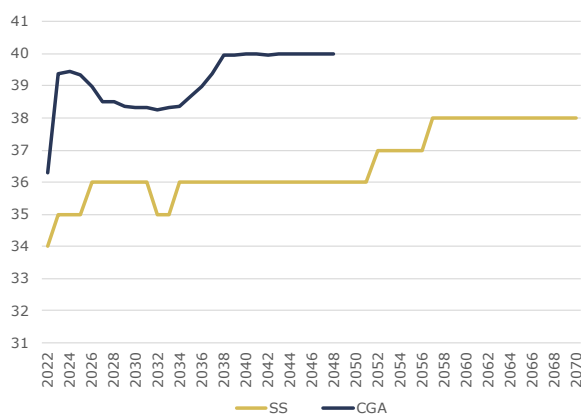
Figure 28 | Average pensionable earnings of SS and CGA (10^3 euro)

Source: GPEARI and GEP.
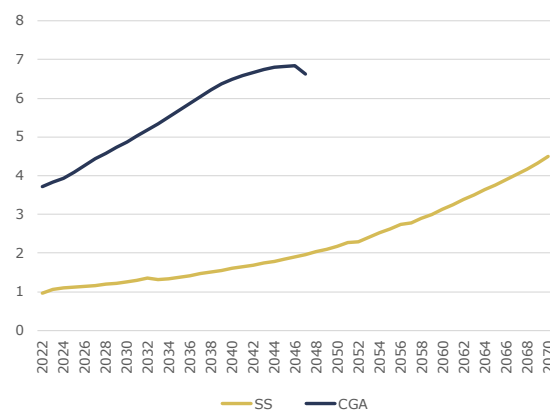
Table 24 | Breakdown of new public pension expenditure (old-age earning-related pensions) - Total

Total	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)	828.2	1 561.4	2 368.2	1 129.3	1 658.5	2 460.6
I. Number of new pensions (1000)	96.5	117.0	113.7	92.4	89.6	97.7
II. Average contributory period (years)	34.3	35.8	36.8	36.1	37.8	38.3
III. Average accrual rate (%)	2.2	2.2	2.3	2.3	2.2	2.2
IV. Monthly average pensionable earnings (1000)	1.3	1.8	2.1	2.2	3.1	4.4
V. Sustainability/Adjustment factor	1.0	1.1	1.4	0.9	0.9	0.9
VI. Average number of months paid the first year	8.7	8.8	8.5	7.8	7.8	7.8
Monthly average pensionable earnings/Monthly economy-wide average wage	80.6	81.7	65.7	45.5	45.4	46.0

Source: European Commission and EPC.

Table 25 | Breakdown of new public pension expenditure (old-age earning-related pensions) – Men

Men	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	482.8	837.3	1 301.4	691.3	1 041.0	1 539.9
I. Number of new pensions (1000)	48.2	56.3	55.9	48.1	48.4	53.0
II. Average contributory period (years)	36.8	38.9	40.0	39.0	41.0	41.0
III. Average accrual rate (%)	2.2	2.2	2.3	2.3	2.2	2.2
IV. Monthly average pensionable earnings (1000)	1.5	2.0	2.2	2.4	3.4	4.9
V. Sustainability/Adjustment factor	1.0	1.0	1.4	0.9	0.9	0.9
VI. Average number of months paid the first year	8.7	8.8	8.5	7.8	7.8	7.8
Monthly average pensionable earnings/Monthly economy-wide average wage	88.8	90.7	70.5	50.5	49.5	50.5

Source: European Commission, EPC.

Table 26 | BREAKDOWN OF NEW PUBLIC PENSION EXPENDITURE (OLD-AGE EARNING-RELATED PENSIONS) - WOMEN

Women	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	345.5	724.1	1 066.8	438.0	617.5	920.7
I. Number of new pensions (1000)	48.3	60.7	57.8	44.3	41.3	44.7
II. Average contributory period (years)	31.9	33.0	33.8	33.0	34.0	35.0
III. Average accrual rate (%)	2.2	2.2	2.3	2.3	2.2	2.2
IV. Monthly average pensionable earnings (1000)	1.2	1.6	1.9	1.9	2.8	3.9
V. Sustainability/Adjustment factor	1.0	1.1	1.5	0.9	0.9	0.9
VI. Average number of months paid the first year	8.7	8.8	8.5	7.8	7.8	7.8
Monthly average pensionable earnings/Monthly economy-wide average wage	72.5	73.3	61.0	40.0	40.6	40.7

Source: European Commission and EPC.

3.4 Financing of the pension system

Total contributions include the contributions to private occupational schemes. Although the number of contributors of these schemes is expected to increase over the projection horizon (mainly due to the increase in members in DC schemes), contributions as a percentage of GDP are expected to remain stable over the entire projection horizon.

Public contributions (contribution from employees and employers, transfers from State to cover non-contributory regime[30] and the CGA deficit[31]) reached 14.2% of GDP in 2022 and are estimated to decrease to 10.3% in 2070. Overall, contributions (from employers and employees) are expected to decrease 1.8 pps. of GDP, from 11.2% in 2022 to 9.4 in 2070. They are driven, throughout the projection period, by the employment trend as the number of contributors decreases by 21% over the projection period. As a result, the projected contributions increase until 2042 and then the trend reverses in 2048 until 2070. From 2022 onwards, the implicit contribution rate and the proportion between employer and employee are kept unchanged.

As mentioned above, FEFSS was created to ensure the coverage of foreseeable pension expenditure for a minimum period of two years. FEFSS receives earmarked revenue from a new tax (AIMI) since 2017, and, since 2020, between 0.5 and 2.5% of CIT revenue and the Solidary Surcharge on the banking sector. More recently, were earmarked to FEFSS part of

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[30] In the 2021 Ageing Report transfers from State budget to fund non-contributory regime was not considered as revenue.
[31] In the 2021 Ageing Report CGA deficit was included in State contribution on Table 25.

the PIT revenue related to capital gains of the selling of properties subject to mandatory inclusion on PIT income statement[32] and the cost of public properties used by public entities[33].

Table 27 | FINANCING OF THE PUBLIC PENSION SYSTEM

	Public employees	Private employees**	Self-employed
Contribution base	Any kind of compensation for work	Any kind of compensation for work	70% of income or 1/12 of taxable income
Contribution rate/contribution			
Employer	23.75%	23.75%	7% or 10%[2]
Employee	11%	11%	21.4% or 25.2%[1]
State*	the deficit of the subsystem	the non-contributory regime	
Other revenues*	gains from financial investments	the sale of public assets and gains from financial investments and earmarked of AIMI, 0.5-2.5 of PIT and Solidary Surcharge on the banking sector	
Maximum contribution	:	:	29.6% x 12 x SSI
Minimum contribution	:	:	29.6% x SSI

* Only legislated contributions are reported. There are some specific rates for some groups of workers as household assistance, professional sportsmen, short-term contract workers, etc. (see Annex). 1 Entrepreneurs and their spouses pay 25.2%. 2 The contribution rate depends. It is 10% when there is an economic dependency is higher than 80%.
AIMI - Additional tax over property. PIT – Personal Income Tax.
Source: GPEARI and GEP.

Table 28 | REVENUE FROM CONTRIBUTIONS (% GDP), NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME, TOTAL EMPLOYMENT AND RELATED RATIOS

	2022	2030	2040	2050	2060	2070	Change 2022-2070
Public pension contribution (% GDP)	14.2	14.1	14.2	14.2	11.9	10.3	-3.8
Employer contribution	7.5	7.1	6.7	6.4	6.3	6.2	-1.3
Employee contribution	3.7	3.6	3.4	3.2	3.2	3.2	-0.5
State contribution*	2.7	3.4	4.1	4.5	2.5	0.9	-1.8
Other revenues*	0.2	0.0	0.0	0.0	0.0	0.0	-0.2
Number of contributors (1000) (I)	4 592.4	4 377.2	3 893.4	3 531.3	3 420.6	3 355.7	-1 236.6
Employment (1000) (II)	4 900.6	4 746.4	4 376.8	4 078.7	3 960.7	3 885.6	-1 015.0
Ratio of (I)/(II)	93.7	92.2	89.0	86.6	86.4	86.4	-7.3

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

3.5 Public pension funds

In 2022, the financial performance of FEFSS was -1.14%[34].

In the projection, the Ageing Working Group assumptions on long-term interest rates were considered. Additionally, the revenue earmarked for the FEFSS was considered to remain

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[32] 2022 State budget law.

[33] Known as onerosity principle. 2021 State budget law.

[34] This rate was calculated take into account data published by Court of Auditors in Opinion on the 2022 General State Account: ratio between the capital gains excluding the unrealised/potential gains (Table 62, page 152) of 2022 and the 2021 stock of assets (Graph 41, page 151).

around 0.2% of GDP in all years of the projection, while the surplus[35]/deficit of the contributory regime was assigned to the revenue/disbursements.

Table 29 | PENSION ASSETS 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)	8.4	9.6	17.5	20.9	19.1	21.4	25.7	20.0
Fund balance (million EUR)	-	4 385.5	4 091.9	2 500.0	3 126.6	9 625.2	11 727.6	-
Fund expenditure	-	0.0	0.0	1 938.7	2 408.6	0.0	1 224.5	-
Disbursements (to pension scheme)	-	0.0	0.0	1 938.7	2 408.6	0.0	1 224.5	-
Other expenditure (incl. administrative costs)	-	-	-	-	-	-	-	-
Fund revenues	-	4 385.5	4 091.9	4 438.7	5 535.2	9 625.2	12 952.2	-
Return on assets	-	0.0	1 595.8	3 489.6	4 378.2	6 727.4	11 232.9	-
Other income (incl. pension contributions)	-	4 385.5	2 496.2	949.1	1 157.0	2 897.8	1 719.2	-
Nominal rate of return (%)		-1.1	3.1	4.1	4.0	4.0	4.0	3.6
Change in asset valuation (million EUR)	-	-	-	-	-	-	-	-

* The nominal rate of return was calculated according to the results of FEFSS assets portfolio management excluding changes in potential gains published in the Opinion on the 2022 General State Account of the Court of Auditors.
Source: European Commission and Portuguese Court of Auditors.

The stock of assets is projected to increase from 9.6% of GDP, in 2022, to 21.4% of GDP, in 2039, driven by the surplus of the public pension system up to 2033 and revenue from property income (Figure 29 and 30). Between 2039 and 2051, the stock of assets is expected to fall as the public pension system balance is further negative, partially offsetting the property income and the other revenue earmarked to FEFSS. It should be stressed that even when the balance of the public pension system reaches its lowest (-0.6% of GDP in 2045), the property income generated by the Fund assets is projected to offset it. Beyond 2051, the improvement in the public pension balance contributes (together with the property income and the other revenue earmarked to FEFSS) to the increase in the FEFSS stock of assets, which is projected to reach 26.2% of GDP in 2070.

Figure 29 | FEFSS BALANCE AND ASSETS AND BALANCE OF THE PUBLIC PENSION SYSTEM (% OF GDP)
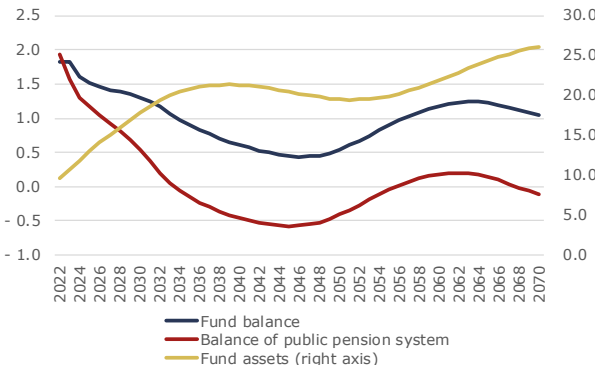
Source: European Commission and EPC.

Figure 30 | CONTRIBUTIONS TO FEFSS BALANCE (% OF GDP)
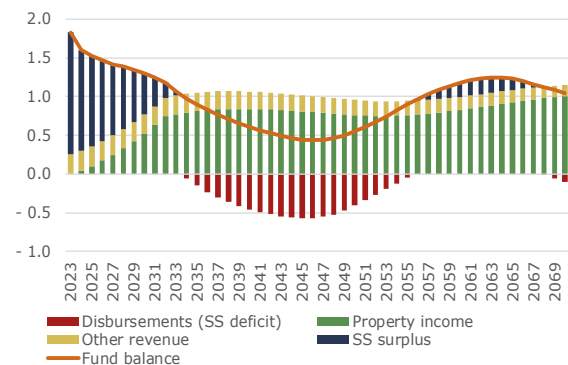
[35] As stated by law.

3.6 Sensitivity analysis

The overview of the sensitivity of pension expenditure projections to changes in the underlying assumptions is provided in Table 30. Results in terms of the average change vis-à-vis the baseline assumptions over the whole period are coherent across the different scenarios.

The policy scenario that entails a constant benefit ratio, thereby offsetting its decline over the horizon, assumes that policy measures are taken if total pension benefit decreases below 90% of its level in the base year (which happens as of 2048). In this scenario, expenditure increases over time, standing 4.3 p.p. above the baseline in 2070. These results highlight the importance of the update rule of pensions in containing expenditure growth.

The second policy scenario, which assumes the maintenance of retirement age at the 2023 level, also illustrates the impact of its indexation to life expectancy. This scenario leads to higher expenditure as a ratio to GDP (+1.9 p.p. in 2070) because a smaller labour force reduces GDP, while the stock of pensioners increases, particularly in the end of 2040s when the old-age dependency ratio peaks. By contrast, in the scenario in which retirement age is linked to life expectancy[36], public expenditure is lower than in the baseline by 0.1 p.p. of GDP at the end of the horizon, as a result of a 1-year increase in the SRA.

In the higher TFP scenario, which assumes a convergence of TFP to 1% in 2070, a denominator effect[37] results in lower expenditure than in the baseline from 2050 onwards, with the differential peaking in 2070 (-0.4pps.). Although not symmetric, the lower TFP scenario, which assumes a convergence of TFP to 0.6% in 2070, has an opposite effect: expenditure in 2070 is higher by 0.8pps. In this case, the difference vis-à-vis the baseline materializes earlier as TFP departs from the baseline as of 2033.

The higher inflation scenario assumes that inflation rates converge linearly from current country-specific values to market-based (euro area) inflation rates by t+10 and, beyond that, to 2% in t+30. This assumption has a minor impact, resulting in expenditure exceeding that of the baseline by 0.1pps throughout the projection horizon (from 2029), as the increase in nominal GDP largely offsets the higher prices.

The scenario that assumes a higher employment rate (by 10pps.) of older workers (55-74 years) entails lower expenditure as of 2025. The differential vis-à-vis the baseline is more pronounced in the2040s and 2050s since GDP growth is higher than in the baseline up to 2039.

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[36] The sensitivity scenario assumes that statutory retirement age shifts in line with ¾ of the expected change in life expectancy. The Portuguese rule assumes 2/3.
[37] TFP is higher than in the baseline scenario from 2041 onwards.

Concerning the demographic scenarios, a lower fertility rate (20%) than in baseline scenario over the projection horizon has a minor effect on nominal expenditure. However, it impacts the labour market and, consequently, the GDP level. Taken together, these effects result on a higher share of expenditure in GDP, starting in 2047 and increasing over time, reaching 0.8pps. in 2070.

In the higher life expectancy scenario that assumes an increase in life expectancy at birth by two years in 2070 compared to the baseline scenario, pension expenditure is higher by 0.5 pps. of GDP at the end of the horizon. This reflects the fact that the resulting rise the expenditure level is not offset by GDP.

The net migration scenarios assume that flows are 33% higher/lower over the entire projection horizon than in baseline scenario. The higher migration assumption results in a decrease in pension expenditure by 0.4pps. of GDP in 2070, while lower migration has an almost symmetric effect.

The total pension expenditure under different scenarios is not significantly affected by different assumptions on occupational schemes, due to the low share of the latter in terms of the total pension expenditure over GDP.

Table 30 | PUBLIC AND TOTAL PENSIONS EXPENDITURE UNDER DIFFERENT SCENARIOS (PPS. DEVIATION FROM THE BASELINE)

Public pension expenditure	2022	2030	2040	2050	2060	2070	Change 2022-2070
Baseline (% GDP)	12.2	13.5	14.7	14.6	11.8	10.4	-1.8
Higher life expectancy (2 extra years)	0.0	0.0	-0.1	0.1	0.4	0.5	0.5
Higher migration (+33%)	0.0	-0.1	-0.2	-0.4	-0.4	-0.4	-0.4
Lower migration (-33%)	0.0	0.1	0.3	0.5	0.5	0.4	0.4
Lower fertility (-20%)	0.0	0.0	0.0	0.2	0.5	0.8	0.8
Higher inflation scenario (2% by 2052)	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Higher emp. of older workers (+10 p.p.)	0.0	-0.3	-0.5	-0.5	-0.4	-0.4	-0.4
Higher productivity (TFP convergence to 1%)	0.0	0.0	0.0	0.0	-0.2	-0.4	-0.4
Lower productivity (TFP convergence to 0.6%)	0.0	0.0	0.2	0.6	0.7	0.8	0.8
Policy scenario: linking retirement age to longevity	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1
Policy scenario: constant retirement age	0.0	-0.1	0.1	1.1	1.7	1.9	1.9
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.7	3.3	4.3	4.3
Total Pension Expenditure	**2022**	**2030**	**2040**	**2050**	**2060**	**2070**	**Change 2022-2070**
Baseline (% GDP)	12.5	13.8	14.9	14.8	11.9	10.6	-2.0
Higher life expectancy (2 extra years)	0.0	0.0	-0.1	0.1	0.4	0.5	0.5
Higher migration (+33%)	0.0	-0.1	-0.2	-0.4	-0.4	-0.4	-0.4
Lower migration (-33%)	0.0	0.1	0.3	0.5	0.5	0.4	0.4
Lower fertility (-20%)	0.0	0.0	0.0	0.2	0.5	0.8	0.8
Higher inflation scenario (2% by 2052)	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Higher emp. of older workers (+10 p.p.)	0.0	-0.3	-0.6	-0.5	-0.4	-0.4	-0.4
Higher productivity (TFP convergence to 1%)	0.0	0.0	0.0	0.0	-0.2	-0.4	-0.4
Lower productivity (TFP convergence to 0.6%)	0.0	0.0	0.2	0.6	0.8	0.8	0.8
Policy scenario: linking retirement age to longevity	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1
Policy scenario: constant retirement age	0.0	-0.1	0.1	1.1	1.7	1.9	1.9
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.7	3.3	4.3	4.3

Source: European Commission and EPC.

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

Since the 2006 Ageing Report, the sustainability of public finances has been improving, in in particular as a result of the 2007 reform of the social security system, which was first taken into account in the 2009 Ageing Report. This reform has introduced the main parameters of the current system: the pension update rule, the sustainability factor in the pension benefit formula, which considers the whole contributory career, a differentiation of the accrual rate according to the reference earnings, the ceilings on pension benefit, penalties on early pensions or bonuses for retiring after the SRA. Subsequent exercises incorporated temporary measures adopted in the context of the prevailing budgetary position or some fine-tuning measures to make the system more equal. Examples of the first type of measures were the wage cuts and freezing of the indexation rule (included in 2012 Ageing Report), an

extraordinary solidarity contribution on pensions (2015 Ageing Report) or extraordinary updates of lower pension benefit (with effects in the 2018, 2021 and 2024 Ageing Report projections). The faster convergence of CGA scheme to Social Security scheme, the link of SRA to life expectancy, the change of base year of the sustainability factor (all of them with effect on 2015 Ageing Report) and the new flexibility rule for early-pensions (2021 Ageing Report) are examples of the second type of measures.

Figure 31 | DRIVERS OF DIFFERENT PROJECTIONS (CHANGE IN EXPENDITURE TO GDP)
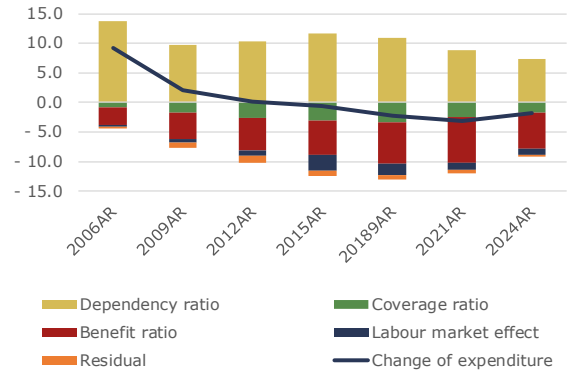
Source: European Commission and EPC.

The dependency ratio is the only factor with a positive impact on expenditure projected since the 2006 Ageing Report, and its contribution is offset by the remaining drivers (Table 31 and Figure 31). The projections have consistently assumed increases in both life expectancy and the SRA, in parallel with higher participation rates. This results lower coverage ratio effects over time (in particular, as regards the early-age coverage ratio). Differences in the macroeconomic scenario prevailing in the base year, or different assumptions have also contributed to reduce projected expenditure across exercises through more favourable evolutions in the benefit ratio and, to a smaller extent, in the labour market effect.

In the specific case of 2024 Ageing Report, the benefit ratio effect does not bring down pension expenditure by as much as in the last exercises, since GDP per hour worked increase less and average pensions have a higher growth. In addition, the coverage ratio effect is less negative in the new projections given that the number of pensioners is higher.

Table 31 | OVERALL CHANGE IN PUBLIC PENSION EXPENDITURE TO GDP UNDER THE 2006, 2009, 2012, 2015, 2018, 2021 AND 2024 PROJECTION EXERCISES

	Public pensions to GDP	Dependency ratio	Coverage ratio	Benefit ratio	Labour market effect	Residual (incl. Interaction effect)
2006 Ageing Report (2004-2050)	9.3	13.7	-0.9	-3.0	-0.2	-0.4
2009 Ageing Report (2007-2060)	2.1	9.8	-1.7	-4.5	-0.6	-0.9
2012 Ageing Report (2010-2060)	0.2	10.4	-2.5	-5.5	-1.0	-1.1
2015 Ageing Report (2013-2060)	-0.7	11.7	-3.1	-5.9	-2.6	-0.9
2018 Ageing Report (2016-2070)	-2.2	10.9	-3.3	-7.1	-1.9	-0.8
2021 Ageing Report (2019-2070)	-3.2	8.8	-2.5	-7.8	-1.1	-0.7
2024 Ageing Report (2022-2070)	-1.8	7.3	-1.7	-6.1	-1.0	-0.3

* The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.
Source: European Commission and EPC.

The main difference between the 2021 Ageing Report and the latest figures stems from differences in the assumptions (macroeconomic and input figures in the base years), in particular in 2022 (Table 32). The extraordinary increases in the lower pensions, together with the lump-sum of 50% of the monthly benefit paid in 2022, have an impact on historical figures. Moreover, the lasting effects of the extraordinary increase in the lower pensions partly justifies some of the difference in in the first years of the projection (see Table 33).

Table 32 | BREAKDOWN OF THE DIFFERENCE BETWEEN THE 2021 PROJECTIONS AND OUTCOMES FIGURES (% GDP)

	2019	2020	2021	2022
Ageing report 2021 projections	12.7	13.8	13.1	13.1
Assumptions (p.p. of GDP)	-0.2	-0.2	-0.3	-1.4
Coverage of projections (p.p. of GDP)	0.0	0.0	0.0	0.0
Constant policy impact (p.p. of GDP)				
Policy-related impact (p.p. of GDP)	0.0	0.2	0.3	0.5
Actual public pension expenditure	12.5	13.8	13.1	12.2

Source: European Commission and EPC.

Compared to the 2021 Ageing Report, the current projections start from a lower value, i.e., 12.2% of GDP for the base years versus 13.1% in AR2021 (Figure 32), reach the peak eleven years later (15.2% in 2046 versus 14.6% in 2035), and then start to decrease until the end of the projection horizon.

Figure 32 | PUBLIC PENSION EXPENDITURE BY TYPE OF PENSION (% GDP) – 2021AR VERSUS 2024AR
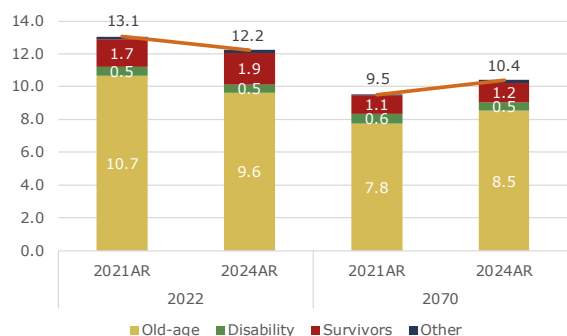
Source: European Commission, GPEARI and GEP.

The fact that spending peaks later is mostly linked to **CGA** expenditure: in the first thirteen years, old-age pension expenditure is lower because **CGA** pensioners retire later with a longer career and, consequently, with higher pension benefits. This behaviour is also perceived in **SS**, although its impact is not as visible.

Table 33 | Breakdown of the difference between the 2021 projections and the new public pension projection (% GDP)

	2022	2030	2040	2050	2060	2070
Ageing report 2021	13.1	14.2	14.4	12.6	10.5	9.5
Change in assumptions (p.p. of GDP)	-1.4	-0.8	0.3	2.0	1.0	0.5
Improvement in the coverage or in the modelling (p.p. of GDP)	0.0	0.0	0.0	0.0	0.3	0.4
Change in the interpretation of constant policy impact (p.p. of GDP)						
Policy-related changes (p.p. of GDP)	0.5	0.1	0.0	0.0	0.0	0.0
New projections	12.2	13.5	14.7	14.6	11.8	10.4

Source: European Commission, GEP, GPEARI.

In the **SS** Scheme, for the first time in the 2024 Ageing Report, the number of new pensions from public entities was estimated taking into account the current number in each cohort. This change was needed because the number of contributors from public entities in last years has gained importance. This difference, seen as an improvement of the coverage, increases expenditure, with the difference reaching the highest magnitude in 2070 (0.3 pps. of GDP). With an impact on the same item, the projection of other pensions (non-contributory pensions of CGA) is assumed in this exercise to be a function of the population, instead of the total pensions paid by CGA. The impact becomes noticeable after 2041 (0.1 pps. of GDP) and reaches almost 0.2 pps. of GDP in 2070.

The remaining differences stem from macroeconomic assumptions and base years differences. The GDP growth and the change in the characteristics of pensioners and contributors are the main drivers of the changes between the current projection and the 2021 Ageing Report.

Concerning occupational schemes, in the current projections, pension expenditure in terms of GDP is expected to be slightly lower than the ratio projected in the 2021 exercise. This is due to the following reasons:

— The extinction of the Caixa Geral de Depósitos Employees' Pension Fund (*Fundo de Pensões do Pessoal da Caixa Geral de Depósitos*), following the transfer of the liabilities and the corresponding assets to CGA[38], leading to a downward shift in the starting point of the current projections.

— The denominator effect, as the GDP projections are higher in comparison to the previous exercise.

4. DESCRIPTION OF THE PENSION PROJECTION MODELS AND THEIR BASE DATA

4.1 Institutional context in which those projections are made

The projections now presented were obtained by using three models:
- The model for the contributory welfare system and the social solidarity system (the social security pension model);
- The public sector employees' model – CGA model
- The private occupational pensions' model.

The social security pensions' model was developed and is ran by the Cabinet for Strategy and Planning of the Portuguese Ministry of Labour, Solidarity and Social Security (GEP/MTSSS) while the CGA model was developed and is ran by the Office for Economic Policy and International Affairs of the Ministry of Finance (GPEARI/MF). The model for occupational pensions was developed by the Insurance and Pension Funds Supervisory Authority – Autoridade de Supervisão de Seguros e Fundos de Pensões (ASF). GPEARI also coordinates the projection exercise and discusses with the other two institutions (GEP/MTSSS and ASF) the respective results.

The three models will be described separately, as follows.

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[38] At the end of 2022, the 'Fundo de Pensões do Pessoal da Caixa Geral de Depósitos' was the second largest pension fund, with an AUM of around 3,3 million euros, representing 15,5% of the national pension fund sector.

4.2 Social Security Pensions Model

Assumptions and methodologies applied

The model used in the present exercise/calculations as well as the methodology is the same that was used in latest Ageing Report. The model has four main modules: the first one projects the number of pensions, the second one pension expenditure, the third one the dynamics of contributors and contributions and the last one estimates the number of pensioners. Modules one, two and four are stratified by age (from 0 to 100+), gender and type of pension (old-age and early-retirement, disability and survivorship).

The social security pensions model takes into account, separately, three different schemes within the social security system: the general regime, the non-contributory regime and the special regime for farmers. The last one mentioned has a non-contributory nature and is a closed regime.

For each year and for all schemes, the total number of pensions is derived by the stock of pensions of the previous year, discounted of mortality and cessations and added with new pensions. It is assumed that new pensioners receive near 7,5 months in the first year and after that receives a full year payment (14 months).

For each type of pension, the model takes into account the stock of pensions and the number of new pensions in the base year in percentage of the total population of each stratum. In 2015 exercise it was assume that these ratios (by age and gender) remained constant over the period of projection. However, after the increase of the retirement age for 66 in 2014 and the automatic process of linkage to the evolution of life expectancy, since 2015 the way as new pensions are computed changed substantially. From 2019 exercise, the ratio (new pensions in percentage of the total population) of each stratum varies, year by year, according to the retirement age evolution.

In this exercise, for the first time, due to the more significant share of contributors in Segurança Social from public entities in recent years, it was calculated the new future pensions based on the current number in each cohort of the contributors of public entities.

Under these assumptions and according to the demographic and macroeconomic scenarios defined exogenously, projections are made assuming that the fundamental relations of the social security system will remain constant.

Data used to run the model

The input data refers to 2022 and is provided by two different bodies within the Portuguese Ministry of Labour Solidarity and Social Security (Instituto de Informática, Instituto de Gestão

de Fundos de Capitalização da Segurança Social and Instituto de Gestão Financeira da Segurança Social). Furthermore, data provided by the Commission is also used, concerning demographic and macroeconomic variables/projections.

Reforms incorporated in the model

This model was constructed based in the 2007 system reform, as reflected in the Basic Law of the Solidarity and Social Security System.

It assumes the indexation rule of pensions in payment based on inflation, GDP and amount of the pension benefit.

According to current legislation, the normal age of retirement was 66 and 7 months, in 2022, and retirement age is linked to life expectancy.

The sustainability factor (FS) is applied only to retirement after long term unemployment and to part of the individuals that apply for the old age pension before the normal age pension, under the flexibility early retirement regime.

The early disability-related pensions are converted into old-age pensions when pensioner reaches the statutory retirement age, but the social pensions lost pensioners to the new Social Inclusion Benefit.

General description of the model

New pensions by age and gender are determined by assuming a different proportion in each year, based on the evolution of retirement age. The cohort in year t+1, age i, will decrease proportionally by the number of months that retirement age advances, and the same proportion will be added in the cohort i+1 in the same year.

A similar methodology is assumed for the contributory career projection. The characteristics of cohort with age i move to the cohort age i+1 in next year, proportionally to the number of months that retirement age advances.

Each year, new pensions will be added to the stock of pensions, such that the number of total pensions can be written in the following way:

$$\text{TotalPens}_{t,i,g} = \text{NewPens}_{t,i,g} + \text{TotalPens}_{(t-1),(i-1),g} \times (1 - \mu - c)$$

where,

$\text{NewPens}_{t,i,g}$ - New pensions in year t, for age i and gender g

$\text{TotalPens}_{t,i,g}$ - Total pensions in year t, for age i and gender g

μ - Mortality rate given by the demographic scenario

c - Cessation rate given by the administrative data

Average old age and disability pensions for new pensioners are calculated according to age, gender, the average contributory career of the new pensions in the base year (for each age and gender) and a theoretical wage history. This theoretical wage history is derived by applying to the average wage of the economy (in 2022) a retrospective matrix of the average wage growth in the Portuguese economy since 1960. The theoretical wage history is only differentiated by gender (which means that it is equal for every age).

Contributions grow based on employment growth rate and productivity. So, total contributions can be derived by the following formula:

- $\text{Contrib}_t = \text{Contrib}_{t-1} \times (1 + w_t) \times (1 + \theta_t)$

where,

Contrib_t - Contributions in year t

w_t - Productivity growth rate in year t

θ_t - Employment growth rate in year t

For the pension expenditure, the model attempts to replicate as much as possible the rules of calculation for new pensions and the pension updates based on a macroeconomic scenario that is set exogenously to the model.

The average pension is determined by:

$$P_{t,i,g} = \frac{S_{t,i,g} \times Ps_{t,i,g} + N_{t,i,g} \times Pn_{t,i,g}}{Pt_{t,i,g}}$$

where,

P – Average pension;

S – Number of pensions carried over from last year;

Ps – Average of pension carried over from last year;

N – Number of new pensions;

Pn – Average of new pensions;

Pt – Number of pensions;

i –age; g – gender; t –year

The new pensions are calculated according to the current rules described in DL No. 187/2007 of 10 May.

Pension expenditures and contributions projections (that are based upon monthly input data) are then calibrated, according to the Social Security's balance sheet of the base year.

The number of pensioners is derived from the analysis of administrative microdata.

Additional features of the projection model

Survivors' pensions

For survivors' pensions, the base year ratios of new pensions are calculated over the number of deaths in the previous year that may originate survivorship pensions for widows or for dependent children.

For survivor pensions it is also considered a depreciation rate (constant over the projection period) that expresses the number of pensions that ceased for other motives than the death of the entitled person. These ratios were calculated, by age and gender, based upon administrative data.

Average survivor pension is indexed to the wage growth and to the average old-age pension growth.

4.3 CGA model

Institutional context in which those projections are made

The pension model used for the CGA projections is the same that was used in the last exercises of the Portuguese pension projections. It is an accounting/actuarial model that allows a detailed parameterization of the system, including the simulation of different demographic or macroeconomic assumptions and changes in the reform parameters. However, as it is not a general equilibrium model it does not permit endogenous analysis of the changes in supply and demand and in the consumption and investment decisions of economic agents stemming from their adjustment, for example, to the reforms in social security that were enacted.

Assumptions and methodologies applied

The model has four main modules: the first one relates to input data (including macroeconomic and demography data), the second one comprises the dynamics for contributors and number of pensions, the third one refers to the dynamics of contributions and pensions and the last one provides the outputs. Modules two and three are structured by age and gender strata in order to allow more precise results.

Data used to run the model

The input data was provided by CGA. The figures used were extracted from the database in July 2023 and were adjusted to those observed in the end of 2022.

Reforms incorporated in the model

The last pension measures in Portugal are included in the present projections.

The transitional regime for updating pension benefits, approved in October 2022 and to enter in force in January 202, as the mid-term update, approved in April 2023 to enter in force in July 2023, were included.

The impact of the Court decision, that allow workers that had been enrolment in the CGA before 2006 and still employed by a public entity, to enrol again in CGA was not considered in the model.

General description of the model

Module for contributors and pensioners dynamics

Due to the fact of CGA being a closed system, the dynamics of contributors is quite simple: the number of contributors decreases each year due to mortality and to other motives like moving to the private sector or exoneration. The number of CGA contributors at the end of year is given by:

$$C_{t,a,g} = C_{t-1,a-1,g} \times \left(1 - \mu_{t,a,g} - \pi_{t,a,g}\right) - np_{t,a,g}$$

where,

$C_{t,a,g}$ - Number of CGA contributors in year t, for age a and gender g

$\mu_{t,a,g}$ - Mortality rate in year t, for age a (for those who would complete age a during year t) and gender g

$\pi_{t,a,g}$ - Contributors rate of exoneration in year t, for age a and gender g

$np_{t,a,g}$ - Number of new pensioners (includes old-age pensioners and disability pensioners) in year t, for age a and gender g.

The dynamics of number of pensions is done for old age and disability pensions together and for survivors separately. The stock of pensioners increases with new pensioners and decreases according to pensioners' mortality. In this model, survivor pensioners also depend on a "depreciation rate" that applies mainly to descendants when conclude their studies.

Old age and disability pensioners

New pensioners (and pensions) are computed according to the legal regime that applies to each type of contributors: regime of Estatuto de Aposentação (that applies to public employees registered in the CGA until August 1993) and social security regime that applies to public employees registered in CGA between September 1993 and December 2005. For each legal regime, new pensioners are projected with a breakdown by motive: disability, old age (including early retirement).

New pensioners are computed by using "retirement probabilities". The later are defined as the base year ratios of new pensioners over contributors, for those who are aged less than 75. This means that new pensions are not determined only as a function of the legal criteria.

Number of new old-age pensioners:

$$op_{t,a,g} = op_{t-1,g,a-1} \times \frac{C_{t-1,g,a-1}}{C_{t-2,g,a-1}}$$

where,

$op_{g,a}(t)$ - Number of new old-age pensioners during year t for age a and gender g.

In the case of old age, including early pensioners, the above-mentioned ratios move along normal retirement age.

It was assumed that the retirement probabilities for disabled do not change with the above-mentioned increase in the normal retirement age.

The number of CGA new disability pensioners is given by:

$$dp_{t,a,g} = dp_{t-1,a,g} \times \frac{C_{t-1,a-1,g}}{C_{t-2,a-1,g}}$$

where,

$dp_{t,a,g}$ - Number of new disability pensioners in year t, for age a and gender g

The dynamics for the number of old-age and disability pensioners at the end of year t is given by:

$$Op_{t,a,g} = Op_{t-1,a-1,g} \times \left(1 - \mu_{t,a,g}\right) + op_{t,a,g} + dp_{t,a,g}$$

where,

$Op_{t,a,g}$ - Number of old-age and disability pensioners at the end of year t for age a and gender g

Survivor pensioners

New pensioners are a function of old age and disability pensioners' mortality. In the past, on average, 80%of pensioners who died had a survivor entitled to a pension, but this percentage is expected to decrease (to near 60%), as spouses beneficiaries tend to have their own wage/pension and would not be eligible to a survivor pension and the number of children tends to decrease as well. Having the estimate for total new survivors' pensioners, the age and gender distribution is the same of base year.

It is also considered that the stock of survivor pensioners depends on a "depreciation rate" that applies mainly to descendants upon concluding their studies. So, it is necessary to split the age strata into the following:

18<a<27

$$Sp_{t,a,g} = Sp_{t-1,a-1,g} \times \left(1 - \mu_{t,a,g} - \chi_{t,a,g}\right) + sp_{t,a,g}$$

Other a

$$Sp_{t,a,g} = Sp_{t-1,a-1,g} \times \left(1 - \mu_{t,a,g}\right) + sp_{t,a,g}$$

where,

$Sp_{t,a,g}$ - Number of survivor pensioners in year t, for age a and gender g

$sp_{t,a,g}$ - Number of new survivor pensioners in year t, for age a and gender g

$\chi_{t,a,g}$ - Depreciation rate of the survivor pensioners stock, unrelated to the death of the beneficiary in year t, for age a and gender g

The CGA database records pensions, not pensioners. However, it has a field that gives information on pensioners that also have a survivor pension paid by CGA. The percentage of pensioners that receive both a survivor and an old-age pension paid by CGA is kept constant over the projection horizon.

Module for contributions and pension's dynamics

Contributions to CGA are a fixed percentage of employees' remuneration (11% supported by employees and 23.75% by the employer. Therefore, the contributions dynamics depends on the remuneration's evolution. The data available for 20230 contained average values for remunerations of the subscribers by age and gender. The actualized and adjusted average remuneration is:

$$W_{t,a,g} = \max\left(W_{t-1,a,g} \times \left(1 + \gamma_t\right); W_{t-1,a-1,g} \times \left(1 + \gamma_t\right)\right)$$

where,

γ_t is the annual update rate for public sector wage scale.

Contributions in each year are given by:

$$Cont_{t,a,g} = \tau_t \times W_{t,a,g} \times C_{t,a,g}$$

where,

τ_t is the CGA's contributory rate

The average old-age pension is determined by:

$$Pens_{t,a,g} = \frac{\left[(Op_{t,a,g} - op_{t,a,g}) \times Pens_{t-1,a-1,g} \times (1+\alpha_t) + op_{t,a,g} \times npens_{t,a,g}\right]}{Op_{t,a,g}}$$

where,

αt represents annual pension update and n pens tag is the new old-age pension in year t, for age and gender g.

Total old-age and disability pensions' expenditure is given by:

$$TE_{t,a,g} = pens_{t,a,g} \times \left(Op_{t,a,g}\right)$$

The dynamics of survivor's pensions follows the old-age pension's one:

$$SurvPens_{t,a,g} = \frac{\left[(Sp_{t,a,g} - sp_{t,a,g}) \times SurvPens_{t-1,a-1,g} \times (1+\alpha_t) + sp_{t,a,g} \times nsurvpens_{t,a,g}\right]}{Sp_{t,a,g}}$$

where

αt represents annual pension update (the same of old age pensions) and nsurvpenstag is the new survivors pension in year t, for age a and gender g.

Each new survivor's pension, according to the law, is equivalent to a percentage of the old age pension that originate it. In the model, it was assumed the average new survivors' pensions is a percentage of the average old age pensions that is keep constant according to the base year.

4.4 Occupational pensions' model

Institutional context in which those projections are made

The Portuguese occupational pension system financed by pension funds can be separated into three types of pension schemes:

- Banking sector DB schemes under the banking sector collective agreement (traditionally the benefits promised were substitutive of the Social Security benefits but, as described below, several changes have occurred).
- other DB schemes.
- DC schemes.

The projection exercise was separately made for each type of pension scheme, as its different characteristics determine that different assumptions should be used in modelling the cash flows for the future.

Assumptions and methodologies applied

The model for the occupational pension system was based on current market statistics, relationships between fundamental economic and demographic variables and on assumptions that were made on the future behaviour of those variables. In brief, the projection exercise can be described as follows:

- The pension fund members were modelled taking into account the current population, the normal decrements (retirement and other exists) and assumptions on new entries for each year.
- The beneficiary's population was modelled by taking the current population, applying the mortality rates defined in the Ageing Working Group assumptions for Portugal to determine the exiting population and adding the new beneficiaries for each year.
- Taking the current market statistics and trends from the last couple of years, the per capita financial values were computed in order to project the financial cash flows. Main financial variables determined and projected were pensionable salary, average pension and contribution rate, from which the cash flows relating to benefits paid and contributions were determined.
- The amount of assets under management was projected considering these cash flows and a rate of return in line with the interest rate assumption defined in the Ageing Working Group.

The projections of the financial variables were made upon assumptions of how these variables are expected to behave in the future. Some of these assumptions were based on past experience and knowledge of the market. In other words, they are based on expectations and are not determined from any scientific formula. It is important to emphasize that some of the assumptions on the variables' behaviour and modelling formulas have indeed a substantial effect on the final results.

Reforms on the 1st pillar DB schemes of the banking sector

The most representative changes that have occurred in the occupational pension system, namely in relation to 1st pillar DB schemes of the banking sector, are:

- The Decree-Law no. 54/2009, of March 2, which established the enrolment of the banking sector' new employees into the Social Security system, closed these schemes to new entrants.

- The Decree-Law no. 1-A/2011, of January 3, according to which the remaining banking sector employees were inscribed in the Social Security system for the purpose of future service regarding retirement benefit. Current banking sector employees began to pay contributions to the Social Security although maintaining the collective agreements benefits. In practice, this means that their pensions will be financed both from the Social Security (for the working period between 2011 and their retirement year) and from the pension fund, since the pension fund will now be responsible for the payment of the complement between the total benefits promised in the collective agreement less the Social Security pension (the type of plan changed from being an independent plan to an integrated with the Social Security plan). Nevertheless, banking sector' funds are still fully responsible for the liabilities concerning illness, disability, death and survivorship benefits.

- The Decree-Law no. 127/2011, of December 31, which established the enrolment of most banking entities' current beneficiaries into the Social Security system (following which the pension funds' liabilities related to pensions in payment and the corresponding assets were transferred to the Social Security system). Nevertheless, banking sector' funds are still fully responsible for future pension indexation, as well as medical post-retirement expenses and post-retirement benefits.

More recently:

- The Decree-Law no. 14/2023, of 24th February, which determined the transfer of the liabilities financed via the Caixa Geral de Depósitos[39] Employees' Pension Fund[40] (Fundo de Pensões do Pessoal da Caixa Geral de Depósitos) and the corresponding assets to Caixa Geral de Aposentações (CGA), as well as the extinction of the pension fund on 31st December 2022.

Data used to run the model

To run the model, the ASF used the data provided by pension fund management entities in the regular reporting of quantitative information.

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[39] Portuguese state-owned banking corporation.
[40] At the end of 2022, the 'Fundo de Pensões do Pessoal da Caixa Geral de Depósitos' was the second largest pension fund, with an AUM of around 3,3 million euros, representing 15,5% of the national pension fund sector.

General description of the model

Pension fund population modelling:

For each year, the number of members was determined considering the population in the year before and the variation occurred in that year (i.e., plus new entrants and minus the exiting population).

Due to the enrolment of the banking sector' new employees into the Social Security system (Decree-Law no. 54/2009, of March 2), which closed these schemes to new entrants, for 1st pillar DB schemes the projected number of new entrants is equal to zero. Still, for the banking sector DB schemes as a whole, a low percentage of new entrants was considered, reflecting new employees with access to complementary benefits.

Similarly, it was established that the number of new entrants for other DB schemes was equal to a percentage of the number of participants in the year before. The idea underneath this assumption is that the number of new DB schemes will be very small and one only expects some population refreshment for the existent schemes, therefore assuming a fixed low percentage of new entrants for the DB scheme.

For DC schemes, the number of new entrants was determined in a similar way, but considering a higher entry rate than the percentages assumed for DB schemes.

For all types of pension schemes, a distribution of new entrants by age was created to allocate the number of new entrants to each age.

The vectors of population decrements for each type of scheme were determined with the help of some statistics and assumptions based on coherent expectation.

For each year *t* and age *i*, the number of members was determined in the following way:

$$members_{t,i} = members_{t-1,i-1} - members\ exits_{t,i} + new\ members_{t,i}$$

In a similar way, the number of beneficiaries for each year and age was calculated as:

$$beneficiaries_{t,i} = beneficiaries_{t-1,i-1} - beneficiaries\ exits_{t,i} + new\ beneficiaries_{t,i}$$

Financial variables modelling:

The pensionable salary was projected taking into account the statistics available and assumptions given about future salary growth.

Per capita pensionable salary:

$$pensionable\ salary_t = pensionable\ salary_{t-1} \times (1 + average\ salary\ growth_t)$$

The ratio between the average pension benefit amount received by the beneficiaries over the average salary of the members were calculated from statistical analysis and assumptions were made on what these ratios are expected to be in the future.

In the past, the payment of benefits in the DC schemes has to be made through a life insurance annuity, at least 2/3 of the accumulated amount. As the pension decumulation phase is transferred to the insurance market (by buying the life annuities), available pension fund statistics only capture the total outflows from the DC funds, instead of regular pension payments. In order to maintain the same modelling approach as for the DB schemes, the total accumulated amounts were converted into annual payments by using an annuity conversion factor.

For all schemes, the average benefit paid each year was divided into two segments, the first one being the average benefit for the new entrants and the second one the average benefit for the remaining beneficiaries. The reasoning for this was the fact that the benefits for the new entrants will be different (according to the behaviour of the benefit ratio defined as an assumption) from the remaining beneficiaries, for which the average pension will increase with a pre-determined assumption. The average pension for the new entrants is determined from the corresponding average pensionable salary and the benefit ratio. For the current beneficiaries, the average pension is determined by weighting (using population numbers) the average pension of current beneficiaries with the average pension of the new entrants.

Per capita average pension:

New entrants

$$average\ pension_t = pensionable\ salary_t \times \left(\frac{average\ pension}{average\ salary}\right) ratio_t$$

Current beneficiaries

$$average\ pension_t = \frac{\left(\begin{array}{l} current\ beneficiaries\ average\ pension_{t-1} \times \\ \times \left(total\ beneficiaries_{t-1} - new\ beneficiaries_{t-1}\right) + \\ + new\ entrants\ average\ pension_{t-1} \times new\ beneficiaries_{t-1} \end{array}\right)}{total\ beneficiaries_{t-1}} \times$$
$$\times \left(1 + pension\ growth\ rate_t\right)$$

The benefits paid are just the beneficiaries' population (both current beneficiaries and new entrants) times the corresponding average pension for each year:

New entrants

$$benefits\ paid_t = new\ entrants\ average\ pension_t \times new\ beneficiaries_t$$

<u>Current beneficiaries</u>

$$benefits\ paid_t = current\ beneficiaries\ average\ pension_t \\ \times\ (total\ beneficiaries_t - new\ beneficiaries_t)$$

The current contribution rate was determined from the statistics available, dividing current contributions by the gross salaries. An assumption was made on how this variable would evolve in the future.

Contributions cash flows were determined by multiplying the average per capita pensionable salary by the contribution rate times the members' population for each type of scheme:

$$contributions_t = contribution\ rate_t \times pensionable\ salary_t \times\ total\ members_t$$

ANNEX

I - SPECIAL CONTRIBUTORY RATES

	Employer	Employee	Total
Sportmens	22,3%	11%	33,3%
Disability workers with work capacity below 80%	11.9%	11.0%	22.9%
Very short-term contracts' workers	26.1%	-	26.1%
Workers under intermittent regime work	23.75%	11%	34.75%
Local inshore fishermen and shellfish gatherers	21%	8%	29%
Domestic workers			
- with unemployment protection	22.3%	11%	33.3%
- without unemployment protection	18.9%	9.40%	28.3%
Members of churches or religious denominations or associations			
- with old-age and disability protection	16.2%	8%	23.8%
- with old-age and disability, parental, disease, occupational disease protection	19.7%	8.6%	28.3%
Workers on very short-term contracts	26.1%	-	26.1%
Workers at home	20.3%	9.3%	29.6%
Members of statutory governing bodies			
- in general	20.3%	9.3%	29.6%
- performing management fuctions	23.75%	11.00%	34.75%
Workers of pre-retirement age with work suspension	18.3%	8.6%	26.9%
Workers with 65 years old and 40 years of contributory period	17.3%	8.0%	25.3%
Disability pensioners with active activity	19.3%	8.9%	28.2%
Old-age pensioners with active activity	16.4%	7.5%	23.9%
Disability pensioners exercising public functions	20.4%	9.2%	29.6%
Old-age pensioners exercising public functions	17.5%	7.8%	25.3%
Agricultural workers	22.3%	11%	33.3%
Workers of Particular Institutions of Social Solidarity and of non-profit institutions	22.3%	11%	33.3%
PT Comunicações, S.A. workers from CTT	7.8%	-	7.8%
Workers who carry out public functions			
- with contract	23.8%	11.0%	34.8%
- with nomination	18.6%	11%	29.6%

Source: Instituto da Segurança Social.

III – EXAMPLES OF PENSION BENEFIT CALCULATION

Example 1

Pension benefit calculation for someone that started work before 2002 and retire in 2022:
The pension benefit of this person is calculated take into account a transitory rule as he/she started work before the 2007 reform. It follows the following rule:
the pension benefit results of 2 parts, the first one computed according the best 10 years of last 15 years of contributory period and another that take into account all the contributory period with a ceiling of 40 years.

$P = (P1 * C3 + P2 * C4)/C$
$P1 = RE1 \times 2\% \times N1$
$RE1 = TRE10/15/140$, if $n < 10$ years, $RE1 = TRE{<}10 / (14 \times N1)$
$P2 = TRE/(N2*14)$
Where:
C - total contributory period
C3 – contributory period up to 31st December 2001
C4 - contributory period after 1st January 2002
P1 – Pension computed take into account of the best 10 years of the last 15 years of contributory period up to 2002
P2 - Pension computed take into account all contributory period after 2001 up to 40 years
P1 only could be higher than 12 times SSI, if P2>P1 or P1 >P2 and P1, P2 > 12 x SSI, P = P2
TRE10/15 = Total earnings (best 10 years of last 15 years of contributory period)
TRE = total earnings at a maximum of 40
N1 - contributory period (minimum of 15 years and maximum of 40 years),
N2 – total contributory period (minimum of 15 years and maximum of 40 years)

This person has **44 years of contributory period** and hypothetically **67 years old**.

Contributory period	Years	Monthly wage	Annual wage	Revaluation coefficient for P1	Revaluation coefficient for P2	Annual wage revalued P1	Annual wage revalued P2	Reference earnings computed according	
								Best 10 years of last 15 years	All contributory period
1	1978	28.40	397.6	16.2987	16.2987	6 480.36	6 480.36		6 480.36
2	1979	37.40	524	13.1231	13.1231	6 871.26	6 871.26		6 871.26
3	1980	44.90	629	11.2549	11.2549	7 074.83	7 074.83		7 074.83
4	1981	53.40	748	9.3789	9.3789	7 011.67	7 011.67		7 011.67
5	1982	53.40	748	7.6625	7.6625	5 728.49	5 728.49		5 728.49
6	1983	64.80	907	6.1055	6.1055	5 538.91	5 538.91		5 538.91
7	1984	77.80	1 089	4.7219	4.7219	5 143.09	5 143.09		5 143.09
8	1985	95.80	1 341	3.958	3.9580	5 308.47	5 308.47		5 308.47
9	1986	112.20	1 571	3.5435	3.5435	5 566.13	5 566.13		5 566.13
10	1987	125.70	1 760	3.239	3.2390	5 699.99	5 699.99		5 699.99
11	1988	135.70	1 900	2.9552	2.9552	5 614.29	5 614.29		5 614.29
12	1989	149.60	2 094	2.6247	2.6247	5 497.17	5 497.17		5 497.17
13	1990	174.60	2 444	2.3145	2.3145	5 657.56	5 657.56		5 657.56
14	1991	200.00	2 800	2.0775	2.0775	5 817.00	5 817.00		5 817.00
15	1992	222.00	3 108	1.9078	1.9078	5 929.44	5 929.44		5 929.44
16	1993	236.40	3 310	1.7914	1.7914	5 928.82	5 928.82		5 928.82
17	1994	245.90	3 443	1.7028	1.7028	5 862.06	5 862.06		5 862.06
18	1995	259.40	3 632	1.6357	1.6357	5 940.21	5 940.21		5 940.21
19	1996	272.30	3 812	1.5865	1.5865	6 048.06	6 048.06		6 048.06
20	1997	282.80	3 959	1.5525	1.5525	6 146.66	6 146.66		6 146.66
21	1998	293.80	4 113	1.5116	1.5116	6 217.51	6 217.51		6 217.51
22	1999	305.80	4 281	1.4776	1.4776	6 325.90	6 325.90		6 325.90
23	2000	318.20	4 455	1.4373	1.4373	6 402.88	6 402.88		6 402.88
24	2001	334.20	4 679	1.3771	1.3771	6 443.18	6 443.18		6 443.18
25	2002	348.00	4 872	1.3304	1.3969	6 481.71	6 805.70		6 805.70
26	2003	356.60	4 992	1.2879	1.3462	6 429.71	6 720.77		6 720.77
27	2004	365.60	5 118	1.2588	1.3117	6 443.04	6 713.81		6 713.81
28	2005	374.70	5 246	1.2318	1.2785	6 461.78	6 706.76		6 706.76
29	2006	385.90	5 403	1.1946	1.2384	6 453.95	6 690.58		6 690.58
30	2007	403.00	5 642	1.1667	1.2059	6 582.52	6 803.69		6 803.69
31	2008	426.00	5 964	1.137	1.1705	6 781.07	6 980.86		6 980.86
32	2009	450.00	6 300	1.137	1.1705	7 163.10	7 374.15	7 163.10	7 374.15
33	2010	475.00	6 650	1.1213	1.1497	7 456.65	7 645.51	7 456.65	7 645.51
34	2011	485.00	6 790	1.0811	1.1085	7 340.67	7 526.72	7 340.67	7 526.72
35	2012	485.00	6 790	1.0518	1.0782	7 141.72	7 320.98		7 320.98
36	2013	485.00	6 790	1.049	1.0704	7 122.71	7 268.02		7 268.02
37	2014	485.00	6 790	1.049	1.0704	7 122.71	7 268.02		7 268.02
38	2015	505.00	7 070	1.0443	1.0651	7 383.20	7 530.26	7 383.20	7 530.26
39	2016	530.00	7 420	1.0384	1.0569	7 704.93	7 842.20	7 704.93	7 842.20
40	2017	557.00	7 798	1.0242	1.0419	7 986.71	8 124.74	7 986.71	8 124.74
41	2018	580.00	8 120	1.0146	1.0286	8 238.55	8 352.23	8 238.55	8 352.23
42	2019	600.00	8 400	1.0124	1.0213	8 504.16	8 578.92	8 504.16	8 578.92
43	2020	635.00	8 890	1.0124	1.0174	9 000.24	9 044.69	9 000.24	9 044.69
44	2021	665.00	9 310	1.0000	1.0000	9 310.00	9 310.00	9 310.00	9 310.00

TR10/15		80 088	
RE1		572.06	
C3		24	
N1		44	
P1 = RE1 x 2% x C3		457.65	
TRE			294 862.50
RE2 = TRE / (N2 x 14)			478.67
N2			44
C4			20
P2			448.52
C = C3 + C4			44
P = (P1 x C3 + P2 x C4) / C			453.50

P2 and accrued rates for P2	Accrual rate	Pension benefit		Note
RE <= 1.1 SSI (1.1 x €443.2 = €487.52)	2.30%	448.52		Reference earning below €443.2 (1.1 x SSI)
1.1 SSI < RE <= 2 SSI (€487.52 < RE <= €886.4)	2.25%	0.00		Part of the reference earning above €487.52 (1.1 x SSI) and below €886.4 (2 x SSI)
2 SSI < RE <= 4 SSI (€886.4 < RE <= €1772.8)	2.20%	0.00		Part of the reference earning above €886.4 (2 x SSI) and below €1772.8 (4 x SSI)
4 SSI < RE <= 8 SSI (€1772.8 < RE <= €3545.6)	2.10%	0.00		Part of the reference earning above €1772.8 (4 x SSI) and below €3545.6 (8 x SSI)
RE > 8 SSI (RE > €3545.6)	2.00%	0.00		Part of the reference earning above €3545.6 (8 x SSI)
P2		448.52		

SSI in 2022	443.20
Statutory retirement age (SRA)	66y & 7m
Age of contributor	67y
Contributory period	44y
Personal retirement age (PRA) (= SRA - (44y - 40y) x 4m)	65y & 3m
Penalty	0.0%
Bonus ((contributor's age (67y) - PRA (65y3m)) x 1%/m)	21.0%
Sustainability factor	-
Pension benefit (P x [1 or (1 + bonus) or (1 - penalty)] x (1-SF))	548.73
92% of the highest monthly salary	611.80
Minimum pension (> 30 years of contributory period)	402.32
Pension benefit paid *	548.73

* Pension benefit paid couldn't be higher than 92% of the highest monthly salary and if P1 is higher P2, P1 has a cap of 12 times SSI, except if both P1 and P2 are higher than 12 times SSI.

Source: GPEARI and GEP.

Example 2
Pension benefit calculation according all career (for someone that starts after 31 December 2001):

The pension benefit of this person is calculated as P2:
P2 = TRE/(N2*14)
Where:
P2 - Pension computed take into account all contributory period after 2001 up to 40 years
TRE = total earnings at a maximum of 40 (for a contributory period below 21 years, the accrual rate is 2%)
N2 – total contributory period (minimum of 15 years and maximum of 40 years)

This person only could has **18 years of contributory period** and, hypothetically, **67 years old**.

Contributory period	Years	Monthly wage	Annual wage	Revaluation coefficient for P2	Annual wage revalued	Reference earnings computed according
						All contributory period
1	2002	348.00	4 872	1.3969	6 805.70	6 805.70
2	2003	356.60	4 992	1.3462	6 720.77	6 720.77
3	2004	365.60	5 118	1.3117	6 713.81	6 713.81
4	2005	374.70	5 246	1.2785	6 706.76	6 706.76
5	2006	385.90	5 403	1.2384	6 690.58	6 690.58
6	2007	403.00	5 642	1.2059	6 803.69	6 803.69
7	2008	426.00	5 964	1.1705	6 980.86	6 980.86
8	2009	450.00	6 300	1.1705	7 374.15	7 374.15
9	2010	475.00	6 650	1.1497	7 645.51	7 645.51
10	2011	485.00	6 790	1.1085	7 526.72	7 526.72
11	2012	485.00	6 790	1.0782	7 320.98	7 320.98
12	2013	485.00	6 790	1.0704	7 268.02	7 268.02
13	2014	485.00	6 790	1.0704	7 268.02	7 268.02
14	2015	505.00	7 070	1.0651	7 530.26	7 530.26
15	2016	530.00	7 420	1.0569	7 842.20	7 842.20
16	2017	557.00	7 798	1.0419	8 124.74	8 124.74
17	2018	580.00	8 120	1.0286	8 352.23	8 352.23
18	2019	600.00	8 400	1.0213	8 578.92	8 578.92
19	2020	635.00	8 890	1.0174	9 044.69	9 044.69
20	2021	665.00	9 310	1.0000	9 310.00	9 310.00
TRE						**150 608.57**
RE2 = TRE / (N2 x 14)						**537.89**
N2						**20**
C4						**20**
P2						**215.16**
C = C4						**20**
P = RE2 x GAR						**215.16**

P2 and accrued rates for P2	Accrual rate	Pension benefit
20 years or less of contributory period	2.00%	215.16
P2		**215.16**
SSI in 2022		**443.20**
Statutory retirement age (SRA)		**66y & 7m**
Age of contributor		**67y**
Contributory period		**20y**
Personal retirement age (PRA) (= SRA - (44y - 40y) x 4m)		**66y & 7m**
Penalty		**0.0%**
Bonus ((67y - SRA) x 0.33%/m)		**1.7%**
Sustainability factor		**-**
Pension benefit (P x [1 or (1 + bonus) or (1 - penalty)] x (1-SF))		**218.71**
Minimum pension (15-20 years of contributory period)		**291.68**
Social complement (Minimum pension minus Pension benefit)		**72.97**
Pension benefit paid *		**291.68**

* Pension benefit according the pension benefit formula is below the minimum pension paid to a pensioner with a 15-20 years of contributory period.
Source: GPEARI and GEP.

Example 3

Pension benefit calculation according all career (It is a hypothetical example for purposes of comparation, as it will only occur for contributors who started working after 31 December 2001 which is not the case of the example):

The pension benefit of this person is calculated as P2:
P2 = TRE/(N2*14)
Where:
P2 - Pension computed take into account all contributory period after 2001 up to 40 years
TRE = total earnings at a maximum of 40
N2 – total contributory period (minimum of 15 years and maximum of 40 years)

This person has **44 years of contributory period** and, hypothetically, **67 years old**.

Contributory period	Years	Monthly wage	Annual wage	Revaluation coefficient for P2	Annual wage revalued	Reference earnings computed according All contributory period
1	1978	28.40	398	16.2987	6 480.36	6 480.36
2	1979	37.40	524	13.1231	6 871.26	6 871.26
3	1980	44.90	629	11.2549	7 074.83	7 074.83
4	1981	53.40	748	9.3789	7 011.67	7 011.67
5	1982	53.40	748	7.6625	5 728.49	5 728.49
6	1983	64.80	907	6.1055	5 538.91	
7	1984	77.80	1 089	4.7219	5 143.09	
8	1985	95.80	1 341	3.9580	5 308.47	
9	1986	112.20	1 571	3.5435	5 566.13	5 566.13
10	1987	125.70	1 760	3.2390	5 699.99	5 699.99
11	1988	135.70	1 900	2.9552	5 614.29	5 614.29
12	1989	149.60	2 094	2.6247	5 497.17	
13	1990	174.60	2 444	2.3145	5 657.56	5 657.56
14	1991	200.00	2 800	2.0775	5 817.00	5 817.00
15	1992	222.00	3 108	1.9078	5 929.44	5 929.44
16	1993	236.40	3 310	1.7914	5 928.82	5 928.82
17	1994	245.90	3 443	1.7028	5 862.06	5 862.06
18	1995	259.40	3 632	1.6357	5 940.21	5 940.21
19	1996	272.30	3 812	1.5865	6 048.06	6 048.06
20	1997	282.80	3 959	1.5525	6 146.66	6 146.66
21	1998	293.80	4 113	1.5116	6 217.51	6 217.51
22	1999	305.80	4 281	1.4776	6 325.90	6 325.90
23	2000	318.20	4 455	1.4373	6 402.88	6 402.88
24	2001	334.20	4 679	1.3771	6 443.18	6 443.18
25	2002	348.00	4 872	1.3969	6 805.70	6 805.70
26	2003	356.60	4 992	1.3462	6 720.77	6 720.77
27	2004	365.60	5 118	1.3117	6 713.81	6 713.81
28	2005	374.70	5 246	1.2785	6 706.76	6 706.76
29	2006	385.90	5 403	1.2384	6 690.58	6 690.58
30	2007	403.00	5 642	1.2059	6 803.69	6 803.69
31	2008	426.00	5 964	1.1705	6 980.86	6 980.86
32	2009	450.00	6 300	1.1705	7 374.15	7 374.15
33	2010	475.00	6 650	1.1497	7 645.51	7 645.51
34	2011	485.00	6 790	1.1085	7 526.72	7 526.72
35	2012	485.00	6 790	1.0782	7 320.98	7 320.98
36	2013	485.00	6 790	1.0704	7 268.02	7 268.02
37	2014	485.00	6 790	1.0704	7 268.02	7 268.02
38	2015	505.00	7 070	1.0651	7 530.26	7 530.26
39	2016	530.00	7 420	1.0569	7 842.20	7 842.20
40	2017	557.00	7 798	1.0419	8 124.74	8 124.74
41	2018	580.00	8 120	1.0286	8 352.23	8 352.23
42	2019	600.00	8 400	1.0213	8 578.92	8 578.92
43	2020	635.00	8 890	1.0174	9 044.69	9 044.69
44	2021	665.00	9 310	1.0000	9 310.00	9 310.00
TRE						**273 374.85**
RE2 = TRE / (N2 x 14)						**488.17**
N2						**44**
C4						**40**
P2						**449.10**
C = C4						**40**
P = RE2 x GAR						**449.10**

P2 and accrued rates for P2	Accrual rate	Pension benefit	Note
RE <= 1.1 SSI (1.1 x €443.2 = €487.52)	2.30%	448.52	Reference earning below €443.2 (1.1 x SSI)
1.1 SSI < RE <= 2 SSI (€487.52 < RE <= €886.4)	2.25%	0.58	Part of the reference earning above €487.52 (1.1 x SSI) and below €886.4 (2 x SSI)
2 SSI < RE <= 4 SSI (€886.4 < RE <= €1772.8)	2.20%	0.00	Part of the reference earning above €886.4 (2 x SSI) and below €1772.8 (4 x SSI)
4 SSI < RE <= 8 SSI (€1772.8 < RE <= €3545.6)	2.10%	0.00	Part of the reference earning above €1772.8 (4 x SSI) and below €3545.6 (8 x SSI)
RE > 8 SSI (RE > €3545.6)	2.00%	0.00	Part of the reference earning above €3545.6 (8 x SSI)
P2		**449.10**	
SSI in 2022		**443.20**	
Statutory retirement age (SRA)		**66y & 7m**	
Age of contributor		**67y**	
Contributory period		**44y**	
Personal retirement age (PRA) (= (SRA - (44y - 40Y)) x 4m)		**65y & 3m**	
Penalty		**0.0%**	
Bonus ((contributor's age (67y) - PRA (65y3m)) x 1%/m)		**21.0%**	
Sustainability factor		**–**	
92% of the highest monthly salary		**611.80**	
Pension benefit (P x [1 or (1 + bonus) or (1 - penalty)] x (1-SF))		**543.41**	
92% of the highest monthly salary		**611.80**	
Minimum pension (> 30 years of contributory period)		**402.32**	
Pension benefit paid		**543.41**	

Source: GPEARI and GEP.

Example 4

Pension benefit calculation according all career (It is a hypothetical example for purposes of comparation, as it will only occur for contributors who started working after 31 December 2001):

The pension benefit of this person is calculated as P2:

P2 = TRE/(N2*14)

Where:

P2 - Pension computed take into account all contributory period after 2001 up to 40 years

TRE = total earnings at a maximum of 40

N2 – total contributory period (minimum of 15 years and maximum of 40 years)

This person has **42 years of contributory period** and **63 years old**.

Contributory period	Years	Monthly wage	Annual wage	Revaluation coefficient for P2	Annual wage revalued	Reference earnings computed according
						All contributory period
1	1978	28.40	398	16.2987	6 480.36	6 480.36
2	1979	37.40	524	13.1231	6 871.26	6 871.26
3	1980	44.90	629	11.2549	7 074.83	7 074.83
4	1981	53.40	748	9.3789	7 011.67	7 011.67
5	1982	53.40	748	7.6625	5 728.49	5 728.49
	1983	0.00	0	6.1055	-	
	1984	0.00	0	4.7219	-	
6	1985	95.80	1 341	3.9580	5 308.47	
7	1986	112.20	1 571	3.5435	5 566.13	5 566.13
8	1987	125.70	1 760	3.2390	5 699.99	5 699.99
9	1988	135.70	1 900	2.9552	5 614.29	5 614.29
10	1989	149.60	2 094	2.6247	5 497.17	
11	1990	174.60	2 444	2.3145	5 657.56	5 657.56
12	1991	200.00	2 800	2.0775	5 817.00	5 817.00
13	1992	222.00	3 108	1.9078	5 929.44	5 929.44
14	1993	236.40	3 310	1.7914	5 928.82	5 928.82
15	1994	245.90	3 443	1.7028	5 862.06	5 862.06
16	1995	259.40	3 632	1.6357	5 940.21	5 940.21
17	1996	272.30	3 812	1.5865	6 048.06	6 048.06
18	1997	282.80	3 959	1.5525	6 146.66	6 146.66
19	1998	293.80	4 113	1.5116	6 217.51	6 217.51
20	1999	305.80	4 281	1.4776	6 325.90	6 325.90
21	2000	318.20	4 455	1.4373	6 402.88	6 402.88
22	2001	334.20	4 679	1.3771	6 443.18	6 443.18
23	2002	348.00	4 872	1.3969	6 805.70	6 805.70
24	2003	356.60	4 992	1.3462	6 720.77	6 720.77
25	2004	365.60	5 118	1.3117	6 713.81	6 713.81
26	2005	374.70	5 246	1.2785	6 706.76	6 706.76
27	2006	385.90	5 403	1.2384	6 690.58	6 690.58
28	2007	403.00	5 642	1.2059	6 803.69	6 803.69
29	2008	426.00	5 964	1.1705	6 980.86	6 980.86
30	2009	450.00	6 300	1.1705	7 374.15	7 374.15
31	2010	475.00	6 650	1.1497	7 645.51	7 645.51
32	2011	485.00	6 790	1.1085	7 526.72	7 526.72
33	2012	485.00	6 790	1.0782	7 320.98	7 320.98
34	2013	485.00	6 790	1.0704	7 268.02	7 268.02
35	2014	485.00	6 790	1.0704	7 268.02	7 268.02
36	2015	505.00	7 070	1.0651	7 530.26	7 530.26
37	2016	530.00	7 420	1.0569	7 842.20	7 842.20
38	2017	557.00	7 798	1.0419	8 124.74	8 124.74
39	2018	580.00	8 120	1.0286	8 352.23	8 352.23
40	2019	600.00	8 400	1.0213	8 578.92	8 578.92
41	2020	635.00	8 890	1.0174	9 044.69	9 044.69
42	2021	665.00	9 310	1.0000	9 310.00	9 310.00
TRE						273 374.85
RE2 = TRE / (N2 x 14)						488.17
N2						40
C4						42
P2						449.10
C = C4						40
P = RE2 x GAR						449.10

P2 and accrued rates for P2	Accrual rate	Pension benefit	Note
RE <= 1.1 SSI (1.1 x €443.2 = €487.52)	2.30%	448.52	Reference earning below €443.2 (1.1 x SSI)
1.1 SSI < RE <= 2 SSI (€487.52 < RE <= €886.4)	2.25%	0.58	Part of the reference earning above €487.52 (1.1 x SSI) and below €886.4 (2 x SSI)
2 SSI < RE <= 4 SSI (€886.4 < RE <= €1772.8)	2.20%	0.00	Part of the reference earning above €886.4 (2 x SSI) and below €1772.8 (4 x SSI)
4 SSI < RE <= 8 SSI (€1772.8 < RE <= €3545.6)	2.10%	0.00	Part of the reference earning above €1772.8 (4 x SSI) and below €3545.6 (8 x SSI)
RE > 8 SSI (RE > €3545.6)	2.00%	0.00	Part of the reference earning above €3545.6 (8 x SSI)
P2		449.10	
SSI in 2022		443.20	
Statutory retirement age (SRA)		66y & 7m	
Age of contributor		63y	
Contributory period		42y	
Personal retirement age (PRA) (= (SRA - (42y - 40y)) x 4m)		65y & 11m	
Penalty ((PRA - 63y) x 0.5%/m = 35m x 0.5%/m)		17.5%	
Bonus		-	
Sustainability factor (if age < SRA and at 60y has less than 40y of contributory period)		-	
Pension benefit (P x [1 or (1 + bonus) or (1 - penalty)] x (1-SF))		370.51	
92% of the highest monthly salary		611.80	
Minimum pension (> 30 years of contributory period)		402.32	
Social complement		31.81	
Pension benefit paid *		402.32	

* Pension benefit according the pension benefit formula is below the minimum pension paid to a pensioner with more than 30 years of contributory period.

Source: GPEARI and GEP.

Example 5

Pension benefit calculation according all career (It is a hypothetical example for purposes of comparation, as it will only occur for contributors who started working after 31 December 2001.):

The pension benefit of this person is calculated as P2:
P2 = TRE/(N2*14)
Where:
P2 - Pension computed take into account all contributory period after 2001 up to 40 years
TRE = total earnings at a maximum of 40
N2 – total contributory period (minimum of 15 years and maximum of 40 years)

This person has **41 years of contributory period** and **63 years old, but hasn't 40y of career at the age of 60y**.

Contributory period	Years	Monthly wage	Annual wage	Revaluation coefficient for P2	Annual wage revalued	Reference earnings computed according All contributory period
1	1978	28.40	398	16.2987	6 480.36	6 480.36
2	1979	37.40	524	13.1231	6 871.26	6 871.26
3	1980	44.90	629	11.2549	7 074.83	7 074.83
4	1981	53.40	748	9.3789	7 011.67	7 011.67
5	1982	53.40	748	7.6625	5 728.49	5 728.49
	1983	0.00	0	6.1055	-	
	1984	0.00	0	4.7219	-	
	1985	0.00	0	3.9580	-	
6	1986	112.20	1 571	3.5435	5 566.13	5 566.13
7	1987	125.70	1 760	3.2390	5 699.99	5 699.99
8	1988	135.70	1 900	2.9552	5 614.29	5 614.29
9	1989	149.60	2 094	2.6247	5 497.17	5 497.17
10	1990	174.60	2 444	2.3145	5 657.56	5 657.56
11	1991	200.00	2 800	2.0775	5 817.00	5 817.00
12	1992	222.00	3 108	1.9078	5 929.44	5 929.44
13	1993	236.40	3 310	1.7914	5 928.82	5 928.82
14	1994	245.90	3 443	1.7028	5 862.06	5 862.06
15	1995	259.40	3 632	1.6357	5 940.21	5 940.21
16	1996	272.30	3 812	1.5865	6 048.06	6 048.06
17	1997	282.80	3 959	1.5525	6 146.66	6 146.66
18	1998	293.80	4 113	1.5116	6 217.51	6 217.51
19	1999	305.80	4 281	1.4776	6 325.90	6 325.90
20	2000	318.20	4 455	1.4373	6 402.88	6 402.88
21	2001	334.20	4 679	1.3771	6 443.18	6 443.18
22	2002	348.00	4 872	1.3969	6 805.70	6 805.70
23	2003	356.60	4 992	1.3462	6 720.77	6 720.77
24	2004	365.60	5 118	1.3117	6 713.81	6 713.81
25	2005	374.70	5 246	1.2785	6 706.76	6 706.76
26	2006	385.90	5 403	1.2384	6 690.58	6 690.58
27	2007	403.00	5 642	1.2059	6 803.69	6 803.69
28	2008	426.00	5 964	1.1705	6 980.86	6 980.86
29	2009	450.00	6 300	1.1705	7 374.15	7 374.15
30	2010	475.00	6 650	1.1497	7 645.51	7 645.51
31	2011	485.00	6 790	1.1085	7 526.72	7 526.72
32	2012	485.00	6 790	1.0782	7 320.98	7 320.98
33	2013	485.00	6 790	1.0704	7 268.02	7 268.02
34	2014	485.00	6 790	1.0704	7 268.02	7 268.02
35	2015	505.00	7 070	1.0651	7 530.26	7 530.26
36	2016	530.00	7 420	1.0569	7 842.20	7 842.20
37	2017	557.00	7 798	1.0419	8 124.74	8 124.74
38	2018	580.00	8 120	1.0286	8 352.23	8 352.23
39	2019	600.00	8 400	1.0213	8 578.92	8 578.92
40	2020	635.00	8 890	1.0174	9 044.69	9 044.69
41	2021	665.00	9 310	1.0000	9 310.00	9 310.00
TRE						**273 374.85**
RE2 = TRE / (N2 x 14)						**488.17**
N2						**40**
C4						**41**
P2						**449.01**
C = C4						**40**
P = RE2 x GAR						**449.01**

P2 and accrued rates for P2	Accrual rate	Pension benefit	Note
RE <= 1.1 SSI (1.1 x €438.81 = €482.69)	2.30%	444.08	Reference earning below €482.69 (1.1 x SSI)
1.1 SSI < RE <= 2 SSI (€482.69 < RE <= €877.62)	2.25%	4.93	Part of the reference earning above €482.69 (1.1 x SSI) and below €877.62 (2 x SSI)
2 SSI < RE <= 4 SSI (€877.62 < RE <= €1755.24)	2.20%	0.00	Part of the reference earning above €877.62 (2 x SSI) and below €1755.24 (4 x SSI)
4 SSI < RE <= 8 SSI (€1755.24 < RE <= €3510.48)	2.10%	0.00	Part of the reference earning above €1755.24 (4 x SSI) and below €3510.48 (8 x SSI)
RE > 8 SSI (RE > €3510.48)	2.00%	0.00	Part of the reference earning above €3510.48 (8 x SSI)
P2		**449.01**	

SSI in 2020	**438.81**
Statutory retirement age (SRA)	**66y & 7m**
Age of contributor	**63y**
Contributory period	**41y**
Personal retirement age (PRA) (= (SRA - (41y - 40y)) x 4m)	**66y & 3m**
Penalty ((PRA - 63y) x 0.5%/m = 39m * 0.5%/m)	**19.5%**
Bonus	**-**
Sustainability factor (if age < SRA and at 60y has less than 40y of contributory peric	**14.1%**
Pension benefit (P x [1 or (1 + bonus) or (1 - penalty)] x (1-SF))	**310.63**
92% of the highest monthly salary	**611.80**
Minimum pension (> 30 years of contributory period)	**402.32**
Social complement	**91.69**
Pension benefit paid *	**402.32**

* Pension benefit according the pension benefit formula is below the minimum pension paid to a pensioner with more than 30 years of contributory period.
Source: GPEARI and GEP.

IV - Additional reporting tables

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

	2022	2030	2040	2050	2060	2070
Average gross wage at retirement*	19.9	26.6	38.1	56.9	82.6	115.7
Economy-wide average gross wage	19.9	26.6	38.1	56.9	82.6	115.7

* The average gross wage at retirement is given by the weighted average of the threes schemes wages according to the new pensioners of each of them.
For CGA is considered the average wage of the contributories
Source: European Commission.

Table A2 | Disability rates by age group (%)

	2022	2030	2040	2050	2060	2070
Age group -54	0.06	0.07	0.06	0.07	0.07	0.07
Age group 55-59	0.57	0.59	0.63	0.62	0.62	0.64
Age group 60-64	0.78	0.85	0.90	0.91	0.90	0.95
Age group 65-69	0.18	0.26	0.35	0.43	0.51	0.57
Age group 70-74	0.00	0.00	0.00	0.00	0.00	0.00
Age group 75+	0.00	0.00	0.00	0.00	0.00	0.00

* Only new disability pensioners of Social Security.
Source: GEP.

Table A3 | Factors behind the change in public pension expenditure between 2022 and 2070 (%GDP) – Pensions

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.3	1.2	-0.1	-2.8	-1.4	-1.8
Dependency ratio effect	2.0	3.2	2.1	-0.2	0.0	7.1
Coverage ratio effect*	-0.5	-0.6	-0.4	-0.2	-0.2	-1.8
Coverage ratio old-age	-0.2	-0.3	-0.2	-0.2	-0.1	-1.0
Coverage ratio early-age	-2.0	0.1	-1.1	-0.5	0.1	-3.3
Cohort effect	-1.0	-3.2	-2.6	0.5	-0.5	-6.8
Benefit ratio effect	0.1	-1.0	-1.4	-2.5	-1.0	-5.8
Labour Market effect	-0.3	-0.3	-0.2	-0.1	-0.2	-1.0
Employment ratio effect	-0.2	-0.1	-0.2	-0.1	-0.1	-0.5
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.1	-0.2	-0.1	0.0	-0.1	-0.5
Residual	0.0	-0.2	-0.1	0.0	0.0	-0.2

* Sub components of the coverage ratio effect do not add up necessarily.
Source: European Commission.