THE SPANISH PENSION SYSTEM: AN UPDATE IN THE WAKE OF THE PANDEMIC

Banco de España contribution to the Committee on the Monitoring and Assessment of the Toledo Pact Agreements. 2 September 2020

2021

BANCO DE ESPAÑA
Eurosistema

Documentos Ocasionales
N.º 2106

Pablo Hernández de Cos

THE SPANISH PENSION SYSTEM: AN UPDATE IN THE WAKE OF THE PANDEMIC

Banco de España contribution to the Committee on the Monitoring and Assessment of the Toledo Pact Agreements. 2 September 2020

THE SPANISH PENSION SYSTEM: AN UPDATE IN THE WAKE OF THE PANDEMIC

Banco de España contribution to the Committee on the Monitoring and Assessment of the Toledo Pact Agreements. 2 September 2020

Pablo Hernández de Cos

GOVERNOR OF THE BANCO DE ESPAÑA

Documentos Ocasionales. N.º 2106

2021

ISSN: 1696-2230 (on-line edition)

Abstract

In 2017 the Banco de España published an Occasional Paper (DO 1701) describing the institutional framework of the pension system, setting out the main medium-term challenges and analysing some reform alternatives. In this paper the Governor updates the foregoing analysis for the Committee on the Monitoring and Assessment of the Toledo Pact Agreements on the basis of the latest figures and regulatory developments. He considers alternatives for reforming the pension system based on their impact on its financial sustainability and overall public finances; on employment, productivity and the economy's potential growth; and on the system's sufficiency and inter- and intra-generational equity.

Keywords: pension system, reform proposals, Toledo Pact, Social Security balance, population ageing, contributory pensions, social contributions, sustainability factor, public finances, pay-as-you-go public contributory system, pension schemes, real-estate saving, gender gap, pandemic.

JEL classification: H55, H61, J11, D14, J71.

Resumen

En 2017, el Banco de España publicó un documento ocasional (DO 1701) en el que se describía el marco institucional del sistema de pensiones, se presentaban sus principales retos a medio plazo y se analizaban algunas propuestas de reforma. En este nuevo documento, el gobernador actualiza ese análisis para la Comisión de Seguimiento y Evaluación de los Acuerdos del Pacto de Toledo, sobre la base de las cifras y los desarrollos normativos más recientes. Asimismo, plantea las alternativas de reforma del sistema de pensiones sobre la base de su impacto sobre su sostenibilidad financiera y del conjunto de las finanzas públicas, sobre el empleo, la productividad y el crecimiento potencial de la economía, y sobre la suficiencia y la equidad inter- e intrageneracional del sistema.

Palabras clave: sistema de pensiones, propuestas de reforma, Pacto de Toledo, saldo de la Seguridad Social, envejecimiento poblacional, pensiones contributivas, cotizaciones sociales, factor de sostenibilidad, finanzas públicas, sistema contributivo público de reparto, planes de pensiones, ahorro inmobiliario, diferencias de género, pandemia.

Códigos JEL: H55, H61, J11, D14, J71.

Contents

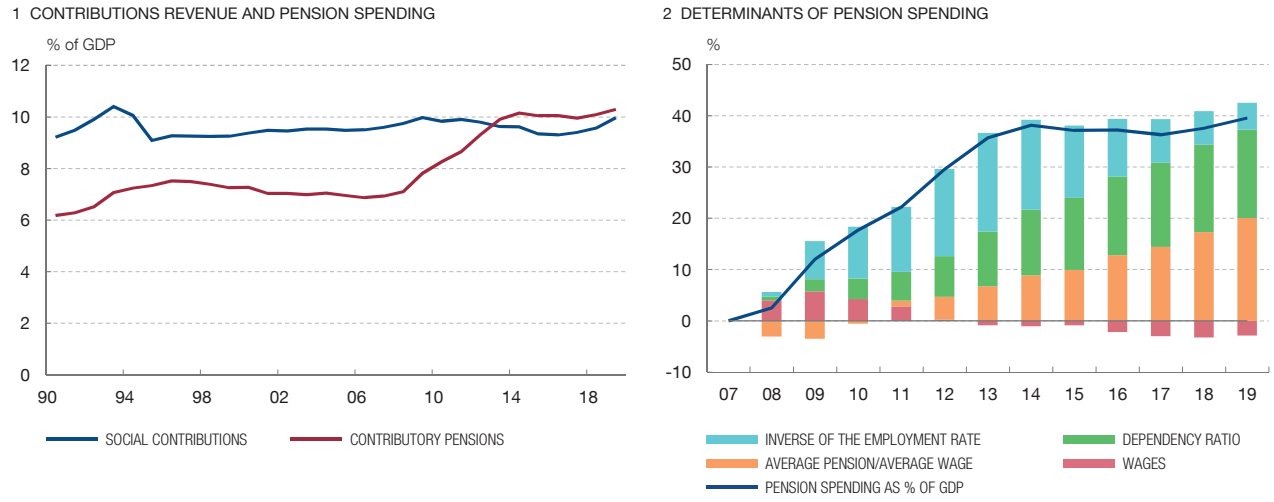
In 2017 the Banco de España published a paper describing the institutional framework of the system. It set out the main medium-term challenges and analysed some reform alternatives.[1] This paper is an update on that analysis based on the latest figures and regulatory developments. It includes discussion of some aspects of interest to the Committee on the Monitoring and Assessment of the Toledo Pact Agreements, such as gender gaps in pensions and complementary saving instruments for retirement.

1 See P. Hernández de Cos, J. F. Jimeno and R. Ramos (2017), *The Spanish public pension system: current situation, challenges and reform alternatives*, Occasional Paper No 1701, Banco de España.

1 The pension system challenge: scale and nature

For the eighth year running, the Social Security system posted a shortfall in its non-financial balance in 2019. The deficit last year totalled 1.3% of GDP, equivalent to almost €17 billion. Since 2007, when the system was running a surplus, the balance has deteriorated by 2.8 percentage points (pp) of GDP. This recurrent budgetary imbalance has seen the Social Security reserve fund decline from €66.8 billion in 2011 to little over €2 billion at end-2019.[2]

Chart 1
PENSION SPENDING BASED ON ITS MAIN COMPONENTS AND DETERMINANTS IN RECENT YEARS



SOURCES: Seguridad Social and INE. Spending does not include top-ups to minimum pensions.

The Social Security balance has deteriorated as a result of an increase in contributory pension spending, which has far outpaced the slight increase in revenues arising from social contributions. Indeed, while social contributions accounted for 10% of GDP in 2019, 0.4 pp up on 2007,[3] the share of contributory pensions (excluding top-ups to minimum pensions) in GDP has risen from 6.9% in 2007 to 10.3% in 2019.

To analyse the changes in spending on pensions, this variable can be broken down into the product of four factors: the dependency ratio, defined as the number of pensions divided by the population aged 16-64; the inverse of the employment rate; the benefit rate, defined as the average pension/average wage ratio; and the share of wages in GDP.

2 From a contributory standpoint, the Social Security system deficit is expected to amount to 1.3% of GDP in 2019. This figure would be obtained by subtracting the spending on contributory pensions (10.3% of GDP) plus subsidies and other contributory benefits (mainly for illness, maternity and paternity leave, high-risk pregnancy and breast-feeding, equivalent to 1% of GDP) from revenues arising on social contributions (10% of GDP). Moreover, the Social Security system incurs current expenditure on personnel and goods and services (0.3% of GDP), has outlays for other non-contributory benefits (0.9% of GDP) and receives net current transfers from general government (1.1% of GDP).

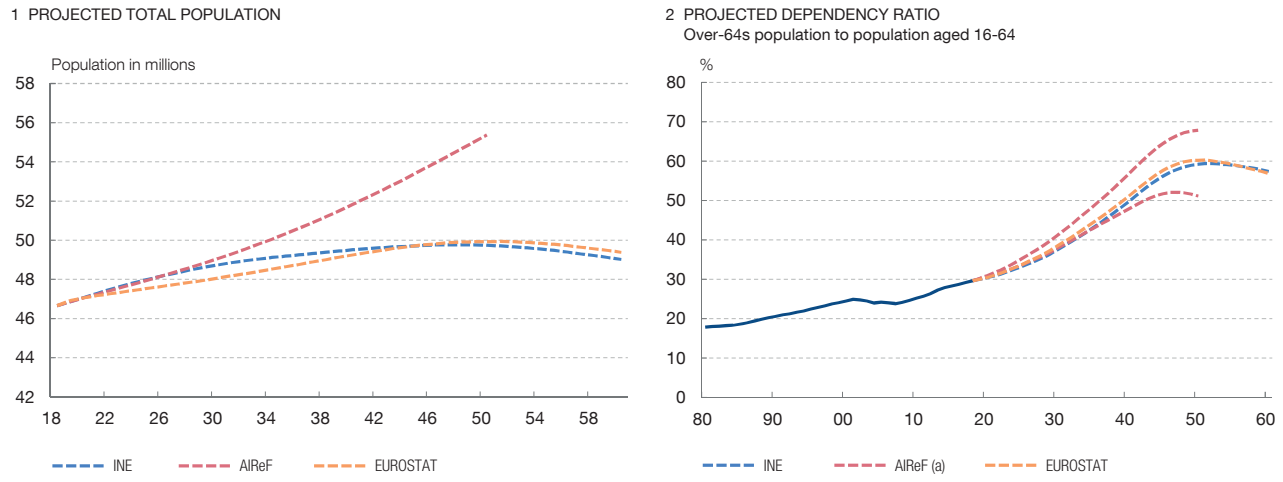
3 In this period, the effective social contributions rate is estimated to have increased from 22.5% in 2007 to 24% in 2019, while total gross wages as a percentage of GDP is expected to have fallen from 42.7% to 41.5%. Note that total gross wages are considered to be the average wage, estimated as aggregate wages and salaries divided by the number of wage-earners (calculated as full-time equivalent jobs), multiplied by numbers employed (also calculated as full-time equivalent jobs). The effective rate of social contributions is estimated as the ratio of revenues on social contributions to total gross wages.

Using this breakdown, we can show that the employment rate during the years of the crisis that broke in 2008 and the subsequent recovery was responsible for scarcely 13% of the deterioration in the Social Security balance.[4] The increase in the dependency ratio and the rise in the average pension/average wage ratio would account for 44% and 51% of the deterioration in the balance, respectively, while the decline in the share of wages in national income is estimated to have contributed to improving the system's balance by 8%.[5]

Recent developments in the Social Security accounts aside, the challenge facing our pension system in the coming years is inextricably linked to the demographic factor, i.e. to the expected increase in the weight of the elderly population relative to the population of working age, which will prompt a substantial increase in the dependency ratio.[6]

In fact, the baseline demographic scenarios of INE (the National Statistics Institute), AIReF (the Independent Authority for Fiscal Responsibility) and Eurostat all indicate that the weight

Chart 2
THE KEY FACTOR: DEMOGRAPHICS



SOURCES: INE, AIReF and Eurostat (EUROPOP).

a AIReF scenarios in the 20th and 80th percentiles, respectively.

4 The employment rate, defined as the ratio of numbers employed (full-time equivalent jobs) to the population aged 16-64, fell from 63% in 2007 to 59.8% in 2019.

5 The dependency ratio is expected to have grown from 26.9% in 2007 to 31.9% in 2019. The benefit rate is estimated to have increased from 38% in 2007 to 46.4% in 2019. The increase in the benefit rate would be the outcome of a swifter rise in the average pension than in the average wage. Specifically, the average pension — calculated as the ratio of contributory pensions (without top-ups to minimum pensions) to the number of pensions — grew by 46.3% between 2007 and 2019, while the average wage (estimated as per footnote 3) increased by 19.8%. Notable among the factors bearing on the increase in the average pension is the revaluation of pensions and the substitution effect, which is defined as the difference between new retirees and pensioner deaths. The revaluation of pensions has run at around an average of 1.4% since 2007. Minimum pensions have averaged growth of just under 3% since 2007, while the revaluation of the maximum pension has averaged 1.3%. With respect to the substitution effect, in average terms since 2007 the average pension of new retirees is estimated to have been 28% higher than the average pension of pensioners who have died.

6 The dependency ratio can be broken down into the product of two factors: the above-mentioned demographic factor, defined as the ratio of the over-65s population to the population aged 16-64, and the coverage rate, which measures the number of pensions as a proportion of the over-65s population.

of the demographic factor in the changes in the Social Security balance, defined as the ratio of the over-65s population to the population aged 16-64, will increase considerably in the coming years. Specifically, this ratio is expected to grow from 30% at present to between 58% and 61% in 2050, depending on the different demographic scenarios, as a result, above all, of the increase in life expectancy.[7] In light of the aforementioned breakdown, increments in the demographic factor revealingly pass through on a one-for-one basis to pension expenditure, meaning that if the former were to double, pension spending, with the other factors holding constant, would also double.

Any long-term projection, including demographic projections, is subject to a high degree of uncertainty. In the future, then, more benign demographic scenarios cannot be ruled out, owing, for example, to a higher birth rate or to greater net migration than considered in the baseline scenario. However, it should be stressed that uncertainty acts in both directions and, therefore, demographics might even exert greater upward pressure on pension spending, as a result, for instance, of a greater-than-projected increase in life expectancy.[8]

Against this background, AIReF provides probabilistic demographic scenarios that reflect this uncertainty and rest on different assumptions as to how fertility, migration and life expectancy will evolve. A reading of the scenarios reveals that the weight in the population of the oldest cohorts will increase very significantly in the coming years, even in the projections constructed on the most optimistic hypotheses. For example, under a scenario of scant growth in the population factor (the 20th percentile of all the scenarios proposed by AIReF), this factor is multiplied by 1.7 between 2019 and 2050. Under a scenario of greater growth (the 80th percentile of all the scenarios, which corresponds to a more pessimistic demographic hypothesis), the demographic factor is multiplied by 2.2. This range, translated into the pressure on pension spending, would entail an increase in such spending of between 5.5 and 10.6 pp of GDP between 2019 and 2050, all other factors holding constant.[9] These figures offer an idea of the scale of the demographic challenge facing our pension system.

---

7 This is so despite the relatively optimistic assumptions about the fertility rate and migration. In particular, AIReF and Eurostat project a rapid convergence of the Spanish and European fertility rates, leading to an increase in 30 years in the fertility rate to 2 children per woman, when currently the figure stands at 1.3 children. The net immigration rate in the AIReF projections is expected to include a growing number of immigrants annually, rising from 150,000 at present to 400,000 in 30 years, while Eurostat stabilises this figure at around 150,000 per annum.

8 On several occasions, the projection for life expectancy has stood below the actual resulting figure. For example, in INE's 2005, 2010 and 2012 projections, life expectancy in 2015 was projected at 82.08, 82.26 and 82.67 years, respectively. The actual resulting figure for life expectancy in 2015 was 82.70 years. In any event, INE's long-term demographic projections in recent years have described relatively well the trend of the dependency ratio over a 10-15 year horizon and, if anything, they have underestimated its growth. For example, in October 2005 a dependency ratio of between 29.7% and 30.2% was projected for January 2020. In 2010 the projection was updated to 30% and, finally, the actual figure in January 2020 was 30.2%.

9 This analysis assumes that the coverage rate falls from 1.06 as of today to 0.96, owing both to the change in the demographic structure of the population and to the increase in the statutory retirement age further to the 2011 reform. Specifically, the number of pensions is projected to reach 16.2 million in 2050. This would be the result of adding 14.9 million retirement and widowhood pensions and 1.3 million other pensions (disability, orphans, surviving family members). To obtain the number of retirement and widowhood pensions, the current ratio of the number of such pensions to the population aged at least 65 (91%) has been applied to the population aged at least 66 as projected by AIReF in 2050. To obtain the number of other pensions, the current ratio of the number of other pensions to the population aged 16-64 (4%) has been applied to the population aged 16-65 projected by AIReF in 2050. Note that the statutory retirement age in 2027 will be 65 years for workers whose contributions exceed 38.5 years, and 67 years for workers whose contributions are below this threshold. Based on the Social Security administrative labour records (MCVL by their Spanish name), it is estimated that somewhat more than half the new retirees in 2018 accredited a contribution period of over 38.5 years. According to calculations made previously, the change in the age structure of the Spanish population projected in 2050 would entail a decline in the coverage rate from 1.06 (as at present) to 0.99. The increase in the reference retirement age from 65 to 66 assumed above, which would translate into a decline in the coverage rate from 0.99 to 0.96, would involve a fall in pension spending of 0.6 pp of GDP in 2050.

One significant aspect to be considered is the role that the labour market can play when it comes to accommodating the aforementioned pressures on spending. For example, a 20 pp improvement in the employment rate, from 60% – the current rate – to 80% in 2050 would reduce the increase in pension spending attributable to demographic dynamics to between 1.5 pp and 5.3 pp of GDP. That is to say, an employment rate of 80% – an undoubtedly ambitious target given the past course of this variable, which peaked in 2007 (63%) – would manage only partly to offset (by 50-70%) the increase in pension spending due to the higher dependency ratio.

Further, the challenge of sustaining the public pension system would also be alleviated if productivity were to trend favourably. Permanent increases in the productivity rate reduce the economy's average pension to average wage ratio.[10] For example, the increase in the pension benefit rate, i.e. the average pension/average wage ratio, between 2007 and 2019 (from 38% to 46%) was in response to lower (by a cumulative rate of 5%) productivity growth, compared with the increase in the real average pension, whose growth was 25% in this period.[11]

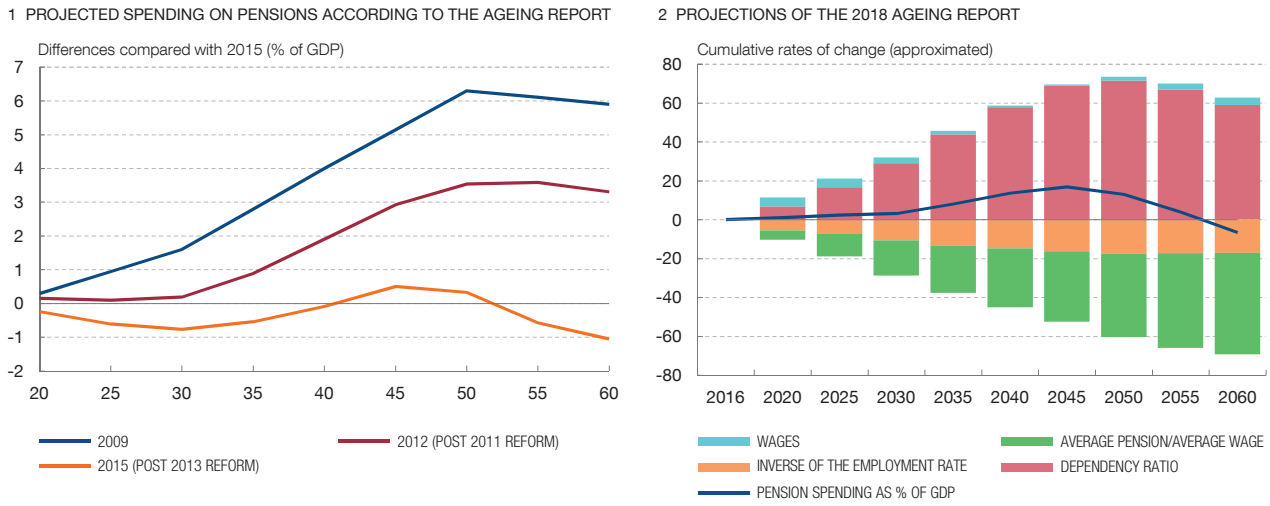
10 See A. de la Fuente (2019), *Productividad y pensiones,* Estudios sobre la Economía Española, 2019-43, Fedea. Increases in the productivity growth rate pass through instantaneously to the average wage, while current pensions, which depend on the wages of previous periods and which are not revalued with productivity gains, do not change. Accordingly, these increases in the productivity growth rate give rise to temporary reductions in the average retirement pension benefit rate. However, insofar as existing pensions are indexed below the productivity growth rate, the growth in productivity will give rise to a permanent reduction in spending through the reduction in the benefit rate.

11 It is, however, important to bear in mind that a reduction in the pension benefit rate in this case does not necessarily mean that the absolute value of pensions will perforce be lower. With sufficient growth in the average wage, positive growth rates for the average pension may be maintained, at the same time as the pension benefit rate diminishes. Indeed, given the duration of the regulatory base calculation period for pensions and for retirement, the higher the growth rate of wages (which, in principle, corresponds in the medium term to that of productivity), the lower the benefit rate will be, even if pensions increase at the rate at which productivity grew during the period of retirees' working lives. For example, in a situation in which the pension regulatory base calculation period is the last 25 years of working life (as will be the case in 2023), assuming a retirement period of 20 years and without revaluing pensions to wage growth, the average benefit rate throughout the retirement period would be 80% of the pension entitlements generated in relation to the final wage if productivity were to grow at 1% per annum, while it would be 65% of that amount if it were 2% per annum. In short, higher productivity growth rates would enable retirement pensions to be higher even if their benefit rate were lower; accordingly, retirees' standard of living would improve, although their relative income compared with the working-age population cohorts would diminish.

2 Recent reforms to the pension system

The demographic challenge our pension system faces is well known. Recent reforms, in 2011 and 2013, addressed this challenge. Among other measures, they delayed the retirement age, increased the period for calculating the regulatory base, introduced a sustainability factor linking the initial pension to life expectancy and approved a revaluation mechanism – the pension revaluation index (PRI) – tying the annual increase in benefits to the system's structural balance, with such increase not being allowed either to be below 0.25% or higher than the change in the consumer price index (CPI) plus 0.50%.

Chart 3
EFFECTS OF THE 2011 AND 2013 REFORMS



SOURCES: Seguridad Social, European Commission (Ageing Report) and Banco de España.

These reforms marked a very considerable step forward as regards ensuring the financial sustainability of the pension system. For example, the European Commission's (EC) 2009 report on ageing, before the 2011 and 2013 reforms were approved, projected an increase in pension spending of 6 pp of GDP in 2050. The 2015 update of this report, after the reforms, projected essentially constant pension spending in the long term.[12,13]

However, in the absence of additional revenues coming into the system, the improvements in financial sustainability, in particular that stemming from the 2013 reform, rested essentially on a decline in the pension benefit rate.[14]

12 The projection in this report was for an increase in the employment rate (15-64 years) from 54.5% in 2013 to 73.6% in 2050, and an increase in labour productivity of 1.5% in the long run. To put this latter figure into context, from 2010 to 2018 the annual growth rate of labour productivity per hour actually worked was 1.1%.

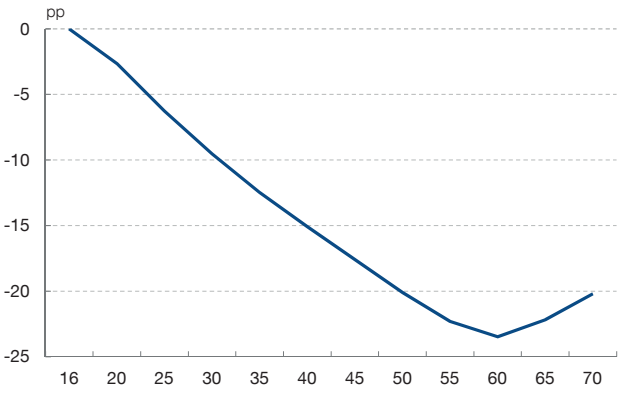
13 The EC's latest ageing report is for 2018, and it projects an increase in pension spending of 1.7 pp of GDP between 2016 and 2050.

14 According to AIReF, the 2011 reform is expected to have reduced pension spending as a proportion of GDP by 2.9 pp in 2048 compared with a no-reform scenario. The 2013 reform, for its part, will further reduce spending by 2.7 pp of GDP, 2.1 pp attributable to the PRI and 0.6 pp to the sustainability factor. See AIReF (2019), *Opinión sobre la sostenibilidad del Sistema de la Seguridad Social,* Opinión 1/19.

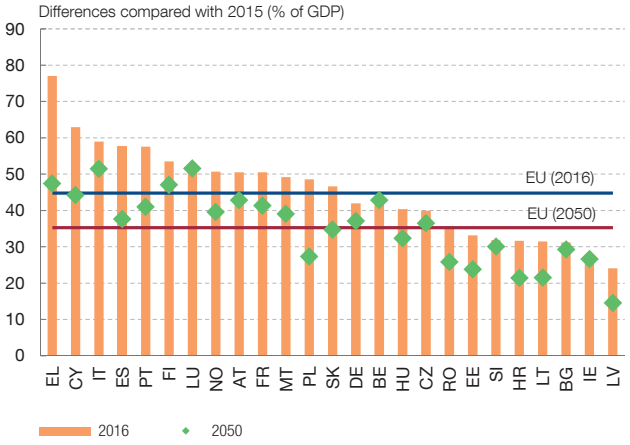
Chart 4

SUFFICIENCY OF PENSIONS. EXPECTED FALL IN THE REPLACEMENT RATE IN SPAIN AND EUROPE

1 BENEFIT RATE. PROJECTIONS ACCORDING TO THE AGEING REPORT
(Average pension/Average wage)



2 PENSION BENEFIT RATE IN 2016 AND 2050



SOURCE: 2018 Ageing Report (European Commission).
NOTE: Chart 4.2 does not include countries with second-pillar contributions over 2% of GDP, according to the OECD (DK, NL, SE and UK).

Specifically, according to this report, Spain had the fourth highest benefit rate of the European countries in 2013; its average pension was 59.7% of the average wage (the average ratio in the EU-28 that same year stood at 44%). This is mainly the outcome of a relatively high initial public pension in relation to the last wage received, known as the "replacement rate" (72.3% in gross terms for Spanish workers who earned the average income for the country during their working lives, compared with 45.5% on average in the EU-28, according to the information provided by the OECD in 2019). In any event, it should be borne in mind that this percentage is supplemented in several European countries by private contributions, obligatory and voluntary alike. Specifically, the gross replacement rate would increase by 10 pp on average for the EU-28, to 55.4% if these private contributions are added, still 17 pp below the Spanish replacement rate.[15]

According to the estimates in the report on ageing, as a result of the 2013 reform, and without further revenues coming into the system, Spain would undergo one of the biggest declines among the EU countries in the benefit rate between 2013 and 2060. This reduction would be approximately 20 pp, with Spain falling from fourth to tenth place, although its benefit rate would still be above the EU average, since several of these countries' systems have features that link the amounts paid to demographic variables, such as life expectancy, or have benefits stemming from considerably sizeable private systems.

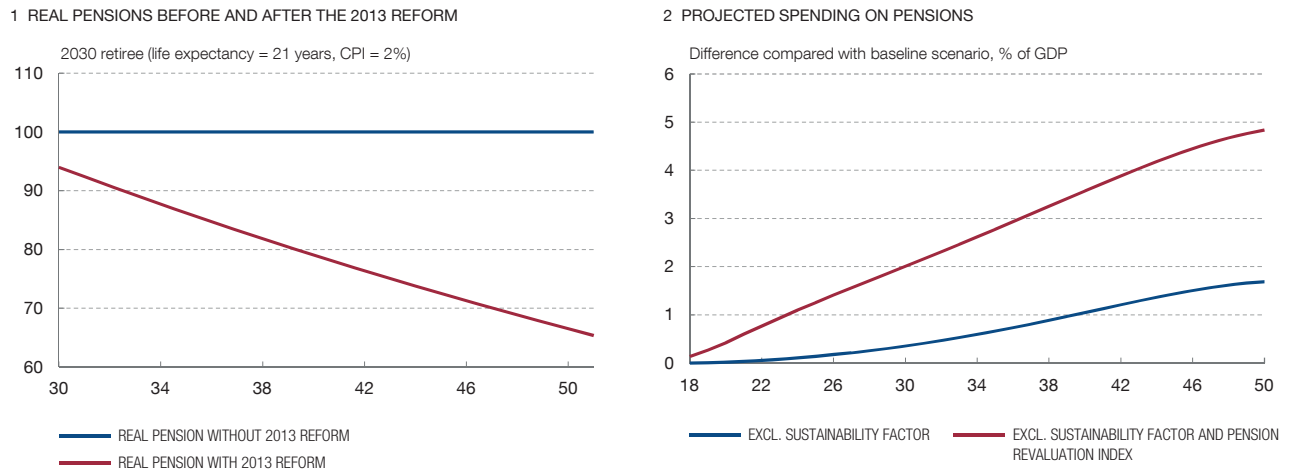
To illustrate the effect these reforms would have on current and future pensions, two simple exercises suffice. First, given the adverse effect of demographic pressure on the

15 OECD (2019), *Pensions at a Glance 2019: OECD and G20 Indicators*, OECD Publishing, Paris.

system's spending, strict application of the pension revaluation index would, without further revenues, not allow, under realistic assumptions, pension revaluations above the floor of 0.25% in the coming decades. In this case, if the CPI stood throughout the years close to the ECB objective of 2%, the loss of pension purchasing power would be 15% in 10 years and 30% in 20 years. Second, on the basis of current projections for life expectancy, the operation of the sustainability factor would reduce the initial pension of workers who have not yet retired by approximately 5% in 10 years and 10% in 20 years. The first factor (the amount of the revaluation) would be applied both to retirees and to the generations yet to retire whereas the second factor (sustainability) would only be applied to those who have not yet retired.

Chart 5

SUFFICIENCY OF PENSIONS. EXPECTED FALL IN REAL PENSIONS



SOURCE: Banco de España.
NOTE: The accounting projection of pension spending in Chart 5.2 draws on assumptions relative to the number of pensions and their average amount, bearing in mind that these amounts differ among those who join or are removed from the system, and those who remain in it. The assumptions behind the path of the different variables are those of the 2018 Ageing Report.

Against this backdrop, it was decided in 2018 to return to CPI-based pension revaluation and the entry into force of the sustainability factor was deferred, until 2023 at the latest. The consequences of these decisions for future pension spending are significant. For example, a simple simulation exercise based on the hypotheses of the EC's 2018 ageing report shows that the return to CPI pension indexing and the ultimate repeal of the sustainability factor would lead to growth in pension spending of over 4 pp of GDP in 2050.[16] Independent of this, and based on somewhat different assumptions, AIReF estimates the increase in spending under a scenario of CPI revaluation and maintenance of the sustainability factor at 2.8 pp of GDP in 2048, to which a further 0.6 pp of GDP would be added were the sustainability factor to be definitively repealed.[17]

16 Accounting projection of pension spending drawing on assumptions relative to the number of pensions and their average amount, bearing in mind that these amounts differ among those who join or are removed from the system, and those who remain in it. The existing assumptions behind the path of the different variables are those of the EC's 2018 ageing report.

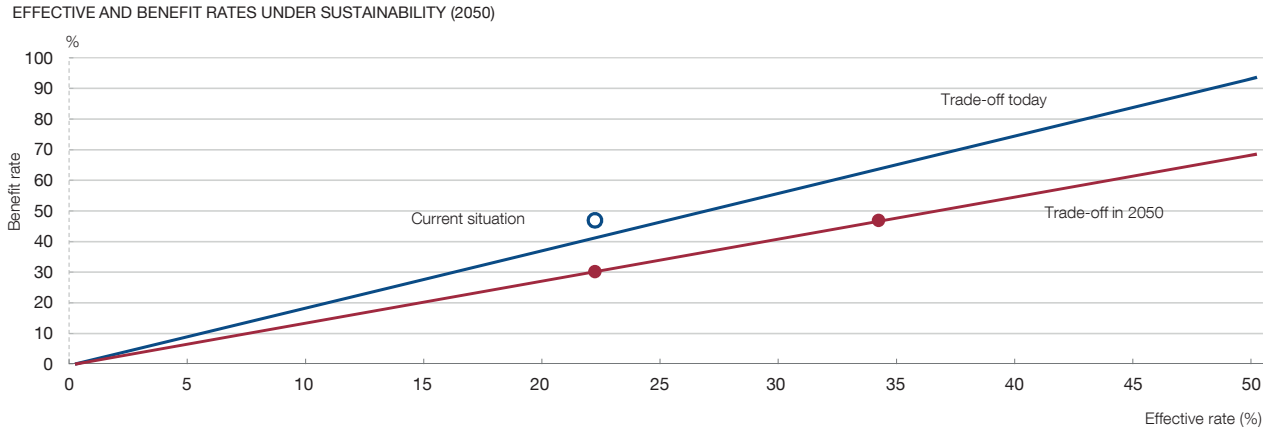
17 See AIReF (2019), *Opinión sobre la sostenibilidad del Sistema de la Seguridad Social,* Opinión 1/19.

3 Reform alternatives

In general, with a view to a possible reform of the system, we need to start by acknowledging that in financial equilibrium conditions there is a direct relationship between the resources channelled to the public pension system and the sufficiency of the benefits. In particular, the benefit rate which the pension system can provide depends positively on the income used to finance it and on the employment rate, and negatively on the dependency ratio.[18]

Chart 6
THE TRADE-OFFS TO MAINTAIN THE SYSTEM'S FINANCIAL EQUILIBRIUM

$$\text{Benefit rate} = \frac{\text{Rate of employment}}{\text{Demographic factor} \times \text{Coverage rate}} \times \text{Effective rate}$$



SOURCE: Banco de España.
NOTE: Assumptions: rate of employment, 80%; demographic factor, 58%; coverage rate, 1.

Thus, in order to address the projected increase in the dependency ratio, even assuming an ambitious scenario where the employment rate and productivity increase, there are basically two alternatives for ensuring the financial sustainability of the pension system: increasing the resources used to finance it or reducing the system's generosity (or a combination of the two).

For illustrative purposes, if we assume an employment rate of 80% and a demographic factor of 58% in 2050, an increase in the effective rate of social contributions of 8 pp to 32% (or an equivalent increase in other taxes and their transfer to the pension system) would be required in order to maintain the current benefit rate. Alternatively, the benefit rate would have to fall from the current 46% to 34% for the effective rate to remain constant.[19]

18 See P. Hernández de Cos, J. F. Jimeno and R. Ramos (2017) *The Spanish public pension system: current situation, challenges and reform alternatives,* Occasional Papers, No 1701, Banco de España.

19 In this example, the fall (12 pp) is lower than that projected by the aforementioned European Commission's report on ageing because it is based on more optimistic microeconomic assumptions. In particular, if these assumptions were in line with those of that report, i.e. an employment rate of 73%, a demographic factor of 62% and a coverage ratio of 1.10, in 2015 the benefit rate compatible with the current effective rate would be 26%, 20 pp lower than at present.

In short, given the demographic scenario expected for 2050, and assuming a significant increase in the employment rate, ensuring the system's sustainability requires an increase in social contributions (or in tax revenue transfers to the system) if the aim is for the system's current benefit rate to remain steady. Alternatively, if the system's revenues do not increase, the benefit rate will fall.

Against this backdrop, any reform should commence by establishing the level of benefits the public pension system should provide and, once established, ensuring that there are sufficient resources to fund it.

Additionally, any reform strategy, whether opting to curb expenditure or increase income, makes it necessary to take into account the distributive consequences, since these are very significant for pension systems. In particular, in a purely contributory system in which benefits were calculated on the defined benefits principle, benefits would be higher for those individuals who completed a longer working life and earned higher wages. However, the existence of welfare benefits, floors and ceilings on benefits and contributions, and of pension calculation formulae which follow criteria that are not purely actuarial generates, among other aspects, very significant effects on equity within and between generations. Likewise, pay-as-you-go funding implies income transfers from younger cohorts to older ones, while tax funding implies transfers from higher-income individuals (to the extent that the tax system is progressive) to the retired population.

There are two issues that need to be taken into account regarding intergenerational income transfers. First of all, to the extent that at a certain point in time the retired population took its saving and labour supply decisions with certain expectations of benefits, making the burden of spending adjustment fall solely on that generation would imply reducing their levels of income and welfare disproportionately. On the other hand, making the whole weight of the reform fall on future generations of workers by significantly increasing intergenerational income transfers would also mean disproportionately reducing that generation's income and welfare levels, which could also respond to these increases by reducing the labour it supplied.

In any event, it is essential for any reform to improve the system's transparency and increase its predictability, providing citizens with certainty and fostering prudent decision-making regarding savings, work and retirement.

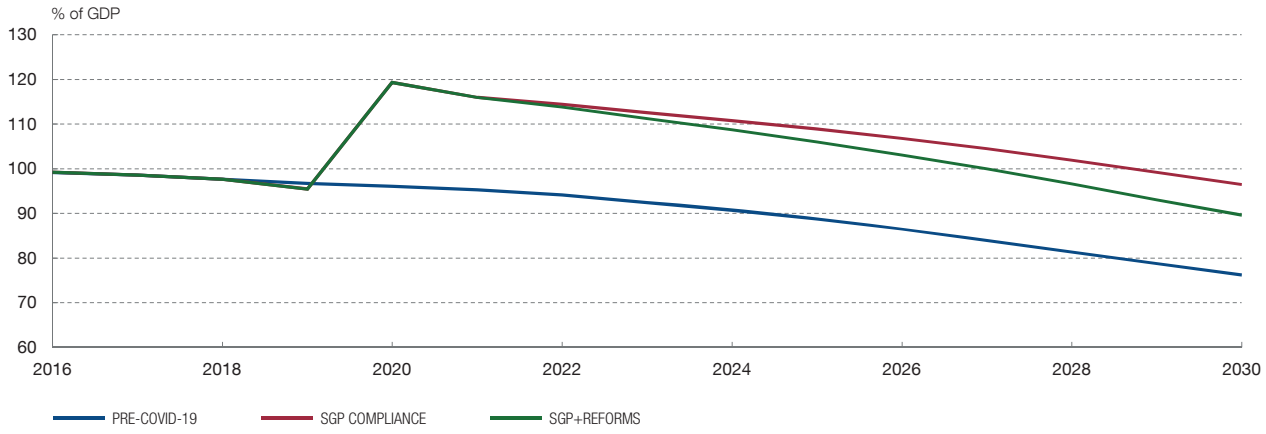
It is also important to discuss the pension system reform in the general setting of the state of public finances and the repercussions of the crisis generated by the coronavirus pandemic in Spain. Thus, the estimates available show that at end-2019 Spain's structural budget deficit was still very high, around 3% of GDP,[20] and the level of public debt-to-GDP stood at 95.5%, only 5.2 pp below its 2014 peak. The structural budget deficit estimate includes the above-mentioned estimate that derives from the 2019 pension system itself.

20 Different structural budget deficit estimates resulting from applying different calculation methodologies are available. According to Banco de España, IMF and European Commission estimates, it stood at 3.1%, 2.5% and 4.2% of GDP, respectively, in 2019.

Chart 7

PENSIONS AND THE CHALLENGE OF ENSURING THE SUSTAINABILITY OF PUBLIC FINANCES

SIMULATED TRAJECTORIES FOR PUBLIC DEBT IN A GRADUAL RECOVERY SCENARIO UNDER CERTAIN ASSUMPTIONS



SOURCE: Macroeconomic projections for the Spanish economy (2020-2022), Banco de España.

The fiscal measures adopted to alleviate the effects of the pandemic, the inevitable worsening of the macroeconomic environment and the operation of the automatic stabilisers will bear down most adversely on public finances in the short term. Specifically, the scenarios contained in the Banco de España's latest forecasts anticipate a very sizeable increase in government deficit and debt in 2020, which would only moderate slightly in the following years as the temporary measures implemented to mitigate the COVID-19 crisis are lifted and, at the same time, economic activity gradually recovers. Even so, in the absence of fiscal consolidation measures, in 2022 the general government deficit would still stand at very high levels, while debt would decline very slightly compared with estimates for that year. Therefore, as in other European countries, following the pandemic we will encounter the highest level of government debt in many decades.

The anticipated rise in government debt as a result of the current crisis will also trigger an increase in the interest burden. The pandemic will also likely lead to greater structural demand for basic welfare expenditure, such as on healthcare. Furthermore, the recent approval of the minimum income scheme entails an increase in permanent expenditure, officially estimated at around €3 billion per year. The upward pressures on pension spending generated by the aforementioned population ageing phenomenon should be added to this starting position.

Therefore, as I have frequently stressed since the onset of the pandemic, while in the short term the response to the health crisis should be accompanied by resolute fiscal measures to soften its impact, in the medium term far-reaching reforms must be enacted to ensure the sustainability of public finances and to reduce public debt. Specifically, reforms

boosting potential economic growth and multi-year public finance consolidation plans will be required. The pension system reforms implemented must take into account this setting and contribute to these objectives.

I would now like to address in greater detail some reform alternatives from both the income and expenditure standpoints which are regularly discussed with a view to dealing with the challenge facing our pension system. Naturally, the specific decisions on this necessary revision of the system must be taken in the political realm, so that Spanish society's various preferences with regard to pension levels and the resources necessary to finance them are appropriately weighted.

REFORM ALTERNATIVES FOR THE PENSION SYSTEM

Changes in the funding sources

- Transferring burdens to central government
- Eliminating ceilings
- Increasing social contributions
- Permanent tax transfers to Social Security

Reforms to curb rising expenditure

- Strict application of the 2013 reform
- Maintaining the PRI except for minimum pensions
- Increasing the number of years taken into account to calculate the regulatory base
- Raising the retirement age further
- Notional defined contribution account systems

3.1 Changes in the funding sources

An alternative for addressing the impact of demography on the pension system's financial sustainability is to obtain additional income, either by increasing intergenerational transfers (which would foreseeably require a substantial rise in the effective rate of social contributions) or by using other taxes to pay for pension expenditure.

In this connection, recent discussions of the Toledo Pact Committee highlight that the Social Security system is presently burdened with costs that are not its responsibility, and, therefore, transferring these to the central government might alleviate part of the Social Security system's deficit (evidently at the expense of the central government deficit).

These costs include most notably measures fostering employment, such as Social Security contribution rebates or exemptions, and subsidies implicit to different regimes. In this case, moreover, the empirical evidence on the impact of these rebates shows that their effectiveness as an incentive for hiring tends to be limited. Restricting these incentives to well-defined groups with clear employability problems or using them to improve the human

capital of the unemployed would foster their effectiveness.[21] Noteworthy on the side of expenditure is the assumption of welfare benefits, along with operating expenses associated with this non-contributory expense. Overall, according to the AIRef, these items would total €7 billion per year.[22] This institution also proposes transferring to the Social Security system somewhat less than one half of the social contributions currently allocated to the National Public Employment Service, which as a whole account for 2% of GDP.

It should be borne in mind, as I noted earlier, that although these measures would alleviate the Social Security system's accounts, the structural deficit of the general government as a whole, equivalent to 3.1% of GDP in 2019, would not be affected, as the central government subsector would assume the Social Security system's current mismatch. In any event, the Social Security system should cover the above-mentioned increase in expenditure arising from the increase in the dependency ratio.

In the case of social contributions, one way of increasing the effective rate without changing the statutory rates could be eliminating the ceilings on contributions. By way of example, the complete elimination of the ceiling on contributions for workers affiliated to the Social Security system's general regime would affect around 10% of workers and it would entail raising capped contributors' average contributions by more than 30%. According to different estimates, the automatic pass-through of this additional taxation would involve additional income of between 0.4% and 0.8% of GDP per year.[23] In any event, such a large increase would raise labour costs which, according to the evidence available, could have negative consequences for employment and productivity.[24]

It should also be taken into account that eliminating the ceiling on contributions without the related increase in benefits would affect the contributory nature of the Social Security system i.e. the relationship between individuals' contributions and the benefits received, by establishing for a significant percentage of workers a level of benefits very distant from the contributions made. This is what has happened to a certain extent in recent years, by means of a process some authors describe as a "stealth reform" (increases to the maximum contribution base that exceed those of the maximum pension).[25]

---

21 See, in this connection, the evidence of deadweight associated with certain Social Security contribution exemption programs, such as P. Font, M. Izquierdo and S. Puente (2017), *Subsidising mature age employment or throwing coins into a wishing well: a quasi-experimental analysis,* Working Papers No. 1740, Banco de España, and the meta analysis indicating that training and guidance programs seem to be the most efficient active policies, in D. Card, J. Kluve and A. Weber (2018),"What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations", *Journal of the European Economic Association,* 16(3), pp. 894-931.

22 According to the AIRef, €4 billion relate to maintaining the funding of the Social Security's operating expenses, €2 billion to measures fostering employment and €1 billion to subsidies implicit to different regimes. See AIRef (2019), *Opinion on the sustainability of the Social Security system,* Opinion 1/19.

23 According to P. Hernández de Cos et al. (2017), op.cit., removing the ceiling could generate additional revenues of around €10 billion. A report of the Workers' Commissions, *(Informe sobre la propuesta de CCOO para el incremento de Bases Máximas de Cotización)* estimated this amount at €8,626 million per year.

24 See, for instance, M. Keane (2011), "Labor Supply and Taxes: A Survey", *Journal of Economic Literature,* 49(4), and Á. Melguizo and J. M. González-Páramo (2013), "Who bears labour taxes and social contributions? A meta-analysis approach", SERIEs, No. 4, pp. 247-271.

25 See J. I. Conde-Ruiz and C. I. González (2016), "From *Bismarck* to *Beveridge*: the other pension reform in Spain", *SERIEs,* No. 7, pp. 461-490.

Alternatively, an option would be to increase the Social Security contribution rates for common contingencies. A simple exercise shows the scope of such a measure. Specifically, as noted earlier, given a demographic factor of 58% in 2050 and assuming a very optimistic employment rate of 80% in 2050, maintaining the average pension level relative to current wages would require increasing the effective rates of social contributions from the current 24% to 32%. Once again, this rise would considerably increase labour costs for firms, possibly resulting, as discussed previously, in lower demand for labour, particularly among the lower-income groups, whose demand is more sensitive to changes in indirect taxes.[26]

Another option to increase the income available to pay for pensions is to raise general taxes and to use part of the taxes collected to fund a permanent transfer from the central government to the Social Security system. This alternative has certain implications. First, taxes are paid by all citizens, including pensioners. Indirectly, therefore, depending on the distribution of this tax among the different age groups, this increase could, to some extent, impact the same population whose income it is intended to protect, even giving rise to a drop in the net pension replacement rate.[27] Second, it would reduce the system's contributory nature, although it could be argued that these contributory elements are smaller in the case of non-retirement pensions (widowhood, orphans and surviving family members), which could justify financing them with general taxes.

3.2 Reforms to curb rising expenditure

As stated earlier, in a context in which it is decided that the system's resources should not be increased, ensuring its financial equilibrium would necessarily require reducing the benefit rate. In fact, strict application of the recent reform in 2013, assuming that the system's income remains constant, would lead to a reduction of the systems benefit rate. This reduction would be achieved via the sustainability factor, which would reduce the starting pension for new cohorts of pensioners in line with life expectancy, and, above all, via the PRI, which would imply a cut in pensions' purchasing power until the system's financial equilibrium is restored.

In this setting, it is sometimes argued that the PRI approved in 2013 should be maintained, ensuring that minimum pensions are indexed to inflation. These pensions would therefore not lose purchasing power, although the rest would. The impact of this measure is estimated at 0.43 pp of GDP per year on average between 2017 and 2057, according to De la Fuente et al. (2017).[28]

Furthermore, in a context in which it is decided that the system's resources should not be increased, there are other mechanisms that could generate the same reduction in

---

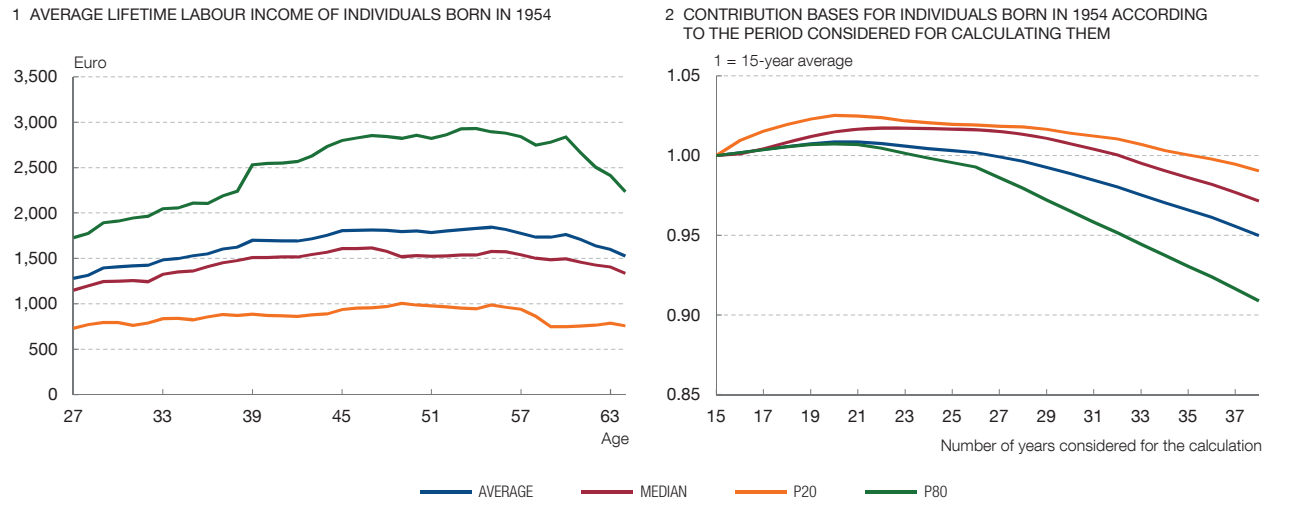
26 A. Lichter, A. Peichl y S. Siegloch (2015), "The own-wage elasticity of labor demand: A meta-regression analysis", *European Economic Review,* vol. 80, pp. 94-119.

27 The replacement rate that is significant from the individual's viewpoint is the ratio between the pension and the latest wage, in both cases net of taxes. The replacement ratio will increase or decrease depending on the differential effect of the increase in taxes between wages and pensions.

28 See A. de la Fuente, M. A. García Díaz and A. Sánchez (2017), *La salud financiera del sistema público de pensiones español. Análisis retrospectivo, proyecciones de largo plazo y factores de riesgo,* Estudios sobre la Economía Española, 2017/4, Fedea.

Chart 8

CONTRIBUTION LEVEL. EXTENSION OF THE CALCULATION PERIOD USED TO DETERMINE RETIREMENT PENSION AMOUNTS



SOURCE: Seguridad Social, Banco de España and own calculations based on 2018 Continuous Sample of Working Histories (MCVL) data.

the pension replacement rate as the 2013 reform, while increasing the extent to which the system is contributory. The contributory principle may be desirable, firstly, because it has positive effects on workers' participation in the labour market, which, in turn, has a positive impact on the system's income and creates an incentive to lengthen working life, and, secondly, because it facilitates pension saving decisions.

Thus, it would be possible to opt for additional increases in the number of contributory years taken into account when calculating the regulatory base for retirement pensions, extending the period of calculation to the entire working life, for example.[29] Introducing this measure would bring the Spanish system closer into line with the situation in some other European countries (such as Finland, Poland, Portugal and Sweden).

Increasing the number of years taken into account to calculate the regulatory base beyond that laid down in current legislation, would, generally, lead to a reduction in the average pension. This would have a greater impact on higher-income individuals, as the employment income profiles of lower-income workers become increasingly flat.[30] For example, for the generation born in 1954, the average contribution base of the last 35 years of work is 7% lower than the average contribution base of the last 25 years, while the median contribution base is only 1% lower and there is no difference for the lower percentiles.[31] In

29 Currently, 23 years are taken into account, while in 2022, when the transitional period ends, 25 years will be.

30 See Y. Manovskii, H. Jeong and Y. Kim (2015), "The Price of Experience", *American Economic Review,* 105(2), February, pp. 784-815.

31 As regards gender differences, considering more years of working life brings the median contribution bases for men and women closer together in the case of the generation born in 1954. For example, the deflated median contribution base for women born in 1954 is 20% lower than it is for their male counterparts, irrespective of whether the last 15 or 25 years of working life are taken into account. That said, this differential is reduced to 3 pp when the last 35 years are taken into account. As analysed below, however, this finding may not apply to younger generations.

any event, the reduction in spending that would be achieved with this parametric reform, in the absence of other adjustment mechanisms, is limited.

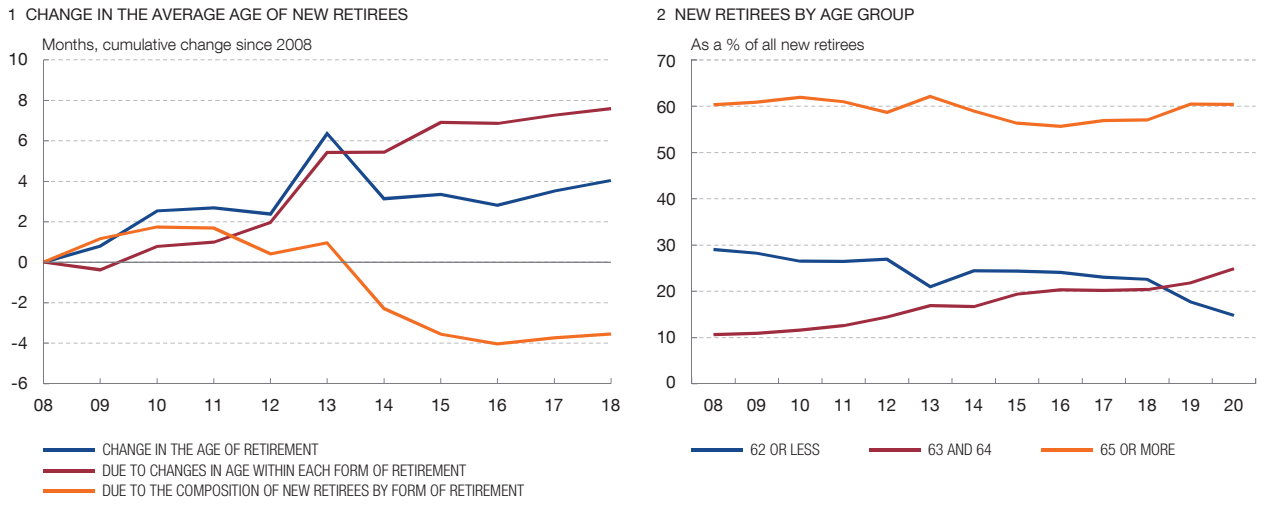
Control over spending could also be achieved by raising the retirement age further. Increases in the statutory retirement age have indeed been proposed in recent years, justified by the increase in life expectancy, later labour market entry, the less physically demanding nature of most work today and the improved physical condition of older age groups.

In particular, in 1975 the life expectancy of an individual who had reached the age of 65 stood, on average, at around 15 years. In 2019, however, someone of the same age had a life expectancy seven years longer, i.e. 22 years, and similar increases are projected for the future. In fact, some countries have even opted to link the statutory retirement age to future changes in life expectancy (for example, Italy and Portugal). By way of illustration, in the case of Spain, increasing the effective retirement age to, for example, 70 would reduce the dependency ratio by 12 percentage points, in comparison with a retirement age of 67. The AIReF, for its part, has calculated that a one-year increase in the effective age of retirement involves a saving of approximately 0.4 pp of GDP.[32]

One of the aims of the 2011 reform was precisely to raise the effective retirement age in Spain. In particular, it provided for a gradual increase in the statutory retirement

Chart 9

THE ACTUAL RETIREMENT AGE HAS RISEN SLIGHTLY IN SPAIN IN RECENT YEARS



SOURCES: Seguridad Social and Banco de España.

32 See AIReF (2019), *Opinión sobre la sostenibilidad del Sistema de la Seguridad Social,* Opinion 1/19. For their part, Devesa et al. (2019) find that the saving from the delay in the effective age of retirement would not be homogenous across the different types of retirement. In particular, it could be zero or even negative in the case of early retirement, as this type of pension would see an increase in benefit that would offset, from an actuarial viewpoint, the additional months of contributions and the shorter expected period of receipt of the pension. See E. Devesa, M. Devesa, I. Domínguez, B. Encinas, M. A. García and R. Meneu (2019), *El retraso efectivo de la edad de jubilación: el impacto sobre la sostenibilidad del sistema de pensiones,* mimeo.

age, from 65 to 67, for contribution histories below a certain threshold, and it increased the contribution period required to qualify for 100% of the regulatory base from 35 to 37 years. However, the reform also introduced a new form of early retirement, which gave workers with a sufficiently long contribution history the option to take retirement before the statutory age.

Drawing on Social Security data, the effective age of retirement has been on a rising trend in recent years, climbing from 63.5 in 2006 to 64.2 at the end of 2018.[33] This behaviour is the result of two opposing effects. First, a net rise in the retirement age for each type of retirement and, second, a negative contribution from the change in weight of the different types of retirement, some of which occur below the statutory age. Specifically, 40% of all retirements occur below the age of 65, and the change in weight of such retirements appears to have increased, reducing the increase in the effective age of retirement by somewhat more than three months.[34]

In any event, the incidence of the 2011 reform on the retirement age has so far been limited. Specifically, in 2018, when the reform had been in force for five years, 65% of workers retired on the basis of the previous legislation and the statutory retirement age of 65 had only changed for 36% of workers.[35] Also, in 2018 somewhat more than half of new retirees had more than 38.5 contributory years, so that the statutory age of 65 continued to apply to them, even though the 2011 reform was fully in force.

At the same time, workers taking some form of early retirement or taking partial retirement have, on average the lowest retirement ages. In particular, in 2018 the average age of new retirees taking voluntary early retirement, involuntary early retirement or partial retirement, was 63.5, 61.7 and 61.6 years, respectively, while those taking ordinary retirement did so at an average age of 65.2. However, it should also be taken into account that the former have longer contribution periods and higher regulatory bases, entitling them to this form of retirement under certain conditions. For example, those taking voluntary early retirement in 2018 had on average 42 years of contributions and a regulatory base of more than €1800, as against 34.1 average years of contributions and somewhat less than €1300 of regulatory base in the case of those taking ordinary retirement. For this reason, those taking voluntary early retirement enjoy a higher average pension, despite being penalised for retiring early.

An analysis of the expected financial returns offered by the Spanish pension system to its participants reveals a high degree of heterogeneity by type of retirement, as a result of

33 There are various ways of calculating the effective age of retirement. For example, the OECD estimates the average age of labour market exit from the changes over time in participation rates by age-group. This age reached 62.1 for men and 61.3 for women in the period 2013-2018, according to OECD (2019), *Pensions at a Glance 2019: OECD and G20 Indicators,* OECD Publishing, Paris, https://doi.org/10.1787/b6d3dcfc-en.

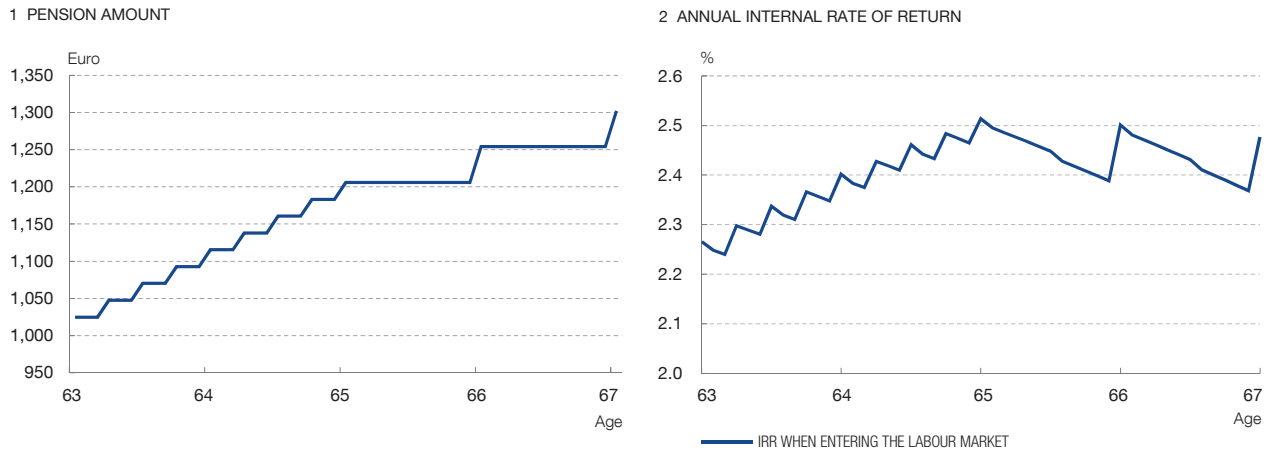
34 See M. Moraga and R. Ramos (2020), "Effective retirement age: recent developments", Analytical Articles, *Economic Bulletin,* 4/2020, Banco de España.

35 This group includes two types of retirement: on one hand, that of workers whose statutory age is above 65, as they do not have a sufficiently long contribution period and, on the other hand, voluntary early retirement, a form that, as mentioned above, was created by the 2011 reform.

Chart 10

RETURN FOR ORDINARY, EARLY AND LATE RETIREMENT

A simple actuarial analysis suggests that the pension system generates an expected real return of more than 2 % for contributors with a long working life. In this example, postponing retirement does not generate a higher return.



SOURCES: M. Moraga and R. Ramos (2020).
NOTE: Results for a contribution period of 465 months at any age. The contribution base assumed is equivalent to 40 % of the maximum contribution base.

the differences in terms of retirement age, contribution history, regulatory bases and benefit levels that have been described above. In particular, the results of this analysis showed that the highest expected average real return is generated by ordinary retirement (4.1%), as against early retirement (2.8%).[36]

An alternative to early retirement that may, from the financial point of view, be somewhat more attractive as a smooth way of transitioning from the labour market to retirement is partial retirement, which allows people to work part time while drawing an early pension. Currently, around 10% of retirees take this form of retirement, although it seems that they generally have even longer contribution periods and even higher contributory bases than other early retirees.

Allowing the modification of certain employment conditions, such as the working day, working hours and wages, during the latter years of a working life may be important to promote more flexible environments for transitioning from work to retirement. Indeed, as people age they suffer declines in certain skills relating to the capacity to perform physical work, the use of new technologies, reading comprehension and numeracy. On the other hand, with the accumulation of experience, older workers develop a greater ability to plan,

36 See M. Moraga and R. Ramos (2020), "An estimate of pension system financial returns", Analytical Articles, *Economic Bulletin,* 3/2020, Banco de España. The returns for other forms of retirement are 3.9% in the case of partial retirement and 3.7% in the case of voluntary late retirement. In a recent report, the Spanish Institute of Actuaries calculates, on the basis of typical individuals, that the actuarial equity factor, defined as the number of euro that a pensioner receives (expected value) for each euro of contribution made, tends to be lower for longer contribution periods and for effective ages of retirement below and above the normal age. See: Instituto de Actuarios Españoles (2020): "Factor de equidad actuarial del sistema contributivo de pensiones de jubilación español", mimeo.

supervise and react to setbacks.[37] This reallocation of skills occurs both among high-wage earners in technologically innovative industries and among low-wage earners who require greater physical capacity.

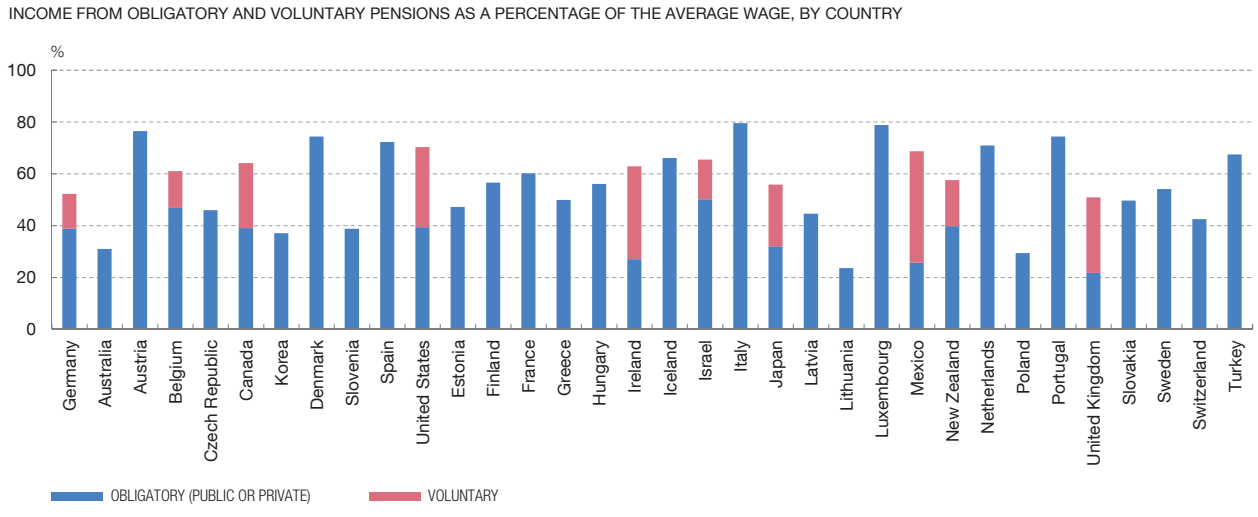
Some countries have opted to establish notional defined contribution account systems. These systems make the return associated with contributions over a working life explicit and incorporate useful elements to provide a closer relationship between contributions and pensions, increase transparency in the determination of pension rights and support decision making by individuals when they retire,[38] although, insofar as financing is based on the pay-as-you-go principle, they do not per se eliminate the need to define the pension benefit rate in accordance with the funds available to finance pensions. In fact, to meet the condition of financial sustainability, the notional defined contribution account system requires precise calculations to adjust the (notional) returns on the contributions built up in personal accounts and the annual payments that make up the retirement benefits to the demographic and macroeconomic scenario at each point in time.

3.3 The role of private saving

Against a background of rising dependency ratios and declining pension replacement rates, it is also important to analyse the role that private saving can play in supplementing the funds of the pay-as-you-go public contributory system for retirement. In this respect, the income

Chart 11

GROSS REPLACEMENT RATE INCLUDING VOLUNTARY PRIVATE PENSION SCHEMES



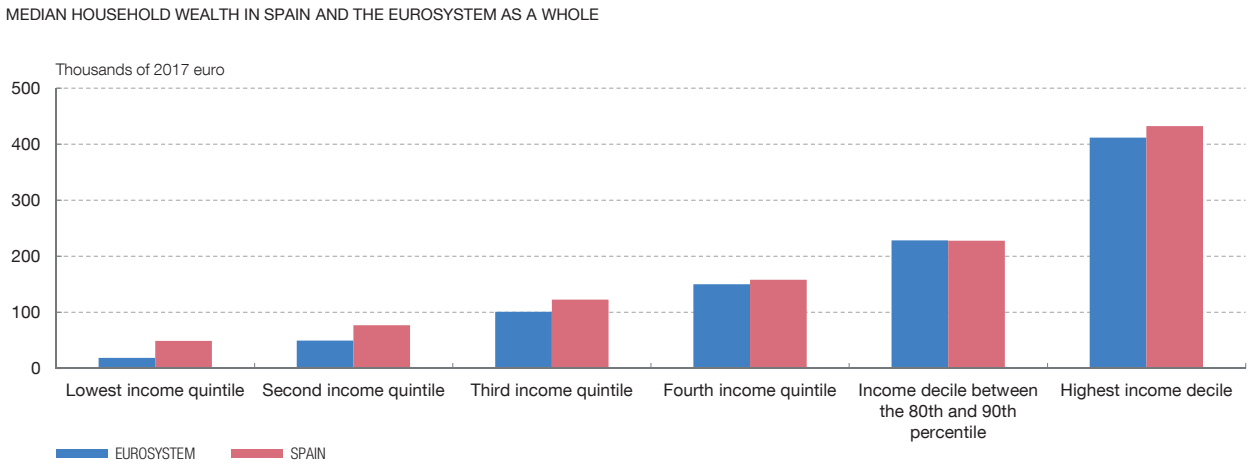
SOURCE: OECD simulations: *Pensions at a Glance* (2019).

37 See B. Anghel and A. Lacuesta (2020), "Ageing, productivity and employment status", Analytical Articles, *Economic Bulletin,* 1/2020, Banco de España.

38 In these systems, contributions are recorded in a personal account to which an adjustment factor determined by certain demographic and economic variables is applied. The value of the pension is determined by this notional amount and life expectancy at the time of retirement.

arising from private voluntary saving makes up part of the funds available during retirement in other European economies, such as Germany (14.5% of wages), Belgium (13.4%) and the United Kingdom (29.2%).

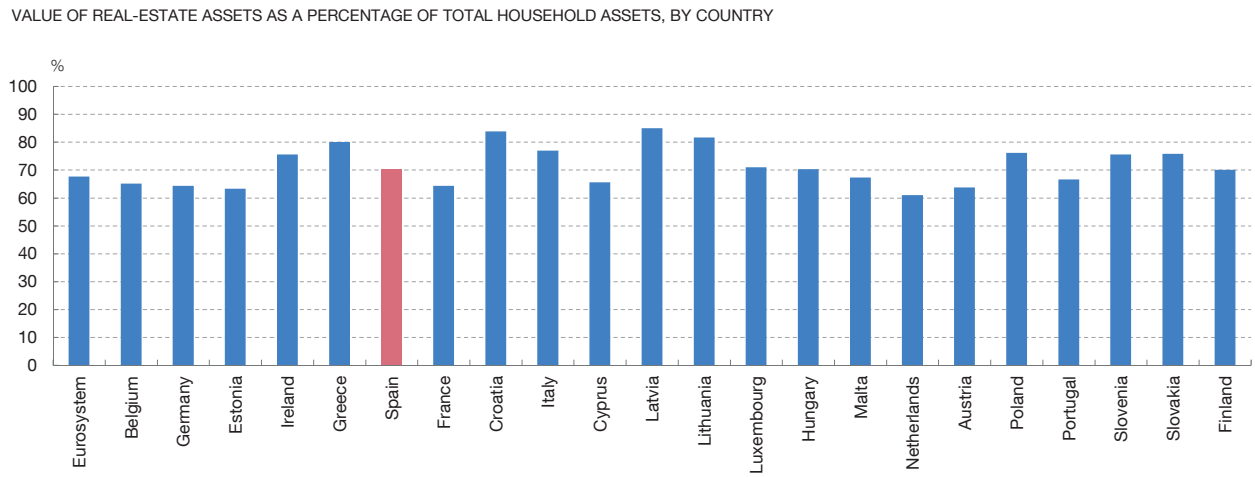
Chart 12
MEDIAN HOUSEHOLD WEALTH



SOURCE: Household Finance and Consumption Survey (2017).

In Spain, the volume and composition of saving have certain important specific characteristics. According to the latest information available, in 2017 median net wealth in Spain was higher than in the Eurosystem as a whole (countries for which comparable information exists), especially in the lower quintiles of the income distribution.

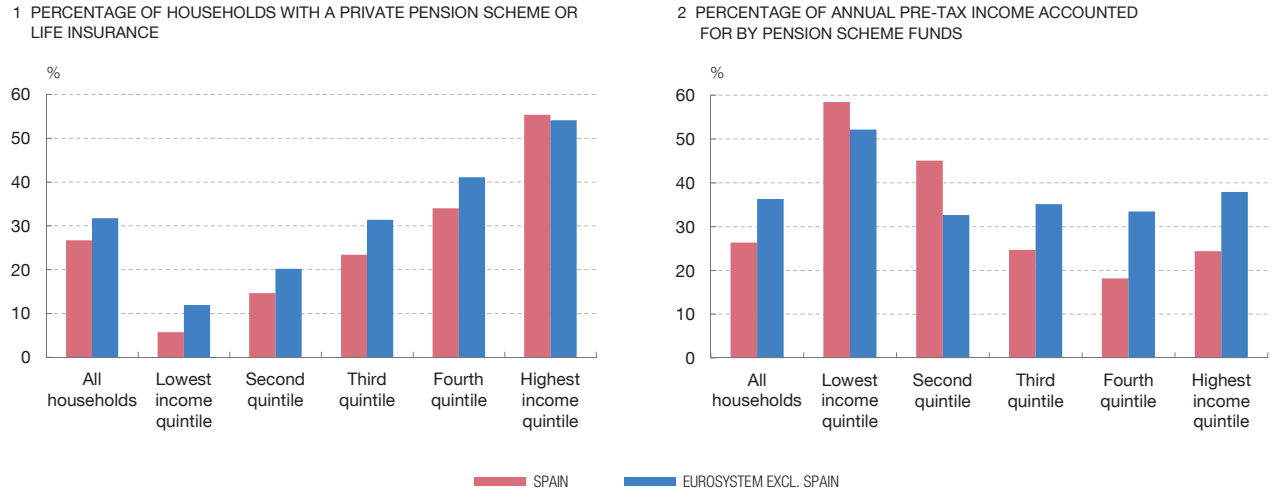
Chart 13
WEIGHT OF REAL-ESTATE ASSETS



SOURCE: Household Finance and Consumption Survey (2017).

The role of real estate in this higher level of wealth is striking; in 2017 it made up 70% of the assets of Spanish households, as against 67% in the Eurosystem as a whole and 63% in countries such as Belgium, France and Germany.

Chart 14
WEIGHT OF PENSION SCHEMES



SOURCES: Household Finance and Consumption Survey (2017) and Spanish Survey of Household Finances (2017).

As regards financial assets, in 2017 in 23% of Spanish households one or more members had a personal pension scheme,[39] six percentage points below the average proportion in the Eurosystem countries.[40] As for the amount invested, the median volume accumulated by Spanish households who have personal pension schemes represents around 27% of gross annual income, similar to the proportion[41] in the rest of the Eurosystem.[42]

In this context, among recent discussions on the development of supplementary systems of private saving for retirement in Spain, those relating to the efficacy and efficiency of the tax incentives existing for contributions to pension schemes and the potential role of the mobilisation of real estate savings stand out.

In the first case, it is well known that, since 1987, contributions to pension schemes may be deducted from taxable income when determining liability for personal income tax, in

39 When company schemes are included, there is a five percentage point difference (27% in Spain and 32% in the rest of the Eurosystem). However, these figures are not comparable, because in the other Eurosystem countries defined-contribution and defined-benefit occupational schemes coexist.

40 In Spain and also in the other Eurosystem countries, ownership of this product increases with household income.

41 When company schemes are included (see footnote 39), the difference is 10 percentage points (26% in Spain, as opposed to 36% in the rest of the Eurosystem).

42 in fact, among lower-income Spanish households with pension schemes, the volume saved in personal schemes amounts to more than 45% of gross income, a higher proportion than in other Eurosystem households.

which case they will be taxed when this saving is recovered following retirement. Such tax deferment is, in fact, the most common alternative in European countries.[43]

The AIReF[44] has recently published a report assessing the tax treatment of pension schemes. Various conclusions may be drawn from this report. First, 2.5 million taxpayers claimed tax relief on their contributions to pension schemes in 2016,[45] 37% of whom were in the upper decile of the income distribution, which suggests that the tax treatment of pension schemes is regressive.[46] Second, these contributions involve an estimated tax cost of €450 million, once the tax deferment is taken into account (i.e. taking into account the tax that will be paid on the contributions when they are received in the form of income, following retirement).[47] Third, despite the tax cost, pension funds amount to a small part of household wealth (among those who have pension funds at the age of 64, their average amount is €20,000), partly as a consequence of the high fees charged for this product.

Additionally, a number of international analyses have examined the extent to which the funds accumulated in pension schemes generate additional savings and if the size of these savings justifies their tax cost. However, there is little evidence regarding the degree to which pension schemes meet the objective of boosting incomes during retirement.[48] On the evidence available, it can be concluded that, although these incentives give rise to new savings, there is disagreement as to their size and whether they offset the loss of tax revenue associated with deferral.[49] In Spain, the available estimates suggest that of every euro contributed to these schemes, on average, 25 cents represents new private savings, but the amount varies significantly between different types of savers. While in higher-income and older households this deduction has been found to give rise to portfolio shifts towards pension funds from other savings instruments, in other types of households, new savings do appear to be generated.[50,51]

---

43 See OECD (2018), *Financial incentives and retirement savings and The Mirrlees Review (2010), "Tax by Design",* Chapters 13 and 14.

44 AIReF (2020), *Estudio 1 de la fase II del Spending Review: beneficios fiscales,* July, https://www.airef.es/es/estudio-1-fase-dos-spending-review-beneficios-fiscales/.

45 In fact, this is the third most common savings vehicle after accounts and deposits, and real estate assets.

46 Nonetheless, household income fluctuates over a working life, so that in order to assess the progressivity of the tax deferment it would be necessary to measure the total income of contributors over their working lives, not that of a single year only (see the *Mirrlees review (2010)).*

47 Specifically, according to the AIReF study (see footnote 44), this figure is obtained after subtracting, from the gross tax cost of €1,643 million in 2016, an estimate of the amount subsequently recovered via deferral. Of the €450 million, €300 million were due to the continuing effectiveness during the transitional regime of the 40% deduction if the scheme is recovered in the form of the capital of the contributions made up to 2007.

48 As pointed out earlier, the recent AIReF report on tax benefits stresses the high fees charged on personal pension schemes, compared with occupational pension schemes. This problem should be reflected in the failure of private pension schemes to generate a sufficiently high income flow during retirement.

49 See OECD (2018), op. cit., Chapter 3.

50 See J. Ayuso, J. F. Jimeno and E. Villanueva (2019), "The effects of the introduction of tax incentives on retirement saving", *SERIEs,* 10, pp. 211-249.

51 In general, it has been found that in occupational pension schemes, these tax incentives increase saving among lower-income households, for example, among renters and younger households. See D. J. Benjamin (2003), "Does 401(k) eligibility increase saving? Evidence from propensity score subclassification", *Journal of Public Economics,* pp. 1259-1290; V. Chernozhukov and C. Hansen (2004), "The impact of 401(k) participation on the wealth distribution: an instrumental quantile regression analysis", *Review of Economics and Statistics,* or Gelber, A.M. (2011), "How do 401(k) s affect saving? Evidence from changes in 401(k) Eligibility", *American Economic Journal: Economic Policy.*

Internationally, various alternatives have been proposed to mitigate the tax cost associated with pension schemes without adversely affecting savings. A first option which seems to have been effective in achieving this is to reduce the rate for deducting contributions from taxable income.[52] A similar alternative would be to limit the maximum amount of contributions to pension schemes that is tax-deductible. A second option would be to concentrate tax deferment in occupational pension schemes. In this case, however, it should be taken into account that not all employees work in companies that offer pension schemes, and those who do, have higher average incomes than other taxpayers.[53] Moreover, the evidence available shows that a high proportion of both those who contribute to occupational pension schemes and those who contribute to individual plans do not respond to incentives.[54] A third alternative would consist of contributions to personal schemes being topped-up by the government. This policy of top-ups that are conditional on taxpayers making their own contributions is pursued, for example, in Germany's "Riester pension schemes". Here, the evidence suggests that such top-ups to contributions increase the acquisition of savings vehicles for retirement, although the majority of taxpayers fail to contribute despite the incentives.[55] Generally, experience has shown that it takes time for households to perceive the tax advantages of saving for retirement.[56] Lastly, an alternative to tax deferment is prepayment of tax.[57] Here, reports on taxation highlight that prepayment may give rise to regressivity, since capital gains are not taxed.[58]

In short, based on the conclusions of the AIReF report on tax deductions for pension fund contributions in Spain, and in light of the evidence available internationally on alternative schemes, it seems reasonable to consider reviewing the Spanish system with the aim of reducing its tax cost and increasing its efficiency in terms of the accumulation of additional savings for retirement.

---

52 Specifically, in 1999, Denmark implemented a policy of reducing the subsidy for contributing to capital pensions, so that the deduction per euro contributed by taxpayers with income of more than €40,000 was reduced from 59 cents to 45 cents. A comprehensive study of Danish taxpayers suggested that this policy reduced the tax cost of contributions without substantially affecting private savings (see R. Chetty, J. Friedman, S. Leth-Petersen, T. H. Nielsen and T. Olsen (2014), "Active vs Passive Decisions and Crowd-Out in Retirement Saving: Evidence from Denmark", *Quarterly Journal of Economics,* 129(3), November, pp. 1141-1219). The reason for this is that the taxpayers who reduced their contributions shifted their retirement savings to other financial vehicles. The study also revealed that the vast majority of affected taxpayers did not change their contributions. When applying the conclusions drawn from this study to Spain, it should be borne in mind that Denmark, at the time, had tax-privileged financial vehicles to which taxpayers shifted a substantial portion of their savings. At present, this option does not exist in Spain.

53 According to the 2017 Survey of Household Finances, 7% of Spanish employees have an occupational pension scheme. In Denmark, 60% of employees have occupational pension schemes (Chetty et al. (2014), op. cit.). In the United States, 38% of employees have access to an occupational pension scheme (Benjamin (2003), op. cit.).

54 Overall, the range of recent estimates suggests that of every euro contributed to this system by employees 25 cents represent new private savings, 25 cents the tax cost and 50 cents are the result of asset substitution. See Benjamin (2003), op. cit., or D. Messacar (2018), "Crowd-out, Education and Workplace Pensions: Evidence from Canadian Tax Records", *Review of Economics and Statistics.* Gelber (2011) obtains larger effects, while Chetty et al. (2014) suggest that employees are totally unresponsive to tax incentives.

55 E. Duflo, W. Gale, J. Liebman, P. Orszag and E. Sáez (2006), "Saving Incentives for Low and Middle-Income Families: Evidence from a Field Experiment with H&R Block", *Quarterly Journal of Economics,* November, pp.1310-1426.

56 See A. H. Börsch-Supan, M. Coppola and A. Reil-Held (2012), "Riester Pensions in Germany: Design, Dynamics, Targetting Success and Crowding-in", *National Bureau of Economic Research Working Paper* 18014.

57 While tax deferment means that pension savings are not taxed until retirement, in the case of prepayment, contributions to pension schemes are not deducted from taxable income, but neither is the income received following retirement taxed. This product should appeal to households expecting their marginal rate to rise over their lifetime (those with the lowest incomes). For the public sector, unlike tax deferrals, the appeal is that funds can be obtained in advance.

58 *Mirrlees Review* (2010), op. cit.

Another component of households' portfolios that could help provide additional income following retirement is housing. As I have mentioned earlier, Spanish household wealth is largely concentrated in real estate assets, particularly in the case of older households. In this setting, it may prove useful to assess the potential of certain financial instruments to obtain liquidity from these relatively illiquid assets. Although some of these instruments have been available and regulated in Spain for some time, they are little used.

For example, a financial instrument that can extract liquidity from housing without the need to transfer title is the reverse mortgage. This instrument, regulated by Law 41/2007, takes the form of a mortgage loan secured by a residential property, in which the borrowers (or, in fact, their heirs) only need to meet the loan payments (principal plus accrued interest) when the contract expires (on the owner's death).[59] Although this instrument offers tax benefits when the mortgage is secured by the principal residence and the mortgagor is over 65 years old (or has been assessed with a disability of 33% or more, or severe or considerable dependency), the volume of such transactions in Spain in recent years has been very limited.

In Spain, tax benefits are also offered for using other financial instruments to obtain liquidity from the principal residence, but unlike the reverse mortgage, they require title to be transferred. This occurs for example, in the sale of a remainder, where the home owner transfers ownership but keeps a life estate. Similarly, Law 26/2014 introduced certain tax benefits for the sale of any asset (for example, but not exclusively, housing) by taxpayers aged over 65 for the purpose of obtaining a lifetime annuity. Although the latter type of instrument has been used more frequently in Spain in recent years than reverse mortgages, its use remains very limited.

We should acknowledge that the different financial products to which I have referred are relatively complex, targeted at a sophisticated segment of the population and closely tied to real estate market dynamics. That is why, even in those countries in which these instruments have been most successful, such as the United States and the United Kingdom, their use remains relatively limited.

In any event, bearing in mind that Spain is one of the countries where population ageing will have a greater impact over the coming years and where household wealth is largely concentrated in housing, it would be desirable to analyse in depth the possible obstacles hindering the development of these financial instruments, both from the standpoint of demand (for example, poor financial literacy of households) and supply (for example, lack of competition or shortcomings in the regulatory framework). Nor must we forget the possible implications of further developing these instruments for the financial stability of credit institutions or insurance companies, or to ensure that their marketing process provides maximum safety guarantees.

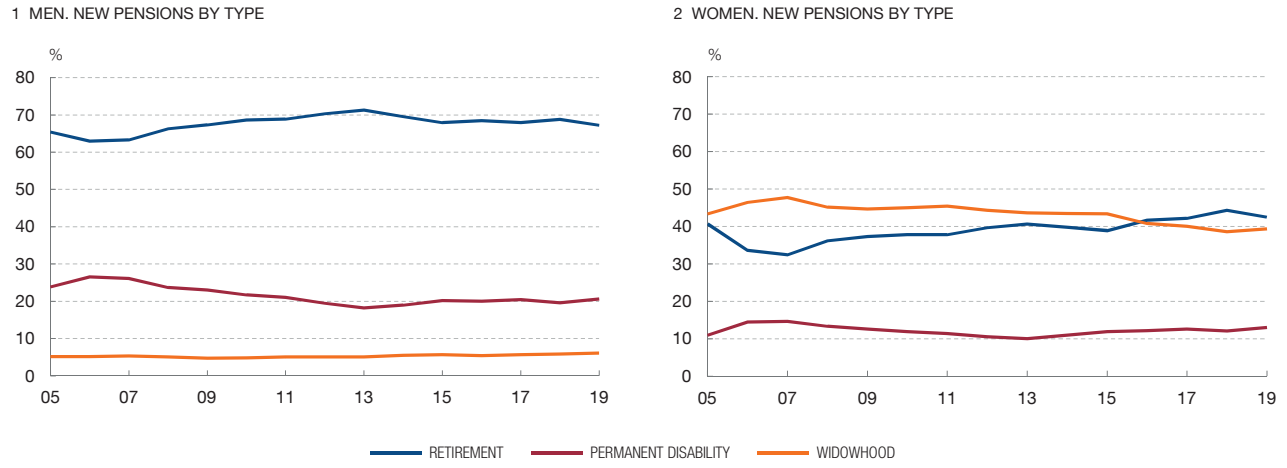
59 For further details, see the *Reverse mortgage access guide*, (available in Spanish only) prepared jointly by the Banco de España and the Directorate General of Insurance and Pension Funds.

3.4 Gender-based differences

A matter that has received increasing attention by the Committee on the Monitoring and Assessment of the Toledo Pact Agreements is the gender gap in the pension system. Gender-based differences in the pension system may arise due to gender inequality in the labour market throughout an individual's working life, or as a result of certain characteristics of the pension system that may be penalising women more than men. In practical terms, however, it is difficult to separate the effect each factor has on the pension gap, precisely because it is the result of a cumulative process and of how the professional careers of men and women interact with the different parameters of the pension system and other social policies. These may at times serve to bridge the gender gap in the labour market or to accentuate it.

As a starting point, we should note that there are significant gender disparities by type of pension. Considering the public pension system as a whole, 53% of total pensions correspond to retirement; 24% to widowhood benefits; 17% to permanent disability benefits, and the remaining 6% to orphans and surviving family members[60]. However, these percentages vary significantly between men and women. Specifically, new retirees account for 68% of total pensions in the case of men, compared with 39% of women; widowhood benefits represent 5% of the total for men and 43% for women; permanent disability benefits represent 22% of total pensions in the case of men, compared with 12% in the case of women; while benefits for orphans and surviving family members account for the remaining 5%-6% for both men and women.[61] These

Chart 15
GENDER DIFFERENCES IN PENSION TYPES



SOURCE: Seguridad Social.

60 These percentages are averages for the period 2005-2019.

61 36% of women aged over 64 who receive a widow's pension, draw another contributory pension. The average pension for women who receive widowhood and other benefits (€574) is lower than that of women who only receive a retirement pension (€779).

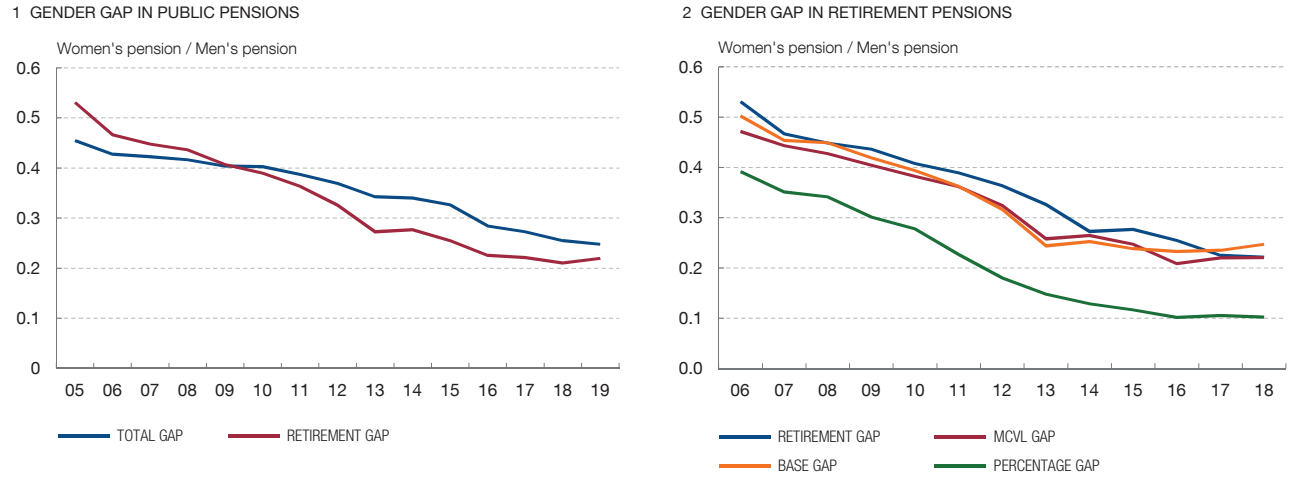
gender disparities continue to exist, despite the recent increase in the relative weight of retirement pensions for women.[62]

In 2019, the disparity in Spain between the average level of pensions for men and women (not including private pension schemes) was 25% in favour of the former. This gap has been substantially reduced from 45% in 2005 (40% in 2010), although the narrowing seems to have stalled in recent years. Focusing on retirement pensions, the initial gap was higher in 2005 (53%), and the subsequent decline even greater (down to 22% in 2019), although some flatness has been observed since 2016.

The MCVL allows us to calculate the gender gap for the two basic pension components: the regulatory base and the percentage applied to this base, which depends on the contribution period and the age at which retirement is taken. The bulk of the difference between men and women, especially in the most recent period, is accounted for by the regulatory base and not the percentage applied. Further, since the average age at which women retire has in recent years been slightly higher than that of men (64.7 for women compared with 64 for men), the difference can be largely attributed to women's shorter contribution period.

Indeed, if we compare the professional profiles of men and women registered with the Social Security, from different cohorts (born between 1950 and 1954, 1955-1959, 1960-1964 and 1965-1968), we observe that women of younger generations have made great progress in

Chart 16
GENDER DIFFERENCES IN PENSION LEVELS



SOURCES: Social Security and Banco de España.

62 See L. Fuster (2019), "Brecha de género en las pensiones contributivas en España", in *Pensiones del Futuro,* Instituto Santalucía, pp. 110-131. According to pensioners' data in the 2017 Social Security labour records (MCVL by its Spanish abbreviation), 95% of men receive a retirement pension, 2% receive a widower's pension and 3% receive both. For women, three clearly differentiated types are observed, based on the pension they receive: i) 41% receive a retirement pension as their only income; ii) 41% receive a widow's pension as their only income, and iii) the remaining 18% receive both. The disparity relative to men is of 13% for women who receive both types of pension, 28% for women who receive only a retirement pension and 41% for women who receive only a widow's pension.

terms of labour-market participation (measured as the total days worked per year), which has enabled them to contribute for longer and also to increase their average contribution bases.[63] However, the gender gaps observed over men's lives are generally hump-shaped.

Comparing cohorts, we see wider gaps for younger cohorts than for older ones when embarking on their careers. However, from age 45 onwards the gaps are narrower and remain flat. If we analyse the cohorts with complete working lives (born between 1950 and 1954 and a contribution history of at least 15 years) and we compare the contribution bases built up according to the period considered for calculating the pension, we observe that any extension of the period beyond 15 years is detrimental to the corresponding amount for both men and women, except at the lower end of the distribution. In gender gap terms, however, the change depends on the relative rate of decline. Thus, gender inequality increases if the period is extended from 15 to 20 years, remains stable between 20 and 30 years and decreases from 30 years onwards. The initial increase and subsequent decline are particularly pronounced at the lower end of the distribution. However, given that for the young cohorts the widest gender pay gap (proxied by the contribution base) arises at an increasingly earlier age, the gender pension gap over long periods could increase, to the detriment of women over men from the same generation.

Overall, this evidence shows that a large portion of the gender gap in retirement pensions is due to differences in the employment arena; economic policy should therefore strive to foster equal opportunities in the labour market.

I would like to end my testimony on this issue by mentioning three matters. First, the weight of widow's pensions will diminish as new generations of women gain greater access to retirement pensions. This has already been observed in countries where women's increased labour-market participation occurred ahead of Spain and, in some cases, has led revisions to widowhood pensions to be considered; these have, nevertheless, varied greatly across countries[64] and a detailed analysis of their potential transposition to Spain is warranted.

---

63 The increase in the work experience of women gaining access to a retirement pension has translated into an increase in the contribution years of women from younger generations. Fuster (2019), op. cit., calculates that women born between 1950 and 1959 have, on average, contributed for 26 years (compared with 34 years for men of the same generation). The gender gap of 25% in the contribution period for the youngest generation of retirees was far more pronounced in older generations (50 %, 70 % and 73 % for generations from 1940-1949, 1930-1939 and 1920-1929, respectively). In addition, as their participation in the labour market has increased, the percentage of women eligible for a retirement pension has risen considerably for younger cohorts, compared with older ones. Thus, only 44% of women born between 1920 and 1929 receive a retirement pension, compared with 75% of those born between 1940 and 1949.

64 In Germany, for example, up to 2002 the widowhood pension consisted of a lifetime annuity equal to a percentage (survivor's portion) of the deceased spouse's pension. A ceiling could be set on that annuity. Since 2002, couples married after 2001 are able to choose between the entitlement to a traditional widowhood pension or pension splitting, whereby they are able to split their claims (pension rights) to a survivor's pension between them and pay them into a contributory pension. The advantages of this option are that it makes the widow's and widower's pension equal, it can be maintained when the surviving spouse remarries and, furthermore, it is not subject to a ceiling. Sweden's current pension system rests on three pillars (or complementary pension sources): two public pillars and one private one. The individual notional defined-contribution accounts adopted in the 1990s are the most important pillar. At the same time Sweden also shifted towards a new widowhood pension model, characterised by the benefit's temporary nature, with a view to partially mitigating the reduction in household income. The second pillar is also public, obligatory and of a defined-contribution nature. However, it is privately managed, i.e. each worker's contributions are individual and invested in the financial markets. The widowhood pension as a lifetime annuity continues to exist in this second pillar of the pension system. The traditional (German) widowhood pension model deters the lower-earning spouse from working, while pension systems such as the Swedish one encourage both spouses' labour-market participation. See Fuster (2019), op. cit.

Second, we must bear in mind the importance of joint retirement, or the coordination of retirement decisions by couples, when estimating the expected impact of any pension reform,[65] given that this may influence the responses of the individuals concerned. Lastly, attention should also be paid to existing gender gaps in financial knowledge, in particular of products such as personal or occupational pension schemes.[66]

65 Between 20% and 30% of US and European married couples retire within a year of each other, irrespective of the spouses' age gap. Joint retirement decisions depend on several factors, such as pension system incentives, each spouse's level of income and wealth, the preference for spending leisure time together, health and possible roles in caring for other dependants. See, for example, M. D. Hurd (1990), "Research on the elderly: Economic status, retirement, and consumption and savings", *Journal of Economic Literature,* 28(2), pp. 565-637; D. M. Blau (1998), "Labor force dynamics of older married couples", *Journal of Labor Economics,* 16(3), pp. 595-629, and L. Hospido and G. Zamarro (2014), "Retirement patterns of couples in Europe", *IZA Journal of European Labor Studies,* 3(12). On the mechanisms that appear to explain this coordination, see P. C. Michaud, A. van Soest and L. Bissonnette (2020), "Understanding Joint Retirement", *Journal of Economic Behavior & Organization,* No 173, pp. 386-401.

66 For example, drawing on the Banco de España's Survey of Financial Competences, women born prior to 1950 know considerably less about products such as personal or occupational pension schemes than men of the same age.

4 Conclusions

The Social Security system has recorded recurrent deficits in recent years; in 2019 it amounted to 1.3% of GDP. Going forward, the public pension system will face further expenditure pressures exerted by the expected and significant growth in the retirement-age population relative to the working-age population as a result of greater longevity. The reforms in recent years have addressed these pressures by, inter alia, progressively raising the retirement age, defining a sustainability factor linking initial pensions to future developments in life expectancy, and introducing a new pension revaluation mechanism that was conditional upon the system's being in equilibrium. These reforms substantially strengthened the system's financial stability. However, without further amendments to the system's revenues, strict application of the new revaluation mechanism can be expected to lead to systematic reductions in pensioners' real income. In turn, according to various available estimates, doing away with the new pension revaluation index and re-indexing pensions to inflation would increase pension expenditure as a percentage of GDP by around a further 3 pp by 2050.

Addressing the strains of population ageing will therefore require increasing the system's resources or alternatively reducing the benefit rate or lifting the effective retirement age further. The specific decisions on this necessary revision of the system must be taken in the political realm, so that Spanish society's various preferences with regard to pension levels and the resources necessary to finance them are appropriately weighted.

The strategy to be followed must also take account of the overall Spanish public finances situation. Thus, available estimates show that at end-2019 the structural budget deficit in Spain stood at around 3% of GDP (approximately 1.3% of which actually stems from the Social Security system). The latest Banco de España projections show that the crisis triggered by the COVID-19 pandemic could raise government debt as a percentage of GDP to close to 120%, the highest level observed in many decades. This rise in government debt will increase the interest burden and, moreover, the pandemic will likely intensify the structural demand for government expenditure on health and care for the elderly. Furthermore, the recent approval of the minimum income scheme entails an increase in permanent expenditure, officially estimated at around €3 billion per year. The upward pressures on pension spending generated by the aforementioned population ageing phenomenon should be added to this starting position.

Ensuring that public finances are sustainable and lessening indebtedness will require multi-year fiscal consolidation plans. The pension system reforms implemented must take this into account and contribute to these objectives.

Further, it is essential for any reform to improve the system's transparency and increase its predictability, affording citizens certainty and fostering prudent decision-making regarding savings, work and retirement. It would also be desirable to strengthen the link between contributions made and benefits received, ensuring always a level of sufficiency for

those households with fewer resources, in addition to introducing new incentives that help bring the effective and statutory retirement ages further into line.

Likewise, establishing automatic adjustment mechanisms helps stabilise the system, adapting it to demographic and economic changes. In this respect, and precisely to shore up the system, several EU countries (e.g. Germany, Sweden and Italy) have already established a link between the level of benefits or the retirement age and life expectancy.

There is also scope for calm reflection on the role that complementary private saving mechanisms ought to play. Their implementation in Spain is very limited compared with other northern European economies and they might help complement the public component.

Furthermore, any reform strategy, whether opting for expenditure restraint or for increased revenue, makes it necessary to take into account and clarify the intra- and intergenerational distributive consequences, since these are particularly significant for pension systems.

It should also be borne in mind that the sustainability problems facing the pension system and, in general, public finances will be compounded if employment and the economy's productivity deteriorate. Specifically, demographic pressure on pension expenditure would be significantly higher than that estimated in this paper if the structural dynamics of those variables observed in the Spanish economy over recent decades are maintained. In this regard, the system reforms undertaken ought to be accompanied by structural reforms enabling these variables to perform better in the future. At the same time, such performance is not independent of the pension system itself; the latter's design should also encourage workers' labour-market participation and boost their employability and productivity. A long-term view is needed when analysing the sustainability of the pension system, and this is perfectly compatible with the fact that many of the reforms needed to improve employment, and above all, the economy's productivity, can only take effect over a relatively long period.

Furthermore, we should not lose sight of the fact that the most important and persistent factor motivating this public pension system reform push, namely the demographic factor, affects many other segments of our economy and will continue to do so for a long time. In its Annual Report 2018, the Banco de España analysed in detail how population ageing may affect the economy's capacity to grow, the labour market, the tax system, inflation and the transmission and effectiveness of fiscal and monetary policy. Indeed, it is hard to think of any relevant segment of the economy that is not significantly affected by the secular ageing process facing our country and our peers. Consequently, the pension system reform, essential though it may be, is not in itself the only reform needed to enable our economy to contend with the numerous challenges posed by the aforementioned demographic scenarios.

Lastly, as you know, in my recent parliamentary appearances I have stressed the need for the major strategic decisions on economic matters to be taken by broad political

consensus. This is the best guarantee for lasting and credible economic reforms. Broad political consensus is especially important in pension-related matters as the pension system's configuration will affect various important areas of the economies of several million citizens from different generations who will base some of their saving, consumption, investment and work decisions on expectations of the rules that will govern their participation in the pension system. This is why the transparency and stability of these rules and the degree of political consensus underpinning them are so essential.

Thank you very much.

BANCO DE ESPAÑA PUBLICATIONS

OCCASIONAL PAPERS

1910 LUIS JULIÁN ÁLVAREZ: El índice de precios de consumo: usos y posibles vías de mejora.

1911 ANTOINE BERTHOU, ÁNGEL ESTRADA, SOPHIE HAINCOURT, ALEXANDER KADOW, MORITZ A. ROTH and MARIE-ELISABETH DE LA SERVE: Assessing the macroeconomic impact of Brexit through trade and migration channels.

1912 RODOLFO CAMPOS and JACOPO TIMINI: An estimation of the effects of Brexit on trade and migration.

1913 ANA DE ALMEIDA, TERESA SASTRE, DUNCAN VAN LIMBERGEN and MARCO HOEBERICHTS: A tentative exploration of the effects of Brexit on foreign direct investment vis-à-vis the United Kingdom.

1914 MARÍA DOLORES GADEA-RIVAS, ANA GÓMEZ-LOSCOS and EDUARDO BANDRÉS: Ciclos económicos y *clusters* regionales en Europa.

1915 MARIO ALLOZA and PABLO BURRIEL: La mejora de la situación de las finanzas públicas de las Corporaciones Locales en la última década.

1916 ANDRÉS ALONSO and JOSÉ MANUEL MARQUÉS: Financial innovation for a sustainable economy. (There is a Spanish version of this edition with the same number).

2001 ÁNGEL ESTRADA, LUIS GUIROLA, IVÁN KATARYNIUK and JAIME MARTÍNEZ-MARTÍN: The use of BVARs in the analysis of emerging economies.

2002 DAVID LÓPEZ-RODRÍGUEZ and M.ª DE LOS LLANOS MATEA: Public intervention in the rental housing market: a review of international experience. (There is a Spanish version of this edition with the same number).

2003 OMAR RACHEDI: Structural transformation in the Spanish economy.

2004 MIGUEL GARCÍA-POSADA, ÁLVARO MENÉNDEZ and MARISTELA MULINO: Determinants of investment in tangible and intangible fixed assets.

2005 JUAN AYUSO and CARLOS CONESA: An introduction to the current debate on central bank digital currency (CBDC). (There is a Spanish version of this edition with the same number).

2006 PILAR CUADRADO, ENRIQUE MORAL-BENITO and IRUNE SOLERA: A sectoral anatomy of the Spanish productivity puzzle.

2007 SONSOLES GALLEGO, PILAR L'HOTELLERIE-FALLOIS and XAVIER SERRA: La efectividad de los programas del FMI en la última década.

2008 RUBÉN ORTUÑO, JOSÉ M. SÁNCHEZ, DIEGO ÁLVAREZ, MIGUEL LÓPEZ and FERNANDO LEÓN: Neurometrics applied to banknote and security features design.

2009 PABLO BURRIEL, PANAGIOTIS CHRONIS, MAXIMILIAN FREIER, SEBASTIAN HAUPTMEIER, LUKAS REISS, DAN STEGARESCU and STEFAN VAN PARYS: A fiscal capacity for the euro area: lessons from existing fiscal-federal systems.

2010 MIGUEL ÁNGEL LÓPEZ and M.ª DE LOS LLANOS MATEA: El sistema de tasación hipotecaria en España. Una comparación internacional.

2011 DIRECTORATE GENERAL ECONOMICS, STATISTICS AND RESEARCH: The Spanish economy in 2019. (There is a Spanish version of this edition with the same number).

2012 MARIO ALLOZA, MARIEN FERDINANDUSSE, PASCAL JACQUINOT and KATJA SCHMIDT: Fiscal expenditure spillovers in the euro area: an empirical and model-based assessment.

2013 DIRECTORATE GENERAL ECONOMICS, STATISTICS AND RESEARCH: The housing market in Spain: 2014-2019. (There is a Spanish version of this edition with the same number).

2014 ÓSCAR ARCE, IVÁN KATARYNIUK, PALOMA MARÍN and JAVIER J. PÉREZ: Thoughts on the design of a European Recovery Fund. (There is a Spanish version of this edition with the same number).

2015 MIGUEL OTERO IGLESIAS and ELENA VIDAL MUÑOZ: Las estrategias de internacionalización de las empresas chinas.

2016 EVA ORTEGA and CHIARA OSBAT: Exchange rate pass-through in the euro area and EU countries.

2017 ALICIA DE QUINTO, LAURA HOSPIDO and CARLOS SANZ: The child penalty in Spain.

2018 LUIS J. ÁLVAREZ and MÓNICA CORREA-LÓPEZ: Inflation expectations in euro area Phillips curves.

2019 LUCÍA CUADRO-SÁEZ, FERNANDO S. LÓPEZ-VICENTE, SUSANA PÁRRAGA RODRÍGUEZ and FRANCESCA VIANI: Fiscal policy measures in response to the health crisis in the main euro area economies, the United States and the United Kingdom. (There is a Spanish version of this edition with the same number).

2020 ROBERTO BLANCO, SERGIO MAYORDOMO, ÁLVARO MENÉNDEZ and MARISTELA MULINO: Spanish non-financial corporations' liquidity needs and solvency after the COVID-19 shock. (There is a Spanish version of this edition with the same number).

2021 MAR DELGADO-TÉLLEZ, IVÁN KATARYNIUK, FERNANDO LÓPEZ-VICENTE and JAVIER J. PÉREZ: Supranational debt and financing needs in the European Union. (There is a Spanish version of this edition with the same number).

2022 EDUARDO GUTIÉRREZ and ENRIQUE MORAL-BENITO: Containment measures, employment and the spread of COVID-19 in Spanish municipalities. (There is a Spanish version of this edition with the same number).

2023 PABLO HERNÁNDEZ DE COS: The Spanish economy and the COVID-19 crisis. Appearance before the Parliamentary Economic Affairs and Digital Transformation Committee – 18 May 2020. (There is a Spanish version of this edition with the same number).

2024 PABLO HERNÁNDEZ DE COS: The main post-pandemic challenges for the Spanish economy. Appearance before the Parliamentary Committee for the Economic and Social Reconstruction of Spain after COVID-19/Congress of Deputies – 23 June 2020. (There is a Spanish version of this edition with the same number).

2025 ENRIQUE ESTEBAN GARCÍA-ESCUDERO and ELISA J. SÁNCHEZ PÉREZ: Central bank currency swap lines (There is a Spanish version of this edition with the same number).

2026 PABLO AGUILAR, ÓSCAR ARCE, SAMUEL HURTADO, JAIME MARTÍNEZ-MARTÍN, GALO NUÑO and CARLOS THOMAS: The ECB monetary policy response to the COVID-19 crisis. (There is a Spanish version of this edition with the same number).

2027 EDUARDO GUTIÉRREZ, ENRIQUE MORAL-BENITO and ROBERTO RAMOS: Tendencias recientes de la población en las áreas rurales y urbanas.

2028 ÁNGEL LUIS GÓMEZ: The effects of changes in the composition of employment on euro area wage growth: panel data analysis. (There is a Spanish version of this edition with the same number).

2029 MIGUEL GARCÍA-POSADA GÓMEZ: Analysis of insolvency proceedings in Spain against the backdrop of the COVID-19 crisis: insolvency proceedings, pre-insolvency arrangements and the insolvency moratorium. (There is a Spanish version of this edition with the same number).

2030 ÁNGEL GÓMEZ-CARREÑO GARCÍA-MORENO: Juan Sebastián de Elcano – 500 años de la Primera vuelta al mundo en los billetes del Banco de España. Historia y tecnología del billete.

2031 OLYMPIA BOVER, NATALIA FABRA, SANDRA GARCÍA-URIBE, AITOR LACUESTA and ROBERTO RAMOS: Firms and households during the pandemic: what do we learn from their electricity consumption?

2032 JÚLIA BRUNET, LUCÍA CUADRO-SÁEZ and JAVIER J. PÉREZ: Contingency public funds for emergencies: the lessons from the international experience. (There is a Spanish version of this edition with the same number).

2033 CRISTINA BARCELÓ, LAURA CRESPO, SANDRA GARCÍA-URIBE, CARLOS GENTO, MARINA GÓMEZ and ALICIA DE QUINTO: The Spanish Survey of Household Finances (EFF): description and methods of the 2017 wave.

2101 LUNA AZAHARA ROMO GONZÁLEZ: Una taxonomía de actividades sostenibles para Europa.

2102 FRUCTUOSO BORRALLO, SUSANA PÁRRAGA-RODRÍGUEZ and JAVIER J. PÉREZ: Taxation challenges of population ageing: comparative evidence from the European Union, the United States and Japan. (There is a Spanish version of this edition with the same number).

2103 LUIS J. ÁLVAREZ, M.ª DOLORES GADEA and ANA GÓMEZ LOSCOS: Cyclical patterns of the Spanish economy in Europe. (There is a Spanish version of this edition with the same number).

2104 PABLO HERNÁNDEZ DE COS: Draft State Budget for 2021. Testimony before the Parliamentary Budget Committee, 4 November 2020. (There is a Spanish version of this edition with the same number).

2105 PABLO HERNÁNDEZ DE COS: The independence of economic authorities and supervisors. The case of the Banco de España. Testimony by the Governor of the Banco de España before the Audit Committee on Democratic Quality / Congress of Deputies, 22 December 2020. (There is a Spanish version of this edition with the same number).

2106 PABLO HERNÁNDEZ DE COS: The Spanish pension system: an update in the wake of the pandemic. Banco de España contribution to the Committee on the Monitoring and Assessment of the Toledo Pact Agreements. 2 September 2020. (There is a Spanish version of this edition with the same number).