Chapter 2

Structural challenges facing the Spanish economy

Contents

Chapter 2
Takeaways

— The Spanish economy's growth capacity over the years ahead will be influenced by a number of far-reaching structural challenges.

— These challenges include:

- driving productivity growth;

- reducing the high structural unemployment rate in the labour market;

- increasing firm size and facilitating cross-sector and cross-firm reallocation of productive resources;

- encouraging people to build up their human capital;

- promoting investment in physical and technological capital and innovation;

- improving the quality of, and trust in, Spanish institutions;

- making public finances more sustainable;

- reducing the supply and demand mismatches in the housing market, which are creating affordability problems;

- tackling the many challenges posed by population ageing, the existence of certain pockets of vulnerability in Spanish households and the green transition.

— If these challenges are to be successfully addressed, a comprehensive strategy of ambitious and lasting reforms needs to be designed and implemented.

— Against this backdrop, the Next Generation EU (NGEU) programme and the Spanish Recovery, Transformation and Resilience Plan (RTRP) present a unique opportunity to boost Spain's potential growth capacity.

— However, a rigorous selection of the investment projects to be funded from the NGEU programme is critical, as is the ambitious implementation of the other reforms and milestones pending under the RTRP.

1   Introduction

Having returned to pre-pandemic levels of activity over the course of 2022, the Spanish economy continued to post strong momentum in 2023 (see Chapter 1 of this report), amid a slowdown in economic activity worldwide, particularly in the euro area.

Spain's growth outlook for 2024-2026 remains relatively favourable (Banco de España, 2024a), but there are some sources of uncertainty at both global and domestic level that should not be underestimated.

In any event, the Spanish economy's growth capacity over the years ahead will be highly influenced by a number of far-reaching structural challenges. These include: (i) driving productivity growth; (ii) reducing the high structural unemployment rate in the labour market (see Chapter 3 of this report); (iii) increasing firm size and facilitating cross-sector and cross-firm reallocation of productive resources; (iv) encouraging people to build up their human capital; (v) promoting investment in physical and technological capital and innovation; (vi) improving the quality of, and trust in, Spanish institutions; (vii) making public finances more sustainable; (viii) reducing the supply and demand mismatches in the housing market, which are creating affordability problems (see Chapter 4 of this report); and (ix) tackling the many challenges posed by population ageing, the existence of certain pockets of vulnerability in Spanish households and the green transition. All this, against a highly complex geopolitical backdrop in which activity in the domestic and global financial system is subject to considerable sources of uncertainty (Banco de España, 2024b).

If these challenges are to be successfully addressed, a comprehensive strategy of ambitious and lasting reforms needs to be designed and implemented. For presentation purposes, the challenges outlined above are set out individually in this and other chapters of this report. They are, however, all closely interconnected, and must therefore be interpreted on a holistic basis. For instance, economic growth is key to any fiscal consolidation process, and its main drivers are buoyant productivity and enhanced human, physical and technological capital. Along the same lines, reducing the high structural unemployment in the Spanish labour market will undoubtedly entail reinforcing the role of education, which in turn will also help raise wages, boost productivity and bolster equality of opportunity. Meanwhile, the green transition will call for a very significant drive for investment in capital and innovation by the private sector and the public sector, which would be smoothed by improving the institutional framework in which economic activity is pursued in Spain.

Against this backdrop, the Next Generation EU (NGEU) programme and the Spanish Recovery, Transformation and Resilience Plan (RTRP) present a unique opportunity to boost Spain's potential growth capacity.[1] Spain has so far received grants of around €37 billion, out of the

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1   See, for example, the following analytical studies using different methodological approaches recently published by the Banco de España: Cuadrado, Izquierdo, Montero, Moral-Benito and Quintana (2022), Fernández-Cerezo, Moral-Benito and Quintana (2023) and Domínguez-Díaz, Hurtado and Menéndez (2024).

approximately €163 billion allocated to it (in the form of grants and loans) under the Recovery and Resilience Facility, the centrepiece of the NGEU stimulus package that is instrumented through the RTRP. Disbursement by the European Commission of the remaining funds is contingent on fulfilling various milestones and targets, associated with investment projects and structural reforms, by 31 August 2026.

A rigorous selection of the investment projects to be funded from the NGEU programme is critical, as is the ambitious implementation of the other reforms and milestones pending under the RTRP, not least a comprehensive reform of the tax system and a review of unemployment assistance benefits. Given the little information available and the short period of time that has elapsed, it is too early for an accurate assessment of the macroeconomic effects of the funds already deployed and the impact of the reforms approved. However, it would be desirable to work towards a real-time assessment, so that any possible shortcomings that may arise, either in the procedures or in the execution of the projects funded, can be identified and corrected. The enormous complexity underlying the management of these funds advises a great deal of transparency so that the process ultimately strengthens people's trust in their institutions.

2   Productivity

Context:

Productivity gains are the main driver of long-term economic growth. One of the most commonly used metrics to measure productivity is total factor productivity (TFP), which can be defined as the part of output growth not attributable to productive resources. In other words, TFP growth proxies gains in the efficiency with which resources (capital and labour) are combined and utilised, which generate GDP growth even when the use of these resources does not increase.[2] Consequently, TFP growth can be considered the fundamental determinant of long-term growth, as efficiency gains in the use of productive resources are not subject to diminishing returns, nor is their use exclusive.[3]

Evidence:

In recent decades, the Spanish economy has seen a slowdown in productivity growth that has been significantly more pronounced than in other developed countries. Specifically, Spanish TFP growth in 2000-2022 was around 13 and 17 percentage points (pp) lower than that observed in Germany and the United States, respectively (see Chart 2.1.a). As highlighted in Chapter 2 of the Banco de España *Annual Report 2022,* sluggish productivity has been one of the main reasons, along with the persistence of very high unemployment rates, why the Spanish economy has lagged behind euro area per capita income in recent decades.

Further evidence:

One way of understanding how aggregate productivity in Spain has evolved in recent years (since 2013) is to analyse, using firm-level data, which part of the changes in aggregate productivity stem from sector composition effects (i.e. the extent to which shifts in the weights of sectors with differing productivity levels contribute to such developments) or from different intra-sector dynamics. Intra-sector dynamics, in turn, can be broken down into three

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2   TFP is an efficiency metric that is related to other widely used metrics, such as labour productivity and GDP per capita. It is calculated by dividing total output by the combined contribution of the factors of production, applying assumptions about the functional form in which these factors are combined. Labour productivity is calculated by dividing total output by the number of hours worked and is therefore a more specific measure focusing on labour efficiency. Meanwhile, GDP per capita is obtained by dividing GDP by a country's population and indicates average income per inhabitant. Consequently, it is not designed to measure the efficiency of the use of factors of production.

3   A higher level of output attributable to the use of factors of production is generally subject to diminishing returns. In other words, as the use of a factor of production increases, the additional output generated by each additional unit of input decreases. However, this does not occur in the case of increases in output attributable to productivity gains. Moreover, the use of productivity gains is generally not exclusive. In other words, a new productivity-enhancing production process can usually be utilised by different production units, whereas a machine or worker are production factors that can only be used by one firm, and are therefore exclusive.
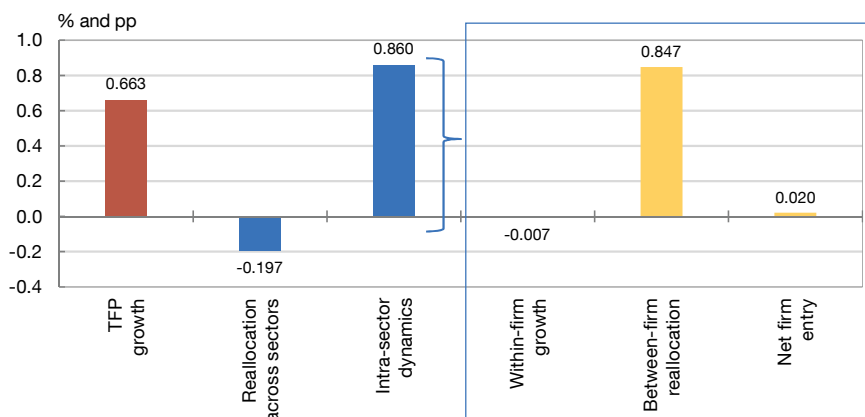
Chart 2.1

The Spanish economy has seen a more pronounced slowdown in productivity growth than other developed countries. Notable explanatory factors include low growth among active firms and the small contribution of net firm entry

2.1.a TFP

1990 = 1

Legend:
- Spain
- Germany
- Italy
- United States
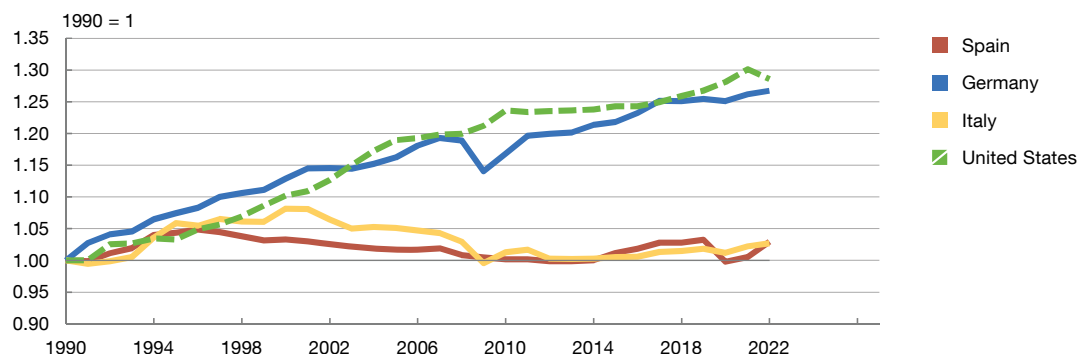
2.1.b Breakdown of TFP growth by across-sector and intra-sector contributions (a)

% and pp

	Value
TFP growth	0.663
Reallocation across sectors	-0.197
Intra-sector dynamics	0.860
Within-firm growth	-0.007
Between-firm reallocation	0.847
Net firm entry	0.020

SOURCES: OECD and Banco de España (CBSO).

a Data in percentage (%) in the case of TFP growth and in percentage points (pp) in all other cases. Breakdown of TFP of the firms in the Central Balance Sheet Data Office integrated database, following the methodology of Foster, Haltiwanger and Krizan (2001) and weighted by sales for aggregation, and the method of Wooldridge (2009) to calculate TFP at firm level.

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contributions: the contribution from productivity growth in each firm (within-firm growth); that resulting from changes in the relative weights of firms operating in the same sector over time (between-firm reallocation); and that owing to firm entries and exits (firm demography). The results of such analysis suggest that *the main factors behind the Spanish economy's sluggish aggregate productivity are low aggregate productivity growth among active firms and the small contribution of net firm entry to productivity growth* (see Chart 2.1.b):[4]

- Cross-sector reallocation of activity made a small negative contribution to TFP growth in Spain between 2013 and 2021. During this period, however, sector-level productivity

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4 This analysis is only conducted up to 2021, as information on firm exits in 2022 is not yet available. For more details on the methodology, see Foster, Haltiwanger and Krizan (2001).

contributed positively to aggregate TFP growth, as it did in other European countries (European Central Bank, 2021).

- As regards intra-sector productivity growth, resource reallocation across firms operating in the same sector made a positive contribution to productivity growth in Spain. In other words, the more productive firms posted higher activity growth than the other firms in the same sector. Meanwhile, the within-firm component made a negative contribution, that is to say, firms' average productivity growth was negative. Lastly, the extensive margin (i.e. net entry) made a very modest contribution to productivity growth.

Areas of action:

Sluggish productivity in the Spanish economy is the product of many interacting factors, calling for action to be taken simultaneously. These factors notably include: (i) the aspects shaping firm size and demographics, and the reallocation of productive resources across sectors and firms;[5] (ii) the level of human capital in the population; (iii) the technological capital stock and the drivers of investment in innovation; and (iv) the regulatory and institutional framework. The following sections describe the role played by these factors in Spain and propose various lines of action to increase their contribution to productivity growth.

Recent measures rolled out in this area:

The draft Royal Decree creating the Spanish National Productivity Board, in compliance with a European Council recommendation of September 2016, is a noteworthy example.[6] The Board's tasks will include drawing up economic and statistical analyses and issuing public opinions aimed at assessing and analysing the Spanish economy's productivity and competitiveness. If the Board is to be effective, it will need to ensure the independence and expertise of its members, and sufficient resources will have to be available to undertake rigorous analyses.

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5   The sectoral make-up of the Spanish economy explains only part of its lacklustre productivity. While it is true that Spain's productive structure is skewed towards sectors of activity that usually post lower productivity growth, practically all sectors record lower productivity than in other European countries.

6   According to the latest information from the European Commission, Spain, Italy and Estonia are the only euro area countries not yet to have a national productivity board.

3 Business size and demographics

Context:

Any artificial constraint on business growth or on the ability to reallocate resources across firms and sectors ultimately holds back productivity in the economy. According to the empirical evidence available, larger firms typically exhibit higher productivity levels and, as discussed in the previous section, resource reallocation across firms is a major driver of aggregate productivity growth.[7] Furthermore, small firms are generally less diversified than their larger competitors, not only in terms of their products and customers, but also as regards their sources of financing. All of this means small firms are relatively more vulnerable to adverse macro-financial shocks.

Evidence:

The proportion of small firms in Spain is relatively high by international standards. In 2021, 76.8% of Spanish firms had between one and four employees, the highest percentage in the European Union (EU) and far higher than the figures seen, for example, in Germany (63.2%), France (70.4%) and Italy (72.5%). This gap has been relatively persistent over recent decades, and it cannot be attributed to the specific sectoral composition of the Spanish economy.[8]

Further evidence:

In addition to the small size of its firms, Spain has also recently had a lower business churn rate than other European countries, which holds back productivity as well.

— **The number of firms has returned to its pre-pandemic mark.** The number of active firms in Spain rose by 1.5%, from 3,154,837 in 2019 to 3,202,912 in 2022. This was smaller than the 9.8% rise observed in the EU as a whole during the same period.[9]

— **However, the business churn rate has fallen and remains at low levels.** Spain's churn rate, which is defined as the ratio of newly registered firms plus deregistered firms to total active

7 See, for example, Moral-Benito (2018) and García-Santana, Moral-Benito, Pijoan-Mas and Ramos (2020).

8 In particular, the percentage of Spanish firms with between one and four employees in 2021 was 58.9% in the manufacturing sectors (compared with 43.6%, 53.2% and 52.9% in Germany, France and Italy, respectively) and 79% in the services sectors (compared with 66.6%, 71.9% and 76.7% in Germany, France and Italy, respectively).

9 The data on the number of firms are taken from the Central Business Register (DIRCE, by its Spanish acronym) for Spain, and from Eurostat's structural business statistics for the EU. The DIRCE data do not include firms in agriculture (NACE Rev. 2 section A), financial service activities, except insurance and pension funding (division K64), public administration (section O), other service activities (section S), activities of households (section T) and activities of extraterritorial organisations and bodies (section U). The EU data do also not include education (section P), human health and social work activities (section Q), arts, entertainment and recreation (section R) or financial and insurance activities (section K). Excluding these sectors also, the number of firms in Spain rose from 2,781,367 in 2019 to 2,804,037 in 2022.

firms,[10] declined from an average of 18.2% in 2016-2019 to 16.2% in 2020-2021. In the EU, it rose from 17.3% to 18.1% in the same period.

— **Spain has a lower business churn rate than the EU because its entry and exit rates are lower.** Specifically, Spain's entry rate – which was in line with those observed in the EU up to 2019 – fell to around 1.7 pp below those of its European peers in 2020 and 2021 (see Chart 2.2.a). Meanwhile, the exit rate declined from around 8.5% in the pre-pandemic years to 7.3% in 2021,[11, 12] in contrast to the increase (from 7.5% to 8.5%) observed in the EU.

— **The entry and exit of firms contribute positively to productivity, meaning that a lower business churn rate limits aggregate productivity growth.** The productivity impact of business births and deaths depends not only on entry and exit rates, but also on the relative productivity of the new and exiting firms. It is possible to analyse relative productivity by considering a regression in which, for firm exits, the dependent variable takes the value of 1 if the firm exits the market in the year and 0 otherwise, with the explanatory variable of interest being its productivity – relative to the sector average and year – in the previous period. For firm entries, a similar regression is considered, but the dependent variable takes the value of 1 if the firm enters the market in the year and 0 otherwise, and the explanatory variable is its productivity in the current period. Based on the coefficients estimated in the two regressions, the following main conclusions may be drawn (see Chart 2.2.b):

  • In the case of firm exits, the negative coefficient implies that, as might be expected, less productive firms are more likely to exit the market. However, although the negative link between productivity and exit from the market became stronger during the financial crisis, it did not do so during the health crisis. This could be due, at least in part, to the various support measures deployed by the authorities following the outbreak of the pandemic, such as the furlough schemes (ERTEs, by their Spanish acronym), the deferral of social security contributions and tax payments and the provision of financing to firms on favourable terms.

  • In the case of firm entries, the negative coefficient also suggests that new firms are less productive than established ones. However, new firms typically have more room for improvement. For example, in Spain, the productivity growth of firms that entered the market between 2014 and 2016 was, after five years, around 22 pp higher than that

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10 Active firms are those that have positive sales or employment in the period analysed. Entry refers to the registration of a new active firm that does not involve any other firm that either currently exists or has existed within the last two years. Exit refers to a firm that becomes inactive, again excluding cases involving other firms or when a firm is reactivated within the next two years.

11 As exits are measured in economic, rather than legal, terms, these figures are not affected by the moratorium on insolvency proceedings. Indeed, in 2019 (the year before the moratorium was approved), 0.14% of firms filed for insolvency proceedings, while the exit rate was 9.4%. Consequently, although the number of firms being wound up has held at previous levels, the exit rate has continued to fall.

12 According to the DIRCE, the entry and exit rates for Spanish firms in 2022 were still below 2019 levels and in line with the average observed in 2020-2021.
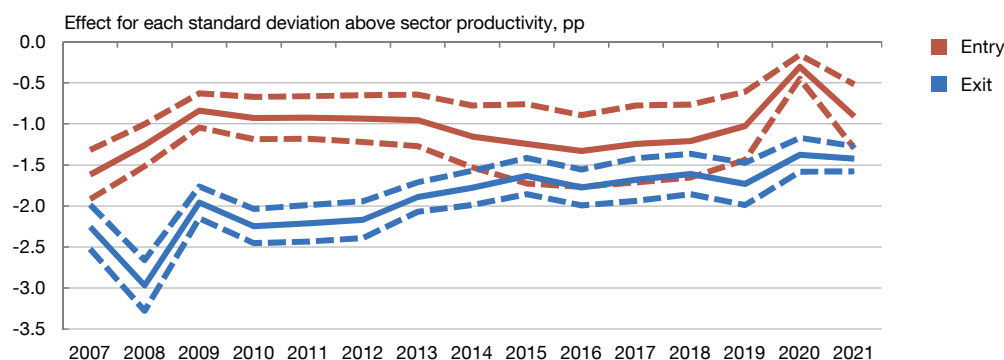
Chart 2.2
Spain has a lower business churn rate than the EU because its entry and exit rates are lower

2.2.a Firm entry and exit rates in Spain and the EU (a)

% of active firms

Entries. Spain
Entries. EU
Exits. Spain
Exits. EU
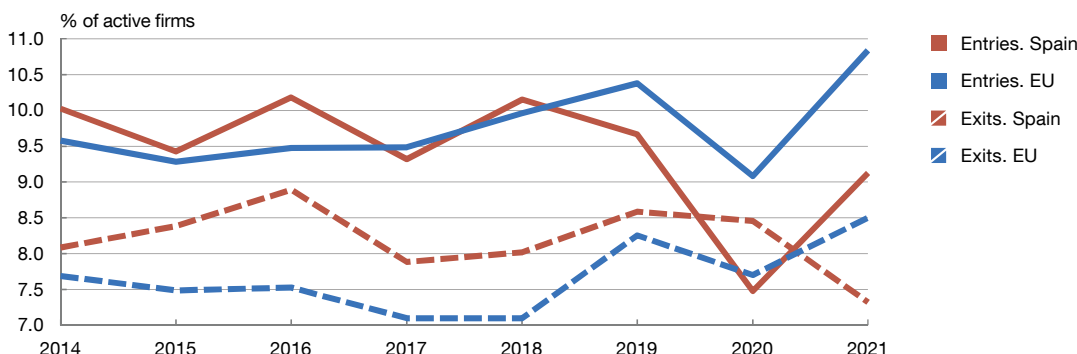
2.2.b Relative productivity levels of new and exiting firms compared with active firms (b)

Effect for each standard deviation above sector productivity, pp

Entry
Exit

SOURCES: Eurostat and Banco de España (CBSO).

a Given the lack of information for some of the years between 2014 and 2021, the EU aggregate does not include Belgium, Greece, Ireland, Malta, Poland or Sweden. Moreover, the Eurostat data do not include firms in the following sectors: agriculture (NACE Rev. 2 section A), financial service activities, except insurance and pension funding (division K64), public administration (section O), other service activities (section S), activities of households (section T) and activities of extraterritorial organisations and bodies (section U).

b The chart shows the coefficients associated with firm-level TFP (in deviations from the sector average) and estimated for each year in two regressions: one in which the dependent variable is a dummy variable that takes the value of 1 if the firm exits the market and 0 otherwise (blue line), and another in which the dependent variable is a dummy variable that takes the value of 1 if the firm has entered the market within the last year and 0 otherwise (red line). Consequently, the estimated coefficients measure the effect of one-standard-deviation changes in firms' TFP with respect to the sector average on entry and exit rates. Firm-level TFP is estimated previously, drawing on the method of Wooldridge (2009). The broken lines show 95% confidence intervals.

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of established firms, meaning that they were already more productive than their competitors from their fifth year onwards. In any event, the estimated coefficient in this regression is less negative than that estimated for exits, suggesting that new firms are more productive than exiting firms.

Areas of action:

Many obstacles shaping firm size and demographics in Spain have been identified in recent decades, notably including:

— **The quantity and quality of regulation.** The volume and complexity of the regulations governing economic activity in Spain have grown substantially in recent years.[13] As a result, firms have to dedicate an increasing proportion of their resources to understanding and complying with the regulations, which sometimes creates obstacles to market unity. To ease the regulatory burden on firms and foster market unity (which would be conducive to business growth and competition), the different tiers of general government should pool their regulatory approaches for each sector, so as to achieve best-practice standards.

— **Spanish firms' access to non-bank financing.** Despite the advances made in recent years, Spanish firms' ability to access non-bank market-based funding sources is still very low. This is particularly detrimental to growth when it limits investment opportunities for younger and more innovative firms, which have relatively less collateral but higher growth potential. In this respect, further progress needs to be made in developing venture capital markets, both in Spain and at European level. This will require firm steps to be taken towards a capital markets union in the EU (European Central Bank, 2024).

— **Insolvency proceedings.** Historically, relatively limited use has been made of insolvency proceedings and pre-insolvency arrangements in Spain. Moreover, when insolvency proceedings have been used, they have typically taken a long time and a high proportion of insolvent firms has eventually been wound up (García-Posada Gómez and Vegas Sánchez, 2018). This has delayed non-viable firms' exit from the market and even reduced the economic value of the firms affected, with the consequent adverse impact on aggregate productivity growth. The 2022 Insolvency Law reform, which is described at the end of this section, seeks to correct some of these shortcomings.

— **Public tender procedures.** Public tenders are mostly awarded to large firms. Some studies suggest that redirecting tender procedures, at least partially, towards small and highly productive but financially constrained firms could spur business and aggregate productivity growth (Giovanni, García-Santana, Jeenas, Moral-Benito and Pijoan-Mas, 2022). In this context, according to a recent Banco de España study (Aguilar, Alloza, de la Mata, Moral-Benito, Portillo-Pampin and Sarasa-Flores, 2023), the tenders linked to the NGEU programme have to date been allocated to larger firms than those that have won previous public tenders.[14] By contrast, the firms that have so far been allocated NGEU grants are comparatively smaller than has been the case in other grants, which can be partly explained by the size of programmes such as the Digital Kit.[15]

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13 For more details, see Mora-Sanguinetti, Quintana, Soler and Spruk (2024) and Mora-Sanguinetti and Pérez-Valls (2021), who use a novel database that compiles and classifies the more than 200,000 rules adopted in Spain between 1995 and 2020. Moreover, according to the European Commission's Single Market Scoreboard, Spain ranked 22nd in the EU based on the burden of government regulation in 2022.

14 In addition to being larger, the successful bidders for NGEU tenders are significantly more productive, have better access to bank financing and saw a smaller drop in their sales during the pandemic.

15 A Spanish programme to foster the digitalisation of small and medium-sized enterprises, which has resulted in a first round of tenders worth €1.5 billion and currently has an implementation rate of more than 80% of the total.

— **Regulatory thresholds.** The academic literature has highlighted the existence of certain employment and tax thresholds in regulations, that are linked to arbitrary levels of firm size and which, to some extent, discourage business growth around these thresholds (Almunia and López-Rodríguez, 2018). A review should be carried out of such thresholds and their impact on business demographics.

Recent measures rolled out in this area:

Various initiatives have been approved in recent years in an attempt to bolster business growth and smooth the efficient reallocation of factors of production. However, it is still too early to accurately assess whether these initiatives will be able to significantly reverse any of the persistent weaknesses in terms of business size and demographics in the Spanish economy. The measures recently approved notably include:

— **The Law on business start-ups and growth.** This law seeks to boost business start-ups and foster their growth through actions such as: (i) facilitating and streamlining business start-up (for example, by reducing minimum share capital or introducing standardised templates and standard articles of association for setting up limited liability companies); (ii) providing increased flexibility in alternative financing arrangements (by introducing a new legal regime for crowdfunding platforms, for example); and (iii) incorporating incentives for compliance with payment periods, both in the private sector (by including a requirement to disclose average supplier payment periods in the annual accounts and late payment monitoring) and in general government (establishing late payment interest and other measures to combat late payment).

— **Insolvency Law reform.** The new law establishes a pre-insolvency mechanism known as a "restructuring plan" that allows business debt forbearance at an early stage. Furthermore, a new bespoke procedure has been added for microfirms, which is cheaper and more streamlined than the standard insolvency proceedings. Lastly, improvements have been made to the fresh-start mechanism for the self-employed and individuals, adding the possibility of debt waiver – without prior liquidation of a debtor's assets – based on a three-year payment plan and extending the waiver of unpaid claims to include public law claims, up to a certain threshold.[16]

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16 On data published by the Association of Registrars, the number of insolvency proceedings involving the self-employed and individuals in Spain increased by 89% in the year following the reform, from 8,503 to 16,096. Furthermore, according to information compiled by the Spanish official export credit company (Cesce), the number of special procedures for microfirms has gradually increased from four in February 2023 to 147 in February 2024.

4 Human capital

Context:

The academic literature emphasises the importance of human capital for economic growth.

— From a macroeconomic standpoint, there is broad consensus that a lower stock of human capital reduces growth.[17] This impact would not only stem from the direct effect of educational attainment levels on individual productivity; it would also materialise through other channels, such as the complementarity between human capital and investment in physical or technological capital. In this respect, European countries with a higher level of human capital (based on the numeracy scores under the Programme for the International Assessment of Adult Competencies, for example) on average invest 1 pp more in R&D&I than Spain.

— From a business perspective, firms' productivity is highly correlated to their staff's educational attainment level (Syverson, 2011). Specifically, firms at the productivity "frontier" (those in the top 10% of the productivity distribution) have more high-skilled workers (7% more staff with tertiary education) than firms at the median of the productivity distribution (Criscuolo, Gal, Leidecker and Nicoletti, 2021).

— At individual level, there is a clear positive return to education, which in addition seems to be increasing over time. Drawing on data from different waves of the Banco de España's Spanish Survey of Household Finances (EFF, by its Spanish abbreviation), it is possible to estimate the internal rate of return to education as with any other investment. The cost of the investment is quantified on the basis of the sum of the income forgone by not working during the period of study, while the benefit can be calculated considering the positive labour income differential obtained after education.[18] According to this analysis, in 2019 an upper secondary education or intermediate vocational training provided a return of 18% for men and 26% for women compared with compulsory secondary education alone; in both cases, this return was greater than that estimated in 2007 (see Chart 2.3.a).[19] Moreover, university studies provided an additional return of 20% for men and 23% for women; again, these figures were higher than those estimated in 2007. Meanwhile, the additional return to higher vocational training compared with intermediate vocational training (non-compulsory level) was also positive for men and women in 2019, although for women it was lower than in 2007.

17 See, for example, Romer (1986), Lucas (1988, 1990, 2015).

18 For more details on the methodology used, see Jansen and Lacuesta (2024).

19 Heckman, Lochner and Todd (2006) estimate, for the United States in 1990, a return of 39% to 12 years of schooling (equivalent to completing upper secondary education) compared with 10 years of schooling alone (compulsory secondary education), and an additional return of 24% to completing 16 years of education (university) compared with 14 years of education. A number of estimates are available for other countries. Drawing on various articles, Card (2008) suggests that the return to an additional year of schooling in many European countries would be between the 5% observed in Sweden and the 10% observed in the United Kingdom.
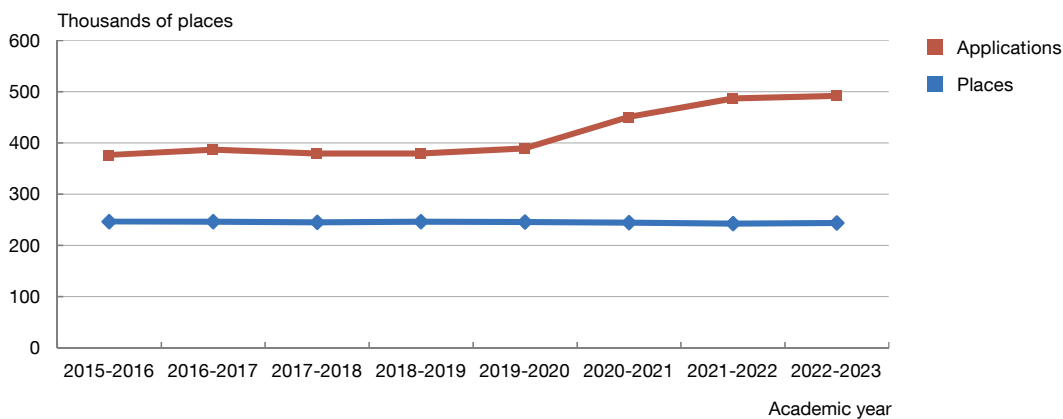
Chart 2.3

There is a significant and positive economic return to education, and it seems to be increasing over time. There appears to be some mismatch between the supply of and demand for places at conventional public universities

2.3.a Internal rate of return (IRR) (a)
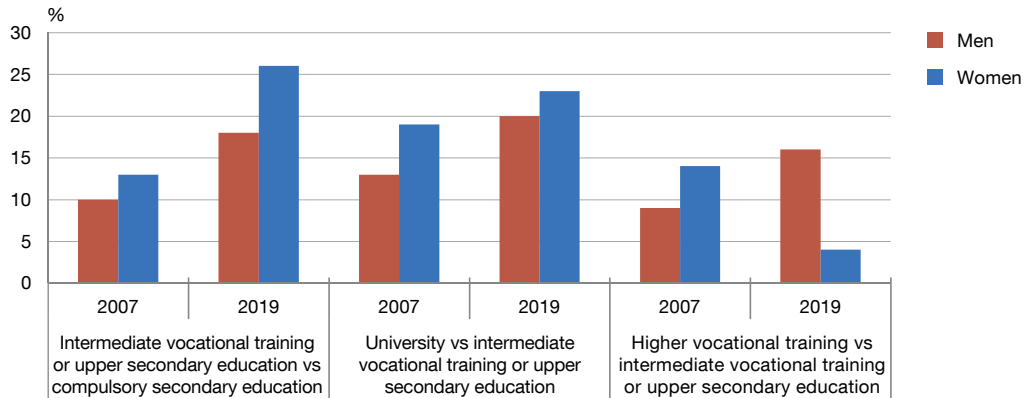
2.3.b Conventional public universities: first-choice applications and places

SOURCES: Banco de España (EFF) and Ministerio de Ciencia, Innovación y Universidades (UNIVbase).

a Drawing on data from the 2008 and 2020 editions of the Spanish Survey of Household Finances (EFF). The chart depicts the IRR to one level of educational attainment compared with another. The IRR to a level of educational attainment is defined as the discount rate that equates the sum of the present value of earnings over 50 years of work experience with the opportunity cost (the present value of income earned by not remaining in education). Gross labour income per year of work experience is obtained using a logarithmic regression of gross annual labour income restricted to a sample with the two educational attainment levels analysed, adding a constant, a dummy variable for the higher educational attainment level, a variable for potential experience and its square defined as age-16 for compulsory secondary education, age-18 for intermediate studies, age-20 for higher vocational training and age-22 for university studies. The estimate takes into account weights and the five imputations of the EFF. Drawing on the results of these regressions, labour income is estimated from 0 to 50 years of work experience and the internal rate of return is calculated assuming that someone who begins to work after completing compulsory secondary education does so two years before someone who studies intermediate vocational training or upper secondary education and that there are no monetary costs of studying. Similarly, it is assumed that, compared with someone who studies either intermediate vocational training or upper secondary education, an individual who studies higher vocational training will begin two years later and a university student graduate four years later. For more details, see Jansen and Lacuesta (2024).

Evidence:

Despite the improvement observed in recent decades, the educational attainment level of the Spanish population remains below the European average.

— **Early school leaving.** The early school leaving rate has fallen considerably in Spain over the last few decades. For instance, the percentage of the population born in 1998 whose highest

level of educational attainment was compulsory secondary education by the age of 25 was 13 pp and 7 pp lower for men and women, respectively, than for those born in 1990.[20] However, Spain continues to have one of the highest early school leaving rates among European countries. Specifically, in 2023, 13.6% of 16-24 year-olds in Spain had left school having completed, at most, compulsory secondary education, compared with 9.6% in the EU as a whole.

— **PISA results.** The Programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD) is a useful international assessment of students' level of achievement at the end of their compulsory education. The latest results refer to 2022, in which Spain ranks 23rd in mathematics and 24th in reading and in scientific knowledge, out of the 38 OECD member countries. When only those students at the highest levels of excellence are considered, Spain has an even lower position in the rankings.

— **Educational attainment level among adults.** On Eurostat data for 2023, the percentage of people with a low level of educational attainment in Spain was 29% among employees, 34% among employers and 35% among the self-employed. These figures are higher than those observed in Italy (27%, 33% and 25%) and well above those found in France (12%, 8% and 11%) and Germany (16%, 11% and 10%).[21]

Further evidence:

In addition to the quantity and quality of education, it is also essential to analyse the extent to which the education available can adapt to changes in demand, and thereby prevent possible mismatches that could hold back the economy's productive capacity and constrain equality of opportunity. In this respect, *there appears to be some mismatch between the supply of and demand for places at conventional (i.e. classroom-based) public universities.*

— **On the demand side, the number of applications to conventional public universities rose by 30% in Spain between 2015 and 2022** (see Chart 2.3.b).[22] Furthermore, such applications appeared to be aligned, to some extent, to labour market demand. Specifically, on average, these applications were positively correlated to graduates' contribution base four years

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20 The increase in men's educational attainment level was split between intermediate vocational training, higher vocational training and university studies, whereas for women it was chiefly concentrated in university education.

21 Beyond the level of educational attainment, other practices related to firm structure, organisation and management are key to productivity. In recent years, progress has been made in the analysis of the importance of these factors in the economic literature thanks to advances in measuring them through surveys (Bloom and Van Reenen, 2007) and randomised trials (Adhvaryu, Molina and Nyshadham, 2022).

22 In addition to a rise in demand for education stemming from the higher returns to training (see Chart 2.3.a), in recent years there has been an increase in the number of people aged 19. In the period 1995-2008, the fertility rate rose somewhat in Spain, in line with the economic upswing during those years. As a result, the population aged 19 grew continuously, from 428,000 to 484,000, between 2015 and 2022. According to the population projections of the National Statistics Institute (INE), the population aged 19 will reach 586,000 in 2028. However, as fertility rates have decreased since the financial crisis, it will tend to fall back, to around 440,000 after 2040.

after graduation, with courses leading to a job paying 10% more than other courses receiving 6% more applications.

— **On the supply side, however, the number of places available at these universities for new students fell slightly (by 1%) in the period analysed.**[23] Moreover, in contrast to the number of applications, the number of places available in areas of study at conventional public universities is not correlated to wage variation. These universities are offering more courses in areas of study with greater job opportunities, but without making more places available.

Areas of action:

It is essential that structural measures be developed to promote human capital accumulation, which may require an in-depth review of the institutional design of Spain's education system. This is especially important at the present juncture, in which a major sectoral and occupational reallocation of employment appears likely, prompted, inter alia, by the far-reaching demographic and technological changes under way and the green transition (for more details on how these could affect the labour market, see Chapter 3 of this report). Among the various initiatives that could be rolled out in this area, the following are noteworthy:

— **Push to encourage students to remain in education.** Public policies should continue to encourage students to remain and progress in the formal education system, especially taking into account the associated individual return (see Chart 2.3.a) and aggregate return. In this respect, work experience is an imperfect substitute for formal education in the development of cognitive skills for workers with lower levels of educational attainment (Martínez-Matute and Villanueva, 2023). Various programmes, such as tutoring in small groups or with teachers from the same ethnic background, have proven useful in encouraging pupils to remain in school and improve their performance.[24] Furthermore, it would be advisable for the public sector to provide students (and their families) with sufficient information on the employment returns to education, to inform their decisions (McGuigan, McNally and Wyness, 2016).

— **Vocational training.** High-quality vocational training could be a very effective alternative for reducing both the early school leaving rate and some of the existing supply and demand mismatches in the labour market, which could increase in the future.[25]

  • The Organic Law on vocational training, approved in 2022, seeks to overhaul the vocational training system in Spain. To this end, it focuses on the dual vocational training system introduced in 2012 and on promoting continuous training.

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23 In the same period, the number of new undergraduate students at private universities rose by 20,000 (+53%).

24 Gershenson, Hart, Hyman, Lindsay and Papageorge (2022) and Battaglia and Lebedinski (2022).

25 For instance, the percentage of Spanish firms reporting that labour shortages were having an adverse or very adverse impact on their activity has risen considerably in recent quarters. Specifically, according to the Banco de España Business Activity Survey (EBAE, by its Spanish abbreviation), 43.8% of firms perceived having such problems in 2024 Q1, up 34 pp from early 2021 (Fernández-Cerezo and Izquierdo, 2024).

- The key characteristic of the dual system is the prominent role given to firms in the training process. In the case of Spain, the economic literature finds that under the dual system the number of days worked, income and job retention rates are all higher in the two years after graduation than under traditional training programmes (Bentolila, Cabrales and Jansen, 2024). However, at international level, the evidence is mixed as to whether the better short-term returns from the dual model continue over the working life, particularly in a context of rapid technological change.[26] It may therefore be advisable, as envisaged under the new law, to reinforce the continuous training system for workers with general skills at the same time as the dual vocational training system is rolled out. This is also particularly appropriate in circumstances like the present in which the working population is ageing significantly, which results in some loss of cognitive skills (Anghel and Lacuesta, 2020).

- In any event, the number of places offered in the dual system in the 2021-2022 academic year accounted for less than 5% of the total. Consequently, if the ambitious targets set in the RTRP for the number of dual vocational training places are to be met in the coming years, the right incentives to generate these places will need to be available to Spanish firms.

— **University education.** The Organic Law on the university system (LOSU, by its Spanish abbreviation), which was approved in March 2023, fosters a series of measures to improve the quality of education and adapt the Spanish university system to the structural challenges facing the Spanish economy. Among other aspects, it introduces changes to university autonomy, staff selection processes and contract types for teaching and research staff. Although it is too early for a comprehensive assessment of the law's ability to correct any of the shortcomings of the Spanish university system,[27] further action may be needed in two particular areas in the future:

  - First, the current university funding system should be assessed, focusing on aspects such as its sufficiency, equity and ability to foster excellence.[28]

  - Second, the above-mentioned supply and demand mismatches in public university education should be reduced, as they could have a negative bearing on equality of opportunity[29] and the Spanish economy's ability to undertake the green and digital transition. On Eurostat data for 2020, just 24% of students in tertiary education in Spain were enrolled in a field related to the natural sciences, mathematics, statistics, information and communication technologies, engineering, manufacturing and construction, below the 28% observed in the euro area.

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26 See Jansen and Lacuesta (2024) for a summary of the literature on this issue.

27 For example, according to some international rankings (Academic Ranking of World Universities), very few Spanish universities rank among the best global institutions in terms of the quality and quantity of their scientific output, taking into account the size of the country's population and economy.

28 See, for example, Montalbán Castilla (2019) and Cabrales, Güell, Madera and Viola (2020).

29 While private universities may have covered some demand, the lack of response from the public university system may affect equality of opportunity.

— **Financial education.** Financial education is key if the general public are to take well informed decisions about their finances and be able to make a critical assessment of public policies. However, as in other European countries, the Spanish population has a low level of financial literacy (Organisation for Economic Co-operation and Development, 2023). Specifically, according to the Banco de España's Survey of Financial Competences 2021, the percentage of the Spanish population aged 18-79 who understand basic concepts related to inflation, compound interest and risk diversification is relatively low, at 65%, 41% and 52%, respectively (Hospido, Machelett, Pidkuyko and Villanueva, 2023). In this respect, the Financial Education Plan, in which the Banco de España, the National Securities Market Commission and the Ministry of Economic Affairs, Trade and Enterprise participate, specifically proposes a set of measures aimed at increasing the general public's financial literacy and improving their financial conduct and habits. For the period 2022-2025, the Plan envisages action across all levels of education, as well as specific initiatives aimed at vulnerable groups and at new users of online financial services. In tandem, it is essential that the impact of such initiatives is carefully and continuously assessed.[30]

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30 Bover, Hospido and Villanueva (2024) conduct a randomised experiment to assess the effect that financial education courses delivered at secondary level have on financial literacy and preferences and attitudes towards saving a few months later. Students' scores in a financial literacy test improved and their degree of patience in choices regarding current and future consumption increased, with these positive effects being observed specifically among students from less advantaged backgrounds. The improvement in their financial literacy may be quantified at around 17% of one standard deviation of the scores in a specifically designed test. By way of reference, in the context of the Survey of Financial Competences, this would be equivalent to a 40% increase in the financial literacy of the 18-25 age bracket.

5 Capital investment and innovation

Context:

Investment in physical and technological capital and the pursuit of innovative activities have the potential to significantly drive up productivity and the economy's growth capacity in the medium and long term. Any comprehensive policy for sustainable growth must therefore stimulate such investment and activities. This is especially true for innovation, as some aspects specific to this type of activity[31] could lead to private sector investment falling short from a social perspective.

Evidence:

In recent decades, an aspect that partly explains Spain's relatively lacklustre productivity has been its low share of innovation, which has also led to a smaller stock of intangible assets.

— Spain has a lower percentage of innovative firms than other European countries, even when firms' smaller size and sectoral distribution are taken into account. Specifically, Eurostat's *Community Innovation Survey* shows that, in the period 2018-2020, only 31% of Spanish firms engaged in innovative activities, compared with 49% in the EU.

— Moreover, according to OECD data, Spain's average innovation intensity is also low. In 2022, R&D&I expenditure in Spain represented around 1.4% of GDP, below the share observed in the OECD as a whole (2.7%), or in countries like Germany (3.1%) and France (2.2%). This innovation gap is the result of the scant momentum of this expenditure item in Spain over the period analysed, from the standpoint of investment both in the public sector and in the private business sector.

— As a result of these developments, although the Spanish economy's intangible assets have increased in recent decade – to 5.9% of all capital stock, according to the Spanish National Accounts –,[32] this has not been sufficient to significantly close the gap with average euro area levels (excluding Ireland[33]), where intangible assets represent 9.4% of capital stock.

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31 For example, innovation generates knowledge spillovers that are not always exploitable by those making the investment. Moreover, when successful, such activities usually produce an intangible asset with an economic value that is much higher for the developer than for the funding provider. Consequently, financing for this type of activities is more complex and costly than that relating to, for example, the acquisition of a conventional physical asset.
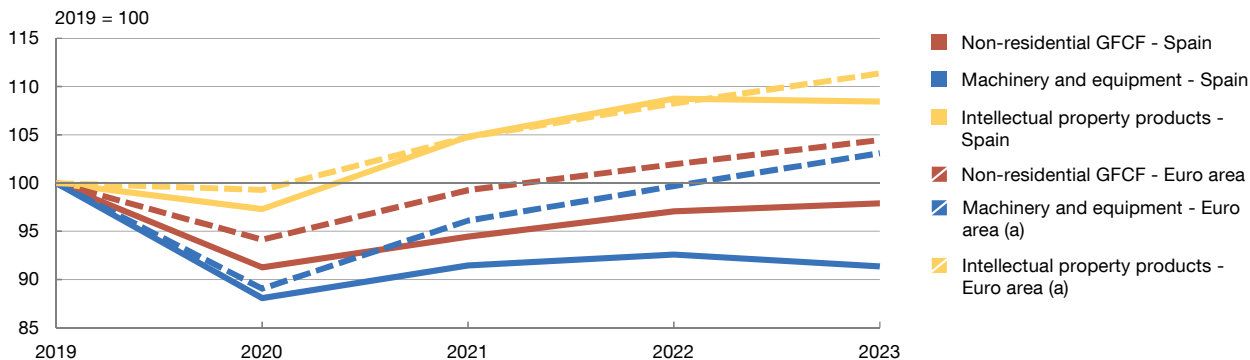
32 Intangible asset investment, according to the Spanish National Accounts, refers to investment in intellectual property products. It does not include other intangible assets, such as new product development, brands, human capital formation by the firm and organisational structure.

33 Ireland has been excluded from the data presented as it distorts the euro area investment series. For further details, see Andersson, Byrne, Emter, González Pardo, Jarvis and Zorell (2023).
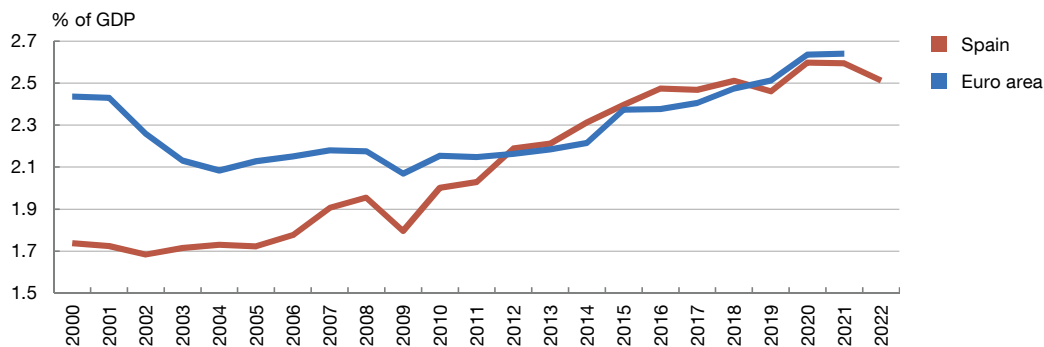
Chart 2.4

In the most recent period, investment in intangible assets and ICT has grown strongly, whereas investment in machinery and equipment has been weak

2.4.a Post-pandemic recovery in investment, by component

2019 = 100

Legend:
- Non-residential GFCF - Spain
- Machinery and equipment - Spain
- Intellectual property products - Spain
- Non-residential GFCF - Euro area
- Machinery and equipment - Euro area (a)
- Intellectual property products - Euro area (a)

2.4.b ICT investment

% of GDP

Legend:
- Spain
- Euro area

SOURCE: Eurostat (National Accounts).

a Ireland is excluded from the euro area.

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Additional evidence:

In the most recent period, the performance of investment has been highly uneven by component, with investment in intangible assets and information and communication technologies (ICT) being clearly buoyant, and weak in capital goods.

— **Since the outbreak of the health crisis, the recovery in investment in intangible assets in Spain has been stronger than in the other investment components.** Specifically, investment in this type of asset had already returned to its pre-pandemic levels by early 2021, while all other investment components had still to reach them at end-2023 (see Chart 2.4.a). This could be due, at least in part, to the boost in the development and implementation of new technologies as a result of the mobility restrictions associated with the pandemic. That said, in 2023, investment in intellectual property products in Spain was 8.5 pp higher than the 2019 level, while in the euro area it stood 11.4 pp above its pre-pandemic mark.

— **As for tangible capital, the different adverse shocks that have shaped economic activity in Spain and globally in recent years appear to be having a sharper impact on investment in machinery and equipment.** In 2023, this demand item in Spain was still 8.6 pp below its pre-crisis level. Conversely, in the euro area as a whole this investment component stood 3.1% above its 2019 level in 2023. The Spanish economy's recent lacklustre performance in investment in machinery and equipment is largely due to the weakness of investment in transport equipment, which stands 25.1 pp below the pre-pandemic level (compared with 4.6 pp below that level in the case of the euro area).

— **Public investment has increased significantly in recent years.** Indeed, in 2022, public sector investment was 27.1% higher than in 2019. The strength of this component may be explained, at least in part, by the effects of the health crisis on some sectors closely linked to general government. Specifically, investment in machinery and equipment in these sectors (which include "Public administration and defence", "Compulsory social security", "Education" and "Human health and social work activities"[34]) grew by 36.7%.[35] Nevertheless, public investment in the euro area, which could also have benefited from such dynamics, rose by only 7.1% between 2019 and 2022.

— **Given the challenges posed by the digitalisation of activity, it is also important to analyse the recent behaviour of ICT investments.** These investments can relate both to intangible capital, such as software, databases and cloud storage servers, and to tangible capital, such as telecommunications and computing equipment. Between 2000 and 2022, this investment component showed notable buoyancy in Spain, its share of GDP increasing from 1.7% to 2.5%, very close to the 2.6% observed in the euro area as a whole (see Chart 2.4.b). In addition, according to the European Commission's Digital Economy and Society Index, in 2022 Spain ranked third in the EU in terms of digital connectivity, but came 11th as regards the integration of digital technology by SMEs.

Areas of action:

Many of the measures that could be adopted in Spain to promote business investment and innovation overlap or are compatible with the range of actions described in previous sections that should ideally be implemented to boost the level of human capital of both employers and workers, and to increase the size of Spanish firms and contribute to the cross-sector and cross-firm reallocation of productive resources. Some initiatives more specifically aimed at boosting investment and innovation are described below:

— **Providing a regulatory framework and a stable institutional environment, to give investors regulatory and legal certainty.**

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34 Although the public sector accounts for most of these activities, there are also private firms operating in them. It should therefore not be assumed that only the public sector invests in these sectors.

35 Growth rate between 2019 and 2021, the latest year for which this breakdown is available.

— Smoothing access to external financing for investment projects, especially those that tend to face greater obstacles in raising finance, such as innovative activities and intangible asset investment. To this end, as already mentioned in Section 3, it would be advisable to foster the development of venture capital markets in Spain and Europe, taking firm steps towards a capital markets union in the EU.

— Reviewing the efficiency and design of the system of tax incentives for innovation. The White Paper for the Reform of the Tax System (2022) (only available in Spanish) provides a thorough overview of the problems in the design of R&D&I incentives in Spain, along with wide-ranging proposals for their reform in line with global best practices. Specifically, the evidence from around the globe shows that designing tax incentives with higher subsidies for newly created companies (which face greater constraints on R&D&I investment) leads to particularly effective policies for enhancing the drive for innovation and its deliverables. It may also be worth giving thought to measures that would allow innovative firms to claim direct reimbursement for investments if they do not make enough taxable profits.

— Rigorously selecting investment projects to be carried out using European NGEU funds, maximising the complementarity and synergies between public and private investment (Alloza, Leiva-León and Urtasun, 2022), and ambitiously implementing the reforms included in the RTRP to reduce the barriers that hinder the sound functioning of markets and resource allocation in the Spanish economy (Albrizio and Geli, 2021).

Recent measures rolled out in this area:

— Law on Developing the Ecosystem of Emerging Businesses, better known as the Start-Ups Law. This law is intended to stimulate investment in innovative activities, to attract, recover and retain talent, as well as create and relocate emerging firms that are committed to innovation. It simultaneously aims to stimulate collaboration of emerging firms with SMEs and large businesses, and also to foster cooperation of emerging firms and entrepreneurs with universities and research institutions. Of the range of measures introduced, the tax and employment incentives for R&D&I activities stand out, as does the measure to streamline the bureaucracy involved in setting up innovative firms.

— Law on Science, Technology and Innovation. This law sets a target for government funding of R&D&I at 1.25% of GDP by 2030. Among other measures, this law also aims to encourage scientific research by creating a new type of permanent contract for researchers and streamlining administrative barriers, such as those surrounding grant access.

6   Institutional framework

Context:

There is broad consensus in the academic literature that the institutional framework and, more specifically, the quality of institutions and the degree of trust they instil among economic agents are key in determining long-run growth (Acemoglu, Johnson and Robinson, 2005). Furthermore, some empirical evidence suggests that lost trust in institutions often takes a relatively long time to be won back, meaning that the economic consequences can also be highly persistent.[36]

Evidence:

According to different internationally comparable indicators, institutional quality and trust have deteriorated in Spain since the financial crisis.

Quantifying the quality of institutions and the degree of economic agents' trust in them is a complex task, particularly for the purpose of establishing comparisons over time and between countries. In any event, despite the uncertainty surrounding these analytical exercises (which are typically based on a combination of information sources and the stated perceptions of different types of agents), some of the metrics most frequently used in this area, such as the World Bank's *Worldwide Governance Indicators* or the European Commission's Eurobarometer, suggest that, in recent decades, trust in Spanish institutions and their perceived quality have deteriorated, and they have done so more markedly than in other European countries.[37]

Areas of action:

In light of such evidence and its economic significance, the quality of and trust in Spanish institutions should be strengthened.

— For example, turning to the dimensions assessed by the World Bank, there is scope for improving the "quality of regulation" in Spain, as it negatively affects not only firm size and the Spanish economy's productivity (see Section 3), but also judicial efficacy (Lucio and Mora-Sanguinetti, 2022).

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36 See, for example, Becker, Boeckh, Hainz and Woessmann (2016), Daniele, Aassve and Le Moglie (2023) and Solé-Ollé and Sorribas-Navarro (2018).

37 Thus, for example, according to the World Bank's *Worldwide Governance Indicators,* while Spain's institutional quality in 1998 was well above the euro area average, the situation had reversed by 2022. The European Commission's Eurobarometer points in the same direction when comparing citizens' degree of trust in political parties, the Government, Parliament and the justice system between 2007 and 2023. Spain has gone from having higher levels of trust than the other large euro area economies to trailing them in all these dimensions except trust in the justice system, where it still ranks second to Germany.

— In addition, action is needed to boost the efficacy and efficiency of Spanish general government, which would help lift productivity and have positive spillovers on private sector decision-making on spending, investment and innovation. In this respect, it is worth mentioning some recent initiatives whose effectiveness will need to be carefully assessed in the coming years:

- One of the priorities of the Spanish RTRP is modernisation of the general government sector, described in project 11 of this plan and to which more than €4.2 billion has been allocated. This initiative aims to improve the efficiency of general government management by driving this sector's level of digitalisation, enhancing energy use (via building renovations and renewable energy use), strengthening the evaluation framework for public policies and cutting down on the use of temporary contracts in public sector employment.

- In this respect, the Law Institutionalising the Evaluation of Public Policies aims to incorporate ex ante and ex post assessments into the legislative processes of central government.[38] The statute of the Public Policy Assessment Agency (AEVAL) created under this law has not yet been approved.

- In addition, with respect to the civil service, changes were recently approved to public sector recruitment, to performance assessments and to internal promotion procedures that must be judged by, among other things, their impact on the quality of the provision of public services.[39] In any event, on 21 March 2024, the Government set out before the Senate Civil Service Commission the broad outlines of the new general government reform, which, inter alia, aims to improve the planning, efficiency and capacity to attract talent of public procurement systems.

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38 Any ex post assessments deemed necessary to review public spending will be performed by the Independent Authority for Fiscal Responsibility (AIReF).

39 Royal Decree-Law 6/2023, of 19 December 2023, ratified by Parliament on 10 January 2024.

7 Population ageing

Context:

Population ageing is one of the biggest challenges that the world's main economies will have to face in the coming years. The extraordinary scale of this challenge stems not only from the magnitude of the demographic changes under way, but also from their numerous implications, for example, in terms of the economy's growth capacity, labour market dynamics and public revenue and expenditure.[40]

Evidence:

In recent decades, demographic trends in Spain have been marked by a significant drop in both fertility and mortality rates (see Chart 2.5.a). As a result, the population ageing process has gathered considerable pace, and will continue to do so over the coming decades, more so in Spain than in other European countries.

— **Fertility rate.** The fertility rate fell from 2.8 children per woman in 1975 to 1.1 per woman in 1998. Since then, it has remained fairly stable in Spain, below the levels observed in other European countries.

— **Mortality rate.** Spain's mortality rate at 65 years of age has clearly trended downwards in recent decades (except during the recent COVID-19 episode), and is very low by international standards.

— **Life expectancy at birth.** Life expectancy at birth has increased markedly in recent decades, to 83.2 years in 2022, and is higher than in other developed countries. However, while Spain stands out internationally for its high life expectancy at birth, its relative position in terms of healthy life expectancy[41] lags behind, for example, Germany, France and Italy (see Chart 2.5.b).[42]

— **Population structure by age group.** Since the early 1970s, the proportion of the total population aged over 64 has more than doubled in Spain, accounting for over 20% in 2023. This trend is set to continue and will be more pronounced than in other European countries. Specifically, drawing on the latest Eurostat demographic projections, between 2023 and 2053 the dependency ratio[43] in Spain will increase by 27.2 pp to 53.8%, compared with just 16.6 pp (to 45.8%) on average in the EU.[44]

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40 For an in-depth analysis of these implications, see Banco de España (2019).

41 Healthy life expectancy at birth is calculated as the life expectancy at birth minus the expected number of years lived with disability or poor health, taking into account the multiple causes that might contribute to poor health, weighted according to their severity (Mathers, Sadana, Salomon, Murray and Lopez, 2001).

42 For further details about the health status of the elderly in Spain, see Crespo, Denis and Jimeno (2023).

43 Defined as the ratio of the population aged over 66 to those aged 16-66.

44 These percentages remain largely unchanged, in qualitative terms, when viewed over a longer period. Again, drawing on the latest Eurostat demographic projections, between 2023 and 2100 the dependency ratio in Spain will increase by 31.6 pp to 58.2%, while the EU average will rise by just 24.7 pp to 53.9%.
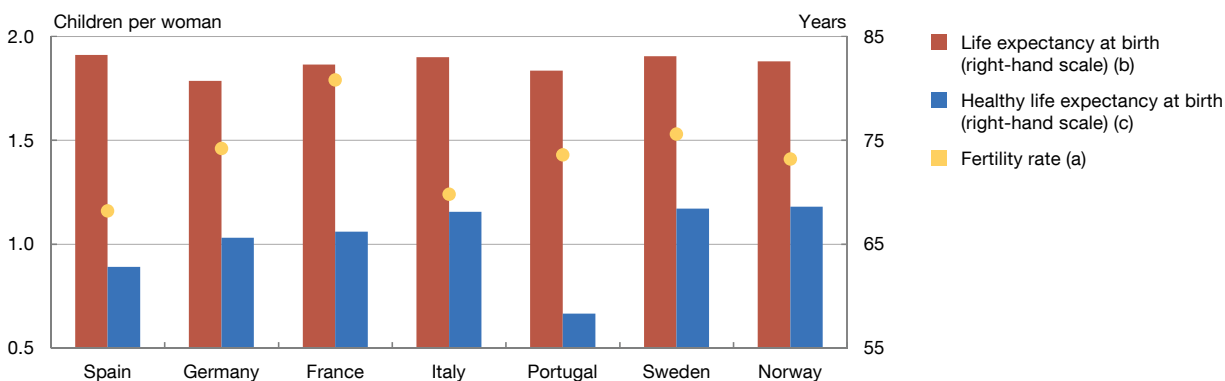
Chart 2.5

Demographic trends in Spain have been marked by a significant drop in both fertility and mortality rates. In addition, in terms of healthy life expectancy, Spain lags behind Germany, France and Italy

2.5.a Fertility and mortality rates in Spain
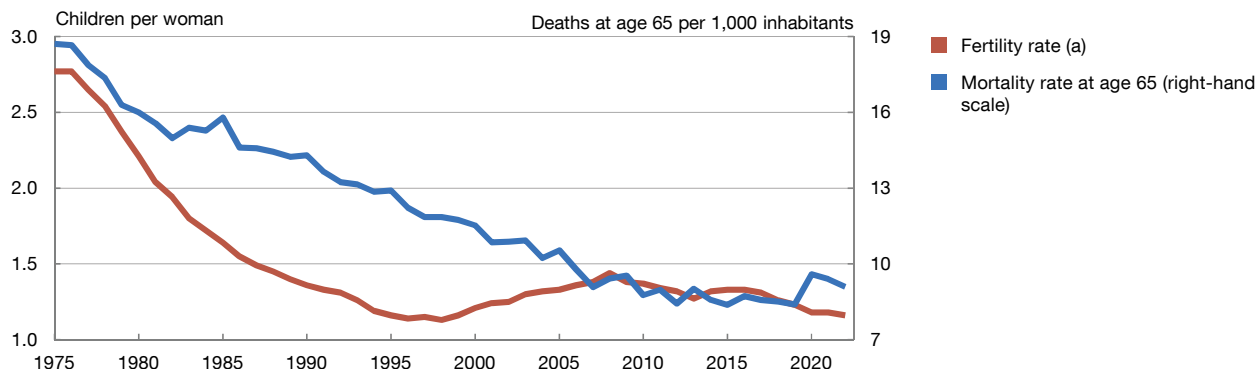
2.5.b Fertility rate, life expectancy and healthy life expectancy at birth in 2022, by country

SOURCES: INE and Eurostat.

a   The fertility rate measures the average number of children a woman would give birth to during her child-bearing years, assuming she gave birth according to the average fertility rate for each year of age.
b   Life expectancy at birth measures the average number of years that a newborn is expected to live if the mortality patterns in the period observed remain unchanged.
c   Healthy life expectancy at birth is calculated on the basis of life expectancy at birth minus the expected number of years lived with disability or in poor health, considering the multiple causes that may contribute to poor health, weighted according to their severity (Mathers, Sadana, Salomon, Murray and López, 2001). Data refer to 2021, except for Norway, where they refer to 2020.

Additional evidence:

Migration flows have surged in recent years, but it seems unlikely that this will offset the current population ageing process in Spain, or effectively smooth any mismatches that might arise in the Spanish labour market.

— **Inflows of foreign nationals.** Since 2002, more than 10 million foreign nationals have migrated to Spain, representing on average half a million intakes per year. More recently, following the decline observed during the pandemic, immigrant arrivals recovered strongly to stand at around 1.1 million in 2022, even above 2007 levels. Spain thus has one of the

highest immigration rates in Europe (approximated as the rate of foreigner arrivals per thousand inhabitants), even ahead of Germany.[45]

— **Outflows of foreign nationals.** In the last two decades (except during the years following the outbreak of the global financial crisis[46]), outflows of foreign nationals have averaged at around half of foreigner inflows, in annual terms.

— **Migration flows of Spanish nationals.** In recent decades, inflows and outflows of Spanish nationals have been far lower than those of foreign nationals. Moreover, in contrast to foreign migration flows, net migration of Spanish nationals has generally been negative, except in the pre-financial crisis years. Specifically, aggregate inflows of Spanish nationals in the period 2002-2022 stood at around 1.15 million and outflows at close to 1.3 million.

— **Impact of migration flows on the size and composition of the Spanish population.** As a result of the developments described above, since the beginning of this century, there has been a considerable net inflow of foreigners into Spain, contributing to the growth of the resident population. Indeed, net foreigner arrivals (close to 5 million between 2002 and 2022) have become practically the only source of population growth in Spain (see Chart 2.6.a). Thus, since 2002, the percentage of residents born abroad has increased by almost 12 pp, to more than 17%.

— **Age profile of foreign and Spanish nationals.** The average age of immigrants arriving in Spain is below that of Spanish nationals. Thus, in early 2023, those aged over 60 represented less than 12% of foreigners residing in Spain, compared with almost 30% in the case of the Spanish national population (see Chart 2.6.b). In addition, the difference in the average age of Spanish and foreign-born residents is around eight years, a gap that has remained virtually unchanged in recent decades.[47]

— **The potential for migration flows to offset the population ageing process.** Migration has limited potential to appreciably slow the population ageing process. In particular, for the dependency ratio in Spain to remain constant over the next 30 years, the foreign-born population of working age would have to be three times larger than anticipated in the latest INE projections.[48] In this respect, it is important to note that these projections already estimate that migration flows will lead to very significant net population growth (of almost 10 million in aggregate terms) up to 2053.

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45   In terms of the number of permanent immigrants, Spain is the world's fourth destination country, only behind the United States, Germany and the United Kingdom (OECD, 2023a).

46   During the financial crisis, net migration turned negative, not only among foreigners but also among Spanish nationals. In this regard, Izquierdo, Jimeno and Lacuesta (2016) find that Spanish and foreign nationals' decision to emigrate was similarly sensitive to the unemployment rate.

47   However, according to the INE's most recent demographic projections, this gap will narrow somewhat in the coming years.

48   In this exercise, the size of the other population groups remains at the levels projected by the INE (INE, 2022). In any event, given the high volatility of migration flows and the uncertainty surrounding them, any projection of such flows must be treated with caution.
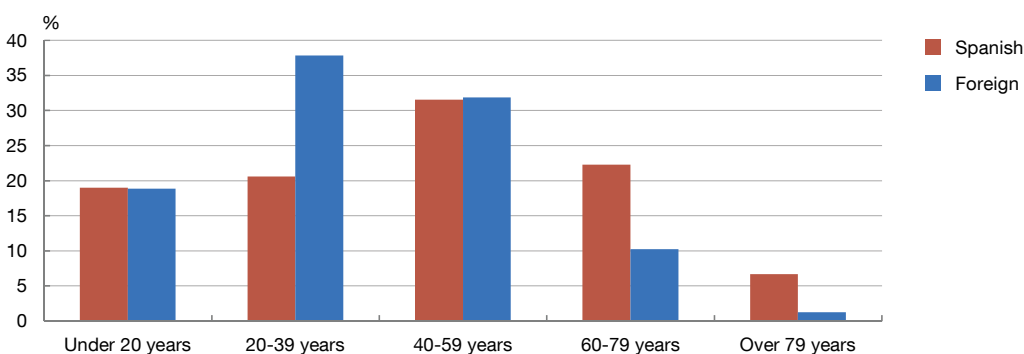
Chart 2.6

In recent years, net foreigner arrivals have become practically the only source of population growth in Spain

2.6.a Resident population growth in Spain and contribution by nationality
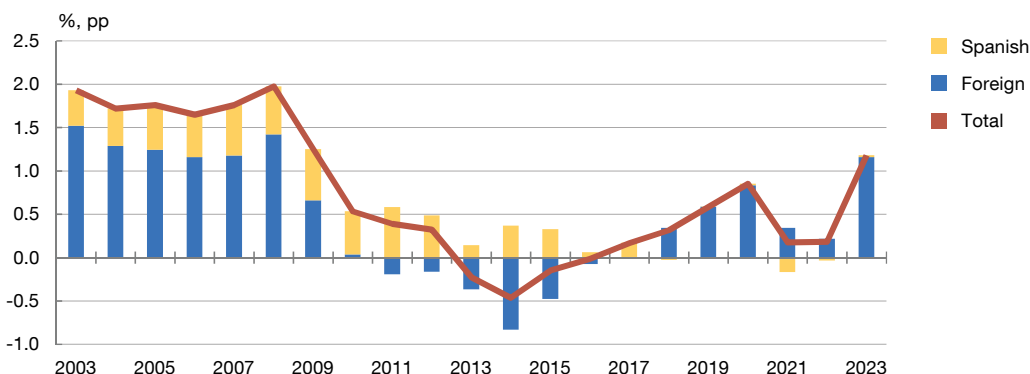
2.6.b Age distribution, by nationality of resident population in Spain (1 January 2023)

SOURCE: INE.

— **Implications of migration flows for the labour market.** In recent years, foreign workers are estimated to have contributed to reducing, at least in part, the mismatches between labour supply and demand, particularly in low-skilled jobs. However, unless the nature of migration flows changes significantly, it seems unlikely that they will be able to effectively continue to do so in the coming years. All this, against a background in which the technological changes currently under way and the green transition could appreciably drive up demand for high-skilled labour (for more details about the challenges posed by these changes for Spain's labour market policies, see Chapter 3 of this report). In this respect, it is important to highlight some of the key labour-related differences between foreign and Spanish nationals:

- *Participation rate.* The participation rate among immigrants is high, generally above that of Spanish nationals (70% and 56.5%, respectively, in 2022). The migration flows projected by the INE for the next ten years could raise the participation rate in Spain by 1.6 pp (Cuadrado, Fernández-Cerezo, Montero and Rodríguez, 2023). Moreover, although the unemployment rate is higher for foreigners than for Spanish nationals, this gap has halved since the financial crisis.

- *Educational attainment and occupation.* According to the Spanish Labour Force Survey, at end-2023, in the cohort of foreign nationals who had lived in Spain for less than one year, around 80% of those of working age did not have a university education, and more than 70% were in low-skilled employment, such as domestic service,[49] construction, retail trade and hospitality. These percentages are similar to those observed in 2008 (87.4% and 60.4%, respectively), but stand in contrast to those recorded for Spanish nationals, less than 29% of whom had low-skilled jobs in 2023. In addition, the proportion of Spanish-born emigrants with a university education is particularly high, accounting for 60% of the total in 2022.

Areas of action:

Addressing the many challenges posed by demographic change calls for resolute action on multiple fronts.

— **The labour market:** Chapter 3 of this report describes some of the possible measures, which include (i) lengthening the working life of older workers, (ii) strengthening lifelong learning and active and passive labour market policies, and (iii) continuously monitoring the potential for new migration policies to effectively mitigate any labour market mismatches that may arise. Two recent initiatives are worth noting in this respect. First, the approval in 2022 of the reform of the Law on Foreign Nationals, which makes the catalogue of difficult-to-cover occupations more flexible, facilitates the entry of foreign entrepreneurs, incorporates training in the concept of "rootedness" and allows foreign students to access the labour market. Second, in recent years, the Government has entered into a number of migration agreements with different countries. These notably include the agreement signed in 2023 between the United States, Canada, Mexico and Spain to promote regular migration from Central and South America.

— **Fiscal policy:** As discussed in Section 9.2, population ageing is already driving a significant increase in public spending, both on pensions and on health and long-term care, which will continue to gather pace in the future.[50] This puts added pressure on public finances, calling for an ambitious medium-term fiscal consolidation plan to be undertaken without delay. This process will require ongoing and thorough assessment of the public pension system's financial sustainability, given that an overall analysis of the main legislative changes made to the system since 2021 suggests that the greater expenditure obligations in the long term will not be fully offset by the revenue raised.

— **Fertility trends:** The available evidence suggests that some of the reasons for Spain's low fertility rate could be related to difficulties in achieving a work-life balance.[51] In this respect,

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49   On the available evidence, the inflow of immigrants employed in domestic service in Spain in the first decade of this century contributed to the rise in the wages of Spanish working mothers, by helping to improve their work-life balance and reduce the wage penalty associated with having children (Castellanos, 2023).

50   For a detailed analysis of the challenges of the demographic transition for the health system, see Regueiro-Ons and González López-Valcárcel (2023).

51   See, for example, Guner, Kaya and Sánchez Marcos (2024).

it would be useful to examine the capacity of some of the public measures adopted in recent years in prompting an appreciable shift in fertility trends in Spain over the coming years. Such measures include, for example, gradually extending paternity leave to 16 weeks by 2021 (bringing it into line with maternity leave), introducing 8-week parental leave per child for childcare and allowing more flexibility for requesting working hours to be adapted for work-life balance reasons.[52] Also worth noting are the new incentives in force since September 2023 to promote work-life balance.[53]

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[52] Royal Decree-Law 5/2023 of 28 June 2023.

[53] Specifically, rebates on fixed-term contracts entered into with young unemployed persons to replace workers in specific work-life balance cases, social security contribution rebates for replaced workers during maternity or paternity and childcare leave, and subsidies for the contracts of workers moved to different jobs owing to risk during pregnancy or breast-feeding. For more details, see Royal Decree-Law 1/2023 of 10 January 2023.

8 Inequality and pockets of vulnerability among households

Context:

The academic literature suggests that excessively high inequality levels may weigh not only on the degree of social cohesion, but also on economic growth capacity, through their adverse effects on aggregate consumption, investment, the accumulation of human capital and opportunities for future generations.[54] Therefore, in any economy, in addition to its main macroeconomic aggregates, it is also essential to analyse the behaviour of the different measures of inequality[55] to determine whether there are significant pockets of social, economic and financial vulnerability among households.

Evidence:

In recent years, income inequality has declined significantly in Spain, against a backdrop of strong employment growth. However, some pockets of vulnerability, largely linked to housing affordability difficulties, have been observed in some households.

— **Income inequality before the pandemic.** The *IFS Deaton Review* is a key initiative, within the economic literature, that aims to quantify, as uniformly as possible, the level of inequality in a large number of countries. According to the review's latest data for a set of European and North American countries, referring to 2019, Spain had one of the highest levels of disposable income inequality that year, only outranked by the United States (see Chart 2.7.a).

— **Income inequality since the pandemic.** Broadly speaking, the majority of the most commonly used measures of inequality – such as wage inequality, income inequality or relative poverty – have followed a very similar pattern in recent years. Although they rose significantly in 2020 following the outbreak of the health crisis, they have fallen sharply since then, mainly as a result of the notable buoyancy of activity and employment in Spain since 2021. In this respect, the most recent data of the INE's Living Conditions Survey (ECV, by its Spanish abbreviation) suggest that the levels of income inequality in Spain in 2022 were very similar to, and even lower than, those observed before the start of the global financial crisis (see Chart 2.7.b).

— **Social vulnerability, associated principally with housing.** Chapter 4 of this report analyses in depth the most recent housing market developments in Spain and describes the housing

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54 See, for example, Grossman (1991), Dijkstra, Poelman and Rodríguez-Pose (2020), Persson and Tabellini (1994) and Alesina and Rodrik (1994).

55 Inequality in an economy can be estimated using a variety of methods, which need not necessarily yield similar results. For example, in certain cases, an estimate of the dispersion of workers' hourly wages may be the most relevant measure of inequality. Elsewhere, however, it may prove more worthwhile to consider measures of inequality relating to total (individual or household) income, wealth or consumption. For further details on these measures of inequality in the Spanish economy, see Anghel et al. (2018) and Anghel, Bover, Hospido, Ortega and Regil (2023).

Chart 2.7

In 2019, Spain had one of the highest levels of disposable income inequality among the European and North American countries reviewed, outranked only by the United States. However, since the health crisis, income inequality has declined significantly in Spain

2.7.a 90:10 percentile disposable income ratio for different countries in 2019 (a)

90:10 percentile ratio
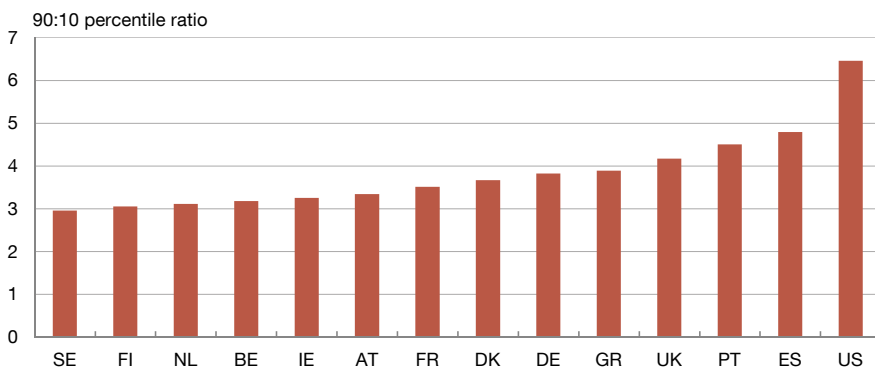
2.7.b Changes in the 90:10 percentile ratio (a)

90:10 percentile ratio
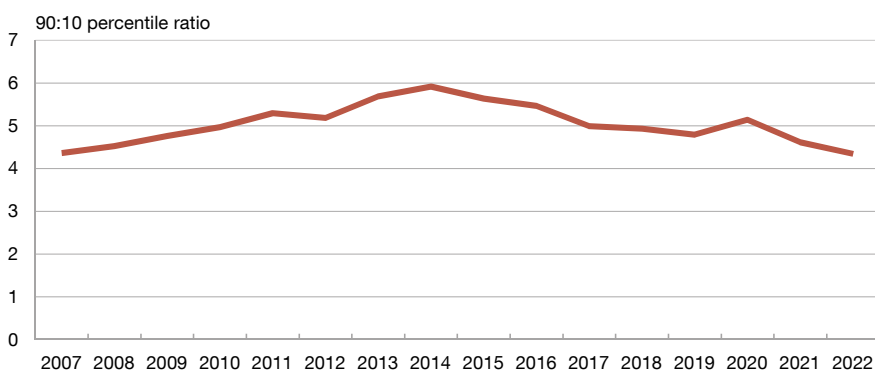
SOURCES: IFS Deaton Review Country Studies Project, INE (ECV) and Banco de España.

a Ratio of two percentiles in the income distribution. For a sample of individuals aged between 25 and 60, income is measured as gross household income plus transfers, less taxes and mandatory social security contributions of workers, the self-employed, the unemployed (if applicable) and employers, divided by the number of household members calculated using the OECD's equivalence scale, where the first household member aged 14 or over counts as one person, other household members aged 14 or over are assigned a value of 0.5, and each household member aged under 13 a value of 0.3.

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affordability problems some households face. In particular, it highlights how the high housing cost burden, especially in the rental segment, places lower-income households (notably young people and the immigrant population) in an economically vulnerable position. Thus, Spain stands out as the European economy with the highest percentage of people living in rented housing at risk of poverty or social exclusion. Specifically, 45% in 2022, compared with an average of 31% in the EU-27.

— **This vulnerability is also reflected in the different measures of wealth inequality.** Wealth inequality has increased significantly in Spain chiefly as a result of developments in the housing market since the late 2000s.

• According to EFF data, the share of wealth held by the wealthiest households has increased in the last two decades. Specifically, in 2002, 43% of the economy's total net

wealth held by Spanish households was concentrated in the wealthiest 10% of the population, compared with 54.3% in 2020. In any event, this is a substantially lower percentage than that observed in other countries. On a global scale, in 2021, for example, the wealthiest 10% of the population held 76% of total wealth (*World Inequality Report,* 2022).

- When analysing the composition of wealth by household group, it is found that behind this increase in net wealth concentration and inequality in Spain, lies a lower accumulation of housing wealth in the segments at the bottom of the wealth distribution. In this regard, since 2011, the proportion of households owning their main residence has dropped by 10 pp, and has done so far more sharply in the case of younger households (-33 pp) and those in the lower quartile of the wealth distribution (-20 pp) (Cobreros, García-Uribe and Gómez, 2023).

Additional evidence:

One of the most widely used approaches in the economic literature for assessing the extent to which equality of opportunity is guaranteed is to quantify intergenerational mobility in education, in particular, by measuring the correlation between the educational attainment levels of parents and their adult offspring. Over time, a smaller correlation implies greater intergenerational mobility. In other words, parents' educational attainment has less influence on that of their offspring, thus promoting equality of opportunity.

— This exercise is conducted for Spain in a recent study published by the Banco de España (Grébol, Machelett, Stuhler and Villanueva, 2024) which finds that the correlation between parents' level of educational attainment and that of their adult offspring decreased in the second half of the 20th century, suggesting greater intergenerational mobility and, hence, more equality of opportunity.

— In Spain, the correlation between the educational attainment level of parents and their offspring stood at around 0.5 for generations born between 1930 and 1960, but gradually decreased for subsequent generations, to 0.38 for those born in 1990 (see Chart 2.8.a). The international evidence available does not allow for fully consistent comparison of the degree of intergenerational mobility in education in Spain and in other European countries. In any event, with this caveat in mind, Hertz, Jayasundera, Piraino, Selcuk, Smith and Verashchagina (2008) seem to suggest that social mobility in Spain in recent decades has been relatively similar to that observed in western European countries and the United States.[56]

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56 In addition, Soria (2022) concludes that, in terms of income, the degree of intergenerational mobility in Spain appears to stand at an intermediate level between that of the Scandinavian countries (very high) and that of Italy or the United States (lower).

Chart 2.8

The correlation between the years spent in education by parents and their adult offspring declined in the second half of the 20th century, suggesting greater intergenerational mobility and, hence, more equality of opportunity. However, the size of this correlation varies significantly across municipalities and provinces

2.8.a By year of birth (a)

Socio-demographic Survey
Labour Force Survey
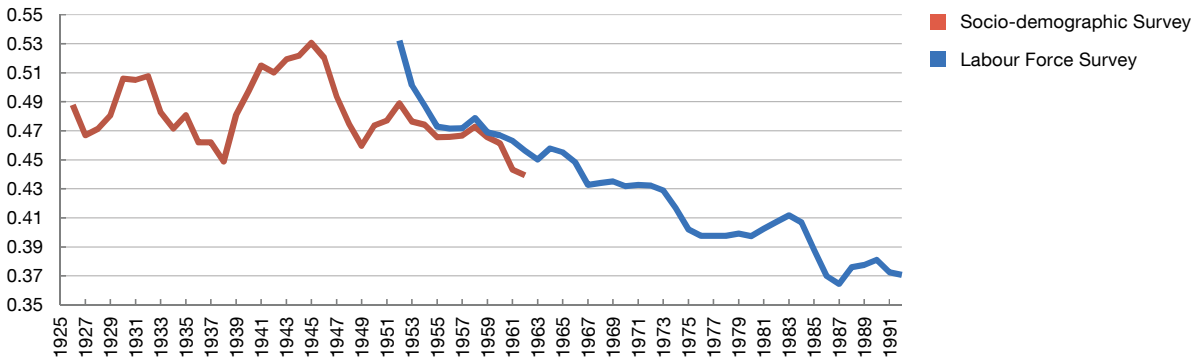
2.8.b By municipality cluster (b)

Correlation between parents and their offspring (years spent in education)

[.45,.6]
[.4,.45]
[.35,.4]
[.3,.35]
[.25,.3]
[.15,.25]
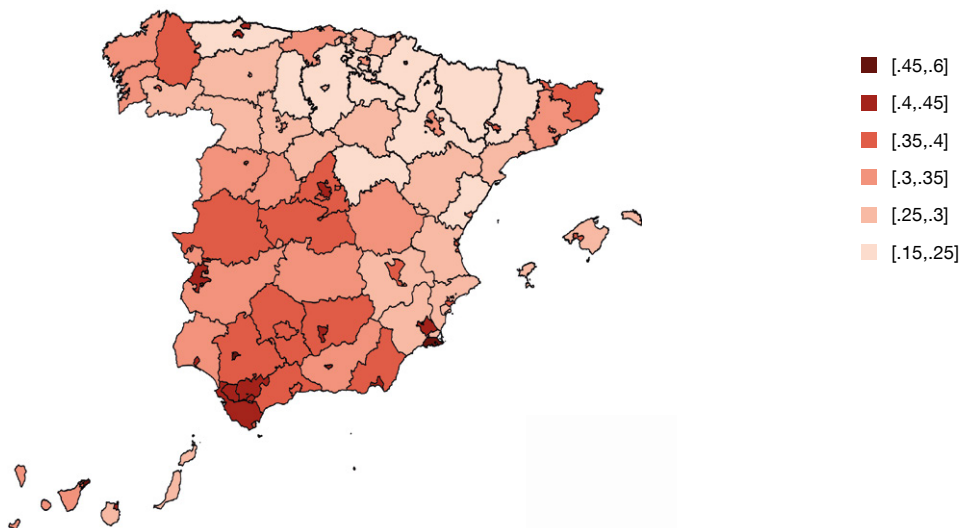
SOURCES: INE (Socio-demographic Survey (1991), Labour Force Survey (1977-2020) and Census (2011)) and Banco de España.

a In the Socio-demographic Survey, the correlation between years spent in education is calculated by pairs of parents and their offspring and in the Labour Force Survey, by pairs of parents and their offspring living at home. For more details, see Grébol, Machelett, Stuhler and Villanueva (2024).
b The regional correlation between parents and their offspring shows municipalities with more than 100,000 inhabitants and assigns the correlation observed in other municipalities to the rest of the province. The correlation between educational attainment levels is calculated using data for municipalities with more than 100,000 inhabitants and clustered data at provincial level for all other municipalities. For more details, see Grébol, Machelett, Stuhler and Villanueva (2024).

— The decline in this correlation points to an increase in social mobility in Spain, which coincided with the education reforms that took place around 1970 and affected those born after 1960. However, it should be emphasised that the size of this correlation varies significantly across municipalities and provinces, and these differences have generally persisted over time (see Chart 2.8.b).

Areas of action:

Addressing the challenges stemming from the pockets of vulnerability among Spanish households requires public policy measures across a very broad range of areas. For example, to bring down the high structural unemployment rate in Spain (see Chapter 3 of this report) and to correct the supply and demand mismatches observed in the Spanish housing market (see Chapter 4 of this report). Also, to strengthen the quality of the country's education system and foster the accumulation of human capital by the population, which as Section 4 of this chapter shows, bring notable individual and aggregate returns. This section also shows the exceptional role played by education, along with health care,[57] in ensuring equality of opportunity for all. Income and transfer policies[58] can also play a key role in mitigating the adverse effects associated with very high levels of inequality or vulnerability. In any event, all public policy measures rolled out in this area, as in any other, must be subject to ongoing and thorough assessment, to analyse their potential to attain the proposed goals and their implications in terms of efficiency and equity. In this respect, some studies already suggest that there is scope for improving the integration of the minimum income scheme (IMV, by its Spanish abbreviation), the different local and regional subsistence income schemes and unemployment benefits, so as to increase their effectiveness and efficiency (AIReF, 2022 and 2023).

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[57] López Laborda, Marín González and Onrubia (2024).

[58] These include, for example, the minimum income scheme, the subsistence income schemes implemented by various regional and local governments, and other direct subsidies such as those established under Royal Decree-Law 20/2022 of 27 December 2022 in the context of the recent energy crisis.

9   Public finances

9.1   Recent trends

The public finances imbalance remains very high, both by historical and international standards.

— **Public debt.** In 2020, the fiscal response to the pandemic drove up the public debt-to-GDP ratio in Spain by 22 pp to 120.3% of GDP. Since then, this ratio has gradually declined, mainly as a result of the strong recovery in economic activity, to stand at below 108% of GDP at end-2023. This figure is very high from a historical standpoint (9 pp above the pre-pandemic level) and 30 pp (17 pp) higher than the (weighted) arithmetic mean of the euro area (see Chart 2.9.a).

— **Budget deficit.** The general government deficit fell from 4.7% of GDP in 2022 to 3.6% in 2023,[59] below the Government's target of 3.9%. However, the Spanish economy's budget deficit remains above its pre-pandemic level (3.1%) and the euro area average in 2023 (3.2%), according to the European Commission's latest projections. In a setting in which public spending remained high, the reduction in Spain's budget deficit in 2023 was attributable to the continuing strong growth in revenue.

• *Public revenue.* Public revenue saw 9% year-on-year growth, driven by the impact on tax revenue of the growth in wage income and capital, corporate earnings and welfare benefits (for an analysis of the impact of the so-called "fiscal drag" on revenue from personal income tax, see Box 2.1). Public revenue was also boosted by the new tax measures implemented and the rise in social security contributions,[60] but was to some extent reduced by the cuts in personal income tax and VAT.[61]

• *Public expenditure.* Spending rose by 6% in 2023, mainly as a result of pension revaluation. Government consumption also remained high, which could be consistent with the fact that some of the expenditure increases during the pandemic had become permanent.[62] However, some of the support measures deployed in response to rising inflation (such as the blanket discount on fuel prices and the extraordinary subsidies for the energy sector) were withdrawn over the course of 2023, which reduced the overall budgetary cost of these expenditure and revenue-side measures to 1.2% of GDP (0.3 pp down on 2022).

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59   The deficit is estimated to have increased by 0.02 pp to 3.7% of GDP after deducting the net impact of the support measures for financial institutions, which was positive for the general government balance in 2023.

60   These measures notably include the creation of two levies on the extraordinary profits of large financial corporations and energy utilities, a wealth tax and a cap on corporate income tax relief for consolidated groups' losses. In addition, revenues from social security contributions increased due to the implementation of the "intergenerational equity mechanism".
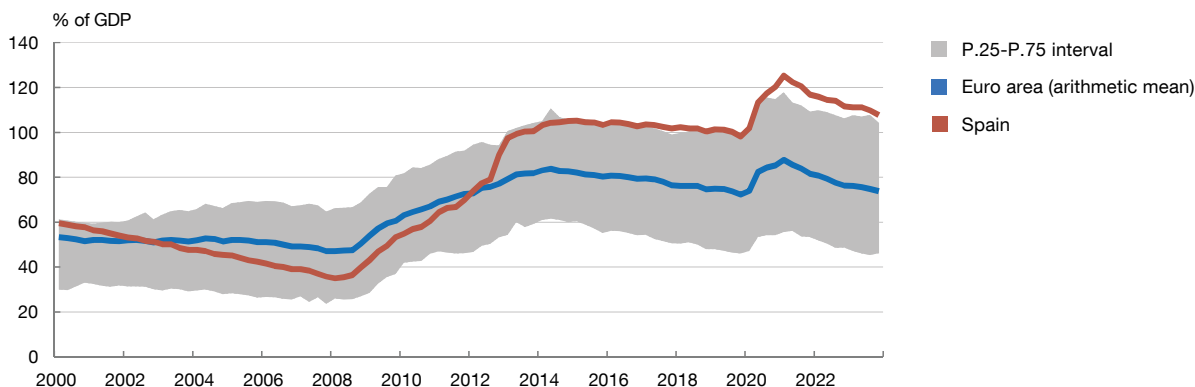
61   Specifically, as regards personal income tax, labour-income related reductions were increased at state level and certain fiscal parameters were adjusted for inflation by some regional governments. As for VAT, cuts were applied to certain food products.

62   Thus, for example, public sector employment was 10.3% above pre-pandemic levels in 2023, according to the Spanish Labour Force Survey (EPA, by its Spanish abbreviation).
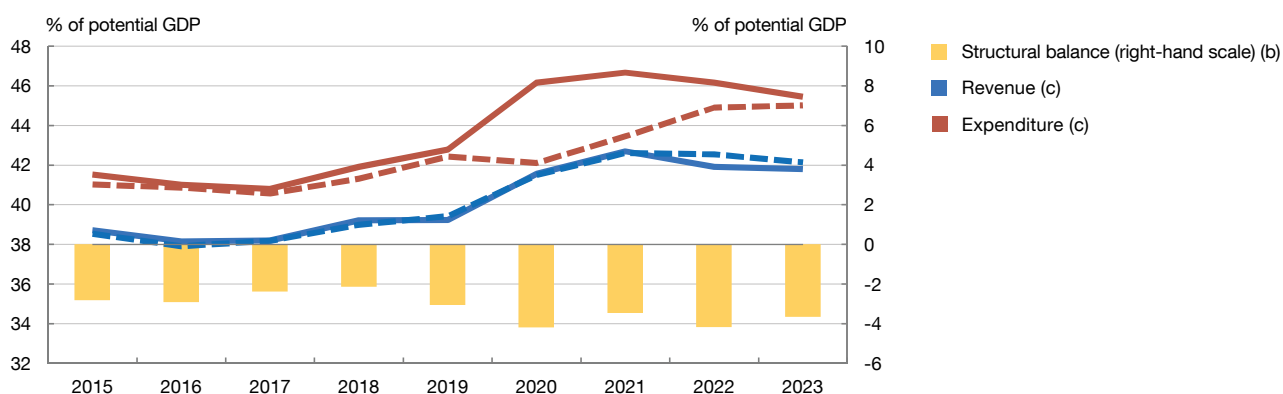
Chart 2.9

In recent years, public debt has increased more markedly in Spain than in the rest of the euro area. The Spanish general goverment fiscal imbalance has a high structural component

2.9.a General government debt (a)

% of GDP

Legend:
- P.25-P.75 interval
- Euro area (arithmetic mean)
- Spain

2.9.b Public revenue and expenditure (cyclically adjusted), excluding NGEU

% of potential GDP

% of potential GDP

Legend:
- Structural balance (right-hand scale) (b)
- Revenue (c)
- Expenditure (c)

SOURCES: Eurostat, European Commission, IGAE and Banco de España.

a November 2023 European Commission estimates for 2023 Q4 (except Spain).
b The structural balance is calculated by deducting from the total balance the cyclical component and the clearly temporary and non-recurring items. According to the Eurosystem's common methodology, items that are temporary but nonetheless increase the deficit and are the result of a discretional (not forced) decision by the Government are not considered to be non-recurring.
c The dotted lines exclude any measures announced as non-permanent.

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— **Fiscal policy stance.** As a result of these developments, the fiscal policy stance in 2023, measured by the change in the structural primary balance, was contractionary, although the stimulus from European funds appears to have largely cushioned this impact. In any event, a structural deficit of close to 3.7% of GDP is estimated for 2023 (around 0.6 pp higher than calculated for 2019).

Since 2019, the public revenue-to-GDP ratio has risen sharply in Spain, by 3.6 pp to 42.8%, with tax revenue and social security contribution growth of 2.5 pp of GDP.[63] This increase in revenue has placed this ratio slightly above the arithmetic mean of the EU, although it is still almost 3 pp below the weighted EU average.

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63   The additional increase in the public revenue-to-GDP ratio is essentially due to the new funds from the NGEU programme.

— General government funds have increased relative to GDP mainly as a result of strong growth in revenue from personal income tax, corporate income tax and social security contributions. Thus, current taxes on income and wealth rose relative to GDP from 10.4% in 2019 to 12.5% in 2023, and social security contributions from 12.9% to 13.5%.

— By contrast, both VAT and all other indirect taxes, including excise duties, have shown more contained growth in recent years, with their weight in GDP remaining at around the pre-pandemic level of 11.5%.[64] Indirect tax revenue as a proportion of total revenue in Spain has thus declined from 32.6% in 2019 to 30.1% in 2023.[65]

— In any event, part of the increase in tax revenue cannot be explained by the improvement in macroeconomic bases or the adoption of explicit measures to raise taxes and social security contributions on a permanent basis. This unexplained component is the so-called tax residual.[66] In 2021, these residuals were positive and very high. However, in 2023 they reversed sharply in all taxes, confirming their eminently transitory nature. Nonetheless, there are arguments that suggest that part of the remaining residuals could be reflecting some structural increase in public revenue in the wake of the pandemic stemming, for instance, from less tax fraud as a result of greater recourse to digital means of payment. In any case, there is much uncertainty as to the transitory or permanent nature of the positive residuals that remain.

This higher revenue, however, has been more than offset by the 4.2 pp increase in expenditure since the outbreak of the pandemic.[67]

— There has been a notable increase in expenditure on economic affairs, closely linked to the subsidies and transfers stemming from the energy crisis, and to NGEU-financed measures. Part of this increase could be expected to have a large transitory component.

— Spending on social protection and health care has also risen significantly in recent years. These items tend to have much stronger inertia.

— The increase in the public debt-to-GDP ratio and, since 2021, the tightening of monetary policy and the resulting higher cost of new issuance have so far led to a relatively moderate rise in debt interest expenditure.[68] Nonetheless, based on the interest rate path currently anticipated by the markets, the ratio of debt interest expenditure to GDP could stand at 2.8% in 2026, some 0.6 pp above its 2019 level.

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64 This is partly due to the temporary tax cuts approved in response to the energy crisis and rising inflation. Thus, in 2023, the temporary tax measures adopted reduced VAT revenue by around 0.3 pp of GDP and revenue from other indirect taxes by just over 0.2 pp of GDP.

65 In recent years, the weight in total revenue of indirect taxation has also decreased for the (arithmetic and weighted) mean of the EU and the euro area. Nonetheless, in both regions, this decrease has been smaller than that observed in the Spanish economy.

66 García-Miralles and Martínez Pagés (2023).

67 Around 1 pp of which is attributable to NGEU-financed expenditure.

68 The moderate scale of this impact appears attributable, in part, to the long average lifespan of general government debt (for example, more than 7.5 years in the case of Spanish central government securities).

— Spending on education as a percentage of GDP has also increased since 2019, partially closing the negative gap that has traditionally existed in Spain vis-à-vis other European countries.

— As for defence spending, despite the recent increases, its weight in GDP (just over 1%) is still far from the 2% commitment to NATO.

All told, the Spanish general government fiscal imbalance has a high structural component that has not improved in recent years (see Chart 2.9.b). Indeed, as mentioned earlier, according to Banco de España estimates, the Spanish general government structural deficit as a percentage of GDP increased from 3.1% in 2019 to 3.7% in 2023.

9.2   Challenges facing the public pension system

The pension system is one of government's most important structural expenditure items. The growth seen in pension expenditure in recent years is expected to continue in the coming decades.

— In 2023, pension expenditure, including contributory and non-contributory pensions and the government employee social security scheme, amounted to 13.1% of GDP. This is 28.3% of the non-financial expenditure of the different tiers of government in 2023 in National Accounts terms.

— Over the last decade, pension payments have increased by 1.1 pp of GDP, while the number of pensions has grown by just over a million. In recent years, actual expenditure levels overall have exceeded the expenditure projections for this item (see Chart 2.10).[69]

— Looking ahead, Spain's demographic path is marked by a significant increase in the proportion of older population (see Section 7). This points to substantial growth in pension expenditure in the coming decades. According to the projections contained in the latest *Ageing Report* (European Commission, 2024), pension expenditure will escalate under the baseline scenario, to 17.3% of GDP in 2050. According to AIReF, pension expenditure will climb to 16.2% of GDP in 2050, while the number of pensions will rise from 11.1 million today to 16.7 million (see Chart 2.10).[70, 71]

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69 For example, the European Commission (2012) projected that pension expenditure would amount to 10.6% of GDP in 2020, compared with the observed values of 12.3% in 2019, 14.5% in 2020 and 13.5% in 2021. This higher than projected expenditure could be due to a less favourable macroeconomic environment and to higher average pension growth compared with the average wage. The report projected growth of 2.4% in potential GDP and of 1.7% in employment for 2020, compared with 1.7% and 1.2%, respectively, in 2019 (European Commission, 2021). As for the average pension to average wage ratio, the projection for 2020 stood at 55.9%, compared with 60% in 2019. The disparities in demographic developments are less marked: the projected dependency ratio for 2020 was 32%, while the observed ratio in 2019 was 32.1%.
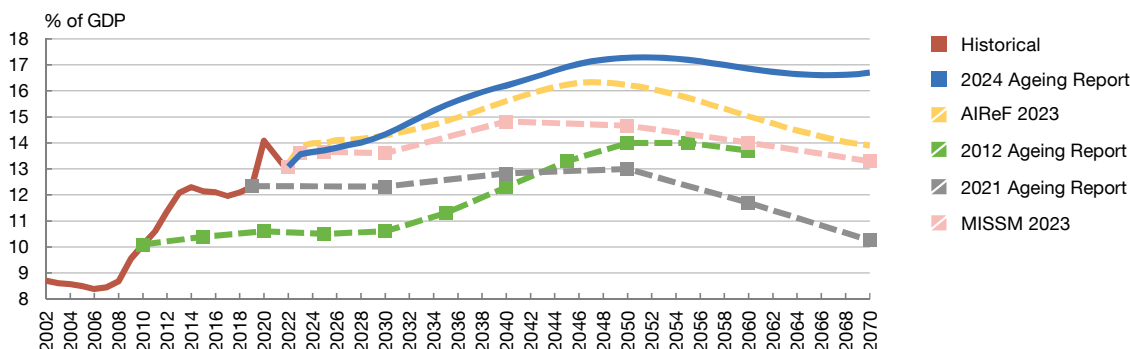
70 The projections of neither AIReF nor the *Ageing Report* include the 2023 revision of National Accounts. Taking the GDP levels following that revision, under the baseline scenario in the *Ageing Report* pension expenditure would stand at 16.8% of GDP in 2050.

71 Moreover, as people age, especially those in poor health, they require long-term care in their activities of daily living. In this respect, the projections in European Commission (2024a) expect public long-term care expenditure to increase from 0.8% of GDP in 2022 to 1.7% of GDP in 2070.

Chart 2.10

Pension expenditure is expected to continue to climb in the coming decades

2.10.a Pension expenditure, developments and projections (a)

% of GDP

Legend:
- Historical
- 2024 Ageing Report
- AIReF 2023
- 2012 Ageing Report
- 2021 Ageing Report
- MISSM 2023

SOURCES: Ministerio de Inclusión, Seguridad y Migraciones (MISSM), IGAE, INE, AIReF and European Commission.

a The 2012 and 2021 Ageing Report and Ministry of Inclusion, Social Security and Migration (MISSM) projections are interpolated on the published figures (shown by the squares for the respective years).

A new pension system reform was implemented between 2021 and 2023. An overall analysis of the major regulatory changes introduced, while subject to considerable uncertainty, points to higher long-term expenditure obligations that are not fully offset on the revenue side.[72]

— The available estimates suggest that the changes approved have significantly increased pension system expenditure obligations over the coming decades, compared with the situation prior to 2021, by between 3.2 pp and 4.7 pp of GDP in 2050.[73]

— These greater expenditure obligations could be reduced if the new incentives introduced to postpone retirement manage to significantly raise the participation rate of older workers. Estimates of the possible effectiveness of these incentives vary between a saving of 1.4 pp (according to the Ministry of Inclusion, Social Security and Migration and the *Ageing Report*) and a saving of 0.8 pp of GDP in 2050 (according to AIReF), and a net increase in expenditure of 0.1 pp in that year (according to Fedea).

— Lastly, on the revenue side, the measures approved are expected to increase social security revenue by between 1.3 pp and 1.7 pp of GDP in 2050.[74]

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72 For a detailed description of the measures adopted and their possible impact, see Banco de España (2023a).

73 De la Fuente et al. (2023), Ministry of Inclusion, Social Security and Migration (2023), AIReF (2023b) and European Commission (2024a).

74 European Commission (2024a), De la Fuente et al. (2023), Ministry of Inclusion, Social Security and Migration (2023), AIReF (2023b) and Banco de España (2023a). The revenue growth figures do not include the effects of the labour market measures adopted (as these are not changes adopted in the context of the pension reform), which the Ministry of Inclusion, Social Security and Migration quantifies at 0.8 pp of GDP in 2050. These measures are the 2021 labour reform (which is estimated to have reduced structural unemployment), the increase in the minimum wage approved in recent years, and the job retention and short-time work schemes deployed during the COVID-19 pandemic (which are understood to have brought to light new contributors from the shadow economy) (Ministry of Inclusion, Social Security and Migration, 2023).

How effective the new incentives to postpone the retirement age will be is subject to great uncertainty and a broad time horizon will be needed to gauge their impact.

— This will ultimately depend on workers' decisions as to when to leave the labour market and the extent to which a higher effective retirement age translates into lower pension expenditure. In this respect, the analysis conducted by the Banco de España suggests that in order to significantly contain pension expenditure, a very considerable percentage of workers would have to decide to postpone their retirement age. Specifically, if all projected ordinary retirements between 2022 and 2050 were postponed by one year, the pension expenditure-to-GDP ratio would fall, on average, by between 0.3 pp and 0.5 pp in that period (see Box 2.2).

— In any event, in 2022 and, especially, in 2023, the number of late retirements increased significantly compared with the years before the new measures seeking to extend working lives were introduced. Specifically, late retirements have risen from 4.8% of total retirements in 2021, to 5.4% in 2022 and to 8.1% in 2023, when they totalled more than 26,000, up 50% on the previous year.

The backstop introduced by the new reform is set to be evaluated in 2025. Under this mechanism, if the average pension expenditure projection for the period 2022-2050 published in the *Ageing Report,* corrected for the revenue measures adopted since 2020, deviates from 13.3% of GDP, the Government must identify a set of measures to remedy that deviation. These may be actions that seek to boost pension system revenue and/or reduce pension system expenditure and, where necessary, should enter into force in 2026. If no such measures were agreed, social security contributions would increase automatically in that year.[75]

The *Ageing Report* projections, net of the revenue measures quantified by AIReF, show that additional measures will most likely be needed to counter the future increase in pension expenditure.[76] Should it be necessary to activate the backstop, letting funding rely exclusively on higher social security contributions could be detrimental to employment and to the competitiveness of the Spanish economy. The simulation exercises performed using the Banco de España's Quarterly Model suggest that there is a correlation between the effective rates of social security contributions and employment. In particular, the results indicate that an increase of 1 pp in the average effective rate would produce, after four years, a drop of around 0.25% in the number of persons employed.[77]

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75 Second additional provision of Royal Decree-Law 2/2023 of 16 March 2023 on urgent measures to extend pensioners' rights, narrow the gender gap and establish a new sustainability framework for the public pension system.

76 Specifically, according to the *Ageing Report,* average pension expenditure in the period 2022-2050 stands at 15.4% of GDP under the baseline scenario. AIReF (2023b) quantified the impact of the revenue measures at 1% of GDP on average in that period. Accordingly, pension expenditure net of the revenue measures approved would amount to 14.4% of GDP, above the 13.3% threshold established in the regulations. In any event, the decision to activate the backstop will depend on the formal assessment of the revenue measures to be made by AIReF in March 2025. This assessment must draw on the macroeconomic and demographic assumptions used in the *Ageing Report.*

77 Banco de España (2023a).

In consequence, looking ahead, it would be desirable to delve deeper into a number of aspects.

— Carry out an ex post analysis to ascertain the impact of the incentives to postpone the retirement age.

— Study the effects on the labour market and on firms' competitiveness of the increase in social security contributions, and the impact on intergenerational equity. In parallel, alternative measures should be analysed, including measures affecting replacement rates which are high by international standards.[78]

— Analyse developments in private retirement saving, considering the role it needs to play to complement public pensions. First, by monitoring the pace of growth of the occupational pension schemes *(planes de pensiones de empleo)* – especially the public-run and the simplified schemes *(planes de empleo simplificados)* – introduced in the 2022 pension reform. The data for 2023 show that both the number of participants and the contributions to these schemes have grown, by 13.4% and 8.6%, respectively, compared with the previous year.[79] Second, by analysing developments in contributions to individual pension schemes, which decreased by 64.1% between 2020 and 2023, coinciding with the lower tax incentives.[80]

9.3 New European fiscal rules

A new European fiscal governance framework has been adopted, which places greater emphasis on public debt sustainability and on the preparation by Member States of medium-term budgetary plans setting a multi-year expenditure path.

— On 20 December 2023 the European Union's ECOFIN Council approved a new fiscal governance framework which is in the process of being ratified by the European Council[81] before it enters into force in 2025.

— This new framework requires that Member States draw up medium-term budgetary plans that ensure – in the case of the most indebted EU countries – that the public debt-to-GDP ratio follows a permanent downward path towards the 60% threshold and that the budget deficit remains below 3% of GDP over the medium term.

— These objectives are to be achieved over four years, although this fiscal adjustment period may be extended to seven years if countries make certain structural reforms that improve their growth prospects or public investments aligned with common EU objectives.

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78 OECD (2023b).

79 In this context, the Seventh General Collective Agreement for the Construction Sector, signed in July 2023, resolved to establish the construction sector simplified occupational pension scheme, which entered into force in February 2024.

80 As regards individual and associated pension schemes, from 2025 it will generally be possible to realise in advance vested rights relating to contributions made at least ten years earlier. This could have a considerable impact on the assets of these pension schemes, which in 2023 amounted to 5.9% of GDP.

81 Following the provisional agreement of the Parliament and the Council of 10 February, the European Parliament voted on the agreement on 23 April and it must now be ratified by the Council.

— The commitments made under these adjustment plans take the form of a single instrument, a multi-year net primary expenditure path to be followed by each Member State.[82] This path is established on the basis of a reference trajectory set by the European Commission based on a country-specific debt sustainability analysis.

— The new framework also incorporates some additional rules (safeguards), which impose minimum deficit and/or debt adjustments for countries whose deficit or debt figures stray from the reference values. For example, countries with a debt-to-GDP ratio over 90% will have to reduce that ratio by at least 1 pp per year. By contrast, those with a debt ratio between 60% and 90% of GDP will have to reduce it by 0.5 pp each year. Moreover, countries will have to continue their fiscal adjustment until they reach a structural deficit of 1.5% of GDP. This resilience safeguard with respect to the 3% benchmark is introduced to provide countries with a safety margin in the event of unforeseen shocks. The annual pace of adjustment to reach this margin is set at 0.4 pp (4-year programmes) or 0.25 pp (7-year programmes).

— In short, the new European fiscal governance framework seeks to calibrate the adjustment effort in each country according to their specific macroeconomic and fiscal outlook, and in a manner that will strengthen public debt sustainability in the medium term. For this purpose, it is based on a variable – primary public expenditure – that is under the direct control of the authorities. Here the aim is to mitigate, to a certain extent, the pro-cyclical bias of the previous European fiscal rules and to seek to ensure that the high volume of public revenue generated during expansionary periods is not lost.[83] The new framework also recognises the importance of designing integrated and mutually reinforcing public investment, structural reform and fiscal adjustment plans, and of increasing national governments' involvement in their design.

Once it is approved, effective and rigorous implementation of the new framework is essential, both for the sustainability of Member States' public finances and for the credibility of the European project itself. In this respect, the new rules could entail significant fiscal adjustments in some countries in the coming years.

— The new governance framework does not significantly reduce the complexity of the European fiscal rules, so determining the precise fiscal adjustment that will be needed in each Member State in the coming years is subject to considerable uncertainty. For instance, the calculation of the national expenditure trajectory and the corresponding fiscal effort is based on several technical assumptions as to potential GDP, the economic impact of structural reforms and the long-term costs of ageing, all of which are subject to great uncertainty. There are also doubts as to which specific budget items will be taken into account to determine each country's net primary expenditure path.

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82 Net primary expenditure excludes discretionary revenue and cyclical unemployment expenditure.

83 See Alloza, Andrés, Burriel, Kataryniuk, Pérez and Vega (2021) for an analysis of the shortcomings of the previous fiscal governance framework.

Chart 2.11

The new fiscal rules could entail significant fiscal adjustments in the coming years for some countries (7-year adjustment programme)

2.11.a Annual average change in primary structural balance (a)
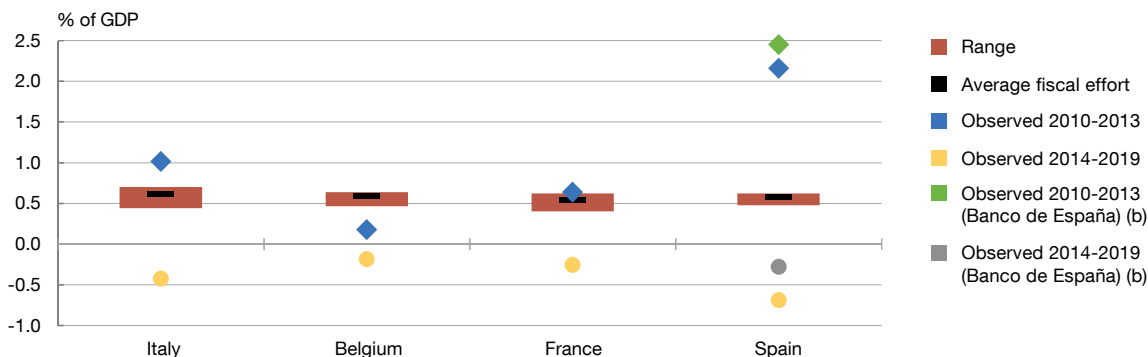
SOURCES: Banco de España and European Commission.

a The average annual change in the primary structural balance required to meet the debt and deficit targets under the new European fiscal rules, over a 7-year adjustment period. The range is the difference between the minimum fiscal effort required under the deterministic baseline scenario (Debt Sustainability Analysis (DSA)) and the maximum effort required under alternative scenarios of lower potential GDP growth and higher interest rates. The observed effort is that estimated by the European Commission during each period.
b For Spain, the estimated average fiscal effort differs from the European Commission estimate, primarily owing to the different potential GDP growth estimates used in the calculation.

— Using a Banco de España debt sustainability analysis tool, which aims to replicate the European Commission's methodology for implementing fiscal adjustments under the new framework, it is estimated that, assuming 7-year fiscal consolidation plans, the most indebted EU countries would have to achieve an average annual improvement in their primary structural balance of between 0.4 pp and 0.7 pp of GDP (see Chart 2.11).

— Compared with the adjustment that these same countries undertook in the period 2014-2019 – after the European debt crisis but before the pandemic – this one will require considerable effort. However, for both Spain and Italy, the future adjustment needed would be lower than that undertaken, on average, between 2010 and 2013 during the sovereign debt crisis.

Aside from the design of the new fiscal rules, the reform approved has missed the opportunity to move forward on some key aspects of euro area governance, such as more efficient coordination of national fiscal policies and the introduction of a permanent common fiscal capacity.

— A central fiscal capacity could implement an appropriate fiscal stance at the aggregate euro area level and thus assure optimal monetary and fiscal policy coordination. It should be adequately sized and enjoy sufficient and stable funding; this would be crucial for the creation of an efficient macroeconomic stabilisation instrument.[84] In this respect, an

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84 See European Commission (2018) for a review of some of the proposals put forward, both in the European institutions and in the academic literature, for the creation of a common stabilisation mechanism in the euro area.

example to follow could be the temporary SURE common funding programme adopted during the pandemic.[85]

— In addition, it would be important to introduce a permanent common funding instrument – for instance, to follow on from the temporary NGEU programme – that would make it possible to finance large-scale projects to provide public goods at a European level, while at the same time avoiding an excessive or uneven impact on national public finances and a deterioration of the single market.

— In any event, the public sector will be able to meet only a small part of the substantial investments that will be needed to address the green and digital transition in the coming years. In consequence, a favourable environment for private investment is essential, as is progress towards completion of both the banking union and the capital markets union (ECB, 2024) so as to reduce the financial fragmentation that still characterises the euro area and increase risk-sharing in the region.

9.4   Fiscal consolidation plan

The macroeconomic and fiscal dynamics of the Spanish economy highlight the need to implement, without delay, a medium-term fiscal consolidation plan that strengthens the sustainability of public finances.

— According to the analytical tools developed by the Banco de España,[86] in an inertia scenario – which takes into account the expenditure projections related to population ageing but does not consider changes in current economic and fiscal policies, nor an automatic increase in social security contributions in the event of possible activation of the backstop included in the recent pension system reform (see Section 9.2) – Spanish public debt would remain at levels very similar to current ones in the coming years, before embarking on a continued upward trajectory from 2030 (see Chart 2.12.a).

— However, in a scenario of fiscal adjustment consistent with the new European fiscal governance framework – which would involve an average annual reduction in Spain's structural imbalance of around 0.5 pp of potential GDP over a period of seven years from 2025 (see Section 9.3) – the public debt-to-GDP ratio could embark, in the coming years, on a downward path that would take it to around 80% of GDP by 2040 (see Chart 2.12.b).

It would be desirable for the multi-year consolidation plan to be set against the backdrop of a prudent macroeconomic framework and include details of the revenue and expenditure measures that would enable gradual fiscal consolidation. This would strengthen the sustainability of public finances and would also boost confidence and certainty about economic policies. In the design of this plan, some key general considerations should be taken into account:
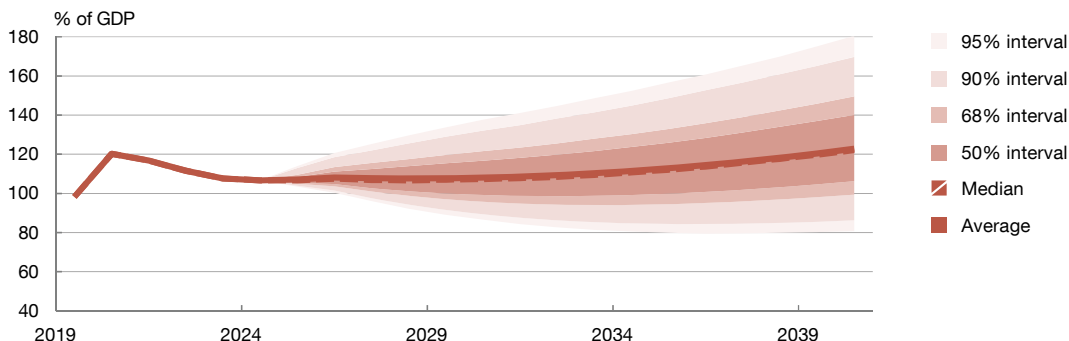
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85   See Burriel, Kataryniuk and Pérez (2022) for an analysis of the significant fiscal savings gained by Member States from the SURE programme.

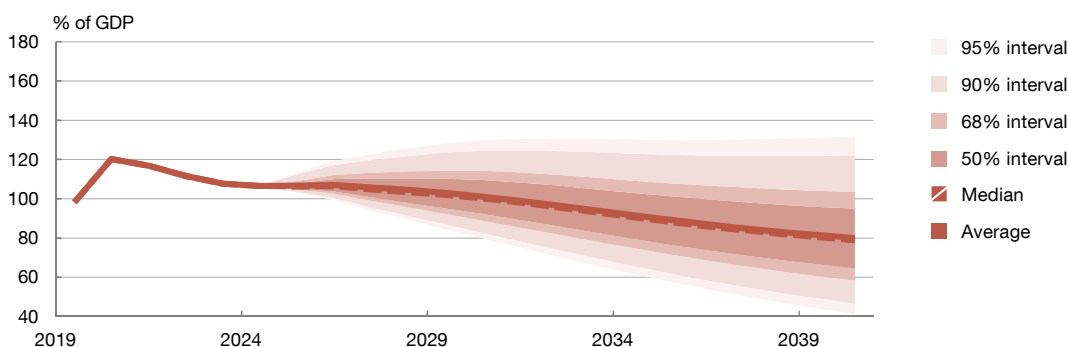86   See, for example, Alloza, Martinez, Rojas and Varotto (2024).

Chart 2.12

The macroeconomic and fiscal dynamics of the Spanish economy highlight the need to implement, without delay, a medium-term fiscal consolidation plan that strengthens the sustainability of public finances (a)

2.12.a No fiscal consolidation scenario

% of GDP

	95% interval
	90% interval
	68% interval
	50% interval
	Median
	Average

2.12.b Fiscal consolidation scenario

% of GDP

	95% interval
	90% interval
	68% interval
	50% interval
	Median
	Average

SOURCES: INE, AIReF and Banco de España.

a Both scenarios include a worsening of the primary structural balance up to 2040 owing to the costs of ageing (pensions, health care and long-term care). The first scenario (Chart 2.12.a) illustrates a fiscal effort consistent with the new measures envisaged in the 2023 pension system reform, but with no activation of the automatic mechanism to increase social security contributions to correct deviations in pension expenditure and no additional fiscal consolidation measures. The second scenario (Chart 2.12.b) introduces a fiscal consolidation plan in accordance with the requirements described in Section 9.3.

— **It is essential that the Spanish economy take advantage of economic upturns to build up fiscal space that will allow it to counter the recessionary effect on activity of any future adverse macro-financial shocks.** Spain's current high level of public debt is mainly due to the significant portion of increases in the general government deficit that, in previous downturns, became structural and were not corrected in subsequent upturns. This is largely a consequence of how public expenditure has evolved. From a historical perspective, in periods when the Spanish economy has recorded below-potential economic growth, public expenditure has tended to rise. However, in periods of higher growth this expenditure has not been reduced, but in fact has even increased slightly.[87]

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87 Specifically, since 2000, it is estimated that structural expenditure has grown by 1.6 pp during periods of contraction of the output gap, while in periods of expansion of this gap it has increased by 0.1 pp.

— Given that the fiscal consolidation plan the Spanish economy needs must have a medium-term approach, it would be desirable for it to be based on broad economic, political and social consensus, and for it to actively involve all tiers of general government (central, regional and local) with budgetary responsibility. As regards this last point, it is important to note that a reform of the regional financing system, to correct some of its limitations observed over the past decades,[88] is still pending. This reform should comply with the principles of sufficiency of resources available to regional governments (based on an objective method of calculating their real expenditure needs), fiscal co-responsibility (understood as the regions' ability to generate revenue to fund their expenditure), and transparency in the various parameters that determine the functioning and development of the system. Strict application of the fiscal rules to the lower levels of government is also essential. In this respect, potential condonation of part of the debt that regional governments have built up over recent decades could discourage disciplined fiscal behaviour in the future. The reform should also address the lack of stability of the system, which has incentivised regional governments to instigate negotiations as a means of increasing their volume of financing.

— The fiscal consolidation plan must be accompanied by rigorous selection of the investment projects to be financed under the European NGEU programme, along with design and implementation of ambitious structural reforms to help alleviate some of the shortcomings that have historically characterised the functioning of the Spanish economy, and improvement in the quality of public finances. Not only would this boost Spain's potential growth capacity in the medium term (Cuadrado, Izquierdo, Montero, Moral-Benito and Quintana, 2022) but in the short term it would also mitigate some of the adverse effects on activity that would result from a contractionary national fiscal policy stance.

On the expenditure side, it is essential to identify the budget headings where expenditure efficiency may be enhanced and to optimise expenditure distribution between items to promote more robust and equitable economic growth.

— In particular, further progress should be made to enhance public expenditure efficiency, in line with the recommendations of the AIReF Spending Review. Some expenditure items where significant room for improvement has been identified are active labour market policies, tax relief, subsidies, hospital expenditure and hiring incentives.

— Similarly, recent Banco de España publications have pointed to the desirability of deploying public measures with an increasingly targeted approach, so that the same objectives can be achieved – for example, protecting certain vulnerable groups from adverse shocks – at a lower budgetary cost.[89]

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88 For an assessment of these constraints see, for example, Hernández de Cos and Pérez (2015).

89 See, for example, García-Miralles (2023) or Blanco and Mayordomo (2023).

— Moreover, the fiscal adjustment required in Spain should not act as a drag on future expenditure growth in areas – such as public investment, education and healthcare – that are essential, not only to boost the potential growth of the economy but also to promote equality of opportunity in society.[90] This is especially relevant at the present juncture where, like all other main world economies, the Spanish economy is immersed in an intense transformational process in areas as diverse as demographics, climate change and digitalisation.

On the revenue side, it is crucial that the fiscal consolidation plan be underpinned by a comprehensive review of the Spanish tax system that assesses whether, overall, the different taxes achieve their objectives in an efficient and effective manner. Ahead of this review and possible reform of the tax system, which is one of the milestones linked to receipt of the fifth instalment of NGEU funds, it would be desirable to take into account the following:[91]

— To make the Spanish tax system more efficient, the relative weight of consumption tax – which is low in comparison with other European economies – could be increased. In general, compared with other taxes, consumption tax creates fewer factor and product market distortions. The potential negative distributional effects that are sometimes associated with consumption taxes could be avoided if part of the revenue obtained were earmarked to compensatory transfers for the vulnerable groups affected.[92]

— In this respect, Spain's consumption tax relief measures entail a significant cost – some €53 billion in 2022 – and should be reviewed and evaluated based on their effectiveness and efficiency. Again, the distributional effects of a possible reduction in this tax relief could be offset by various fiscal strategies targeting the most disadvantaged population groups.

— Moreover, many agencies have highlighted the desirability of broadening the personal income tax base, by reforming or eliminating various tax reductions that are considered inefficient. See, for example, the recommendations of AIReF (2022) or the *White Paper on Tax Reform* (2022).

— In addition, Spain is committed to achieving some highly ambitious climate targets over the coming decades (see Section 10). To do so efficiently will require, among other measures, improving and increasing green taxation, an area in which Spain has raised less revenue than other European economies in the past decades.[93] As in the previous cases, higher green taxes could be accompanied by compensatory measures – some of which temporary – to ease the impact on certain groups of households and firms that may be particularly

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90 See, for example, Ramey (2020), Deleidi (2022), Barro (2001), Krueger and Lindahl (2001) and Blanchet, Chancel and Gethin (2022).

91 For a comprehensive diagnosis of the Spanish tax system and various possible reform proposals, see the White Paper on Tax Reform (2022).

92 Correia (2010), Nguyen, Onnis and Rossi (2021), Fuster (2022), Guner, Lopez-Daneri and Ventura (2023) and Macnamara, Pidkuyko and Rossi (2023).

93 Specifically, in 2021 (latest data available), green taxes accounted for 4.5% of total taxes and social security contributions in Spain, compared with 5.4% in the euro area.

exposed to the effects of the green transition (for more details, see Chapter 4 of the Banco de España's *Annual Report 2021).*

— Lastly, the growing digitalisation and globalisation of economic activity require continued efforts to coordinate and harmonise the tax system at the international level. As is the case, for instance, of the international tax agreements achieved under the OECD/G20 framework and the various EU initiatives for greater coordination and integration of corporate and digital taxation. This is the surest means of preventing any erosion of tax bases and of Spain's economic competitiveness.

10   Green transition

Context:

The fight against climate change and the transition to a more sustainable economy is one of the key challenges facing society today. Assessing the economic impact of the different physical risks associated with global warming and environmental degradation and the transition risks arising from the shift to a low-emission economy is subject to extraordinary uncertainty. However, there is a broad consensus (i) that the economic losses resulting from the materialisation of these physical risks would far outweigh the cost of implementing an ambitious strategy to mitigate and adapt to climate change, and (ii) that a gradual and orderly transition carried out without delay and with a high degree of international coordination *(Network for Greening the Financial System* climate scenarios) would cut the transition costs. It is also clear that this transition will entail a profound structural change in Spain's economic growth model – especially in our energy model – that will have extremely significant implications for almost all areas of activity, with a very heterogeneous impact across countries, regions, sectors, firms and households.

In this setting, in recent years Spain has taken on highly ambitious environmental commitments, in line with those established in the EU overall and in other advanced economies. Specifically, the Draft Update of the 2023-2030 National Energy and Climate Plan[94] sets the following targets for 2030: a reduction of 32% in Spain's greenhouse gas emissions compared with 1990 levels; renewables to account for 48% of final energy consumption and 81% of electricity generation; and increased energy efficiency that reduces final energy consumption by 44%. Also noteworthy is that 42% of the funds received by Spain under the European NGEU programme are to be earmarked for various initiatives linked to the green transition, including the housing rehabilitation and urban regeneration plan, the emergency action plan for sustainable, safe and connected mobility in urban and metropolitan areas, and the deployment and integration of renewables.

Evidence:

There is broad consensus among the scientific community that the Iberian Peninsula could be significantly affected by the physical risks associated with climate change, and that this impact would be very uneven across regions. The considerable intensity and asymmetry of the potential impact of global warming in Spain is highlighted, for example, in the European Commission's **Ninth report on economic, social and territorial cohesion**.

— Complementary to these studies, in recent years the Banco de España has developed an intense research agenda that seeks to delve into the very diverse implications for the Spanish economy of climate change, environmental degradation and the green transition.

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94   The final document must be submitted no later than 30 June 2024, taking into account the Commission Recommendation published on 18 December 2023.

— The work performed under this analytical agenda notably includes assessments of the possible macro-financial impact in Spain of various physical risks, such as those potentially arising from severe droughts and heatwaves, wildfires, floods, increased aridity[95] and the degradation of ecosystems. It also covers, in the case of transition risks, analysis of the impact on the Spanish economy – at sectoral and aggregate level – of an increase in emission costs[96] and the establishment of a border carbon adjustment mechanism.[97]

— Overall, these studies broadly suggest that the impact of the physical and transition risks on activity, employment, price and credit dynamics in the Spanish economy would be by no means insignificant. Moreover, these effects would be very heterogeneous across regions, sectors, firms and households, and would have a considerable impact on certain regions and sectors and certain types of firms and households.

Areas of action:

To address the huge challenges posed by global warming and the energy and green transition, and to meet the ambitious environmental goals to which Spain is committed, all public policies and economic agents should make a very active contribution. In this respect, the Banco de España's last two Annual Reports (**Chapter 4** of *Annual Report 2021* and **Chapter 4** of *Annual Report 2022)* analyse in detail the role that economic policies should play in this area. Some of the main messages set out in these reports are summarised below:

— **Governments must play a leading role throughout this process, not only because they have the necessary democratic legitimacy to define the roadmap, but also because they have the most comprehensive and appropriate set of instruments to achieve the proposed goals.** Specifically, through green taxation, public investment and regulation of economic activity, public policies must act as the essential lever to boost the green transition. Nevertheless, they must also provide economic agents with certainty and mitigate the larger negative impact that this transition will have on the most vulnerable groups.

— **The energy transition will require, among other measures, large-scale deployment of renewable energy sources over the coming decades.** Boosting renewables poses a considerable technological challenge, among others, considering that some green technologies are still at an early stage of development or are not yet cost competitive. It will also significantly drive up demand for certain raw materials – such as rare earths – that are scarce in the EU. This could trigger new dependencies on imports from third countries. In any event, Spain has a very favourable climate for the development of renewable energy

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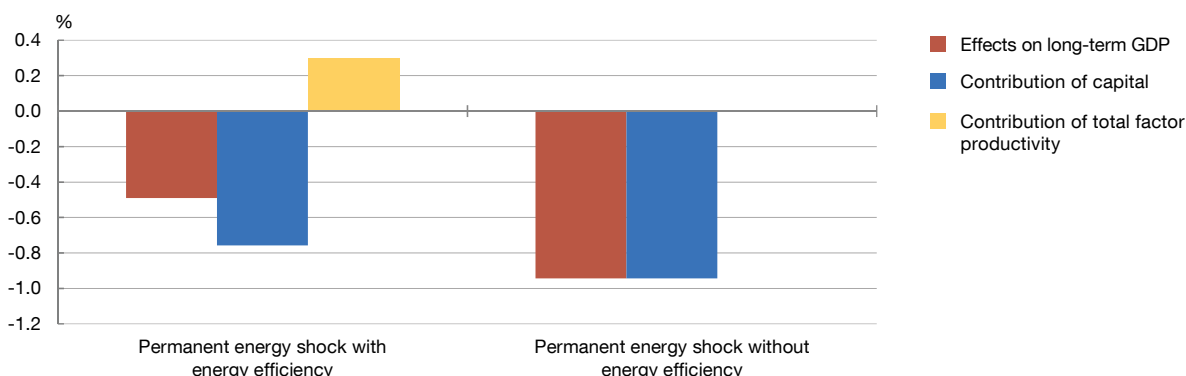
95   Broto and Hubert (2024).

96   Veiga-Duarte, Hurtado, Aguilar, Quintana and Menéndez-Álvarez (2024).

97   Delgado, Quintana and Santabárbara (2024).

Chart 2.13

Energy efficiency eases the impact on activity of higher energy prices

2.13.a Impact on GDP of higher energy prices with and without energy efficiency (a)

Legend:
- Effects on long-term GDP
- Contribution of capital
- Contribution of total factor productivity

SOURCE: Banco de España.

a Results of applying the endogenous growth general equilibrium model (EGGEM) to the impact on Spanish potential GDP of a permanent increase of 30% in imported energy costs, according to whether or not investment is made in energy efficiency gains. Although under the EGGEM the long-term impact is very gradual (over more than 100 years), more than 80% of the transition would be completed by 2050. For more details see Domínguez, Hurtado and Urtasun (2024).

sources for electricity generation. Specifically, according to the European Commission's ENSPRESO dataset, it has the second-highest onshore wind power capacity and the highest solar power capacity in the EU. Against this backdrop, over the last five years, Spain's installed wind capacity has increased by 8 gigawatts (GW) to 31 GW, and its solar capacity by 19 GW to 24 GW. By 2030 it aims to reach installed capacity of 62 GW (wind) and 76 GW (solar).

— Moreover – aside from the deployment of renewables – improving energy interconnections within the EU and a determined commitment to energy efficiency gains will also be essential. Improving energy efficiency will not only help achieve climate goals, but it will also help ease the green transition's negative impact on activity. In this respect, a recent study by the Banco de España (Domínguez, Hurtado and Urtasun, 2024) has quantified the impact on the potential GDP of the Spanish economy of a permanent increase of 30% in imported energy costs. The findings show that if, in response, firms were to invest more in energy efficiency improvements, the shock to potential GDP could be halved (see Chart 2.13). The main explanation for this lower impact on GDP in the long run would be that greater investment in energy efficiency would translate into productivity gains, which in turn would mitigate the fall in private capital investment.

— The green transition also poses a considerable challenge for central banks and the financial system, insofar as this profound structural change could significantly affect monetary policy conduct and pose considerable risks to financial stability. This requires central banks to act resolutely, both in their analysis of the economic and financial implications of climate change and in the realm of regulation of financial institutions and prudential supervision. In this respect, although much remains to be done, notable progress has been made in recent years.

- Monetary policy. In July 2022 the European Central Bank (ECB) resolved to tilt its corporate bond purchase programmes towards issuers with better climate performance.[98] Also, a limit was announced on the share of assets issued by banks with a high carbon footprint that can be pledged as collateral by individual counterparties when borrowing from the Eurosystem. In addition, climate change considerations were included in the disclosure requirements. All these decisions are in line with the ECB's climate action plan published with the announcement of the monetary policy strategy review in 2021.[99]

- Financial stability. Stress tests have been developed to assess the impact of transition to a greener economy on banks' solvency and profitability.[100]

- Supervision. The ECB has conducted a targeted follow-up of the weaknesses identified in the 2022 Thematic Review on Climate and Environmental Risks. This resulted in qualitative requirements being imposed on significant institutions that continue to present severe shortcomings in their materiality and business environment analysis. The ECB has also conducted on-site inspections on climate and environmental risks and has analysed the information on such risks disclosed by significant institutions for the first time under Pillar 3 standards in 2023 H1. For its part, the Banco de España has continued to assess the progress made by less significant institutions in implementing its supervisory expectations for climate and environmental risk management, incorporating the results of this assessment into the supervisory dialogue and the recommendations issued as part of the Supervisory Review and Evaluation Process.

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98 ECB. (2022). *ECB takes further steps to incorporate climate change into its monetary policy operations,* 4 July (press release). Details of the decarbonisation of corporate bond holdings were published in a press release dated 19 September (ECB. (2022). *ECB provides details on how it aims to decarbonise its corporate bond holdings*). Subsequently, following the *Governing Council's decision to start reducing the asset purchase programme (APP) portfolio,* it was announced that during the period of partial reinvestment corporate bond purchases would be more strongly tilted towards issuers with better climate performance (ECB. (2023). *ECB decides on detailed modalities for reducing asset purchase programme holdings,* 2 February (press release)).

99 ECB. (2021). *ECB presents action plan to include climate change considerations in its monetary policy strategy,* 8 July (press release).

100 For Spain, see the latest results published in AMCESFI's first Biennial report on climate change risks to the financial system. At European level, see *The Road to Paris: stress testing the transition towards a net-zero economy.*

References

Acemoglu, Daron, Simon Johnson and James A. Robinson. (2005). "Chapter 6. Institutions as a fundamental cause of long-run growth". In Philippe Aghion and Steven N. Durlauf (eds.), *Handbook of Economic Growth,* 1 (part A), pp. 385-472, North-Holland. https://doi.org/10.1016/S1574-0684(05)01006-3

Adhvaryu, Achyuta, Teresa Molina and Anant Nyshadham. (2022). "Expectations, Wage Hikes and Worker Voice". *The Economic Journal*, 132(645), pp. 1978–1993. https://doi.org/10.1093/ej/ueac001

Aguilar, Eduardo, Mario Alloza, Tamara de la Mata, Enrique Moral-Benito, Íñigo Portillo-Pampin and David Sarasa-Flores. (2023). "Una primera caracterización de las empresas receptoras de fondos NGEU en España". Documentos Ocasionales, 2321, Banco de España. https://repositorio.bde.es/handle/123456789/35653

AIReF. (2020). "Tax Benefits Study". https://www.airef.es/en/document-center/studies-document-center/tax-benefits/

AIReF. (2022). "1st Opinion. Minimum Living Income. Opinion 1/22. https://www.airef.es/wp-content/uploads/2022/09/NOTICIAS-EN/Primera-Opinion-IMV_EN_REV.pdf

AIReF. (2023a). "2nd Opinion. Minimum Income Scheme". Opinion 2/23. https://www.airef.es/wp-content/uploads/2023/09/AIReF.-Second-Opinion-on-the-Minimum-Income-Scheme.pdf

AIReF. (2023b). "Opinion on the long-term sustainability of the general government: the impact of demographics". Opinion 1/23. https://www.airef.es/wp-content/uploads/2023/03/OPINI%C3%93N-SOSTENIBILIDAD/AIReF-2023_Opinion-sostenibilidad-de-las-AAPP-largo-plazo_EN.pdf

Albrizio, Silvia and José Federico Geli. (2021). "An empirical analysis of the determinants that can boost Next Generation EU's effectiveness". *Economic Bulletin – Banco de España*, 4/2021, Analytical Articles. https://repositorio.bde.es/handle/123456789/19071

Alesina, Alberto and Dani Rodrik. (1994). "Distributive Politics and Economic Growth". *The Quarterly Journal of Economics*, 109(2), pp. 465–490. https://doi.org/10.2307/2118470

Alloza, Mario, Javier Andrés, Pablo Burriel, Iván Kataryniuk, Javier J. Pérez and Juan Luis Vega. (2021). "The reform of the European Union's fiscal governance framework in a new macroeconomic environment". Documentos Ocasionales, 2121, Banco de España. https://repositorio.bde.es/handle/123456789/17542

Alloza, Mario, Danilo Leiva-León and Alberto Urtasun. (2022). "The response of private investment to an increase in public investment". *Economic Bulletin - Banco de España*, 2/2022, Analytical Articles. https://repositorio.bde.es/handle/123456789/21161

Alloza, Mario, Jorge Martínez, Juan A. Rojas and Iacopo Varotto. (2024). "La dinámica de la deuda pública: una perspectiva estocástica aplicada al caso español". Documentos Ocasionales, Banco de España. Forthcoming.

Almunia, Miguel and David López-Rodríguez. (2018). "Under the Radar: The Effects of Monitoring Firms on Tax Compliance". *American Economic Journal: Economic Policy*, 10(1), pp. 1-38. https://www.aeaweb.org/articles?id=10.1257/pol.20160229

Álvarez-Román, Laura, Sergio Mayordomo, Carles Vergara-Alert and Xavier Vives. (2023). "Climate Risk, Soft Information, and Credit Supply". CEPR Discussion Paper, 18661, Centre for Economic Policy Research. https://cepr.org/publications/dp18661

AMCESFI. (2023). *Biennial Report on Climate Change Risks to the Financial System,* 1. https://www.amcesfi.es/f/webwam/RCL/Publicaciones/archivos/AMCESFI_Informe_Cambio_Climatico_2023_en.pdf

Andersson, Malin, Stephen Byrne, Lorenz Emter, Belén González Pardo, Valerie Jarvis and Nico Zorell. (2023). "Intangible assets of multinational enterprises in Ireland and their impact on euro area GDP". *ECB Economic Bulletin*, 3/2023. https://www.ecb.europa.eu/pub/economic-bulletin/focus/2023/html/ecb.ebbox202303_02~3404c284d0.en.html

Anghel, Brindusa, Henrique Basso, Olympia Bover, José María Casado, Laura Hospido, Mario Izquierdo, Iván A. Kataryniuk, Aitor Lacuesta, José Manuel Montero and Elena Vozmediano. (2018). "Income, consumption and wealth inequality in Spain". Documentos Ocasionales, 1806, Banco de España. https://repositorio.bde.es/handle/123456789/33569

Anghel, Brindusa, Olympia Bover, Laura Hospido, Julio Ortega and Ana Regil. (2023). "Inequality in Spain: 2005-2021". Country Studies: Inequalities in Europe and North America. A parallel study to the IFS Deaton Review, Institute for Fiscal Studies. https://ifs.org.uk/inequality/wp-content/uploads/2023/11/Inequality-in-Spain.pdf

Anghel, Brindusa and Aitor Lacuesta. (2020). "Ageing, productivity and employment status". *Economic Bulletin - Banco de España*, 1/2020, Analytical Articles. https://repositorio.bde.es/handle/123456789/11808

Banco de España. (2019). "Chapter 4. Economic consequences of demographic change". In Banco de España, *Annual Report 2018*, pp. 211-252. https://repositorio.bde.es/handle/123456789/12521

Banco de España. (2022). "Chapter 4. The Spanish economy and the climate challenge". In Banco de España, *Annual Report 2021*, pp. 221-272. https://repositorio.bde.es/handle/123456789/21115

Banco de España. (2023a). "Chapter 2. Robust and sustainable growth and convergence with the euro area: challenges and opportunities". In Banco de España, *Annual Report 2022*, pp. 73-136. https://repositorio.bde.es/handle/123456789/29663

Banco de España. (2023b). "Chapter 4. Spain and the European Union in the face of the energy crisis: near-term adjustments and challenges pending". In Banco de España, *Annual Report 2022*, pp. 184-220. https://repositorio.bde.es/handle/123456789/29665

Banco de España. (2024a). *Financial Stability Report. Spring 2024.* https://repositorio.bde.es/handle/123456789/36418

Banco de España. (2024b). "Quarterly report and macroeconomic projections for the Spanish economy. March 2024". *Economic Bulletin – Banco de España,* 2024/Q1. https://repositorio.bde.es/handle/123456789/36150

Barro, Robert J. (2001). "Human Capital and Growth". *American Economic Review*, 91(2), pp. 12-17. https://doi.org/10.1257/aer.91.2.12

Basso, Henrique, Ourania Dimakou and Myroslav Pidkuyko. (2023). "How inflation varies across Spanish households". Documentos Ocasionales, 2307, Banco de España. https://repositorio.bde.es/handle/123456789/29792

Battaglia, Marianna and Lara Lebedinski. (2022). "With a little help from my friends: Medium-Term effects of a remedial education program targeting Roma minority". *Economics of Education Review*, 86, 102196. https://doi.org/10.1016/j.econedurev.2021.102196.

Becker, Sascha O., Katrin Boeckh, Christa Hainz and Ludger Woessmann. (2016). "The empire is dead, long live the empire! Long-run persistence of trust and corruption in the bureaucracy". *The Economic Journal*, 126 (590), pp. 40-74. https://doi.org/10.1111/ecoj.12220

Bentolila, Samuel, Antonio Cabrales and Marcel Jansen. (2024). "Does Dual Vocational Education and Training Pay Off?". Forthcoming.

Blanchet, Thomas, Lucas Chancel and Amory Gethin. (2022). "Why Is Europe More Equal than the United States?". *American Economic Journal: Applied Economics*, 14 (4), pp. 480-518. https://doi.org/10.1257/app.20200703

Blanco, Roberto and Sergio Mayordomo. (2023). "Evidence on the impact of the public guarantee and direct aid schemes on Spanish firms during the COVID-19 crisis". Documentos Ocasionales, 2317, Banco de España. https://repositorio.bde.es/handle/123456789/34592

Bloom, Nicholas and John Van Reenen. (2007). "Measuring and Explaining Management Practices Across Firms and Countries". *The Quarterly Journal of Economics*, 122(4), pp. 1351–1408. https://doi.org/10.1162/qjec.2007.122.4.1351

Bover, Olympia, Laura Hospido and Ernesto Villanueva. (2024). "The Impact of High School Financial Education on Financial Knowledge and Saving Choices". *Journal of Human Resources,* 59(2). https://doi.org/10.3368/jhr.0720-11049R2

Broto, Carmen and Olivier Hubert. (2024). "Desertification in Spain: Is there any impact on credit to firms?". Forthcoming.

Burriel, Pablo, Iván Kataryniuk and Javier J. Pérez. (2022). "Computing the EU'S SURE interest savings using an extended debt sustainability assessment tool". Documentos Ocasionales, 2210, Banco de España. https://repositorio.bde.es/handle/123456789/21159

Cabrales, Antonio, Maia Güell, Rocío Madera and Analía Viola. (2020). "Income contingent university loans: Policy design and an application to Spain". *Economic Policy*, 34(99), pp. 479–521. https://doi.org/10.1093/epolic/eiz010

Card, David. (2008). "Returns to Schooling". *The New Palgrave Dictionary of Economics*, pp. 1-11. https://doi.org/10.1057/978-1-349-95121-5_2574-1

Castellanos, María Alexandra. (2023). "Inmigration, parenthood and child penalties". Job Market Paper. https://www.dropbox.com/s/u7xul0la2v9u19y/MCastellanos_lmm_ChildPenalty.pdf?dl=0

Cobreros, Lucía, Sandra García-Uribe and Marina Gómez. (2023). "Distributional accounts: a tool for monitoring the distribution of household wealth and debt components". *Economic Bulletin – Banco de España*, 2023/Q4, 02. https://repositorio.bde.es/handle/123456789/33800

Comité de Personas Expertas. (2022). *Libro Blanco sobre la Reforma Tributaria*. Instituto de Estudios Fiscales, Ministerio de Hacienda y Función Pública. https://www.ief.es/docs/investigacion/comiteexpertos/LibroBlancoReformaTributaria_2022.pdf

Correia, Isabel. (2010). "Consumption Taxes and Redistribution". *American Economic Review,* 100(4), pp. 1673-1694. https://www.aeaweb.org/articles?id=10.1257/aer.100.4.1673

Crespo, Laura, Angela Denis and Juan Francisco Jimeno. (2023). "The health status of the retirement-age population: a first approach". *Economic Bulletin - Banco de España,* 2023/Q4, 04. https://repositorio.bde.es/handle/123456789/34892

Criscuolo, Chiara, Peter Gal, Timo Leidecker and Giuseppe Nicoletti. (2021). "The human side of productivity. Uncovering the role of skills and diversity for firm productivity". OECD Productivity Working Papers, 29, Organisation for Economic Co-operation and Development. https://doi.org/10.1787/5f391ba9-en

Cuadrado, Pilar, Alejandro Fernández-Cerezo, José Manuel Montero and Francisco José Rodríguez. (2023). "The impact of population ageing on the labour force participation rate in Spain". *Economic Bulletin - Banco de España*, 2023/Q3, 12. https://repositorio.bde.es/handle/123456789/33513

Cuadrado, Pilar, Mario Izquierdo, José Manuel Montero, Enrique Moral-Benito and Javier Quintana. (2022). "The potential growth of the Spanish economy after the pandemic". Documentos Ocasionales, 2208, Banco de España. https://repositorio.bde.es/handle/123456789/23359

Daniele, Gianmarco, Arnstein Aassve and Marco Le Moglie. (2023). "Never forget the first time: The persistent effects of corruption and the rise of populism in Italy". *The Journal of Politics*, 85 (2). https://doi.org/10.1086/723019

De la Fuente, Ángel (coord.), Mercedes Ayuso, José Ignacio Conde-Ruiz, Enrique Devesa, Javier Díaz-Giménez, Julián Díaz-Saavedra, Rafael Doménech, Inmaculada Domínguez-Fabián, Luisa Fuster, Miguel Ángel García-Díaz, José Antonio Herce, Sergi Jiménez, José María Marín Vigueras, Concepció Patxot, Alfonso Sánchez-Martín and Felipe Serrano. (2023). "Notas sobre las proyecciones de gasto en pensiones del MISSMI". *Estudios sobre la Economía Española,* 2023/31, Fedea. https://documentos.fedea.net/pubs/eee/2023/eee2023-31.pdf?utm_source=wordpress&utm_medium=actualidad&utm_campaign=estudio&_gl=1*16qjk3x*_ga*MTEzODcyMDcxOC4xNjY5ODl2MDU2*_ga_K71EGLC8JC*MTY5OTI4NjM2Mi40LjAuMTY5OTI4NjM2Mi4wLjAuMA..&_ga=2.65175470.1671895838.1699286362-1138720718.1669826056

Deleidi, Matteo. (2022). "Quantifying multipliers in Italy: does fiscal policy composition matter?". *Oxford Economic Papers,* 74 (2), pp. 359-381. https://doi.org/10.1093/oep/gpab028

Delgado, Mar, Javier Quintana and Daniel Santabárbara. (2024). "Carbon Pricing, Border Adjustment and Renewable Energy Investment: A Network Approach". Forthcoming.

Dijkstra, Lewis, Hugo Poelman and Andrés Rodríguez-Pose. (2020). "The geography of EU discontent". *Regional Studies,* 54(6), pp. 737–753. https://doi.org/10.1080/00343404.2019.1654603

Domínguez-Díaz, Rubén, Samuel Hurtado and Carolina Menéndez. (2024). "The medium-term effects of investment stimulus". Documentos de Trabajo, 2402, Banco de España. https://repositorio.bde.es/handle/123456789/35913.

Domínguez-Díaz, Rubén, Samuel Hurtado and Alberto Urtasun. (2024). "Energy transition and vulnerability to external shocks: simulations with an endogenous growth model". Documentos de Trabajo, Banco de España. Forthcoming.

Emambakhsh, Tina, Maximilian Fuchs, Simon Kordel, Charalampos Kouratzoglou, Chiara Lelli, Riccardo Pizzeghello, Carmelo Salleo and Martina Spaggiari. (2023). "The Road to Paris: Stress Testing the Transition Towards a Net-Zero Economy". ECB Occasional Paper, 2023/328, European Central Bank. http://dx.doi.org/10.2139/ssrn.4564374

European Central Bank. (2021). "Key factors behind productivity trends in EU countries". Occasional Paper Series, 268, European Central Bank. https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op268~73e6860c62.en.pdf

European Central Bank. (2024). *Statement by the ECB Governing Council on advancing the Capital Markets Union*. https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240307~76c2ab2747.en.html

European Commission. (2012). "The 2012 Ageing Report. Economic and budgetary projections for the 27 EU Member States (2010-2060)". European Economy, 2|2012. https://ec.europa.eu/economy_finance/publications/european_economy/2012/pdf/ee-2012-2_en.pdf

European Commission. (2018). *Annual Report 2018 of the European Fiscal Board*. https://commission.europa.eu/publications/2018-annual-report-european-fiscal-board_en

European Commission. (2021). "The 2021 Ageing Report. Economic and budgetary projections for the EU Member States (2019-2070)". Institutional Paper, 148. https://data.europa.eu/doi/10.2765/84455

European Commission. (2023). "Commission Recommendation, Assessment (SWD) and Factsheet of the draft updated National Energy and Climate Plan of Spain". https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-5_en#details

European Commission. (2024a). "2024 Ageing Report. Economic and budgetary projections for the EU Member States (2022-2070)". Institutional Paper, 279. https://economy-finance.ec.europa.eu/document/download/971dd209-41c2-425d-94f8-e3c3c3459af9_en?filename=ip279_en.pdf

European Commission. (2024b). *Ninth report on economic, social and territorial cohesion*. Jorge Durán Laguna. (ed.), Publications Office of the European Union. https://ec.europa.eu/regional_policy/sources/reports/cohesion9/9CR_Report_FINAL.pdf

Fernández-Cerezo, Alejandro and Mario Izquierdo. (2024). "The Banco de España Business Activity Survey: 2024 Q1". *Economic Bulletin - Banco de España,* 2024/Q1, 08. https://repositorio.bde.es/handle/123456789/36213

Fernández-Cerezo, Alejandro, Enrique Moral-Benito and Javier Quintana. (2023). "A production network model for the Spanish economy with an application to the impact of NGEU funds". Documentos de Trabajo, 2305, Banco de España. https://repositorio.bde.es/handle/123456789/27333

Foster, Lucia, John C. Haltiwanger and C. J. Krizan. (2001). "Aggregate Productivity Growth. Lessons from Microeconomic Evidence". *New Developments in Productivity Analysis*, University of Chicago Press, pp. 303 – 372. https://www.nber.org/system/files/chapters/c10129/c10129.pdf

Fuster, Luisa. (2022). "Macroeconomic and distributive effects of increasing taxes in Spain". *SERIEs*, 13, pp. 613–648. https://doi.org/10.1007/s13209-022-00269-5

García-Miralles, Esteban. (2023). "Support measures in the face of the energy crisis and the rise in inflation: an analysis of the cost and distributional effects of some of the measures rolled out based on their degree of targeting". *Economic Bulletin - Banco de España*, 2023/Q1, 15. https://repositorio.bde.es/handle/123456789/29769

García-Miralles, Esteban and Jorge Martínez Pagés. (2023). "Government revenue in the wake of the pandemic: tax residuals and inflation". *Economic Bulletin - Banco de España*, 2023/Q1, 16. https://repositorio.bde.es/handle/123456789/29791

García-Posada Gómez, Miguel and Raquel Vegas Sánchez. (2018). "Bankruptcy reforms in the midst of the Great Recession: The Spanish experience". *International Review of Law and Economics*, 55, pp. 71-95. https://doi.org/10.1016/j.irle.2018.04.001

García-Santana, Manuel, Enrique Moral-Benito, Josep Pijoan-Mas and Roberto Ramos. (2020). "Growing like Spain: 1995-2007". *International Economic Review*, 61(1), pp. 383-416. https://doi.org/10.1111/iere.12427

Gershenson, Seth, Cassandra M. D. Hart, Joshua Hyman, Constance A. Lindsay and Nicholas W. Papageorge. (2022). "The Long-Run Impacts of Same-Race Teachers". *American Economic Journal: Economic Policy*, 14 (4), pp. 300-342. https://www.aeaweb.org/articles?id=10.1257/pol.20190573

Giovanni, Julian Di, Manuel García-Santana, Priit Jeenas, Enrique Moral-Benito and Josep Pijoan Mas. (2022). "Buy Big or Buy Small? Procurement Policies, Firms' Financing and the Macroeconomy". Documentos de Trabajo, 2233, Banco de España. https://repositorio.bde.es/handle/123456789/23361

Grébol, Ricard, Margarita Machelett, Jan Stuhler and Ernesto Villanueva. (2024). "Educational inequality in Spain". Banco de España. Forthcoming.

Grossman, Herschell I. (1991). "A General Equilibrium Model of Insurrections". *The American Economic Review*, 81(4), pp. 912–921. http://www.jstor.org/stable/2006650

Guner, Nezih, Ezgi Kaya and Virginia Sánchez Marcos. (2024). "Labor Market Institutions and Fertility". *International Economic Review.* https://www.cemfi.es/~guner/Labor-Market-Institutions-and-Fertility-July-2023.pdf

Guner, Nezih, Martin Lopez-Daneri and Gustavo Ventura. (2023). "The looming fiscal reckoning: Tax distortions, top earners, and revenues". *Review of Economic Dynamics,* 50, pp. 146-170. https://doi.org/10.1016/j.red.2023.07.003

Heckman, James J., Lance J. Lochner and Petra E. Todd. (2006). "Chapter 7. Earnings Functions, Rates of Return and Treatment Effects: The Mincer Equation and Beyond". *Handbook of the Economics of Education*, 1, pp. 307-458. https://doi.org/10.1016/S1574-0692(06)01007-5

Hernández de Cos, Pablo and Javier J. Pérez. (2015). "Reglas fiscales, disciplina presupuestaria y corresponsabilidad fiscal". *Papeles de Economía Española,* 143. https://www.funcas.es/articulos/reglas-fiscales-disciplina-presupuestaria-y-corresponsabilidad-fiscal/

Hertz, Tom, Tamara Jayasundera, Patrizio Piraino, Sibel Selcuk, Nicole Smith and Alina Verashchagina. (2008). "The Inheritance of Educational Inequality: International Comparisons and Fifty-Year Trends". *The B.E. Journal of Economic Analysis & Policy*, 7(2). https://doi.org/10.2202/1935-1682.1775

Hospido, Laura, Margarita Machelett, Myroslav Pidkuyko and Ernesto Villanueva. (2023). *Survey of Financial Competences (ECF) 2021: main results and changes since 2016*". Banco de España. https://repositorio.bde.es/handle/123456789/34792

Instituto Nacional de Estadística. (2022). "Population projections. 2022-2072". https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176953&menu=ultiDatos&idp=1254735572981

International Monetary Fund. (2021). "Boosting productivity in the aftermath of COVID-19". https://www.imf.org/external/np/g20/pdf/2021/061021.pdf

Izquierdo, Mario, Juan F. Jimeno and Aitor Lacuesta. (2016). "Spain: from massive immigration to vast emigration?". *IZA Journal of Migration*, 5 (10). https://doi.org/10.1186/s40176-016-0058-y

Jansen, Marcel and Aitor Lacuesta. (2024). "La educación post-obligatoria". In Antonio Cabrales and Ismael Sanz (coords.), *Economía de la Educación*. Fundación Areces. https://www.fundacionareces.es/recursos/doc/portal/2024/04/23/economia-de-la-educacion.pdf#page=337

Krueger, Alan B., and Mikael Lindahl. (2001). "Education for Growth: Why and for Whom?". *Journal of Economic Literature*, 39 (4), pp. 1101-1136. https://doi.org/10.1257/jel.39.4.1101

Lamas Rodríguez, Matías, Mari Luz Garcia Lorenzo, Manuel Medina Magro and Gabriel Perez-Quiros. (2023). "Impact of climate risk materialization and ecological deterioration on house prices in Mar Menor, Spain". *Scientific Reports*, 13, 11772. https://doi.org/10.1038/s41598-023-39022-8

López Laborda, Julio, Carmen Marín González and Jorge Onrubia. (2024). "Observatorio sobre el reparto de los impuestos y las prestaciones entre los hogares españoles", *Octavo informe-2021,* Fedea. https://documentos.fedea.net/pubs/eee/2024/eee2024-04.pdf

Lucas, Robert E. (1988). "On the mechanics of economic development". *Journal of Monetary Economics*, 22(1), pp. 3-42. https://doi.org/10.1016/0304-3932(88)90168-7

Lucas, Robert E. (1990). "Why Doesn't Capital Flow from Rich to Poor Countries?". *The American Economic Review*, 80(2), pp. 92–96. http://www.jstor.org/stable/2006549

Lucas, Robert E. (2015). "Human Capital and Growth". *American Economic Review,* 105 (5), pp. 85-88. http://dx.doi.org/10.1257/aer.p20151065

Lucio, Juan de and Juan S. Mora-Sanguinetti. (2022). "Drafting 'better regulation': the economic cost of regulatory complexity". *Journal of Policy Modeling*, 44(1), pp. 163-183. https://doi.org/10.1016/j.jpolmod.2021.10.003

Macnamara, Patrick, Myroslav Pidkuyko and Raffaele Rossi. (2023). "Taxing consumption in unequal economies". Documentos de Trabajo, 2331, Banco de España. https://repositorio.bde.es/handle/123456789/34646

Martínez-Matute, Marta and Ernesto Villanueva. (2023). "Task specialization and cognitive skills: evidence from PIAAC and IALS". *Review of Economics of the Household*, 21, pp. 59-93. https://doi.org/10.1007/s11150-021-09587-2

Mathers, Colin D., Ritu Sadana, Joshua A. Salomon, Christopher J. L. Murray and Alan D. Lopez. (2001). "Healthy life expectancy in 191 countries, 1999". *The Lancet*, 357(9269), pp. 1685-1691. https://doi.org/10.1016/S0140-6736(00)04824-8

McGuigan, Martin, Sandra McNally and Gill Wyness. (2016). "Student awareness of costs and benefits of educational decisions: effects of an information campaign". *Journal of Human Capital,* 10(4), pp. 482-519. https://www.journals.uchicago.edu/doi/10.1086/689551

Ministerio de Inclusión, Seguridad Social y Migraciones. (2023). "Proyecciones del gasto público en pensiones en España." https://www.inclusion.gob.es/documents/20121/3479582/Informe+Proyec_SS+2023_final.pdf

Montalbán Castilla, José. (2019). "Financiación Universitaria: Desafíos y Soluciones Potenciales". *Estudios sobre la Economía Española,* 2019/16. Fedea. https://documentos.fedea.net/pubs/eee/eee2019-16.pdf?_gl=1*op4vfb*_ga*MTMxNDY1MTE2My4xNzEzMTgyNTE1*_ga_K71EGLC8JC*MTcxMzE4MjUxNC4xLjAuMTcxMzE4MjUxNC4wLjAuMA

Mora-Sanguinetti, Juan S. and Ricardo Pérez-Valls. (2021). "How does regulatory complexity affect business demography? Evidence from Spain". *European Journal of Law and Economics*, 51, pp. 203–242. https://doi.org/10.1007/s10657-020-09650-w

Mora-Sanguinetti, Juan S., Javier Quintana, Isabel Soler and Rok Spruk. (2024). "The heterogenous effects of a higher volume of regulation: evidence from more than 200k Spanish norms". *Journal of Regulatory Economics,* 65, pp. 137-153. https://doi.org/10.1007/s11149-023-09466-x

Moral-Benito, Enrique. (2018). "Growing by learning: firm-level evidence on the size-productivity nexus". *SERIEs,* 9, pp. 65-90. https://doi.org/10.1007/s13209-018-0176-2

Nguyen, Anh D. M., Luisanna Onnis and Raffaele Rossi. (2021). "The Macroeconomic Effects of Income and Consumption Tax Changes". *American Economic Journal: Economic Policy*, 13(2), pp. 439-466. https://www.aeaweb.org/articles?id=10.1257/pol.20170241

Organisation for Economic Co-operation and Development. (2021). "Improving knowledge transfer and collaboration between science and business in Spain", OECD Science, Technology and Industry Policy Papers, 122. https://doi.org/10.1787/4d787b35-en

Organisation for Economic Co-operation and Development. (2023a). *International Migration Outlook 2023.* https://doi.org/10.1787/b0f40584-en

Organisation for Economic Co-operation and Development. (2023b). "OECD/INFE 2023 International Survey of Adult Financial Literacy", OECD Business and Finance Policy Papers, 39. https://doi.org/10.1787/56003a32-en

Organisation for Economic Co-operation and Development. (2023c). *Pensions at a Glance 2023: OECD and G20 Indicators*. OECD Publishing. https://doi.org/10.1787/678055dd-en

Persson, Torsten and Guido Tabellini. (1994). "Is Inequality Harmful for Growth?". *The American Economic Review*, 84(3), pp. 600–621. http://www.jstor.org/stable/2118070

Ramey, Valerie A. (2020). "The macroeconomic consequences of infrastructure investment". Working Paper 27625, National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w27625/w27625.pdf

Regueiro-Ons, Camila and Beatriz González López-Valcárcel. (2023). "Los retos del sistema sanitario a la luz de la transición demográfica". In Funcas, *La economía española ante el reto demográfico,* pp. 112-131. Papeles de Economía Española, 176. https://www.funcas.es/revista/la-economia-espanola-ante-el-reto-demografico/

Romer, Paul M. (1986). "Increasing returns and long-run growth". *Journal of Political Economy*, 94(5), pp. 1002-1037. https://www.jstor.org/stable/1833190

Solé-Ollé, Albert and Pilar Sorribas-Navarro. (2018). "Trust no more? On the lasting effects of corruption scandals". *European Journal of Political Economy*, 55, pp. 185-203. https://doi.org/10.1016/j.ejpoleco.2017.12.003

Soria, Javier. (2022). "Intergenerational Mobility, Gender Differences and the Role of Out-Migration: New Evidence from Spain". http://dx.doi.org/10.2139/ssrn.4110960

Syverson, Chad. (2011). "What Determines Productivity?". *Journal of Economic Literature*, 49(2), pp. 326-365. https://www.aeaweb.org/articles?id=10.1257/jel.49.2.326

Veiga-Duarte, Rubén, Samuel Hurtado, Pablo A. Aguilar, Javier Quintana and Carolina Menéndez-Álvarez. (2024). "CATALIST: a new, bigger, better model for evaluating climate change transition risks at Banco de España". Forthcoming.

Wooldridge, Jeffrey M. (2009). "On estimating firm-level production functions using proxy variables to control for unobservables". *Economics Letters,* 104(3), pp. 112-114. https://doi.org/10.1016/j.econlet.2009.04.026

Box 2.1

THE HETEROGENEOUS IMPACT OF INFLATION ON PERSONAL INCOME TAX REVENUE

The robust performance of public revenue in Spain in the last four years is mainly attributable to strong growth in revenue generated by personal income tax. This increase owes, first, to real growth in the tax base (the number of workers and pensioners) and, second, to growth in its nominal component (wages, welfare benefits and other household income), driven by the inflationary episode.[1]

In addition, nominal growth in the personal income tax base may trigger an increase in the effective average tax rates if the parameters determining the tax liability are not fully updated in line with growth in the taxable base. This effect, known as "fiscal drag", means that an increase in taxable income prompts an even higher increase in the tax rate, leading to the elasticity of revenues to changes in the taxable income (ERTI) being greater than 1.[2]

This box summarises the main findings of a forthcoming paper[3] that analyses the impact of fiscal drag on aggregate tax revenue and its uneven effect across households depending on their level of income. To this end, it uses the personal income tax microsimulation tool developed by the Banco de España,[4] which is based on anonymised administrative tax data of personal income taxpayers and on detailed modelling of the tax rules. This tool performs hypothetical simulations of changes in taxpayers' income or in the applicable rules, yielding individual results for each taxpayer in the sample and aggregate results for the economy as a whole.

In the first simulation exercise, the ERTI of each taxpayer is estimated in a static context by calculating the impact on their tax liability of increasing all their income sources by 1%, given certain microdata and tax rules. This exercise estimates the degree of marginal fiscal drag (i.e. that

triggered by slight increases in income) in the tax system, irrespective of possible changes in the tax rules or of the observed growth in income. Given these results, aggregate revenue-base elasticity of 1.85 is estimated. In other words, a 1% increase in household income would lead to a rise of 1.85% in total tax revenue if the tax parameters are not updated.[5] For example, for a taxpayer with income of €33,700 (belonging to the 77th percentile) and a tax liability amounting to €5,472, a 1% increase in income (€337) would trigger a rise of around €101 (1.85%) in their tax liability. This elasticity is in line with the estimates available for the average of countries belonging to the Organisation for Economic Co-operation and Development (OECD).[6]

The fiscal drag effect is determined by two mechanisms. The first is the loss in relative value of tax benefits (reductions, tax deductions and tax credits), which do not increase in proportion to income because they are either fixed nominal amounts or subject to ceilings that are not updated. It is estimated that 58% of fiscal drag stems from this mechanism, which is strongly influenced by the loss in relative value of the reduction for labour income earners and of the personal and family allowance. The second mechanism occurs when increases in income are taxed at a marginal rate that is higher than the average rate applied to individual taxpayers, as the progressive tax brackets are defined in nominal terms and do not change, i.e. they are not adjusted for inflation. This latter mechanism accounts for an estimated 42% of fiscal drag. The significance of these two mechanisms varies depending on taxpayers' income, as illustrated below.

Chart 1 shows that there are marked differences in taxpayers' ERTI depending on their total income, with near-zero elasticities for those at the lower end of the income

1   The factors that have led to the recent increase in public revenue in Spain are described in Chapter 1 of this report, and in Esteban García-Miralles and Jorge Martínez Pagés. (2023). "Government revenue in the wake of the pandemic. Tax residuals and inflation". *Economic Bulletin - Banco de España*, 2023/Q1, 16. Personal income tax revenue is defined as the revenue collected in cash terms in one year, mostly in the form of tax withholdings and prepayments on the income earned that year. Thus, the revenue, the income that makes up the tax base and the GDP to which this income contributes all refer to the same year.

2   In technical terms, the ERTI of each individual is equal to their effective marginal rate (the tax rate applied to the last euro of income earned) divided by their effective average rate (the tax payable divided by total income).

3   Sofía Balladares and Esteban García-Miralles. (2024). "Progresividad en frío. El impacto heterogéneo de la inflación sobre la recaudación por IRPF", Documentos Ocasionales, Banco de España (forthcoming).

4   Olympia Bover, José María Casado, Esteban García-Miralles, José María Labeaga and Roberto Ramos. (2017). "Microsimulation tools for the evaluation of fiscal policy reforms at the Banco de España". Documentos Ocasionales, 1707, Banco de España.

5   This estimate is based on the latest available pre-pandemic microdata referring to 2019 and on the legislation applicable at the time. The results therefore capture the effect of the tax rules regardless of observed income growth or subsequent regulatory changes. In any event, a simulation based on 2023 legislation yields a similar estimate (1.84), and the historical relationship between growth in the tax base and tax revenue net of the fiscal measures for the period 2017-2022 is of the same magnitude (1.84).

6   Robert Price, Thai-Thanh Dang and Jarmila Botev. (2015). "Adjusting fiscal balances for the business cycle: New tax and expenditure elasticity estimates for OECD countries". OECD Economics Department Working Papers, 1275, OECD Publishing.

distribution, and high elasticities for medium and medium-high incomes, which decrease as income increases.

The middle of the distribution has notably high elasticities, with an ERTI greater than 10 in the fourth decile. Although taxpayers in this decile have low income and low tax liabilities, a rise in income triggers very high relative increases in these liabilities, almost entirely due to the loss of relative value in tax benefits, which have a sizeable impact on the calculation of their income tax. Taxpayers in the top deciles have lower elasticities than those on medium incomes, with elasticities of 1.8 and 1.4 in the ninth and tenth deciles, respectively. In these deciles, fiscal drag largely stems from the progressivity of personal income tax.[7] These two deciles represent 17.2% and 55.4%, respectively, of aggregate revenue from personal income tax, and their weight in aggregate ERTI is therefore very significant.

Generally, the effect of fiscal drag reduces income inequality insofar as it leads to a broad-based rise in the effective average rates across the entire income distribution. Given that personal income tax rates are progressive, higher average rates across the distribution mean greater redistribution of income. Specifically, both the Gini index and the 90:10 ratio of after-tax income point to a less unequal distribution when incomes increase homogeneously and tax rules remain unchanged.[8] However, although the redistributive capacity of the tax is enhanced, its progressivity, i.e. the difference between the effective average tax rates for high and low incomes, is slightly reduced.[9]

In the second simulation exercise, the impact of fiscal drag is quantified in the current situation, in which nominal household income is growing strongly and the parameters that determine the personal income tax payable have not

Chart 1
Distribution of elasticity of revenue to taxable income (ERTI) (a)
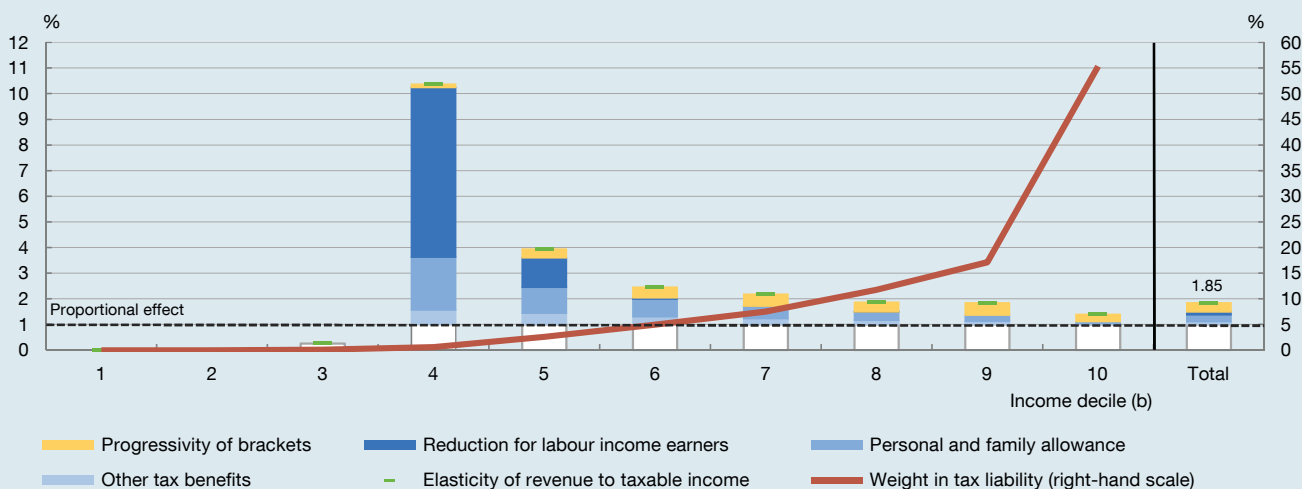
SOURCES: Ministerio de Hacienda (Instituto de Estudios Fiscales) and Banco de España.

a ERTI is defined as the percentage change in the tax liability triggered by a 1% increase in taxable income.
b Average ERTI in each decile is calculated as the average weighted by each individual's share in total tax liability, such that the average of all deciles weighted by their contribution to total tax liability coincides with aggregate ERTI.

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7 As tax benefits represent a very minor part of these taxpayers' tax base, their ERTI is mainly determined by the effect of tax brackets. This is despite the fact that tax rates become flatter in the higher income brackets, and that taxes on savings income (predominant for higher incomes) are less progressive.

8 The Gini index is defined as the area between the Lorenz curve (which shows the cumulative percentage of total income) and a line with a slope at 45 degrees (representing perfectly equal distribution of income). The 90:10 ratio represents the wealthiest 10% of the income distribution relative to the poorest 10%.

9 This result is consistent with earlier literature, which also finds that fiscal drag reduces inequality despite weakening the progressivity of the tax. See Herwig Immervoll. (2005). "Falling up the stairs: the effects of 'bracket creep' on household incomes". *Review of Income and Wealth,* 51(1), pp. 37-62.

Box 2.1

THE HETEROGENEOUS IMPACT OF INFLATION ON PERSONAL INCOME TAX REVENUE (cont'd)

been fully updated, despite some reforms introduced in recent years.[10] This exercise entails uniformly updating the microdata on the basis of observed or projected growth in the different sources of individuals' gross income (wages, capital income, self-employment income),[11] and incorporating the legislaton in force each year or hypothetical legislation in which the tax parameters are updated, to calculate the resulting tax revenue.

Chart 2 shows the quantitatively significant impact of fiscal drag in the recent period. Specifically, it is estimated

that fiscal drag would explain around half of the increase observed in the personal income tax revenue-to-GDP ratio between 2019 and 2023[12] (from 6.9% to 8.5%). The remaining increase owes mainly to higher growth in the personal income tax base relative to GDP growth. In addition, the effective average rates are estimated to have risen from 12.8% in 2019 to 14.7% in 2023, with 70% of this increase attributable to fiscal drag. This estimation is obtained by comparing the estimated revenue for 2023 given the current legislation, with that obtained, for the same year, in a simulation in which the personal income

Chart 2
Observed and simulated changes in the personal income tax-to-GDP ratio
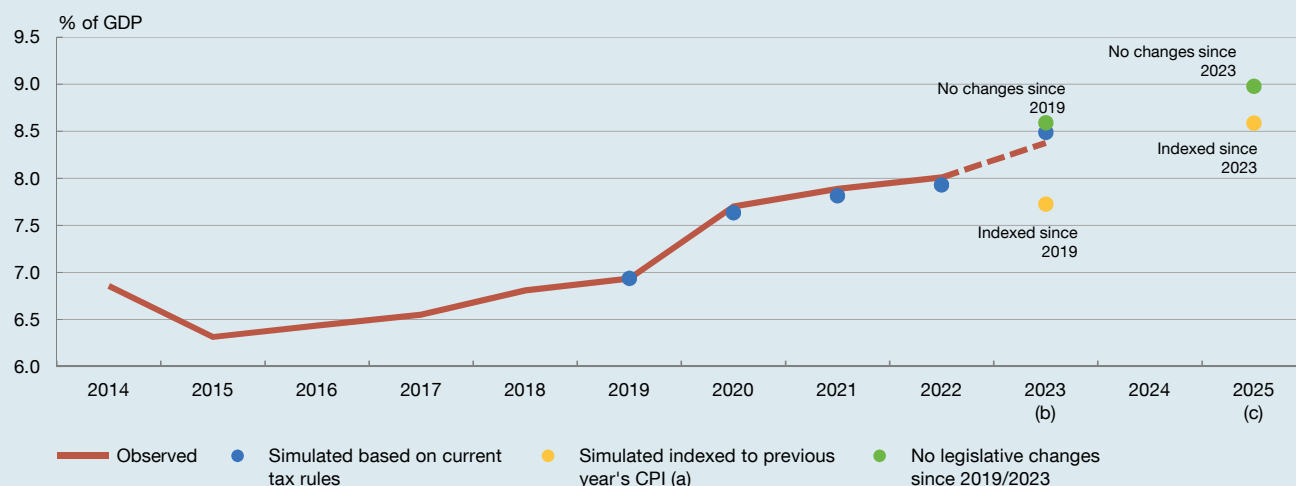
SOURCES: Ministerio de Hacienda (Instituto de Estudios Fiscales and Agencia Estatal de Administración Tributaria) and Banco de España.

a Personal income tax parameters are indexed every year t, using the CPI observed between December of year t-2 and November of the previous year t-1.
b For 2023, growth observed up to 2023 Q3 is extrapolated to the year as a whole.
c For 2025, the Banco de España's macroeconomic projections are used for the different macroeconomic aggregates underlying the tax base.

10 Slightly over half of OECD countries, including Spain, Italy and Portugal, update their personal income tax parameters discretionally and more or less regularly, using more or less clearly defined criteria, while other countries do so automatically by law, for instance, the Nordic countries, the United States and Belgium. In Spain, in 2022 and 2023, regulatory changes to update some of the tax parameters were approved by a number of regional governments. There have also been regulatory changes at the central government level in 2023 and 2024, which modify the reduction for labour income earners to accommodate the increase in lower incomes, particularly those affected by the rise in the national minimum wage. All of this legislation has been incorporated into the analysis.

11 The fact that this exercise does not account for any heterogeneity in the growth of each source of income among taxpayers does not have a significant effect on the aggregate results obtained. This is because most of the tax revenue is concentrated in the top deciles (as illustrated by Chart 1), which in turn determine the gross income growth used in the simulations. In any event, as a robustness check, a simplified simulation has also been carried out to account for heterogeneity across deciles in the total income growth of individual taxpayers, drawing on information from the National Statistics Institute's (INE) Living Conditions Survey (in which income is observed up to 2022 and the same distribution is assumed for growth in 2023). The exercise uses this heterogeneous growth, combined with the estimated ERTI for each decile (see Chart 1), to obtain the aggregate tax revenue. The result of this robustness exercise (tax revenue growth of 43.7% between 2019 and 2023) is very similar to that obtained using homogeneous growth in all the deciles (43.3%) and that yielded by the microsimulator (43%).

12 The 2023 estimate is based on an extrapolation using data observed up to the third quarter.

Box 2.1

THE HETEROGENEOUS IMPACT OF INFLATION ON PERSONAL INCOME TAX REVENUE (cont'd)

tax parameters have been updated each year from 2019 to 2023, using the consumer price index (CPI) observed the previous year.[13]

In the coming years, if there are no further regulatory changes to update the personal income tax parameters, fiscal drag will continue to have a significant impact on tax revenue. In particular, it is estimated that if the personal income tax rules in force in 2023 remain unchanged (incorporating the recent reform affecting the reduction for labour income earners applicable from 2024) and the different household income components grow uniformly in line with the Banco de España's 2023 Q4 macroeconomic projections, personal income tax revenue could reach 9% of GDP in 2025, up 29% on 2019. Conversely, if the

personal income tax parameters were to be indexed in 2024 and 2025 to the previous year's CPI, the personal income tax-to-GDP ratio would stand at 8.6%, close to its 2023 level and 24% higher than in 2019. Moreover, in the absence of further changes to the personal income tax rules, the effective average rate could stand at 15.3% by 2025, 20% higher than in 2019.

These results show that the decision on how and when to update the tax parameters has consequences both for total revenue and for its distribution across taxpayers' income level. These consequences must be weighed up in the current context of vulnerable public finances and bearing in mind the recommendations for an efficient design of taxation (see Section 9.4 of this chapter).

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13 Specifically, the update of the fiscal parameters for year t is based on the growth of the CPI observed between December of year t-2 and November of year t-1, which is the usual practice in most countries that index their taxes to the CPI of the previous year. However, indexation alternatives are used in other countries, such as the current year's CPI or other indices that reflect wage growth. The simulation results for the period analysed are similar if the personal income tax parameters are updated using these alternative indices.

Box 2.2

THE IMPACT OF THE NEW INCENTIVES TO DELAY RETIREMENT ON SOCIAL SECURITY PENSION EXPENDITURE

The latest pension system reform, carried out between 2021 and 2023, has safeguarded pensions' purchasing power and bolstered their sufficiency through measures such as indexing them to the consumer price index (CPI), repealing the sustainability factor and increasing minimum pension top-ups. As described in Section 9.2, these spending-side measures, which are partially offset by higher social security contributions, entail a notable increase in the system's obligations in the medium and long term.

This box seeks to quantify the possible impact of one of the measures approved to mitigate this increase in the system's expenditure, namely the incentive to delay retirement, by drawing on simulations using microdata from the social security administrative labour records (MCVL, by its Spanish initials). In this respect, two key changes have been approved through the reform. First, a 4% increase in pension benefits has been established for each year that retirement is postponed, irrespective of the contribution period. Second, workers who delay retirement have been given the choice of receiving either the foregoing percentage increase in their pension, a lump-sum payment upon retirement or a combination of the two.[1]

Analysing how effective these new incentives are in containing the projected growth of pension expenditure relative to GDP is crucial for determining whether further measures will be needed to ensure the system's financial sustainability in the future (see Chart 2.10 of the main text). In this case, containment operates through two channels. First, workers remaining for longer in the labour market reduces the number of years they will receive a pension (even though the pension they ultimately receive is for a higher amount than if they had retired at the ordinary retirement age). Second, a higher participation rate among the older population, insofar as it translates into higher aggregate employment, could contribute to economic growth and, therefore, to GDP. In this respect, a European comparison shows that the participation rate in Spain for those aged 55-64 (65.4%) is lower than in some European Union (EU) countries, such as Sweden (81.7%), Germany (75.3%) and Portugal (68.6%), but

higher than in others, among them France (60.3%), Italy (57.8%) and Greece (57.1%).[2]

Given the short period of time that has elapsed since the new incentives came into force in 2022, it is too early to quantify the extent to which they could prompt a substantial shift in workers' decisions about when to leave the workforce. These decisions depend on many factors, such as health, personal and family circumstances and job satisfaction, meaning that the monetary incentives are just one more aspect within a range of factors influencing workers' decisions.

In general, the latest evidence shows that the benefits and labour market dynamics before 2022 provided limited incentive for workers to remain in the labour market, demonstrating the difficulty in achieving a substantial increase in the effective retirement age through this incentives mechanism. MCVL data reveal that the decision to continue working beyond the ordinary retirement age has traditionally been restricted to a small number of workers. Indeed, the labour market exit trends among some of the cohorts that have most recently retired (those born between 1950 and 1954) have been highly influenced by the statutory retirement ages for both early and ordinary retirement. Thus, Chart 1.a shows a significant decline in the labour market exit rate in the 65-66 age bracket, attributable to the gradual raising of the statutory retirement age established in the 2011 reform. But the changes in the number of people working beyond the statutory retirement age have been much less notable. For example, of the workers born in 1954 who were paying social security contributions at the age of 60, only 9.2% continued to pay such contributions at the age of 67, a modest increase of 1.2 pp with respect to the proportion calculated considering workers born in 1950.

In addition, again according to the MCVL, for close to 30% of people who took retirement in 2022, the effectiveness of the incentives to continue working would have been limited, as their pre-retirement employment status would have meant there was little scope for extending their working life (i.e. they were unemployed,

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1 The new option to receive a lump sum may be more attractive to workers with a high intertemporal discount; that is to say, those who show a greater preference for receiving income in the present rather than potentially greater income in the future.

2 On the revenue side, past the ordinary retirement age, firms and workers that provide their services outside general government and public authorities are exempt from paying social security contributions for common contingencies, except temporary incapacity stemming from such contingencies. This exemption also encompasses contributions for unemployment insurance, the Wage Guarantee Fund and vocational training.

THE IMPACT OF THE NEW INCENTIVES TO DELAY RETIREMENT ON SOCIAL SECURITY PENSION EXPENDITURE (cont'd)

did not pay social security contributions or were recipients of a disability pension) (see Chart 1.b).[3]

There is also some uncertainty about the extent to which a potential increase in the effective retirement age reduces pension spending relative to GDP. To address this issue, the Banco de España has recently developed a tool to simulate long-term social security spending on contributory pensions, based on the MCVL.[4] Drawing on an estimated labour income process and a retirement decision model,[5] the tool can simulate – up to 2050 – the contribution records of a sample of workers in 2021 and the moment that they will retire, taking into account the legislation currently in force and the legislation that will be applicable over the coming decades.[6]

The preliminary results obtained from this tool show that social security spending on contributory pensions, which

was equivalent to 12% of GDP in 2021, will grow significantly in the coming years. In 2050, the level of relative spending on pensions will be contingent, among other factors, on projected economic growth. Thus, it is expected to range between 14.3% (under a favourable scenario of long-term annual GDP growth of 1.8%) and 16.9% (if such GDP growth were only 1%).

The retirement decision model does not contemplate workers taking into account the increase in their future income as a result of delaying their exit from the labour market, nor was there a lump-sum payment for postponing retirement during the sample period used to estimate such increase. These results should therefore be interpreted under the assumption that the new incentives do not alter the "no-policy-change" course of the projected effective retirement age, which is largely

Chart 1
In recent years, less than 10% of workers have remained in the labour market after the age of 67

1.a Number of workers who remained in the labour market at different ages
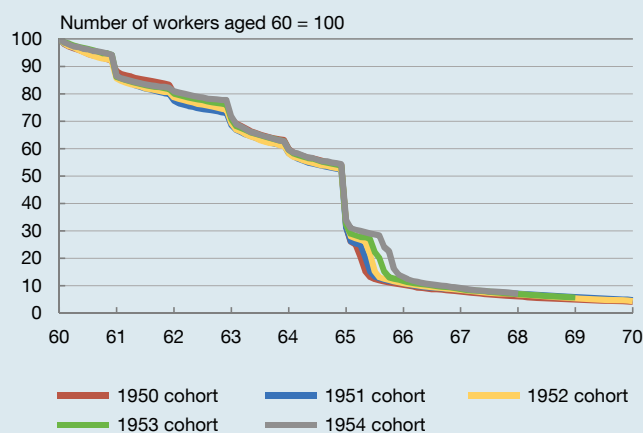
1.b Pre-retirement employment status of people who took retirement in 2022
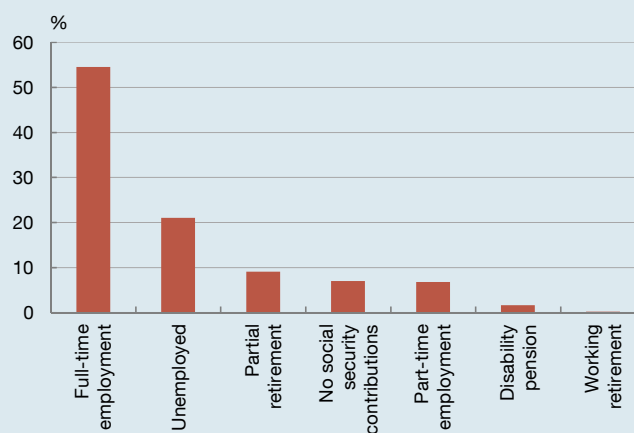
SOURCES: Ministerio de Inclusión, Seguridad Social y Migraciones (MCVL) and Banco de España.

3 The analysis estimates the employment status of workers who retired in 2022 two months previously. A total of eight statuses are defined: full-time employment, part-time employment, unemployment, full retirement, partial retirement, working retirement *(jubilación activa),* disability pension and no social security contributions.

4 Henrique Basso, Angela Denis, Esteban García-Miralles, José María Labeaga and Roberto Ramos. "Simulaciones del gasto en pensiones en el largo plazo". Documentos Ocasionales – Banco de España (forthcoming).

5 Specifically, a multinomial logit model with five classes (full or part-time employment, unemployment, full retirement, partial retirement and no social security contributions) is estimated using monthly data from 2010 to 2017 and for workers aged 58-70. The model's explanatory variables include labour income, the amount of unemployment benefits, the amount of retirement pensions, different pension entitlement indicators and various demographic variables.

6 The tool also relies on various macroeconomic and demographic assumptions and a set of simple rules for other non-retirement pensions (for widow(er)s, disability, orphans and surviving family members), in order to complete the path of social security spending on contributory pensions.

Box 2.2

THE IMPACT OF THE NEW INCENTIVES TO DELAY RETIREMENT ON SOCIAL SECURITY PENSION EXPENDITURE (cont'd)

determined by the increase in the statutory retirement age established in the 2011 reform.[7]

To gauge the potential effect of the incentives approved in 2021 on delaying retirement, a number of additional simulation exercises have been conducted. Specifically, drawing on the retirement age distribution for the projection horizon, it has been assumed that the retirement age rises by between one and three years for a growing proportion of workers. For instance, the scenario envisaging the smallest impact of the new incentives assumes that only 10% of workers at ordinary retirement age would delay retirement, and would only do so by one year. By contrast, the scenario envisaging the greatest impact of these incentives assumes that 100% of such

workers would delay their exit from the labour market by three years.[8] Two alternative options are also considered: one in which, after delaying retirement, workers choose the 4% increase in their benefits, and another in which they opt for the lump-sum payment.[9] It is worth noting that, given the typical inflation rate and life expectancy projections, the present value of the 4% increase is higher than that of the lump-sum payment. Consequently, this latter option entails a greater saving from the standpoint of social security spending.[10]

Chart 2 show the results of these simulations. On average in the period 2022-2050, if 20% of the workers of ordinary retirement age under the baseline projection participate in the labour market for another year, pension spending
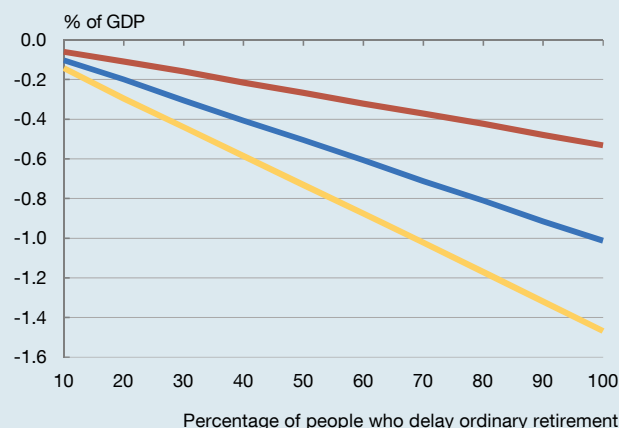
Chart 2
Change in average pension expenditure in 2022-2050 compared with the baseline projection, based on the percentage of people who delay retirement and the type of incentive chosen

2.a Option to receive 4% increase in pension
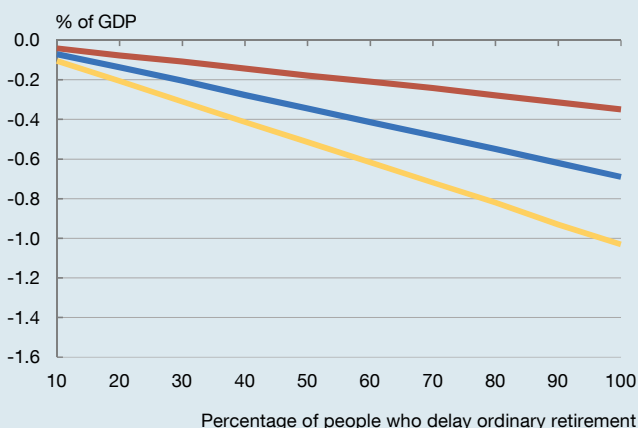
2.b Option to receive lump-sum payment

One-year delay   Two-year delay   Three-year delay

SOURCE: Banco de España.

7 Specifically, from 2027 onwards, the ordinary retirement age will be 65 for workers with at least 38 and a half years of contributions, and 67 in other cases.

8 This exercise assumes long-term GDP growth of 1.3%, leading to pension expenditure of 16% of GDP in 2050. This GDP growth is consistent with the estimate of potential GDP of the Spanish economy in Pilar Cuadrado, Mario Izquierdo, José Manuel Montero, Enrique Moral-Benito and Javier Quintana. (2022). "The potential growth of the Spanish economy after the pandemic". Documentos Ocasionales, 2208, Banco de España. Moreover, it should be mentioned that the number of workers taking ordinary retirement over the projection horizon accounts for around 75% of total new retirement pensions.

9 For simplicity, it is assumed that the formula established for contribution periods shorter than 44 years and six months is applied to all workers who choose the lump sum, yielding an amount that is 10% lower than that for workers whose cumulative contributions exceed that period.

10 For example, taking as reference an annual pension of €14,000, projected price growth of 2% and a life expectancy of 20 years at the time of retirement, the present value of the pension increase flow for delaying retirement (stripping out inflation) would be €13,607, whereas the lump sum would amount to €6,028 if the contribution period were shorter than 44 years and six months, and €6,631 otherwise.

Box 2.2

THE IMPACT OF THE NEW INCENTIVES TO DELAY RETIREMENT ON SOCIAL SECURITY PENSION EXPENDITURE (cont'd)
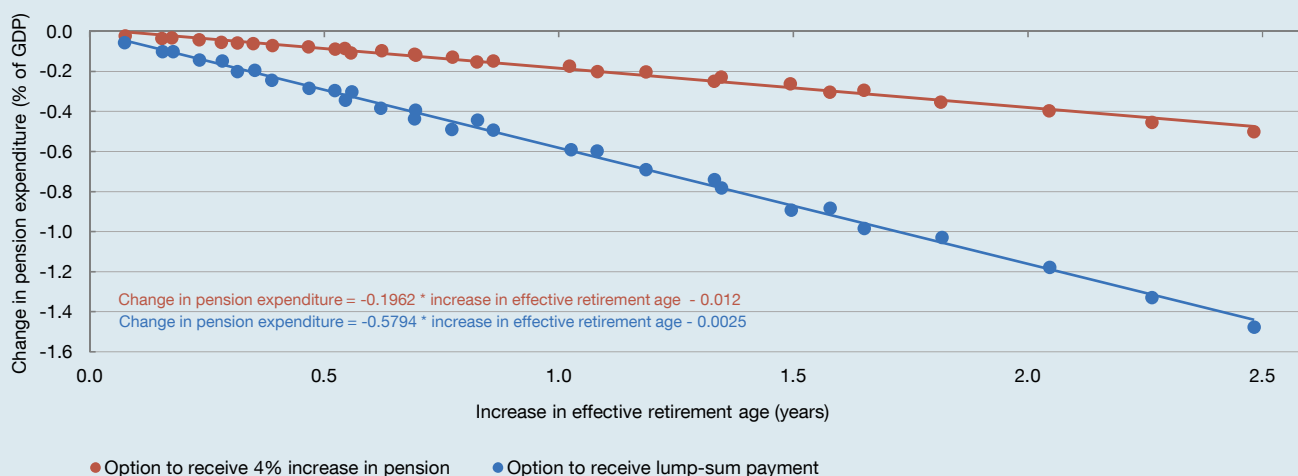
relative to GDP would fall by barely 0.1 percentage points (pp), compared with a decline of between 0.3 pp and 0.5 pp if 100% of them decided to do so.[11] Naturally, lengthier extensions of working life would result in lower pension expenditure. For instance, if half of these workers delayed retirement for three years, the saving in pension expenditure would be 0.5 pp of GDP, assuming these workers opt for a higher pension, or 0.7 pp of GDP if they chose the lump-sum payment. While these exercises should be treated with caution owing to the large number of assumptions involved, they suggest that, even under scenarios where the new incentives have a notable effect on increasing the effective retirement age, the reduction in pension expenditure, at least in an initial approximation, would be relatively limited.

Moreover, the simulations make it possible to establish a relationship between a higher effective retirement age and

a change in relative pension expenditure. Taking 2050 as a reference and estimating a linear relationship, it may be concluded that each year of increase in the effective retirement age would be associated with a decrease in pension spending of between 0.2 pp and 0.6 pp of GDP (see Chart 3).[12] The value of this relationship can be compared with the estimates of other institutions. For example, according to the Independent Authority for Fiscal Responsibility (AIReF), a one-year increase in the effective retirement age would reduce pension spending by 0.8 pp of GDP by 2050, whereas the Ministry of Inclusion, Social Security and Migration estimates a saving of 0.9 pp in that year. For its part, the Foundation for the Study of Applied Economics (Fedea) calculates that the impact of an average one-year delay of retirement on relative spending on pensions would range between a reduction of 0.3 pp and an increase of 0.1 pp.[13] It should

Chart 3
Each year of increase in the effective retirement age would be associated with a decline in pension spending of between 0.2 pp and 0.6 pp of GDP in 2050.
Estimated relationship between an increase in the effective retirement age and the change in pension expenditure in 2050

Change in pension expenditure = -0.1962 * increase in effective retirement age - 0.012
Change in pension expenditure = -0.5794 * increase in effective retirement age - 0.0025

● Option to receive 4% increase in pension   ● Option to receive lump-sum payment

SOURCE: Banco de España.

11 In the tool described, GDP growth is obtained as the sum of the increase in the number of workers and apparent labour productivity growth. Consequently, in the simulations, the new retirement age distributions resulting from the assumed effect of the incentives are reflected in GDP growth through the change in the number of workers as a result of a percentage of them deciding to continue working for another year, without this altering the productivity growth assumption.

12 Taking the period 2022-2050 as reference, an average one-year increase in the effective retirement age in that period would be associated with a decrease in average expenditure of between 0.6 pp and 0.8 pp of GDP.

13 The value of the relationship estimated by the Ministry of Inclusion, Social Security and Migration has been calculated drawing on a simulation conducted by this Ministry, which links an increase of 1.6 years in the retirement age in 2050 to a reduction in pension expenditure of 1.4 pp of GDP in that year. See Ministerio de Inclusión, Seguridad Social y Migraciones. (2023). "Proyecciones del gasto público en pensiones en España". See also AIReF. (2023). "Opinion on the Long-term Sustainability of the General Government: the Impact of Demographics". Opinion 1/23, and Ángel de la Fuente et al. (2023). "Notas sobre las proyecciones de gasto en pensiones del MISSMI". *Estudios sobre la Economía Española* 2023/31, Fedea.

Box 2.2

THE IMPACT OF THE NEW INCENTIVES TO DELAY RETIREMENT ON SOCIAL SECURITY PENSION EXPENDITURE (cont'd)

be stressed that each of these estimates is based on its own specific methodology, models and assumptions, and the comparisons set out must therefore be interpreted with due prudence.

Further analyses will be needed in the future to gauge the new incentive scheme's potential for delaying retirement.

In this respect, labour market developments for the segment of workers approaching retirement age in the years ahead will provide further evidence on the scheme's ability to increase labour-market participation among older workers and thus improve the social security system's financial sustainability.