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2019 – PEER REVIEW ON ITALY – FICHE ON PENSIONS^(*)
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Chapter 1 - The legal-institutional framework of the Italian pension system and the changes introduced in 2019

1.1 An overview

The Italian pension system is a public, mandatory PAYG scheme covering the whole resident population. After a transitional phase, the same rules apply to all participants, with the exceptions of minor pension schemes. Such general rules envisage: i) the adoption of the Notional Defined Contribution (NDC) scheme, with periodic revisions of the implicit accrual rates, ii) the eligibility requirements for old-age and early retirement both linked to changes in life expectancy and iii) the indexation of pensions to price inflation.

Following Law 214/2011, only one social security institute (*Istituto Nazionale di Previdenza Sociale* - INPS) manages all public pensions schemes, for the private and public sectors, with the exception of professionals' funds mentioned above

The minor pension schemes which are allowed to deviate from the general rules, mainly concern professional funds. They account for about 4% of the insured to the public pension system and 2.2% of the total public pension expenditure in 2016. However, some of them have already opted for the application of the NDC scheme.

In 2016, in line with 2018 Ageing Report results, the public pension expenditure accounts for 15.6% of GDP¹, gross of tax revenues on pensions. Discarding the social assistance component, the aggregate is composed of old-age, early and disability pensions for 84% and of survivors' pensions for the remaining 16%. Sector analysis shows that about 58% of public pension expenditure refers to private employees, 27% to public employees and 15% to the self-employed (artisans, shopkeepers and farmers) and professionals' funds.

The legal-institutional framework of the Italian pension system has been greatly reformed since 1992. The measures that have contributed most to improving the financial sustainability, already embodied in the 2012 and 2015, and 2018 AWG pension projections, may be summarized as follows:

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

¹ In 2016, the ratio actually accounts for 15.4%, on the basis of the latest National Accounts estimates of GDP released by Istat (National Institute of Statistics) at the end of September 2019. National accounts data are also available for 2017 and 2018 with pension expenditures as a ratio of GDP being, in both years, equal to 15.2%. The differences with the peer review projections show lower pension expenditures as a ratio of GDP amounting to 0.3 percentage points in 2018.

- the introduction of the NDC method and the periodic update of the transformation coefficients (accrual rate) to changes in mortality rates (Law 335/1995 and Law 247/2007);
- the tightening of the eligibility requirements for old-age, early, and social assistance pensions (Law 503/1992, Law 335/1995, Law 449/1997, Law 243/2004, as modified by Law 247/2007, Law 214/2011);
- the alignment of the statutory retirement age of women to that of men, thus eliminating the previous 5-year gap (Law 122/2010, Law 214/2011);
- the indexation of the eligibility requirements to changes in life expectancy for old-age, early, and social assistance pensions (Decree Law 78/2010 and Law 214/1995).

The Budget Law for 2017 (Law 232/2016) introduced only minor changes aimed at increasing lower amount contributory pensions and facilitating earlier access to retirement for workers so-called “precocious” or involved in arduous works. Measures facilitating earlier exit from the labour market, without affecting pension expenditure, have also been introduced, on temporary basis (up to 2018).

The most recent pension interventions, which are assessed in the current peer review process, entered fully into force at the end of January 2019 and have been adopted with Law 145/2018 (2019 Budget Law) and Decree Law 4/2019 converted into Law 26/2019.

The new measures introduced by Law 145/2018 envisage:

- for the period 2019–2021, a tighter automatic revaluation mechanisms of pensions to prices;
- for the period 2019–2023, a reduction mechanisms for rich pensions above 100.000 euro.

The new measures introduced by Law 26/2019 foresee:

- a new, experimental and temporary, early retirement channel for workers who reach at least the age of 62 and a minimum contribution requirement of 38 years in the period 2019–2021 (so-called Quota 100);
- for the existing early retirement scheme based only on accrued contributions and not on age, the minimum contributory period is kept constant to the level of 2018 (42 years and 10 months for men and 41 years and 10 months for women) and unlinked from gains in life expectancy during the year 2019–2026;
- for workers so-called ‘precocious’ who have gained at least 1 year of actual work before the age of 19 in specific categories or in disadvantageous conditions, early retirement based only on accrued contributions regardless of age is possible once the minimum contribution requirement of 41 years has been attained. During

the period 2019–2026, such requirement is also unlinked from gains in life expectancy;

- the so-called *Opzione Donna*, i.e. the experimental regime allowing female workers aged at least 58 and having 35 years of social security contributions to retire early, was extended also to 2019;

Beside the public system also private, funded pillars exist, which are set up on voluntary basis to supplement the public pension system in ensuring adequate income protection to the elderly, especially when the NDC scheme is fully phased in.

The legislative framework regulating private funded pillars was firstly introduced in 1993 (legislative Decree 507/1993) and 1995 (Law 335/1995). Thereafter, additional measures were adopted in order to increase the number of the insured. In particular, Law 243/2004, legislative Decree 252/2005, and Law 296/2006 provided important changes in terms of fiscal incentives to join private pension funds. More recently, the Budget Law for 2017 has foreseen, under given conditions, the faculty for the insured to utilise part of the capital accumulated in private pension funds to finance income provision before retirement.

Private funded pillars are not included in the current public expenditures projections. Table 20 gives some statistical information about the development of the private component of the pension system in Italy during the period 2000–2016, in terms of coverage, contributions paid, and financial assets.

1.2 The public pension system

1.2.1 Calculation rules

With the 1995–pension reform (Law 335/1995), the Italian pension system adopted the NDC scheme, based on an actuarial equivalence between contributions paid and pension payments after retirement. The previous Defined Benefit (DB) scheme still applies pro-rata to contributions accrued until 1995 and until 2011 for workers with more than 18 years of contribution at the end of 1995.

Old-age and early pensions. Under the NDC scheme, the pension is calculated as a product of two factors: the total lifelong contributions, capitalised with the nominal GDP growth rate (five-year geometric mobile average) and the transformation coefficient, the calculation of which is mainly based on the probabilities of death, the probabilities of leaving a surviving spouse, and the average outliving period². As a consequence, the

²For formula and parameters, see Annex 1. The transformation coefficient is approximately the inverse of the average number of years for which a pension are expected to be paid to the pensioner and their surviving spouse, the latter weighted with the reversibility rate.

pension amount is proportional to the contribution rate and directly correlated to the contribution period and the age of retirement.

Until the end of 2012, the transformation coefficients were foreseen only for the age bracket 57-65. For retirement ages below (i.e. disability pensions) or above the range, the lowest and the highest coefficients were respectively applied. As of 2013, the upper limit of the age range has been extended to 70 and then further, in line with the increase in the eligibility requirements brought about by changes in life expectancy (see §. 1.2.2).³ The most recent update of the transformation coefficients is the one adopted for the period 2019-2021 which extended the upper limit to 71.

According to current legislation, as of 2019, the transformation coefficients are subject to bi-annual revisions according to changes in mortality rates. The revision procedure is automatic as it falls entirely under the administrative sphere of competence⁴.

Under the previous Defined Benefit (DB) regime, which still applies pro-rata to contributions accrued until 1995⁵, the pension is calculated as a percentage of the reference wage, obtained multiplying 2% by the years of contribution, up to a maximum of 80%. The reference wage is an average of wages/labour income related to the last part of career, indexed to prices up to the year before that of retirement. The number of annual wages involved varies depending on sector, time period to which the contribution is referred and retirement age.

Disability pensions. General calculation rules, as described above, also apply to disability pensions. Furthermore, an additional contribution period is granted to those with 100% of disability degree, corresponding to the remaining years to reaching the Statutory Retirement Age (SRA), up to a maximum contribution period of 40 years⁶.

Survivors' pensions. Survivors' pensions account for 60% of the deceased's pension. When the deceased is a contributor, the amount of pension is calculated according to the general rules as described above. Survivor's pensions cannot be cumulated with other income sources for 25%, 40% or 50% of their amount if the survivor's total income exceeds, respectively, three, four or five times the minimum pension.

1.2.2 Eligibility requirements

The Italian pension system basically foresees two ways for retirement (see table 1):

³The transformation coefficient may be somewhat higher for women in relation to children they have given birth (transformation coefficient corresponding to an age 3 months higher than that of retirement for each child up to a maximum of 1 year).

⁴In accordance with the administrative procedure laid down by Law 247/2007, the 2013 and 2016 revisions of the transformation coefficients were adopted by the directorial Decrees of the Ministry of Labour and Social Policies of 14th May 2012 and of 22nd June 2015, respectively. The update of transformation coefficients for the period 2019-2021 has been adopted with directorial Decree of the Ministry of Labour on 15 May 2018.

⁵It also applies to contributions paid until to 2011 by the insured with more than 18 years of contributions at the end of 1995. It has to be noted that most of them are already retired and the rest of them will retire in the next few years.

⁶In fact, the maximum degree of disability is considered incompatible with any kind of work.

- the **old-age retirement** which requires the Statutory Retirement Age (SRA) with, at least, 20 years of contributions and, as of 2012, for workers enrolled after 1995, a pension benefit at least equal to 1.5 times the old-age allowance indexed with the five-year mobile average of nominal GDP;
- the **early retirement**, at an age below the SRA, which normally requires high contribution periods.

Statutory Retirement Age (old-age pensions). In 2016, the SRA was 66 years and 7 months for men (all sectors) and female employees in the public sector. For female employees in the private sector and female self-employed, SRA was, respectively, 1 year (65 years and 7 months) and 6 months lower (66 years and 1 month). Current legislation established that for these categories of female workers, the SRA had to quickly increase so as to equalize that other workers as of 1st January, 2018. Accordingly, as of 2018 all SRAs are aligned to 66 years and 7 months.

The same procedure has been applied for the old-age allowance (*assegno sociale*, or *social pension* if awarded before 1996). In 2018, the minimum age requirement to be entitled to it will be increased by 1 year and then fully aligned to the SRA (§. 1.2.3).

According to a specific legislative provision, the SRA must be at least 67 in 2021. Based on the latest official demographic projections⁷, such a target has, de facto, been already achieved taking into consideration the 2019 update of the eligibility requirements to changes in life expectancy (see below).

Early pension retirement before the attainment of the SRA is possible:

- for all workers, regardless of their age on the basis only of a minimum contribution requirement. In the period 2016–2018, such contributory requirement was equal to 42 years and 10 months for men and to 41 years and 10 months, for women.
- for workers, enrolled after 1995, who may retire up to a maximum of three years earlier than the SRA, having accrued at least 20 years of contributions and a pension not inferior to 2.8 times the old-age allowance⁸ in 2012, indexed with the five-year mobile average of nominal GDP.

More recently, with Decree Law n. 4/2019 as converted into Law n. 26/2019, a new early retirement channel has been established on an experimental basis. Indeed, workers attaining, during the period 2019–2021, at least 62 years of age and 38 years of accrued contributions could also retire early (so-called, Quota100).

Workers of the private sector accruing such requirements before 31 December 2018 had possibility to retire as of the 1 April 2019. Those that, instead, qualify after 31 December 2018 can retire only after 3 months from the time Quota 100 requirements are met, as a shifting retirement windows regime is also applied.

⁷ Istat (2017), demo.istat.it and Ministero dell'economia e delle finanze – RGS (2017), *Rapporto n. 18*, p. 214–215.

⁸ Corresponding to almost 1,200 euro per month in 2012.

Likewise, workers of the public sector accruing Quota 100 requirements before 29 January 2019 had the chance to retire as of the 1 August 2019. Those that qualify for a pension after 29 January 2019 can retire after 6 months from the time requirements are met, as a shifting retirement windows regime is also applied.

Indexation of the eligibility requirements. As of 2013, all pension and old-age allowance eligibility requirements are periodically updated, every three years up to 2019 and every two years afterwards, to changes in life expectancy at 65, as measured by the National Institute of Statistics (Istat).

As expressly foreseen by the Law, the updating procedure of the eligibility requirements falls completely within the administrative sphere of competence, thus assuring the effectiveness of the periodic revisions as well as the compliance with the scheduled dates. Such an automatic mechanism is fully consistent with those foreseen for the update of the transformation coefficients to changes in mortality rates (Law 247/2007), in terms of administrative procedures and the timing of revisions.

The updates in the eligibility requirements for retirement of 2013 and 2016, equal, respectively, to an increase of 3 and 4 months, were based on the changes in life expectancy at 65 notified by Istat with reference to the preceding three-year period. Likewise, the most recent update of pension eligibility requirements to changes in life expectancy, in force as of 2019, which increased all retirement criteria by 5 months, took as a reference the rise in longevity over the previous three year. The administrative procedure for updating the eligibility requirements for 2021-2023 to reflect recent changes in life expectancy has been concluded on 5 November 2019 establishing that no increase was warranted with respect to 2019 requirements⁹. Given that there was no time for considering such innovation, the projection presented in this fiche could not include it. Accordingly, in line with 2018 Ageing Report projections, the assumption used for 2021 update of pension criteria in the new baseline scenario is an increase of 3 months which reflects the rise in life expectancy projected in the Eurostat population projections with base 2015.

The Law n. 205/2017 (Budget Law for 2018) has slightly smoothed such indexation mechanism foreseeing that, for future biannual updates in pension requirements starting from 2023, the change in life expectancy has to be computed as the difference between the average of the two reference years minus the average of the two preceding years. The exception is represented by the update of 2021 where the change in life expectancy is computed as the difference between the 2017-2019 average and the value notified in 2016. In addition, the Law n. 205/2017 set an upper limit establishing that future increases in pension entitlement criteria cannot, in any case, exceed three months. In case the rise in life expectancy exceeds three months, the differential with respect such

⁹ The 2013 and 2016 indexation of the eligibility requirements to changes in life expectancy were adopted by a directorial Decree of the Ministry of Economy and Finance of 14 December 2011 and 16 December 2014 increasing, respectively, retirement criteria by 3 months and 4 months. The update of 2019 amounting to 5 months, has been adopted by the directorial Decree of the Ministry of Finance of 5 December 2017. The Directorial Decree of the Ministry of Finance that set no change in pension eligibility requirements due to updates in life expectancy for the period 2021-2023, has been published on the Official Journal of 5 November 2019.

an upper limit is added in subsequent adjustments. Finally, the law also established that no change in the pension entitlement criteria is due in case of reduction in life expectancy. Such adjustments will be used in subsequent biannual updates to diminish future positive changes in life expectancy.

As already mentioned above, the indexation mechanism to changes in life expectancy applies to:

- the minimum age requirement for old-age pensions (SRA) and old-age allowances, which, as a consequence of the update for changes in life expectancy in force for the years 2019–2021, are now both equal to 67 years;
- the minimum age requirement for early pensions, under the NDC scheme, which as a result of the update for changes in life expectancy in force for the period 2019–2021 is now equal to 64 years.
- the minimum contribution requirements for early pensions, regardless of age;

With reference to the latter channel for early retirement, which envisages only a minimum contribution, regardless of age, the Decree Law n. 4/2019 as converted into Law n.26/2019 has recently established that no update to change in life expectancy was warranted for the period 2019–2026. Accordingly, during such period, workers can continue to retire early with the minimum contribution requirements in force up to 2018 which are equal to at least 42 years and 10 months, for men, and to 41 years and 10 months for women. However, the actual pension treatment starts 3 months after the time such contribution requirements are met as a shifting retirement windows regime is also applied.

Disability pension. To be entitled to a disability pension, 5 years of contributions are required, 3 of which accrued in the last five years before retirement.

Survivor's pension. Survivor's pensions are granted to the spouse and/or children of the deceased either pensioner or contributor¹⁰. As for the latter, 15 years of contributions are required or, alternately, 5 years, 3 of which accrued in the last five years before the decease.

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

The Italian pension system provides a safety net for the elderly on low income, regardless of contributions. The safety net consists of two kind of social assistance benefits: the old-age allowance (5,825 euro per year, in 2016 increased to 5,953 euro in 2019) and social assistance additional sums (hereafter 'social additional sums' - *maggiorazioni sociali*). Both are means-tested and subject to a minimum age requirement of 65 years and 7 months in 2016, increased by 1 year in 2018 to align it with SRA requirements, and linked to changes in life expectancy¹¹. As a consequence of the 5

¹⁰ Survivors' pensions can also be entitled to children up to 18 years old (or 26 years, if students).

¹¹ Under certain income conditions, further integration (about 40 euro per month) may be provided to the elderly by the so-called social purchase card (*carta acquisti*) (art. 82, Decree Law 112/2008, converted into Law 133/2008).

month increase in life expectancy established for the period 2019–2021, the minimum age requirement for the old-age allowance is now equal to 67 years.

The old-age allowance is granted to the elderly with personal income not exceeding the benefit itself and, if married, with couple's income non-exceeding twice the benefit.

Social additional sums are foreseen to supplement the old-age allowance to given income thresholds, depending on age and marital status (single/married). For the 70 and older, the income thresholds account for 8,298 euro in 2016 increased to 8,442 euro in 2019 for a single and 14,123 euro in 2016¹² increased to 14,396 euro in 2019 for a couple.

Only under the DB and mixed regimes, besides the old-age allowance, a means-tested, topping-up mechanism to the minimum pension (6,525 euro per year, in 2016) is foreseen, subject to the fulfilment of the eligibility requirements for an old-age pension.

1.2.4 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 pensioners¹³.

According to the current legislation general rule, in force as of 2011, the percentage of indexation to prices is differentiated by pension brackets. Such a percentage is 100% of the inflation rate for the amount of pension up to three times the minimum pension, 90% for the amount between three and five times the minimum, and 75% for the part above five times the minimum.

However, such a framework has been subject to several temporary derogations. For instance, for the period 2014–2018, indexation to price inflation has been regulated according to the following rates, which apply to the total pension amount: 100% to pensions up to 3 times the minimum; 95% for pensions between 3 and 4 times the minimum; 75% for pension between 4 and 5 times the minimum; 50% for pensions between 5 and 6 times the minimum; 40% (45%, in 2015–2016) for pensions above 6 times the minimum¹⁴.

For the period 2019–2021, the Law n. 145/2018 (2019 Budget Law) set new temporary rates for the indexation to price inflation, which, again, applies to the total pension amount. They are equal to: 100% for pensions up to 3 times the minimum; 97% for pensions between 3 and 4 times the minimum; 77% for pensions between 4 and 5 times the minimum; 52% for pensions between 5 and 6 times the minimum; 47% between 6 and 8 times the minimum; 45% for pensions between 8 and 9 times the minimum; 40% for pensions above 9 times the minimum.

After 2021, the general rule mentioned above should be re-established.

¹² For those who have contributed to the pension system, the age threshold of 70 is reduced by 1 year for every five years of contributions and social additional sums are somewhat higher.

¹³ Since then pensions, including minimum pension (paragraph 1.2.3), have been indexed only to price inflation.

¹⁴ For 2014 alone, the pension quota above 6 times the minimum is not indexed.

1.2.5 Accumulation of pension and labour income

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

However, the Decree Law 4/2019 as converted in Law 26/2019 set an explicit restriction to such option for workers retiring early on the basis of the new joint requirements of Quota 100, i.e. with at least 62 years of age and 38 years of contributions. According to legislation, the pension treatments granted under the new eligibility criteria for early retirement cannot be cumulated, up to the moment of accrual of the requirements for being entitled to an old-age pension, with the incomes from employment or self-employment, with the exception of incomes arising from occasional self-employment, up to a limit of EUR 5,000 per year.

Disability pensions. The possibility of accumulation is fully allowed only with 40 years of contributions. Otherwise, the pension is subject to a withdrawal of 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 full income, including the pension itself, exceeds four or five times the minimum pension.

Survivor's pensions. The accumulation without any curtailment is allowed as long as the pensioner's income, including the pension itself, lies below 3 times the minimum pension. For higher incomes, a reduction of 25%, 40% and 50% is foreseen for income amounts falling in the brackets: three to four, four to five and more than five times the minimum.

1.2.6 Financing of the public pension system

Public pension expenditure is financed through contributions and public budget transfers, mainly covering social assistance provisions.

Contribution rates are differentiated by sector, as below:

- **private and public employees:** 33%, of which about 1/3rd is paid by the employee and 2/3rd by the employer;
- **the self-employed (artisans, shopkeepers and farmers):** gradually increasing from around 23.1% in 2016 to 24% in 2018;
- **atypical workers:** from 28% in 2014 to 33% in 2018. Such percentages are reduced to 22% and 24% (as of 2016), respectively if they are pensioners or contributors to other public pension schemes¹⁵.

The difference in contribution rates between employees and the self-employed is actually lower than it may appear, if expressed in terms of a homogeneous definition of the contribution base. In fact, the contribution base includes the total contributions in the

¹⁵ With the exception of professionals not enrolled in professional funds, for which the contribution rate is 27% in 2016 and reduced to 25% as of 2017.

case of the self-employed, and only the 1/3rd paid by the worker, in the case of employees. As for the latter, the inclusion of contributions paid by the employer in the contribution base would reduce the contribution rate from 33% to about 27%.

1.2.7 Taxation of pensions

Pensions are taxed as labour-income, allowing for deductions inversely correlated to income levels. Pension income below 7,500 euro per year is tax-exempt (2016 no tax-area)¹⁶.

In 2016, total revenue on public pensions accounts for about 18,7% 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.

1.3 Recent pension measures considered in the projections

Law 214/2011 was the last major pension reform of the Italian pension system and was already embodied in the 2012, 2015 and 2018 rounds of projections.

Since the introduction of the provisions of Law 214/2011 only minor changes to the legal framework have been introduced. The main interventions, somewhat related to the pension system, and already included in the 2018 Ageing Report projections have been adopted with the Budget Law 2017 and may be summarized as follows.

Measures increasing pension amount. The so-called 14th payment (*“quattordicesima”*) already granted to pensioners with a personal income up to 1.5 times the minimum pension (monthly payment of 750 euro) has been increased by 30%. Furthermore the same provision, at its original amount, is also granted to pensioners with a personal income in between 1.5 and 2 times the minimum pension (monthly payment from 750 to 1,000 euro).

Measures to facilitate earlier access to pension. Lower requirements to access early retirement have been introduced in favour of:

- workers so-called ‘precocious’ (with at least 1 year of actual work before the age of 19) lowering the contribution requirement regardless of age. Compared to the general rule, such reduction accounts for 1 year and 10 months for males and 10 months for females. Such a facilitation is only granted to given categories of workers under particular disadvantageous conditions;
- workers involved in arduous works (*lavori usuranti*);
- the insured safeguarded from the eligibility requirements foreseen by Law 214/2011 for whom a temporary extension of the programme (the so-called 8th-safeguard) has been foreseen in order to bring it to a conclusion.

¹⁶ In 2019, the no-tax area for single pensioner amounts to 8,125 euro.

Such privileges are allowed within the limit of a given amount of planned resources, and subject to constant monitoring. In case of possible overruns, the advantage in terms of lower retirement age is correspondently reduced.

Finally, the insured with contribution periods accrued in different funds are allowed to sum them all free of charge in order to fulfil the contribution requirements to retire¹⁷.

Measures to facilitate earlier exit from the labour market. Temporary measures (up to 2018) have been also foreseen to facilitate earlier exit from the labour market (however not before the age of 63), through the following interventions:

- the so-called '*APE sociale*' consisting of social public assistance benefits (which are not pensions, though included in public expenditure) granted before retirement to workers in disadvantageous conditions stated by law;
- the so-called '*APE di mercato*' consisting of a loan granted by the bank sector and guaranteed by pension entitlements. The loan (not included in public expenditure) is to be repaid by beneficiaries in 20 years after retirement;
- the so called '*RITA*', which is linked to the *APE di mercato* in terms of qualifying requirements, though benefits (not included in public expenditure) are financed through part of the capital accumulated by workers in their private, funded pension schemes."

The most recent pension interventions, which are assessed in the current peer review process, entered fully into force at the end of January 2019 and have been adopted with Law 145/2018 (2019 Budget Law) and Decree Law 4/2019 converted into Law 26/2019.

The new measures introduced by Law 145/2018, envisage¹⁸:

- 1) for the period 2019-2021, a tighter automatic revaluation mechanisms of existing pensions to prices. The new temporary rates for the indexation to price inflation, applying to the total pension amount, have been structured as follows: 100% to pensions up to 3 times the minimum; 97% for pensions between 3 and 4 times the minimum; 77% for pensions between 4 and 5 times the minimum; 52% for pensions between 5 and 6 times the minimum; 47% for pensions between 6 and 8 times the minimum; 45% for pensions between 8 and 9 times the minimum; 40% for pensions above 9 times the minimum;
- 2) for the period 2019-2023, a reduction mechanism for rich pensions envisaging that benefits with total amounts exceeding, on an annual basis, EUR 100,000 gross, have to be reduced by 15% for the part exceeding that amount and up to EUR 130,000; by 25% for the part exceeding EUR 130,000 up to EUR 200,00; by 30%

¹⁷ According to the previous legislation, free of charge accumulation of contributions in different funds was only allowed in case the minimum contribution requirement for an old-age pension had not been achieved in any of the funds.

¹⁸ Law 145/2018 has also created an ad hoc fund for the "The revision of early retirement system and to provide for incentives for hiring young workers". Such a fund has been endowed with 7 billion euro as of 2024. The higher pension expenditures stemming from the introduction of the measures foreseen by Decree Law 4/2019 have been financed up to 2023 through the full utilisation of the resources of the Fund. According to current legislation, in the following years the Fund is still endowed with an amount reaching 4 billion euro in 2028. Lacking a specific policy provision, such resources have not been pencilled for interventions on pensions.

for the part exceeding EUR 200,000 up to EUR 350,000; by 35% for the part exceeding EUR 350,000 up to EUR 500,000; and by 40% for the part exceeding EUR 500,000.

The new measures introduced by Decree Law 4/2019 converted into Law 26/2019 foresee:

- 3) a new, experimental and temporary, early retirement channel for workers who reach, at least, the age of 62 and a minimum contribution requirements of 38 years in the period 2019-2021 (so-called Quota 100). Workers of the private sector accruing such requirements before 31 December 2018 had the possibility to retire as of the 1 April 2019. Those that, instead, qualify after 31 December 2018 may retire after 3 months from the time Quota 100 requirements are met, as a shifting retirement windows regime is also applied. Likewise, workers of the public sector accruing such requirements before 29 January 2019 had the chance to retire as of the 1 August 2019. Those that qualify after 29 January 2019 may retire after 6 months from the time Quota 100 requirements are met, as a shifting retirement windows regime is also applied. According to legislation, the pension treatments granted under such new eligibility criteria for early retirement cannot be cumulated, up to the moment of accrual of the requirements for being entitled to an old-age pension, with the incomes from employment or self-employment, with the exception of incomes arising from occasional self-employment, up to a limit of EUR 5,000 per year;
- 4) for the existing early retirement scheme based only on accrued contributions and not on age requirements, the minimum contributory period is kept constant to the level of 2018 (42 years and 10 months for men and 41 years and 10 months for women) and unlinked from gains in life expectancy during the year 2019-2026. However, the actual pension treatment starts 3 months after the accrual of such minimum contribution requirements as a shifting retirement windows regime is also applied. As a consequence of the discontinuation of the updates for life expectancy over the period 2019-2026, such a measure produces a permanent reduction in minimum contribution requirements which, according to Eurostat 2015 demographic projections, amounts to 9 months from 2027 onwards;
- 5) for workers so-called 'precocious' who have gained at least 1 year of actual work before the age of 19 in specific categories or in disadvantageous conditions, early retirement based only on accrued contributions regardless of age is possible once the minimum contribution requirement of 41 years has been attained. During the period 2019-2026, such requirement is also unlinked from gains in life expectancy. The actual pension treatment starts 3 months after the accrual of such minimum contribution requirement as a shifting retirement windows regime is also applied;
- 6) the so-called Opzione Donna, i.e. the experimental regime allowing female workers aged at least 58 (59 if self-employed) and having at least 35 years of

social security contributions to retire early, was extended also in 2019. However, the actual pension treatment starts 12 months (18 months for self-employed) after the accrual of such requirements as a shifting retirement window regime is applied. Pension benefits are reduced as they are fully calculated according to the Notional Defined Contribution regime;

7) Re-funding of APE Social also for 2019.

As shown in figure 3, the measures in force as of 2019 produce, in terms of GDP, additional costs over the medium term and savings over the long term. Up to 2030, the upward revision of the pension expenditures to GDP ratio accounts, on average, 0.2 percentage points. After 2030, the new pension interventions produce some savings which are zeroed in the last years of projections. They amount, on average, to 0.1 percentage points of GDP and are mostly due to the lower average value of pension benefits stemming from the anticipation of 9 months in the minimum contribution requirement for early retirement regardless of age, resulting from unlinking such contribution criterion from gains in life expectancy over the period 2019-2026.

1.4 Actual 'constant policy' assumption used in the projection

According to the current legislation, social pensions and old-age allowances are indexed to price inflation. Furthermore, additional social sums, granted to the low income elderly, are constant in nominal terms. In these cases, the application of the indexation rules as laid down by Law would imply, de facto, the disappearance of social assistance provisions in the long run, which play an important role within the public pension system. In fact, in the past years improvements to social assistance benefits within the public pension system have been repeatedly legislated. The same considerations apply to the minimum pension, which is only foreseen in the transitional phase for the insured before 1996. For these reasons, the pension model assumes that social assistance benefits, including additional social sums are indexed to nominal GDP per capita, in the mid-long term. However, in the short term up to 2022, pension projections fully comply with the indexation rules foreseen by current legislation.

Chapter 2 – Overview of demographic and labour forces projections

2.1 Demographic development

According to the Eurostat demographic projections, with 2015 as the base year, underpinning the current simulation round, total population is expected to decrease by about 10% over the entire forecasting period (Table 3). Such a decrease mainly depends on the demographic transition (the ageing of the baby boom generations), on which the adoption of conservative hypotheses on demographic parameters also weighs, in particular as regards migration flows.

More specifically, over the forecasting period, life expectancy at birth increases by 6.2 years for men and 5.6 for women moving, respectively, from 80.7 to 86.9 and from 85.3 to 90.9; life expectancy at 65, which better approximates the age of retirement, rises by 4.6 for men and 4.5 for women. The fertility rate moves from 1.34 in 2015 to 1.66 in 2070. The net annual flow of migration averages on around 190 thousand over the forecasting period with an increasing trend up to 2040, where it reaches 218 thousand units, and a subsequent decline towards 2070, where it settles on 164 thousand units.

The transition of the baby boom generations, longevity gains, and low fertility rates are responsible for the relevant ageing of the population, as shown in figure 1, which compares changes in the age structure between the base year and the end of the forecasting period. More specifically, the old-age dependency ratio increases from 33.7% in 2015 to 60.3% in 2070, signaling a potential strong impact of the ageing population on age-related expenditure items and the relevance for the pension system to be provided with automatic mechanisms to counteract this pressure.

2.2 Labour forces

Under the new set of projections that take into consideration the impact of pension interventions legislated in 2018-2019, labour forces (15-74) are projected to decrease by 13.6% over the period 2016-2070, with a reduction of 0.2 percentage points with respect to the results of the 2018 Ageing Report, mostly as a consequence of the decline in the working age population. Vis-à-vis the 2018 Ageing Report results, in the new peer review scenario, labour force projections decrease, as a consequence of the new pension parametric changes, on average, by 0.3 percentage points over the period 2019-2070, with the decline mostly concentrated in the first 10 years of the projections (-0.5 percentage points on average over the period 2019-2030).

Nonetheless, the total participation rate in the age bracket 20-74 is significantly increasing from 60% in 2016 to 64.5% in 2070, showing, however, a 0.2 percentage points reduction on average with respect to the 2018 Ageing Report. In spite of the new measures that made early retirement more easily accessible on a temporary basis, the gains in participation rates are still fully explained by the evolution of older workers' participation rates, which are greatly affected by changes in the eligibility requirements and by the phasing-in of the NDC regime. In particular, participation rates rise from 53.4% in 2016 to 73.1% in 2070, in the age-class 55-64, and from 6.9% to 30.7% in the age-class 65-74, against a slight decrease of 1.3 pp in the age-class 20-54. The latter is mainly due to male prime-age activity rates, which are projected to decline in the age-class 36-44¹⁹.

As shown in tables 5, the average effective exit age increases in line with the periodic updates of the eligibility requirements. At the end of the forecasting period, the average effective exit age, as calculated by the CSM is, as for the 2018 Ageing Report, 67.8 for males and 69.1 for females²⁰.

Notwithstanding the steady increase in the effective exit age, in a decade or so, the labour market will face a rapid and relevant contraction in the labour force mainly caused by the demographic transition. In this context, the rise of female and older workers' activity rates are not sufficient to compensate for the reduction in the working age population. From 2027 to 2046, employment is projected to decrease at an average annual rate of about 0.5%. Such negative dynamics go on until the end of the forecasting period, though at a lower rates.

¹⁹ This outcome is not explained by retirement legislation or past evidence of workers' behaviour. It just results from an extrapolation of a temporary impact of the economic crisis on labour forces.

²⁰ In the long term, the new measures introduced with Decree Law 4/2019, produce a permanent reduction of 9 months which is confined to the early retirement channel based only on accrued minimum contributions and not on age. Table 4 shows that, in 2070, labour force participation rate for the cohorts 65-74 declines from 31.3% projected in the 2018 Ageing Report to 30.7%, projected in the New Baseline Scenario. With respect to that, the average exit age are only reduced slightly by few decimal points, overall remaining at 67.8 for men and 69.1 for women (tables 5a and 5b). This is only an apparent contradiction which is limited to the point estimate of 2070. In the new baseline projections both participation rates for 65-74 and average exit age modify over time vis-à-vis previous 2018 Ageing Report results. The former is, in general, reduced, whereas the latter, overall, increases. However, it has to be noted that in specific points in time, due to the strong undulatory pattern of labour force projections of the 2018 Ageing Report, not so evident in the new baseline, the gap between the two projections of the participation rate 65-74 closes and then, after few years widens again. Also the series of the gap in average exit age probabilities in the two set of projections follows the same pattern and specifically for the year 2070, such a gap tends to be quite close to zero. In this respect, it should also be noted that, the probability of exiting from the labour market, as estimated by the Commission, does not guarantee in itself consistency with the probability of retiring that is endogenously calculated by the pension model on the basis of the fulfilment of contribution and age requirements. However, through a bilateral consultation, a satisfactory approximation of the exit probability was achieved in the mid-long run, allowing for some differences in terms of distribution by age, gender and time profile. Vis-à-vis the results of the 2018 Age Report, the average exit rates for men in the period 2019-2070 are increased by 0.13% whereas the probabilities of retiring calculated by the model show a rise amounting to 0.25% on average. For female workers, instead, average exit ages and probability of retiring are more aligned. The change with respect to previous estimates is, respectively, 0.15% and 0.17%. Moreover, in line with expectations, the new projections show that, vis-à-vis the 2018 Ageing Report, the new pensioners retiring in 2070 thanks to the 9 month lower minimum contributions requirements are almost equally distributed in each single age cohort (see table 12.b).

Chapter 3 – Pension projection results

3.1 Extent of the coverage of pension schemes

Pension projections cover the total pension expenditure for old-age, disability and survivors' pensions related to contributions paid to the public pension system plus the old-age allowances and social additional sums because of their close relation with ageing. In fact, the latter are only granted to the elderly with low income.

The aggregate of pension expenditure utilized in the projections is just a bit lower than the one of Eurostat (ESSPROS statistics). The difference, which accounts for about 0.7% of GDP (Table 6), is due to:

- benefits entitled to survivors and the disabled (0.6 percentage points in terms of GDP) which are related neither to pension contributions nor to ageing (benefits paid to the disabled below the SRA, war pensions, work injury annuities and merit awards);
- supplementary pensions provided by private pension funds (0.1 percentage points in terms of GDP) which fall outside the perimeter of the public pension system.

The exclusion of private pension schemes from current projections is mainly motivated on the grounds that the State runs no risk on the financial returns. Such a statement is based on the following:

- private pension funds are never mandatory, regardless of their being occupational pension schemes or not;
- private pension funds never replaces the coverage of the public pension system, which is compulsory for all workers (no opting out);
- a quota of the capital accumulated in private pension funds (up to 50%) may be withdrawn as a one-off reimbursement at the retirement (or even before, to finance particular expenses, such as home purchasing);
- private pension funds play a supplementary role to the public pension system providing a minor fraction of elderly income. This implies that workers, who join private pension funds on voluntary basis, accept all the risks concerning the financial returns, since the public pension system in any case provides them with an adequate pension income.

3.1.1 Pension expenditure to GDP ratio

Table 7 shows the projected ratio of pension expenditure (gross of tax revenues) to GDP obtained on the basis of the new AWG baseline scenario that includes the recent pension interventions in force as of 1st of January 2019 (Law 145/2018) and end of January 2019

(Decree Law 4/2019 as converted into Law 26/2019). Reported values refer to the end-year of each decade of the forecasting period.

Graphs based on annual values are, instead, presented in figure 4 where results are compared with the previous 2018 Ageing Report baseline scenario. Vis-à-vis previous projections, the new baseline pension expenditures-to-GDP ratio shows an increase equal, on average, to 0.2 percentage points over the period 2019-2031.

In line with the 2018 Ageing Report projections, over the period 2016-2018, pension expenditures as a ratio of GDP remain constant at the level of 15,6%. The stability of the ratio over the first years of the projections is mainly due to the tightening of the eligibility requirements for old-age and early pensions, and particularly the alignment of the SRA of women in the private sector to that of other workers by 2018.

In the following three years, the ratio grows steadily to 16.1% in 2021. Vis-à-vis the projections of the 2018 Ageing Report, pension expenditures rise up to the maximum gap of 0,4 percentage points of GDP in 2021. This trend is the result of the increase in the number of pensions due to the kick-in of the new temporary retirement criteria set by the Law 26/2019, which introduces, over 2019-2021, an early retirement possibility for workers with at least 62 years of age and at least 38 years of accrued contributions (Quota 100).

With regard to short term results, it should be noted that the increase in pension expenditures to GDP ratio reported in 2019-2021 is in line with the figures on the ex post monitoring of the costs of Quota 100 foreseen by the Law 26/2019. The figures reported in this fiche are similar to those presented in the 2019 Update of the Economic and Financial Document (Nota di Aggiornamento al DEF) published last September which contains the first actual data on the take up rate of Quota 100.

The initial estimates of the take up rate²¹ of Quota 100, carried out by the Italian Social Security Institute (INPS), presented in the Technical Report to the Parliament accompanying the Draft of the Decree Law 4/2019, showed that the number of new pensioners retiring with the new requirements would have been 290.000 in 2019, 327.000 in 2020, 356.000 in 2021. With respect to those estimates, the surveillance activity on the applications presented so far has proven that for 2019 the actual number of applications is 90.000 units less than initially estimated.

It has to be noted that, the DL 4/2019 gives to workers being at least 62 years old and having at least 38 years of contribution in 2019-2021 a subjective right. Accordingly, they have the faculty to retire with Quota 100 criteria even after 2021. Against this legislative framework, taking into account the results of the surveillance activity on Quota 100 for

²¹ The underlying initial assumption on the take up rate of Quota 100 carried out by INPS was the following: for 2019, a take up rate of 100% for the dormant contributors (silenti), 85% of the potential applicants in the case of workers of the private sector and 70% of the potential applicants for public sector workers. For the following years, for those who had qualified for early retirement with Quota 100 requirements but decided not to opt for this possibility, the assumption of the take up rate was 40% of the potential applicants in case of workers of the private sector and 45% of the potential applicants for public workers.

2019, the underlying, conservative assumption that has been carried out for the short term assessment of the number of new pensioners retiring with the new criteria is that those 90.000 subjects that decided, over the first year, to not apply for Quota 100, even if entitled, will actually retire in 2020 and 2021, with a uniform distribution of new pensioners along both years, so that the number of applicants initially foreseen by INPS for 2021 will actually materialize²².

After 2021 and up to 2031 when the gap with previous projections closes, pension expenditures as ratio of GDP keeps increasing but at a slower rate than 2018 Ageing Report projections. Underlying this dynamic is the simultaneous contribution of several contrasting factors. On one hand, pension expenditure/GDP is pushed up mostly by the unfolding of the first negative effects of the demographic transition due to the retirement of the baby boom cohorts. Such an effect is, de facto, reinforced by the recent measures adopted with Decree Law 4/2019 converted with L 26/2019 which, for the period 2019-2026, provide for the discontinuation in the updates to life expectancy for the minimum contribution requirement for the channel of early retirement based only on accrued contributions. In 2026, at the timing of expiring of such a measure, the minimum contribution requirement for early retirement would be 9 months lower on a permanent basis, resulting in a higher number of new pensions. On the other hand, the increase in pension expenditures as a ratio of GDP is, somehow, bridled by the gradual continuation of the process of raising the minimum requirements for access to retirement and the simultaneous application, pro rata, of the contribution-based calculation system. In addition, the amount of the stock of existing pensions will be lower as the new pensions paid on the basis of the Quota 100 criteria are, in the period after 2021, lower than those that would have been paid to the same subjects on the basis of the previous requirements. In particular, as the innovation of Quota 100 concerns mostly pensioners retiring with the mixed regime, with respect to previous legislation, pension benefits would be 3% lower for any year of anticipation under the notional contribution scheme and 2% lower for any year of anticipation under the earnings-related regime. Similarly, also the workers retiring earlier on the basis of the accrual of a minimum contribution requirement regardless of age, will obtain lower average pensions than those they would have received on the basis of previous legislation, due to the 9 months permanent reduction in the amount of accrued contributions needed to get a pension.

After 2031, pension expenditures/GDP in the new baseline scenario keep increasing up to the maximum of 18.6% in 2040. However, the values of the new baseline scenario are

²² There is still no clear explanation regarding the reasons for such a lower take-up rate in 2019. It is likely that the restriction established by the Law on the cumulability between the pension obtained with Quota 100 criteria and income from work may have discouraged potential applicants. Another reason for the limited appeal of Quota 100 so far, may be due to the reduction in pension benefits as a consequence of the earlier retirement. The innovation of Quota 100 concerns mostly pensioners retiring with the mixed regime. For them, retiring earlier with Quota 100 would imply a pension benefit that is expected to be 3% lower for any year of anticipation under the notional contribution scheme and 2% lower for any year of anticipation under the earnings-related regime with respect to the amount of pension that they would have obtained on the basis of previous higher requirements. In addition, pensioners that retire earlier according to the Quota 100 requirements bear the deadweight costs of losing the underlying growth in nominal wage that would amount to around 3% for every year of anticipation with respect to previous legislation requirements.

slightly lower than previous 2018 Ageing report results due to the smaller ratio between the average pension value and labour productivity.

Overall, the growth in the central part of the forecast period, is due to the increase in the ratio between the number of pensions and the number of employees induced by the demographic transition and reinforced by the new measures that facilitate early retirement. Such a trend is only partially offset by the increase in the minimum requirements for access to retirement and by the lower average pension benefits deriving from the anticipation in retirement. In this phase, the pressure of demographic factors exceeds the declining trend in the benefit ratio that comes about from the gradual introduction of the NDC scheme over the entire working life and from the anticipation in retirement.

The transition for the DB to the NDC scheme is shown in figure 5, where the new pensions are broken down in three components referring, respectively, to workers almost fully covered by the DB scheme (at least 18 years of contributions in 1995), workers under the mixed, pro rata scheme (less than 18 years of contributions in 1995) and new entrants after 1995. As can be seen, old-age and early retirements of the first group will be almost over as of 2020-2025, when retirements of the second group, whose pensions are increasingly calculated with the NDC method, become preeminent and goes in parallel with the demographic transition up to 2040-2045, thus mitigating its financial impact. As expected, for disability pensions the transitional process is somewhat accelerated, due to lower contribution records at retirement.

The rapid contraction in pension expenditure to GDP ratio over the final part of the forecasting period is imputable to the full application of the NDC scheme²³, which runs in parallel with the stabilization and subsequent decline in the ratio of pensions to employees. The latter mainly arises from the gradual exit of the baby boom generations whose effect is further reinforced by the operating of the automatic adjustment of eligibility requirements to changes in life expectancy.

In this respect, over the end of the projections horizon, the pension expenditures as a ratio of GDP in the new baseline scenario decrease sharply until reaching 13.9% in 2070, a value which is completely aligned to that projected in the 2018 Ageing Report. Figure 4 shows that, thanks to the actuarial fairness of the NDC regime, in the final part of the projections horizon, the increasing effect given by the higher number of pensions resulting from the 9 months anticipation in the minimum contribution requirements that derived from the temporary freezing of updates for life expectancy changes, would be completely offset by the corresponding lower amount of average pension benefits coupled with lower GDP levels.

²³ Full application of the NDC scheme implies, amongst the others, that the implicit reference wage is calculated over the whole career thus reflecting wage and GDP (valorization factor) dynamics over a quite a long period back. Given the poor performance of both variables in the first part of the forecasting period, this contributes to the containment of the average pension dynamics in the following decades (Fig. 4.b).

3.2 Tax revenues on pensions

Tax revenues on pensions, reported in Table 7, have been projected following the same rule adopted in the previous round of projections. Accordingly, tax revenues as a share of pension expenditure are assumed to be constant over time. Given the country specificities, such a simplistic approach has the merit of guaranteeing cross-country comparability. Similarly to the results of the 2018 Ageing Report, tax revenues on public pensions are projected to move from 2.9% of GDP in the base year to 3.5% around 2040 and then settle on 2.6% towards the end of the forecasting period.²⁴

3.3 Pension expenditure by scheme/sector

Table 8 shows that old-age and early pensions, including disability pensions above the SRA, cover the largest part of pension expenditure. The incidence passes from 81.3% in 2016 to 85.3% in 2070. In the same period, the weight of survivors' pensions declines slightly from 16.2% to 12.7%, while the quota of disability pensions, below the SRA, decreases from 2.5% to 2.0%.

Table 8 also gives the projected pension expenditure distributed by sector. Discarding old-age allowances and the social additional sums, private sector employees, including atypical workers, account for about 57.3% of the total pension expenditure in 2016, and their relative weight increases up to 72.8% in 2070. Correspondingly, the quota of the public sector employees and that of the self-employed is reduced from 25.9% to 14.3% and from 14.9% to 10.2%, respectively.

Changes in the distribution of pension expenditure by sector are only partly explained by the composition of the insured, which follows the same pattern. An important contribution comes from the containing effects brought about by the introduction of the NDC method, which mainly affects public sector employees and the self-employed. The former depends on the DB calculation method which was more generous for the employees in the public sector than those in the private one. The latter depends on the self-employed contribution rate which is lower than that of other workers (24% instead of 33%).

Finally, the expenditure for social pensions and old-age allowances is projected to increase in terms of GDP, moving from 0.3% in 2016 to 0.4% in 2070. Such a trend is driven by both the number of beneficiaries and the average amount of pension. The former mainly depends on the ageing population and the decreasing quota of the elderly with only survivor's pension entitlements; the latter is due to the more favourable indexation rule assumed under the constant policy scenario (§1.5).

²⁴ Information concerning the incidence of income tax on pensions in the base year is important in order to assess the real burden of public pension expenditure in terms of GDP, and make it comparable amongst countries.

3.4 Main driving forces behind pension projections

3.4.1 Benefit ratio and economic dependency ratio

The decomposition of pension expenditures as a ratio of GDP, reported in table 9.a and 9.b, not surprisingly shows that the demographic transition and the expected increase in life expectancy will exert a strong negative impact of pension/GDP projections. Such an effect (measured by the old-age dependency ratio) accounts for 10.3 p.p. over the entire forecasting period and is mainly concentrated in the period 2020–2040 in coincidence with the retirement of the baby boom generations.

In the long run, the deterioration of the sustainability of the pension system driven by the adverse demographic perspectives will not take place thanks to the offsetting effects triggered by past pension reforms, in spite of the increase of pension outlays produced by the new temporary measures adopted in 2018–2019.

Indeed, the evolution of the benefit ratio is expected to provide a decreasing contribution on pension expenditures as a ratio of GDP amounting to –4.0 p.p. mostly imputable to the progressive phasing in of the NDC scheme and the indexation of pension to price inflation. Similarly, the evolution of the coverage ratio is expected to reduce pension expenditures/GDP by –4.5 p.p. in the period 2016–2070, as a consequence of the increase in the eligibility requirements and their linkage to changes in life expectancy. Finally, the effect due to employment ratio equal to –2,8 p.p. is mainly boosted by the postponement of retirement age.

The decomposition of pension expenditure to GDP ratio given by the product of the ‘benefit ratio’ (the ratio of average pension to labour productivity) with the ‘economic dependency ratio’ (the ratio of pensions to employees) provides for more in-depth and valuable information on the driving forces behind the new baseline pension projections vis-à-vis the results of the 2018 Ageing Report (Figures 4.b and 4.c).

In the 2018 Ageing Report, the economic dependency ratio shows an initial declining path that lasts until around 2021, followed by a substantial stability over the subsequent five years. Such a downward trend is mainly due to the tightening of the eligibility requirements and the contextual increase in the employment rate. By contrast in the new baseline scenario, as a consequence of the easier access to early retirement due to the introduction of Quota 100 requirements, the number of pensions as a ratio of the employees increases substantially over the period 2019–2026 (on average +1,5 percentage points vis-à-vis 2018 Ageing Report estimates). Thereafter, in both scenarios, over the following two decades, the ratio of pensions to employees rises steeply because of the demographic transition, as the baby boom generations are expected to move from the working age (denominator) to the old-age classes (numerator), while the employment rate stops increasing. In the last part of the forecasting period, the economic dependency ratio first stabilizes and then declines because of the exit of the baby boom generations.

In the 2018 Ageing Report, the benefit ratio, instead, increases steadily up to 2027 before stabilizing for some years. In that period, in fact, the increasing quota of pensions calculated according to the NDC method does not compensate for the low productivity growth assumed in the transitional phase. In the subsequent period, however, when the productivity growth approaches its structural level, the benefit ratio decreases significantly because of the phased-in process of the NDC scheme. A similar pattern can be seen in the case of the new baseline scenario, even though, vis-à-vis 2018 Ageing report results, the benefit ratio is slightly higher over the period 2020-2022 and thereafter always lower. Such a pattern is explained by the fact that workers retiring on the basis of the requirements of Quota 100 initially enjoys relatively higher pension benefits thanks to the earnings related and mixed schemes. Afterwards, pension benefits will be on average lower than what projected in the 2018 Ageing report on the basis of previous legislation as earlier retirement corresponds to a lower amount of accrued contributions (Fig. 6).

3.4.2 Average replacement rates

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

In this regard, Table 10.a shows the evolution of the ratio between the average pension (new old-age and early pensions), and the gross average wage/labour income at retirement. In the case of the new baseline scenario, under Quota 100 rules, this indicator increases substantially in 2019 vis-à-vis previous Ageing Report estimates (respectively, 68.7 versus 62.8), due to the retirement of workers with DB and mixed regime who obtain relatively higher pension benefits. Subsequently, the replacement rate calculated in line with new legislation falls permanently below the level of the 2018 Ageing Report.

With the gradual consolidation of the NDC calculation method, flanked by a recovery in productivity growth, the ratio starts to decline, settling on its minimum of about 45% around 2050 and then increases again up to close to 50% at the end of the forecasting period. It is interesting to note that, during the transitional phase, the indexation of pension to price inflation reduces the gap between the older pensions, calculated with the more generous DB rules, and the new ones which are correlated with current earnings (Fig. 6).

Table 10.b also reports the replacement rate at retirement net of supplementary pensions, which approximates the replacement of new pensioners. Such an indicator is obviously more informative for cross country comparison, given that the ratio between pensions and pensioners may vary considerably among member states²⁵. As expected,

²⁵ Supplementary pensions are public old-age pensions based on contribution records not utilised for the calculation of the main pension. Therefore, they are generally very small. Without them, the number of new pensions coincides with the number of new pensioners and, consequently, the average amount of pension increases, as well as the average number of contribution years.

the replacement rate referring to new pensioners is higher than that referring to new pensions, the difference settles on 2.2 pp towards the end of the forecasting period.

The replacement rate calculated in terms of average final wages does not allow to assess the relative size of new pensions in terms of average labour compensation. In this regard, Table 10.b also reports the replacement rate expressed in terms of the average economy wage. Compared to replacement rate based on final wages, it settles on 10 pp above, on average.

3.4.3 Old-age and economic dependency ratio

Figures 4.d-4.f provide more information about the evolution of pensions to employees ratio (economic dependency ratio), which is projected to increase significantly less than the elderly dependency ratio. Apart from the counteracting effect brought about by the increase in the employment rate (Figure 4.e), the more contained dynamics of the economic dependency ratio mainly depend on the incidence of pensions to the population 70+, which is projected to decline considerably over time (Figure 4.d) even taking into account for the impact of the new pension measures introduced in 2019, which, nonetheless, with respect to the results of the 2018 Ageing Report increase the ratio, on average by 0.9 pp over the period 2019-2070 (+1,7 pp up to 2035) . The reason for that is to be found in the evolution of survivors' pensions entitled to the over 70 and the earnings-related pensions paid to the under 70.

As for the former, it should be noted that changes in life expectancy, while significantly affect the number of the elderly, are more or less neutral to the evolution of survivors' pensions. In fact, higher life expectancy does not increase, for the widow or widower, the average period of outliving their spouse.

As for the latter, it is worth mentioning that the incidence of pensions to people under 70, expressed in terms of the elderly (70+), will be reduced not only for the increase in the eligibility requirements, but also, and to a large extent, for a simple composition effect due to changes in the demographic structure. In fact, the quota of population in the age bracket 50-69 (where the relevant part of pensions under 70 is placed) on that of people 70+ is projected to fall relevantly. This means that the number of pensions under 70 would be reduced even if the take-up ratio were constant.

3.4.4 Pensioners and elderly population

Tables 12.b and 13.b report in total and for women, the incidence of pensioners in terms of population. With respect to previous 2018 Ageing Report, the number of pensioners aged 60-64 expressed as a ratio of the corresponding population increase significantly in 2020 (by around 5 percentage points in terms of total population and 4 percentage points in terms of women) in line with the introduction of the new early retirement channel of Quota 100. In 2030, in response to the 9 months reduction in the minimum contribution requirement in the early retirement channel based only on accrued contributions resulting from the freezing of the periodical updates in life expectancy for the period

2019-2026, the largest increase in the ratio of pensioners to population, amounting to 2.6 percentage points will be still concentrated in the 60-64 age group whereas the age cohort 65-69 is projected to increase by 1.1 percentage points. In 2070 all the age cohorts will increase. In terms of the corresponding population, the pensioners belonging to group 65-69 will increase by almost 1.2 percentage points vis-à-vis the results of the 2018 Ageing Report whereas in both the 70-74 and 75+ ratios, the increase will be equal to 0.7 percentage points.

Beside the changes with respect to the previous results of the 2018 Ageing Report, as expected, over the projection horizon, the percentage of the retired tends to shrink over time for all the age brackets characterized by a remarkable increase in the eligibility requirements, namely from 60 to 69. Instead, such a reduction is much lower in the age bracket 70-74 where changes in the eligibility requirements are limited and will materialise only towards the end of the forecasting period.

Looking at the elderly above 70, the incidence of pensioners is slightly decreasing. Apart from the reduction in the age bracket 70-74, mentioned above, this is mainly due to the presence of non-resident pensioners in the base year. In fact, the definition of population underlying the demographic projections refers to resident persons, while pensions are also paid to the non-resident. As can be seen at the bottom of the table, taking out non-resident pensioners at the beginning of the forecasting period leads to such a reduction disappearing. This means that the number of 70+ pensioners is projected to evolve fully in line with the population in the same age bracket, thus confirming the demographic consistency of pension projection.

Furthermore, it should be considered that immigrants over 60 are likely to bring with them pension rights matured in their own countries or, alternatively, they are not able to mature pension rights in the host country. Analogously, elderly people leaving the country are likely to take their pension entitlements away with them. If the two group numbers were the same there would be a sort of compensation: non-resident pensioners would be counterbalanced by the resident without pension rights due to their entering the country at an advanced age. In the case of Italy, the latter tend to exceed the former during the forecasting period, according to the assumptions on net migration flows²⁶. If we took out the quota of the elderly deriving from net migration flows above 60²⁷, which accounts for 0.7-0.8 pp in the second half of the forecasting period (0.9 for female alone), the incidence of pensioners to population would be correspondingly higher.

The same conclusions may be drawn from the analysis of the incidence of pensioners in terms of inactive population, reported in table 12.a and 13.a.

²⁶ At the beginning of the forecasting period, however, non-resident pensioners do not have any appraisable compensation, as Italy has only recently moved from being a net sending country to a net receiving one.

²⁷ Such a component is significantly lower than it was in the previous round of projections due to the downward revision of the assumption on migration flows.

3.4.5 Old-age and system dependency ratios

The Old-age Dependency Ratio (ODR) expresses a demographic concept of dependency which is based on the population age structure (§. 2.1). In fact, it compares the elderly above a given age threshold (generally 65), supposed economically dependent, with the working age population (generally 20–64), supposed economically active. However such a decomposition does not correspond to an economic concept of dependency. In fact, an elderly person might be still active and contributing to the pension system, while an adult might be inactive and receiving pension benefits. On top of that, the age thresholds which separate dependent people (elderly 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 educational systems.

Such aspects may be better reflected by the economic dependency ratio, defined as the ratio between pensioners and employees, regardless of age. This indicator, labelled as 'Pension System Dependency Ratio (SDR)' in Table 11, emphasizes the contribution brought about by changes in the legal framework of the pension system.

The ratio between the SDR and ODR provides a measure of what can be roughly labelled as 'System Efficiency', being aware that many factors may affect it other than the pension system regulation. As shown in table 11, such an indicator undergoes a large reduction over the forecasting period, from 1.9 in 2016 to 1.2 in 2070 still signaling the effectiveness of the pension reform process described in chapter 1.

3.5 New public pension expenditure

Tables 14.a-14.c illustrate, in total and for both genders, the projected expenditure for new pension and its decomposition in terms of pensions and their average amount. In turn, the latter have been broken down into three factors: the average contribution period, the average pensionable earnings, and the average accrual rate.

Over the short term (2019–2021), the evolution of the number of new pensions clearly reflects the impact of the introduction of the new early retirement regime Quota 100, whereas over the medium term it describes the transition of the baby boom generations. From an average annual level of about 438,000 over the first decade of the forecasting period (almost 50,000 more than in the 2018 Ageing report), the number of new pensions increases to a level close to 710,000 in the middle of the forecasting period (2030–2040), and declines afterwards to about 528,000 units toward the last decade. Gender composition shows that new male pensions account for about 55–60% of the total.

The average accrual rate is a weighted average of the accrual rate explicitly foreseen in the DB calculation method (2%) and that implicit in the NDC scheme, defined as the product of the contribution rate times the transformation coefficient at the age of retirement. The former is constant, while the latter changes according to the contribution rate, the age of retirement and the periodic revision of transformation coefficients. The

average accrual rate moves from 1.93%, characterized by the prevalence of pensions calculated on the basis of the DB method, to 1.70% around 2035, when the NDC method is largely predominant, and then to 1.65% at the end of the forecasting period. The latter may be obtained by simply multiplying the average contribution rate (about 31%) by the transformation coefficient corresponding to the average retirement age, about 5.3% (Figure 7). Gender analysis highlights that the average accrual rate of females is a little higher than that of males by about 0.1. This highlights the fact that women will retire somewhat later than men under the NDC scheme being less probable for them to access early retirement due to generally lower contributions/pension rights. It also depends on the privilege of an augmented transformation coefficients granted to women in relation to the number of children (§. 1.2.1).

Figure 7 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 due to the revision of the transformation coefficients. As it is possible to grasp, the introduction, on a temporary basis, of a new avenue for early retirement does not affect overall adequacy/stability of the Italian pension system.

The average contribution period per pension increases by about 3.6 years from the 2016 level reaching in 2070 a level of 38.3 (Figure 8) with a significant spike in 2019, corresponding to people retiring with Quota 100 regime who have a relatively richer contribution tenure.

Overall, the increase in the average contribution period per pensions accounts for about 60% of the corresponding increase in the average retirement age. The difference is mainly explained by the postponement of the entry age in the labour market observed for younger generations. Though the final value shows no visible gender differentiation, in the central part of the forecasting period the average contribution period of men exceeds that of women by a couple of years.

The overall increase in the average contribution period is basically concentrated in the last part of the forecasting period. The initial rise, up to 2020, is due to the elevation of the retirement age, also driven by the alignment process of the SRA of women in the private sector to that of the other workers as well as from the retirement of workers with Quota 100 criteria who have accrued a relatively high amount of contributions (at least 38 years).

Instead, in the central part of the forecasting period, the average contribution period stays almost stable, despite the indexation of the eligibility requirements. This outcome has basically two explanations. Firstly, the cohorts retiring in this period started contributing to the pension system somewhat later compared to their predecessors, as emerges from the database of the insured. Secondly, early retirement foreseen under the NDC scheme becomes gradually effective as of around 2030 and thus contributes to slowing down the increase in the average retirement age.

Both explanations also clarify gender differences in the contribution records. In fact, the probability for women to access early retirement under the NDC scheme is much lower than men, due to well-known gender gaps in wages and careers²⁸. On top of that, the average entry age into the labour market of women is somewhat higher than that of men.

However, in the last 20 years of the forecasting period, the average contribution period grows again in line with the average retirement age, since both the above-mentioned factors cease to operate. In fact, the entry age into the labour market of the cohorts retiring in this period tend to stabilize as well as the percentage of those retiring earlier than the SRA. The phased-in process of early retirement under the NDC scheme together with the more favourable assumptions on female employment rates over the first years of the forecasting period also explain the gradual narrowing of gender differences.

The average contribution period per pensioner follows the same path as that of pensions, though it is a couple of years higher, since supplementary, additional pensions are generally of a very small amount. Figure 8 compares the projected evolution of such a variable with that of the average contribution period per pension.

The average pensionable earnings should be actually interpreted as a weighted average between the explicit reference wage under the DB method and an implicit reference wage under the NDC one²⁹. As expected, average pensionable earnings, if deflated with productivity growth, decline in the long run according to the gradual shift towards the NDC calculation rules. In terms of the average gross wage (national accounts figures), it passes from around 103.8% of the first decade to around 83.2% of the last one.

In terms of GDP, the decline of pensionable earnings is less marked because of the negative evolution of employment over the entire forecasting period, except for the first decade³⁰.

3.6 Pension contributions and contributors

Contributors evolve substantially in line with employment over the whole forecasting period, allowing for minor adjustments by sector (Table 16). At the same time, the average labour income subject to contribution (contribution base divided by the number

²⁸ A substantial minimum amount of pension is required (1,200 euro in 2012 indexed with the five-year mobile average of nominal GDP).

²⁹ With regard to the former, the number of last annual wages involved in the calculation of the reference wage mainly depends on sector, contribution period and retirement age. As for the latter, the implicit reference wage is defined as an average of lifelong wages indexed with GDP growth (§. 1.2.1).

³⁰ Such an outcome is substantially in line with that of the 2015 round of projections. However, the difference between the growth rates of pensionable earnings and GDP is somewhat higher in the current round of projections, over the first 10-15 years of the forecasting period, and lower thereafter. This is mainly due to the valorization factor which actually is a mobile average of GDP growth rates over the previous five years. Therefore, when GDP growth rates are increasing, pensionable earnings grow less than GDP and, furthermore, the higher the increase the larger the difference. On top of that, in the three-year period 2013-2015, the cumulative GDP growth has actually turned out to be about 3% lower than that forecast in the 2015 round, affecting negatively the valorization factor over the following years.

of contributors) is assumed to grow in line with productivity, according to the general rule agreed in the AWG for the mid-long term. As a consequence, the overall contribution base evolves in line with GDP growth. Therefore, the total pension contributions remain basically constant as a share of GDP, except for a slight increase up to 2018 due to the gradual elevation of the contribution rates foreseen for the self-employed and atypical workers. Starting from the level of 10.7% in 2016, contributions to GDP ratio settles on 10.8% in 2020. It then increases up to 11% in 2050 and 2060 and then decline slightly to 10.9% (Table 7).

3.7 Sensitivity analyses

Table 17 reports the deviations in the projection of pension expenditure to GDP brought about by the sensitivity tests agreed in the AWG. Figure 9 also compares the deviations in public debt as a share of GDP in 2040 and at the end of the forecasting period.

Since the current legislation already foresees a linkage between the eligibility requirements and changes in life expectancy (§.1.2.2), the sensitivity test on 'policy scenario' is of no relevance in this setting.

Life expectancy: *2-year increase gradually achieved over the whole forecasting period.*

Assuming a 2-year increase in life expectancy, the elderly dependency ratio (people of 65+ to working-age population 20-64) settles at an increasingly higher level. At the end of the forecasting period, it is about 5 percentage points higher (65.5% vs 70.2%) than in the baseline. In fact, while the denominator (working-age population) tends to remain almost unchanged, the numerator strongly reflects differences in life expectancies. However, the increasing deviation in the elderly dependency ratio is counterbalanced by the containing effects exerted on the number of pensioners, by the indexation of the eligibility requirements, and on the average amount of pension, by the revision of transformation coefficients. The counteracting effects exerted by the automatic adjustment to changes in life expectancy overcome those brought about by demographic changes, until around 2040. Thereafter, the ratio of pension expenditure to GDP tends to increase a little more rapidly than that under the baseline assumptions until it settles 0.1 percentage points above, in the last 20 years of the forecasting period.

In order to explain the size and the time profile of deviations from the baseline, it is useful to recall that an increase in life expectancy, and then in the retirement age, produces a reduction in the number of new pensioners. Correspondently, the same change in life expectancy implies lower mortality rates for all ages (especially among the very elderly), which gradually raise the number of total pensioners. The latter gradually compensate for the financial effect caused by the reduction of new pensioners. As expected, the transition of the baby boom generations emphasises the saving effects in the central part of the forecasting period, as they retire, and the compensating effects in the last part, as they get older.

Productivity: *0.4 pp higher/lower TFP growth as of 2045, linearly achieved from 2027.*

Under the capital stock rule, a symmetrical change in TFP growth of 0.4 pp, produces a symmetrical deviation in productivity and GDP growth of 0.6 pp. Consequently, the ratio of pension expenditure to GDP is lower/higher than that in the baseline. The deviation gradually increases till around 2060, where it accounts for 1.5 pp (lower TFP) and -1.3 pp (higher TFP). Afterwards the gap shrinks towards the end of the forecasting period (2070) where it reaches, respectively, an increase of 1.4 pp in the lower TFP scenario and a reduction of 1.2 pp under the higher TFP assumptions³¹.

The differences in the ratio of pension expenditure to GDP are explained by the diverse evolution of the benefit ratios. Instead, the ratio of pensions to employees and its decomposition do not change significantly. This latter effect depends on the NDC method, which also requires a minimum amount of pension to access early and old-age retirement.

Employment rate: *2 pp higher/lower employment rate in the age bracket 20-64 as of 2035, gradually achieved from 2018 by changing unemployment rate.*

An upward/downward change in the employment rate immediately translates into a corresponding increase/decrease of GDP growth. This causes the ratio of pension expenditure to GDP to settle below/above the baseline. In fact, higher/lower employment levels result in a corresponding higher/lower number of pensions only after a long period. However, towards the end of the forecasting period, the ratio of pension expenditure to GDP tends to overlap the baseline projection. This is partly due to the replacement rates under the NDC regime, which are increasingly higher/lower than those in the baseline, due to higher/lower GDP growth rates utilized for the capitalization of the accrued contributions.

Older workers' participation rate: *10% increase of employment rates in the age bracket 55-74 as of 2030, gradually achieved from 2018.*

In spite of the easier access to early retirement legislated in 2019, prolonging working lives further than that already assumed in the baseline scenario, basically has been achieved through two assumptions: zeroing the probabilities of early retirement and increasing the propensity of working after the SRA. The pension model calculates the corresponding lower number of pensioners and the subsequent increase in the average amount of pension due to higher contributions accrued.

The reduction in pension expenditure to GDP ratio reaches its maximum value of about 1.9 percentage points around 2030. Such an outcome mainly reflects changes in

³¹ 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. Diversely, pension expenditure is only marginally affected at the beginning. In 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 pension expenditure evolution.

employment (and GDP growth) and in the number of pensions during the first decades of the forecasting period. Moving towards 2070, 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 capitalization rates. In the last decade of the forecasting period, the latter effect tends to equalise, in terms of financial effects, the reduction in the ratio of pensioners to employees.

Migration: *33% increase/decrease of net flows of immigrants.*

An increase in migration flows implies a reduction in pension expenditure to GDP ratio. Compared to the baseline scenario, the maximum difference of 0.7 percentage points is reached around 2050. Afterwards, it tends to shrink towards 2070, where it accounts for about 0.4 percentage points. Such a result is explained by higher GDP growth rates, due to increased numbers of employees. In particular, the decrease in the elderly dependency ratio is translated into the ratio of pensions to employees. The difference tends to stabilize as soon as the additional immigrants are transformed into elderly people and, consequently, pensioners. A further containing effect on pension expenditure is exerted by higher replacement rates, which come about from the more favourable capitalization rates, linked to GDP growth, under the NDC regime.

Projection results are somehow symmetrical in case of an equivalent decrease of the net flows of immigrants.

Fertility rate: *20% decrease of fertility rate gradually achieved over the whole forecasting period.*

Any change in the fertility rate starts to turn into employment after some 20 years and it takes further 40-50 years to affect the number of pensioners. This means that no effect is produced on pension expenditure within the horizon of the forecasting period, apart from that coming from disability pensions (actually negligible) and, to some extent, poorer replacement rates due to lower capitalization rates under the NDC system.

Therefore, a 20% reduction in the fertility rate would gradually increase the projected ratio of pension expenditure to GDP starting from around 2035. The deviation accounts for 0.6 in 2050, 0.9 in 2060 and settles on 1.2 pp at the end of the forecasting horizon. As expected, such an outcome is mostly explained by a corresponding decrease in the number of employees, and GDP level, partially compensated for by lower pension amounts towards the end of the forecasting period.

Risk scenario: *TFP growth rate converging to 0.8.*

Such a scenario differs from the baseline only for the convergence level of TFP growth which settles on 0.2 pp lower in 2045. According to the capital formation rule agreed in the AWG, this implies a reduction in productivity growth of 0.3 pp. Therefore, the results

are proportionally in line with those obtained with the sensitivity test on lower productivity growth.

To complement the sensitivity analysis of the Italian pension system, Figure 9 compares the deviations in the pension expenditure to GDP ratio in 2040 and 2070 whereas Figure 9.b reports the corresponding deviations in terms of public debt³² as share of GDP. As it is possible to grasp, debt-to-GDP ratio would be reduced/increased mostly as a result of changes in TFP and productivity assumptions. The lion's share of the increase/decrease would actually be concentrated in the last part of the forecast horizon, after 2040.

3.8 Policy-risk scenario

The new pension interventions legislated in 2018 and 2019 are based on legislative provisions establishing a temporary interval of validity. Indeed, Quota 100 gives the possibility to access early retirement only to workers who reach at least 62 years of age and 38 years of contributions in the period 2019–2021³³. Furthermore, the discontinuation of the linkage to changes in life expectancy for the early retirement channel based only on accrued contribution has been legislated exclusively for the period 2019–2026, and it will produce a permanent reduction in the pension requirement of 9 months based on 2015 Eurostat population projections.

Given such framework, it is of some interest to assess the impact of such measures in case such provisions would end up being permanent rather than temporary; even though the new Italian Government in charge as August 2019 has, in all occasions, publicly declared that the measures introduced with DL 4/2019 will not be renewed.

Accordingly, following the request by the European Commission's services, aiming to highlight the risk on public finance stemming from the possible renewal of the pension interventions introduced in 2019, a new counterfactual scenario has been set up (i.e. Adverse Scenario). This scenario assumes the following:

- Workers with at least 62 years of age and 38 of contributions can retire early all along the forecast horizon (up to 2070). In order to solve possible interferences with current legislation, it has also been assumed that for workers that started contributing as of 1996 and that are fully subjected to the NDC regime, in line with current old-age pension requirements, people retiring with Quota 100 also have to reach a pension benefit at least equal to 1.5 times the old-age allowance indexed with the five-year mobile average of nominal GDP;

³² The effect on public debt has been projected according to the EU methodology for the calculation of the cost of ageing in the S1 and S2 indicators.

³³ This is a subjective right so for people entitled, the faculty to retire with Quota 100 criteria could be applied even after 2021.

- for the existing early retirement scheme based only on accrued contributions and not on age, the minimum contributory period is kept constant to the level of 2018 (42 years and 10 months for men and 41 years and 10 months for women) and unlinked from gains in life expectancy during the whole forecasting period from 2019 to 2070.

The results of the so-called Adverse scenario are presented in table 18 and in figure 10. Under the new assumptions, pension expenditures as a ratio of GDP is projected to increase by 0.5 percentage points on average over the period 2021-2046 vis-à-vis the new baseline scenario. The gap between the two set of projections is expected to widen up to 0.8 percentage points in 2029 and then close in 2046. Afterwards, the pension expenditures as a ratio of GDP in the adverse scenario and that of the new baseline scenario will be fully aligned.

Pension expenditures/GDP in the adverse scenario will increase steadily up to the peak of 19.1% that is projected to be reached in 2038 (two years before than in the new baseline scenario). Afterwards, the ratio is expected to decline reaching at the end of the forecast horizon the level of 13.9% of GDP, in line with the new baseline projection results.

Vis-à-vis the new baseline scenario, the increase in pension expenditure to GDP highlighted for the adverse scenario is due to the projected higher number of pensions with respect to the number of employees (figure 10.c) in the initial part of the horizon which is only subsequently offset by the decrease in the average pension benefits as a ratio of labour productivity (figure 10.b). Overall, in the adverse scenario the percentage ratio of pensions to people above 70 is expected to increase on average by 5.0 percentage points over the period 2022-2070 with respect to the new baseline scenario.

3.9 Comparison with the previous AWG baseline projections

Table 19 compares pension results in the new baseline scenario with 2018 Ageing Report projections and those of the previous round, decomposing the differences in the ratio of pension expenditures to GDP between the initial and final years of the forecasting horizon in the main underlying driving factors.

Taking as a reference the difference in pensions-to-GDP ratio between 2070 and 2016, the comparison of the new baseline, showing a reduction of 1.76 percentage points, with the 2018 Ageing Report baseline projections, showing a reduction of 1.75 percentage points, does not exhibit substantial changes in the contribution of the underlying factors. All in all, the sizeable worsening of the dependency ratio would keep being compensated by the combined offsetting effects exerted by the benefit and coverage ratios.

The differences between the new baseline scenario and the 2018 Ageing Report are mostly explained by changes in the legislative changes introduced in 2018-2019 (Table

20). As already mentioned above, the new measures produce higher pensions expenditures in the first year of projections, due to the facilitation in accessing early retirement. Instead, over the long term, the new measures will produce some savings mostly imputable to the lower average pensions paid as a result of the 9 months anticipation in retirement in the channel based only on minimum contributions requirements (Figure 11).

The changes in GDP growth projections are mostly the result of lower labour force participation rates due to changes in the in early retirement introduced in 2019. Overall, GDP growth is on average equal to the 2018 Ageing Report results. In particular, GDP growth is lower by 0.2 percentage points on average over the period 2019–2021 (Figure 12).

Table 1 - Statutory retirement age (SRA) and early retirement

Years of contributions		2016	2020	2030	2040	2050	2060	2070
Qualifying condition for old age retirement	<u>Old age retirement (SRA)⁽¹⁾</u>							
	Minimum retirement age (SRA) - men	66y+7m	67y	67y+11m	68y+9m	69y+7m	70y+5m	71y+1m
	Minimum retirement age (SRA) - w omen ⁽²⁾	65y+7m	67y	67y+11m	68y+9m	69y+7m	70y+5m	71y+1m
	Minimum contributory period - men	20	20	20	20	20	20	20
	Minimum contributory period - w omen	20	20	20	20	20	20	20
Qualifying condition for early retirement ⁽⁴⁾	<u>Early retirement regardless of age (all regimes)⁽¹⁾</u>							
	Minimum contributory requirement - men	42y+10m	42y+10m	43y+2m	44y	44y+10m	45y+8m	46y+4m
	Minimum contributory requirement - w omen	41y+10m	41y+10m	42y+2m	43y	43y+10m	44y+8m	45y+4m
	<u>Early retirement under the NDC regime⁽¹⁾</u>							
	Minimum retirement age - men			64y+11m	65y+9m	66y+7m	67y+5m	68y+1m
	Minimum retirement age - w omen			64y+11m	65y+9m	66y+7m	67y+5m	68y+1m
	Minimum contributory period - men			20	20	20	20	20
	Minimum contributory period - w omen			20	20	20	20	20
	Minimum amount of pension - men ⁽³⁾			1,200 euro per month in 2012 (2.8 times the old age allowance, in 2012) indexed with the five-year average of nominal GDP				
	Minimum amount of pension - w omen ⁽³⁾			1,200 euro per month in 2012 (2.8 times the old age allowance, in 2012) indexed with the five-year average of nominal GDP				

(1) The age requirements (and contribution requirements for early retirement regardless of age) are indexed to changes in life expectancy at 65. The update is foreseen every three years until 2019 and then every two years. Changes in life expectancy are consistent with the mortality assumptions underlying the Eurostat demographic projection, with the 2015 as the base year. The 2013, 2016 and 2019 indexation of the eligibility requirements were adopted by a directorial decree of the Ministry of Economy and Finance of 14th December 2011, 16th December 2014 and 5th December 2017, respectively. The next update, which come into force as of 1st January 2021, has been adopted on 5 November 2019 resulting in a zero increase in eligibility requirements. For early retirement regardless of age the DI 4/19 suspended the indexation of the requirements until 2026 and introduced a time window of three months. This window is maintained throughout the forecast period.

(2) SRA of the female employees in the private sector equalizes that of men (and women in the public sector) starting from 2018. In 2016, the SRA of the female self-employed is 6 months lower.

(3) The minimum amount of pension is 1,200 euro per month in 2012 (which corresponds to 2.8 times the old age allowance, in 2012) indexed with the five-year average of nominal GDP.

(4) Workers who reach, at least, the age of 62 and a minimum contribution requirements of 38 years in the period 2019-2021 (so-called Quota 100) may retire earlier. A shifting retirement window applies equal to 3 months for workers of the private sector and 6 months for workers of the public sector.

Tab. 2.a- Number of new pensions by age group - administrative data (year 2015) - Total

Age group	All	Old age	Disability	Survivor	Other (including minimum)
0-49	29,325	113	16,198	13,014	:
50-54	26,599	5,039	13,478	8,082	:
55-59	127,114	98,530	16,271	12,313	:
60-64	179,127	148,307	12,242	18,578	:
65-69	138,711	108,290	1,106	29,315	:
70-74	44,397	7,777	54	36,566	:
75+	131,278	3,700	15	127,563	:
Other (supplementary and non-resident)	77,744	54,609	1,136	19,630	2,369
Total	754,295	426,365	60,500	265,061	2,369

Tab. 2.b- Number of new pensions by age group - administrative data (year 2015) - Male

Age group	All	Old age	Disability	Survivor	Other (including minimum)
0-49	13,668	100	9,841	3,727	:
50-54	15,537	4,750	9,305	1,482	:
55-59	62,302	49,071	11,331	1,900	:
60-64	85,973	74,363	8,839	2,771	:
65-69	96,276	91,334	881	4,061	:
70-74	11,028	5,938	29	5,061	:
75+	30,483	2,802	7	27,674	:
Other (supplementary and non-resident)	48,347	44,278	837	1,899	1,333
Total	363,614	272,636	41,070	48,575	1,333

Tab. 2.c- Number of new pensions by age group - administrative data (year 2015) - Female

Age group	All	Old age	Disability	Survivor	Other (including minimum)
0-49	15,657	13	6,357	9,287	:
50-54	11,062	289	4,173	6,600	:
55-59	64,812	49,459	4,940	10,413	:
60-64	93,154	73,944	3,403	15,807	:
65-69	42,435	16,956	225	25,254	:
70-74	33,369	1,839	25	31,505	:
75+	100,795	898	8	99,889	:
Other (supplementary and non-resident)	29,397	10,331	299	17,731	1,036
Total	390,681	153,729	19,430	216,486	1,036

Table 3 - Main demographic variables evolution

Demography	2016	2020	2030	2040	2050	2060	2070	Peak year
Population ('000)	60.763	60.705	60.334	59.955	58.887	56.835	54.859	2016
Population growth rate	0,0	0,0	-0,1	-0,1	-0,3	-0,4	-0,3	2017
Old-age dependency ratio (pop65/pop15-64)	34,5	36,4	45,0	57,9	62,5	61,04	60,28	2050
Ageing of the aged (pop80+/pop65+)	30,5	32,3	32,6	32,9	41,3	46,5	44,5	2060
Men - Life expectancy at birth	80,7	81,2	82,5	83,7	84,8	85,9	86,9	2070
Men - Life expectancy at 65	19,1	19,5	20,4	21,3	22,1	23,0	23,7	2069
Women - Life expectancy at birth	85,3	85,8	86,9	88,0	89,0	90,0	90,9	2070
Women - Life expectancy at 65	22,5	22,9	23,8	24,7	25,5	26,3	27,0	2070
Men - Survivor rate at 65+	89,6	90,2	91,5	92,6	93,6	94,4	95,1	2070
Men - Survivor rate at 80+	63,7	65,4	69,4	73,1	76,3	79,3	81,9	2070
Women - Survivor rate at 65+	94,0	94,3	95,1	95,7	96,3	96,7	97,1	2070
Women - Survivor rate at 80+	78,0	79,2	82,0	84,4	86,5	88,4	90,0	2070
Net migration ('000)	134,5	161	210	218	197	177	164	2039
Net migration over population change	-7,5	-6,7	-6,7	-4,3	-1,3	-0,8	-1,0	2017

Source: EUROSTAT and Commission Services.

Table 4 - Participation rate, employment rate and share of workers for the age groups 55-64 and 65-74

	2016	2020	2030	2040	2050	2060	2070	Peak year
Labour force participation rate 55-64	53,4	59,0	69,9	71,3	71,8	72,5	73,1	2070
Employment rate for workers aged 55-64	50,3	55,9	66,9	68,5	69,2	69,8	70,4	2070
Share of workers aged 55-64 on the total labour force	94,3	94,7	95,8	96,1	96,3	96,3	96,4	2070
Labour force participation rate 65-74	6,9	9,9	18,5	21,3	23,5	28,5	30,7	2070
Employment rate for workers aged 65-74	6,7	9,7	18,2	21,0	23,1	28,1	30,2	2070
Share of workers aged 65-74 on the total labour force	98,2	97,8	98,1	98,3	98,5	98,6	98,6	2061
Median age of the labour force	43,0	44,0	46,0	45,0	45,0	46,0	45,0	2025

Table 5a - Labour market entry age, exit age and expected duration of life spent at retirement - Male

	2017	2020	2030	2040	2050	2060	2070	Peak year
Average effective exit age (CSM)	63,9	65,2	66,0	66,4	67,0	67,6	67,8	2069
Contributory period	37,2	37,2	36,0	36,0	35,5	37,7	38,7	2019
Duration of retirement **	20,0	19,5	19,6	20,5	20,4	20,3	21,1	2070
Duration of retirement/contributory period	0,5	0,5	0,5	0,6	0,6	0,5	0,5	2049
Percentage of adult life spent at retirement***	30,3	29,2	29,0	29,7	29,4	29,1	29,8	2017
Early/late exit****	3,9	2,3	1,7	2,9	3,5	3,8	3,4	2016

Source: Commission Services.

Table 5b - Labour market entry age, exit age and expected duration of life spent at retirement - Female

	2017	2020	2030	2040	2050	2060	2070	Peak year
Average effective exit age (CSM)	63,7	65,8	66,9	67,6	68,2	68,7	69,1	2069
Contributory period	31,7	33,6	33,8	33,8	34,1	37,1	37,7	2070
Duration of retirement **	23,5	22,0	22,0	22,0	22,7	22,6	23,3	2017
Duration of retirement/contributory period	0,7	0,7	0,7	0,7	0,7	0,6	0,6	2016
Percentage of adult life spent at retirement***	34,0	31,5	31,0	30,7	31,1	30,8	31,3	2017
Early/late exit****	7,7	2,8	1,5	2,4	2,1	2,2	2,4	2017

Source: Commission Services.

** Duration of retirement is calculated as the difference between the life expectancy at average effective exit age and the average effective exit age itself.

*** The percentage of adult life spent at retirement is calculated as the ratio between the duration of retirement and the life expectancy diminished by 18 years.

**** Early/late exit, in the specific year, is the ratio of those who retired and aged less than the statutory retirement age and those who retired and aged more than the statutory retirement age.

Table 6 - Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Eurostat total pension expenditure	14,0	14,3	15,5	15,5	15,5	16,1	16,5	16,5	16,5	16,1
Eurostat public pension expenditure [a]	13,8	14,2	15,3	15,3	15,4	15,9	16,4	16,3	16,3	15,9
Public pension expenditure (AWG) [b]	13,3	13,7	14,7	14,8	14,9	15,4	15,9	15,8	15,7	15,4
Difference [a] - [b]	0,5	0,5	0,6	0,5	0,5	0,5	0,5	0,5	0,6	0,5
Expenditure categories not considered in the AWG definition wrt Eurostat total pension expenditure:										
- 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	0,6	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	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	0,1	0,1

Source: EUROSTAT and Member States.

Table 7 - Projected gross and net pension spending and contributions (% of GDP)

	2016	2020	2030	2040	2050	2060	2070	Peak year
Expenditure								
Gross public pension expenditure	15.6	16.0	17.3	18.6	17.1	15.0	13.9	2040
Net public pension expenditure	12.7	13.0	14.1	15.1	13.9	12.2	11.3	2040
Contributions								
Public pension contributions	10.7	10.8	10.8	10.9	11.0	11.0	10.9	2053

Source: Commission Services.

Table 8 - Projected gross public pension spending by scheme (% of GDP)

Pension scheme	2016	2020	2030	2040	2050	2060	2070	Peak year
Total public pensions	15.6	16.0	17.3	18.6	17.1	15.0	13.9	2040
<i>of which:</i>								
- Old age and early pensions	12.7	13.1	14.2	15.5	14.2	12.5	11.8	2042
- Earnings related ⁽¹⁾	12.4	12.8	13.9	15.1	13.8	12.2	11.4	2042
- minimum pensions and minimum income guarantees ⁽²⁾	0.3	0.3	0.3	0.4	0.4	0.4	0.4	2049
- Disability pensions	0.4	0.4	0.4	0.4	0.3	0.3	0.3	2029
- Survivor's pensions	2.5	2.5	2.6	2.7	2.6	2.2	1.8	2040
<i>of which:</i>								
- private employees	8.9	9.1	9.8	11.4	11.7	11.0	10.1	2046
- old age, early and disability pension	7.3	7.4	8.2	9.7	10.0	9.5	8.8	2046
- other pensions (survivors)	1.6	1.7	1.6	1.7	1.7	1.6	1.3	2045
- public employees	4.1	4.3	4.7	4.4	3.0	2.0	2.0	2033
- old age, early and disability pension	3.5	3.8	4.2	3.8	2.5	1.7	1.8	2032
- other pensions (survivors)	0.5	0.5	0.6	0.6	0.5	0.3	0.2	2037
- self-employed	2.3	2.3	2.5	2.3	2.0	1.6	1.4	2032
- old age, early and disability pension	2.0	2.0	2.0	1.9	1.6	1.2	1.2	2028
- other pensions (survivors)	0.3	0.4	0.5	0.5	0.4	0.3	0.2	2035

Source: Commission Services and Member State.

(1) Includes disability pensions above the SRA.

(2) Old age allowance and additional sums.

Table 9.a - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - Pensions

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	0.40	1.26	1.27	-1.44	-2.11	-1.14	-1.76	-3.4%
Dependency ratio effect	0.91	3.62	4.72	1.56	-0.32	-0.21	10.29	18.6%
Coverage ratio effect	-0.57	-1.65	-1.28	-0.18	-0.17	-0.65	-4.51	-8.9%
- Coverage ratio old-age	-0.35	-1.02	-0.62	0.11	-0.12	-0.65	-2.64	-5.0%
- Coverage ratio early-age	-2.24	-4.34	-3.67	-3.72	-2.35	-0.86	-17.18	-35.7%
- Cohort effect	0.37	-2.22	-5.62	-1.89	0.99	0.05	-8.32	-16.2%
Benefit ratio effect	0.65	0.77	-1.21	-2.64	-1.48	-0.13	-4.04	-7.1%
Labour Market/Labour intensity effect	-0.53	-1.22	-0.64	-0.09	-0.17	-0.17	-2.82	-5.7%
- Employment ratio effect	-0.39	-0.68	-0.22	-0.15	0.02	-0.01	-1.43	-3.1%
- Labour intensity effect	0.01	0.01	0.00	0.00	-0.01	0.00	0.01	0.0%
- Career shift effect	-0.15	-0.56	-0.43	0.06	-0.18	-0.15	-1.41	-2.6%
Residual ⁽¹⁾	-0.05	-0.25	-0.32	-0.10	0.03	0.01	-0.68	-0.3%

Source: Commission Services.

(1) This residual is made by two components: the residual effect as defined in eq. [1] and the interaction effect.

Table 9.b - Factors behind the change in public pension expenditures between 2016 and 2070 (in percentage points of GDP) - Pensioners

	2016-20	2020-30	2030-40	2040-50	2050-60	2060-70	2016-70	Average annual change
Public pensions to GDP	0.40	1.26	1.27	-1.44	-2.11	-1.14	-1.76	-3.4%
Dependency ratio effect	0.91	3.62	4.72	1.56	-0.32	-0.21	10.29	18.6%
Coverage ratio effect	-0.59	-1.77	-1.08	-0.17	-0.24	-0.60	-4.45	-8.8%
- Coverage ratio old-age	-0.33	-1.04	-0.27	0.16	-0.18	-0.59	-2.25	-4.2%
- Coverage ratio early-age	-2.24	-4.25	-3.61	-3.49	-2.26	-0.84	-16.69	-34.6%
- Cohort effect	0.37	-2.22	-5.62	-1.89	0.99	0.05	-8.32	-16.2%
Benefit ratio effect	0.67	0.90	-1.41	-2.65	-1.42	-0.18	-4.08	-7.2%
Labour Market/Labour intensity effect	-0.53	-1.22	-0.64	-0.09	-0.17	-0.17	-2.82	-5.7%
- Employment ratio effect	-0.39	-0.68	-0.22	-0.15	0.02	-0.01	-1.43	-3.1%
- Labour intensity effect	0.01	0.01	0.00	0.00	-0.01	0.00	0.01	0.0%
- Career shift effect	-0.15	-0.56	-0.43	0.06	-0.18	-0.15	-1.41	-2.6%
Residual ⁽¹⁾	-0.06	-0.26	-0.32	-0.10	0.03	0.01	-0.69	-0.3%

Source: Commission Services.

(1) This residual is made by two components: the residual effect as defined in eq. [1] and the interaction effect.

Table 10.a - Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme old-age earnings related (in %) - Pensions

	2016	2020	2030	2040	2050	2060	2070
Public scheme (BR)	58.9	60.6	63.7	58.8	50.7	46.5	45.9
Public scheme (RR)	64.4	64.2	56.9	49.2	44.7	48.3	49.8
Coverage	100	100	100	100	100	100	100
Public scheme old-age earnings related (BR)	59.6	62.5	66.3	60.4	51.1	46.8	47.1
Public scheme old-age earnings related (RR)	64.4	64.2	56.9	49.2	44.7	48.3	49.8
Coverage	78.6	77.4	77.4	79.2	80.3	80.4	80.5
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual scheme (BR)	:	:	:	:	:	:	:
Private individual scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Total (BR)	58.9	60.6	63.7	58.8	50.7	46.5	45.9
Total (RR)	64.4	64.2	56.9	49.2	44.7	48.3	49.8

Table 10.b - Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme old-age earnings related (in %)

	2016	2020	2030	2040	2050	2060	2070
Average pension / average wage at retirement (RR) - new pensions	64.4	64.2	56.9	49.2	44.7	48.3	49.8
Average pension / average wage at retirement (RR) - new pensioners	71.1	71.0	60.1	51.9	46.9	50.5	52.0
Average pension / average-wide economy wage (RR) - new pensions	78.0	76.8	63.1	57.0	52.5	58.5	59.0
Average pension / average wage at retirement (BR) - pensioners	59.6	62.5	66.3	60.4	51.1	46.8	47.1
Coverage	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Member States.

Table 11 - System Dependency Ratio and Old-age Dependency Ratio

	2016	2020	2030	2040	2050	2060	2070
Number of pensioners (I) ('000)	15,088	15,212	15,952	17,568	17,864	16,753	15,306
Employment (II) ('000)	22,803	23,386	24,034	22,740	21,605	21,172	20,676
Pension System Dependency Ratio (SDR) (I)/(II)	66.2	65.0	66.4	77.3	82.7	79.1	74.0
Number of people aged 65+ (III) ('000)	13,456	14,101	16,543	19,387	19,894	18,928	18,027
Working age population 15-64 (IV) ('000)	39,049	38,719	36,796	33,493	31,842	31,008	29,904
Old-age Dependency Ratio (ODR) (III)/(IV)	34.5	36.4	45.0	57.9	62.5	61.0	60.3
System efficiency (SDR/ODR)	1.9	1.8	1.5	1.3	1.3	1.3	1.2

Source: Commission Services.

Table 12.a - Pensioners⁽¹⁾ (public schemes) to inactive population⁽²⁾ ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Total							
- Age group -54	2.4	2.5	2.2	1.8	1.6	1.5	1.3
- Age group 55-59	34.6	26.5	30.6	24.9	23.6	20.4	19.9
- Age group 60-64	69.1	69.3	59.2	49.9	39.0	34.8	31.3
- Age group 65-69	96.3	98.8	83.6	80.6	77.0	72.2	58.0
- Age group 70-74	98.7	93.9	96.3	96.1	93.8	97.3	91.1
- Age group 75+	96.5	96.6	97.8	97.0	96.5	96.6	97.2
- Age group 55-69	75.1	73.2	66.6	62.6	55.4	49.7	41.6
- Age group 70+	97.1	95.7	97.4	96.7	95.9	96.8	95.9
Without non resident pensioners in 2016							
- Age group -54	2.4	2.4	2.1	1.8	1.6	1.5	1.3
- Age group 55-59	34.3	26.3	30.5	24.8	23.6	20.4	19.9
- Age group 60-64	68.6	69.0	59.1	49.8	39.0	34.8	31.3
- Age group 65-69	94.1	97.5	83.5	80.5	77.0	72.2	58.0
- Age group 70-74	95.6	91.5	95.9	96.0	93.8	97.3	91.1
- Age group 75+	93.7	92.6	94.6	95.7	95.9	96.1	96.6
- Age group 55-69	73.8	72.4	66.4	62.5	55.3	49.7	41.6
- Age group 70+	94.2	92.3	95.0	95.8	95.4	96.4	95.5
- Net elderly immigrants 70+ ⁽³⁾	0.0	0.1	0.4	0.7	0.7	0.8	0.7

Source: Commission Services.

(1) Value at the end of the year.

(2) Average annual value.

(3) Cumulated net flows of immigrants above 60 as a share of inactive population 70+.

Table 12.b - Pensioners⁽¹⁾ (public schemes) to population⁽²⁾ ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Total							
- Age group -54	1.1	1.1	1.0	0.8	0.8	0.7	0.7
- Age group 55-59	11.7	8.1	7.2	6.4	6.0	5.1	5.0
- Age group 60-64	42.2	36.9	21.7	15.6	12.0	10.4	9.0
- Age group 65-69	87.3	82.0	58.8	51.6	45.7	39.0	29.6
- Age group 70-74	95.1	91.5	91.5	90.0	86.7	87.0	80.7
- Age group 75+	96.5	96.6	97.8	97.0	96.5	96.6	97.2
- Age group 55-69	45.5	38.9	28.5	26.1	21.4	18.0	14.5
- Age group 70+	96.1	94.9	95.9	94.9	94.2	94.6	93.4
Without non resident pensioners in 2016							
- Age group -54	1.1	1.1	1.0	0.8	0.8	0.7	0.7
- Age group 55-59	11.6	8.0	7.1	6.4	6.0	5.1	5.0
- Age group 60-64	42.0	36.8	21.7	15.5	12.0	10.4	9.0
- Age group 65-69	85.3	80.9	58.7	51.6	45.7	39.0	29.6
- Age group 70-74	92.0	89.1	91.1	89.9	86.7	87.0	80.7
- Age group 75+	93.7	92.6	94.6	95.7	95.9	96.1	96.6
- Age group 55-69	44.7	38.5	28.5	26.1	21.4	18.0	14.5
- Age group 70+	93.2	91.5	93.5	94.0	93.7	94.2	93.0
- Net elderly immigrants 70+ ⁽³⁾	0.0	0.2	0.6	0.8	0.8	0.9	0.8

Source: Commission Services.

(1) Value at the end of the year.

(2) Average annual value.

(3) Cumulated net flows of immigrants above 60 as a share of inactive population 70+.

Table 13.a - Female pensioners⁽¹⁾ (public schemes) to inactive population⁽²⁾ ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Total							
- Age group -54	2.6	2.6	2.3	1.7	1.5	1.4	1.2
- Age group 55-59	22.0	19.3	24.6	21.1	19.1	15.9	15.4
- Age group 60-64	50.2	45.6	44.5	37.7	30.0	26.3	23.4
- Age group 65-69	85.3	82.5	70.0	68.1	60.8	55.1	44.5
- Age group 70-74	92.4	87.7	87.0	89.5	88.1	89.6	82.9
- Age group 75+	95.1	95.0	95.7	94.2	94.3	95.4	95.9
- Age group 55-69	58.6	54.2	52.5	50.4	42.4	36.8	30.9
- Age group 70+	94.3	92.9	93.3	93.0	93.0	94.3	93.4
Without non resident pensioners in 2016							
- Age group -54	2.5	2.6	2.3	1.7	1.5	1.4	1.2
- Age group 55-59	21.7	19.1	24.5	21.0	19.1	15.9	15.4
- Age group 60-64	49.7	45.3	44.4	37.6	30.0	26.3	23.4
- Age group 65-69	83.9	81.8	69.9	68.0	60.8	55.1	44.5
- Age group 70-74	90.6	86.1	86.8	89.4	88.1	89.6	82.9
- Age group 75+	91.7	92.0	94.1	93.7	94.2	95.3	95.9
- Age group 55-69	57.8	53.7	52.3	50.3	42.4	36.8	30.9
- Age group 70+	91.4	90.3	92.1	92.6	92.9	94.3	93.4
- Net elderly immigrants 70+ ⁽³⁾	0.0	0.1	0.4	0.7	0.8	0.8	0.8

Source: Commission Services.

(1) Value at the end of the year.

(2) Average annual value.

(3) Cumulated net flows of immigrants above 60 as a share of inactive population 70+.

Table 13.b - Female pensioners⁽¹⁾ (public schemes) to population⁽²⁾ ratio by age group (%)

	2016	2020	2030	2040	2050	2060	2070
Total							
- Age group -54	1.4	1.4	1.2	0.9	0.8	0.8	0.7
- Age group 55-59	10.3	8.0	7.8	6.9	6.1	5.1	4.9
- Age group 60-64	35.7	29.0	19.0	13.7	10.8	9.2	7.9
- Age group 65-69	80.7	72.6	51.3	44.9	37.5	31.4	23.8
- Age group 70-74	91.0	86.2	83.3	83.7	80.8	80.0	73.6
- Age group 75+	95.1	95.0	95.7	94.2	94.3	95.4	95.9
- Age group 55-69	41.0	33.8	25.6	23.3	18.5	15.2	12.2
- Age group 70+	94.0	92.4	92.2	91.2	91.3	92.3	91.2
Without non resident pensioners in 2016							
- Age group -54	1.4	1.4	1.2	0.9	0.8	0.8	0.7
- Age group 55-59	10.1	8.0	7.7	6.9	6.1	5.0	4.9
- Age group 60-64	35.4	28.8	19.0	13.6	10.8	9.2	7.8
- Age group 65-69	79.3	71.9	51.2	44.9	37.5	31.4	23.8
- Age group 70-74	89.2	84.6	83.2	83.6	80.8	80.0	73.6
- Age group 75+	91.7	92.0	94.1	93.7	94.2	95.3	95.9
- Age group 55-69	40.4	33.5	25.5	23.3	18.5	15.2	12.2
- Age group 70+	91.0	89.8	91.0	90.9	91.2	92.3	91.2
- Net elderly immigrants 70+ ⁽³⁾	0.0	0.2	0.6	0.9	0.9	0.9	0.9

Source: Commission Services.

(1) Value at the end of the year.

(2) Average annual value.

(3) Cumulated net flows of immigrants above 60 as a share of inactive population 70+.

Table 14.a - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Total

	2016	2020	2030	2040	2050	2060	2070
Projected new pension expenditure (millions EUR)	6,905	10,247	17,182	20,587	21,631	35,188	45,431
I. Number of new pensions ('000)	312.0	438.3	710.5	708.5	566.9	578.9	528.4
II. Average contributory period	34.7	35.7	35.0	35.1	34.9	37.4	38.3
III. Average accrual rates (%)	1.93	1.83	1.70	1.67	1.67	1.67	1.65
IV. Monthly average pensionable earnings ('000 EUR)	2,542	2,753	3,126	3,813	5,026	7,475	10,485
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings/Monthly economy-wide average wage	103.8%	105.1%	95.4%	87.1%	80.9%	84.3%	83.2%

Source: Commission Services.

Table 14.b - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Male

	2016	2020	2030	2040	2050	2060	2070
Projected new pension expenditure (millions EUR)	5,192	6,779	10,490	12,671	13,096	21,427	27,803
I. Number of new pensions ('000)	221.0	264.0	395.9	399.1	315.9	325.6	303.5
II. Average contributory period	36.2	37.2	36.0	36.0	35.5	37.7	38.7
III. Average accrual rates (%)	1.92	1.80	1.66	1.62	1.63	1.63	1.60
IV. Monthly average pensionable earnings ('000 EUR)	2,606	2,951	3,405	4,172	5,521	8,236	11,356
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings/Monthly economy-wide average wage	106.4%	112.7%	103.9%	95.3%	88.9%	92.9%	90.1%

Source: Commission Services.

Table 14.c - Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions) - Female

	2016	2020	2030	2040	2050	2060	2070
Projected new pension expenditure (millions EUR)	1,713	3,468	6,692	7,915	8,535	13,761	17,628
I. Number of new pensions ('000)	91.0	174.3	314.6	309.4	251.0	253.2	224.8
II. Average contributory period	31.1	33.6	33.8	33.8	34.1	37.1	37.7
III. Average accrual rates (%)	1.95	1.86	1.75	1.74	1.74	1.73	1.72
IV. Monthly average pensionable earnings ('000 EUR)	2,387	2,452	2,774	3,349	4,402	6,496	9,310
V. Sustainability/Adjustment factor	:	:	:	:	:	:	:
VI. Average number of months paid the first year	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Monthly average pensionable earnings/Monthly economy-wide average wage	97.5%	93.6%	84.7%	76.5%	70.9%	73.3%	73.8%

Source: Commission Services.

Table 15 - Financing of the system

	Public employees ⁽¹⁾	Private employees	Self-employed ⁽²⁾
Contribution base	114,704	363,952	146,429
Contribution rate/contribution in 2016	33.0%	33.0%	23.1%
<i>Employer</i>	24.2%	23.8%	
<i>Employee</i>	8.8%	9.2%	23.1%
<i>State</i>			
<i>Other revenues</i>			
Maximum contribution ⁽³⁾⁽⁴⁾	33,107	33,107	23,175
Minimum contribution ⁽⁴⁾	3,445	3,445	3,592

(1) For local bodies, the contribution rate is 32.65% of which 23.8% is paid by the employer and 8.85% is paid by the employee.

(2) Gradually increasing from around 23.1% in 2016 to 24% in 2018.

(3) Estimates based on maximum and minimum contribution base.

(4) Values only refer to the new entrants after 1995.

Table 16 - Revenue from contribution (million), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2016	2020	2030	2040	2050	2060	2070
Public contribution	178,913	195,359	249,824	319,031	434,497	606,688	838,430
<i>Employer contribution</i>	109,920	119,640	153,885	196,622	268,535	374,195	517,693
<i>Employee contribution</i>	68,993	75,719	95,939	122,409	165,962	232,494	320,736
<i>State contribution⁽¹⁾</i>	:	:	:	:	:	:	:
Number of contributors (I)	23,397	23,875	24,436	23,301	22,279	21,757	21,142
Employment (II)	22,803	23,386	24,034	22,740	21,605	21,172	20,676
Ratio of (I)/(II)	102.6	102.1	101.7	102.5	103.1	102.8	102.3

Source: Commission Services.

(1) Contributions paid by the State as "employer" are included in "employer contribution". The quota of public pension expenditure not covered by contribution is charged on public finances.

Table 17 - Public and total pension expenditures under different scenarios (deviation from the baseline)

	2016	2020	2030	2040	2050	2060	2070
Baseline	15.6	16.0	17.3	18.6	17.1	15.0	13.9
Higher life expectancy (2 extra years)	0.0	-0.1	-0.2	-0.2	0.1	0.1	0.1
Higher Total Factor Productivity Growth (+0.4 pp.)	0.0	0.0	0.0	-0.5	-1.1	-1.3	-1.2
Lower Total Factor Productivity Growth (-0.4 pp.)	0.0	0.0	0.0	0.6	1.3	1.5	1.4
Higher emp. Rate (+2 pp.)	0.0	-0.1	-0.4	-0.3	-0.3	-0.1	0.0
Lower emp. Rate (-2 pp.)	0.0	0.1	0.4	0.3	0.3	0.2	0.0
Higher emp. of older workers (+10 pp.)	0.0	-0.5	-1.9	-0.9	-0.1	0.1	0.3
Higher migration (+33%)	0.0	-0.1	-0.3	-0.6	-0.7	-0.6	-0.4
Lower migration (-33%)	0.0	0.1	0.3	0.6	0.8	0.8	0.5
Lower fertility	0.0	0.0	0.0	0.2	0.6	0.9	1.2
Risk scenario	0.0	0.0	0.1	0.3	0.6	0.7	0.7
Policy scenario: linking retirement age to increases in life expectancy	:	:	:	:	:	:	:

Source: Commission Services.

Table 18 - Expenditure to GDP

	2020	2025	2030	2040	2050	2060	2070
Baseline scenario [a]	16.0	16.5	17.3	18.6	17.1	15.0	13.9
Adverse Scenario [b]	16.0	17.1	18.1	19.1	17.0	15.1	13.9
[b]-[a]	0.0	0.5	0.8	0.5	-0.1	0.1	0.0

Source: Commission Service.

Table 19 - Average annual change in public pension expenditure to GDP during the projected period under the 2006, 2009, 2012, 2015 and 2018 projection exercises

	Public pension to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. interaction effect)
2006 *	0.41	11.54	-3.17	-1.99	-5.29	:	-0.69
2009 **	-0.41	10.40	-3.22	-1.14	-5.47	:	-0.98
2012 ***	-0.90	9.55	-5.55	-1.31	-2.03	0.03	-1.58
2015 ****	-1.93	8.05	-5.16	-1.43	-1.95	0.06	-1.51
2018 AR*****	-1.75	10.25	-4.54	-1.42	-3.96	0.00	-2.10
2018 New Baseline*****	-1.76	10.29	-4.51	-1.43	-4.04	0.01	-2.09

Source: Commission services.

* 2004-2050; ** 2007-2060; *** 2010-2060; **** 2013-2060;***** 2016-2070.

Explanatory note: The Table presents the average annual change of pension expenditure and the contributions of the underlying component to that change, whereas Table shows, for different intervals of time, the decomposition, in percentage points, of the factors behind the change in public pension expenditures. * 2004 - 2050, ** 2007 - 2060, *** 2010 - 2060, **** 2013 - 2060. ***** 2016 - 2070. Please note that the four components do not add up because of a residual component.

Table 20.a - Decomposition of the difference between 2018 and the new public pension projection (% of GDP)

	2010	2016	2020	2030	2040	2050	2060	2070
Ageing report 2018	14.8	15.6	15.6	17.2	18.7	17.3	15.1	13.9
- Change in assumptions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Improvement in the coverage or in the modelling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Change in the interpretation of constat policy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Policy related changes	0.0	0.0	0.4	0.0	-0.1	-0.2	-0.1	0.0
New projection	14.8	15.6	16.0	17.3	18.6	17.1	15.0	13.9

Source. Member State.

Table 20.b - Decomposition of the difference between 2015 and the new public pension projection (% of GDP)

	2010	2016	2020	2030	2040	2050	2060
Ageing report 2015	14.8	15.6	15.3	15.7	15.8	14.8	13.8
- Change in assumptions	0.0	0.0	0.2	1.4	2.8	2.3	1.2
- Improvement in the coverage or in the modelling	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Change in the interpretation of constat policy	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Policy related changes	0.0	0.0	0.5	0.2	0.0	-0.1	0.0
New projection	14.8	15.6	16.0	17.3	18.6	17.1	15.0

Source. Member State.

Table 21 - Private component of the Italian pension system - Time series 2000-2016

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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
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
- pensions	602	637	733	736	735	698	918	905	900	892	890	878	897	889	886	856	748
- 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
Non-mandatory private pensions	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
Non-mandatory occupational pensions ⁽¹⁾⁽²⁾	108	121	123	114	111	111	143	133	133	132	130	131	130	130	133	130	118
Non-mandatory private pensions	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
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
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
Number of contributors (thousands)	1,692	2,160	2,396	2,587	2,740	2,963	3,184	4,560	4,854	5,055	5,273	5,537	5,829	6,204	6,540	7,227	7,787
Non-mandatory occupational pensions ⁽¹⁾	1,692	1,959	2,038	2,078	2,112	2,219	2,304	3,424	3,536	3,570	3,569	3,577	3,580	3,627	3,687	4,251	4,547
Non-mandatory private pensions	0	201	357	509	628	744	880	1,136	1,314	1,485	1,703	1,960	2,249	2,577	2,853	2,976	3,240
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
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
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

Source: Covip (2000-2016), 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.

Figure 1: Age pyramid comparison: 2013 vs 2070

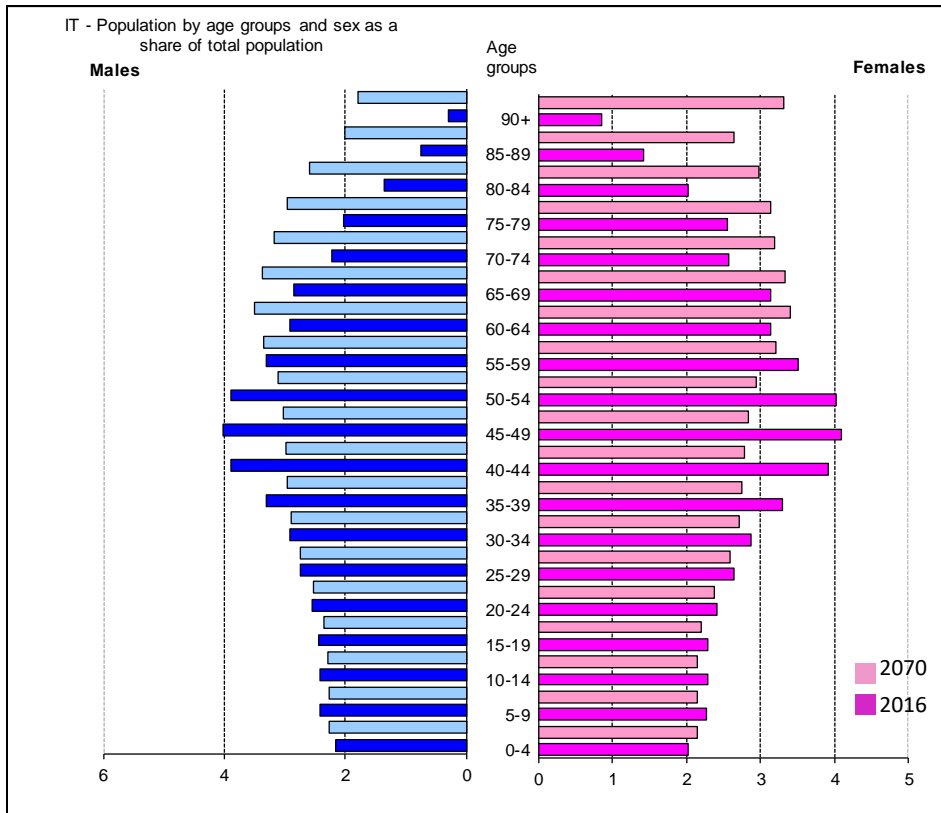
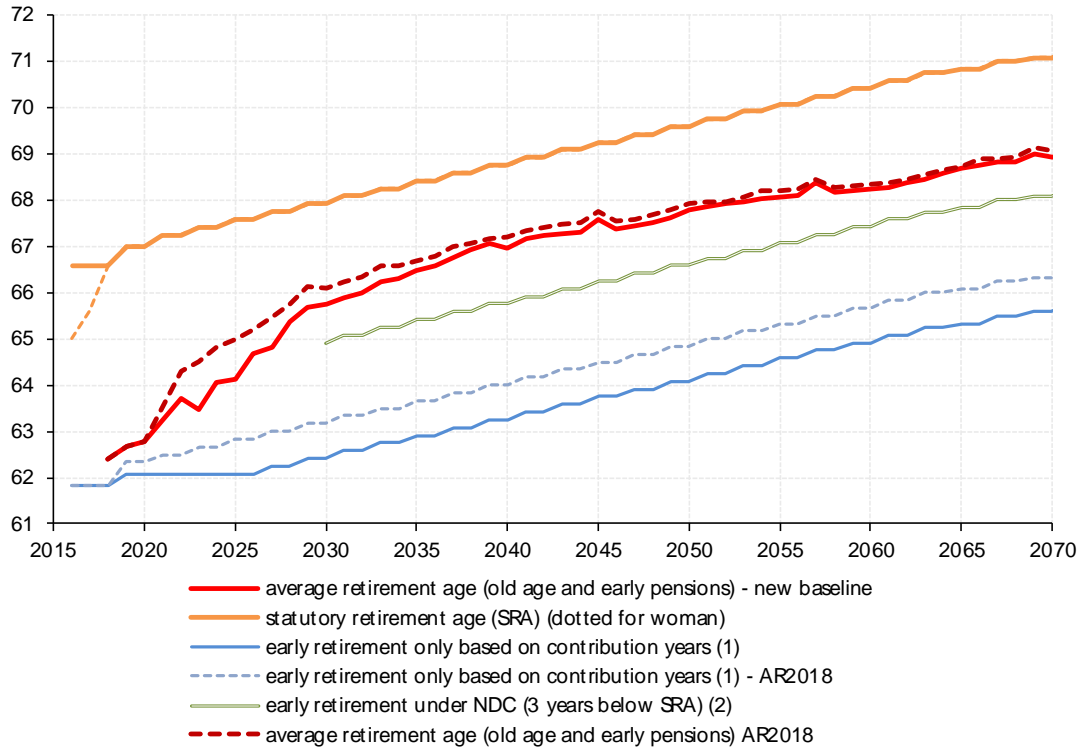


Figure 2: Eligibility requirements and average retirement age



(1) The 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 the younger cohorts of workers enter the labour market, in the long run the contribution requirement will be achieved at much older ages.

(2) Though currently in force, it actually becomes effective around 2030.

Figure 3: interventions adopted since January 2019 with law 26/ 2019 – Financial effects on pension expenditure in pp of GDP (+ costs; - savings)

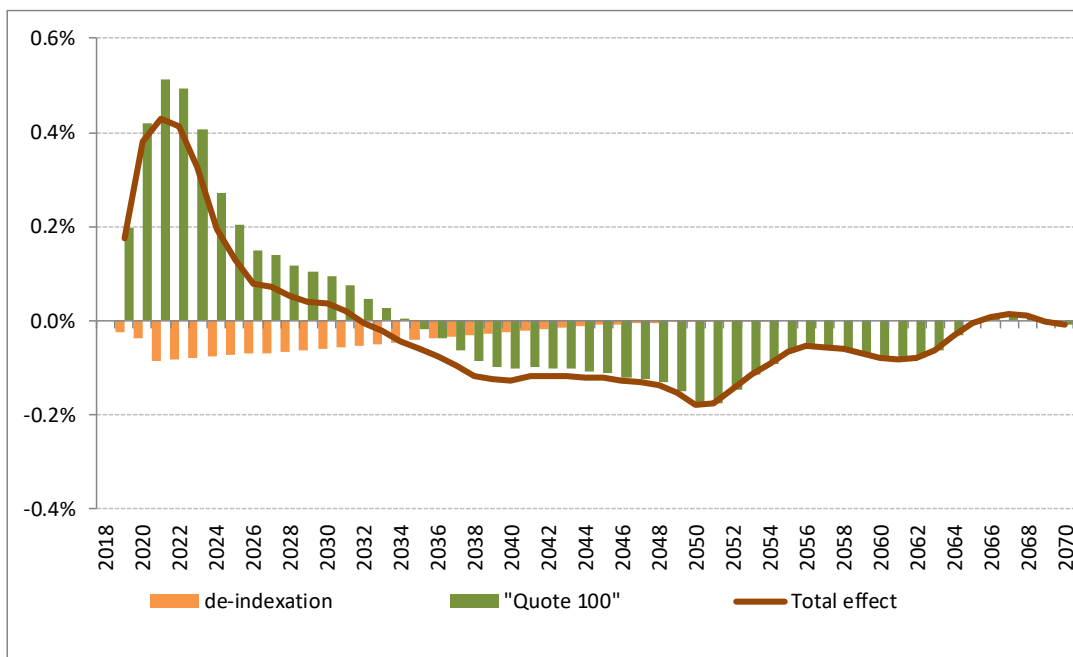


Figure 4: pension expenditures percentage of GDP and its decomposition - AWG 2018 Baseline projection

Figure 4.a: percentage ratio of expenditure to GDP

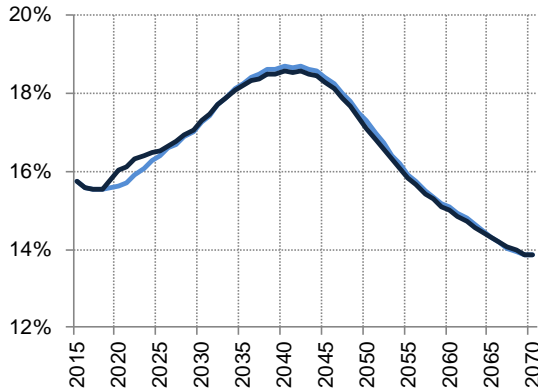


Figure 4.d: percentage ratio of pensions to people of 70+

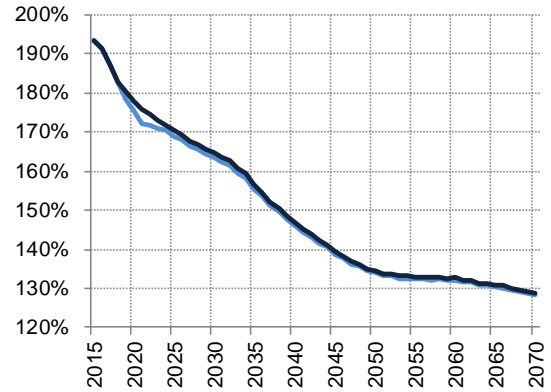


Figure 4.b: percentage ratio of average pension to productivity

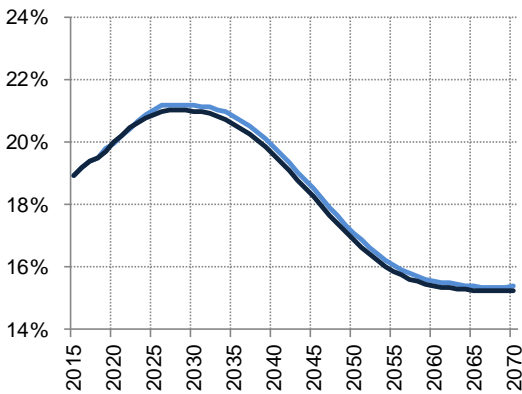


Figure 4.e: percentage ratio of employees to population [20-69]

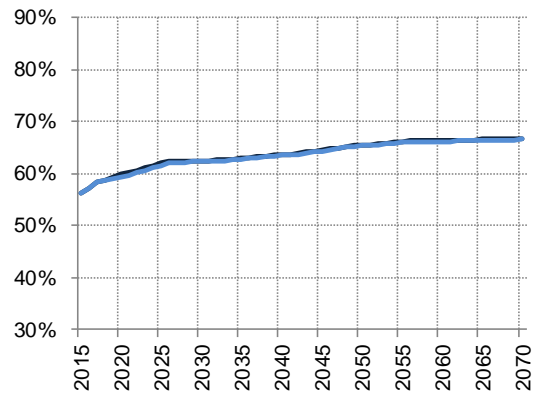


Figure 4.c: percentage ratio of pensions to employees

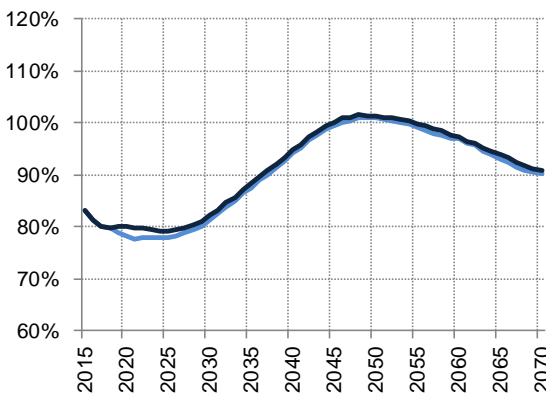
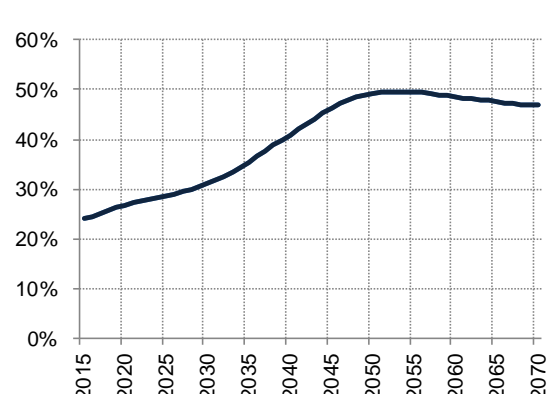


Figure 4.f: percentage ratio of people of 70+ to population [20-69]



— AR 2018 — New baseline

Figure 5: new old age, early pensions and disability by schemes

Figure 5.a: old age and early pensions

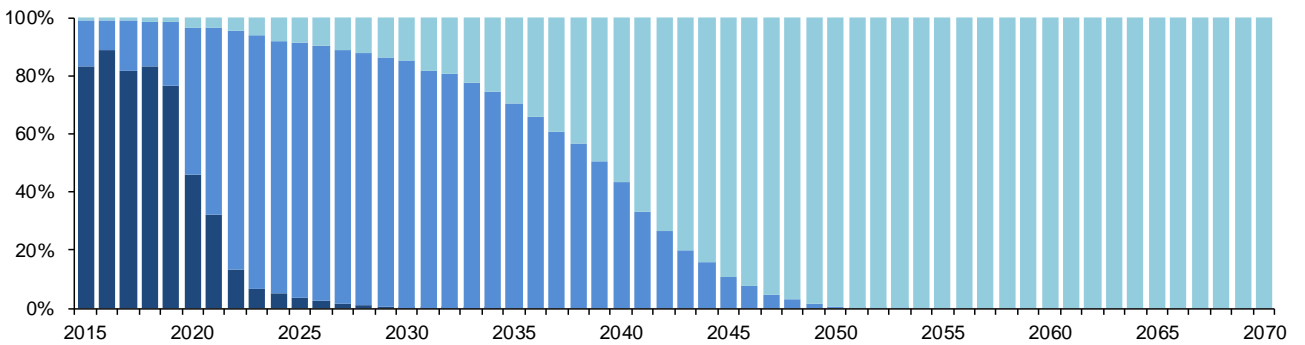


Figure 5.b: disability pensions

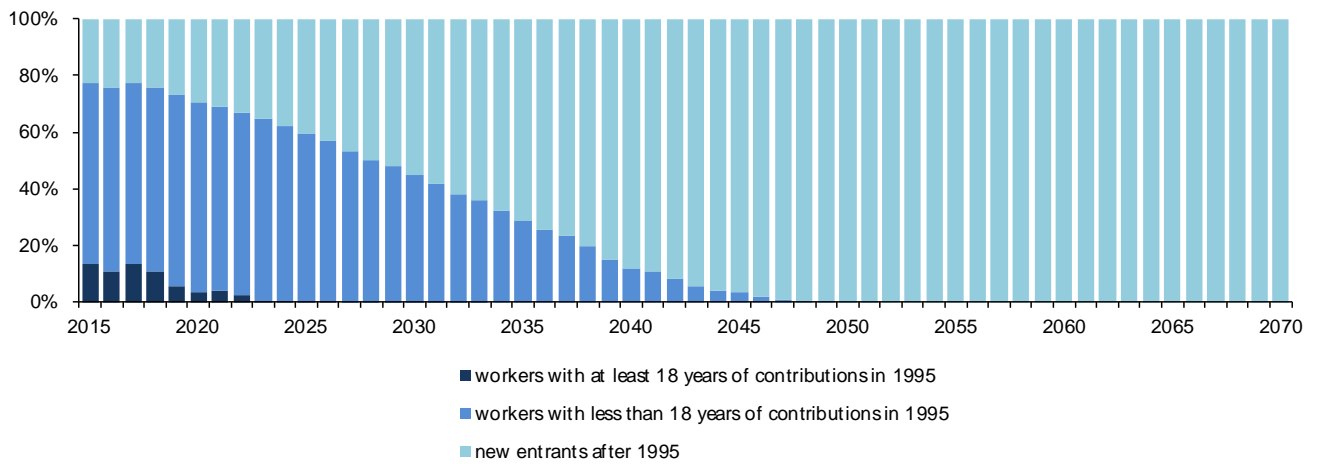


Figure 6: benefit ratio and replacement rate expressed in terms of economy wide average wage

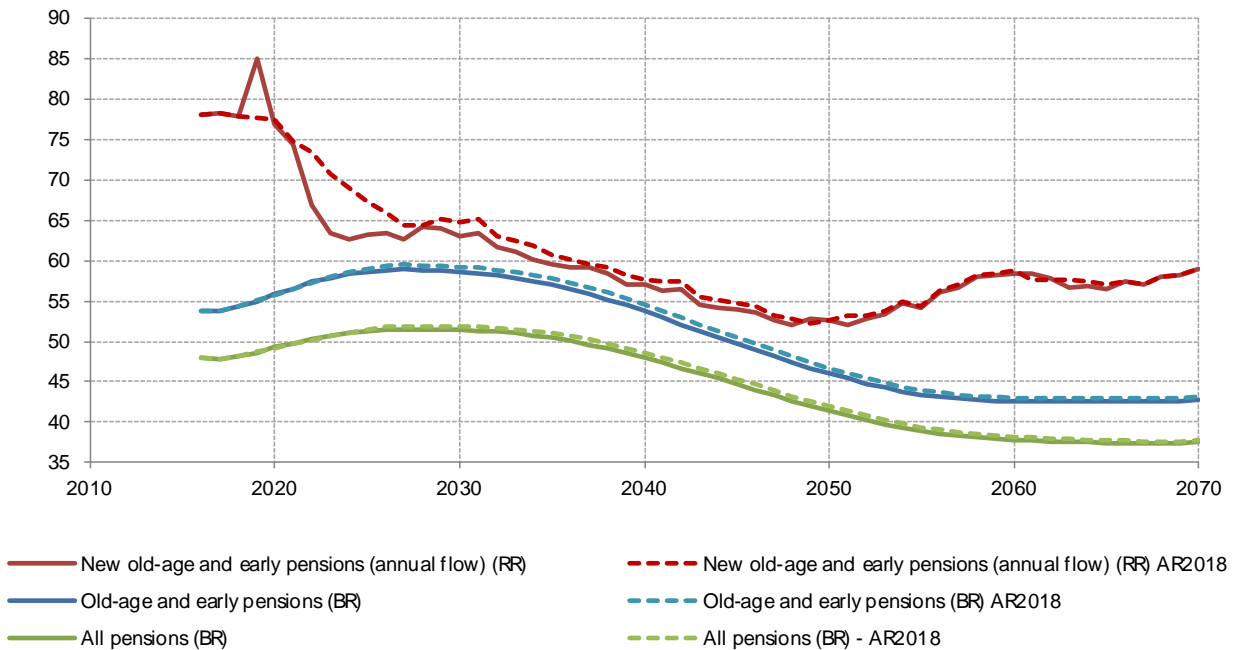


Figure 7: update of transformation coefficients and mean value at the average retirement age

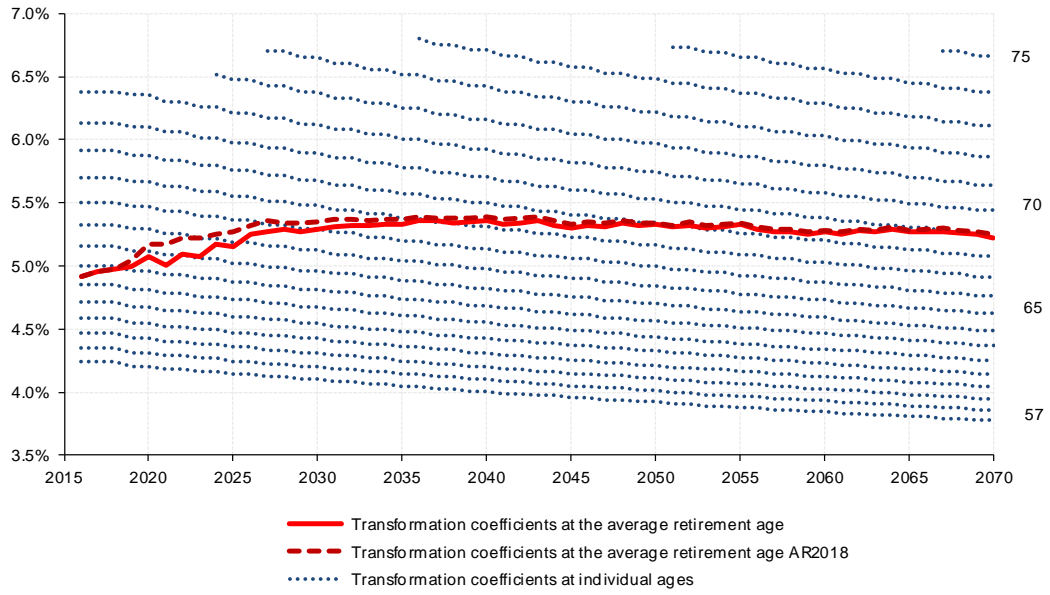


Figure 8: average contribution period

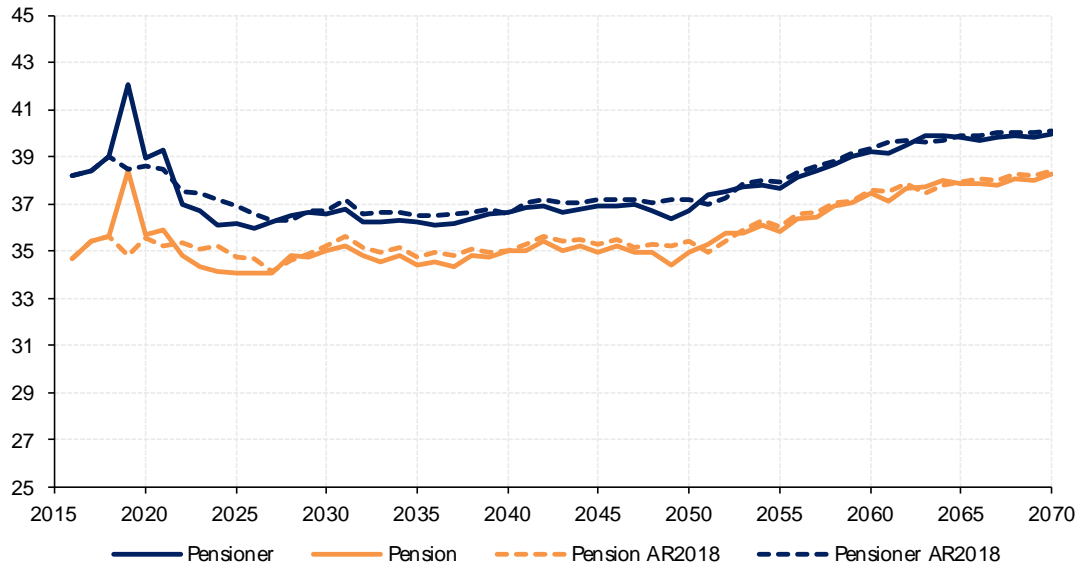


Figure 9: Sensitivity analysis

Figure 9.a: pension expenditure as percentage of GDP - Comparison with the baseline scenario

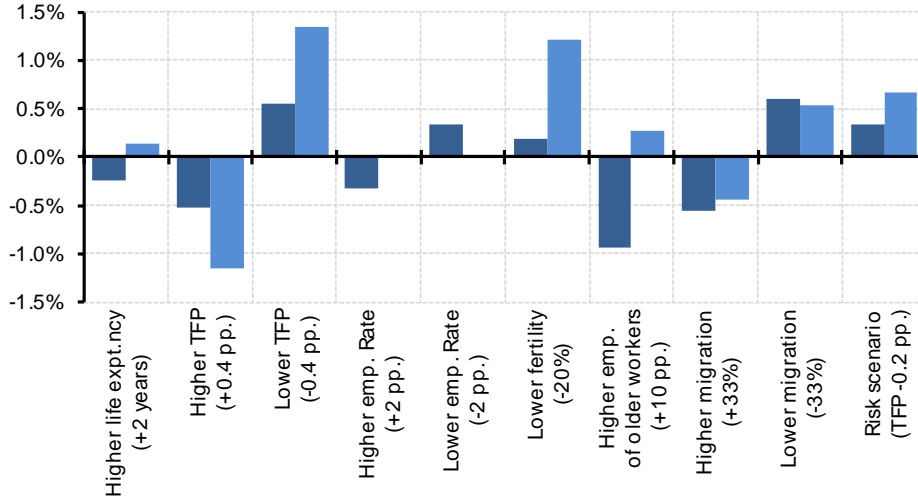
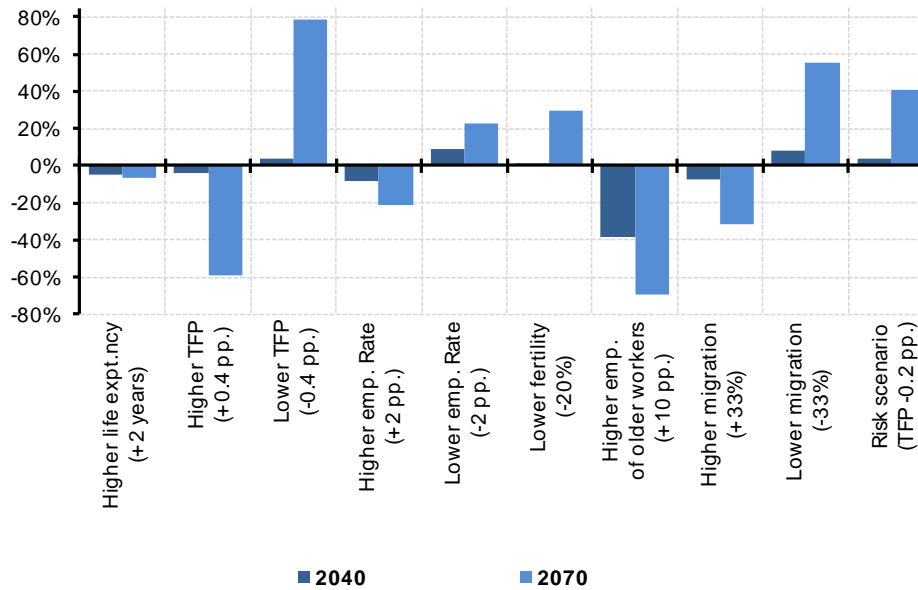


Figure 9.b: differential cumulative effect on debt - Comparison with the baseline scenario



(1) Parameter variations are calculated starting from 2014.

Figure 10: pension expenditures percentage of GDP and its decomposition - baseline scenario vs adverse scenario

Figure 10.a: percentage ratio of expenditure to GDP

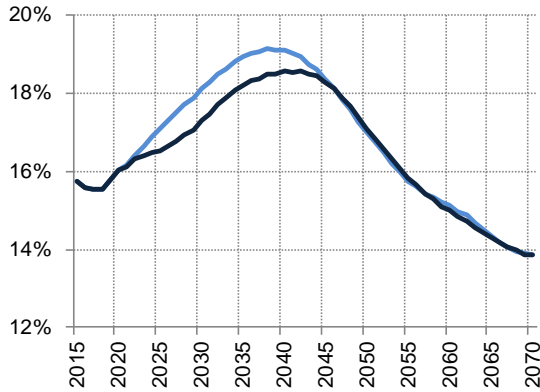


Figure 10.d: percentage ratio of pensions to people of 70+

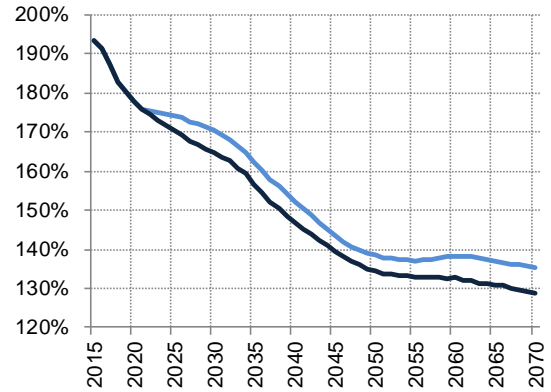


Figure 10.b: percentage ratio of average pension to productivity

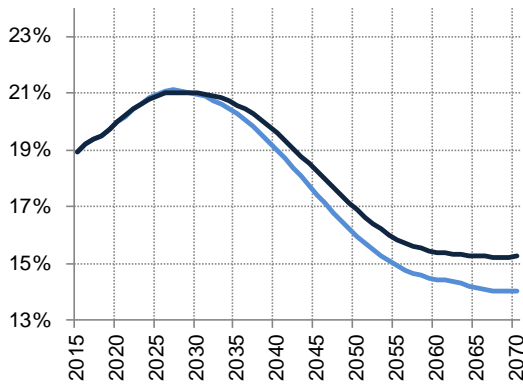


Figure 10.e: percentage ratio of employees to population [20-69]

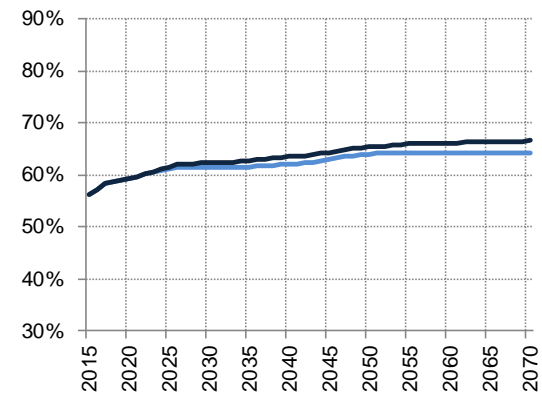


Figure 10.c: percentage ratio of pensions to employees

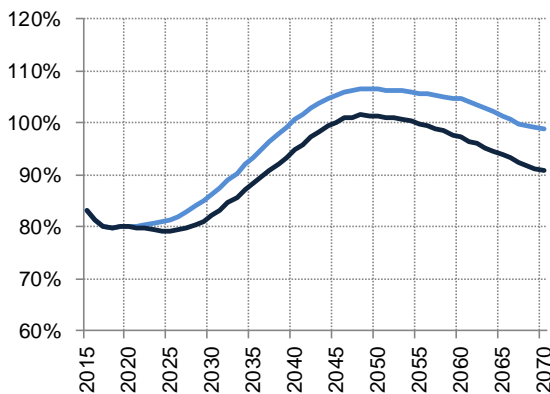
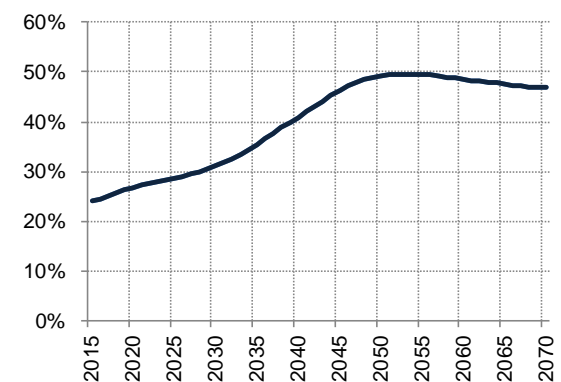


Figure 10.f: percentage ratio of people of 70+ to population [20-69]



— adverse scenario — baseline

Figure 11: Pension Expenditure to GDP ratio - Comparison between Ageing Report 2018 e Ageing Report 2018 post L 26/ 2019

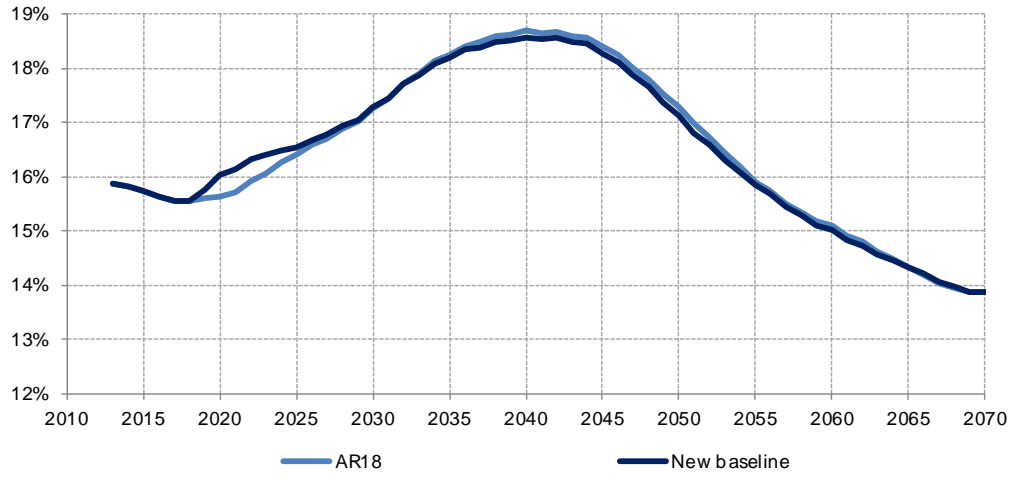
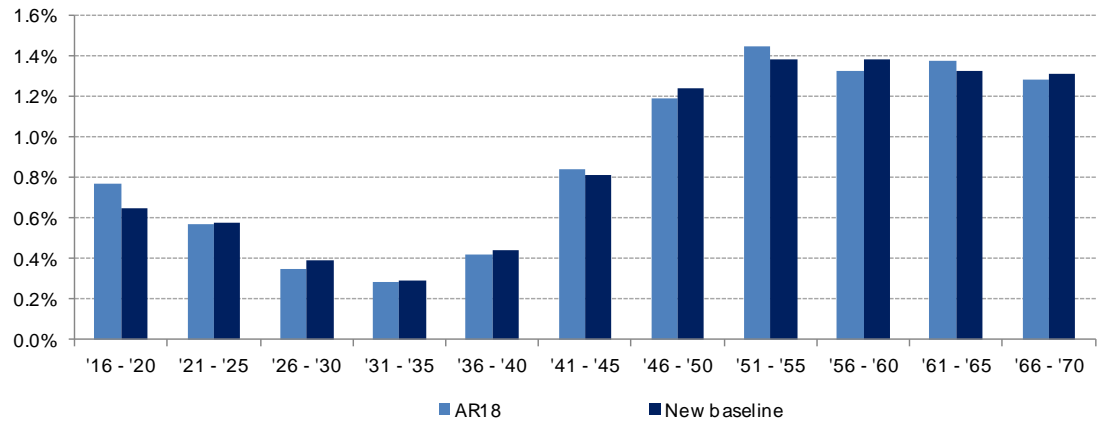


Figure 12: GDP growth rates - Average of the period



ANNEX 1 – Regulatory framework

The annex includes:

- a summary table describing the calculation rules under the DB, mixed and NDC regimes (Table A1.1);
- a summary table describing the eligibility requirements under the DB, mixed and NDB regimes (Table A1.2 and Table A1.3);
- a summary table reporting the evolution of the minimum eligibility requirements for old-age and early pensions, by 5-year step (Table A1.4);
- the formula and assumptions for the calculation of the transformation coefficients;
- transformation coefficients in force for the two-year period 2019-2021 (Table A1.5).

Table A1.1 - Public pension system: calculation rules

	Earnings-related scheme (DB) Workers with at least 18 years of contribution at the end of 1995, limited to pensions awarded until 31st December 2011	Mixed scheme Workers with less than 18 years of contribution at the end of 1995, and workers with at least 18 years of contribution limited to pensions awarded as of 1st January 2012	Contribution-based scheme (NDC) New entrants into the system as of 1st January 1996
Old age, early retirement and disability pensions⁽¹⁾	<p>Pension (P) is calculated according to the following formula:</p> $P = 2\% (C_1 W_1 + C_2 W_2)$ <p>w here: W_1 and W_2 = reference wage C_1 e C_2 = years of contribution</p> <p>a) for contribution before 1992 (C_1), W_1 is the last monthly wage for public employees and the average of the last 5 or 10 years, for private employees and the self-employed, respectively⁽²⁾.</p> <p>b) for contribution after 1992 (C_2), W_2 is the average of the last 10 years for private and public employees⁽³⁾ and 15 years for the self-employed (starting from 2002)⁽⁴⁾.</p> <p>The accrual rate for each year of contribution is 2% up to a fixed threshold of the reference wage⁽⁵⁾. Beyond this limit, such a percentage decreases to 1% in the case of W_1 and to 0.9% in the case of W_2.</p>	<p>Pension (P) is obtained as a sum of two components:</p> $P = PA + PB$ <p>The former (PA) is calculated by using the earning-related method while the latter (PB) the NDC method. In particular:</p> $PA = 2\% (C_1 W_1 + C_2 W_2)$ <p>w here: W_1 and W_2 = reference wage C_1 e C_2 = years of contribution before 1995</p> <p>a) for contribution before 1992 (C_1), W_1 is last monthly wage for public employees and the average of the last 5 or 10 years, respectively, for private employees and the self-employed⁽²⁾.</p> <p>b) for contribution between 1993-1995 (C_2), W_2 is the average wage of a number of last years progressively increasing⁽⁴⁾.</p> <p>The accrual rate for each year of contribution is 2% up to a fixed threshold of the reference wage⁽⁵⁾. Beyond this limit, such a percentage decreases to 1% in the case of W_1 and to 0.9% in the case of W_2.</p> $PB = ct M$ <p>(for explanation, see the box on the right hand side).</p>	<p>Pension (P) is calculated according to the following formula:</p> $P = ct M$ <p>w here: ct is the tranformation coefficient and M the life-long contributions capitalized with the growth rate of nominal GDP.</p> <p>Transformation coefficients in force in the period 2010-2012 ranged from 4.42% at the age of 57 to 5.62% at age of 65 (above 65 they are set equal to that of 65) .</p> <p>They are subject to a three-year revision (two-year revision as of 2021) to take account of changes in life expectancy, according to a procedure falling entirely under the administrative sphere of competence.</p> <p>As of 2013, they are extended to the age of 70⁽⁶⁾, and then further in line with the increase in the eligibility requirements linked to changes in life expectancy.</p> <p>Transformation coefficients in force in the period 2013-2015 ranged from 4.30% at the age of 57 to 5.43% at age of 65 (up to a maximum of 6.54% at age of 70). Those currently in force (years 2016-2018) ranges from 4.25% at the age of 57 to 5.33% at age of 65 (up to a maximum of 6.38% at age of 70)</p> <p>Under 57 the transformation coefficients are set equal to that of 57.</p> <p>The contribution rate is 33% for private and public employees, 20% for the self-employed in 2011, gradually increased to 24% in 2018. For atypical workers the contribution rate was 27% in 2012 and 2013, gradually increased to 33% in 2018.</p>
Survivors' pensions⁽⁸⁾	<p>60% of the pension calculated as above, if a survivor is a widow or widower of an employee; 60% of the deceased's pension, if a survivor is a widow or widower of a pensioner.</p> <p>Such a percentage is reduced by 25%, 40% or 50% if the survivor total income exceeds, respectively, 3, 4 or 5 times the minimum pension.</p>	as before	as before

(1) Disability pensions include the 'assegno ordinario di invalidità' and the 'pensione di inabilità'. As for the latter, extra contributions are generally accrued (up to the maximum that beneficiaries would have reached if they had continued to work).

(2) Wages involved in the calculation of the reference wage are indexed to prices.

(3) For the public employees, starting from 2008.

(4) Wages involved in the calculation of the reference wage are indexed to prices, plus 1%.

(5) This threshold is 46,123 euros in 2017.

(6) Indexation of age requirements is foreseen every three years from 2013 to 2019 and every two years from 2021. The 2013 and 2016 indexation of the eligibility requirements were adopted by a directorial decree of the Ministry of Economy and Finance of 14th December 2011 and 16th December 2014, respectively. The next update, which comes into force as of 1st January 2019, will be finalized by the end of 2017.

(7) The threshold is 100,324 euros in 2017.

(8) In the case of a surviving spouse with one or two children, the percentage of 60% is increased to 80% and 100%, respectively. Such a percentage is arranged differently when there are only surviving children.

Table A1.2 - Public pension system: eligibility requirements - DB and Mixed schemes

		Earnings-related (DB) and mixed schemes (DB and NDC) - Workers already insured at the end of 1995			
		2004 - 2007	Starting from 2008 (Law 243/2004 and Law 247/2007)	Starting from 2012 (Law 214/2011)	Transient changes 2019-2021 (Law 26/2019)
Old age retirement Statutory Retirement Age (SRA) ⁽¹⁾	Private/public sector employees and self employed	65 years for men, 60 years for women and 20 years of contribution for both genders	as before ⁽⁶⁾	In 2012, SRA is 66 for men and women in the public sector, 62 for women in the private sector. In all cases, 20 years of contributions are also required From 2012 to 2018, SRA of women in the private sector is gradually aligned to that of other workers From 2013, SRA is indexed to changes in life expectancy ⁽⁷⁾ .	as before
	Early retirement	Private sector employees Public sector employees Self employed	35 years of contribution and 57 years of age ⁽²⁾ or, alternatively, 38 years of contribution, in the period 2004 - 2005, and 39 in the period 2006 - 2007 ⁽³⁾ 40 years of contribution regardless of age or, alternatively, 35 years of contribution and 58 years of age until 30/06/2009, 60 from 1/07/2009 to 2010 and 61 in 2011 ⁽⁶⁾ . Starting from July 2009, workers are allowed to access early retirement at an age lower by 1 year with at least 36 years of contribution ^{(4) (5) (6)} . 35 years of contribution and 58 years of age or 40 years of contribution ⁽³⁾ . 40 years of contribution regardless of age or, alternatively, 35 years of contribution and 59 years of age until 30/06/2009, 61 from 1/07/2009 to 2010 and 62 in 2011 ⁽⁶⁾ . Starting from July 2009, workers are allowed to access early retirement at an age lower by 1 year with at least 36 years of contribution ^{(4) (5) (6)} .	Contribution requirement regardless of age: - Men: 42 years and 1 month of contributions in 2012 (plus 1 month in 2013, 2 months in 2014); - Women: 41 years and 1 month of contributions in 2012 (plus 1 month in 2013, 2 months in 2014). From 2013, contribution requirements are indexed every three years (every 2 years as of 2021) to changes in life expectancy ⁽⁷⁾ .	Two retirement channels: 1) Contribution requirement regardless of age: as before 2) early retirement with respect to SRA in case of at least 62 years of age and 38 years of accrued contributions.
Disability pensions ⁽⁶⁾		5 years of contribution 3 of which accrued in the last five years.	as before	as before	as before
Survivors' pensions ⁽⁹⁾		15 years of contribution, or alternatively, only 5 years of contribution 3 of which accrued in the last five years.	as before	as before	as before

(1) Before 1992, the minimum retirement age was, respectively, 60 and 55 for private sector employees, and the minimum contribution period was 15 years.

(2) The age requirement was reduced to 56 for blue-collar workers in the period 2004 - 2005.

(3) A further postponement of the retirement age was envisaged through the so-called 'exit window', ranging from 3 to 11 months.

(4) For the period 2008-2015, women under DB and mixed schemes who have satisfied the requirements laid down by legislation before law 243/2004 are allowed to retire before 60 as long as they choose the less favourable pension treatment provided by the NDC method.

(5) From 2008, the further postponement through the 'exit window' was foreseen for all regimes, averaging about 9 months for the employees and 15 months for the self-employed.

(6) In 2011, for both old age and early pensions, the retirement age was postponed through the 'exit window' by 1 year for employees and 1 year and half for the self-employed.

(7) The 2013, 2016 and 2019 indexation of the eligibility requirements were adopted by a directorial decree of the Ministry of Economy and Finance of 14th December 2011 and 16th December 2014 and 5th December 2017 respectively. The Law 26/2019 blocked the increase in pension requirements to take into account of life expectancy changes already established for 2019 and discontinued such changes in the period 2019-2026. The next update, which came into force as of 1st January 2027, will be finalized by the end of 2026.

(8) After the 1984-reform (law 222/84), the entitlement of disability pensions only depend on mental and physical impairments regardless of labour market conditions.

(9) Survivors' pensions may be also entitled to children up to 18 (or 26, in the case of students).

Table A1.3 - Public pension system: eligibility requirements - NDC scheme

		Contribution-based scheme (NDC) - New entrants into the system after 1995		
		up to 2007	Starting from 2008 (Law 243/2004 and Law 247/2007)	Starting from 2012 (Law 148/2011)
Old age retirement Statutory Retirement Age (SRA) ⁽¹⁾	Private/public sector employees and self employed		Men: 65, with at least 5 years of contribution ⁽³⁾ . Women: 60, with at least 5 years of contribution ⁽³⁾ .	In 2012, SRA is 66 for men and women in the public sector; is 62 for women in the private sector. Retirement is allowed with at least 20 years of contribution and an amount of pension not inferior to 643 euro per month in 2012 (1.5 times the old-age allowance, in 2012). Such a threshold is indexed with the five-year average of nominal GDP. From 2012 to 2018 (1 st January), SRA of women in the private sector is gradually aligned to that of other workers From 2013, SRA is indexed to changes in life expectancy ⁽⁴⁾ .
	Private sector employees	For both genders, retirement is allowed with at least 57 year of age and 5 years of contribution or, alternatively, 40 years of contribution regardless of age.	40 years of contribution regardless of age or, alternatively, 35 years of contribution and 58 years of age until 30/06/2009, 60 from 1/07/2009 to 2010 and 61 in 2011 ⁽³⁾ . Starting from July 2009, workers are allowed to access early retirement at an age lower by 1 year with at least 36 years of contribution ^{(2) (3)} .	Two retirement channels: 1) Contribution requirement regardless of age: - Men: 42 years of contributions (plus 1 month in 2012, 2 months in 2013 and 3 months in 2014); - Women: 41 years of contributions (plus 1 month in 2012, 2 months in 2013 and 3 months in 2014);
	Public sector employees			
Self employed	40 years of contribution regardless of age or, alternatively, 35 years of contribution and 59 years of age until 30/06/2009, 61 from 1/07/2009 to 2010 and 62 in 2011 ⁽³⁾ . Starting from July 2009, workers are allowed to access early retirement at an age lower by 1 year with at least 36 years of contribution ^{(2) (3)} .		From 2013, contribution requirements are indexed every three years (every 2 years as of 2021) to changes in life expectancy ⁽⁴⁾ . 2) For both gender, early retirement is also allowed, up to a maximum of three years before the SRA (63 in 2012), as long as they have matured 20 years of contributions and an amount of pension not inferior to 1,200 euro per month in 2012 (2.8 times the old-age allowance, in 2012). Such a threshold is indexed with the five-year average of nominal GDP.	
Disability pensions ⁽⁵⁾	5 years of contribution 3 of which accrued in the last five years.	as before	as before	
Survivors' pensions ⁽⁶⁾	15 years of contributions, or alternatively, only 5 years of contribution 3 of which accrued in the last five years.	as before	as before	

(1) Before 1992, the minimum retirement age was, respectively, 60 and 55 for private sector employees, and the minimum contribution period was 15 years.
(2) From 2008, the further postponement through the 'exit window' was foreseen for all regimes averaging about 9 months for employees and 15 months for the self-employed.
(3) In 2011, for both old age and early pensions, the retirement age was postponed through the 'exit window' by 1 year for employees and 1 year and half for the self-employed.
(4) The 2013, 2016 and 2019 indexation of the eligibility requirements were adopted by a directorial decree of the Ministry of Economy and Finance of 14th December 2011 and 16th December 2014 and 5th December 2017 respectively. The Law 26/2019 blocked the increase in pension requirements to take into account of life expectancy changes already established for 2019 and discontinued such changes in the period 2019-2026. The next update, which comes into force as of 1st January 2027, will be finalized by the end of 2026.
(5) After the 1984-reform (law 222/84), the entitlement of disability pensions only depend on mental and physical impairments regardless of labour market conditions.
(6) Survivors' pensions may be also entitled to children up to 18 (or 26, in the case of students).

Table A1.4 - Statutory retirement age (SRA) and early retirement

Years of contribution		2016	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
Qualifying condition for old age retirement	<u>Old age retirement (SRA)⁽¹⁾</u>												
	Minimum retirement age (SRA) - men	66y+7m	67y	67y+7m	67y+11m	68y+5m	68y+9m	69y+3m	69y+7m	70y+1m	70y+5m	70y+10m	71y+1m
	Minimum retirement age (SRA) - w omen ⁽²⁾	65y+7m	67y	67y+7m	67y+11m	68y+5m	68y+9m	69y+3m	69y+7m	70y+1m	70y+5m	70y+10m	71y+1m
	Minimum contributory period - men	20	20	20	20	20	20	20	20	20	20	20	20
	Minimum contributory period - w omen	20	20	20	20	20	20	20	20	20	20	20	20
Qualifying condition for early retirement ⁽⁴⁾	<u>Early retirement regardless of age (all regimes)⁽¹⁾</u>												
	Minimum contributory requirement - men	42y+10m	42y+10m	42y+10m	43y+2m	43y+8m	44y	44y+6m	44y+10m	45y+4m	45y+8m	46y+1m	46y+4m
	Minimum contributory requirement - w omen	41y+10m	41y+10m	41y+10m	42y+2m	42y+8m	43y	43y+6m	43y+10m	44y+4m	44y+8m	45y+1m	45y+4m
	<u>Early retirement under the NDC regime⁽¹⁾</u>												
	Minimum retirement age - men				64y+11m	65y+5m	65y+9m	66y+3m	66y+7m	67y+1m	67y+5m	67y+10m	68y+1m
	Minimum retirement age - w omen				64y+11m	65y+5m	65y+9m	66y+3m	66y+7m	67y+1m	67y+5m	67y+10m	68y+1m
	Minimum contributory period - men				20	20	20	20	20	20	20	20	20
	Minimum contributory period - w omen				20	20	20	20	20	20	20	20	20
Minimum amount of pension - men ⁽³⁾				1,200 euro per month in 2012 (2.8 times the old age allowance, in 2012) indexed w ith the five-year average of nominal GDP									
Minimum amount of pension -w omen ⁽³⁾													

(1) The age requirements (and contribution requirements for early retirement regardless of age) are indexed to changes in life expectancy at 65. The update is foreseen every three years until 2019 and then every two years. Changes in life expectancy are consistent with the mortality assumptions underlying the Eurostat demographic projection, with the 2015 as the base year. The 2013, 2016 and 2019 indexation of the eligibility requirements were adopted by a directorial decree of the Ministry of Economy and Finance of 14th December 2011, 16th December 2014 and 5th December 2017, respectively. The next update, which come into force as of 1st January 2021, has been adopted on 5 November 2019 resulting in a zero increase in eligibility requirements. For early retirement regardless of age the DI 4/19 suspended the indexation of the requirements until 2026 and introduced a time window of three months. This window is maintained throughout the forecast period.

(2) SRA of the female employees in the private sector equalizes that of men (and women in the public sector) starting from 2018. In 2016, the SRA of the female self-employed is 6 months lower.

(3) The minimum amount of pension is 1,200 euro per month in 2012 (which corresponds to 2.8 times the old age allowance, in 2012) indexed with the five-year average of nominal GDP.

(4) Workers who reach, at least, the age of 62 and a minimum contribution requirements of 38 years in the period 2019-2021 (so-called Quota 100) may retire earlier. A shifting retirement window applies equal to 3 months for workers of the private sector and 6 months for workers of the public sector.

1.1 Transformation coefficients: formula and assumptions

The formula and parameters for the calculation of the transformation coefficients are given below:³⁴

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

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

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*

$s = m, f$

$\frac{l_{x+t,s}}{l_{x,s}}$ = *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 $x+t$*

³⁴ Ministero dell'Economia e delle Finanze-RGS (2017), *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. 19, Appendice 1, lettera B.2, http://www.rgs.mef.gov.it/VERSIONE-I/Attivit--i/Spesa-soci/Attivita_di_previsione_RGS/2017/. The 2019-2020 revision of the transformation coefficients was adopted by a directorial Decree of the Ministry of Labour and Social Policies of 8 June, 2018 according to an automatic, administrative procedure laid down by Law 247/2007.

$\frac{j_{x+t,s}^{ved}}{j_x^{ved}} = \text{probability for a widow or widower to be eliminated because of death or new marriage.}$

$k = \text{adjustment owing to how pension is drawn. This parameter accounts for 0.4615}$

$\varepsilon_s = \text{difference between the pensioner's age of sex } s \text{ and the spouse's age}$

$\eta = \text{percentage of reversibility}$

$\delta_s = \text{average percentage of reduction of the survivor's pension owing to income requirements.}$

$r = \text{internal return rate}$

$\sigma = \text{indexation rate}$

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

Table A1.5 – Transformation coefficients in force for the two-year period 2019-2020

Age	Transformation coefficients	Annuity factor
57	23.812	4.200%
58	23.236	4.304%
59	22.654	4.414%
60	22.067	4.532%
61	21.475	4.657%
62	20.878	4.790%
63	20.276	4.932%
64	19.672	5.083%
65	19.064	5.245%
66	18.455	5.419%
67	17.844	5.604%
68	17.231	5.804%
69	16.609	6.021%
70	15.982	6.257%
71	15.353	6.513%

Source: Directorial decree of the Ministry of Economy and Finance of May 15, 2018, published in the Official Journal (Gazzetta Ufficiale) of June 8, 2018.

ANNEX 2: Further information requested in the methodological annex

1. Economy-wide average wage at retirement

In the projections, the average contribution base grows in line with productivity (see §§. 3.6 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 actually reflects the assumption on the career age wage profile.

Table A2.1 - Economy wide average wage at retirement evolution (in thousands euro)

	2010	2016	2020	2030	2040	2050	2060	2070
Economy-wide average wage [a]	28.1	29.4	31.4	39.3	52.5	74.5	106.3	151.3
Economy-wide average wage at retirement [b]		34.4	36.4	42.5	59.1	85.4	125.9	172.6
[a]/[b]-1 (%)		16.9	15.9	8.1	12.5	14.6	18.3	14.1

Source: Commission Service.

Pensioners vs pensions

See §. 3.4.4

Pension taxation

See §. 3.2

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 A2.2 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 A2.2 - Disability rates by age groups (%)

	2016	2020	2030	2040	2050	2060	2070
- Age group -54	0.5	0.6	0.6	0.7	0.6	0.6	0.6
- Age group 55-59	2.9	3.3	3.6	3.9	4.1	3.8	3.6
- Age group 60-64	3.8	3.6	5.1	5.7	5.7	5.1	5.4
- Age group 65-69	1.3	2.1	3.5	4.3	4.8	5.6	5.1
- Age group 70-74	0.0	0.0	0.0	0.0	0.0	0.5	1.1
- Age group 75+	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Member State.

Figure A2.1 e A2.2 illustrate, respectively, the evolution of disability pensions and their average amount compared to that of old-age and early pensions.

Figure A2.1: number of disability pensions below SRA (thousand)

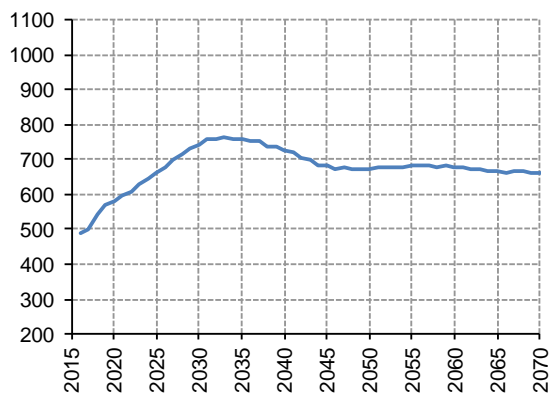
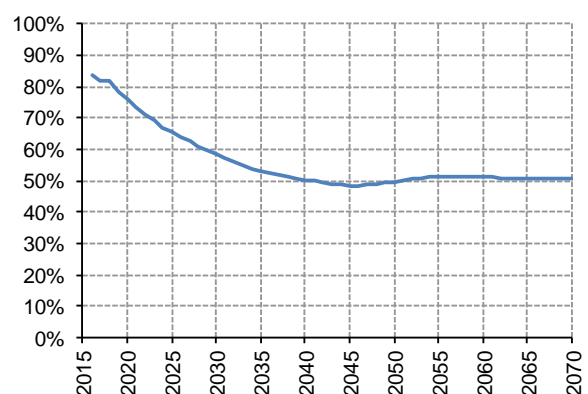


Figure A2.2: average disability pension to average old age and early pension



2. Survivor pensions

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

Figure A2.3 e A2.4 illustrate, respectively, the evolution of disability pensions and their average amount compared to that of old-age and early pensions.

Figure A2.3: number of survivor pensions (thousand)

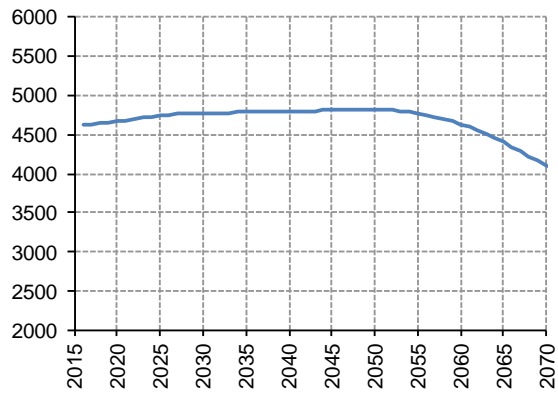
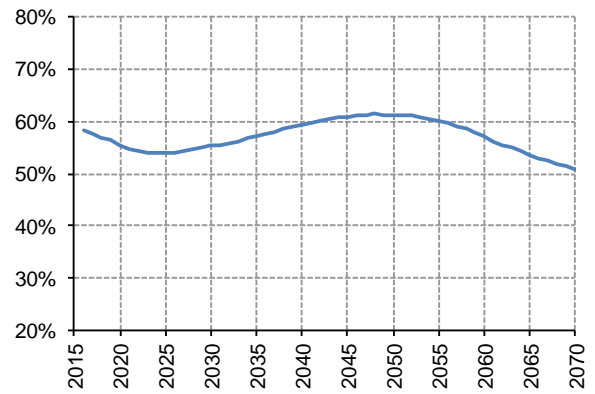


Figure A2.4: average survivor pension to average old age and early pension



3. Contributions

See §. 3.6