Economic Policy Committee - Ageing Working Group

2024 Ageing Report

Italy - Country Fiche

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Ministry of Economy and Finance – State General Accounting Department – General Inspectorate for Social Expenditure

For enquiries, please contact: chiara.rubino@mef.gov.it

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Introduction

The present country fiche for Italy[1] 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 pension projections presented in this fiche incorporate the macroeconomic assumptions and methodologies agreed within the *Ageing Working Group* of the *Economic Policy Committee*. The projections have been peer reviewed by the other Member States and the European Commission within the *Ageing Working Group*. The projections were finalised in the autumn of 2023 and represent the situation of the pension system on 30/09/2023.

Section 1 provides a general overview of the pension system in Italy. 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.

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[1] This fiche was prepared by the Ministry of Economy and Finance, State General Accounting Department (Ragioneria Generale dello Stato - RGS), General Inspectorate for Social Expenditure (Ispettorato Generale per la Spesa Sociale - IGESPES) in cooperation with Sogei, Forecasting and Statistical Analysis Models Unit – Public Finance.

1. Overview of the pension system[2]

1.1. Description of the pension system

The Italian pension system is a mandatory public PAYG scheme covering the whole resident population. After a transitional phase, which is still ongoing, the same set of rules will apply to all participants, with the exception of minor pension funds and some special categories. These general rules envisage: i) the adoption of the Notional Defined Contribution (NDC) scheme, with periodic revisions of the implicit accrual rates; ii) the linking of eligibility requirements for both old-age and early retirement to changes in life expectancy; and iii) the indexation of pensions to price inflation.

Pursuant to Law 214/2011, only one social security institute (*Istituto Nazionale di Previdenza Sociale -* INPS) manages all public pension schemes, for both the private and the public sectors, with the exception of professional funds. The minor pension schemes that are allowed to deviate from the general rules mainly concern professional funds. They account for about 4.5% of those insured in the public pension system and 2.2% of the total public pension expenditure in 2019. However, some of them have already opted to apply the NDC scheme.

The legal institutional framework of the Italian pension system has been deeply reformed with the introduction of a series of far-reaching intervention measures since 1992. The measures that have contributed the most to improving the financial sustainability of the pension system are the following:

- the elimination of indexation to real wages (Law 503/1992);

- the introduction of the Notional Defined Contribution (NDC) method and the periodic update of transformation coefficients following changes in mortality rates (Law 335/1995 and Law 247/2007);

- the tightening of eligibility requirements for old-age, early retirement, and social assistance pensions (Law 503/1992, Law 335/1995, Law 449/1997, Law 243/2004, as amended by Law 247/2007, Law 122/2010, Law 214/2011);

- the alignment of the statutory retirement age for women with that for men, thus eliminating the previous 5-year gap (Law 122/2010, Law 214/2011);

- the indexation of eligibility requirements for old-age, early retirement, and social assistance pensions to changes in life expectancy (Law 122/2010, Law 214/2011, Law 205/2017).

1.1.1. Computation rules

With the 1995 pension reform (Law 335/1995), the Italian pension system moved to an NDC regime, based on the actuarial equivalence between contributions paid and pension to be paid after retirement. The NDC system is still phasing in, as the legislation provides for its full application to workers who started contributing starting from 1 January 1996. The previous Defined Benefit (DB) scheme continues to apply pro rata to contributions accrued before 2011 for workers with more than 18 years of contributions at the end of 1995 and to contributions accrued before 1995 for workers with less than 18 years of contributions at the end of 1995.

Old-age and early pensions. Under the NDC scheme, the pension is calculated as the product of two factors: the total lifetime contributions, capitalised with the nominal GDP growth rate (five-year moving average) and the so-called transformation coefficient, the computation of which is mainly based on the

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[2] For an exhaustive description of pension schemes, please consult the PENSREF database.

probabilities of death, the probabilities of leaving a surviving spouse, and the average remaining life expectancy[3]. As a result, the amount of the pension is proportional to the contribution rate and directly related to the contribution period and the retirement age[4].

Under the previous Defined Benefit (DB) regime, which still applies pro-rata, the pension is calculated as a percentage of the reference wage, obtained by multiplying an accrual rate by the years of contributions, up to a maximum of 40 years[5]. The reference wage is an average of wages/earnings in the last part of the career, indexed to prices up to the year before that of retirement.

Disability pensions. The general computation rules described above also apply to disability pensions, which are granted to persons who have lost at least two-thirds of their capacity to work and have paid contributions for at least five years (including three of the last five years before the claim is made). In the case of a total and permanent loss of working capacity, an additional contribution period equivalent to the remaining years up to the Statutory Retirement Age (SRA) is awarded, up to a maximum contribution period of 40 years[6]. In all other cases, the entitlement is reassessed every three years and becomes permanent after two renewals.

Survivors' pensions. In most cases, the survivors' pension amounts to 60% of the deceased's pension[7]. If the deceased was not retired, the amount of the pension is calculated according to the general rules as described above. Survivors' pensions cannot be cumulated with other sources of income for 25%, 40% or 50% of their amount if the survivor's total income exceeds three, four or five times the minimum pension respectively.

1.1.2.   Eligibility requirements

The Italian pension system provides for two types of retirement (see Table 1 and Annex 1):

- **old-age** retirement, which requires reaching the Statutory Retirement Age (SRA) with, at least, 20 years of effective contributions and, for workers enrolled after 1995, a pension benefit at least equal to 1.5 times the old-age allowance[8];

- **early retirement**, at an age below the SRA, which normally requires longer contribution periods.

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[3] The coefficients are updated every two years. The most recent update, which entered into force in 2023, revised the following parameters affecting the calculation of survivor pensions: 1) the probability of death and the probability, by sex and age, of death and remarriage of the surviving spouse; 2) the probability of leaving a family, by sex and age; 3) the age gap between the partners, by sex and age of the deceased. The revision procedure is automatic, as it falls entirely within the administrative sphere of competence. See Annex 1 for formula and parameters.
[4] For retirement ages below (i.e., disability pensions) or above the age bracket 57-71, the lowest and the highest transformation coefficients are respectively applied.
[5] Accrual rates go from 0.9% to 2%, depending on the reference wage (the two are inversely related).
[6] The maximum degree of disability is incompatible with any kind of work.
[7] The percentage rises to 80% or 100% if the deceased leaves a spouse with one or more dependent children.
[8] The amount considered shall be 1.5 times the old-age allowance in 2012, indexed to the five-year moving average of nominal GDP. Said threshold is equal to 754.91 euro in 2023. The aforementioned threshold amount cannot, in any case, be lower, for a given year, than 1.5 times the monthly amount of the social allowance established for the same year.

TABLE 1 – QUALIFYING CONDITIONS FOR RETIREMENT

			2022	2030	2040	2050	2060	2070
Qualifying condition for retiring **with** a full pension	Statutory retirement age - men[1]		67y	67y+3m	68y+3m	69y+2m	70y+1m	70y+10m
	Statutory retirement age - women[1]		67y	67y+3m	68y+3m	69y+2m	70y+1m	70y+10m
	Minimum require ments	Contributory period - men	20	20	20	20	20	20
		Retirement age - men						
		Contributory period - women	20	20	20	20	20	20
		Retirement age - women						
Qualifying condition for retirement **without** a full pension	Early retirement age - men[2]		64y	64y+3m	65y+3m	66y+2m	67y+1m	67y+10m
	Early retirement age - women[2]		64y	64y+3m	65y+3m	66y+2m	67y+1m	67y+10m
	Penalty in case of earliest retirement age							
	Bonus in case of late retirement							
	Minimum contributory period - men		42y+10m	43y+1m	44y+1m	45y+0m	45y+11m	46y+8m
	Minimum contributory period - women		41y+10m	42y+1m	4y+1m	45y+0m	44y+11m	45y+8m
	Minimum residence period - men							
	Minimum residence period - women							

Source: Italian Ministry of Economy and Finance.

The current legislation has equalised the SRA for men and women in 2018 at the age of 66 and 7 months, as a result of the gradual increase in the retirement age for women in the private sector that began in 2012. The additional increases in the SRA that have occurred since then reflect the update every two years of pension requirements, following changes in life expectancy at 65. Accordingly, in 2019, the SRA was increased by a further 5 months, to 67 years, for all male and female employees. Due to the slowing of life expectancy growth, no increase was envisaged in the 2021, 2023 and 2025 updates.

As of 2018, the age requirement for the old-age allowance (*assegno sociale*) has been aligned to the SRA (§. 1.1.3).

Early retirement before reaching the SRA is possible:

- for all workers, regardless of their age, solely on the basis of an increased contribution requirement linked to changes in life expectancy. For the period 2016-2018, this contributory requirement was equal to 42 years and 10 months for men and to 41 years and 10 months, for women. In line with the provisions introduced in 2019 (Decree Law 4/2019 as converted into Law 26/2019) for the period 2019-2026, the minimum contributory period for early retirement regardless of the age is kept constant at the level of 2018 and is not linked to changes in life expectancy. However, the actual pension treatment (from 2019) starts 3 months after the time when such contribution requirements are met, as a shifting retirement window regime is also applied;
- for workers enrolled after 1995, who may retire up to a maximum of three years earlier than the SRA, if they have accrued at least 20 years of effective contributions and their pension amount is at least equal to 2.8 times the old-age allowance[9];
- Decree Law n. 4/2019 introduced, on an experimental basis, a temporary early retirement channel (the so-called, "Quota 100"). Workers who, in the period 2019-2021, reach at least 62 years of age and 38 years of accrued contributions can also retire earlier. Private sector workers can retire after 3 months after meeting the "Quota 100" requirements, public sector workers after 6 months. The 2022 Budget Law provided for early access to retirement for workers who, in 2022, accrued jointly 64 years of age and 38 years of contributions ("Quota 102"). The 2023

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[9] The amount considered shall be 2.8 times the old-age allowance in 2012, indexed to the five-year moving average of nominal GDP. Said threshold is equal to 1409.16 euro in 2023. The aforementioned threshold amount cannot, in any case, be lower, for a given year, than 2.8 times the monthly amount of the social allowance established for the same year.

Budget Law provided access to early retirement for workers who in 2023 accrue jointly 62 years of age and 41 years of contributions ("Quota 103"). For both "Quota 102" and "Quota 103", the same differentiated shifting retirement windows regime set for "Quota 100" applies.

Automatic indexation to life expectancy of eligibility requirements. Eligibility requirements for pension and old-age allowances are updated every two years to reflect changes in life expectancy at 65, as measured by the National Institute of Statistics (Istat)[10]. The latest updates since the 2021 Ageing Report were adopted by the Directorial Decrees of October 27th, 2021 (published in the Official Journal n. 268 of November 10th, 2021) and July 18th, 2023 (published in the Official Journal n. 243 of October 17th, 2023), respectively. In both cases, on the basis of data notified by Istat, no increase was due with respect to 2019 requirements.

Looking in more detail, the Budget Law for 2018 (Law 205/2017) established that the change in life expectancy must be calculated as the difference between the average of the two reference years minus the average of the two preceding years[11]. In addition, the Law 205/2017 set an upper limit, stipulating that future increases in the pension eligibility criteria cannot exceed three months. If the increase in life expectancy exceeds three months, the difference with respect to this upper limit will be added in subsequent adjustments. Finally, the law also established that if life expectancy decreases, no change in the pension eligibility criteria is due. Such adjustments will be used in subsequent biannual updates to reduce future positive changes in life expectancy.

Disability pensions. 5 years of contributions are required to qualify for a disability pension, including 3 in the last five years before retiring.

Survivors' pensions. Survivors' pensions are granted to the spouse and/or dependent children of the deceased, whether retired or contributing[12]. For the latter, 15 years of contributions are required or, alternatively, 5 years, 3 of which accrued in the last five years before the decease.

1.1.3. Indexation of pensions

Pensions are indexed to price inflation, unlike the rule applied before 1992, which also envisaged a partial indexation to real wages for the private sector pensioners.

Under the current general rule, in force since 2022 but currently suspended for a temporary derogation, the percentage of price indexation varies according to the amount of the pension. This percentage is 100% of the inflation rate for the amount of the pension up to four times the minimum pension, 90% for the amount between four and five times the minimum, and 75% for the part above five times the minimum.

Such a framework has been subject to several temporary derogations. Lately, for the period 2023-2024, the 2023 Budget Law (Law 197/2022) set new temporary rates for the indexation to price inflation, which apply to the total amount of the pension and not to amount brackets. The current indexation rates are the following: 100% for pensions up to 4 times the minimum pension; 85% for pensions between 4 and 5 times the minimum; 53% for pensions between 5 and 6 times the minimum; 47% between 6 and

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[10] As expressly provided for by the law, the procedure for updating the pension eligibility requirements is a purely administrative one, which guarantees the effectiveness of the periodic revisions and the compliance with the scheduled dates. Such automatic mechanism is fully in line with those laid down for the update of the transformation coefficients to changes in mortality rates (Law 247/2007), in terms of the procedures and the timing of the revisions.

[11] The exception is the 2021 update, when the change in life expectancy was calculated as the difference between the 2017-2019 average and the value notified in 2016.

[12] In the absence of spouses or children, survivors' pensions can be awarded to other dependent family members.

8 times the minimum; 37% for pensions between 8 and 10 times the minimum; 32% for pensions above 10 times the minimum (the annual amount of the minimum is 7,383 euro in 2023).

In 2025, the general rule mentioned above should be re-established. It should be noted that the general indexation rule is used for the medium-long term pension projections and is, overall, more favourable to pensioners, whereas all the derogations adopted so far have always aimed at reducing pension expenditure.

1.1.4. Accumulation of pension and labour income

Old-age and early pensions. According to Law 133/2008, old-age and early pensions can be fully cumulated with labour income.

However, Decree Law 4/2019 explicitly restricts this option for workers who retire early under the joint requirements of "Quota 100", i.e., with at least 62 years of age and 38 years of contributions. This restriction also applies to early retirement under the subsequent "Quota 102" (i.e., 64 plus 38) and "Quota 103" (i.e., 62 plus 41) schemes. According to the law, the pension treatment granted under the new eligibility criteria for early retirement cannot be cumulated with income from employment or self-employment, with the exception of income from occasional self-employment, up to a limit of 5,000 euro per year, until the conditions for entitlement to an old-age pension are met.

Disability pensions. Full accumulation is only allowed with 40 years of contributions. Otherwise, the pension is reduced by 50% of the amount exceeding the minimum pension. In any case, the pension amount is first reduced by 25% or 50%, depending on whether the pensioner's total income, including the pension itself, exceeds four or five times the minimum pension.

Survivors' pensions. Full accumulation is only allowed as long as the pensioner's income, including the pension itself, is less than 3 times the minimum pension. For higher incomes, a reduction of 25%, 40% and 50% is applied for incomes of three to four, four to five and more than five times the minimum, respectively.

1.1.5. Financing of the public pension system

Public pension expenditure is financed by contributions and transfers from the public budget, which mainly cover provisions of social assistance.

Contribution rates are differentiated by sector, as follows:
- private and public employees: 33%, of which about 1/3rd is paid by the employee[13] and 2/3rd by the employer;
- self-employed (artisans, shopkeepers and farmers): 24% in 2023;
- atypical workers: 33% as from 2018, reduced to 24% if they are pensioners or contributors to other public pension schemes[14].

1.1.6. Taxation of pensions

Pensions are taxed as labour-income, allowing for deductions inversely correlated to income levels. Pension income below 8,174 euro per year in 2023 is tax-exempt. In 2022, total revenue on public

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[13] In recent years, transitional measures have been implemented to gradually reduce/exempt, in part, the contribution payments for employed workers, while maintaining the applicable computation rate.

[14] With the exception of professionals not enrolled in professional funds, for which the contribution rate is 25%.

pensions accounts for about 19% of total expenditure which corresponds to nearly 2.9% of GDP. Contributions paid to the public pension system are fully deductible from the taxable income.

1.1.7.   Special Pensions

In the Italian system, the two main categories of special pensions concern difficult working conditions and security and armed forces. These two categories meet the conditions required for special pension status, namely: i) they are allocated on the basis of occupational activity or special status, ii) they are publicly funded, iii) they are deemed to be more advantageous than the general scheme.

Difficult conditions. This label includes the following special cases:

i) *arduous works*: employees working in arduous conditions as defined by law. Retirement is allowed according to the more favourable age and contribution requirements in force before Law 214/2011 and not indexed to changes in life expectancy up until 2026. For the period 2017-2026, the retirement age could vary between 61 years and 7 months and 64 years and 7 months subject to a minimum of 35 years of contributions[15]. The privilege is granted on request and is subject budgetary constraints, i.e., within the limit of a certain amount of public funds allocated[16] to cover the additional costs compared to the main scheme. In the limit is exceeded, the new entrants' privilege is reduced accordingly[17];

ii) *precocious workers*: employees with at least one year of contribution (and actual work) before the age of 19, subject to special legal conditions[18]. Compared to the main scheme, early

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[15] For workers engaged in particularly strenuous tasks, employed in the so-called 'assembly line,' drivers of vehicles used for public collective transportation service, and night shift workers employed for a number of working days equal to or exceeding 78 per year: i) For employees: a *quota* (sum of age and contributory seniority) of 97.6 with a minimum age of 61 years and 7 months and a minimum contributory seniority of 35 years; ii) For self-employed individuals: a *quota* of 98.6 with a minimum age of 62 years and 7 months and a minimum contributory seniority of 35 years.

For night shift workers on shifts for a number of working days from 72 to 77 per year: i) For employees: a *quota* of 98.6 with a minimum age of 62 years and 7 months and a minimum contributory seniority of 35 years; ii) For self-employed individuals: a *quota* of 99.6 with a minimum age of 63 years and 7 months and a minimum contributory seniority of 35 years.

For night shift workers on shifts for a number of working days from 64 to 71 per year: i) For employees: a *quota* of 99.6 with a minimum age of 63 years and 7 months and a minimum contributory seniority of 35 years.; ii) For self-employed individuals: a *quota* of 100.6 with a minimum age of 64 years and 7 months and a minimum contributory seniority of 35 years.

[16] About 300 mln euro per year.

[17] The normative references for arduous work requirements are: Legislative Decree 67/2011 as amended by Law 232/2016, art. 1, paragraph 206 and by Law 205/2017.

[18] i) Unemployed individuals without social safety nets, workers with a disability exceeding 74%, individuals dedicated to the care of a family member with severe disabilities; ii) Within the following professions: workers in the extractive industry, construction, and building maintenance, crane operators, operators of mobile machinery for drilling in construction, tanners of leather and fur, railway convoy operators and traveling personnel, drivers of heavy vehicles and trucks, hospital nursing and midwifery professions with organized shift work, personal care assistants for individuals with non-self-sufficiency conditions, preschool teachers and nursery school educators, porters, goods handling personnel, and similar occupations, unskilled personnel in charge of cleaning services, environmental workers and other waste collectors and separators; agricultural, livestock, and fishing workers; coastal, inland, and offshore fishermen, employees or members of cooperatives; workers in the first and second fusion stages of the steel industry and glassworkers involved in high-temperature work not already covered by the legislation of legislative decree 67/2011; maritime workers embarked on board and traveling personnel in maritime and inland water transport; workers meeting the conditions specified in Article 1, paragraphs 1 to 3 of Legislative Decree 67/2011, namely workers engaged in arduous activities as specified above.

retirement is allowed with 41 years of contributions regardless of age, indexed to changes in life expectancy starting from 2027. The privilege is granted on request and is subject to budgetary constraints, i.e., within the limit of a certain amount of public funds allocated[19] to cover the additional costs compared to the main scheme. In the limit is exceeded, the new entrants' privilege is reduced accordingly[20];

iii) *exposed to asbestos*: employees who a) have contracted an occupational disease; b) have worked in asbestos mines or quarries. Special more favourable rules for the contribution years are allowed. Additional contributions related to periods of exposure to asbestos are also valid for the fulfilment of the contribution requirements (in particular, early retirement based on the contribution requirement regardless of age)[21];

iv) *artistic/entertainment workers*: retirement is permitted as follows: a) old age and early retirement as in the main scheme except for dancers and choreographers, who can retire at a lower age with a minimum requirement of 20 years of contribution. A lower SRA for old-age pension is also granted to a wider category of arts/entertainment workers under the mixed scheme, but not under the NDC one[22];

v) *professional sport workers*: compared to the main scheme, retirement is allowed at lower ages subject to contribution requirements. A lower SRA for old-age pension is also granted to sport professional workers who have accrued contributions before 1995 and who are in the mixed scheme, but not in the NDC scheme[23].

Security and armed forces. These schemes cover all workers in the armed forces and the police and also include pilots and flight attendants:

i) *armed forces and police services*: contributions are counted more favourably for periods actually spent in military campaigns. Early retirement is allowed at: a) 58 years of age and 35 years of contributions, plus 1 year of "exit window" postponement; b) 41 years of contributions, regardless of age, plus 15 months "exit window" postponement. Old-age retirement age (with 20 years of contributions) varies between the 60 and 66 years of age, depending on rank and position, plus a variable number of months of "exit window" postponement. All requirements are indexed to changes in life expectancy[24];

ii) *pilots and flight attendants*: compared to the main scheme, retirement is allowed at a lower age (1 year for every 5 years of enrolment in the dedicated pension fund ("*fondo volo*") up to a maximum of 5 years and with a minimum number of years of contributions required (15/20 years depending on the category)[25].

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[19] About 600 mln euro per year.

[20] The normative references for precocious workers are Law 232/2016, art. 1, paragraph 199, and Law 205/2017.

[21] The normative reference for legislation on workers exposed to asbestos: Law 257/1992 art. 13, paragraphs 6, 7 and 8 and subsequent amendments.

[22] Normative references: Legislative Decree 708/1947, Legislative Decree 182/1997, Law 214/2011, DPR 157/2013, Law 145/2018, Law 26/2019.

[23] Normative references: Law 336/1973, Law 91/1981, Legislative Decree 166/1997, DPR 157/2013, Law 145/2018, Law 26/2019.

[24] Normative references: Legislative Decree 165/1997, Law 243/2004.

[25] Normative references: Law 859/1965; Law.484/1973, Law 480/1998, Legislative Decree 503/1992; Law.335/1995; legislative Decree 164/1997.

1.1.8.   A safety net: the old-age allowance and additional social assistance sums

The Italian pension system provides a safety net for low-income elderly people, regardless of their contributions. The safety net consists of two kinds of social assistance benefits: the old-age allowance (*assegno sociale*, 6,591 euro per year in 2023) and social assistance top-up benefits (hereafter 'social assistance top-ups' - *maggiorazioni sociali*). Both are means-tested and subject to a minimum age of 67 in 2023, in line with the requirements of the SRA, and linked to changes in life expectancy[26].

The old-age allowance is granted to elderly people whose personal income does not exceed the benefit itself and, if married, whose couple's income does not exceed twice the benefit.

Social assistance top-ups are provided to supplement the old-age allowance up to certain income thresholds, depending on age and marital status. For those aged 70 and over (or 67, with 15 years of accrued contributions), the income thresholds are 9,157 euro per year in 2023 for a single person and 15,748 euro per year in 2023 for a couple.

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

The reform of the Italian pension system introduced by Law 214/2011 (the so-called "Fornero Reform"), the legal provisions of which have already been described in the previous sections, was the most recent structural intervention with relevant financial effects in terms of sustainability. The 2012 WGA round of projections and all the subsequent exercises have taken these effects into account. Since the introduction of the provisions of Law 214/2011, only minor changes to the legal framework have been enacted, which, to a limited extent, have relaxed some of the requirements of the Fornero Reform, while not altering its main structure.

In particular, the main measures, already included in the 2021 Ageing Report and which still have short-term effects, have been adopted by Decree Law 4/2019 as converted into Law 26/2019. Further temporary measures were enacted by the Budget Laws for 2022 and 2023 (Law n. 234/2021 and Law n. 197/2022, respectively). While all these measures are relevant in the short term, they also have medium- to long-term structural effects.

Decree Law 4/2019 introduced the experimental and temporary early retirement channel "Quota 100", while Law n. 234/2021 and Law n. 197/2022 introduced the temporary early retirement channels "Quota 102" and "Quota 103"[27], respectively. These three derogations from the Fornero Reform have been described in § 1.1.2. and § 1.1.5.

In addition, Decree Law 4/2019 also established a freeze for the years 2019-2026 on the mechanism for adjusting the seniority contribution requirement to changes in life expectancy for the age-independent early retirement channel (see §1.1.2.). A similar provision is applied also to 'precocious' workers and employees working in arduous conditions (see § 1.1.8.). Because of very low increases in life expectancy

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[26] Under certain income conditions, further integration (about 40 euro per month) can be granted to the elderly by means of the so-called social purchase card (*carta acquisti*) (art. 82, Decree Law 112/2008, converted into Law 133/2008).

[27] Given the much higher contribution requirement (41 years, with a minimum age of 62 years) than "Quota 102", "Quota 103" *de facto* configures an anticipation of the early retirement channel regardless of age. "Quota 102" (which requires a minimum contribution period of 38 years and a minimum age of 64 years) instead configured an anticipation with respect to old-age retirement. The anticipation in "Quota 103" is thus smaller than the anticipation in "Quota 102".

in the 2019-2026 period, and because of the addition of a 3-month window period to access early retirement, the freeze in the link mechanism has prevented a mere 2 months increase in requirements.

Law 234/2021 provided for the extension of the temporary program called "*Opzione Donna*", i.e., the experimental regime allowing early retirement to female workers who, in 2021, have accrued 35 years of contributions and reached the age of 58 if they are employees and 59 if they are self-employed. Most recently, Law 197/2022 modified the "*Opzione Donna*", albeit under more stringent conditions: female workers in special conditions[28], who in 2022 are aged at least 60 (reduced by one year for each child born up to a maximum of 2 years) and have accrued at least 35 years of social security contributions, may retire early. It should also be noted that, under the "*Opzione Donna*" scheme, the actual pension treatment starts 12 months (18 months for self-employed persons) after the accrual of such requirements, as a postponed retirement window regime is applied. Pension benefits are reduced as they are fully calculated according to the Notional Defined Contribution regime.

The 2023 Budget Law also refinanced the "*APE Sociale*" (Early Retirement Allowance or Anticipo Pensionistico) for 2023. This measure was introduced by the 2017 Budget Law (Law 232/2016) and then extended from year to year until now, so that the measure is still in force throughout 2023 for those who meet the requirements during the year. The "APE Sociale" is available to workers over the age of 63 with at least 30 years of contributions and consists of public social assistance benefits (which are not pensions, although they are included in public expenditure) granted before retirement. In order to qualify, workers must be in a disadvantaged situation as defined by law[29]. Finally, the 2023 Budget Law established new temporary rates for the period 2023-2024 for the indexation to price inflation, which apply to the total amount of the pension and not to the brackets (see § 1.1.4.), and a transitory increase for pensions that are equal to or below the minimum treatment, also for the two-year period 2023-2024. Overall, the 2023 Budget Law has produced containment effects for the dynamics and level of pension expenditure compared to the previous legislation.

More recently, the Budget Law for 2024 (Law 213/2023) introduced some changes to previous legislation. The temporary early retirement scheme known as "Quota 103" has been extended for individuals who meet the requirements by 31 December 2024, albeit under stricter conditions: pension benefits are reduced as they are calculated fully according to the Notional Defined Contribution regime; up to the age of 67 years the maximum pension benefit cannot exceed four times the minimum pension (€2,839 per month); the actual pension treatment starts seven months (instead of the previous three months) for private workers and nine months (instead of six months) for public workers after the requirements for "Quota 103" have been met. Law 213/2023 also refinanced the "*APE Sociale*" for 2024 under stricter conditions, as it is now available for workers who are in a disadvantaged situation as defined by law[30] and who are at least 63 years and 5 months old (instead of the previous 63 years); in addition, the Law introduced for this measure the provision that these public social assistance benefits cannot be cumulated with income from employment or self-employment, with the exception of income from occasional self-employment, up to a limit of 5,000 euro per year (lower compared to previous legislation). Likewise, the so-called *"Opzione Donna"* scheme has been extended again in 2024 (for those who meet the requirements in 2023) subject to the same stringent conditions provided for by Law 197/2022, except that the age requirement has been raised by one year (i.e., to 61 years).

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[28] These special conditions include caregivers, redundant workers, and disabled.

[29] These special conditions include caregivers, disabled, unemployed who have exhausted unemployment benefits, and workers engaged in particularly strenuous working conditions (in this case the contribution requirement is raised to 36 years, instead of the 30 years required to the other categories).

[30] These special conditions include caregivers, disabled, unemployed who have exhausted unemployment benefits, and workers engaged in particularly strenuous working conditions (in this case the contribution requirement is raised to 36 years, instead of the 30 years required to the other categories).

Two measures have also been introduced for pensions fully accrued under the NDC system (workers enrolled after 1995): 1) for the old-age pensions, the pension benefit threshold of 1.5 times the old-age allowance has been reduced to 1; 2) for the old-age retirement channel three years before reaching the SRA, the minimum pension benefit threshold has been raised from 2.8 to 3 times the old-age allowance (reduced to 2.8 and 2.6 times for women with one and two/more children, respectively), but the pension benefit itself is capped at five times the old-age allowance until the SRA is reached. In addition, the actual pension treatment starts three months (instead of the previous zero delay) after the pension requirements are met and the 20-year contributory requirements is linked to changes in life expectancy (absent in the previous legislation) (see § 1.1.2). As regards the indexation mechanism, the 2024 Budget Law reduced the percentage of indexation for pensions above 10 times the minimum, from 32% to 22% (see § 1.1.3). Lastly, the Law introduced for specific categories of public-sector workers (health workers, local authority employees, primary school teachers, and judicial officers) a gradually increasing number of months (from 3 if the requirements are met by 2024 - as already provided for by the legislation in force before Law 213/2023 -, up to 9 if the requirements are met after 2028) before they start receiving the early pension benefit and a pension recalculation mechanism for the DB quota of the early retirement pension benefit under the mixed regime (excluding those who have met the requirements by 31 December 2024 and other categories) . This recalculation will lead to cuts in the pension benefits, with the possibility, for health workers, to limit the penalisation when postponing retirement beyond the first available statutory window for effective retirement.

Finally, the requirements for access to early retirement regardless of age were linked again to the change in life expectancy starting from 1 January 2025, instead of 1 January 2027 as established by Decree-Law No. 4/2019. However, anticipating the link has no financial impact as the adjustment of the requirements for access to early retirement from 1 January 2025 has been certified at 0.

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

Under current legislation, social pensions and old-age allowances are indexed to price inflation. The law also grants low-income elderly people additional social sums that are constant in nominal terms. In all these cases, applying the price indexation rules laid down by law would reduce the value of these social benefits in the long run[31]. As they play an important role within the public pension system, improvements in social assistance benefits have been repeatedly legislated in the recent years. In order to deal with such issues, the pension model assumes that social assistance benefits, including additional social sums, are indexed to nominal wage growth rather than to prices, in the medium to long term. However, in the short term, up to 2028, pension projections fully comply with the indexation rules of the current legislation.

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[31] The same considerations apply to the *integrazione al trattamento minimo*, which is only envisaged in the transitional phase for those insured before 1996.

2. Overview of the demographic and labour force projections[32]

2.1. Demographic projections

According to Eurostat's demographic projections, with 2022 as the base year, total population is expected to shrink by 9.7% over the period 2022-2070 (Table 2), 1 percentage point less than what was projected in Eurostat's 2019 demographic projections, which underpinned the previous 2021 Ageing Report. Such a decrease depends mainly on the demographic transition (the ageing of the baby-boom generations), which is also influenced by more conservative fertility assumptions. With respect to the previous projections this population decline is smaller, despite the less favourable fertility assumptions, due to higher net migration hypotheses.

In the latest Eurostat demographic projections, the total fertility rate (TFR) has been revised significantly downwards. In 2022, the consolidated rate is considerably lower than what was previously forecast (1.24 compared with 1.34). Over the projection period, the TFR is assumed to increase linearly, but at a more moderate pace than previously assumed. As a result, at the end of the forecast horizon, in 2070, the initial gap, however, narrows somewhat, with a rate of 1.45 compared with the previous 1.52.

Net migration is assumed to follow a more sustained profile than previously projected. In Eurostat's current population projections, net migration averages 250 thousand units per year between 2023[33] and 2070, compared with 216 thousand units previously projected. Net migration is expected to increase until 2034, when it peaks at 280 thousand units. It is then projected to remain stable between 2035 and 2040, after which it begins to decline until 2050, when it stabilises at around 240 thousand units, a net flow that will remain broadly stable until 2070 compared with 164 thousand migrants in 2070 in the past round.

Over the forecast period, life expectancy at birth increases by 6 years for men and 5.5 years for women, almost in line with previous projections. However, the slightly higher gains in life expectancy are due to the lower levels in the base year, which was still negatively affected by COVID-19, and increases from 81.1 to 87.1 years for men and from 85.7 to 91 years for women. Life expectancy at 65, to which requirements for retirement are indexed, rises by 4.5 years for both men and women.

The transition of the baby-boom generations, coupled with longevity gains and low fertility rates, are the main drivers behind the significant ageing of the population. This is illustrated in Figure 1, which compares the changes in the age structure between the base year and the end of the projection period. More specifically, the old-age dependency ratio (population aged 65+ as a share of the population aged 20-64) rises from 40.8% in 2022 to a peak of 66% around 2050, corresponding to the transition of the baby-boom cohorts into old age, and ends at 65.5% in 2070, signalling a potentially strong impact of ageing on related expenditure items.

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[32] For more details, see European Commission and EPC (2022), *'The 2024 Ageing Report: Underlying assumptions and projection methodologies.'* European Economy, Institutional Paper 257. https://economy-finance.ec.europa.eu/publications/2024-ageing-report-underlying-assumptions-and-projection-methodologies_en

[33] The year 2022 was not taken into account because of its abnormally high level (348 thousand units). Incidentally, the consolidated net migration figure certified by Istat was much lower at 229 thousand units. The same evidence may occur also for 2023.

TABLE 2 – MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	59,044	58,761	58,497	57,432	55,250	53,259	59,044	2022	-5,785
Population grow th rate	-0.2%	0.0%	-0.1%	-0.3%	-0.4%	-0.3%	0.0%	2023	-0.1%
Old-age dependency ratio (pop 65+ / pop 20-64)	40.8	48.0	60.8	66.0	64.7	65.5	66.0	2050	24.7
Old-age dependency ratio (pop 75+ / pop 20-74)	17.4	19.5	24.8	32.5	33.2	31.6	33.9	2055	14.2
Ageing of the aged (pop 80+ / pop 65+)	32.0	31.9	32.1	40.7	45.9	43.1	46.0	2059	11.1
Men - Life expectancy at birth	81.1	82.4	83.7	85.0	86.1	87.1	87.1	2070	6.0
Women - Life expectancy at birth	85.5	86.8	87.9	89.0	90.1	91.0	91.0	2070	5.5
Men - Life expectancy at 65	19.5	20.5	21.4	22.3	23.2	24.0	24.0	2070	4.5
Women - Life expectancy at 65	22.7	23.7	24.7	25.5	26.4	27.2	27.2	2070	4.5
Men - Survivor rate at 65+	90.0	91.2	92.4	93.4	94.3	95.0	95.0	2070	5.0
Women - Survivor rate at 65+	94.3	94.9	95.6	96.2	96.7	97.1	97.1	2070	2.8
Men - Survivor rate at 80+	63.4	67.9	71.9	75.4	78.5	81.3	81.3	2070	17.9
Women - Survivor rate at 80+	77.5	80.5	83.2	85.6	87.7	89.4	89.4	2070	12.0
Net migration (thousand)	348.5	270.2	270.8	239.8	233.8	240.1	348.5	2022	-108.3
Net migration (% population previous year)	0.6%	0.5%	0.5%	0.4%	0.4%	0.4%	0.6%	2022	-0.1%

Population figures refer to average annual values.

Source: Eurostat, European Commission.

FIGURE 1 – AGE STRUCTURE: 2022 VS 2070
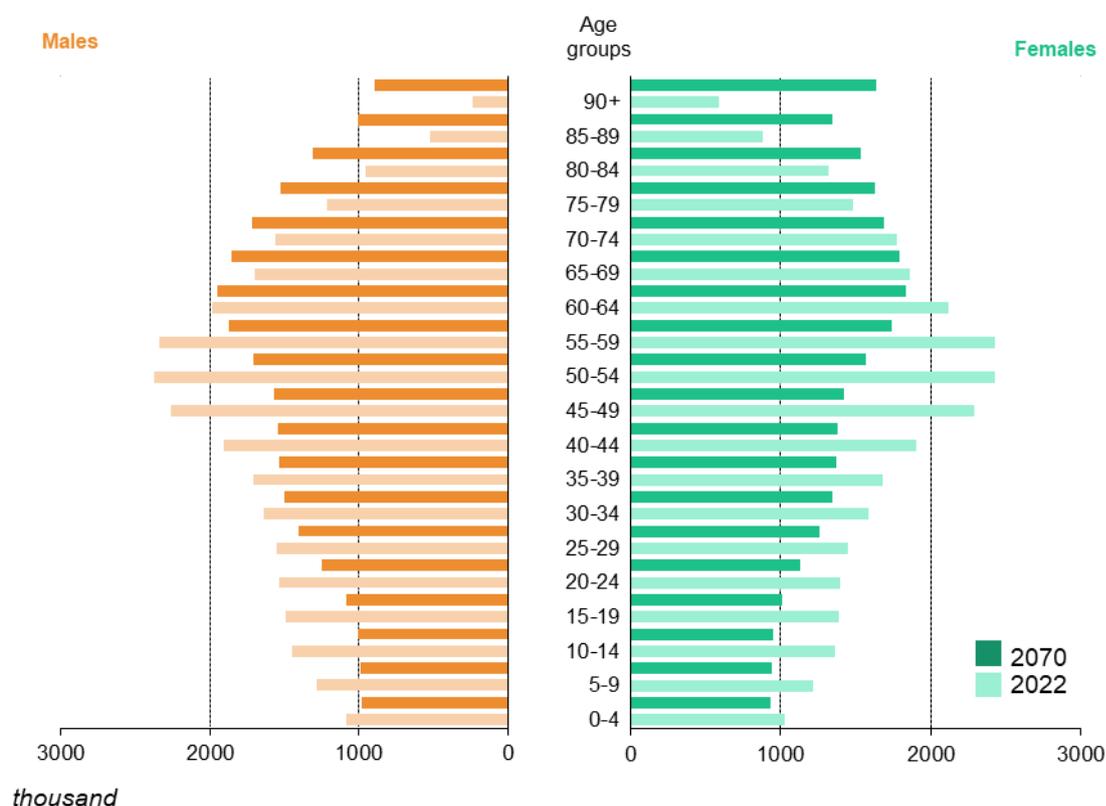
Source: Eurostat, European Commission.

2.2. Labour force projections

Under the current scenario, the labour force (active individuals in the age bracket 20-74) is projected to decrease by 8.3% over the period 2022-2070, whereas in the 2021 Ageing Report it was projected to decline by 11.6%. In both cases, the shrinkage is mostly explained by the reduction in the working age population.

Against this backdrop, the overall participation rate in the age group 20-74 rises significantly by 7.1 percentage points, from 60.3% in 2022 to 67.4% in 2070, which is 1.1 percentage points higher than the

corresponding rate in the 2021 Ageing Report projections. The gains in participation rates are still fully explained by the evolution of older workers' participation rates, which are strongly affected by the increase in eligibility requirements associated with the phasing in of the NDC regime. In particular, participation rates increase from 57.9% in 2022 to 76.3% in 2070 for those in the 55-64 age group and from 9.4% to 33.0% for those in the age 65-74 group (Table 3).

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Labour force participation rate 20-64	70.4	71.8	73.8	75.3	75.8	76.3	76.3	2070	5.8
Employment rate of workers aged 20-64	64.8	65.3	67.9	70.4	70.9	71.3	71.3	2070	6.5
Share of workers aged 20-64 in the labour force 20-64	92.0	90.9	91.9	93.5	93.6	93.6	93.6	2059	1.5
Labour force participation rate 20-74	60.3	60.8	61.4	64.5	66.5	67.4	67.4	2070	7.1
Employment rate of workers aged 20-74	55.6	55.5	56.7	60.4	62.4	63.3	63.3	2070	7.8
Share of workers aged 20-74 in the labour force 20-74	92.2	91.1	92.3	93.7	93.9	94.0	94.0	2070	1.8
Labour force participation rate 55-64	57.9	64.5	67.5	70.3	74.2	76.3	76.3	2070	18.4
Employment rate of workers aged 55-64	55.1	61.0	64.3	67.5	71.2	73.3	73.3	2070	18.2
Share of workers aged 55-64 in the labour force 55-64	95.1	94.5	95.1	96.0	96.0	96.0	96.0	2070	0.9
Labour force participation rate 65-74	9.4	14.7	18.5	21.5	27.0	33.0	33.0	2070	23.7
Employment rate of workers aged 65-74	9.1	14.1	17.9	21.0	26.3	32.3	32.3	2070	23.2
Share of workers aged 65-74 in the labour force 65-74	97.0	96.3	96.9	97.6	97.6	97.7	97.7	2070	0.7
Median age of the labour force	44.0	45.0	44.0	44.0	46.0	46.0	46.0	2058	2.0

Source: European Commission.

As shown in Table 4, the average labour market exit age resulting from the Cohort Simulation Model (CSM) increases in line with the periodic updates of the eligibility requirements. At the end of the projection period, the average labour market exit age is 68.6 for men and 69 for women. A similar pattern is visible for the projected average total retirement age, which, as required by the current legislation, evolves in line with developments in longevity (Figure 2).

FIGURE 2 – ELIGIBILITY REQUIREMENTS AND AVERAGE RETIREMENT AGE
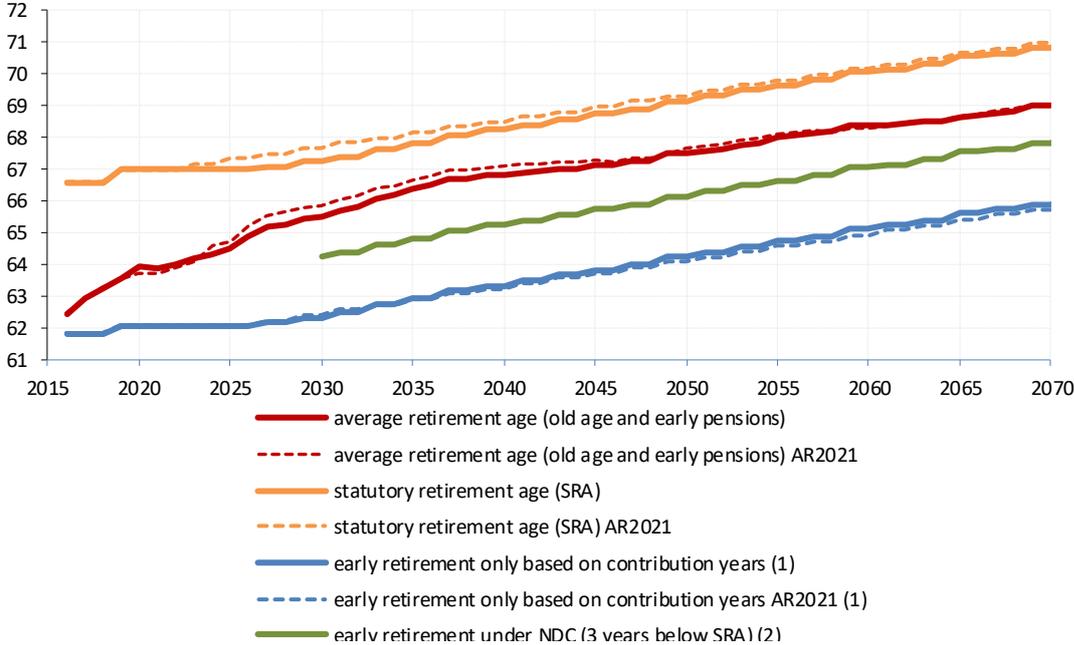
(1) The retirement age has been calculated assuming a full career, without interruptions, starting at 19 for males and 20 for females. In this sense, it can be seen as a 'minimum age'. However, given the increasing delay in entering the labour market for younger cohorts, it is to be expected that in the long run the contribution requirement will be achieved at much older ages.

(2) Though presently in force, this channel becomes effective around 2030.

Source: Italian Ministry of Economy and Finance.

Notwithstanding the steady increase in the average labour market exit age, the labour market will face a rapid and significant contraction in the labour force, mainly due to by the demographic transition. Within this pattern, the expected changes in female and old-age employment will partly compensate for the reduction in the working-age population. From 2022 to 2070, the employment rate in the 20-74 age group is projected to increase at an average annual rate of around 0.3 percentage points, mostly driven by the female contribution, which is expected to increase by 0.4 p.p. on average.

TABLE 4- – LABOUR MARKET EXIT BEHAVIOUR

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.2	65.1	66.4	66.9	67.7	68.3			:
Average labour market exit age (CSM)**	64.2	65.4	66.2	66.9	67.8	68.8	68.8	2070	4.5
Contributory period	35.5	34.6	34.6	34.4	36.0	37.7	37.8	2068	2.2
Duration of retirement***	21.1	21.7	22.2	22.2	22.1	22.0	22.5	2054	0.9
Duration of retirement/contributory period	59%	63%	64%	64%	61%	58%	66%	2037	-1%
Percentage of adult life spent in retirement****	32%	32%	32%	32%	32%	31%	33%	2023	-1%
Early/late exit*****	3.4	3.7	3.1	2.0	2.4	3.3	4.2	2029	-0.1

MEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	62.8								
Average labour market exit age (CSM)**	64.0	65.2	66.0	66.7	67.6	68.6	68.6	2070	4.6
Contributory period	36.5	35.6	35.5	35.0	36.6	38.1	38.3	2068	1.6
Duration of retirement***	18.6	20.5	20.6	20.6	20.6	20.5	21.3	2058	1.9
Duration of retirement/contributory period	51%	58%	58%	59%	56%	54%	61%	2047	3%
Percentage of adult life spent in retirement****	29%	31%	31%	31%	30%	30%	32%	2024	1%
Early/late exit*****	2.3	3.2	3.0	2.1	2.5	3.4	3.8	2063	1.2

WOMEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	63.7								
Average labour market exit age (CSM)**	64.5	65.6	66.3	67.1	68.0	69.0	69.0	2070	4.5
Contributory period	33.9	33.4	33.6	33.7	35.2	37.2	37.2	2070	3.3
Duration of retirement***	23.6	22.8	23.8	23.7	23.6	23.5	24.1	2054	-0.1
Duration of retirement/contributory period	70%	68%	71%	70%	67%	63%	73%	2037	-6%
Percentage of adult life spent in retirement****	35%	33%	34%	33%	33%	32%	35%	2022	-3%
Early/late exit*****	4.5	4.2	3.3	1.9	2.2	3.1	4.7	2029	-1.3

*The 'average effective retirement age' is the age at which people start receiving a pension benefit (old-age, early or disability). It is calculated on the basis of the administrative data on newpensioners 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 retire before reaching the statutory retirement age and those who retire at or beyond the statutory retirement age. For 2022, the value refers to 2023.*

Source: Italian Ministry of Economy and Finance and European Commission.

3. Pension projection results

3.1. Coverage of the pension projections

The pension projections cover the total pension expenditure for old-age, survivors' and disability pensions related to contributions paid to the public pension system. Old-age allowances and social supplementary amounts are also included, because of their close link with ageing, as they are catered to elderly people with low incomes.

The total expenditure on pensions used in the projections is slightly lower than the figure provided by Eurostat (ESSPROS statistics) (Table 5). The difference, which amounts to just 0.7% of GDP in 2020, the most recent year for which data are available, is essentially due to the portion of survivors' and disability benefits that are neither related to pension contributions nor to ageing (benefits paid to disabled persons under the SRA, war pensions, work injury annuities and merit awards).

The fact that the State bears no risk on the financial returns of private pension schemes explains the exclusion of this component from the projections. Private pension funds are not mandatory, regardless of whether they are occupational or individual pension schemes. Private pension funds never replace the coverage of the public pension system, which is compulsory for all workers (no opting out is allowed). A quota of the capital accumulated in private pension funds (up to 50%) can be withdrawn as a lump sum at the moment of retirement (or before, to finance certain expenses, such as the purchase of a first dwelling or for health expenses). Private pension funds play a complementary role to the public pension system and provide only a small part of the elderly's income, as enrolment rates are quite low. For an overview on complementary pensions in Italy, see the data reported in the Annex 1.

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

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013-2021
Eurostat total pension expenditure	16.5	16.4	16.4	16.0	15.8	15.8	15.9	17.6	16.7	0.2
Eurostat public pension expenditure (A)	16.3	16.2	16.2	15.8	15.6	15.6	15.7	17.4	:	1.1
Public pension expenditure (AWG: outcome) (B)	15.8	15.8	15.6	15.4	15.2	15.2	15.3	16.9	16.0	0.2
Difference Eurostat/AWG: (A)-(B)	0.5	0.4	0.6	0.4	0.4	0.5	0.4	0.5	:	0.0
Expenditure categories not considered in the AWG definition vs Eurostat total pension expenditure:	0.7	0.6	0.8	0.6	0.6	0.6	0.6	0.7		
- Benefits paid to the disabled and the deaf and dumb below 65 years old, war pensions, work injury annuities and merit awards	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5		
- Survivors' war pensions and survivors' work injury annuities	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
- Supplementary pensions paid by private pension funds	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[*] Figures for 2021 do not take into account the revision in National Accounts released in September 2023.
Source: Eurostat, European Commission, Italian Ministry of Economy and Finance.

3.2. Overview of projection results

3.2.1. Projected pension expenditure relative to GDP

Table 6 shows the projected ratio of pension expenditure (gross of tax revenue) to GDP obtained on the basis of the current WGA baseline scenario. Figure 3 shows the results of the overall projections in comparison with the scenario presented in the 2021 Ageing Report.

For the period 2019-2022, the notified data on public pension expenditure as a share of GDP according to the definition adopted by the WGA are lower than the corresponding figures presented in the 2021 Ageing Report. The difference amounts to 0.4 percentage points of GDP on average but becomes 0.0 in 2024. The lower incidence of public pension expenditure to GDP is principally explained by the higher level of actual GDP and partially by the lower number of existing pensions, in particular for the excess

mortality among the elderly due to the COVID-19 pandemics. All of these effects are offset in 2023-2024 as a result of the increase in the price indexation of benefits.

Public pension expenditure amounts to 15.6% of GDP in 2022, 0.3 p.p. higher compared to 2019, but 0.8 p.p. lower than the figure reported in the AR 2021 for 2022 (16.3%, see § 3.6).

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Expenditure									
Gross public pension expenditure	**15.6**	**16.6**	**17.1**	**15.5**	**13.7**	**13.7**	**17.3**	**2036**	**-1.9**
Private occupational pensions	:	:	:	:	:	:	0.0	2022	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	15.6	16.6	17.1	15.5	13.7	13.7	17.3	2036	-1.9
Net public pension expenditure*	12.6	13.5	13.8	12.5	11.1	11.1	14.0	2036	-1.5
Net total pension expenditure*	12.6	13.5	13.8	12.5	11.1	11.1	14.0	2036	-1.5
Contributions									
Public pension contributions	10.9	11.2	11.2	11.3	11.4	11.3	11.5	2059	0.4
Total pension contributions	10.9	11.2	11.2	11.3	11.4	11.3	11.5	2059	0.4
Balance of the public pension system (%GDP)**	-4.7%	-5.5%	-5.8%	-4.2%	-2.3%	-2.4%	-6.0%	2036	2.3%

*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.

Figure 3.a: pension expenditure to GDP (%)
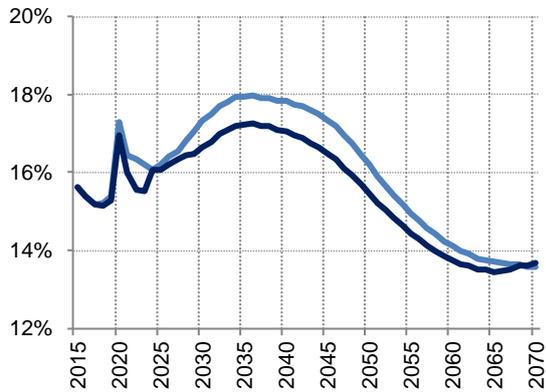
Figure 3.d: number of pensions to people aged 70+ (%)
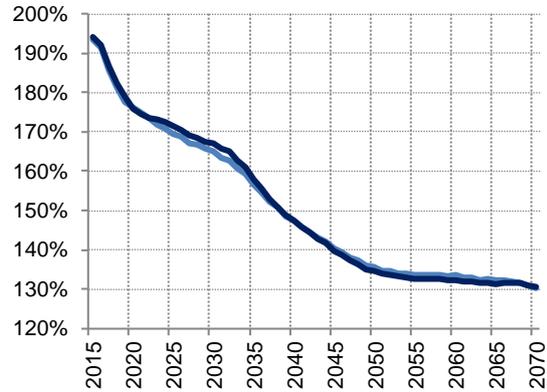
Figure 3.b: average pension to productivity (%)
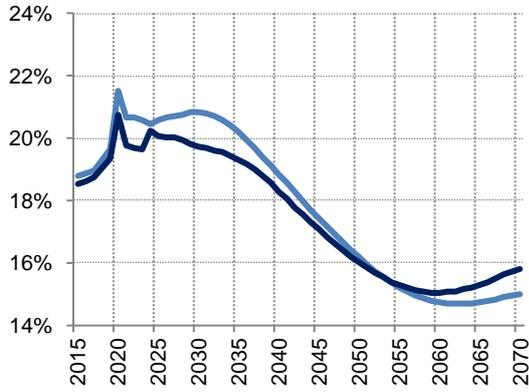
Figure 3.e: number of working people to population [20-69] (%)
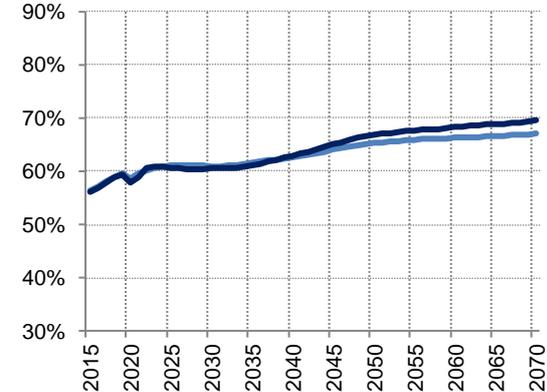
Figure 3.c: number of pensions to number of working people (%)
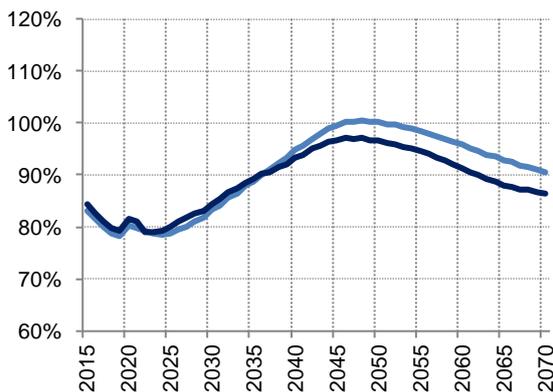
Figure 3.f: people aged 70+ to population [20-69] (%)
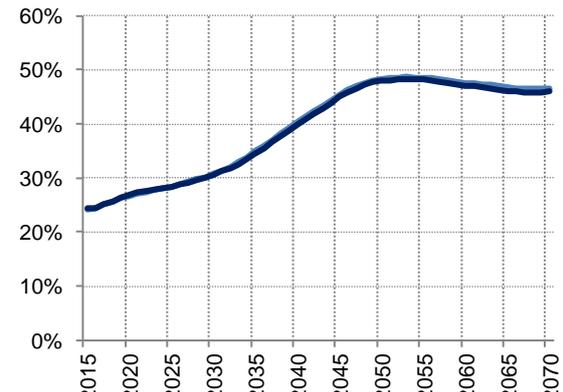
AR21 ——— AR24

Source: Italian Ministry of Economy and Finance

After a slight decline in 2023, the ratio of pension expenditure to GDP rises steadily from 2024 onwards, peaking at 17.3% of GDP in 2036. Thereafter, the ratio of pension expenditure to GDP gradually declines to 15.5% in 2050, converges to 13.7% in 2060 and stabilises around this level until 2070.

22

Overall, the pension-to-GDP ratio is projected to decline by 1.9 percentage points over the projection period 2022-2070.

The increase in the early part of the forecast period is due to the simultaneous contribution of several factors. On the one hand, pension expenditure/GDP is pushed up mainly by the unfolding of the adverse effects of the demographic transition related to the retirement of the baby-boom cohorts. Such an effect is *de facto* reinforced by the measures adopted with Decree Law 4/2019 as converted into Law 26/2019 and by the 2022 and 2023 Budget Laws, which have somewhat eased the access to early retirement.

This upward trend in expenditure is only partially offset by the lower average pension benefits resulting from the anticipation of retirement, as NDC rules are still phasing in. The pressure of demographic factors exceeds the declining trend in the benefit ratio.

The transition from the DB to the NDC scheme is shown in Figure 4, where the new pensions are broken down into three components relating, respectively, to workers almost fully covered by the DB scheme (at least 18 years of contributions in 1995), workers in the mixed pro rata scheme (less than 18 years of contributions in 1995), and new entrants after 1995. As can be seen, the old-age and early retirements of the first group will be almost over by 2020-2025, when retirements of the second group, whose pensions are increasingly calculated according to NDC method, will become predominant. That goes in parallel with the demographic transition until the 2040s-2050s, thus mitigating the financial impact. As expected, the transition process is somewhat accelerated for disability pensions, due to lower contribution amounts at retirement.

The rapid decline in the ratio of pension expenditure to GDP in the second part of the projection period is due to the full application of the NDC scheme, which runs in parallel with the stabilisation and subsequent decline in the ratio of pensions to employees. This last phenomenon is mainly driven by the gradual exit of the baby-boom generation, the effect of which is reinforced by the application of the automatic adjustment of eligibility requirements to changes in life expectancy.

FIGURE 4 – NEW OLD AGE, EARLY PENSIONS AND DISABILITY BY SCHEMES

Figure 4.a: old age and early pensions
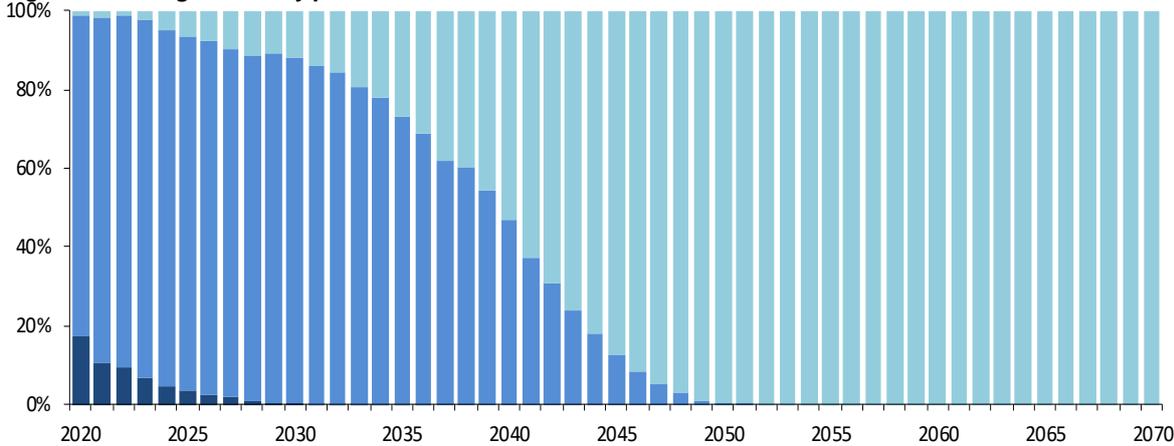
Figure 4.b: disability pensions

■ workers with at least 18 years of contributions in 1995

■ workers with less than 18 years of contributions in 1995

■ new entrants after 1995
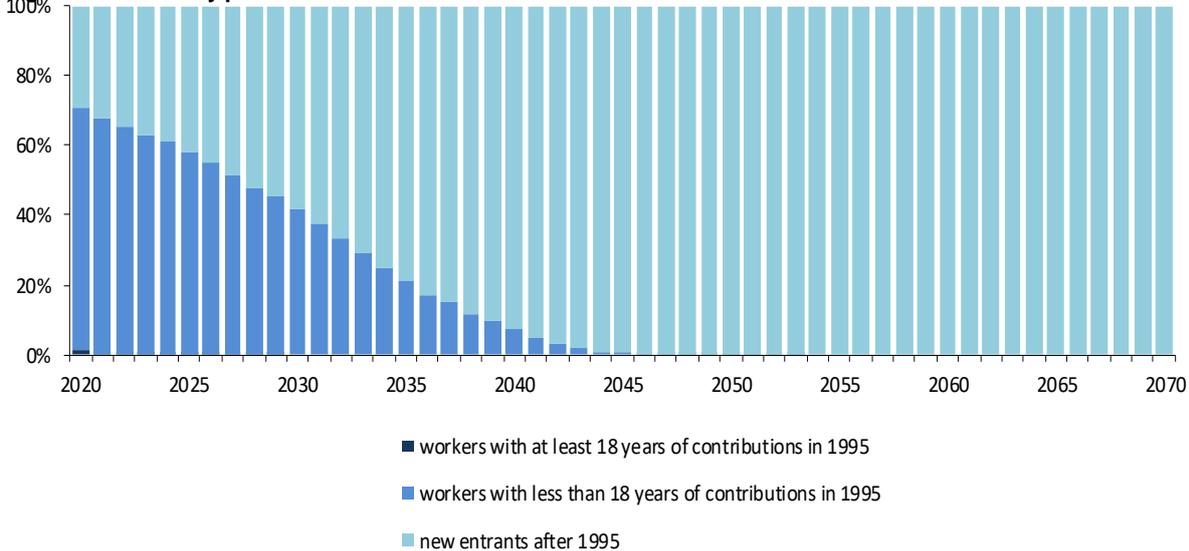
Source: Italian Ministry of Economy and Finance

3.2.2. Net pension expenditure

Pension expenditure net of taxes on pensioners' income, shown in Table 6, has been projected using the same rule adopted in the previous round. Accordingly, the share of tax revenue in pension expenditure is simply assumed to be constant over time. Similar to the results of the 2021 Ageing Report, the difference between the gross and the net pension-to-GDP ratios, which proxies the tax revenue on public pensions, is projected to move from 3.0% of GDP in the base year to 3.2% around 2040 and then to settle at 2.6% towards the end of the projection period.

3.2.3. Pension expenditure by scheme

Table 7 shows that old-age and early pensions, which include disability pensions for people with age above the SRA, account for the lion's share of pension expenditure. Their share of total pension expenditure grows from 83.0% in 2022 to 86.2% in 2070. Over the same period, the weight of survivors'

pensions[34] declines from 14.9% to 11.3%, while the share of disability pensions, below the SRA, increases from 2.1% to 2.5%.

Expenditure on social pensions and old-age allowances is projected to increase as a share of GDP, from 1.7% in 2022 to 2.6% in 2070. This trend is driven by both the number of beneficiaries and the average amount of the pension. The former is mainly due to the ageing of the population and the decreasing share of elderly people with only survivor's pension entitlements; the latter is due to the more favourable indexation rule assumed in the constant policy scenario (§ 1.3).

The pension expenditure projections include "special pension" schemes, referring in particular to the armed forces and workers in difficult conditions. Total expenditure on special pensions in 2022 was around 1% of GDP. In the projections, all the special pension categories are aggregated for calculation purposes.

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

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Total public pensions	15.6	16.6	17.1	15.5	13.7	13.7	17.3	2036	-1.9
Old-age and early pensions	12.9	14.0	14.4	13.0	11.6	11.8	14.6	2036	-1.1
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	12.7	13.7	14.0	12.6	11.2	11.4	14.2	2036	-1.2
Minimum pensions (non-contributory)	0.3	0.3	0.4	0.4	0.4	0.3	0.4	2052	0.1
Disability pensions	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2065	0.0
Survivor pensions	2.3	2.4	2.4	2.1	1.8	1.5	2.4	2037	-0.8
Other pensions	:	:	:	:	:	:	:	:	:

Source: European Commission, EPC.

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

FIGURE 5 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE

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

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

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

Source: European Commission, EPC.

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[34] An additional factor explaining the projected evolution of the ratio of survival pensions to GDP is also due to the biennial revision of the transformation coefficients. The most recent update, entering into force in 2021 and which has been legislated with the Directorial Decree of December 1st, 2022 published on the Official Journal n.294 of December 17th, 2022.

3.3.1.   Benefit ratio and economic dependency ratio

The decomposition of pension expenditure as a share of GDP presented in Table 8 shows, not surprisingly, that the demographic transition would exert a strong positive impact on pension expenditure as a share of GDP towards 2070. Such an effect (as measured by the dependency ratio) amounts to 8.3 p.p. over the entire projection period, with the largest increase in the dependency ratio unfolding in the period 2020-2040, in correspondence with the retirement of the baby-boom generation. In the long run, the adverse demographic outlook is offset by the effect of past pension reforms, despite the increase in pension expenditure brought about by the recent temporary measures adopted in the period 2019-2022.

Indeed, the evolution of the benefit ratio is expected to result in a negative contribution to pension expenditure to GDP of 3.8 p.p., mostly stemming from the progressive phasing-in of the NDC scheme and the indexation of pensions to price inflation. Similarly, the evolution of the coverage ratio is expected to reduce pension expenditure as a percentage of GDP by 3.0 p.p. in the period 2022-2070, due to the increase in the eligibility requirements, as they are linked to changes in life expectancy. Finally, the labour market effect of -2.8 p.p. is mainly driven by the postponement of the retirement age.

The decomposition of the pension expenditure ratio to GDP, given by the product of the 'benefit ratio' (the ratio of average pension to labour productivity) and the 'economic dependency ratio' (the ratio of pensions to workers) presented in Figures 3.b and 3.c (§ 3.2.1), provides more information on the driving forces behind the new projections vis-à-vis the results of the 2021 Ageing Report.

Concerning the economic dependency ratio, over the following two decades, the ratio of pensioners to workers rises steeply, as the baby-boom generation is expected to move from the working age (denominator) to the old age (numerator), while the employment rate no longer increases. In the last part of the projection period, the economic dependency ratio first stabilizes and then declines because of the exit of the baby boom generations.

Apart from the positive blip in 2024 due to high indexation, the benefit ratio decreases significantly because of the phasing-in process of the NDC scheme and then stabilizes in the last two decades of the projection period (see Table 9 and Figure 6 below)[35].

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[35] Compared to the 2021 Ageing Report, a different definition of wage has been adopted to compute the benefit ratio. Until the AR21, we did not employ the economy-wide average wage as reported by the Commission in the Questionnaire, but rather a ratio of National Accounts gross compensation of employees on full-time equivalents (for employees). Using the Commission's definition has caused an upward shift in the overall pattern of the Benefit Ratio. The trajectory of average pensions (increasing in the second part of the projection period) is due to higher GDP growth rates impacting accrual rates in the NDC computation scheme.

TABLE 8– FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2022 AND 2070 (PPS OF GDP) – PENSIONERS[36]

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.1	0.4	-1.6	-1.7	-0.1	-1.9
Dependency ratio effect	2.7	4.3	1.4	-0.3	0.2	8.3
Coverage ratio effect*	-1.0	-1.2	-0.1	-0.3	-0.4	-3.0
Coverage ratio old-age	-0.5	-0.4	0.1	-0.3	-0.4	-1.4
Coverage ratio early-age	-2.8	-4.1	-3.2	-1.4	-0.8	-12.3
Cohort effect	-2.1	-5.4	-1.5	1.5	-0.1	-7.6
Benefit ratio effect	0.0	-1.3	-2.2	-0.9	0.6	-3.8
Labour market effect	-0.5	-1.0	-0.6	-0.3	-0.4	-2.8
Employment ratio effect	-0.1	-0.7	-0.6	-0.1	-0.1	-1.6
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.4	-0.4	0.0	-0.2	-0.4	-1.3
Residual	-0.1	-0.3	-0.1	0.0	0.0	-0.5

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

Source: European Commission, EPC.

3.3.2. Average replacement rates

As mentioned above, the reduction in the benefit ratio is mainly due to normative reasons. In addition to the indexation of pensions to price inflation alone, the gradual shift from the DB to the NDC scheme plays an important role, reinforced by the periodic revision of the transformation coefficients in accordance with mortality assumptions.

In this regard, Table 9 shows the evolution of the replacement rate, i.e., the ratio between the average new pension (old-age and early retirement) and the gross average wage/labour income at retirement. In the baseline scenario, in the years 2023-2027, this indicator fluctuates at relatively high levels, averaging 72%. This pattern is due to the retirement of workers enrolled in the mixed regimes, who receive relatively higher pension benefits, partially computed according to the old DB formula. Subsequently, the replacement rate starts to decline. With the gradual phasing-in of NDC rules, flanked by a recovery in productivity growth, the ratio falls to a minimum of around 46% around 2050 and then increases again to just over 52% at the end of the projection period.

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

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public scheme (BR)	69%	71%	65%	57%	53%	56%	-14%
Coverage	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	71%	73%	67%	58%	54%	58%	-14%
Public scheme: old-age earnings related (RR)	59%	55%	50%	46%	50%	52%	-7%
Coverage	79%	80%	80%	80%	79%	81%	2%
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	:	:	:	:	:	:	:
Private individual schemes (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Total benefit ratio	69%	71%	65%	57%	53%	56%	-14%
Total replacement rate (earnings-related benefits)	59%	55%	50%	46%	50%	52%	-7%

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

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

FIGURE 6 – BENEFIT RATIO AND REPLACEMENT RATE EXPRESSED IN TERMS OF ECONOMY WIDE AVERAGE WAGE

Legend:
- New old-age and early pensions (annual flow) (RR)
- New old-age and early pensions (annual flow) (RR) AR21
- Old-age and early pensions (BR)
- Old-age and early pensions (BR) AR21
- All pensions (BR)
- All pensions (BR) - AR21
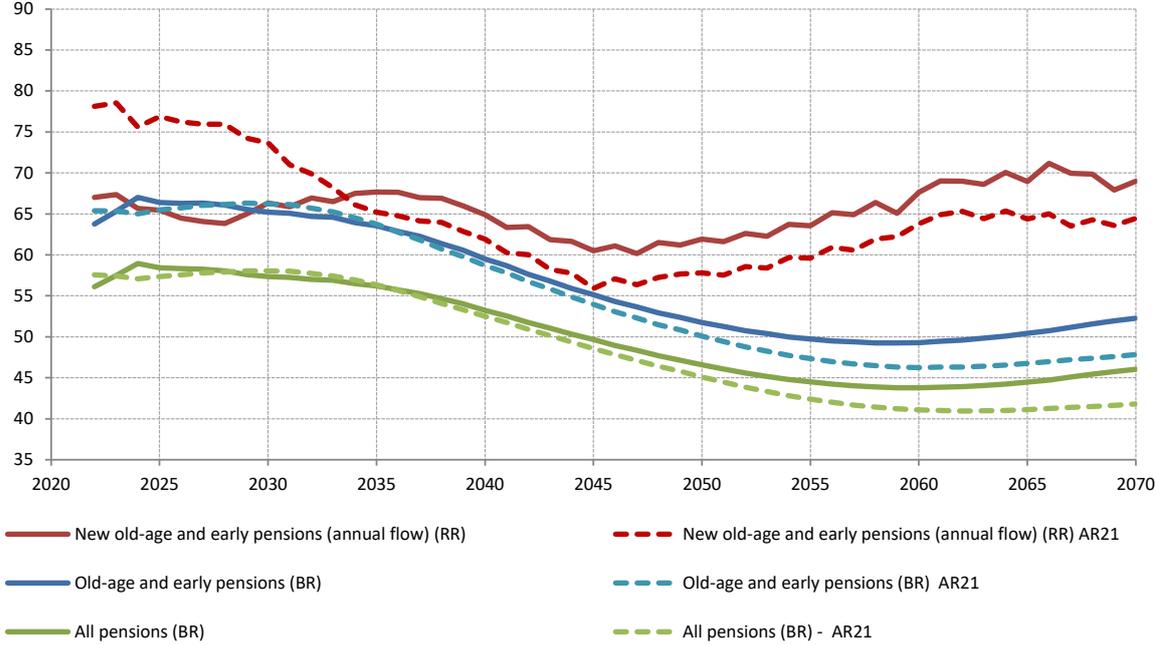
3.3.3.   Old-age and system dependency ratios

The Old-Age Dependency Ratio (OADR) compares the elderly above a given age threshold (generally 65 years), who are presumed to be economically dependent, with the working age population (generally 20-64 years), supposed economically active. However, such a decomposition does not correspond to an economic concept of dependency, as an elderly person may still be active and contributing to the pension system, while an adult may be inactive and receiving pension benefits. Moreover, the age thresholds separating dependent people (old and young) from the working age population are not clearly defined and may vary over time in relation to possible changes in individual behaviours and legislative frameworks regulating pension and education systems. Such aspects may be better reflected by the economic dependency ratio, defined as the ratio of pensioners to workers, regardless of age. This indicator, referred to as 'Pension System Dependency Ratio (SDR)' in Table 10, emphasizes the contribution brought about by changes in the legal framework of the pension system.

The ratio between the SDR and the OADR provides a measure of the 'System Efficiency'. As shown in Table 10, such indicator decreases steadily from 1.6 in 2022 to 1.1 in 2070, still signalling the effectiveness of the pension reform process described in Chapter 1.

Figures 3.d-3.f (§ 3.2.1) provide more information on the evolution of the ratio of pensions to workers (economic dependency ratio), which is projected to increase at a slower pace than the old-age dependency ratio. Apart from the counteracting effect of the rise in the employment rate (Figure 3.e), the more subdued dynamics of the economic dependency ratio mainly depend on the incidence of pensions on the population aged 70 and over, which is projected to decline considerably over time (Figure 3.d). The reason for this is to be found in the evolution of survivors' pensions for those aged 70 and over and of the earnings-related pensions paid to people under 70.

As for the former, it should be noted that changes in life expectancy, while having a significant impact on the number of elderly people, are more or less neutral with regard to the evolution of survivors' pensions. In fact, higher life expectancy does not increase the average length of time that widows or widowers outlive their spouses. Furthermore, probabilities to leave a spouse have decreased substantially in the past years because of a decreased propensity to marry and a recovery in life expectancy for males compared to females.

Concerning the second point, it is worth mentioning that the incidence of pensions on people under 70, expressed as a proportion of the elderly (70+), will be reduced not only because of the increase in the eligibility requirements, but also, and to a large extent, because of a simple composition effect due to changes in the demographic structure. The ratio of the population in the age bracket 50-69 (where the relevant part of the under-70 pensions is) to the population aged 70+ is projected to decrease substantially over the projection horizon. This means that the number of under-70 pensions would fall even if the take-up rate remained constant.

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

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	14760	15755	17222	17523	16406	15457	697
Employment (thousand) (II)	23181	23122	22770	22332	22127	21924	-1257
Pension system dependency ratio (SDR) (I)/(II)	0.6	0.7	0.8	0.8	0.7	0.7	0.1
Number of people aged 65+ (thousand) (III)	14120	16081	18876	19370	18452	17955	3835
Working-age population 20-64 (thousand) (IV)	34605	33519	31034	29354	28539	27396	-7209
Old-age dependency ratio (OADR) (III)/(IV)	0.4	0.5	0.6	0.7	0.6	0.7	0.2
System efficiency (SDR/OADR)	1.6	1.4	1.2	1.2	1.1	1.1	-0.5

Source: European Commission, EPC.

3.3.4. Pensioners and elderly population

Tables 11 and 12 present the incidence of pensioners in terms of the total population and for women. In 2022, the ratio of pensioners aged 60-64 to the corresponding population is 31.8%. It is noteworthy that, despite the introduction of the new early retirement channels of "Quota 102/103", the number of pensioners aged 60-64 expressed in terms of the corresponding population have decreased on average by 1.7% between 2021 and 2022 compared to the 2020 peak value of 35.1% mainly affected by the introduction of "Quota 100". This can be explained by the more limited number of eligible persons for "Quota 102/103" compared to "Quota 100". By 2030, the ratio of pensioners to the population aged 60-64 will still be around 22.3%. One factor driving this trend is the 2 months reduction in the minimum contribution requirement for the early retirement channel, based solely on accrued contributions, resulting from the freezing of the periodic life expectancy updates for the period 2019-2026 (see § 1.2).

In addition to examining the expected impact of recently adopted pension measures on specific age groups over the projection horizon, the significant increase in the eligibility requirements means that the percentage of retired people tends to shrink over time for all age groups until 69. Instead, such a reduction is much less pronounced in the 70-74 age group, where changes in the eligibility requirements are limited and only materialise towards the end of the projection period.

Looking at the elderly over 75, the incidence of pensioners decreases only marginally[37]. This trend is mainly due to the presence of non-resident pensioners in the base year. Although non-residents also

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[37] Compared to AR21, the coverage ratio for people aged 75 years and over is somewhat lower essentially due to lower numbers of survivors' pensioners over the entire projection period.

receive pensions, the method used to determine the population for the demographic projections, specifically refers to resident persons.

Similar conclusions can be drawn from the analysis of the incidence of pensioners in terms of the inactive population, which is presented in Tables 11 and 12. Values may exceed 100% because of the presence of working pensioners.

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

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	2.2	2.1	1.8	1.9	1.8	1.6
Age group 55-59	25.6	24.5	22.7	23.2	25.3	24.6
Age group 60-64	56.0	50.1	37.9	29.7	31.7	32.3
Age group 65-69	89.2	87.4	82.3	78.5	66.5	62.9
Age group 70-74	93.7	92.8	97.0	96.8	100.9	101.7
Age group 75+	97.0	98.1	96.2	96.1	96.8	97.7

pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	1.0	0.9	0.8	0.8	0.8	0.7
Age group 55-59	7.6	6.4	5.6	5.4	5.4	5.0
Age group 60-64	31.8	22.3	14.9	10.8	9.7	8.7
Age group 65-69	76.4	67.1	57.6	50.9	38.6	31.5
Age group 70-74	90.0	88.9	90.5	88.2	89.3	86.4
Age group 75+	97.0	98.1	96.2	96.1	96.8	97.7

Source: European Commission, EPC.

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

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	2.4	2.2	1.7	1.6	1.5	1.4
Age group 55-59	16.8	20.1	17.4	16.1	16.8	15.7
Age group 60-64	38.9	35.9	28.4	21.5	22.6	21.4
Age group 65-69	74.6	69.4	68.2	60.5	49.5	47.5
Age group 70-74	85.3	84.0	90.3	90.1	91.9	89.4
Age group 75+	94.6	93.3	93.2	93.7	95.5	96.3

female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	1.3	1.1	0.9	0.8	0.8	0.7
Age group 55-59	7.0	6.9	5.8	5.1	5.0	4.5
Age group 60-64	25.2	18.5	12.8	9.2	8.4	7.3
Age group 65-69	67.3	57.3	50.2	41.6	30.6	25.6
Age group 70-74	83.7	80.7	84.2	81.9	81.5	76.4
Age group 75+	94.6	93.3	93.2	93.7	95.5	96.3

Source: European Commission, EPC.

3.3.5. New public pension expenditure

Table 13 illustrates, in total and for both genders, the projected expenditure on new pensions and its decomposition in terms of the number of pensions and their average amount. The latter is in turn broken down into three factors: the average contribution period, the average pensionable earnings, and the average accrual rate.

In the short term (2022-2028), the evolution of the number of new pensions (old-age and early retirement) remains relatively stable, reflecting two counteracting factors: easier access to retirement in 2022-2025 (due partially to the temporary derogations from the Fornero Reform, but mostly to the null increase in life expectancy originated from the COVID-19 pandemic) and fewer new pensions in 2026-2028 as a result of increased access in the preceding years. In the medium term, it describes the transition of the baby-boom generation to retirement age. From an average annual level of around 563,000 in the

first decade of the projection period, the number of new pensions rises to a level close to 662,000 in the 2032-2044 period, falls to 524,000 units in 2045-2060 and finally grows slightly to around 552,000 units in the last decade. The gender composition shows that, on average, new male pensions account for around 56% of the total.

The average accrual rate is a weighted average of the accrual rate explicitly defined in the DB calculation method (2% or lower, depending on the reference retribution) and the implied accrual rate in the NDC scheme, which is defined as the product of the contribution rate and the transformation coefficient at the age of retirement. The former is constant, while the latter changes according to the contribution rate, the retirement age, and the periodic revision of the transformation coefficients. The average accrual rate moves from 1.8%, characterised by the predominance of pensions calculated according to the DB method, to 1.7% around 2040, when the pure NDC method is largely predominant.

The analysis by gender highlights that the average accrual rate for women is slightly higher than for men, by about 0.1 percentage points. This reflects the fact that women will retire somewhat later than men under the NDC scheme, as they are less likely to have access to early retirement due to generally lower contributions/pension rights. It also depends on the privilege of an augmented transformation coefficient granted to women in relation to the number of children.

Figure 6 illustrates how and to what extent the indexation of the eligibility requirement to changes in life expectancy is able to compensate for the downward effects of the revision of the transformation coefficients. It is not difficult to see that the temporary introduction of new channels for early retirement does not affect the overall adequacy/stability of the Italian pension system.

The average contribution period per pension increases by about 2.2 years from the 2022 level, reaching a level of 37.7 in 2070 (Figure 7). Overall, the increase in the average contribution period per pension accounts for about 57% of the corresponding increase in the average retirement age. The difference is mainly explained by the postponement of the labour market entry age observed for the younger generations. The overall increase in the average contribution period is mainly concentrated in the last part of the projection period. Instead, in the central part of the projection period, it remains almost stable, despite the indexation of the eligibility requirements. There are two main explanations for this result. Firstly, the cohorts retiring in this period started contributing to the pension system somewhat later than their predecessors, as shown by the database of insured persons. Secondly, the early retirement provided for in the NDC scheme will gradually become effective from around 2030 and this contributes to slowing down the increase in the average retirement age.

Both explanations also highlight gender differences in the contribution records. Indeed, women are much less likely than men to have access to early retirement under the NDC scheme, due to the well-known gender gaps in wages and careers. On top of that, the average labour market entry age is somewhat higher for women than for men, as is also the risk of career gaps linked to maternity and caring for the disabled and elderly.

The average contribution period per pensioner follows the same path as that of pensions, although it is a few years higher.

The average pensionable earnings should be interpreted as a weighted average between the explicit reference wage under the DB method and an implicit reference wage under the NDC one[38]. As expected, average pensionable earnings, when deflated by productivity growth, decline in the long run in line with the gradual shift towards the NDC calculation rules. In terms of the average gross wage (national

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[38] With regard to the former, the number of final annual earnings used to calculate the reference wage depends mainly on the sector, the contribution period, and the retirement age. As for the latter, the implicit reference wage is defined as the average of lifetime wages indexed to GDP growth (§. 1.1.1).

accounts figures), it goes from around 98.4% of 2022, to 100% in 2030 and 2040, to 98% in 2050, and finally up again to 100% in 2070.

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

TOTAL	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	10608	17259	24023	24192	38362	56156
I. Number of new pensions (1000)	544.8	698.1	732.4	541.9	559.1	578.6
II. Average contributory period (years)	35.5	34.6	34.6	34.4	36.0	37.7
III. Average accrual rate (%) (c/A)	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%
Notional-accounts contribution rate (c)	:	:	:	:	:	:
Annuity factor (A)	:	:	:	:	:	:
IV. Monthly average pensionable earnings (1000 EUR)	2.4	3.1	4.2	5.9	8.5	11.8
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings / monthly economy-wide average wage	1.0	1.0	1.0	1.0	1.0	1.0

MEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	7072	10245	14537	14650	23371	33669
I. Number of new pensions (1000)	337.9	386.1	397.8	303.8	310.5	327.0
II. Average contributory period (years)	36.5	35.6	35.5	35.0	36.6	38.1
III. Average accrual rate (%) (c/A)	1.7%	1.7%	1.7%	1.7%	1.7%	1.6%
Notional-accounts contribution rate (c)	:	:	:	:	:	:
Annuity factor (A)	0.0	0.0	0.0	0.0	0.0	0.0
IV. Monthly average pensionable earnings (1000 EUR)	2.6	3.4	4.7	6.4	9.4	12.7
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings / monthly economy-wide average wage	1.1	1.1	1.1	1.1	1.1	1.1

| WOMEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	3536	7014	9485	9542	14991	22487
I. Number of new pensions (1000)	206.9	312.1	334.5	238.1	248.6	251.6
II. Average contributory period (years)	33.9	33.4	33.6	33.7	35.2	37.2
III. Average accrual rate (%) (c/A)	1.8%	1.8%	1.8%	1.8%	1.8%	1.7%
Notional-accounts contribution rate (c)	:	:	:	:	:	:
Annuity factor (A)	0.0	0.0	0.0	0.0	0.0	0.0
IV. Monthly average pensionable earnings (1000 EUR)	2.1	2.8	3.7	5.2	7.4	10.6
V. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings / monthly economy-wide average wage	0.9	0.9	0.9	0.9	0.9	0.9

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

Source: European Commission, EPC.

Transformation coefficients at the average retirement age
Transformation coefficients at the average retirement age AR2021
Transformation coefficients at individual ages
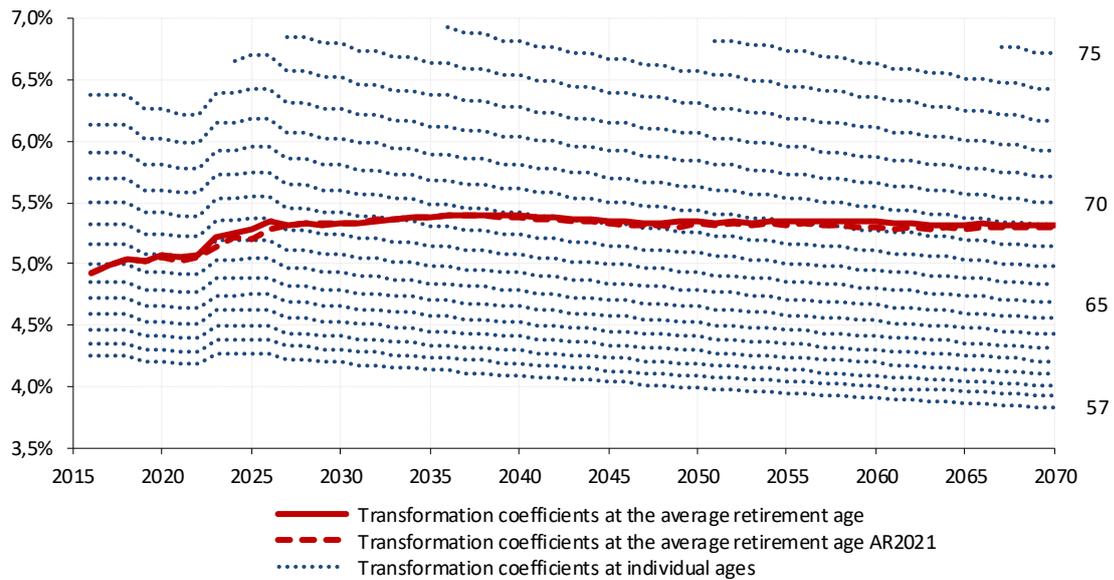
Source: Italian Ministry of Economy and Finance.

FIGURE 8 – AVERAGE CONTRIBUTION PERIOD

Pensioner — Pension — Pensioner AR21 — Pensioner AR21
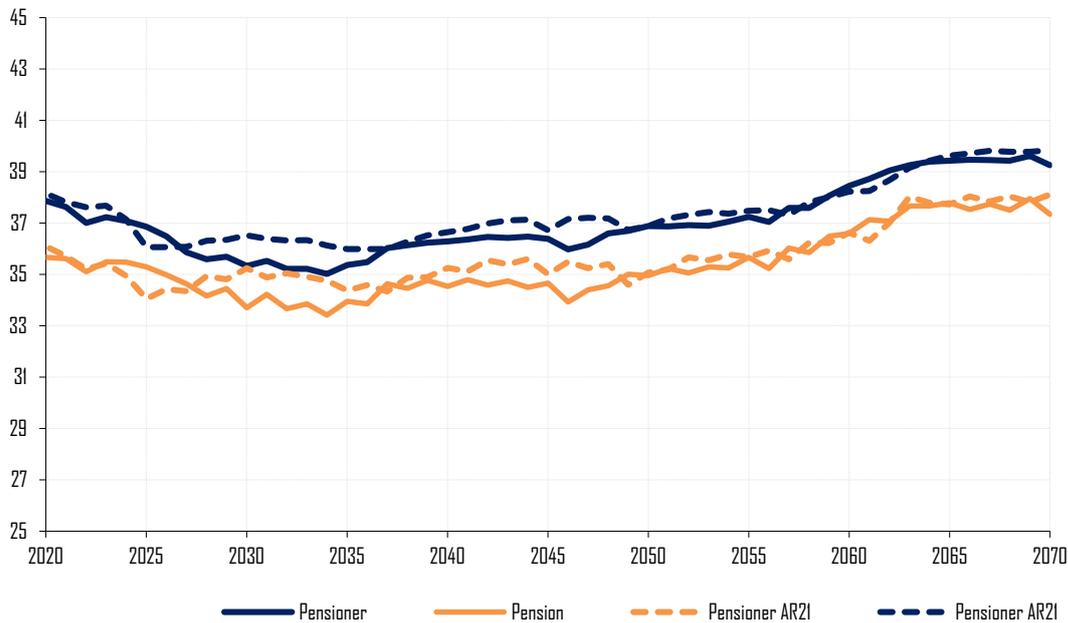
Source: Italian Ministry of Economy and Finance.

3.4. Financing of the pension system

The number of contributors evolves broadly in line with employment over the whole projection period, with for minor adjustments by sector. At the same time, the average labour income subject to contributions (contribution base divided by the number of contributors) is assumed to grow in line with productivity, in accordance with the general rule agreed in the WGA for the medium to long term. As a

result, the total contribution base evolves in line with GDP growth and total pension contributions as a percentage of GDP remain basically constant, except for a slight increase in the early years of the projection due to the gradual increase in the contribution rates for the self-employed and atypical workers. Starting from a level of 10.9% in 2022, the ratio of contributions to GDP increases slightly to 11.2% in 2030 and increases marginally over the last decades of the projection. (Tables 14-15).

TABLE 14– FINANCING OF THE PUBLIC PENSION SYSTEM

	Public employees	Private employees	Self-employed
Contribution base	123,760	392,149	124,579
Contribution rate/contribution	33%	33%	24%
Employee	23.8%	23.8%	
Employer	9.2%	9.2%	24%
State*			
Other revenues*			
Maximum contribution	37,462	37,462	27,245
Minimum contribution	4,873	4,873	4,201

*Only legislated contributions are reported.

Source: Italian Ministry of Economy and Finance.

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

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public pension contributions (%GDP)	10.9	11.2	11.2	11.3	11.4	11.3	0.4
Employer contributions	*8.1*	*8.3*	*8.4*	*8.5*	*8.6*	*8.5*	*0.4*
Employee contributions	*2.8*	*2.9*	*2.9*	*2.8*	*2.9*	*2.8*	*0.0*
State contribution*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Other revenues*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Number of contributors (I) (1000)	24198	24610	24203	23964	24017	23554	-644
Employment (II) (1000)	23181	23122	22770	22332	22127	21924	-1257
(I) / (II)	1.04	1.06	1.06	1.07	1.09	1.07	3%

*Includes only legislated contributions.

Source: European Commission, EPC.

3.5. Sensitivity analysis

In the following, we briefly describe the sensitivity scenarios simulated. Since the current legislation already provides for a link between eligibility requirements and changes in life expectancy (§. 1.1.2), the sensitivity test to such a 'policy scenario' is not relevant in this context.

Life expectancy: *2-year additional gain gradually achieved over the entire projection period*.

Assuming an additional 2-year gain in life expectancy at birth, the old-age dependency ratio (people aged 65 and over as a ratio to working-age population aged 20-64) settles at an increasingly higher level. At the end of the projection period, it is about 4.5 percentage points higher than in the baseline (70.1% vs 65.5%). However, the impact of the increasing deviation in the old-age dependency ratio is counterbalanced by the dampening effects on the number of pensioners stemming from the indexation of the eligibility requirements to changes in life expectancy and on the average level of pensions resulting from the revision of transformation coefficients.

In order to explain the size and the time profile of the deviations from the baseline, it is useful to recall that an increase in life expectancy and then in the retirement age leads to a reduction in the number of

new pensioners and an increase in the number of workers (and, consequently, in GDP growth). Correspondingly, the same change in life expectancy implies lower mortality rates for all age groups (especially for the very old), which gradually raises the number of pensioners. This gradually offsets the financial impact of the reduction in the number of new pensioners. As GDP grows faster than total pension expenditure, in the last decade of the projection period the deviation from the baseline turns negative.

Migration: *33% more/less non-EU immigration over the entire projection period.*

An increase in migration flows implies a reduction in the ratio of pension expenditure to GDP. Compared with the baseline scenario, the maximum difference of 0.63 percentage points is reached around 2060. Afterwards, it tends to decrease marginally, reaching 0.55 p.p. in 2070. Such result is explained by higher GDP growth rates, due to an increased number of workers. In particular, the decrease in the old-age dependency ratio is reflected in the ratio of pensions to workers. The difference tends to stabilise as soon as the additional immigrants grow older and, consequently, retire. A further dampening effect on pension expenditure stems from higher replacement rates resulting from the more favourable capitalisation rates, linked to GDP growth under the NDC regime.

In the case of a corresponding decrease in migration flows, the projected results are somewhat symmetrical, although the difference with the baseline is slightly higher (maximum of 0.76 p.p. in 2060 and final value of 0.7 p.p.).

Fertility rate: *20% decrease of fertility rate gradually achieved over the entire projection period.*

Any change in the fertility rate takes about 20 years to be reflected in employment and another 40 years to be translated into the number of pensioners. This means that there is no direct impact on pension expenditure on GDP within the projection horizon, apart from the negative impact on disability pensions (which is negligible) and, to some extent, on lower pension amounts because of lower capitalisation rates under the NDC system due to lower GDP growth rates.

Therefore, the impact of a 20% reduction in the fertility rate is essentially indirect and consists of a gradually increasing ratio of pension expenditure to GDP starting from around 2050. The deviation amounts to 0.4 in 2060 and settles at 0.7 pp at the end of the projection period. As expected, such an outcome is mainly explained by a corresponding decrease in the number of workers and the GDP level, which is partially compensated by lower pension amounts towards the end of the projection period.

Higher inflation: *inflation converges to 2.64% (2% in baseline) by T+10 and 2% in T+30.*

Given that pension amounts are indexed to price indexation, the impact of higher inflation assumptions is not neutral on the numerator of the expenditure to GDP ratio. However, in the first years of the projection period, such positive impact (which only operates on the stock, not on new pensions) is offset by an increase in nominal GDP produced by changed assumptions on the GDP deflator. In the last decade, the gap becomes slightly positive (by less than 0.1 p.p. on average) as past higher nominal GDP growth translates into higher capitalisation rates under the NDC system.

Higher employment rate of older workers: *employment rates of older workers (55-74y) are increased by 10 p.p. over the period 2024-2036.*

The further extension of working lives compared to the baseline scenario has been implemented by setting the probabilities of early retirement to zero and increasing the propensity to work after reaching the SRA.

The reduction in the ratio of pension expenditure to GDP peaks at around 1.4 p.p. in 2033. Such a result mainly reflects changes in employment (and GDP growth, both affected positively) and in the number

of pensions in the early decades of the projection period (affected negatively). In the following years, these effects tend to be offset by an increase in the average pension due to longer working careers and, under the NDC system, higher transformation coefficients and capitalisation rates. In the 2050s, the latter effect leads to an increase in pension expenditure of around 0.5 p.p. compared with the baseline scenario. However, this difference tends to decrease in the last decade, closing at 0.3 p.p. in 2070.

Productivity: *TFP growth converges to 0.6%/1.0% instead of 0.8%.*

Under the capital stock rule, a lower productivity scenario, with a change in TFP growth of -0.2 p.p., lowers productivity and GDP growth by 0.3 p.p. at the end of the projection period. Consequently, the ratio of pension expenditure to GDP is higher than in the baseline scenario[39]. The deviation gradually increases from 2033 until around 2060, when it amounts to 0.6 p.p. of GDP, and remains unchanged at the end of the projection period.

As far as higher productivity is concerned, the deviation increases steadily from 2041 to 2070, when it reaches a maximum of –0.4 p.p. of GDP.

The differences in the ratio of pension expenditure to GDP are essentially explained by the different evolution of average pensions. The ratio of pensions to workers and its decomposition change only marginally, and that is due to the minimum amount requirement to access retirement for individuals enrolled in the NDC regime. Said minimum amounts are set at 2.8 and 1.5 times the social allowance for early and old-age retirement respectively. The social allowance is indexed to wage growth, linked to labour productivity and hence the TFP.

Policy scenario: *unchanged retirement age.*

This scenario assumes that all the eligibility requirements for early and old-age retirement remain unchanged throughout the projection period at the parameters in force in 2023.

The pension expenditure-to-GDP ratio would increase quite significantly over the first twenty years of the projections. In 2030 and 2040, respectively, pension expenditure as a percentage of GDP would be 0.3 p.p. and 0.9 p.p. higher than in the baseline scenario, as a result of the significantly higher number of pensioners. Thereafter, given the reduction of average pension benefits stemming from the lower accrued contribution and the lower transformation coefficients resulting from earlier retirement, pension expenditure would keep increasing relative to the baseline scenario, but the change would be smaller in the following 10-15 years (on average 0.7-0.8 p.p. of GDP). From 2060 onwards, the deviation from the baseline increases again as GDP is negatively impacted by reduced employment amongst the elderly.

Policy scenario: *offset declining pension benefit ratio*

This scenario assumes that policy measures are taken when the earnings-related public pension benefit ratio decreases by 10% relative to the base year. The scenario keeps the benefit ratio constant at this 10% lower point for the remainder of the projection period.

In this scenario, public pension expenditure increases steadily starting in the mid-2040s. In 2070, the pension expenditure-to-GDP ratio is projected to be 1.5 p.p. higher compared with the baseline scenario.

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[39] When pensions are indexed only to price inflation, as in the case of Italy, an increase (decrease) in the growth rate of productivity will result in an increase (decrease) in the growth rate of GDP of the same size. However, pension expenditure is only marginally affected in the early years of the projection period. As a matter of fact, productivity growth only impacts on new pensions, which are related to earnings. Generally, it takes two to three decades until the structural change in the growth rate of productivity is entirely transferred to the pension expenditure evolution.

Table 16 presents the deviations in the projection of the ratio of pension expenditure to GDP resulting from the sensitivity tests agreed in the WGA. Figure 9 then compares the trends in pension expenditure on GDP through the projection period for the simulated scenarios.

TABLE 16– EXPENDITURE PROJECTIONS UNDER DIFFERENT SCENARIOS (PPS DEVIATION FROM BASELINE)[40]

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070
Baseline (%GDP)	15.6	16.6	17.1	15.5	13.7	13.7	-1.9
Higher life expectancy at birth (+2y)	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1
Higher migration (+33%)	0.0	-0.2	-0.4	-0.6	-0.6	-0.6	-0.6
Lower migration (-33%)	0.0	0.2	0.4	0.7	0.8	0.7	0.7
Lower fertility (-20%)	0.0	0.0	0.0	0.1	0.4	0.6	0.6
Higher inflation scenario (2% by 2052)	0.0	-0.1	-0.2	-0.1	0.0	0.1	0.1
Higher employment rate of older workers (+10 pps)	0.0	-1.2	-0.7	0.3	0.5	0.3	0.3
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	-0.1	-0.3	-0.4	-0.4
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.2	0.5	0.6	0.6	0.6
Policy scenario: link retirement age to longevity	:	:	:	:	:	:	:
Policy scenario: constant retirement age	0.0	0.3	0.9	0.7	1.0	1.2	1.2
Policy scenario: constant benefit ratio	0.0	0.0	0.0	1.4	2.2	1.5	1.5

Source: European Commission, EPC.

FIGURE 9 – SENSITIVITY ANALYSIS

DEMOGRAPHIC SCENARIOS

Higher Life Expectancy — Higher migration — Lower migration — Lower fertility — Baseline
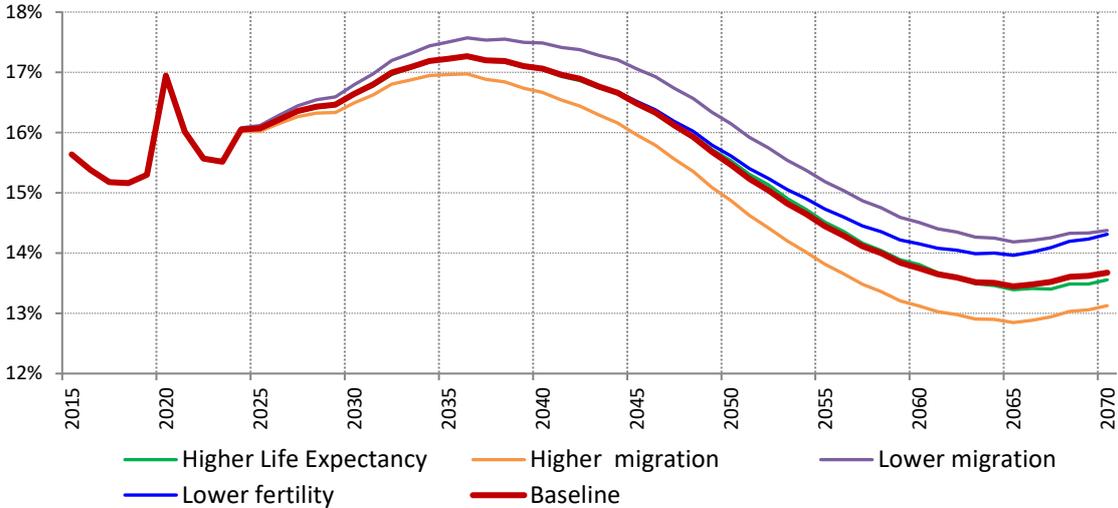
[40] For more information on the design of the sensitivity scenarios, see Chapter 5 of Part 1 in European Commission and EPC (2022), 'The 2024 Ageing Report: Underlying assumptions and projection methodologies.' European Economy, Institutional Paper 257. https://economy-finance.ec.europa.eu/publications/2024-ageing-report-underlying-assumptions-and-projection-methodologies_en .
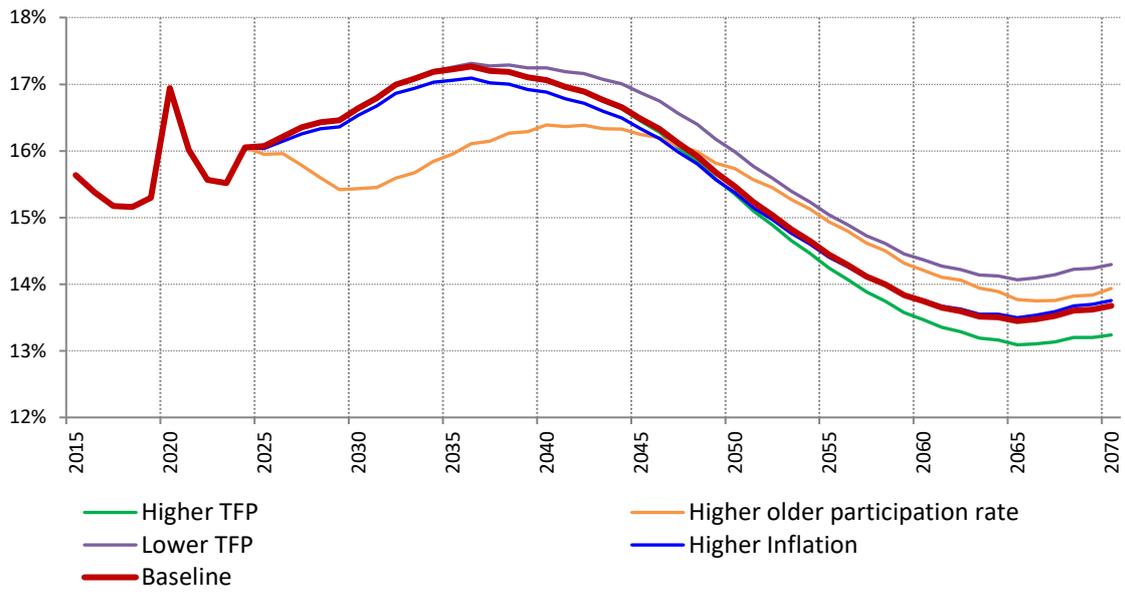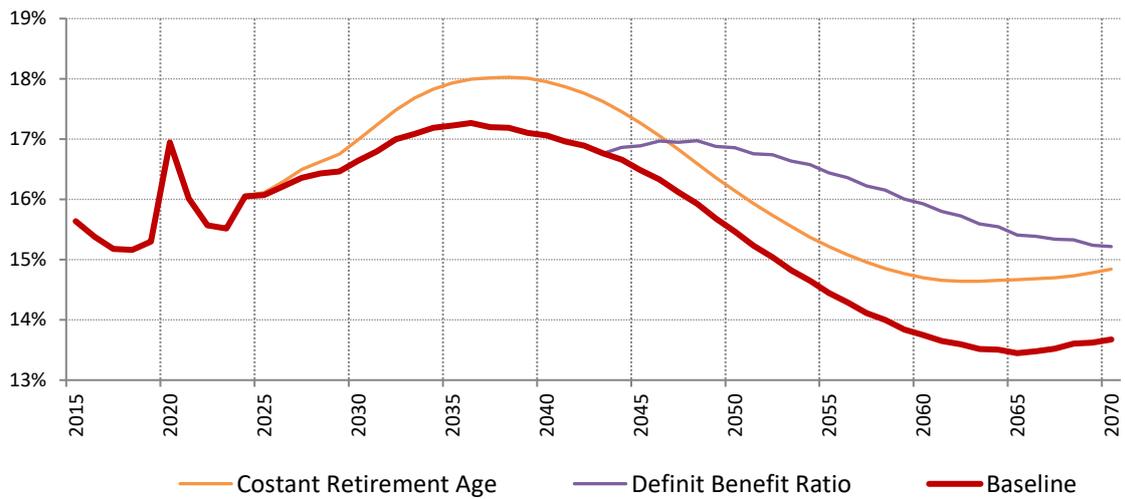
Source: Italian Ministry of Economy and Finance.

3.6. Changes in comparison with previous Ageing Report projections

Table 17 compares the pension results in the new baseline scenario with the 2021 Ageing Report projections, decomposing the differences in the ratio of pension expenditure to GDP into the main underlying drivers.

The change in the pensions-to-GDP ratio between 2022 and 2070 in the new baseline scenario shows a reduction of 1.9 p.p., compared to a 2.7 reduction in the AR 2021 projection exercise. The 2070 endpoint is substantially identical to the previous report, but the 2022 value is 0.7 p.p. lower[41].

There are also some changes in the contribution of the underlying factors. In particular, the positive impact of the dependency ratio is reduced, but it is almost fully offset by the smaller negative impact of the coverage ratio and the benefit ratio – and, marginally, of the employment effect.

- The dependency ratio decreases over the entire projection period, but the numerator (i.e., people aged 65 and over) is almost the same as in AR21 at the end of the period as the number of people aged 65 and over gradually increases. The number of pensions is eventually the same as in AR21.

- The coverage ratio has a less pronounced negative impact on pension expenditure, mainly due to higher coverage in the early-age group (below 65 years of age), especially in the short term, as a result of temporary early retirement schemes and the halt in the increase in contribution requirements (see § 1.2). As can be seen in Table 8, the main impact of the early age coverage rate is concentrated in the period 2022-2030 compared to AR21 2019-2030.

- The benefit ratio also has a less pronounced negative impact on pension expenditure, mainly because the level of the pension amount adjusts to the higher GDP growth in the first years of the projection (due to higher employment)[42].

- Finally, as regards the labour market effect, its profile has changed over the projection period, although the overall effect is essentially the same in both AR24 and AR21. In fact, the hours worked effect dominates initially with a negative sign. Almost immediately, activity picks up, followed by employment after t+10 (past the NAWRU anchor convergence period), so that the labour market effect recovers.

Taken together, these factors explain why a less adverse evolution of the dependency ratio in AR24 than in AR21 is reflected in a decrease in pension expenditure to GDP towards 2030, but not over the entire projection period.

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[41] The difference increases to 1 p.p. (16.3 *vis-à-vis* 15.3% of GDP) if the revision in National Accounts data occurred in September 2023 is taken into account.

[42] In addition, the denominator has changed compared to AR21 (in AR24 it is the economy-wide average wage, whereas in AR21 it was a ratio of gross compensation of employees in national accounts to full-time equivalent employees).

TABLE 17– DISAGGREGATION OF THE CHANGE IN THE PUBLIC PENSION EXPENDITURE-TO-GDP RATIO IN CONSECUTIVE AGEING REPORTS (PPS OF GDP)

	Public pension expenditure	Dependency ratio effect	Coverage ratio effect	Benefit ratio effect	Labour market effect	Residual (incl. interaction effect)
2006 Ageing Report (2004-2050)	**0.4**	*11.5*	*-3.2*	*-5.3*	*-2.0*	*-0.7*
2009 Ageing Report (2007-2060)	**-0.4**	*10.4*	*-3.2*	*-5.5*	*-1.1*	*-1.0*
2012 Ageing Report (2010-2060)	**-0.9**	*9.5*	*-5.5*	*-2.0*	*-1.3*	*-1.6*
2015 Ageing Report (2013-2060)	**-1.9**	*8.0*	*-5.0*	*-2.1*	*-2.3*	*-0.5*
2018 Ageing Report (2016-2070)	**-1.7**	*10.3*	*-4.5*	*-4.0*	*-2.8*	*-0.7*
2021 Ageing Report (2019-2070)	**-1.8**	*9.5*	*-3.5*	*-4.3*	*-2.9*	*-0.6*
2024 Ageing Report (2022-2070)	**-1.9**	*8.3*	*-3.0*	*-3.8*	*-2.8*	*-0.5*

- The disaggregation for 2006/2009/2012 is on the basis of the number of pensions; for the other vintages it is on the basis of pensio

- The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.

Source: European Commission, EPC.

The differences between the new baseline scenario and the 2021 Ageing Report are explained by changes in the underlying assumptions both over the historical period (Table 18) and over the projection horizon (Table 19). In both the historical and the projection periods, the changes are primarily due to the higher nominal GDP levels as a result of the surge in inflation in the early 2020s[43]. However, it is worth noting that pension expenditure is also increasingly higher over the projection period than in the previous projection, due to the impact of higher nominal (and real) GDP growth on the accrual rate of pension contributions in the Italian NDC scheme. As a result, the gap between the two projection exercises gradually narrows. By 2070, pension expenditure as a percentage of GDP is 0.1 p.p. higher in the AR2024 than in the AR2021.

TABLE 18– DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 PROJECTIONS AND ACTUAL PUBLIC PENSION EXPENDITURE IN 2019-2022 (%GDP)

	2019	2020	2021	2022
Ageing Report 2021 projections (%GDP)	15.4	17.3	16.4	16.3
Assumptions (pps of GDP)	*-0.1*	*-0.3*	*-0.4*	*-0.8*
Coverage of projections (pps of GDP)	*0.0*	*0.0*	*0.0*	*0.0*
Constant policy impact (pps of GDP)	*0.0*	*0.0*	*0.0*	*0.0*
Policy-related impact (pps of GDP)	*0.0*	*0.0*	*0.0*	*0.0*
Actual public pension expenditure (%GDP)	15.3	16.9	16.0	15.6

Source: Italian Ministry of Economy and Finance.

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[43] In 2022, the GDP deflator grew by 3%, while price inflation grew by 8.1%. However, pension amounts are indexed to changes in price inflation from *t-2* to *t-1*, hence the effect is visible from 2023.

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

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	16.3	17.3	17.8	16.2	14.1	13.6
Change in assumptions (pps of GDP)	-0.8	-0.7	-0.8	-0.7	-0.4	0.1
Improvement in the coverage or in the modelling (pps of GDP)	0.0	0.0	0.0	0.0	0.0	0.0
Change in the interpretation of constant policy (pps of GDP)	0.0	0.0	0.0	0.0	0.0	0.0
Policy-related changes (pps of GDP)	0.0	0.0	0.0	0.0	0.0	0.0
New projections	15.6	16.6	17.1	15.5	13.7	13.7

Source: Italian Ministry of Economy and Finance

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

4.1. Updating and institutional utilization

As in the past, the projections of the Italian pension system for the 2021 round of EPC-WGA forecasting exercise have been run with the model of the Department of General Accounts (Dipartimento della Ragioneria Generale dello Stato – RGS), which covers the whole public pension expenditure, according to the definition given in paragraph 3.1.

The RGS pension model has been regularly updated since 1999 (yearly up to 2011 and twice a year thereafter). Ordinary updating procedures involve the setting of data and parameters for the base year, while demographic and macroeconomic assumptions are revised depending on the availability of new estimates and information. Methodological improvements have also been introduced over time.

Projections of the Italian pension system are regularly made on the basis of two different baseline scenarios respectively based on national and EPC-WGA scenario assumptions. The latter are presented as part of Italy's Stability Programmes, in the section devoted to the analysis of the mid/long-term sustainability of public finances. The projection based on the national baseline scenario is also reported in the Public Finance Documents[44].

Projection results, based on both scenarios, are illustrated in the RGS annual Report which focuses on the mid/long-term prospects of public expenditure for pensions, health and long-term care. Any changes to the projection model and scenario assumptions are also commented in the Report as well as the updating procedure. The RGS Report also includes an in-depth sensitivity analysis of demographic and macroeconomic parameters. Since 2002, a standardized set of tables has been included in the Annex of the RGS Report, which encompasses analytical results of projections in order to improve comparability through time and between different scenario assumptions.

The latest RGS Report refers to the 2023 update of projections and is based on the legislation in force in June 2023[45]. In this context, the EPC-WGA baseline scenario already incorporates, for the mid-long term, the new set of demographic and macroeconomic assumptions defined in the EPC-WGA for the 2021 round of age-related expenditure projections[46]. The latest projections, based on national and EPC-WGA baseline scenarios, was made in September 2023 for the Update of the Economic and Financial Document.

The RGS pension model has been constantly used to assess the financial effects of proposed and/or implemented pension reforms. It has also been used at national and international levels within research programmes on the financial implications of ageing and of pension reforms, as well as within institutional cooperation with the OECD and the IMF.

Compared to the previous 2021 WGA projections, the database of the insured covering the private and public sector employees and the self-employed has been updated to 2020. The legal framework is in line with the legislation in force at the end of September 2023 (§. 1.2).

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[44] Such documents are prepared each year by the Ministry of Economy and Finance and presented to Parliament by the Government.

[45] Ministero dell'Economia e delle Finanze-RGS (2023), Le tendenze di medio-lungo periodo del sistema pensionistico e socio-sanitario (Mid-long term trends for the pension, health and long-term care systems), Report no. 24 https://www.rgs.mef.gov.it/_Documenti/VERSIONE-I/Attivit--i/Spesa-soci/Attivita_di_previsione_RGS/2023/Rapporto-2023.pdf

[46] For the short term, generally the first three-four years, the macroeconomic assumptions are fully aligned to those underlying the Public Finance Documents.

4.2. Methodology

The RGS pension model is designed to reproduce accurately the main features of the legal-institutional framework, allowing to take into consideration all the several pension reforms enacted during the last two decades. At the same time, the model is provided with methodological solutions assuring consistency with demographic and macroeconomic scenario assumptions.

The pension model is composed of four modules: demography, labour market, productivity, and pension. The pension module is strictly interrelated with the others as in the outline reported below:

```
                    Population
                    Prob. of death
                    Migration                      Worked hours
 ┌──────────────┐              ┌──────────────┐              ┌──────────────────┐
 │  Demography  │ ───────────► │ Labour market│ ───────────► │   Productivity   │
 │(cohort       │              │(cohort       │              │(prod. function   │
 │ approach)    │              │ approach)    │              │ approach)        │
 └──────────────┘              └──────────────┘              └──────────────────┘
        │                        ▲      │                          │
        │         Entrants       │      │  Exit prob.              │
        │                        │      ▼                          │
        │                  ┌──────────────────────┐                │
        │                  │   Pension model      │ ◄──────────────┘
        └────────────────► │(cohort and multistate│
   Prob. of death          │    approaches)       │  GDP Wages / earnings
                           └──────────────────────┘
```
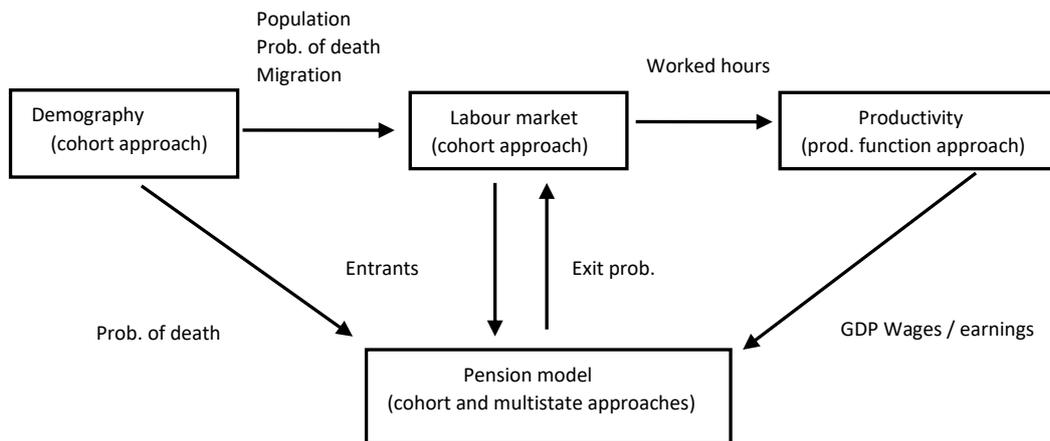
The demographic module adopts the traditional cohort component approach according to which the number of people, by age and sex, is projected on the basis of probabilities of death, total fertility rates, and net migration flows. The last ones, in turn, are obtained as a difference between emigrants (based on the probabilities of emigrating) and immigrants[47].

The labour market module is mainly based on a projection of the labour force, by age, sex, and level of education, to which unemployment rates are applied. The labour force projection combines the dimensional effect of working age population and the cohort evolution of participation rates. The latter is obtained extrapolating the cohort trend in the propensity to enter the labour market on a permanent basis, estimated on the labour force database. The extrapolation of past trends is adjusted to take account of further effects brought about by: i) the evolution of enrolment rates and related changes in educational attainment, and ii) the fulfilment of eligibility requirements for pension entitlement, which depends on pension legislation and worker distribution by age and contribution years.

Unemployment rates, distributed by age and sex, are assumed to change over time, converging on an average target value also taking into account the evolution of the working age population. The total hours worked are calculated on the basis of the incidence of part-time and full-time workers, and the corresponding average hours worked.

The productivity module bases its projection on a sum of two components: i) an exogenous assumption on the growth rate of total productivity factors, which is kept constant at its long-term level after an initial adjustment, and ii) the additional contribution due to changes in the ratio of capital stock to employment (capital deepening). To this end, a Cobb Douglas production function is used.

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[47] The national baseline scenario adopts the demographic projections elaborated by Istat (National Statistics Institute). The latest demographic projection, with 2021 as the base year, was publishes in August 2022, hppt//demo.istat.it.

The pension module adopts a multistate approach involving a large number of 'discriminating' variables, i.e., variables which are relevant for the pension rules to be applied. Such variables are divided into two groups: state and monetary variables.

The first group contains variables that identify distinct positions within the system, as reported in the table below.

State variables	Specifications
Fund (or group of workers)	13 in the private sector and 5 in public sector
Sex	Male, female
Age	[15-74]
Typology of contributor	Contributor, dormant, pensioner-contributor
Contribution years	[0-49] before retirement; [1-20] after retirement
Regime	Earnings-related, contribution-based, mixed
Typology of pension	Disability (2 types), old age, early retirement

At any time, it is possible to identify members of the pension system in terms of their belonging to one of the possible combinations of the state variable specifications. The forecast of members is worked out according to the following equation:

$$\underbrace{a_{t,s,x,f}}_{members} = \underbrace{a_{t-1,s,x-1,f}}_{members} \underbrace{\varphi_{t-1,s,x-1,f}}_{\substack{probability \\ of \ surviving}} \times \underbrace{T_{t-1,s,x-1,f}}_{\substack{transition \\ matrix}} + \underbrace{e_{t,s,x,f}}_{entrants} \qquad \forall s, f, 15 \leq x \leq \omega$$

where, for each sex s, age x, and fund (or specific group of workers) f, a indicates the row vector of the insured distributed by different states at the end of the year t, φ is the probability of surviving, e indicates the row vector of entrants to the pension system in the year t, and T is a matrix of transition probabilities that allows to calculate the changes in the state of members already insured at the end of the year t-1 and still alive at the end of the year t. The general element $t_{i,j}$ of the transition matrix expresses the probability that a member belonging to state i at the end of the year t-1 will transit to state j at the end of the year t.

New entrants, i.e., those insured for the first time in the pension system, are set equal to the cohort increase of employment, suitably transformed into new contributors. The number of entrants by age and sex are attributed to each fund, or other appropriate aggregations of workers, on the basis of specific distributions of probability.

Mean values of monetary variables, such as wages/earnings, pension etc., are associated with each of the possible combinations of the state variable specifications and supplemented with indexes of variability (the variation coefficient) and distribution functions[48].

The number of new survivors' pensions is determined by applying the probabilities of death and leaving a surviving spouse (or dependent children) to pensioners or contributors who have already qualified for retirement. In addition, a permutation matrix is applied to attribute an age to the surviving spouse on the

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[48] In particular, such an approach allows to give adequate treatment to the topping up mechanism for the minimum pension under the DB and mixed regimes, the indexation of pensions by size bracket, and the eligibility requirement for retirement under the NDC regime.

basis of the age of the deceased. Overall, the number of new survivor's pensions are then added to the pensions of previous year which are still being paid out.

4.3. Internal consistency of the model

The consistency of the model with the legal-institutional framework is achieved by grouping the insured according to the state variables, which have been singled out above, to provide, dynamically, all information relevant to calculate the number of pensions and their amounts. Furthermore, the model is able to take on board data concerning workers already insured in the system at the beginning of the forecasting period, including dormant members who are no longer contributing but would later be able to claim a pension, on the basis of past contribution records.

The consistency of the pension module with the demographic and occupational ones is favoured by the cohort approach, which is consistently applied throughout the model. The most relevant mechanisms through which such consistency is sought may be summarized as follows:

- with regard to mortality, consistency is assured by applying the probability of death to all the insured (contributors, pensioners, etc.), i.e., those already in the system at the beginning of the forecasting period and those entering afterwards;

- as for net migration flows and employment rates below 42, consistency is guaranteed through the calculation of workers joining the pension system as new contributors, which depends on the cohort profile of participation and unemployment rates, besides the dimension of demographic cohorts;

- consistency with employment in the age classes above 42 is also assured. In fact, the probabilities of exiting from the labour market are endogenously calculated by the pension module according to current legislation and retirement behaviour;

- net migration flows from 42 to 60 are also transformed into new contributors according to the employment rates forecast in the corresponding age classes. Immigrants above 60 are considered neither contributors nor pensioners entitled to an earnings-related pension;

- wages (or labour income in the case of the self-employed) are projected to increase over time by cohort, applying the dynamics of productivity and a further increase due to career progressions[49]. In this regard, consistency with macroeconomic assumptions is assured by targeting the career progressions to guarantee constancy through time of the ratio between the average contribution base of all workers (gross wages for the employees and gross labour income for the self-employed) and productivity.

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[49] The dynamics of wages is projected by cohort, consistently with the cohort evolution of labour force and contributors. In a very stylised way, for the various segments of the pension system (scheme, regime, category of workers etc.), the following algorithm is used:

$$w_{t,a,x} = w_{t-1,a-1,x-1}(1+\sigma_t + \pi_t)(1+\gamma_a)(1+\varepsilon_t)$$

where: t = year; a = contribution years; x = age; σ = inflation rate; π = productivity growth rate; γ = additional wage growth rate due to career progression, which is applied as long as a further year of contribution is matured, ε stands for the percentage of change necessary to guarantee that the average wage grows in line with productivity.

Methodological annex

Economy-wide average wage at retirement

In the projections, the average contribution base grows in line with productivity (see §§. 3.4 and 4.3 of the fiche), so does the economy-wide average wage. The economy-wide average wage at retirement has been calculated as the product of economy-wide average wage times the ratio between the average contribution base at retirement and the average contribution base. The latter ratio actually reflects the assumption on the career age wage profile.

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

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	32.8	45.1	66.1	96.6	137.9	185.7
Economy-wide average gross wage	29.1	37.3	50.6	72.1	101.5	140.7

Source: European Commission, EPC.

Pensioners vs pensions

See §. 3.3.4 and for the issue of consistency of labour force projections in national models see § 4.2 and 4.3.

Pension taxation

See § 1.1.6 and § 3.2.2.

Disability pensions

Disability pensions are transformed into old-age pensions at the SRA. However, from a statistical point of view they continue to be labelled as "disability pensions". Therefore, the values included in the pension reporting frameworks correspond to an estimate of disability pensions below the SRA, which changes over time according to the indexation of the eligibility requirements.

Table A2 reports the disability rates by age group and forecasting years, which have been calculated as a ratio between disability pensions, projected by the pension model, and the corresponding population. The rates look quite stable over time. However, owing to the indexation of the eligibility requirements, a substantial increasing trend may be seen in the age classes mainly affected by changes in the retirement age.

TABLE A2– DISABILITY RATES BY AGE GROUPS (%)

	2022	2030	2040	2050	2060	2070
Age group -54	0.4	0.4	0.5	0.6	0.6	0.5
Age group 55-59	2.6	2.7	3.2	3.8	3.9	3.6
Age group 60-64	3.7	3.8	5.3	5.5	6.1	6.0
Age group 65-69	2.3	1.9	3.5	4.8	6.8	6.8
Age group 70-74	0.0	0.0	0.0	0.0	0.1	1.2
Age group 75+	0.0	0.0	0.0	0.0	0.0	0.0

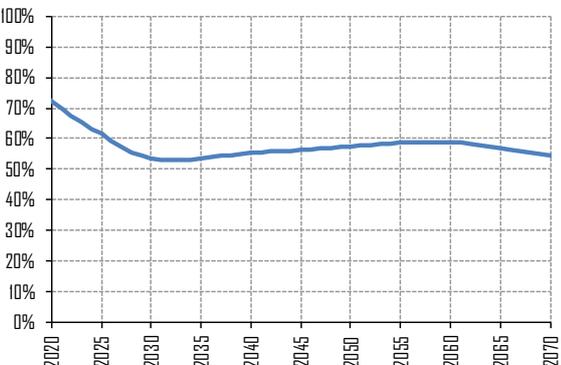*Source*: Italian Ministry of Economy and Finance.

Figures A1.1 and A1.2 illustrate, respectively, the evolution of the number of disability pensions as well as their average amount compared to that of old-age and early pensions.

Figure A1.1: number of disability pensions below SRA (thousand)
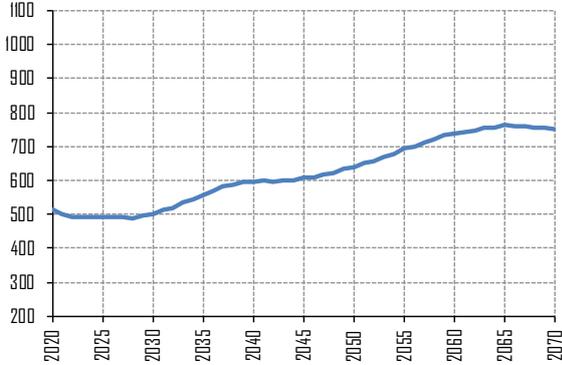
Figure A1.2: average disability pension to average old age and early pension

Source: Italian Ministry of Economy and Finance.

Survivors' pensions

The dynamics of survivor pensions, and their average amount, reflect the evolution of old-age and early pensions with an average delay of 10-15 years and are positively correlated with the gap in life expectancy between males and females. They also depend on the probabilities of leaving a spouse/children who have the right to claim a survivor's pension and the age gap between the deceased pensioner and their spouse. The mortality rates used in the model are taken from the demographic assumptions, while the other parameters mentioned above are consistent with those employed for the estimate of the transformation coefficients currently in force.

Figure A2.1 e A2.2 illustrate, respectively, the evolution of the number of survivor's pensions as well as their average amount compared to that of old-age and early pensions.

Figure A2.1: number of survivors' pensions (thousand)

Figure A2.2: average survivors' pension to average old-age and early pension
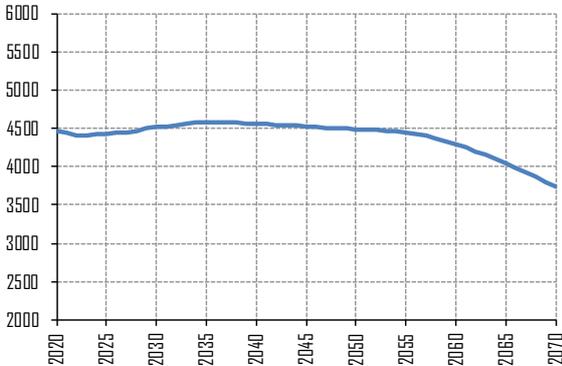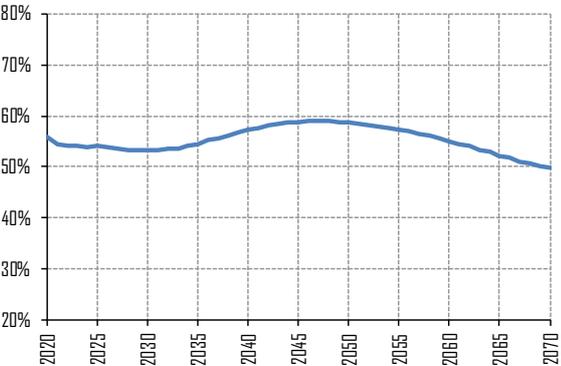
Source: Italian Ministry of Economy and Finance.

Contributions

See §. 3.4.

Alternative pension spending disaggregation

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

TABLE A3 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2022 AND 2070 (PPS OF GDP) – PENSIONS

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.1	0.4	-1.6	-1.7	-0.1	-1.9
Dependency ratio effect	2.5	4.3	1.4	-0.3	0.2	8.1
Coverage ratio effect*	-1.0	-1.4	-0.2	-0.2	-0.5	-3.3
Coverage ratio old-age	-0.6	-0.7	0.1	-0.3	-0.5	-2.0
Coverage ratio early-age	-2.1	-4.2	-3.4	-1.5	-0.9	-12.1
Cohort effect	-2.1	-5.4	-1.5	1.5	-0.1	-7.6
Benefit ratio effect	0.1	-1.1	-2.2	-0.9	0.7	-3.4
Labour market effect	-0.4	-1.0	-0.6	-0.3	-0.4	-2.7
Employment ratio effect	0.0	-0.7	-0.6	-0.1	-0.1	-1.5
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.4	-0.4	0.0	-0.2	-0.4	-1.3
Residual	-0.2	-0.3	-0.1	0.0	0.0	-0.5

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

Source: European Commission, EPC.

Administrative data on new pensioners

TABLE A4– ADMINISTRATIVE DATA ON NEW PENSIONS (*) (2022)

Table A4.a - men

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	7,976	15	5,911	2,050	
50 - 54	7,554	534	5,986	1,034	
55 - 59	54,032	42,832	9,635	1,565	
60 - 64	114,353	104,544	7,743	2,066	
65 - 69	104,742	100,435	1,402	2,905	
70 - 74	7,866	2,760	25	5,081	
75+	29,979	312	10	29,657	

Table A4.b - women

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	10,145	13	4,373	5,759	
50 - 54	8,115	55	3,381	4,679	
55 - 59	40,624	27,752	4,631	8,241	
60 - 64	87,362	70,553	3,792	13,017	
65 - 69	122,378	101,851	920	19,607	
70 - 74	33,895	4,379	24	29,492	
75+	105,911	236	5	105,670	

Table A4.c - total

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	18,121	28	10,284	7,809	
50 - 54	15,669	589	9,367	5,713	
55 - 59	94,656	70,584	14,266	9,806	
60 - 64	201,715	175,097	11,535	15,083	
65 - 69	227,120	202,286	2,322	22,512	
70 - 74	41,761	7,139	49	34,573	
75+	135,890	548	15	135,327	

(*) This sheet presents the number of new pensions. In the italian framework, pensioners could add more than one pension. This may happen especially in the case of survivor pensions.

Source: INPS.

Private component of the Italian pension system

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pension expenditure, gross (mln €)	1,568	2,120	1,847	2,788	1,887	1,502	2,484	1,715	2,336	1,697	1,731	1,695	1,608	1,565	1,328	1,519	1,765	1,512	2,106	1,275	1,316	2,187	1,459
Non-mandatory occupational pensions [1,2]	1,568	2,120	1,847	2,788	1,887	1,502	2,484	1,715	2,336	1,697	1,731	1,695	1,608	1,565	1,328	1,519	1,765	1,512	2,106	1,275	1,316	2,187	1,459
- pensions	602	637	733	736	735	698	918	905	900	892	890	878	897	889	886	856	748	724	705	639	622	525	508
- benefit in capital	966	1,483	1,114	2,052	1,152	804	1,566	810	1,436	805	841	817	711	676	442	663	1,017	788	1,402	635	694	1,662	951
Non-mandatory private pensions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of pensioners (thousands)	108	121	123	114	111	111	143	133	133	132	130	131	130	130	133	130	118	119	116	115	110	97	93
Non-mandatory occupational pensions [1,2]	108	121	123	114	111	111	143	133	133	132	130	131	130	130	133	130	118	119	116	115	110	97	93
Non-mandatory private pensions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contributions (mln €)	2,665	3,751	4,231	4,568	4,951	5,481	6,231	8,434	10,900	11,121	11,481	11,842	12,052	12,414	13,008	13,547	14,256	14,544	16,000	15,918	16,531	17,602	18,237
Non-mandatory occupational pensions [1]	2,665	3,395	3,638	3,822	4,021	4,401	4,988	7,007	9,118	9,146	9,212	9,365	9,316	9,306	9,631	9,778	10,162	10,478	11,724	11,430	11,739	12,473	13,000
Non-mandatory private pensions	0	356	593	746	930	1,080	1,243	1,427	1,782	1,975	2,269	2,477	2,736	3,108	3,377	3,769	4,094	4,058	4,268	4,480	4,792	5,129	5,237
Number of contributors (thousands)	1,692	2,160	2,396	2,587	2,740	2,963	3,184	4,560	4,851	5,055	5,273	5,537	5,849	6,204	6,447	7,235	7,786	8,300	8,735	9,116	9,341	9,730	10,290
Non-mandatory occupational pensions [1]	1,692	1,959	2,038	2,078	2,112	2,219	2,304	3,371	3,475	3,507	3,502	3,511	3,519	3,565	3,623	4,200	4,493	4,805	5,089	5,343	5,492	5,795	6,284
Non-mandatory private pensions	0	201	357	509	628	744	880	1,189	1,376	1,548	1,770	2,025	2,330	2,639	2,824	3,035	3,293	3,495	3,646	3,773	3,849	3,935	4,006
Assets of pension funds and reserves (mln €)	23,011	32,970	34,642	37,609	40,878	47,307	51,576	57,747	61,302	73,827	83,167	90,687	104,363	116,465	130,941	140,351	151,278	162,299	167,236	185,477	197,866	213,241	205,596
Non-mandatory occupational pensions [1]	23,011	32,777	34,025	36,331	38,728	43,969	47,030	51,957	54,677	64,861	71,958	77,495	88,277	96,952	107,722	113,345	120,636	127,677	129,906	142,897	151,762	161,915	153,487
Non-mandatory private pensions	0	193	617	1,278	2,150	3,338	4,546	5,790	6,625	8,966	11,209	13,192	16,086	19,513	23,219	27,006	30,642	34,622	37,330	42,580	46,104	51,326	52,109

Source: Covip (2000-2022), Relazione annuale. Such reports can be downloaded from the following web site: www.covip.it
(1) It includes open and close pension funds and those pre-existing before 1993-reform.
(2) It only refers to the "pre-existing" pension.

Annexes

Computation of the transformation coefficients in the Italian NDC scheme

The formula and parameters for the calculation of the transformation coefficients are given below[50]:

$$TC_x = \frac{1}{\Delta_x}$$

$$\Delta_x = \frac{\displaystyle\sum_{s=m,f}\left(a_{x,s}^{v(t)} + A_{x,s}^{v(t)}\right)}{2} - k$$

Average present value of direct pension awards:

$$a_{x,s}^{v(t)} = \sum_{t=0}^{w-x} \frac{l_{x+t,s}}{l_{x,s}}\left(\frac{1+r}{1+\sigma}\right)^{-t}$$

Average present value of reversibility pension awards:

$$A_{x,s}^{v(t)} = \sum_{t=0}^{w-x} \frac{l_{x+t,s}}{l_{x,s}} q_{x+t,s}\left(\frac{1+r}{1+\sigma}\right)^{-t}\Theta_{x+t,s}\,\eta\delta_s \sum_{\tau=1}^{w-x-t+\varepsilon_s} \frac{l_{x+t+\tau-\varepsilon_{x,s},\bar{s}}^{ved}}{l_{x+t+1-\varepsilon_{x,s},\bar{s}}^{ved}}\left(\frac{1+r}{1+\sigma}\right)^{-\tau}$$

Where:

TC = *transformation coefficient*

Δ = *divisor*

s = *sex (m=men, f=women)*

$\bar{s}$ = *opposite sex*

$\dfrac{l_{x+t,s}}{l_{x,s}}$ = *probability of surviving between ages* x *and* $x+t$

x = *retirement age*

w = *maximum age*

$q_{x+t,s}$ = *probability of death between ages* $x+t$ *and* $x+t+1$

$\Theta_{x+t,s}$ = *probability of leaving a surviving spouse at the age* $x+t$

$\dfrac{l_{x+t,s}^{ved}}{l_x^{ved}}$ = *probability for a widow or widower to be eliminated because of death or new marriage.*

k = *adjustment owing to how pension is drawn. This parameter accounts for 0.4615*

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[50] Ministero dell'Economia e delle Finanze-RGS (2023), *Le tendenze di medio-lungo periodo del sistema pensionistico e socio-sanitario (Mid-long term trends for the pension, health and long term care systems)*, Report no. 24, Appendice 1.

ε_s = difference between the pensioner's age of sex s and the spouse's age

η = percentage of reversibility

δ_s = average percentage of reduction of the survivor's pension owing to income requirements.

r = internal return rate

σ = indexation rate

$$\left(\frac{1+r}{1+\sigma}-1\right) = 1.5\% = discount\ rate$$

TABLE A6– TRANSFORMATION COEFFICIENTS IN FORCE FOR THE TWO-YEAR PERIOD 2023-2024

Age	Transformation coefficients	Annuity factor
57	4.270%	23.419
58	4.378%	22.839
59	4.493%	22.256
60	4.615%	21.669
61	4.744%	21.079
62	4.882%	20.485
63	5.028%	19.888
64	5.184%	19.289
65	5.352%	18.686
66	5.531%	18.079
67	5.723%	17.472
68	5.931%	16.861
69	6.154%	16.251
70	6.395%	15.637
71	6.655%	15.025

Source: Directorial decree of the Ministry of Economy and Finance of December 1st, 2022, published in the Official Journal (Gazzetta Ufficiale) of December 17th, 2022.