Financial Outlook for the Pension System and the Standard of Living of Pensioners by 2070

Frédérique Nortier-Ribordy*

Abstract – The outlook for changes in the share of pension expenditure in GDP depends heavily on assumptions of future productivity. If labour productivity were to increase by an average of 1.6% per year, the ratio of pension expenditure to GDP would be stable or decreasing from 2032, to settle at 12.1% in 2070, compared to 14.7% if productivity were to increase by only 0.7%. This stability or even decrease in the share of pension expenditure may seem counter-intuitive in view of the expected ageing of the population. The increase in the retirement age from 62 to 64, as a result of reforms adopted, and the smaller increase in pensions compared to earned income would, in effect, counterbalance this ageing. The standard of living of pensioners would thus be between 75.5% and 87.2% of the standard of living of the whole population in 2070, whereas it has been broadly equivalent since the early 2000s.

* Secrétariat général du Conseil d'orientation des retraites (COR). Correspondence: *frederique.nortier-ribordy@cor-retraites.fr*

For around thirty years now, pensions have held an important place in public debate: a number of reforms have been proposed or adopted, triggering significant social movements, and many reports have made a diagnosis regarding the outlook for the pension system.[1] This outlook must be long-term: retirement is an operation that is built up and carried out over the entire life cycle, and reforms are being implemented relatively slowly. Until the early 2000s, these reports did not necessarily achieve a consensus among stakeholders, government and social partners, in particular. The creation of the Conseil d'orientation des retraites (COR, French Pension Policy Council) in 2000 aimed to correct this pitfall by involving parliamentarians, social partners, experts and government representatives in the various stages of establishing projections (selection of assumptions and validation of results). This joint work on the outlook for the pension system, which remains a distinctive French feature, makes it possible to reach a consensus on the diagnosis and to frame the debates during the reform projects.

One of the missions entrusted to the COR since its creation is thus "to describe the medium and long-term developments and outlooks for legally compulsory pension schemes, in the light of economic, social and demographic developments, and to draw up [...] projections of their financial situation."[2] This mission was bolstered by the law of 20 January 2014 guaranteeing the future and justice of the pension system, which establishes the production by the COR of an annual report on the pension system. It enables the Comité de suivi des retraites (CSR, French Pension Monitoring Committee) to determine whether or not the pension system is significantly deviating from its objectives, in particular that of financial sustainability and a satisfactory standard of living for pensioners.

The purpose of this article is to present the main results of the financial and standard of living projections for pensioners up to 2070, prepared for the COR Annual Report published in September 2022 (Conseil d'orientation des retraites, 2022). These projections were used as the basis for discussions on the government's reform project examined in early 2023, the implementation of which has been announced for the summer of 2023.

Since the future is inherently uncertain, not only in the short-term but also, and even more so, in the medium and long-term, making projections requires making assumptions about the regulatory,[3] demographic and economic developments on which the pension system depends. Both the projected situation of the French pension system and the relative pension for pensioners, in comparison with active workers incomes, are particularly sensitive to demographic and economic developments (Box 1). The first Section reviews these assumptions and, in particular, those of the four scenarios selected by the COR, which differ according to the labour productivity assumption used.[4] The second Section sets out the change in the share of pension expenditure in GDP and its components up to 2070, based on these four scenarios and the third Section sets out the change in the balance between pension resources and expenditure. The fourth Section discusses the sensitivity of the financial situation of the pension system to the various demographic and economic assumptions. Lastly, the fifth and final Section examines the change in the standard of living of pensioners.

1. The Projection Assumptions Used by the COR

To establish its projections, the COR uses INSEE's central scenarios as demographic and labour force assumptions. In turn, the selection of long-term economic targets (labour productivity growth and unemployment rate) is the result of a discussion and consensus among COR members, a consensus built on the work and studies available on the subject (Box 2). The selection of contrasting assumptions is necessary given the COR's mission to inform public debate on pensions in the most transparent way possible. It therefore provides information on the projected pension situation both in proactive economic scenarios, which entail breaks in trends compared to the recent past, and in more pessimistic scenarios. In this context, covering a broad range of possibilities makes the question of whether some economic assumptions are more relevant than others – a question that

1. For the most well-known: Commissariat général du Plan (1991), Charpin (1999), Insee (1990).
2. Paragraph 1 of Article L114-2 of the French Social Security Code.
3. Since one of the ways in which the projections are used is to inform decision-making relating to possible changes to pension rules, it is necessary to determine the spontaneous developments that would occur in the absence of such changes. To that end, the COR carries out its projections "on the basis of unchanged legislation", i.e. by taking into account only the pension rules already adopted, and does not attempt to anticipate possible future pension reforms, reforms which would also make it difficult for its members to reach consensus.
4. Some assumptions are used to a greater extent than others, so as to avoid having an excessive amount of results that would make it impossible to read the financial situation of the pension system. This is the case for labour productivity assumptions with cumulative effects over the projection horizon, given the indexation of entitlements and pensions on prices.

Box 1 – Why Are Demographic and Economic Assumptions Necessary?

The share of pension expenditure in GDP is calculated as follows:

$$\text{Share of expenditure} = \frac{\text{Pension expenditure}}{\text{GDP}}$$

With a constant sharing of wealth between capital and labour, the change in the share of pension expenditure in GDP can be written as follows:

$$\Delta\, \text{share of expenditure} = \Delta\left(\frac{\text{Number of pensioners}}{\text{Number of contributors}}\right) \times \Delta\left(\frac{\text{Average pension}}{\text{Average income from employment}}\right)$$

The change of share of pension expenditure in GDP will thus depend on two factors which are a function of the demographic and economic conditions (over which pension system managers have no direct influence at first) and of the pension system's own rules (which do result from its management):

The ratio between the number of contributors and the number of pensioners (or demographic ratio) depends on demographic conditions (fertility, mortality and migration balance), employment behaviour at all stages of life and the unemployment rate. The "spontaneous" development of this ratio can be counterbalanced by the rules of the pension system (especially those that affect the effective retirement ages).

The ratio between the average pension of all pensioners and the average income from employment of all employed persons (or relative pension) depends not only on the general economic framework (particularly labour productivity) but also on the rules determining pension amounts (rules for calculating pensions on pay out, rules for indexing entitlements and pensions, etc.).

With a change that takes these two factors into account, at constant contribution rates, the share of pension expenditure in GDP thus becomes independent of the effects of demographic shocks (birth rate and migration) or economic shocks (unemployment and productivity) whereas the French pension system is currently particularly sensitive to the growth assumption used, due to price indexation, and to demographic changes which are only partially taken into account in the calculation of entitlements and pensions,[i] as noted by the CSR and in academic work (Blanchet *et al.*, 2016).

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[i] *The extension of the insurance period provided for in the 2003 law established that life expectancy gains were to be divided as follows: 2/3 for the contribution period and 1/3 for retirement.*

Box 2 – The Selection of Labour Productivity Assumptions

In 2021, the COR wanted to engage in a process of reflection and discussion around long-term growth scenarios involving a broad panel of experts, in order to ensure the richness of debates and the variety of points of view. Indeed, the rate of growth of hourly labour productivity in France has reached the lowest level observed in a century (excluding periods of war) and this slowdown has been observed for many developed countries. Debates between economists are thus multiplying as to the reasons for this slowdown and the outlook for future productivity developments in France, and there remains a split between "techno-optimists" and "techno-pessimists" about the future of productivity gains – especially regarding the possibility of a positive productivity shock linked to the digital revolution.

At the end of the discussions, a consensus was reached among COR members for a downward revision of productivity targets compared to those used in previous years. Pension system projections will now be based on four productivity scenarios: 1.0% and 1.3%, which were two assumptions previously used, and two new assumptions of 0.7% and 1.6%, with a single long-term unemployment rate. The 1.0% scenario thus became an intermediate scenario rather than an extreme scenario. The most favourable assumption is long-term hourly productivity growth (1982-2019), the least favourable is the average hourly productivity recorded over the last decade (2009-2019). The intermediate assumptions (1.0% and 1.3%) reflect productivity growth in France over the last 20 and 30 years, respectively.

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would be key if a single scenario were to be used – less crucial.

Once the overall demographic and economic framework has been established, and since the French pension system is composed of more than forty schemes, each with its own calculation rules and contribution rates, it is necessary to break it down by scheme. This breakdown is particularly important for public pension schemes, given the way in which they calculate the pension and their contribution rate.

1.1. The Demographic and Labour Force Assumptions

The projection assumptions used by the COR are constructed based on the central scenario of INSEE's demographic and labour force assumptions (Algava & Blanpain, 2021; Bechichi *et al.*,

2022). Sensitivity tests are studied for each of the demographic components: fertility, mortality and migration balance.[5] On the other hand, no activity rate variant is studied.

The demographic projections published by INSEE in November 2021 update those for 2016 by integrating recent demographic developments. Compared to 2016, the central fertility and life expectancy assumptions have been revised downwards (Blanpain & Buisson, 2016).[6]

Fertility is assumed to settle at 1.8 children per woman from 2022 onwards (Table 1), a less favourable assumption than that previously adopted (1.95 children per woman). Two alternative assumptions are studied: a low assumption in which fertility would decrease from 1.8 in 2022 to 1.6 in 2030 and stabilise at that level until 2070 and a high assumption in which it would increase to 2 between 2022 and 2030 and then stabilise. The range of assumptions envisaged thus remains below the threshold for the renewal of generations.

Mortality would continue to fall in the projection, but less sharply than projected in 2016. In the central scenario, life expectancy at age 60 would reach 31.3 years for women in 2070, 2.3 years lower than expected in 2016, and 29.3 years for men, which is 1.7 years lower. INSEE has taken into account the slowdown in life expectancy gains observed since 2014. Between 2014 and 2019, life expectancy at age 60 increased by only 0.1 years for women and 0.3 years for men,[7] compared to 1.5 to 2 years per decade before 2014. Alternative assumptions are also taken into consideration: in the low assumption, men and women would live for 2.8 years less at age 60 in 2070 and, in the high assumption, women would live 3.1 years longer and men 3 years longer.

The migration balance is the difference between the number of people entering the territory and the number of people leaving over the course of a year. It is quite volatile by nature and, therefore, difficult to predict. The assumption adopted by INSEE was maintained at +70,000 in the demographic projections for 2021-2070, with a low variant at +20,000 and a high variant at +120,000. However, the age structure of the migration balance has been amended to take account of recent developments: the average age of net inflows would thus be older (Conseil d'orientation des retraites, 2022).

As regards the labour force, the COR projections also rely on the scenario of INSEE's latest projections, which extends the major demographic and activity trends (Bechichi *et al.*, 2022). The number of people in the labour force increased by an average of 0.5% per year between 2002 and 2021, when the labour force reached 30.1 million people. The gradual retirement of the baby boom generations beginning in 2006 was partially offset by the increase in activity among older people due to the higher retirement age, the increase in activity among women and, to a lesser extent, the increase in activity among young people. According to INSEE's new projections, the labour force would continue to grow over the next two decades, at a slower rate (0.1% per year on average). The trend would reverse from 2040, with an average annual decline of 0.1%. The labour force would peak at 30.5 million people

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5. The activity rates by age group and gender in INSEE's central scenario are applied to the population studied in the variant to determine the labour force.
6. The COR had largely anticipated this decrease by using the low fertility and life expectancy assumptions of the previous demographic projection exercise for its annual report, from 2021 onwards, while retaining the central migration balance assumption. This choice is confirmed a posteriori since the central scenario of INSEE's new demographic projections is very close to the scenario combining the low fertility, low life expectancy and central migration balance from the previous year.
7. So, extending this trend, only 0.2 years and 0.6 years per decade for women and men respectively.

Table 1 – **INSEE's population projection assumptions from 2016 and 2021**

Assumptions	2016 central	2021		
		Central	Low	High
Fertility	1.95 over the entire period	1.80 from 2023 onwards	1.60 from 2030 onwards	2.00 from 2030 onwards
Life expectancy for women at age 60	32.5 years in 2060 and 33.6 years in 2070	31.3 years in 2070	28.5 years in 2070	34.4 years in 2070
Life expectancy for men at age 60	29.7 years in 2060 and 31 years in 2070	29.3 years in 2070	26.5 years in 2070	32.3 years in 2070
Migratory balance	+70,000 over the entire period	+70,000 per year over the entire period	+20,000 per year over the entire period	+120,000 per year over the entire period

Sources: INSEE, population projections 2013-2070 and 2021-2070.

in 2040 before falling to 29.2 million in 2070. The decrease beyond 2040 is mainly explained by the decrease in the working-age population, as activity behaviour will have stabilised.

1.2. Long-Term Labour Productivity and Unemployment Rate Assumptions

In addition to demographic and activity assumptions, pension projections require assumptions about hourly labour productivity growth and the unemployment rate. The development of productivity determines the development of wages and ultimately pensions, while that of the unemployment rate determines employment with a given labour force (Table 2). Based on these assumptions, it is then possible to deduce GDP growth, which is equal to the product of the growth of apparent labour productivity per capita and of employment. The COR assumes that the sharing of value added between wages and capital remuneration and working hours are stable in its projection.

The scenarios, constructed by the Direction générale du Trésor (the French Treasury), establish three distinct periods (Direction générale du Trésor, 2021).

In the short-term (2022-2027), as provided for by law, the assumptions are those used by the government in the Stability Programme for 2022 (Direction générale du Trésor, 2022). In the long-term (from 2032), the targets set by the COR for the development of labour productivity and the unemployment rate will determine GDP growth. It is assumed that the unemployment rate will stabilise from a certain date onwards, so its impact becomes constant in the long-term. The growth of labour productivity and that of earnings per capita are inverse to cumulative processes; therefore, their impact increases over time. This is why the COR identifies four scenarios for long-term hourly labour productivity gains (0.7% scenario, 1.0% scenario, 1.3% scenario and 1.6% scenario) associated with a single unemployment rate assumption.

Between the two periods (2022-2027 and 2032-2070), the transition is gradual and may create some artefacts in growth if long-term targets prove to be far from short-term assumptions. In the 2022 Stability Programme, the government predicts that full employment would be achieved in 2027 and that the unemployment rate would be 5% by that date, which is two percentage points lower than the target set by the COR for its annual report (7%). As employment results from the unemployment rate in the construction of the COR scenarios, the rise in unemployment mechanically translates into job losses that generate a very sharp slowdown in growth over the years 2027-2032.[8] The assumptions of the Stability programme were not yet known when the COR members chose the long-term unemployment assumption, and they "preferred to retain the 7% assumption, having often been criticised for the excessive optimism of the low 4.5% assumption", as noted by the CSR in its ninth opinion (Comité de suivi des retraites, 2022). However, there is no reason to expect that the economic situation will be particularly depressed over the period 2027-2032. The CSR notes that "the artificial nature of the connection in the 7% assumption obviously poses a problem" and considers that it "would be useful to public debate to have a small set of complementary projections that, at least, correct this lack of connection […] (the results are in any case less dependent on the unemployment assumptions than on the productivity assumptions). These projections would take advantage of this to incorporate the development of very short-term growth forecasts"; the CSR notes that, on the contrary, the short-term forecasts may appear optimistic in view of the international context and current inflation. This is why all of the financial results are presented here using an unemployment rate of 4.5% from 2032 onwards.[9] However, it was not possible to

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8. *This break in trend does not appear in previous reports. For example, in 2021, the stability programme forecast an unemployment rate of 8.4% in 2027. The achievement of long-term growth targets was thus linear over the period 2027-2032.*

9. *It should be noted that in its reform proposal presented to the Council of Ministers on 23 January 2023, the government uses the scenario based on productivity growth of 1.0% and an unemployment rate of 4.5% from 2032 onwards for its assumption.*

Table 2 – **Long-term assumptions in the COR's scenarios and variants**

Unemployment rate (%)	Annual labour productivity growth (long-term values achieved from 2032 onwards)			
	0.7%	1.0%	1.3%	1.6%
4.5	0.7% scenario	1.0% scenario	1.3% scenario	1.6% scenario
7.0		Variant (7% - 1.0%)		

Sources: COR assumptions, 2022.

incorporate new short-term forecasts, as these are the responsibility of the French Treasury.

In order to assess the sensitivity of the projection results to the unemployment assumption, the assumption of an eventual unemployment rate of 7% is nevertheless studied. This variant is paired, by convention, with the 1.0% productivity growth scenario, though this does not give that scenario the role of a central scenario.

1.3. Assumptions Regarding the Civil Service

Once the demographic and economic assumptions have been established, they are broken down into assumptions regarding the number of social security contributors and the average per capita tax base for each scheme, in order to take into account the respective dynamics of remuneration and employment between private sector employees, civil servants and the self-employed. This breakdown is particularly important for the civil service. Firstly, the pensions of civil servants are calculated on the basis of the index-linked salary. Thus, the more moderate the change in the value of the index point, the lower the retirement pensions of civil servants when paid out. This effect is immediately reflected in pension expenditure, since the salary for the final six months is used as a reference for the calculation of civil servants' pensions, while it would be more spread over time for private sector employees, for whom the calculation of pensions takes into account their entire career. Secondly, since employer contributions are higher in the civil service than in the private sector − due to the balancing contribution paid for the State civil service scheme and a higher contribution rate than in the private sector for the scheme for regional and hospital civil servants (Caisse Nationale de Retraites des Agents des Collectivités Locales − CNRACL) − any distortion in the sharing of pensionable remuneration between the public and the private sector has an effect on the proportion of resources allocated to funding the pension system.[10]

The assumptions on remuneration in the civil service, provided by the Budget Directorate of the Ministry of Economy and Finance, thus forecast very moderate increases in civil servants' wages in the coming years. From 2023 to 2027, the annual increase in the average index-linked salary would be limited to +0.1% in current euro, after the 3.5% increase in July 2022 and excluding the effects of the *Ségur de la santé* healthcare service consultation. From 2027 to 2032, the rate of growth of the average index-linked salary would be +0.1% per year in constant euro and then, between 2032 and 2037, it would match that of private sector wages (between 0.7% and 1.6% depending on the scenarios). The share of premiums would increase from 2027 to 2037, while index-linked salary growth would match private sector wage growth. Beyond 2037 and up to 2070, the development would be parallel in the civil service and the private sector.

2. The Share of Pension Expenditure in GDP Would Decrease in the Future in Three Out of Four Scenarios

These assumptions relating to demographic and economic developments, as well as those concerning jobs and remuneration in the civil service, make it possible to deduce how pension expenditure will change between 2023 and 2070. In addition, the projections are made on the basis of unchanged legislation, with the COR annual report being intended to provide a diagnosis shared by the members of the board regarding the pension system.

2.1. A High Level of Sensitivity to the Productivity Assumptions Used

With EUR 345.1 billion paid out in 2021, gross expenditure on the pension system amounted to 13.8% of GDP, after an exceptional 14.7% in 2020 due to the sharp contraction in GDP linked to the health crisis. While this level may seem high, it should be stressed that without the measures taken in respect of pensions over the last 30 years, pension expenditure as a proportion of GDP would be higher by about 4.3 percentage points of GDP, in particular due to the index-linking of pensions to prices.[11]

Between 2002 and 2021, pension expenditure increased by an average of 2% per year in real terms. This increase is mainly explained by the steady increase in the number of pensioners (+1.7% on annual average), especially with the large baby boom generations reaching retirement age from 2006 onwards and, to a much lesser extent, by the increase in their average pension (+0.4% on annual average). In turn, real GDP growth was significantly lower, as an

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10. With a pension system fully financed by social security contributions and the same contribution rate for all schemes, the amount of resources as a proportion of GDP would be stable over time.

11. By 2070, depending on the productivity assumption adopted, price-linked indexation would reduce pension expenditure as a proportion of GDP by 3.5 to 5.5 percentage points, while the combination of all the other measures implemented during the reforms of 1993, 2003, 2010 and 2014 would have an effect on this horizon of 2.4 to 2.8 GDP percentage points, an impact that is much less dependent on the productivity assumption (Marino, 2014; Bozio, 2021).

annual average (1.1%), than that of expenditure, mainly due to the economic crisis of 2008-2009 and the health crisis of 2020.

As a result, the share of pension expenditure in GDP increased by 2.1 percentage points between 2002 and 2021, from 11.7% to 13.8% (Figure I). After reaching a high point in 2014 (14.1%), the share of pension expenditure in GDP then fell steadily from 2014 to 2019 (−0.5 GDP percentage points), due to the recovery of activity and the measures implemented in respect of pensions, in particular, the under-indexation of pensions. For the past two years, it has been severely buffeted by the health crisis and its effects on GDP: it rose by 1.1 percentage points between 2019 and 2020 before falling by 0.9 percentage points in 2021 in connection with the strong recovery in activity.

Looking at the outlook, real-terms pension expenditure would increase by between 1.6% and 1.7% according to the annual average scenarios between 2022 and 2032, slightly higher than real GDP (between 1.3% and 1.6%). In terms of value, i.e. once price developments are taken into account, the share of pension expenditure in GDP would thus increase significantly over the next ten years, though to a greater or lesser extent: it would vary between 14.2% and 14.7% of GDP in 2032, depending on the scenario.

Between 2033 and 2055, the pace of growth in pension expenditure would slow, ranging from 0.7% to 1.0% per year in real terms under the 1.0% to 1.6% scenarios, which is lower than

real GDP growth which would range from 0.9% to 1.5%. As a result, pension expenditure as a proportion of GDP would fall in these three scenarios, ranging from 12.7% (1.6% scenario) to 13.8% (1.0% scenario) in 2055. It would stabilise under the 0.7% scenario, in which both expenditure and real GDP would increase by 0.6% in real terms per year, and would then be 14.7% of GDP in 2055.

Between 2056 and 2070, real-terms pension expenditure would increase slightly more than in the previous period, while the pace of GDP growth would be stable. Pension expenditure as a proportion of GDP would continue to fall, but less rapidly in scenarios in which productivity growth is at least 1.0% and it would be stable in the 0.7% scenario. By 2070, as a proportion, pension expenditure would vary between 11.9% of GDP (1.6% scenario) and 14.4% of GDP (0.7% scenario), compared to 13.8% in 2021. The difference between the various assumptions would thus be 2.6 percentage points.

2.2. The Determining Factors of the Share of Pension Expenditure in GDP

Despite the gradual ageing of the French population, under the assumptions envisaged, from 2032 onwards, pension expenditure as a proportion of French national wealth would remain stable or would fall. This result may seem counter-intuitive in view of the expected ageing of the population. The ratio between the number of contributors and the number of pensioners would thus decrease significantly, from 1.7 contributors per pensioner with a direct pension

Figure I – **Share of pension system expenditure in GDP, observed and projected with an unemployment rate of 4.5% from 2032 onwards**
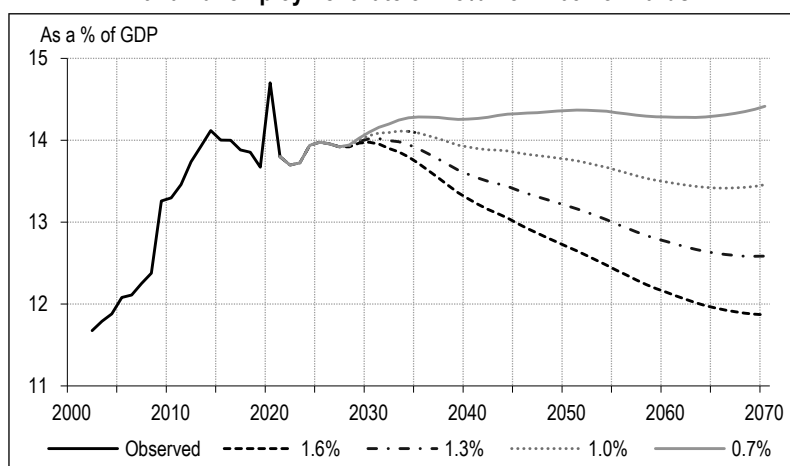
Notes: Data excluding financial income and charges, excluding allocations and recoveries from provisions. From 2020 onwards, the accounts of the CRPNPAC (Supplementary civil aviation aircrew scheme) are included.
Coverage: All legally compulsory French pension schemes, including the Old-Age Solidarity Fund (FSV), excluding the Civil Service Supplementary Pension Scheme (RAFP).
Sources: Reports to the CCSS 2002–2021; COR projections – September 2022.

entitlement[12] in 2021 to about 1.3 by the projection horizon (Figure II-A). This decrease would be observed even though the cohort size-free retirement age[13] would go from 62.3 years old in 2020 to almost 64 years old from the late 2030s due to the reforms already adopted. It would also be counterbalanced by the fact that the average pension for pensioners would continue to grow in constant euro, but slower than the average income from employment. The average pension would thus vary between 33% (1.6% scenario) and 39.9% (0.7% scenario) of the average income from employment in 2070, compared to 50.3% in 2021 (Figure II-B). The indexation of entitlements and pensions to prices has the effect of widening the gap between pensions (both those of people who are already retired and those of future pensioners) and income from employment. The effect builds year on year and is all the stronger as labour market income growth is high in comparison with inflation, making the pension expenditure as a proportion of GDP very sensitive to the pace of real-terms growth in labour productivity and income from employment until the mid 2050s (Marino, 2014; Bozio, 2021).

This decrease in the relative average pension should not be interpreted as impoverishing future generations of pensioners in real terms: the average pension would continue to grow in constant euro with the *Noria* effect,[14] but less rapidly than average income from employment. It would thus increase by between 0.2% (0.7% scenario) and 0.6% (1.6% scenario) on average per year, while average income from employment would increase by between 0.7% and 1.4% per year between 2021 and 2070.

2.3. A breakdown of the share of pension expenditure in GDP

The share of pension expenditure in GDP evolves mainly as a result of three main components: demographic, economic and regulatory. The following breakdown allows us to isolate their contribution to this evolution:

- The demographic ratio reflects the ageing of the population, measured by the ratio between the number of people of retirement age (here, those aged 60 and over) and the number of people of working age (here, aged 20-59).

- The economic context takes into account the sharing of the wealth produced and the inverse of the employment rate.[15]

- The rate of pensioners reflects changes in retirement ages.

- The relative pension is an indicator of the degree of protection afforded by the pension system.

- The residual takes into account several aspects not covered in the breakdown (e.g. the difference

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12. *Pensioners with direct pension entitlements are those who have acquired at least their own pension entitlement resulting from their contribution to a French pension scheme. Pensioners in receipt of a reversion pension only are therefore excluded from this definition.*
13. *The cohort size-free retirement age depends on the likelihood of being retired at each age between the ages of 50 and 70. It corresponds to the average retirement age for a fictitious generation which would have, at each age, the same proportion of pensioners as that observed in a given year (Secrétariat général du Conseil d'orientation des retraites, 2015).*
14. *The Noria effect refers to the development of the average pension linked to the renewal of the population of pensioners: the new generations, whose pensions are on average higher, gradually replace the older generations with lower pensions.*
15. *The inverse of the ratio used here is slightly different from the usual ratio, which relates the number of people aged 20 to 59 to the total number of employed people of those same ages.*

Figure II – **Determining factors in the development of the total pension amount**
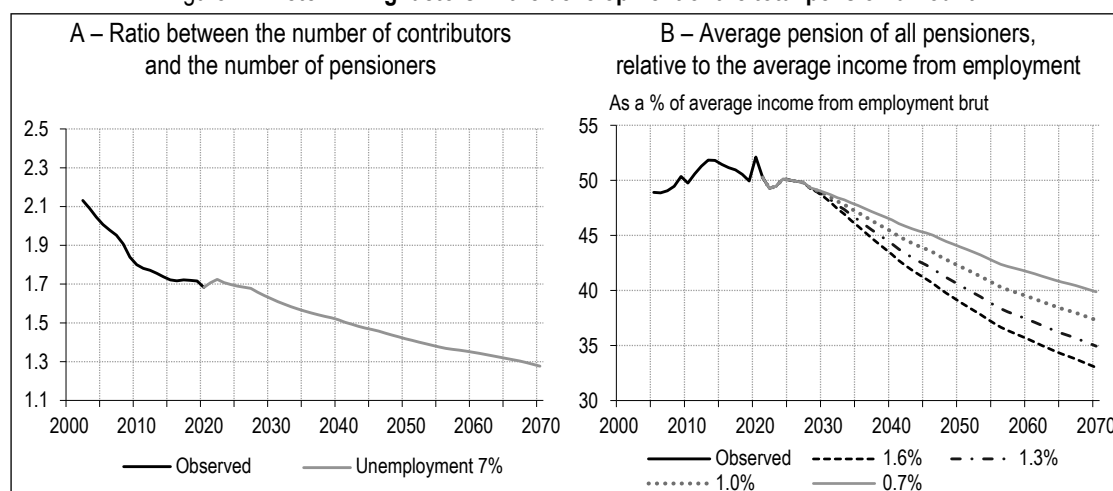
Reading note: In 2020, 1.7 persons were employed for every 1 pensioner with their own entitlement (all schemes combined) and the average gross pension amount of all pensioners with their own entitlements represented 50.3% of the average income from employment (excluding part-time employment).
Coverage: All legally compulsory French pension schemes, excluding the Civil Service Supplementary Pension Scheme (RAFP) Pensioners with at least one pension entitlement of their own.
Sources: COR projections, INSEE national accounts – September 2022 and DREES, ANCETRE 2020 model.

$$Share\ of\ pension\ expenditure\ in\ GDP$$
$$=$$
$$\left.\frac{population\ aged\ 60\ and\ over}{population\ aged\ 20-59}\right\}\quad \text{❶ Demographic ratio}$$

$$\times$$

$$\left.\frac{average\ earnings}{output\ per\ capita}\times\frac{population\ aged\ 20-59}{employed\ population}\right\}\quad \text{❷ Economic context}$$

$$\times$$

$$\left.\begin{array}{c}\dfrac{number\ of\ pensioners\ all\ ages}{population\ 60\ and\ over} \quad \Rightarrow \text{Rate of pensioners}\\ \times\\ \dfrac{average\ pension}{average\ earnings} \quad \Rightarrow \text{Relative pension}\\ \times\\ residual\end{array}\right\}$$

❸ Rules of the pension system

between pension benefits paid to pensioners and total pension expenditure including management fees).

The contribution of each component (demographic ratio, rate of pensioners, etc.) to the development of pension expenditure as a proportion of GDP between year *n* and year *n+x* is calculated as follows:

$$Component\ contribution$$
$$=\frac{\left(component_{n+x}-component_{n}\right)}{average\left(\dfrac{dep_{n}}{component_{n}};\dfrac{dep_{n+x}}{component_{n+x}}\right)}$$

where dep_{n} = share of pension expenditure in GDP for year *n*.

From 2002 to 2021, the share of pension expenditure in GDP increased by 2.1 percentage points, mainly due to ageing (Figure III).

The demographic ratio fell from 2.7 to 1.8 over this period and contributed 4.7 percentage points to this increase. Due to the increase in the retirement age, the rate of pensioners contributed negatively (−0.6 percentage points). Similarly, the increase in the employment rates of both women and men over the age of 50 has led to the economic context contributing to a decrease

Figure III – **Change in the share of pension expenditure in GDP, observed and projected and contributions to that change**
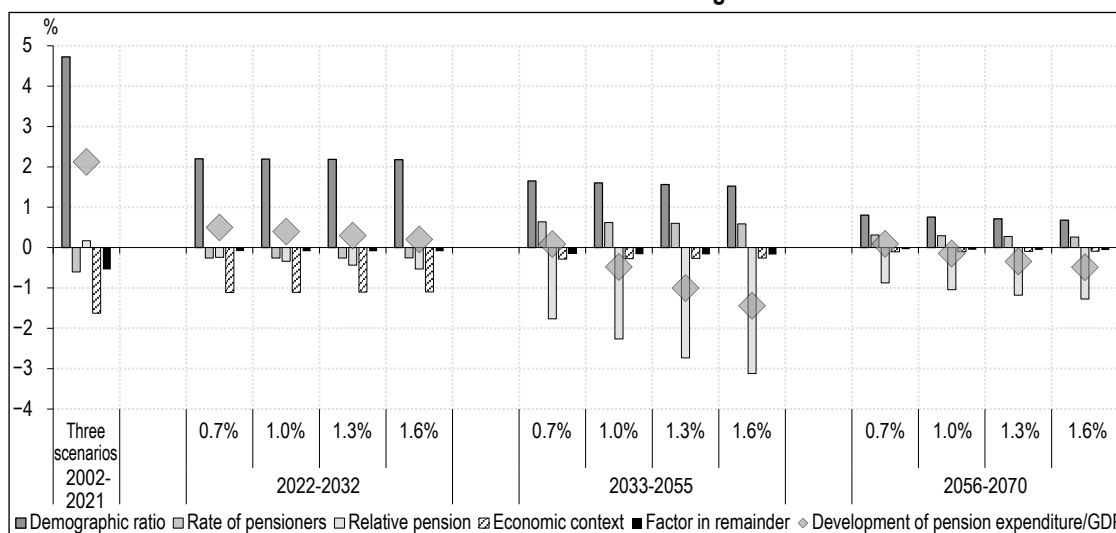
Notes: The country's demographic ratio is the ratio between the population aged 60 and over and the population aged 20 to 59. The labour market is the inverse of the employment rate (measured as the total number of people in employment relative to the population aged 20 to 64). Finally, the rules of the pension system can be understood through the rate of pensioners (total number of pensioners per person aged 60 and over) and the average pension relative to the average income from employment.
Reading note: Between 2022 and 2032, the share of pension expenditure in GDP would increase by 0.2 percentage points in the 1.6% scenario with an unemployment rate of 4.5%. The economic context, the rate of pensioners and the relative pension would contribute to a decrease in this proportion of 1.1, 0.3 and 0.5 percentage points respectively, while the ageing population would contribute to increasing it by 2.2 percentage points.
Sources: COR projections – September 2022.

in the share of retirement expenditure in GDP (−1.6 percentage points).

By contrast, the relative pension increased slightly and contributed positively to the change in the share of pension expenditure in GDP (0.2 percentage points). The average pension continued to increase, due in particular to the improvement in the pension of newly retired women (linked to longer careers), but this growth has slowed significantly. Firstly, the price indexation of pensions moderated the development of the average pension for pensioners. In addition to this structural slowdown factor, there have been smaller revaluations in relation to inflation over the recent period (shift of the revaluation dates from 2014 to 2018 and under-indexation in 2019 and 2020 for basic pensions; freezing of the point value from 2013 to 2018, then under-valuation in 2019 and 2020 for supplementary pensions). Secondly, replacement rates are falling across all schemes. In the basic scheme, this decrease is due to the price indexation of entitlements for private sector employees;[16] for civil servants, it can be attributed to the increase in the premium rate and the freezing of the index point value. In the AGIRC-ARRCO compulsory supplementary pension private sector scheme, it is linked to the decline in the scheme's performance since 1990: for one euro of contributions, accrued entitlements are about half what they were 30 years ago (Nortier-Ribordy, 2016).

As regards the outlook, under any scenario, between 2022 and 2032, pension expenditure as a proportion of GDP would increase (from 0.2 to 0.5 percentage points of GDP). The ageing of the population (which contributes 2.2 percentage points) would be partially offset by the gradual increase in the retirement age due to the increase in the insurance period required to access the full rate. The improvement in the economic context and the decrease in the rate of pensioners would thus contribute to a decrease of 1.1 and 0.3 percentage points, respectively, of the share of pension expenditure in GDP. The development of the relative pension would have a varying contribution depending on the scenarios, of around −0.2 to −0.5 percentage points. The decline in replacement rates would continue in the AGIRC-ARRCO scheme and in the civil service schemes because of the assumptions used regarding civil service remuneration (very moderate increase in the index point value until 2037 and increase in the premium rate from 2027 to 2032). In the basic scheme for private sector employees, replacement rates would continue to fall, due to the price indexation of entitlements.

From 2033 to 2055, the share of pension expenditure would be almost stable in the 0.7% scenario and would decline in the other three scenarios (from −0.5 to −1.5 percentage points). The demographic ratio would continue to play a positive role in the development of pension expenditure as a proportion of GDP (1.6 to 1.7 percentage points), while in the absence of further reforms to increase the retirement age, the contribution of the rate of pensioners would be positive (0.6 percentage points). This positive contribution would be linked to the ageing of the retired population. The improvement in employment rates would continue to have a slight negative effect on pension expenditure as a proportion of GDP (−0.3 percentage points).

The decrease in the share of pension expenditure in GDP would thus be largely attributable to the decrease in the relative pension, the contribution of which would vary between −1.9 and −3.3 percentage points. This is an unexpected finding in the sense that the effects of the price indexation of entitlements should stabilise during this period.[17] Firstly, the modest growth in income from employment and the level of unemployment observed since the early 2000s have an effect on the constitution of pension entitlements, which would later affect the level of pensions at the time they are paid out. Thus, average wage growth over the previous 25 years would only align with annual wage growth (between 0.7% and 1.6% per year) from 2050 onwards. Secondly, the effects of the decrease in the performance of the AGIRC-ARRCO scheme, which would only stabilise from 2033 onwards, would continue to spread as the generations concerned reached retirement age. Replacement rates would also continue to fall in the State civil service due to the decrease in the average pro-rata coefficient over the generations following later entries into the State civil service scheme (Secrétariat général du Conseil d'orientation des retraites, 2023).

Finally, from 2055 to 2070, the share of pension expenditure in GDP would gradually stabilise in all scenarios. The ageing population would be offset by the decrease in the relative pension. This decrease would come almost exclusively from the AGIRC-ARRCO scheme and, to a lesser extent, from the increase in retirement

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16. *The increase in the length of insurance required for the payment of pensions at full rate, provided for in the reforms, which leads to an increase in the retirement age, also has a downward impact on the pro-rata coefficients of pensions.*
17. *Under steady conditions (constant wage growth, career duration and retirement duration), it is possible to demonstrate that the average pension increases in line with average earnings from employment.*

duration. As the pensions of older pensioners are generally lower than those of younger pensioners due to the *Noria* effect, the extension of the retirement duration, which increases the proportion of older pensioners among the total number of pensioners, mechanically helps to slow the growth of the average pension.

3. The Balance of the Pension System Depends on the Convention Selected

3.1. How Should The Resources of the Pension System Be Measured?

Normally, a pay-as-you-go pension scheme is financed by contributions from employed workers levied from their gross wages[18] at a specified contribution rate. In this case, in the same way as expenditure, the resources of the pension system are easy to project once the demographic and economic assumptions have been made. At unchanged contribution rates and when the sharing of value added between capital and labour is stable, the amount of resources as a proportion of GDP is stable. The resulting development of the balance (the gap between resources and expenditure) then reflects only the development of pension expenditure as a proportion of GDP.

In practice, however, some of the resources of the pension system come from funding sources other than contributions. Thus, 12% comes from the assumption of contributions by the State intended to ensure the financial balance of the State civil service scheme and other special schemes (SNCF, RATP, mining, seafarers or State workers' scheme) ; 12% comes from tax revenues (including the General Social Contribution [*contribution sociale généralisée* – CSG]) paid by active and retired workers ; and 9% comes from external bodies. The latter two sources of funding are intended to compensate for exemptions and reductions in contributions for low-wage earners, certain solidarity schemes (mainly family or unemployment benefits) or a very unfavourable demographic situation (farmer schemes). These resources are discretionary by nature. In particular, resources from the family branch of the social security system and the Unedic (*Union nationale interprofessionnelle pour l'emploi dans l'industrie et le commerce* - National Professional Union for Employment in Industry and Trade) decrease in the forecast because the assumptions predict fewer children and unemployed people than in recent years.

In addition, contribution rates differ across schemes. In particular, they are higher under the CNRACL scheme (scheme for civil servants

working in local authorities and hospitals). However, the share of the remuneration of civil servants working in the Fonction publique territoriale (FPT - local authorities) and the Fonction publique hospitalière (FPH - hospitals) in total remuneration decreases under assumption, which leads to a decrease in the share of resources in GDP through a structural effect.

This is why the COR presents the resources and balance of the pension system in accordance with two accounting conventions for the State civil service scheme and other special schemes.

The EPR convention (for *Équilibre Permanent des Régimes*, meaning Permanent Balance of Schemes) aims to achieve a balance between the State pension scheme (but not that of civil servants working in local authorities and hospitals) and the special schemes each year. This convention reflects the current legislation governing the pension system and serves, *inter alia*, as a basis for discussions on social security funding laws. It has the advantage of providing an alert regarding the funding need of schemes that do not benefit from balancing subsidies, but it provides no structural indication of the financial situation of schemes that are financially balanced by the State (almost a quarter of the expenditure of the entire pension system).

The EEC convention (for *Effort de l'État Constant*, meaning Constant State Effort) in turn consists in stabilising the resources allocated to the State pension scheme and special balanced schemes as a proportion of GDP at the average value recorded between 2017 and 2021[19]. This convention, presented for illustration purposes only, makes it possible to highlight the redeployment of financial flows between the balanced schemes for which expenditure is expected to decrease and the other schemes, given that the State contribution to pension funding would remain constant as a proportion of GDP.

While these conventions are equivalent for the overall public financial situation, the level of the balance is very sensitive to the convention adopted for the projection. These differences are due to the fact that, depending on the

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18. *While there is a legal distinction between employer contributions and employee contributions, the final impact of the contributions is based on the number of employed people. See document N° 4 of the COR meeting of 17 October 2019 (Secrétariat général du Conseil d'orientation des retraites, 2019).*

19. *The name of the conventions has been changed since the COR report of November 2019 because the previous names were not explicit and linked the conventions to the institution (CCSS) or to an economic concept (GDP). The new names are intended to clarify the logic underlying each of the conventions.*

conventions, the State contributes more or fewer resources to the pension system.

The financial situation of the pension system can be assessed year after year. But in a context of demographic change and/or economic fluctuations of a cyclical nature, it may also be of benefit to examine whether the funding needs observed in a given year will be offset by the surpluses of other years. The two indicators (annual balance and average balance over the projection period) are discussed in the following Section.

3.2. In Light of the Assumptions Used, the Pension System Would Have Funding Needs over the Next 25 Years

With the economic recovery seen in 2021, the balance of the pension system recovered: after having a funding requirement of around 0.6 percentage points of GDP in 2020, due to the health crisis, the pension system appears to have a surplus of 900 million euro in 2021. And this surplus is expected to increase in 2022 (3.2 billion euro under the EPR convention).

In the projection, its development, like that of the expenditure to GDP ratio, would be very sensitive to the pace of growth in remuneration from employment (or labour productivity) and the convention adopted (Figure IV).

Under the EPR convention, the balance of the pension system would remain negative over the projection horizon in three of the four scenarios, mainly due to the decrease in the share of resources in GDP. In the short-term, this decrease would be partly related to the decrease in resources from the CNRACL scheme due to the effect of the remuneration assumptions for civil servants. It is worth highlighting the paradoxical nature of this result, as the gains for public finances brought about by savings measures in relation to public sector payroll are reflected in a deterioration in the financial situation of the pension system. The deterioration in the balance would then be the result of the basic scheme for private sector employees. Between 2022 and 2070, the pension system would experience an average funding requirement of around −1.1 (0.7% scenario) to −0.3 (1.3% scenario) percentage points of GDP. The pension system would only return to equilibrium in the 1.6% scenario in the mid-2050s and would be just balanced in this scenario on average over the period. The balance would be between −1.9% of GDP (0.7% scenario) and 0.2% of GDP (1.6% scenario) in 2070.

Using the EEC convention, the pension system would gradually return to equilibrium in all scenarios but over a longer or shorter period of time (towards the mid-2030s in the 1.6% scenario, the mid-2040s in the 1.3% scenario and the late 2050s in the 1.0% scenario). It would continue to experience funding needs over the projection period in the 0.7% scenario. By 2070, the balance of the pension system would thus vary between −0.7% and 1.5% of GDP. Between 2022 and 2070, the pension system would have a

Figure IV – **Balance of the pension system according to the accounting convention used, observed and projected**
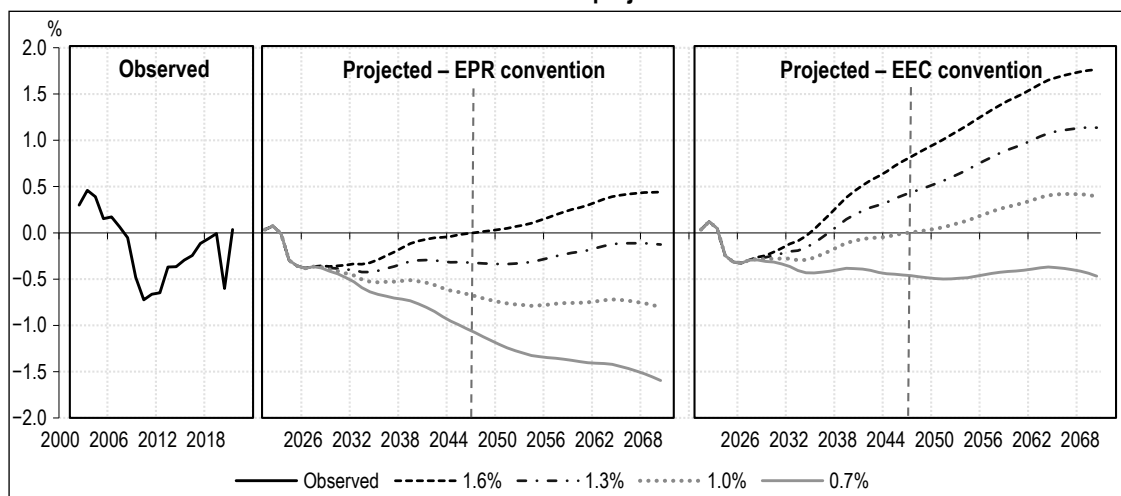
Notes: Data excluding financial income and charges, excluding allocations and recoveries from provisions. EEC convention: stabilisation of contributions and balancing grants as a proportion of GDP at their average level from 2017 to 2021. EPR convention: contributions and balancing grants changing so as to ensure equilibrium in the balance of these schemes each year. The dashed vertical bar indicates the 25-year control horizon defined by the CSR.
Coverage: All legally compulsory French pension schemes, including the Old-Age Solidarity Fund (FSV), excluding the Civil Service Supplementary Pension Scheme (RAFP).
Sources: Reports to the CCSS 2010–2021; COR projections – September 2022.

deficit on average in the 0.7% and 1.0% scenarios (respectively −0.6 and −0.4 percentage points of GDP), it would be just balanced in the 1.3% scenario and it would be in surplus in the 1.6% scenario (0.4 percentage points of GDP). This improvement in the financial situation of the pension system would be achieved in return for a greater financial contribution from the State as an employer than under the EPR convention and an equivalent deterioration in the State budget.

## 4. Sensitivity to the Economic and Demographic Assumptions

The outlook for the pension system is presented according to various labour productivity growth assumptions, associated with a single unemployment rate target (4.5%) and INSEE's central demographic and labour force scenarios. However, it is necessary to examine variants to assess the sensitivity of the results to these central assumptions. These variants are paired with the 1.0% labour productivity growth scenario, without making it a central scenario.

The number of contributors and pensioners and the average pension have been projected by changing each of the four variables (unemployment rate, fertility, mortality and migration balance) that differentiate the variants one by one, while leaving the other economic assumptions (labour productivity and employment rate by age) unchanged.

In the medium term (2032), the unemployment rate assumption would play a stronger role than all the other assumptions: in the case of an unemployment rate of 7% instead of 4.5%, the share of pension expenditure in GDP would be 0.4 percentage points of GDP higher than in the 1.0% scenario (in which it would be 14.1%). The differences would range from −0.2 percentage points (1.6% productivity scenario) to +0.2 percentage points (low migration balance) for the other assumptions (Figure V). In the long-term (2070), differences linked to productivity assumptions and demographic assumptions would continue to spread, while differences relating to unemployment would be slightly smaller than in 2032. The share of pension expenditure in GDP (13.5% in the 1.0% scenario) would thus be 1.6 percentage points lower if productivity increased by an average of 1.6% per year and 1 percentage point higher if productivity increased by only 0.7% per year. If life expectancy were higher, the difference would be around 1 percentage point and it would be −0.8 percentage points if it were lower. The fertility and migration balance assumptions would have effects of around 0.7 to 0.8 percentage points of GDP in the upward or downward direction.

These results are linked to the respective developments of the ratio between the number of contributors and the number of pensioners and the relative pension.

Figure V – **Sensitivity to economic and demographic assumptions of the projections of the share of pension expenditure in GDP in 2032 and 2070**
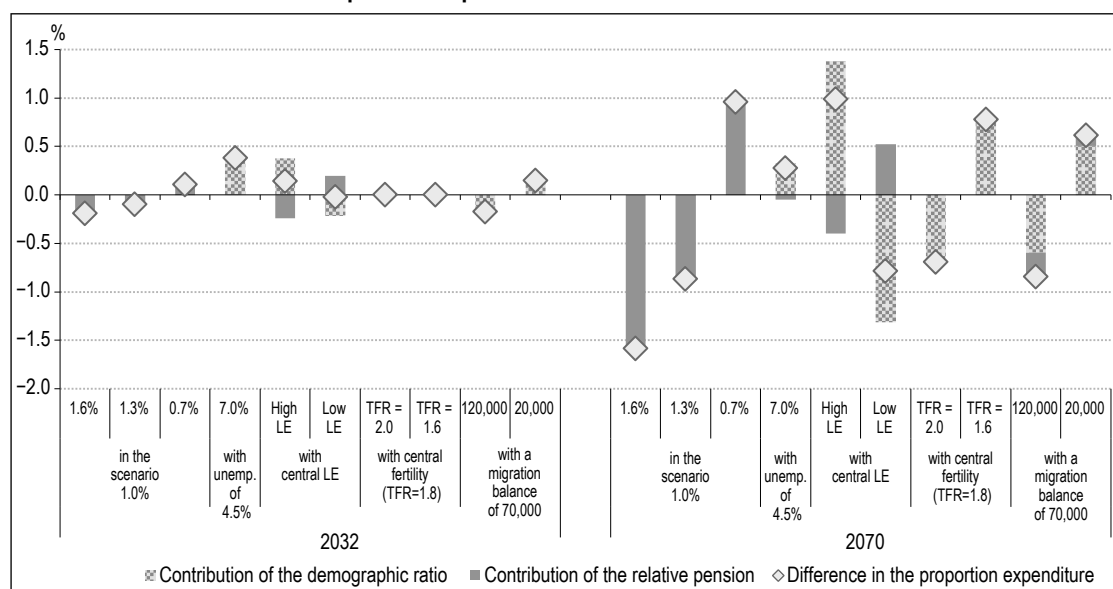
Reading note: In 2070, the share of pension expenditure in GDP would be 0.3 percentage points higher, with an unemployment rate of 7% instead of 4.5% and labour productivity growth of 1.0%. The ratio between the number of contributors and pensioners would increase pension expenditure as a proportion of GDP by 0.3 percentage points, while the relative pension would decrease it by −0.04 percentage points.
Sources: COR projections – September 2022.

With regard to demographic assumptions in the first analysis, the migration balance assumption for the entire projection period and the fertility assumption for the second half would have effects primarily on the number of contributors, while mortality assumptions would have an impact mainly on the number of pensioners. In the short-term, migration variations result in a higher or lower number of contributors and the additional or non-existent net inflows would have an effect on the number of pensioners only after 20 to 30 years. The number of contributors would be higher (lower) in the case of higher (lower) fertility from the time that the first generations affected by this assumption reach the age of entry into the labour market (around 2045), while the number of pensioners would be identical to that of the central scenario due to a structural effect (children born from 2020 onwards will not retire before 2070). Finally, if life expectancy gains were to grow faster than expected, the number of pensioners would logically be higher than in the baseline scenario, as a result of a longer retirement period.

The migration balance and mortality assumptions also have an effect on the average pension. The effect of migration balance assumptions is small and depends on career length: immigrants generally have shorter contribution periods and therefore lower pension levels. In terms of mortality, a higher (lower) life expectancy, and therefore more (less) late deaths, results in a higher (lower) proportion of older pensioners among all pensioners. Since the pensions of older pensioners are lower on average, the higher number of pensioners with high life expectancy is associated, due to a composition effect, with a lower average pension for all pensioners, and vice versa. On the other hand, the relative pension is not mechanically affected by fertility assumptions since the higher (lower) number of people born will not have retired yet.

As regards the economic assumptions (productivity and unemployment), productivity assumptions have no structural effect on the ratio between the number of contributors and the number of pensioners, because they are based on the same demographic scenario and the same unemployment rate. Higher or lower unemployment, for its part, mechanically results in a lower number of contributors. However, the unemployment assumption also has an indirect effect on the number of pensioners, which depends on behaviour in relation to taking retirement, which varies according to the labour market situation at the end of peoples' careers.[20] The level of the unemployment rate also has an effect on the relative pension. On the one hand, if people extend their careers, their pension amounts are higher. On the other hand, more frequent periods of unemployment result in lower acquired pension entitlements, even where solidarity mechanisms (validation of quarters and free points in supplementary schemes) exist to mitigate the impact of unemployment on the pension amount (Cheloudko *et al.*, 2020)[21]. However, the impact of unemployment on the pension of those covered by the scheme, and thus on the projected average relative pension, increases slowly and only becomes noticeable in the very long-term. However, the scale of these differences is much smaller than that related to differences in productivity growth assumptions, as they stabilise when the unemployment rate reaches its target value in 2032, while differences related to productivity assumptions are cumulative until the mid 2050s, as discussed in Section 2.

5. The Standard of Living of Pensioners Would Rise Less Than That of the Population as a Whole

The objective of financial sustainability of the pension system is accompanied by an objective of ensuring a satisfactory standard of living for pensioners. In order to assess whether this objective is met, beyond the pension related to income from employment, it is also necessary to take into account the other components of a household's standard of living. In addition to pensions, other sources of income must thus be added, first among which is income from wealth, which is higher for pensioners than for the population as a whole, since pensioners have a higher level of wealth on average (Secrétariat général du Conseil d'orientation des retraites, 2021). The redistributions that take place between households through the payment of benefits (other than pensions) and social security and tax levies must then be integrated. Finally, household size should be taken into account, which varies over the course of life. Pensioners' households are thus composed of fewer people than working households, in particular because children have generally left the home by retirement age.

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20. People covered by the scheme who are no longer employed at the time of retirement have no incentive to leave beyond the full rate, while people covered by the scheme who are still employed may choose to benefit from additional entitlements in return for a later retirement.
21. This mitigation is nevertheless partial. Firstly, these arrangements most often concern compensated unemployment. However, a significant proportion of unemployed people are not compensated and therefore cannot benefit from them. Secondly, there is no wage added to the account in the basic schemes of private sector employees: the longer the period of unemployment or the more periods of unemployment in their career, the greater the risk of having at least one year without a wage in the years taken into account for the calculation of the reference wage.

Since 1996, the standard of living of pensioners has been very close to (or even slightly higher than) that of the population as a whole, whereas it was 30% lower in the 1970s (Figure VI). The first reason for this convergence of living standards is the widespread application of the pension system introduced in 1945[22] and the continuous improvement of entitlements. The Boulin laws of 1970 following the Laroque report thus increased the rate of pay out and the reversion rate and minimum pension levels were established; the application of supplementary schemes was broadened and their contribution rates were increased, generating higher entitlements; contributory pensions and the minimum old age pension underwent significant increases until the mid-1980s. At the same time, careers, especially those of women, have become increasingly comprehensive, which has also increased the level of pensions. Finally, the increase in wage labour among the employed population has also contributed to the increase in pensions, with pension amounts being higher in schemes for employees than for non-employees (Aubert, 2023). Between 1996 and 2010, the average standard of living of pensioners rose in parallel with that of the working population and the population as a whole, but has since developed less favourably, particularly as a result of the smaller increases and the spread of tighter pension calculation rules (cf. Section 2).

In the future, the relative standard of living of pensioners would largely depend on the development of the average pension relative to the average income from employment, as it is assumed that the proportions of income, social security and tax levies and wealth in household income would be stable. It would thus decrease to a greater extent as productivity gains would be important. Between 2021 and 2070, pensions would increase (ranging from increasing by 8.4% for the 0.7% scenario to increasing by 29.3% for the 1.6% scenario), but would do so slower than earnings from employment (increasing by between 40.3% and 102%), which would benefit fully from productivity gains.

The relative standard of living of pensioners would thus vary between 76.2% (1.6% scenario) and 87.9% (0.7% scenario). It would therefore reach values comparable to those it had in the 1980s or those found in many European countries (Belgium, the Netherlands or the United Kingdom, for example).

Moreover, the projections presented here are "mechanical" in the sense that they do not incorporate any changes in behaviour caused by the relative decrease in pensions: people covered by the scheme are assumed to continue with the same savings and pension pay out behaviour (retirement on achieving the full rate) in the future as observed at present. However, if they consider that the amount of their future pension is insufficient, people covered by the scheme

22. *Extension of schemes to all professions and introduction of supplementary schemes.*

Figure VI – **Relative standard of living of pensioners, observed and projected (average standard of living of pensioners relative to that of the population as a whole)**
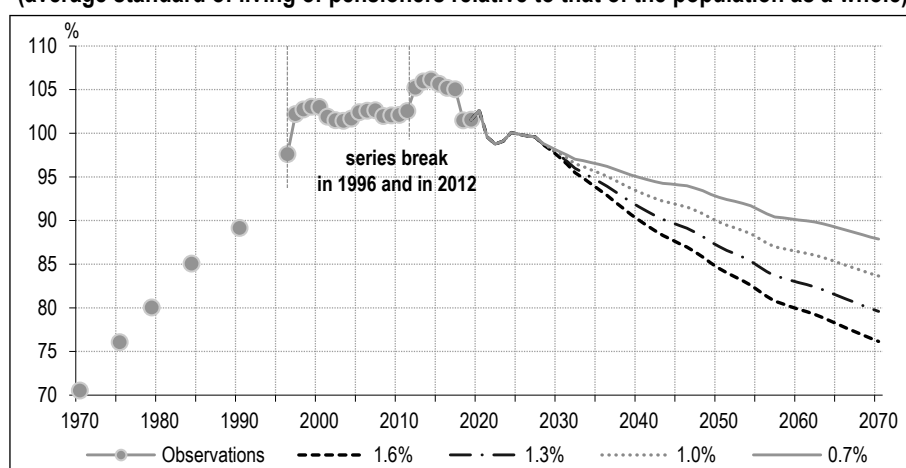
Notes: The old Revenus fiscaux surveys (tax income surveys) were conducted approximately every five years from 1970 to 1996. The income measured in these old surveys is not directly comparable to the income measured in surveys conducted from 1996 onwards, hence the series break in 1996.
Reading note: In 2019, the last year observed, the average standard of living of all pensioners represented 101.5% of that of the population as a whole.
Coverage: All ordinary households.
Sources: INSEE-DGI, Tax income surveys 1970 to 1996; INSEE-DGI, Tax income surveys backcasted from 1996 to 2004; INSEE-DGFiP-CNAF-CNAV-CCMSA, Tax and social incomes surveys from 2005 to 2019; COR projections – September 2022; INSEE, DESTINIE model.

could – in so far as they are able – react to the relative decrease in pensions through two methods: either, for those whose income from employment so allows, through increased efforts to save for retirement during their working life; or, if they are in employment before pay out, by postponing their retirement age beyond the age at which they obtain the full rate.

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This article aims to provide information to frame the financial outlook of the French pension system for 2070 and the development of the standard of living of pensioners.

Despite the gradual ageing of the French population, pension expenditure as a proportion of national wealth, which synthetically expresses the level of levies that must be made on the wealth produced by the labour force to ensure the equilibrium of the system, would remain contained or would decrease, according to the labour productivity growth assumptions. This result may seem counter-intuitive in view of the expected ageing of the population, which will inevitably impact on future pension expenditure by increasing the number of pensioners relative to the number of contributors. This unfavourable demographic development is offset, firstly, by the increase of the retirement age from 62 years old to 64 years old due to the reforms already adopted and, secondly, by the lower increase in the standard of living of pensioners compared to that of working people. Due to measures taken in recent years by the various schemes and their extension into the future, the average pension would continue to grow in constant euro, but slower than average income from employment. The standard of living of pensioners relative to that of the population as a whole would thus be between 76.2% and 87.9% in 2070, compared with 101.5% in 2019.

The level of the balance is highly sensitive to the economic scenario chosen, since that largely reflects the sensitivity of the share of expenditure in GDP to labour productivity growth assumptions. It can also differ greatly, depending on the convention selected for the projection of resources. These differences are due to the fact that, depending on the conventions, the State contributes more or fewer resources to the pension system, even if the overall situation of public finances is equivalent under all the conventions.

To appreciate the respective merits of a given convention, it is not a matter of asserting that one is more "true" than another (all are conventions) but of measuring their pedagogical contribution to the understanding of the mechanisms underlying the pension system. Thus, as the CSR points out, behind the choice of one or the other of the conventions, there are different visions of what can or should be the overall effort of the nation in favour of pensions, expressed by pension expenditure as a proportion of GDP.

Either the projected share of pension expenditure in GDP and, as a corollary, the relative standard of living of pensioners and their length of retirement are considered adequate by the community. In this case, assuming that State contributions remain constant as a proportion of GDP (EEC Convention) and under the most favourable scenarios, projected surpluses after 2035 indicate the level of resources that can be redeployed to other social challenges or public policies, such as the climate transition. The funding needs identified under the EPR convention indicate, in contrast, the level of additional resources to be provided to the pension system by the labour force if the projected level of expenditure is considered adequate by society.

Or the projected share of pension expenditure in GDP does not seem acceptable to the community. If it is considered too low, then the surpluses identified under the EEC convention can be used to improve the relative standard of living of pensioners and/or their retirement period. If it is considered too high, then reforms can be envisaged to lower it by taking further action in respect of the decrease in the relative standard of living of pensioners and/or the increase in the retirement age. In this case, the convention corresponding to the current legislation (EPR convention) makes it possible to assess the extent of the adjustments to be made for the pension system as a whole. □

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