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Foreword by the Governor Pablo Hernández de Cos



The Banco de España's *Annual Report* takes stock of the developments in the Spanish economy in 2022 and in 2023 to date, setting them against the global and European context. It goes on to describe and evaluate the economic policies implemented to address the energy crisis and assesses the outlook and the main risks for the coming quarters (Chapter 1). Taking a longer perspective, this report spells out the main structural challenges facing the Spanish economy, placing particular stress on those factors that have hampered convergence with the euro area in recent decades and the structural reforms needed to make up for lost time (Chapter 2).

The report also includes two thematic chapters. The first one reviews the monetary policy response of the European Central Bank (ECB) to the current inflationary episode in the euro area and analyses its transmission to financial conditions, economic activity and inflation (Chapter 3). The second thematic chapter focuses on the response of Spain and the European Union (EU) to the energy crisis and the challenges outstanding in the area of energy, including those relating to import dependence and the green transition (Chapter 4), thus complementing the chapter on the climate challenges facing our economy published in last year's *Annual Report*.

Accordingly, the Annual Report supplements the analysis of the Spanish financial sector carried out by the Banco de España, presented every six months in the Financial Stability Report, the latest edition of which was published in April.

Recent macroeconomic developments

Economic developments in 2022 and in 2023 have been marked by two contrary trends. At the beginning of last year, the lifting of the pandemic-related restrictions triggered a strong recovery in activity. Subsequently, the Russian invasion of Ukraine drove up commodity price increases, which started in 2021, leading to an intensification of inflationary pressures and, in response thereto, monetary policy tightening. As a result, real GDP slowed notably in the second half of the year.

That said, economic activity has been more resilient than initially expected, and in 2023 to date, signs of renewed momentum seem to be discernible. Real GDP growth stood at 5.5% in

2022 as a whole in Spain (3.5% in the euro area), while in 2023 Q1, the Spanish economy grew by 0.5% quarter-on-quarter (0.1% in the euro area). Taking as point of reference the moment before the start of the pandemic, the level of real GDP is still 0.2% lower (2.5% higher in the euro area).

Factors contributing to the economy's resilience appear to have included the reversal of previous supply shocks, in the form of a fall in energy prices on international markets from the summer onwards (the most adverse scenarios for the energy crisis having been dispelled), and the gradual clearing of the bottlenecks in international trade that emerged in 2021, which has led to a gradual slowing of inflation from the autumn. Also, households have extensive cushions of savings built up during the pandemic, the pick-up in demand following COVID-19 has continued to generate positive effects and the transmission of the restrictive turn in monetary policy has still not been completed. All this, against a background in which activity has been supported by the fiscal stimulus provided by the measures deployed by the authorities to mitigate the fallout from the inflationary crisis.

Particularly striking in this period has been the growth in employment, facilitated by wage moderation: the cumulative increase in the number of persons employed since the beginning of the pandemic has been greater than that in activity and hours worked. As regards its composition, growth has been driven by the pick-up in services, particularly in 2022 H1. Conversely, higher energy input prices have weighed on energy-intensive manufacturing sectors. Also, the momentum of exports, which have made a large contribution to GDP growth, has been notable. The recovery in international tourism has been especially striking, although exports of non-tourism services are also proving to be highly expansionary. As a result, despite the sharp rise in energy prices, the contraction in the current account surplus was relatively small in 2022.

As in the rest of the euro area, the strength and persistence of the rise in inflation in Spain, which began in 2021 and intensified in 2022, has been surprising. Inflation was initially driven by the energy component. But it was then passed through to food prices and underlying inflation (i.e. non-energy goods and services) over the course of 2022. Having peaked last summer, inflation began to fall and continues to do so. This decline has essentially been a result of the sharp slowdown in energy prices, and a slight reduction in underlying inflation has been observed only very recently.

The outlook for the coming years

According to the Banco de España's latest projections,¹ the Spanish economy is expected to become more buoyant over the coming quarters. In 2023 as a whole, GDP growth is expected to be significantly slower than in 2022, but the gradual acceleration of activity is expected to allow annual average GDP growth to exceed 2% in 2024 and 2025. Indeed, the latest information shows higher than expected activity growth in the first quarter of 2023. Along with the recent revision to the historic time series, this suggests that real GDP growth this year may exceed the rate of 1.6% predicted in our latest projections. The faster pace of output growth will be helped, among other factors, by the expected easing of inflationary pressures (leading to a recovery of agents' confidence and real income), an end to the disruptions to global production chains and the deployment of the Next Generation EU (NGEU) funds.

However, these projections are subject to very high uncertainty and there are risks that less positive scenarios will materialise. In particular, the possible duration of the war continues to be the main source of risk for Europe. The future course of the world economy is also a cause for concern, in a context of monetary policy tightening worldwide and significant geopolitical risks, compounded by the doubt regarding the impact and persistence of recent financial tensions. On the domestic front, uncertainty remains over how the savings built up by households during the pandemic might contribute to private consumption and the pace at which the NGEU projects will be rolled out.

Likewise, the growth outlook will crucially depend on the projected disinflation actually taking place. Greater persistence of high inflation would slow the recovery and, should it be seen in the euro area as a whole, would lead to a high probability of further tightening of monetary policy and, thus, of financial conditions.

The medium-term challenges and the role of economic policies

A succession of negative shocks in recent years has required decisive action from the various economic policies to mitigate their impact on the economy. Appropriate application of these policies will continue to be crucial over the coming quarters.

¹ [Macroeconomic projections for the Spanish economy \(2023-2025\)](#).

From a long-term perspective, it is essential for economic policy action in Spain to focus on addressing the economy's outstanding structural challenges, as borne out by the failure to converge towards euro area per capita income levels in recent decades. Behind this persistent negative gap lie two well-known shortcomings in the Spanish economy: low productivity and a low rate of employment, which have moreover historically been negatively correlated. With this in mind, the big challenge consists in undertaking decisive reforms conducive to convergence with the euro area.

This convergence needs to occur without increasing macro-financial imbalances, to ensure it is sustainable over time. In this respect, since the outbreak of the global financial crisis, the Spanish economy has displayed a pattern of growth that has partly corrected the imbalances built up over the previous upswing.

In particular, there has been intense deleveraging by Spanish households and firms; an increase in the solvency and liquidity of the balance sheets of credit institutions, following the thorough process of balance-sheet clean-up and restructuring and the strengthening of the regulatory framework as a result of the global financial crisis; an improvement in competitiveness (which has enabled a positive current-account balance to be maintained since 2012, even after the outbreak of the pandemic and the energy crisis; and a reduction in the share of construction investment in activity to levels similar to those seen in the euro area as a whole.

However, certain structural vulnerabilities remain, which shape the outlook for economic growth and its sustainability going forward. Notable among them is that arising from the high level of public debt (up by more than 80 percentage points of GDP since the start of the financial crisis), which is also accompanied by a considerable structural budget deficit. This situation amounts to a significant source of vulnerability for the Spanish economy, especially in a context of monetary policy tightening, while it also reduces the fiscal space available to address possible future negative shocks.

In addition, the Banco de España, along with other institutions and analysts, has in recent years highlighted the vulnerabilities stemming from the increase in certain aspects of inequality in Spain, in particular in the area of opportunities. Reversing these trends and mitigating their adverse effects sustainably over time requires public action in diverse spheres, which needs to be stringently evaluated in terms of both equity and efficiency.

In this context, the appropriate use of NGEU funds and the rigorous and ambitious design, implementation and evaluation of the reforms included in the Spanish Recovery, Transformation and Resilience Plan (RTRP) represent an historic opportunity that must not be wasted.

i) Monetary policy: ensuring price stability

In response to the growing inflationary pressures and higher inflation outlook, in late 2021 the ECB began a process of monetary policy tightening to meet its objective of maintaining euro area inflation at 2% over the medium term. This tightening has been the sharpest and fastest in euro area history. There are short-term costs to this process in terms of weaker economic activity, but maintaining price stability is the main contribution that a central bank can make to ensure sound economic growth in the long term.

Looking ahead, euro area inflation is expected to remain at high levels over the rest of 2023, albeit on a declining path that would bring inflation close to our 2% target in the medium term. This decrease would be driven by a combination of factors, including the fading of the effects associated with the economic reopening, previous supply shocks (supply bottlenecks and soaring energy prices) and the depreciation of the euro. It is likely to be furthered by the growing pass-through of the recent drop in energy prices, the exchange rate appreciation and the easing of domestic demand as a result of, among other factors, our monetary policy decisions.

However, this outlook is subject to much uncertainty, in particular regarding the potential duration of the war in Ukraine. Likewise, the financial market tensions, should they persist, could lead to a sharper than expected tightening of credit conditions, thus posing a downside risk to growth prospects and inflation. Conversely, continuation of the recent reversal of past supply shocks could foster confidence and support stronger growth than currently expected. The continued resilience of the labour market might also translate into stronger than expected growth by bolstering confidence and household spending.

In addition, certain factors could delay the return of inflation to the 2% target in the medium term, most notably the possibility that energy price declines will pass through to other goods and services more slowly and to a lesser extent than past increases, the possible emergence of second-round effects via wages or profit margins and the uncertainty over the possible reversal of the fiscal policy measures introduced to mitigate the effects of inflation.

Against this background, we at the ECB Governing Council have emphasised that monetary policy decisions will continue to be based on our assessment of the inflation outlook in light of the incoming economic and financial data, the dynamics of underlying inflation, and the smooth functioning of the monetary policy transmission mechanism. In any event, these decisions must ensure that interest rates will be brought to levels sufficiently restrictive to achieve a return of inflation to our 2% medium-term target and will be kept at those levels for as long as necessary.

Likewise, we have underlined our readiness to respond as and when necessary to maintain financial stability in the euro area, given that, as we underlined in the monetary policy strategy review, this is a prerequisite for ensuring price stability. We have the right toolkit both to provide the required liquidity to the financial sector and to act against possible risks of debt market fragmentation. With regards to the latter, the ECB applies flexibility in reinvestments under the PEPP portfolio as a first line of defence. Were this to prove insufficient, the new Transmission Protection Instrument (TPI) introduced in July 2022 could be activated if necessary to ensure the smooth and effective transmission of monetary policy across the euro area.

ii) Budgetary policy: targeted support for the most vulnerable, compatible with a fiscal consolidation process getting under way this year

Crucially, in the current high inflation environment, the fiscal policy stance must not be incompatible with the tightening of our monetary policy. Hence the recommendation that the public support measures to mitigate the impact of higher inflation on households and firms should be temporary, be closely targeted at the most vulnerable groups – thus avoiding an across-the-board fiscal impulse – and preserve the incentives to consume less energy. Further, these measures should be withdrawn gradually, in step with the decrease in international prices already under way. Otherwise, we run the risk of a sustained fiscal expansion amplifying the inflationary pressures in the medium term, and thus necessitating a more robust monetary policy response.

The broad range of measures deployed in 2022 and 2023 by euro area countries, including Spain, helped to underpin activity and contain inflation in 2022 and are expected to continue to do so in 2023. However, their withdrawal will push up consumer prices over the coming years, particularly in 2024. The bulk of the measures have indeed been designed to be

temporary. However, they have not been sufficiently geared towards the agents most vulnerable to the inflationary shock, and therefore the effects on these agents might have been mitigated at a lower fiscal cost.

In the case of Spain, the general government deficit and public debt remain very high. As a result, a fiscal consolidation plan should be introduced, starting in 2023, to gradually reduce this vulnerability and to recover fiscal space to be able to address potential adverse shocks in the future. This is especially necessary given that inflation helped to reduce the fiscal imbalance in 2022, but its long-term impact on public finances will be less favourable or even negative – since its upward impact on public spending comes at some lag –, and there are some doubts over the extent to which the strong tax revenue growth of recent years will prove temporary.

Further, in the short term, the roll-out of NGEU funds and the structural reforms under the RTRP could more than offset the economic slowdown that might be triggered by the start of the fiscal consolidation process, presenting us with an opportunity that should not be missed.

This process must be grounded on prudent macroeconomic projections, involve all tiers of general government and translate into a medium-term plan detailing the government revenue and expenditure measures to ensure a gradual reduction in the imbalances. This would shore up the sustainability of public finances and bolster the credibility of, and confidence in, economic policies. According to Spain's Stability Programme Update for 2023-2026, the structural deficit will decline by a cumulative 1.2 pp of GDP by 2026 and the primary structural balance by 1.6 pp.

The fiscal consolidation should also be compatible with an improvement in the quality of public finances, boosting their contribution to the economy's potential growth. On the expenditure side, it is essential to bolster efficiency – in line with the recommendations issued by the Independent Authority for Fiscal Responsibility – and to optimise the distribution between items, preserving those that are essential to foster economic growth and equal opportunities, such as spending on education or health care. On the revenue side, a comprehensive review of the tax system is required, in line with some of the guidelines laid down in the White Paper on Tax Reform. In particular, it appears necessary to shift the burden of taxation to consumption, to review the significant cost associated with the tax relief measures, to strengthen and raise green taxes and to deepen the international coordination and harmonisation of the tax system to contend with the growing levels of digitalisation and

globalisation. These actions could be accompanied by compensatory measures to mitigate their potential effects on the most vulnerable groups.

A further consideration to bear in mind when analysing medium and long-term public debt dynamics is the impact of population ageing on public pension spending, not forgetting that this phenomenon will also exert upward pressure on other expenditure items, such as health care and care for the elderly.

In recent years the pension system has undergone a number of reforms, reversing key elements of the 2013 reform and introducing new changes, mainly aimed at shoring up social security revenues and raising the effective retirement age.

Estimating the impact that the various measures approved may have on the system's revenue and expenditure over the coming decades is subject to much uncertainty. In any event, the wide range of estimates available – by the Banco de España and other institutions – suggest that, as a result of the various legislative changes approved since 2021, the Spanish pension system will, in the long term, have to assume greater expenditure obligations that will not be fully offset by the revenues raised. A further uncertainty is the potential adverse impact of higher social security contributions on employment, wages and competitiveness. According to these estimates, in the framework of the new automatic adjustment mechanism, further measures will have to be adopted to shore up the system's financial sustainability. In any event, a transparent, ongoing and thorough assessment of the effects of these reforms is needed, including their impact on intergenerational equity.

iii) [An incomes agreement to prevent inflation from becoming entrenched](#)

It is important to remember that much of the high inflation observed in the last two years stems from the surge in commodity prices, which has led to a very significant increase in the price of imported goods relative to exported goods. In other words, there has been what we economists call a deterioration in the terms of trade, which is nothing less than a loss of wealth and well-being, and, moreover, one that is inevitable in the short term.

Since the loss is inevitable, we should seek to distribute it fairly between workers and firms, in order to prevent the inflationary spiral that will occur if both try to unilaterally avoid the loss

and maintain, respectively, the same level of real wages and profit margins. Such a process would exacerbate the negative impact of higher imports on the economy's competitiveness, resulting in employment and output losses.

So far, in 2022 there has been a significant decline in real wages in Spain. At the same time, profit margins have been growing since the beginning of 2021, after falling significantly in 2020, albeit very unevenly across sectors and firms.

Therefore, the feared feedback loop between wages, profit margins and prices has not materialised for the time being. But this does not mean it will not do so in the future. To avoid it, as I have been advocating since autumn 2021, it would be desirable to reach an incomes agreement for an equitable distribution between firms and workers of the loss of real income caused by the rise in imported commodity prices. In this regard, it is very important that the existing preagreement between employers' associations and trade unions, the full details of which are not known at the cut-off date for this report, be translated as soon as possible into guidelines for collective bargaining to avoid the risk of an inflationary spiral.² An agreement of this kind would provide a commitment to macroeconomic stability and an environment of confidence, which is fundamental in the current inflationary context with high uncertainty.

iv) An ambitious structural reform agenda that allows for sustainable convergence with Europe

As I stressed above, the great challenge for economic policy in Spain should be to foster convergence with the euro area in terms of income. To achieve this, the focus should be on implementing the necessary reforms to increase productivity and the employment rate. This, together with other specific measures, would also allow our vulnerabilities to be reduced.

In order to improve productivity, actions must be taken on multiple fronts, such as removing constraints on business growth or reallocating resources across sectors and firms. Beyond recent initiatives, such as the Law on business start-ups and growth and the Law on developing the ecosystem of emerging businesses, whose effectiveness will need to be assessed over time, achieving these goals requires, among other measures, a review of the regulatory

² For a detailed description of the main features of an incomes agreement that would guarantee this objective, see my presentation of the Annual Report 2021 to Parliament of 1 June 2022.

thresholds that discourage business growth, reducing the delay on general government payments (which acts as a brake on financing for small firms), ensuring market unity, bolstering competition and continuing to broaden sources of funding available to firms.

It is also necessary to boost innovation by properly designing public mechanisms to channel funding towards projects that generate positive externalities by fostering synergies between different public and private initiatives, and revising R&D tax incentives. And this without forgetting the need to reinforce confidence in public institutions and promote their modernisation, by encouraging an efficient use of public resources and a culture where public policies are evaluated to ensure their effectiveness is continuously improved.

Raising the employment rate is particularly important against a backdrop of an ageing population and a secular downward trend in hours worked. To this end, the Spanish labour market's institutional framework needs to be adjusted and the human capital improved.

The Spanish labour market has traditionally had a high prevalence of temporary contracts, a wage level that bears little relationship with each firms' productivity and ineffective passive and active employment policies. Since the pandemic, regulatory changes such as the 2021 labour market reform have been introduced which have reduced the temporary employment ratio. However, a full assessment of these changes will need to consider many different aspects and a broader time frame. Likewise, the Employment Law and the changes in unemployment benefits seek to ensure compatibility between protecting the most vulnerable and providing appropriate incentives for labour supply.

In any event, looking ahead, if public employment services' currently very limited role in job mediation is to become more relevant and if their training and labour market insertion work is to be more effective, better professional profiling of the unemployed, rigorous oversight of training and labour market insertion programmes and resource allocation based on the findings of assessments are required. Squaring protection for the more vulnerable groups with appropriate incentives on the labour supply-side calls for greater coordination between the active and passive policies. The capacity of migration policies to effectively smooth any mismatches arising in the Spanish labour market also needs to be continuously monitored.

In terms of human capital, despite the significant improvement in recent decades, the educational level of the Spanish population is below the EU average. This reduces

the economy's potential growth and undermines equality of opportunities, since there is evidence that educational attainment differences are very persistent between generations. Against this backdrop, the level and efficiency of public spending in Spain needs to be analysed in depth and the education and vocational training system needs to be adapted to the new technological and demographic environment. Recent reforms in this area (laws governing education, vocational training and university system) should also be assessed in order to attain these objectives.

Studying the differential impact of public policies on different population groups is also crucial. The Banco de España has increasingly focused its analysis on inequality, both in general terms and in relation to specific aspects, such as, for example, the heterogeneous impact of inflation on households, the increase in their financial vulnerability to interest rate increases, the financial exclusion of certain population groups, the asymmetric exposure to the green transition, the depopulation of certain territories and the persistent differences in per capita income between regions.

Mitigating the adverse effects of the different social vulnerabilities identified requires public measures in a wide range of areas, such as regulation (of the labour and housing markets, among others), taxation, public services (e.g. education and health care) and income policies and transfers. In fact, raising productivity and the employment rate are key elements of any strategy aiming for a sustainable reduction of inequality. And these actions must be rigorously evaluated in terms of both equity and efficiency.

Housing affordability, which has tightened in recent years for both home ownership and rentals, is one domain in which particular vulnerability is observed. For instance, there has been a sharp fall in the owner-occupancy rate, especially among young adults. Accordingly, the increase in rental demand has been concentrated in this group, in lower-income households and in certain geographical areas. This situation, closely related to that of the labour market, has contributed to increasing wealth inequality in Spain. Furthermore, the steeper growth in rents than in labour income has increased the proportion of the population at risk of social exclusion and of households whose ability to spend on other goods and services is constrained.

The insufficient growth of supply to absorb the strong increase in demand appears to lie behind the considerable momentum of rental prices. In response to this, the future Law on the right to housing emphasises the need to increase the supply of rental housing and establishes various price control measures. The latter include measures to limit rental updating and the

possibility of capping rental prices in areas under housing pressure. In this respect, economic studies show that price controls can have adverse effects on rental supply, in terms of both quantity and quality, and that, ultimately, far from making rental housing cheaper, they end up leading to higher price levels. Against this backdrop, it will be essential to rigorously assess the ability of this regulation to effectively achieve its objectives. In particular, we must be watchful for any signs of the above-mentioned adverse effects emerging, so that the regulation can be adapted to stave them off.

v) A reinforced regulatory framework underpinning a healthy banking sector

The financial stress of recent months triggered by the crises at different medium-sized US banks and Credit Suisse has heightened concern worldwide over the risks related to the banking sector's funding costs and liquidity. This episode highlights once again the importance of financial institutions having the necessary funds to absorb unexpected shocks.

In the current setting, euro area and, particularly, Spanish banks are overall highly resilient and have sound capital and liquidity positions. This is the result of the regulatory reform agreed internationally over the last decade, which in the EU has been applied to all banks, irrespective of their size. In the same vein, the pre-emptive role of banking supervision should also be stressed. Even before the recent banking events, certain supervisory priorities had been set within the Single Supervisory Mechanism specifically to mitigate and anticipate the adverse effects of the current macroeconomic context. The supervisors homed in on banks' interest rate risk, the sustainability of their funding plans and analysis of the risks stemming from exposures to the non-bank financial sector.

Moreover, the strong retail focus of Spanish banks' business model, which bolsters their resilience to adverse shocks to wholesale market financing conditions, and their favourable financial performance of late are both notable. Indeed, the Spanish banking sector's return on equity rose considerably in 2022, standing well above the average cost of cost of capital. Spanish banks' balance sheets are also in better shape: the NPL ratio has fallen again and their solvency and liquidity ratios far exceeded the minimum regulatory requirements.

Apart from the foregoing considerations, in a situation in which interest rates have had to be raised swiftly, banks face upside and downside risks to their net interest income, the value of

their financial instrument holdings and their balance sheet credit quality. Banks whose average lending rates have adapted to the new situation faster than their average deposit rates (e.g. those with a greater share of variable-rate loans and/or shorter maturities, and a greater share of retail funding) are seeing a substantial improvement in their net interest income, which has boosted their profitability. Conversely, the value of fixed-income financial exposures (e.g. bonds, especially those with longer maturities) has declined. Additional upward adjustments to banks' funding costs and a deterioration in credit risk quality will also be more likely the longer the high-interest rate period continues. How different banks and financial systems position themselves against these risks, which has become an investor focal point, will determine how resilient they are.

In this regard, amid such high uncertainty, including that surrounding the degree of monetary policy tightening, Spanish banks must implement a prudent provisioning and capital policy. A policy that earmarks part of the higher earnings they are currently generating to further bolster the sector's resilience would thus put it in a better position to absorb any potential losses should the worst risk scenarios materialise.

In addition, a smoother-functioning euro area with improved governance would contribute hugely to making the European financial system less vulnerable. Specifically, the banking union needs to be completed through the creation of a fully mutualised European deposit insurance scheme. Any agreement on the creation of such a scheme would boost the confidence of citizens and the markets and contribute to increased risk-sharing in the euro area and, thus, to reducing potential episodes of fragmentation. It would also help to align financial responsibility with the banking supervision and resolution decision-making mechanisms, which are already centralised.

Recent events must also be analysed in depth from a global regulatory and supervisory perspective. The Federal Reserve System has already published its review of the reasons behind events in the United States. We will also be able to draw some lessons from our analysis of recent developments that has just got under way at the Financial Stability Committee and the Basel Committee on Banking Supervision. These exercises will allow us to fine-tune the regulations so that they can be continuously adapted in response to changing circumstances. We must also not forget that the final link of the regulatory reform (Basel III) is yet to be transposed into EU law, which must be done completely and consistently so as to remedy the pending shortcomings, in particular in the definition of banks' risk-weighted assets.

Lastly, it must be borne in mind that the short and medium-term challenges posed by the recent period of extraordinary crises do not make tackling the banking sector's structural challenges, such as those linked to the management of climate-related risks, digitalisation and growing competition from technology firms, any less urgent.

vi) More Europe to deal with common challenges

The war in Ukraine has thrown into relief the extraordinary vulnerabilities posed by the particular energy framework of Spain and the rest of the EU. The existing energy mix (in which fossil fuels account for almost three-quarters of the energy consumed), the considerable import dependencies (as we import virtually all of these fuels) and the insufficient energy interconnection infrastructure within the EU (which is particularly incomplete in the electricity and natural gas segments) have all been conducive to the European economies being hit particularly hard by an adverse shock such as that triggered by the war in Ukraine.

Exposure to these vulnerabilities varies considerably across EU Member States. Yet none of them are immune to these unfavourable effects. The considerable size of the challenge and the fact that it is a common shock underscore the importance of a joint response, like in the case of the pandemic. In short, the response to the war in Ukraine must, once again, be more Europe. Indeed, the response to the crisis has included numerous pan-European components that have supplemented the national authorities' measures. This joint response and the notable adaptability that the EU economies have shown has staved off potentially highly disruptive scenarios.

However, correcting the existing structural deficiencies will require the large-scale roll-out of renewable energy sources, further energy efficiency improvements and greater interconnection infrastructure development over the coming decades. Some of the foundations that should underpin this transformation have already been laid, such as the different European Green Deal initiatives and the NGEU and REPowerEU programmes. Despite the challenges that it poses, the renewables drive could also represent a great opportunity for Spain, as it has the second highest onshore wind power generation potential and the highest solar power generation potential in the EU. Spain also has firms that are global leaders in these sectors.

Nevertheless, achieving the highly ambitious energy and climate goals remains a huge challenge, particularly in terms of financing and technological development. This process will

also trigger a substantial increase in demand for some commodities (such as rare earths) that are scarce in the EU, which could give rise to new import dependencies on third countries.

Consequently, it is key that European policies continue to provide a joint response to these challenges, which must be agile, provide certainty and ensure that the green transition does not lead to a structural loss of competitiveness for the European productive system. Specifically, with regard to financing, the volume of funds required to undertake the investments associated with the energy and green transition far exceeds the amounts envisaged in the current European programmes and the possibilities of many of the Member States. Therefore, more determined headway will need to be made in public-private cooperation and in the common public funding of these public goods for the EU; for example, by establishing a permanent European fiscal capacity.

In addition, the challenges facing the euro area call for far-reaching reforms to its institutional framework that enhance its functioning. Spain's presidency of the EU in the second half of 2023 is a good opportunity to push these reforms forward.

First, the review of the Stability and Growth Pact must be sped up. A fiscal rule framework that strengthens the sustainability of public finances is needed to ensure macroeconomic stability and the smooth functioning of the euro area. In this respect, Europe's current institutional infrastructure has many shortcomings in this area, and the repeated attempts to address them have resulted in a complex and procyclical set of rules that has failed to prevent the build-up of fiscal and macroeconomic imbalances and does not provide many incentives for compliance.

The European Commission has recently proposed an overhaul of the fiscal rules, the central feature of which are the multi-year budgetary plans to be agreed on with the Member States, which seek primarily to ensure that public debt-to-GDP ratios are put on a downward path or stay at prudent levels. These fiscal commitments would be implemented via an expenditure rule. Meanwhile, the fiscal adjustment paths could be extended where structural reforms and investments that positively impact potential growth and improve debt sustainability are undertaken.

This proposal has several positive aspects worth noting: the debate now centres on debt sustainability; an expenditure rule is put forward as a key adjustment mechanism (given that expenditure is the main variable under the control of the fiscal authorities); the way reforms

and investment and the pace of fiscal adjustment interact is factored in; and allowance is made for greater cross-country heterogeneity. However, a clear system of incentives should also be set in place to remedy the procyclical behaviour of public finances and encourage faster fiscal consolidation during boom times. Moreover, this proposal may not be the most effective way to simplify the current fiscal rules, since analysing debt sustainability is notably difficult in practice.

In any event, the fiscal rules notwithstanding, there is considerable scope for continuing to strengthen Europe's institutional framework and economic governance. In particular, it would be a good idea to create a permanent central fiscal capacity, perhaps constituted around a European unemployment insurance system, as well as a common financing instrument that gives continuity to the NGEU programme. This is essential in order to reduce the risk that some of the investment that is key to digitalisation, the fight against climate change and the EU's Open Strategic Autonomy could fall by the wayside. All of this without forgetting the considerable progress still needed to complete the banking union and the capital markets union.

* * * * *

In short, ambitious, lasting economic policies will be needed if the challenges facing the Spanish economy in the years ahead are to be addressed decisively. Spain is due for a number of (local, regional and general) elections in the coming months, opening the way for a far-reaching debate on these challenges. A minimum consensus should ultimately emerge on the policies best suited to tackling them, thus ensuring that such policies are durable (a key factor if they are to be successful). Our ability to ensure lasting improvements to the well-being of the general public and real convergence with our European partners will largely depend on this.

Lastly, it should be stressed that, to design and properly implement a host of sweeping structural reforms, it is particularly important that assessment of public policies become the norm and that the related findings be factored into decision-making by the public authorities.³ Moreover, an assessment culture requires the right data. Without quality, timely and sufficiently granular data, a proper assessment is impossible. In their day-to-day activities government units amass a vast amount of information, which, once processed and matched, can rapidly

³ December 2022 saw the enactment of Law 27/2022 of 20 December 2022 institutionalising the evaluation of central government public policies.

enhance diagnostic and assessment capacities, particularly if made available to the research community. All government units should set to work on this without delay.⁴

In a democratic society, these assessments have a dual (political and technical) role to play. In the political sphere, evaluating the design and effects of public policies should foster transparency regarding policymakers' actions and their outcomes. This facilitates accountability and democratic oversight by Parliament and citizens. It also fulfils a technical function, strengthening the decision-making process by providing it with valuable information to enhance its effectiveness and efficiency. Therefore, when "evidence-based policies" are promoted, this is both a technical argument in favour of effectiveness and a political statement in favour of citizens' and their representatives' democratic oversight of political power.

The Banco de España's *Annual Report* seeks precisely to contribute to a thorough diagnosis of the challenges facing the economy and to help assess the different economic policy tools available to address such challenges.

Pablo Hernández de Cos

Governor of the Banco de España

Foreword to the *Annual Report 2022*.

10 May 2023.

4 The data laboratory recently launched by the Banco de España (BELab) is a good example of this service to society, since it makes the microdata from many of our main databases available to researchers. The same can be said of the recent agreement between the National Statistics Institute, the Tax Agency, the Social Security System and the Banco de España for the joint design of a collaborative data system to which researchers will have access, provided that the information is to be used for scientific purposes in the public interest.

Annual Report: Digest

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<p>Inflation and uncertainty have weakened global economic activity</p>	<ul style="list-style-type: none"> • Global economic developments have been marked by persistent inflationary pressures and monetary policy tightening. • Inflation has begun to ease thanks to the drop in energy commodity prices since summer 2022. Yet inflationary pressures remain high, after having spread to the entire consumption basket. • Global economic activity slowed considerably over the course of 2022. • Most recently, the global economy has shown some signs of greater dynamism. • Euro area activity has been relatively resilient in an adverse environment, as the slowdown in 2022 H2 was less pronounced than had been expected at the end of the summer. 	Cover
<p>Spain: from the reopening momentum to resilience in the face of the energy crisis</p>	<ul style="list-style-type: none"> • Spanish GDP grew by 5.5% in 2022, as a result of two very different phases: a vigorous recovery in H1 and a slowdown in H2. • In 2022 H2 and early 2023 the Spanish economy performed better than expected. • As a result, Spanish economic activity is 0.2% below its pre-pandemic level, while euro area GDP stands 2.5 pp above it. • Sectorally, the pick-up in services drove growth, particularly in 2022 H1. Conversely, higher energy input prices have weighed on activity in energy-intensive manufacturing sectors. • The relatively positive performance of the external sector, the strength of employment (underpinned by wage moderation) and the fiscal momentum have all supported activity. • According to the economic projections for 2023-2025, the post-pandemic gap between Spanish and euro area GDP will gradually close, although uncertainty is high and persistent and there is a risk that less positive scenarios might materialise. 	Contents
<p>Slowing energy prices in Spain have helped significantly lower headline inflation in recent months, but underlying inflation remains high</p>	<ul style="list-style-type: none"> • Inflation has risen sharply and persistently. Yet, after peaking in summer 2022, consumer price inflation has slowed. • In July 2022 the year-on-year growth of consumer prices, measured by the harmonised index of consumer prices (HICP), amounted to 10.7%. It declined sharply thereafter, to 3.8% in April 2023 (according to the flash estimate). • The rise in inflation has been mitigated by the measures deployed by the authorities since mid-2021. • Inflation was initially driven primarily by the energy component, which started to rise in spring 2021 and was exacerbated by the consequences of the war in Ukraine. • Both the initial rise in energy inflation and its subsequent decline have been considerably sharper in Spain than in the euro area. • The rise in inflation has been passed through to food consumer prices and non-energy industrial goods and services prices (i.e. the underlying component of the HICP). • The slowdown in energy prices since summer 2022 is behind the decline in headline inflation since then. • Unlike energy inflation, underlying and food inflation remain very high. In light of the signs of price growth moderation in the initial stages of production processes, the incipient deceleration should bear out in the near future. • From a cost perspective, unit profits have of late contributed more to value added deflator growth than unit labour costs. • Despite the steep rise in consumer prices, wage settlements are proving moderate, which has resulted in a significant fall in real wages. • Profit margin containment and labour cost moderation will be key to avoiding significant second-round effects on inflation. • Non-energy inflation is expected to gradually decelerate over the period 2023-2025. 	Foreword by the Governor Annual Report Digest Chapter 1 Chapter 2 Chapter 3 Chapter 4 Index of photographs

Inflation and tighter financing conditions weakened consumption and investment in 2022 H2	<ul style="list-style-type: none"> • The rise in inflation – and the attendant erosion of household purchasing power – and tighter financing conditions have adversely affected private investment and consumption. • The higher cost of new debt has started to impact loan demand and the debt service burden has increased for agents with floating-rate debt. • Almost half of the extraordinary savings built up by households during the pandemic are held in bank deposits, but these funds are unlikely to give a significant impetus to consumption. • Residential investment has also proven considerably weak recently. This is due to the gradual loss of household purchasing power, the fact that bank lending has progressively become more expensive and difficult to access and the high uncertainty. • Private productive investment has also lost considerable momentum since spring 2022 amid growing production costs, high uncertainty and tightening financing conditions. • Government spending under the Next Generation EU (NGEU) programme increased modestly in 2022 and, therefore, its impact on the spending of final agents remains limited. 	<div>Cover</div> <div>Contents</div> <div>Foreword by the Governor</div> <div>Annual Report Digest</div> <div>Chapter 1</div> <div>Chapter 2</div> <div>Chapter 3</div> <div>Chapter 4</div> <div>Index of photographs</div> <div>Acronyms and abbreviations</div>
The external sector was key to sustaining output growth	<ul style="list-style-type: none"> • The Spanish economy's external sector has performed fairly well recently. • Net exports made a sizeable contribution (2.4 pp) to GDP growth. • As far as real trade flows are concerned, services exports were notably buoyant, particularly in terms of international tourism. • Conversely, trade in goods has seen much more muted growth recently, above all in terms of exports. • Despite rising energy costs, the Spanish economy has proven more competitive in recent times. • Even though energy prices have risen sharply, the contraction in the current account surplus was relatively small in 2022. • Compared with the pre-pandemic period, the deterioration in Spain's goods and services balance has been much more modest than in other major euro area countries. 	
Domestic and supranational European economic policy responses in recent quarters	<ul style="list-style-type: none"> • The European authorities have responded resolutely to the Russian invasion of Ukraine and the challenges it has posed by implementing a wide range of measures in multiple areas. • In the energy domain, the launch of the European Commission's REPowerEU programme stands out. This plan combines a series of initiatives aimed at diversifying the EU's fossil fuel supply sources, stepping up energy saving and speeding up the deployment of renewables. • In late 2021 the ECB embarked on a process of tightening in response to the high and persistent inflationary pressures. • The national authorities of the EU Member States have also adopted manifold initiatives in response to the surge in prices. • It is estimated that the measures adopted in Spain since mid-2021 to mitigate the consequences of high inflation for economic agents will have a budgetary impact of around €37 billion between 2021 and 2025. • An initial taxonomy of the measures breaks them down into those aimed at easing the increases in the price of some of the goods whose price has risen the most and those that seek to prop up the income of certain groups of agents. • Overall, the measures rolled out in Spain (and in the euro area) do not sufficiently target the hardest hit agents. Measures better designed to target the most vulnerable agents would have been more effective, at a lower fiscal cost, in mitigating the impact of the inflationary crisis on such agents. • Overall, the measures rolled out have helped reduce inflation and boost activity. 	

<p>The lack of convergence with per capita income in the euro area</p>	<ul style="list-style-type: none"> • The Spanish economic growth observed in recent decades has not been sufficient to achieve convergence with the per capita income level in the euro area. This lack of convergence is fundamentally determined by the persistence of two well-known shortcomings: low productivity and a low employment rate, which have also traditionally correlated negatively. • Specifically, the gap with the euro area shrank to its narrowest in 2005. This was the result of very strong growth in employment, but it was accompanied by worsening productivity and the build-up of significant macroeconomic and financial imbalances, which translated into a deep recession in Spain in the wake of the global financial crisis. • Remedying these shortcomings while avoiding the build-up of other significant macroeconomic, financial or social imbalances should be one of the central aims of Spanish economic policy. 	<p>Cover</p>
<p>The role of innovation in productivity</p>	<ul style="list-style-type: none"> • Any factor that artificially constrains business growth or the ability to reallocate factors of production across firms and sectors ultimately results in less buoyant innovation and productivity in the economy. Examples here include aspects relating to the volume and quality of regulation, barriers that affect firms' creation, growth and winding up, and shortcomings in the cross-firm allocation of capital. • Various legislative initiatives have been undertaken in recent quarters in an attempt to bolster business growth and entrepreneurship and facilitate the efficient reallocation of factors, and will need to be assessed in the future. It would also be worthwhile undertaking a review of the regulatory thresholds which discourage business growth, reducing the delay on general government payments (which hampers financing for small firms), ensuring market unity, bolstering competition and continuing to broaden sources of funding available to firms (which will require headway to be made in the capital markets union). • Properly designed public investment can lead to positive spillovers to private investment (both overall and on R&D&I). However, in Spain, it has been persistently below the average observed for the euro area, particularly since the global financial crisis. The Next Generation EU (NGEU) programme, both in its scope and its structural approach, represents a unique opportunity to remedy this situation. There is also room to evaluate and overhaul the design of tax incentives and direct subsidies for R&D&I projects. • The design and implementation of the NGEU programme represents a significant challenge for the Spanish general government, but it also presents a great opportunity to modernise and digitalise. 	<p>Contents</p> <p>Foreword by the Governor</p> <p>Annual Report Digest</p>
<p>The employment rate and labour supply: key features</p>	<ul style="list-style-type: none"> • A persistently low level of employment is another crucial factor in understanding the Spanish economy's lack of convergence with the per capita income level of the euro area. Spain's relatively low rate of employment is a reflection of the higher impact of unemployment. • The Spanish labour market's structure has given rise to significantly higher unemployment levels and more widespread use of temporary job contracts than the euro area average. • More recently, several regulatory changes have altered the Spanish labour market. Among other measures, the 2021 labour market reform cut down on temporary contracts in exchange for making some permanent hiring modalities more flexible, and expanded the role of furlough schemes (ERTEs, by their Spanish acronym) as an employment adjustment mechanism. Any thorough assessment of this labour market reform will require analysis of its impact on a range of areas. • The high levels of unemployment seen in Spain in recent decades have a strong structural component. In this respect, it is essential to examine the role of active and passive employment policies. Squaring protection for the more vulnerable groups with appropriate incentives on the labour supply-side calls for greater coordination between the two policies. • Human capital endowment is a key determinant of productivity, capacity to innovate and employment. The educational attainment level of employers, the self-employed and employees in Spain is lower than the euro area average. This undermines equality of opportunity, as the differences in educational attainment level are relatively persistent. 	<p>Chapter 1</p> <p>Chapter 2</p> <p>Chapter 3</p> <p>Chapter 4</p> <p>Index of photographs</p>

The employment rate and labour supply: key features (cont'd)	<ul style="list-style-type: none"> • Education policies should be geared towards increasing human capital and fostering versatility. It is crucial to assess the lifetime employment return associated with different percentages of practical and academic studies in vocational training, as there is evidence that practical studies are useful for fostering an immediate transition to the labour market, but not necessarily for developing a professional career, where academic studies would have the advantage. Aside from the changes introduced by the Law on the university system, it would be useful to make progress in linking the system's funding to excellence targets and to develop initiatives to increase the proportion of graduates in STEM subjects (Science, Technology, Engineering and Mathematics). A detailed efficiency analysis should also be carried out of public spending on education. • Looking ahead, population ageing and hours worked per employee could play a key role in the course of labour supply and per capita income in Spain and thus in the country's convergence with the euro area. • Population ageing would be even more pronounced were it not for the positive and relatively high net migration expected in Spain in the years ahead. The capacity of new migration policies to effectively smooth any mismatches arising in the labour market should be continuously monitored. • An additional aspect that may have a bearing on labour supply is the Spanish population's health and its evolution over time. Given its importance, priority should be given to assessing the efficiency of public spending on health. 	Cover Contents Foreword by the Governor
Main imbalances in the Spanish economy	<ul style="list-style-type: none"> • The Spanish economy has shown a more balanced growth pattern since the outbreak of the global financial crisis, and has corrected some of the macro-financial imbalances that built up in the prior expansionary phase. The intense deleveraging carried out by households and firms is noteworthy. Also worthy of mention is the notable correction of the external imbalances in recent years. • Nevertheless, the sustainability of the Spanish economy's growth path faces enormous structural challenges. 	Annual Report Digest
Public indebtedness	<ul style="list-style-type: none"> • Despite declining as a percentage of GDP, the general government deficit and debt remained at very high levels in 2022, both on a historical and an international comparison. The estimates available show that Spain's budget deficit has a high structural component. In this respect, it should be noted that the deterioration in the structural deficit between 2019 and 2022 was largely determined by the increase in structural primary expenditure. • The far-reaching demographic changes under way in Spain will, in the coming decades, lead to a significant increase not only in spending on pensions, but also on health and long-term care. • While subject to much uncertainty, an overall analysis of the main legislative changes to the Spanish pension system since 2021 suggests that it will foreseeably be necessary to adopt new measures from 2025 to shore up the system's financial sustainability. A further source of uncertainty is the potential impact of the revenue-raising measures adopted in 2023 on employment, wages and the competitiveness of the Spanish economy. The above considerations, especially bearing in mind the significance of the changes implemented, make an ongoing, transparent and thorough assessment of the magnitude of their effects advisable, including their impact on intergenerational equity. • The sustainability of Spain's public finances would be significantly bolstered in the coming years if a fiscal consolidation plan and an ambitious package of structural reforms are implemented. Various considerations on public expenditure and revenue could serve as a guide for designing such a consolidation strategy. • In the short term, the roll-out of the NGEU European funds could soften the impact of the economic slowdown that might be triggered by the start of the fiscal consolidation process. Embarking on a gradual process of bolstering public finances could be compatible with maintaining some of the tax support measures in place for the more vulnerable groups. • There is broad consensus on the need to reform the European Union's fiscal governance framework, a key element of the European institutional architecture. On 26 April 2023, the European Commission published a legislative proposal for the reform of this fiscal governance framework. • In any event, beyond this review of the fiscal rules (which should result in the adoption of a new framework in the coming months), there is considerable scope for improvement to continue strengthening Europe's institutional infrastructure and economic governance. 	Chapter 1 Chapter 2 Chapter 3 Chapter 4 Index of photographs

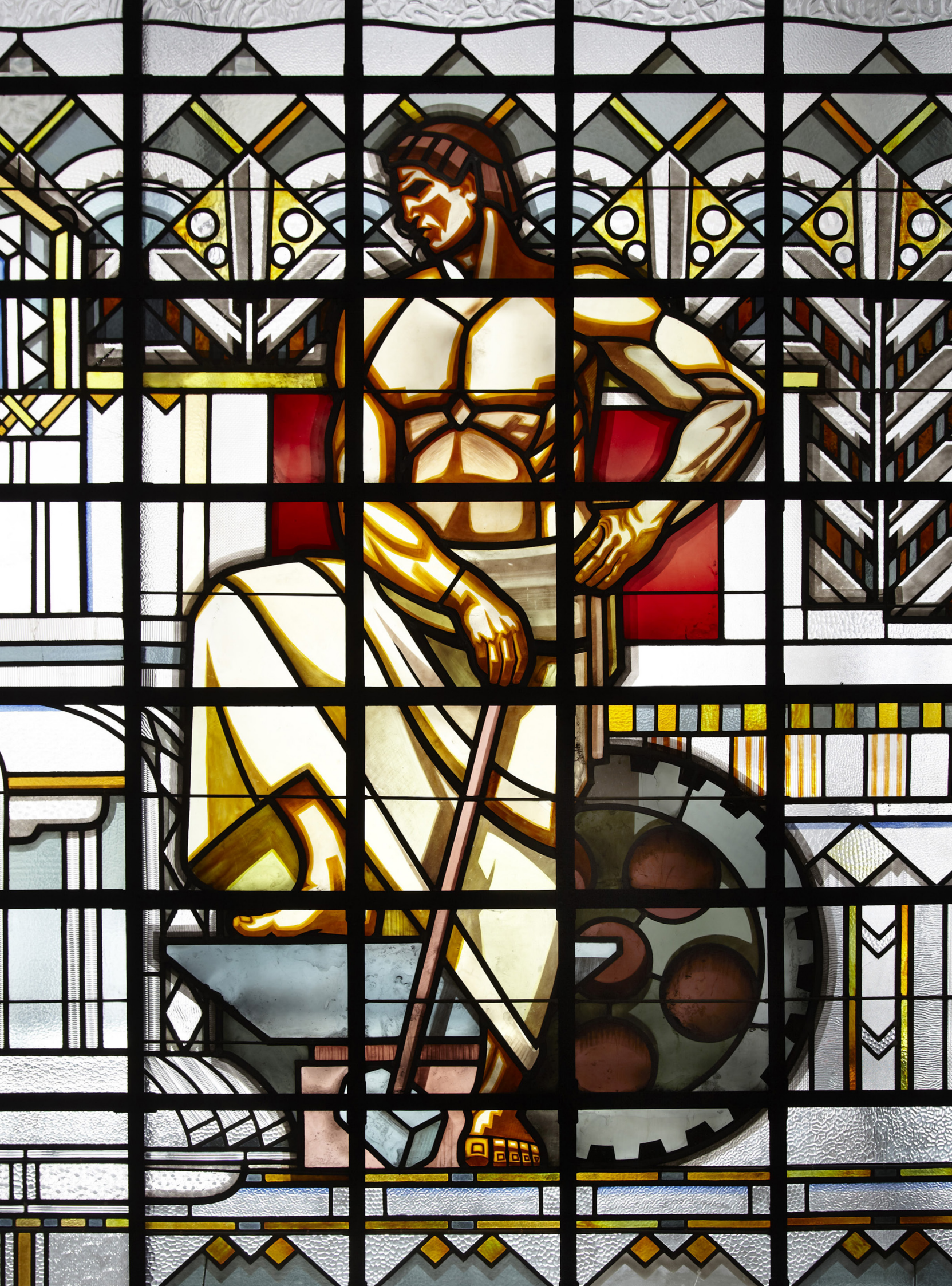
Household vulnerabilities	<ul style="list-style-type: none"> • Focusing on the differential impact of economic developments on different population groups is crucial. • In recent years, the Banco de España has very actively contributed to identifying these differential impacts in the Spanish economy. The studies carried out have documented, inter alia, certain pockets of social, economic and financial vulnerability in Spanish households, which appear to be especially concentrated on those with lower incomes. • The root cause of these vulnerabilities varies significantly, and mitigating their effects requires that government measures be put in place in very different areas and calls for an ongoing and thorough assessment of the capacity of these measures to attain the proposed goals and their implications in terms of equity and efficiency. • Housing affordability, which has tightened in recent years, for both home ownership and rentals, is one domain in which particular vulnerability is observed. Among lower-income groups, the higher demand for rental housing is associated with the labour market situation and mortgage lending standards. The insufficient growth of supply to absorb the strong increase in demand appears to lie behind the considerable momentum of rental prices since 2014. • The future Law on the right to housing places greater emphasis on the need to increase the supply of rental housing. However, some of the measures included, such as rent control, could have unwanted effects in the medium term. According to the economic literature, while price controls can reduce rents in regulated areas in the short term, they can also bear adversely on rental supply and create real estate market segmentation. Tax and regulatory measures could also be considered with a view to increasing the supply of rental housing from the professional private sector. 	

Euro area inflation has started to moderate, but the broad-based spread of inflationary pressures remains unfinished	<ul style="list-style-type: none"> • Inflation began to decline in autumn 2022 in the euro area and somewhat earlier in Spain, in both cases driven by the drop in the energy component. • In the short term, the downward correction of inflation is expected to continue. This moderation is explained by mechanical factors such as the negative base effects, falling commodity prices, the recent appreciation of the euro and the extension of the fiscal measures to protect households and firms from inflation. • Over the medium term inflation is expected to continue to decline towards levels compatible with the monetary policy target at that horizon. • The easing of global supply chain bottlenecks, the reversal of indirect effects due to lower energy prices and the economic slowdown already observed in the second half of 2022 will help curb underlying inflation. • Although upside risks to inflation have moderated, some risk factors – such as the course of the war in Ukraine, the impact on global inflation of China's economic reopening after abandoning its zero-COVID policy, possible asymmetries in the consumer price response or potential second-round effects via wages and profit margins – generate uncertainty about the reach of the disinflation process. • Inflation expectations in the euro area, which currently remain anchored at around 2%, will be crucial for price and wage-setting.
In response to the growing inflationary pressures, the European Central Bank (ECB) began a process of monetary policy tightening	<ul style="list-style-type: none"> • From end-2021 the ECB shifted to a tighter monetary stance in order to meet its primary objective of keeping inflation at 2% over the medium term. • In a first stage, net asset purchases were discontinued. Next, policy rates began to be raised, with a cumulative increase between July 2022 and the cut-off date for this report of 375 bp. • To strengthen the pass-through of the policy rate increases to bank lending conditions, in October 2022 the ECB Governing Council also decided to recalibrate the criteria for the third series of TLTROs. The reduction in asset holdings purchased under the APP started in March 2023 and will continue at a measured and predictable pace, with reinvestments expected to be discontinued as of July. • Future decisions will ensure that policy interest rates will be set at sufficiently restrictive levels to return inflation to the 2% target over the medium term and will be kept at those levels for as long as necessary. In addition, they will continue to be based on the ECB's assessment of the inflation outlook, the dynamics of underlying inflation and the strength of monetary policy transmission.
The chapter analyses the transmission of monetary policy to financial conditions	<ul style="list-style-type: none"> • The impact that the measures adopted by the ECB have had and will have in the future is felt in different stages and through different channels. In a first stage, the tightening of monetary policy impacts financial conditions through different channels: the capital markets channel, the bank channel, the income channel, the wealth channel and the exchange rate channel. In a second stage, the tightening of financial conditions lowers aggregate demand and reduces inflation. • Capital markets channel: the euro area risk-free interest rate curve has shifted upwards since end-2021. The increase in such interest rates has fed through immediately to the capital market financing costs of firms and general government. • Bank channel: credit institutions have gradually passed the increases in market rates through to their new loans and deposits. In the euro area overall, the pass-through to the cost of new household mortgage lending is occurring at a pace similar to that of past cycles, but somewhat more quickly in the case of lending to firms. • Conversely, in terms of remuneration on new time deposits, the pass-through to households has been slower, while that to firms has been similar or somewhat slower, depending on the term. Broadly speaking, in Spain the pass-through has, to date, been more sluggish than might be expected based on the historical regularities. • Income channel: higher interest rates have begun to have an impact on the income of households and firms. These effects have been more pronounced in Spain, particularly for households – essentially reflecting the strong prevalence of floating rate contracts in the stock of mortgages – and to a lesser extent for firms. • In the case of general government, as compared with previous cycles, the higher level of indebtedness has amplified the pass-through to the debt burden. However, this effect has been dampened by the lengthening of the average life of outstanding debt.

<p>The chapter analyses the transmission of monetary policy to financial conditions (cont'd)</p>	<ul style="list-style-type: none"> • Wealth channel: the value of household wealth has been negatively affected by monetary policy tightening, via its adverse impact on asset prices, although other factors have also had an influence. • Exchange rate channel: the euro exchange rate has tended to depreciate against other currencies, although there has been reverse movement in the most recent period. This depreciation mainly reflects an earlier and stronger monetary policy tightening in other regions compared with the euro area. 	<p>Cover</p>
<p>The transmission of monetary policy is highly uneven across countries and sectors</p>	<ul style="list-style-type: none"> • There is significant cross-country heterogeneity in monetary policy transmission. In the bank channel, the different speeds of monetary policy transmission to households' mortgage and time deposit rates seem to reflect both banks' idiosyncrasies and differences in each country's banking sector structure. • There is also considerable heterogeneity in the income channel across Spanish households and firms, which amplifies the effect of interest rate rises on aggregate consumption and investment. 	<p>Contents</p>
<p>The chapter also estimates the effects of the monetary policy measures on economic activity and inflation</p>	<ul style="list-style-type: none"> • The monetary policy tightening is already beginning to pass through to real activity and inflation, but the bulk of the impact will be felt from this year onwards. 	<p>Foreword by the Governor</p>
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		<p>Index of photographs</p>
		<p>Acronyms and abbreviations</p>

<p>The European Union's energy framework before the start of the war in Ukraine</p>	<ul style="list-style-type: none"> • Despite renewable energy sources having gained weight in both the Spanish and the EU energy mix in recent decades, fossil fuels continued to account for almost 70% of primary energy consumption in 2021. • Various factors have contributed to the energy transformation, notably including greater electricity generation from renewable sources, changes in the sectoral structure of economies and efficiency gains. • In any event, before the start of the war in Ukraine, there were significant differences in energy mix across the main European countries, which broadly reflected different national energy policy strategies, asymmetries in national productive systems and heterogeneity in countries' natural resources. • At the European level, Spain stood out for its relatively high use of oil, mainly owing to the Spanish transportation sector's high consumption. Natural gas consumption was similar in Spain and the EU, at around 24% of total consumption, albeit with a very different composition. The same differences were also observed in renewable energy consumption.
<p>The import dependencies associated with the energy mix</p>	<ul style="list-style-type: none"> • In recent decades, the EU's energy import dependency has increased and it is greater than that of the main world economies. In 2019 the EU imported practically all of the oil and natural gas that it consumed; these imports were also relatively concentrated. • Natural gas, uranium, anthracite and oil were the European energy imports most vulnerable to global trade disruptions. • In 2019 Spain's energy imports were more diversified than those of the EU as a whole. However, Spain was more dependent on foreign energy than the EU, and this energy dependence has also increased over recent decades.
<p>The insufficient integration of energy markets within the EU</p>	<ul style="list-style-type: none"> • Despite the EU having promoted the strengthening of energy interconnections between the different Member States over the last 15 years, they are still incomplete. Integration of the natural gas market at European level is limited by the existing infrastructure. Moreover, cross-border electricity interconnection capacity is highly uneven. • Other highly diverse aspects also contribute to EU energy markets behaving particularly heterogeneously across Member States. For example, there are considerable differences in how changes in wholesale electricity prices are passed through to retail prices. In addition, taxes and other regulated charges account for a sizeable proportion of the energy prices paid by consumers, which varies considerably across the European economies.
<p>European economies' near-term adjustment to the energy crisis</p>	<ul style="list-style-type: none"> • The European authorities have responded resolutely to the Russian invasion of Ukraine and the challenges it has posed by implementing a wide range of measures in multiple areas. In the energy domain, the launch of the European Commission's REPowerEU programme stands out. • The national authorities of the EU Member States have also adopted manifold initiatives. • Overall, the roll-out of all these initiatives across Europe and in the different Member States has shaped recent macroeconomic developments in the EU.
<p>Substitution of energy sources</p>	<ul style="list-style-type: none"> • Partly as a result of the measures adopted, EU countries have proven relatively adept at reducing their energy imports from Russia. This was possible in large part thanks to the substitution of the commodities previously imported from Russia with those from other international suppliers. The fall in gas consumption also appears to have played a part. • In any event, it is still too early to assess the extent to which the significant capacity the European economies have demonstrated in adapting their energy demand in the near term and restructuring their energy procurement will last. • For instance, certain conjunctural factors conducive to these adjustments could reverse in the coming quarters. • In addition, were these developments to become entrenched, energy consumption in the EU would in all likelihood continue to fall, albeit at the expense of a significant (and potentially structural) loss to its industrial base.

Spanish households' exposure and adjustment to the energy crisis	<ul style="list-style-type: none"> • The impact of the energy crisis on Spanish households is shaped by several factors, which vary by type of household. • The ex ante exposure of Spanish households to the rising cost of energy is particularly marked among lower income households. • Disparity can also be seen in terms of the households facing disproportionately high energy expenditure. • The ability of households to adapt their demand for energy in the short term has been relatively limited, both historically and in the current environment. • Certain decisions taken by the authorities have also shaped the impact of the energy crisis on Spanish households in recent quarters. For example, the decision to reduce VAT on food, electricity and gas, the fuel rebate and the €200 grant for households with low income and wealth levels approved at end-2022. 	Cover
The sensitivity and adaptation of Spanish firms to the crisis	<ul style="list-style-type: none"> • The differences in energy intensity appear to have had a decisive influence on the impact of the crisis on the Spanish economy's different sectors and firms, and on how they have responded. • In a bid to reduce their energy expenditure, firms sought, in particular, to renegotiate their supply contracts and to improve their energy efficiency. • In general terms, smaller and less productive firms proved more vulnerable to the rise in energy costs. 	Contents
The challenges posed by the energy transition	<ul style="list-style-type: none"> • Despite the notable adaptability shown by the European economies over recent quarters, mitigating the structural vulnerabilities identified in the EU's energy framework means that numerous challenges on a huge scale will have to be met head on in the coming years. • Given the sheer scale of the challenges entailed by the EU's energy transition, all policies and all economic agents must play a very active role in forging ahead with the process. 	Foreword by the Governor
Promoting renewable energies: challenges and opportunities	<ul style="list-style-type: none"> • Reducing the EU's external energy dependency and the green transition will require a large-scale deployment of renewable energy sources (which have higher levels of domestic production) and additional energy efficiency improvements over the coming decades. • The promotion of renewable energies could be a great opportunity for Spain, which has the second highest onshore wind power generation potential and the highest solar power generation potential in the EU. • Spain also has firms that produce a significant portion of the components required to install wind and solar power technologies. • Nevertheless, the deployment of renewable energies will also entail considerable challenges, for instance in technological development. • The energy transition will also lead to a substantial increase in demand for certain very specific commodities. In the absence of supply-side adjustments, this greater demand for certain commodities could give rise to price pressures, bottlenecks and new import dependencies for the EU. • The transition towards a greener and more sustainable economy may cause sharp shifts in the demand for labour. • Lastly, the promotion of renewable energies does not reduce the importance of developing better energy interconnection infrastructure among EU Member States. 	Annual Report Digest
Funding the green transition and other public policy challenges	<ul style="list-style-type: none"> • To advance the economy's energy transformation, public policies must play a leading role. • These actions are especially important at European level. The European policy response to the current crisis must be agile, provide certainty, ensure that the green transition does not lead to a structural loss of competitiveness for the European economies and reduce the risk of delocalisation of European industry. • In addition, it is essential for European policies to contribute to maintaining a level playing field within the EU. Among other actions, this will require more decisive advances in the common funding of public assets at EU level. • In any event, without the active involvement of the financial system, it will be impossible to efficiently channel the large volume of funds needed to carry out the green transition. 	Chapter 1
		Chapter 2
		Chapter 3
		Chapter 4
		Index of photographs



1

THE SPANISH ECONOMY'S RESILIENCE AMID ADVERSITY AND UNCERTAINTY

1 Introduction

The global economy is suffering the consequences of the biggest rise in inflation in half a century. The present high inflation episode was initially a response to the intensity of the post-pandemic recovery and the disruptions in global production chains. However, its main cause in Europe has been the increase in energy and food prices stemming from the geopolitical tensions that culminated in the war in Ukraine, although demand factors have been gaining weight.¹

Overall, these developments exerted downward pressure on economic activity in 2022. The loss of income stemming from the increase in the relative price of imported energy goods in Europe affected households' and firms' consumption and investment decisions, in a setting marked, moreover, by high global uncertainty which even called into question the security of energy supplies during the winter months.

In response to the inflationary shock, the main central banks have tightened their monetary policy swiftly and sharply, impacting financial conditions. Central banks have raised monetary policy interest rates significantly, at an unprecedented rate in the case of the euro area, and have begun to reduce the size of their balance sheets.

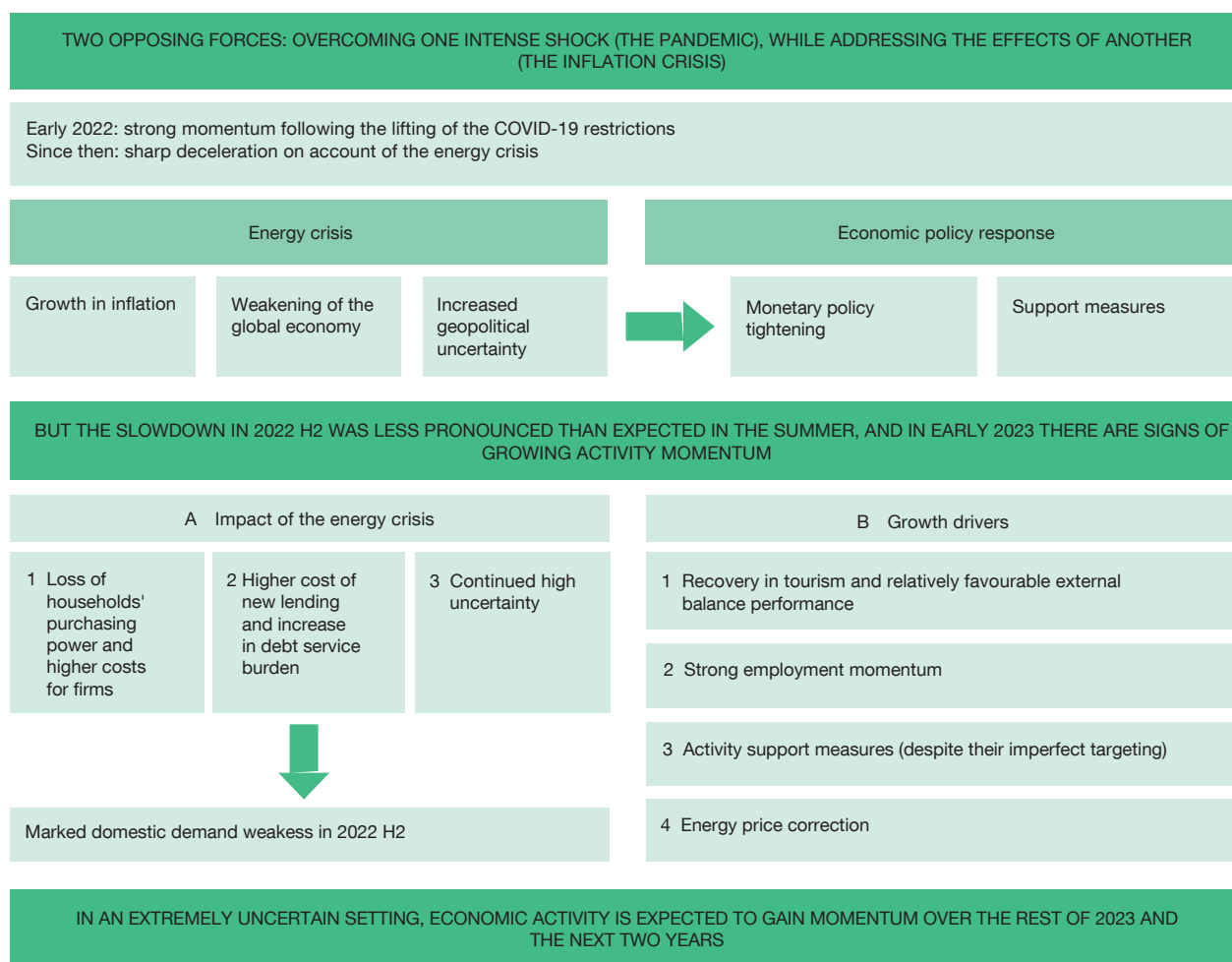
The tightening of financial conditions is also gradually affecting economic activity. The higher cost of new lending has begun to affect loan demand, while some agents are experiencing more difficulties accessing credit. The debt service burden has also increased for agents that have variable rate debt or that have had to refinance their debts at maturity, which increases their financial vulnerability.

In this adverse environment, economic activity was more resilient than expected in Spain in 2022. During the first half of the year, GDP growth received a significant boost from the lifting of the remaining pandemic-related restrictions and the strength of tourism, as a consequence of the recovery in inflows of foreign tourists, which also helped underpin the current account balance (see Figure 1.1). Yet the energy crisis drove imported inflation to very high levels, undermining Spanish households' and firms' purchasing power. Accordingly, consumption and investment expenditure were significantly weaker in the second half of the year. In any event, during that period, output growth was somewhat stronger than expected, in part because the energy crisis also eased and the most pessimistic scenarios, under which Europe could have faced a winter of energy supply

¹ For a more detailed explanation of the factors underpinning this inflationary episode, see [Banco de España \(2022a\)](#).

Figure 1.1

THE RESILIENCE OF THE SPANISH ECONOMY AMID ADVERSITY AND UNCERTAINTY



SOURCE: Banco de España.

disruptions of some kind, failed to materialise. The early months of 2023 have seen growing activity momentum, with quarterly GDP growth of 0.5% in Q1 (0.1% in the euro area).

The actions taken at the national level to ease the consequences of the energy crisis have helped sustain activity (see Box 1.1). However, these actions must be more targeted, so as to protect the more vulnerable agents, and must go hand in hand with the start, in 2023, of a gradual fiscal consolidation process that will entail a reduction in the Spanish structural deficit this year (see Chapter 2 of this report).

The forecasts for activity growth for 2023-2025 are favourable, although uncertainty remains very high. Activity is expected to be underpinned by declining inflationary pressures, which will help restore households' and firms' real income levels, and by the increased deployment of funds under the Next Generation EU (NGEU) programme. But various risks persist, notably including the possible emergence of fresh episodes of geopolitical instability

worldwide, which could drive up energy prices. Moreover, the rate of decline of underlying inflation is highly uncertain, linked to factors such as demand strength and the possible appearance of second-round effects on margins or wages. In addition, if euro area inflation were to prove more persistent than expected, this would give rise to further monetary policy tightening, which would exert downward pressure on both consumption and investment.

2 Inflation and uncertainty have weakened economic activity worldwide

The world economy has been marked by persistent inflationary pressures and monetary policy tightening (for more details, see Chapter 3 of this report). Rising inflation rates, which have been widespread across the different geographical areas, have surprised on account of their intensity and persistence. These inflationary pressures were essentially in response to global factors, including the recovery in demand associated with the reopening of economies following the health crisis, rising (energy and non-energy) commodity prices and disruptions in global logistics and production chains.²

Inflation has begun to ease thanks to the drop in energy commodity prices since summer 2022. The deceleration in these prices has been pronounced (see Chart 1.1.1) and this, together with significant negative base effects, explains the decline in euro area headline inflation from a peak of 10.6% in October 2022 to 6.9% in March 2023.^{3, 4}

Yet inflationary pressures remain high, after having spread to the entire consumption basket. The growth in the cost of energy and other commodities has had significant indirect effects on non-energy inflation and accounts for a very large part of the increase in prices of the other goods and services in the consumption basket. Specifically, both food and underlying (non-energy industrial goods and services) inflation rates continued to rise in the euro area up to March 2023, when they stood at 15.4% and 5.7%, respectively.⁵

Global economic growth slowed significantly over the course of 2022. In many countries, the average growth rate was high in the year, owing to the boost provided by the post-pandemic reopening in the first half, which benefited service industries in particular. Yet as the year progressed, high inflation undermined global growth. The more energy-intensive productive sectors were particularly affected by rising costs. Moreover, the decline in households' and firms' purchasing power weakened their consumption and investment expenditure. Economic momentum was also hampered by the uncertainty associated with the war in Ukraine and, increasingly, by the tightening of financial conditions (see Chart 1.1.2). In 2022 overall, global

² Banco de España (2022a).

³ Changes in the year-on-year inflation rate between two consecutive months depend not only on the change in prices between those two months but also on the change between the same two months of the previous year. In general, base effects reflect the change in the inflation rate owing to changes in prices a year earlier.

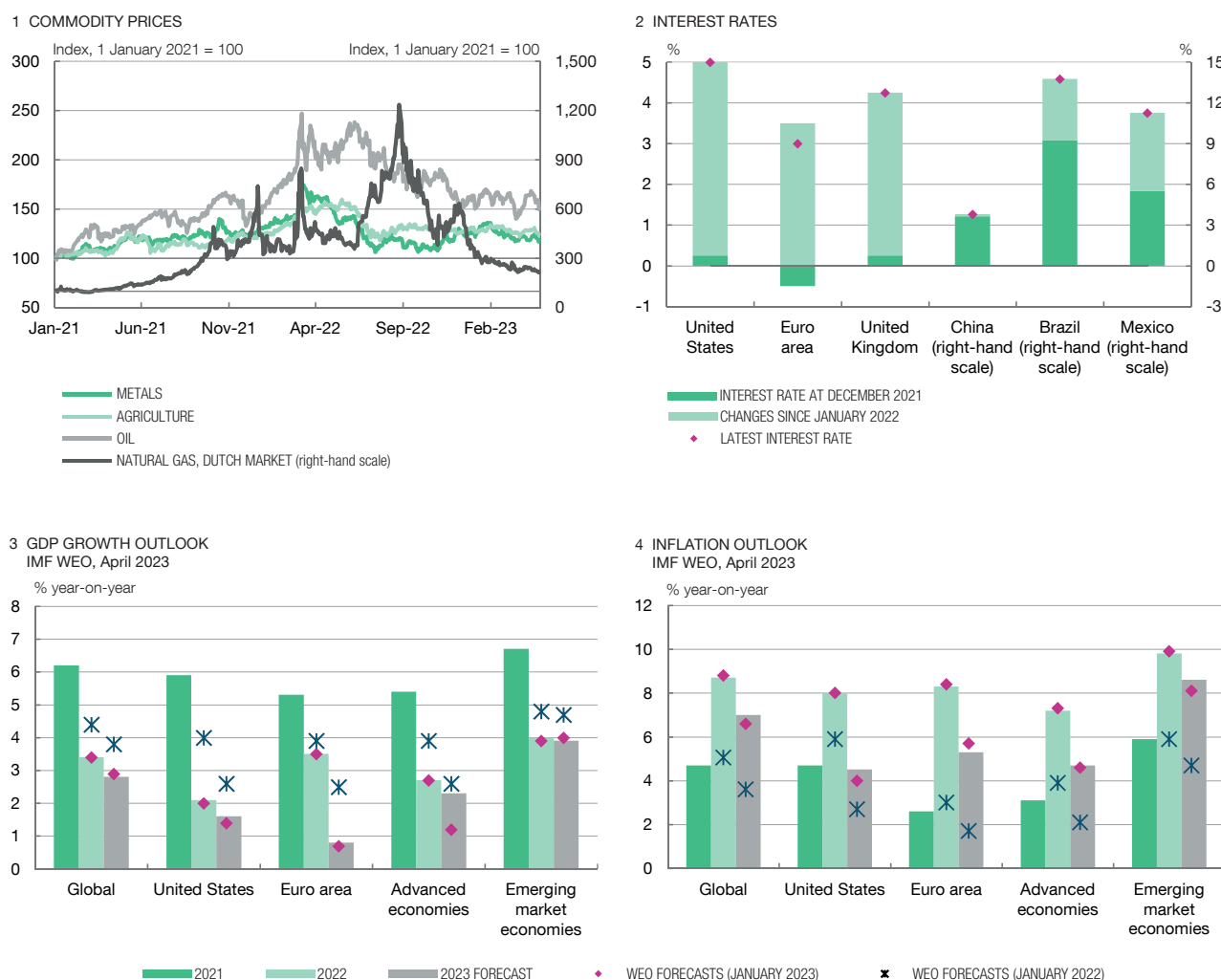
⁴ According to the harmonised index of consumer prices (HICP) flash estimate, published after the cut-off date for this chapter, euro area inflation stood at 7% in April.

⁵ In April, euro area food and underlying inflation rates remained very high, at 13.6% and 5.6%, respectively.

Chart 1.1

THE WORLD ECONOMY SLOWED DOWN IN 2022

The world economy decelerated in 2022, against a backdrop marked by greater uncertainty in the wake of Russia's invasion of Ukraine, high inflation and tighter monetary policy stances. Inflation rates are expected to fall in 2023, accompanied by moderate activity growth.



SOURCES: IMF (World Economic Outlook) and Refinitiv.



GDP grew by 3.4%, which was less than expected at the start of the year (see Chart 1.1.3). The differences across the different geographical areas can be explained by factors such as the level of dependence on imported commodities, the timing of the lifting of the pandemic-related restrictions, and the aggregate demand policy stance.

Most recently, the global economy has shown some signs of greater dynamism. In the last stretch of 2022, global activity was more resilient than had been expected mid-year, thanks to the gradual normalisation of global supply chains and the progressive moderation of energy prices. In the opening months of 2023, economic activity looks to have picked up somewhat, underpinned by the continuation of the above-mentioned factors and China's decision to abandon its zero-

COVID policy. But the global financial turbulence in March has revived the uncertainty. In terms of annual average rates, the latest projections point to a slowdown in GDP in 2023, both in the advanced and the emerging market economies, as a result of the weakness in activity in 2022 H2, persistently high inflation and monetary policy tightening (see Charts 1.1.3 and 1.1.4).

Euro area activity has been relatively resilient in an adverse environment. Following the momentum in 2022 H1 stemming from the effects of the post-pandemic reopening, and as in other advanced economies, activity subsequently weakened. In any event, the euro area economy has also proved fairly resilient, as the slowdown in 2022 H2 was less pronounced than had been expected at the end of the summer. Moreover, economic activity is recovering modestly in early 2023, underpinned by the strength of the labour market. Looking forward, the relief provided by the decline in energy prices and the improvement in external demand will help to further strengthen euro area GDP, although this effect will be tempered by the impact of the necessary process of monetary policy tightening on the real economy.⁶

3 Spain: from the reopening momentum to resilience in the face of the energy crisis

Spain's high GDP growth in 2022 overall (5.5%) was the combination of two very different half-years. After a slow start to the year, the lifting of the pandemic-related restrictions prompted a sharp recovery in activity in the spring. However, the economy slowed markedly in the second half of the year, as the expansionary momentum of the economic reopening began to wane, giving way to the negative effects linked to the heightened inflationary pressures, increased uncertainty, the worsening outlook for external markets and the gradual tightening of agents' financing conditions. The impact of all these adverse factors was, however, cushioned by the strength of the labour market and the budgetary support measures.

The lifting of the health restrictions and the effects of the inflationary crisis conditioned supply-side developments. The sharp rebound in services, which were the sectors most affected by the restrictions, was the driving force, especially in the first half of the year. This reopening of services was reflected in high growth of private consumption and tourism exports, which benefited greatly from the gradual normalisation of foreign tourism inflows. By contrast, the manufacturing sectors performed less well as the year progressed, on account of opposing forces. Global logistics and production chain disruptions eased, which bolstered manufacturing sectors' activity. But this was countered by the prolonged and sharp increase in the cost of energy and other intermediate goods that had begun in 2021 and curbed activity in some manufacturing sectors. Indeed, in the most energy-intensive sectors, production was curtailed by rising costs (see Chart 1.2.1).⁷ More recently, the sharp fall in gas and electricity prices has eased some of these difficulties, although gas prices are still much higher than they were in spring 2021.⁸

⁶ ECB (2023).

⁷ Fernández-Cerezo and Prades (2022).

⁸ Specifically, on the Iberian gas market (MIBGAS), the price was around €40 per MWh in April 2023, compared with €17.5 per MWh in March 2021 and after reaching levels of €125 per MWh in March 2022.

In 2022 H2 and early 2023 the Spanish economy performed better than expected. In particular, the loss of momentum was less pronounced than had been suggested by the confidence indicators (see Chart 1.2.2). In any event, private consumption and investment demand weakened markedly in the last stretch of the year, as explained in more detail in Section 1.5 below. Activity has improved somewhat – also ahead of expectations – in the early months of 2023, with GDP growth of 0.5% in quarterly terms, compared with growth of 0.1% in the euro area as a whole in the same period.

Overall, Spanish GDP is 0.2% below its pre-pandemic level. Euro area GDP is already 2.5 pp over that level. The recovery in GDP has been uneven across demand components and economic sectors. Private consumption and, especially, investment (particularly residential investment) are still below their pre-pandemic levels, unlike imports and exports which have risen above theirs (see Chart 1.2.3). By productive sectors, agriculture and services have recovered their pre-COVID levels, whereas industry and construction have still not done so (see Chart 1.2.4).⁹

The inflationary crisis is having an uneven impact on different groups of economic agents (for more details, see Chapter 4 of this report). The higher price of imported energy goods compared with domestic energy production entails a loss of income. For households, the impact on their cost of living depends, among other factors, on their consumption patterns and the public policy response. This second aspect is analysed in the last section of this chapter. As regards households' consumption patterns, the amount that each spends on food and energy (the consumer goods whose prices have increased the most) as a proportion of their total expenditure is a crucial factor.¹⁰ For firms, the effects depend on their level of energy consumption, the flexibility of their production processes and their market power. The impact has been especially marked in energy-intensive manufacturing sectors, whose gas and electricity rates have been swiftly revised in line with wholesale prices, and whose options for reducing their energy consumption or replacing their energy sources with others whose prices have risen less are more limited.¹¹ There are also differences across firms as regards the extent to which they can pass cost increases through to selling prices, which in turn is related to demand and to the competitive environment in which they operate.¹²

9 Developments in recent quarters have meant that the services sectors that were most severely affected by the health crisis (retail trade, transportation and hospitality, professional, scientific and administrative activities, and arts and recreation) have now exceeded their pre-crisis levels by a wider margin than those that were less affected (information and communications, financial activities and insurance, and real estate activities).

10 As is explained in more detail in Section 1.7 below, food accounts for a larger proportion of lower income households' expenditure, whereas among medium to low income households energy expenditure is higher (García-Miralles, 2023). In addition, in the case of Spain, the type of gas and electricity contracts has also been key, as the income of households with utility rates that change rapidly according to changes in the corresponding wholesale markets has borne a larger impact. Meanwhile, Basso, Dimakou and Pidkuyko show that larger, lower income households whose head is male, less educated and old experience higher inflation.

11 Fernández-Cerezo and Prades (2022) show how, in 2022, the heterogeneity in manufacturing sector productivity in Spain is partly explained by the differences in energy consumption, in the degree of exposure to the post-pandemic recovery in contact-intensive activities and in the severity of supply shortages.

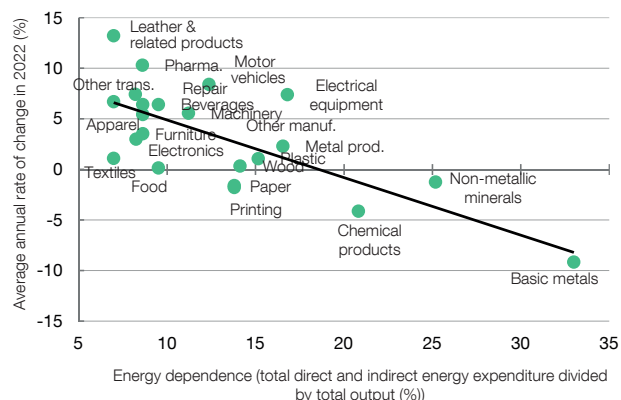
12 Menéndez and Mulino (2022) show that profits have fallen at firms that have a greater propensity to export, that are more exposed to particularly competitive environments.

Chart 1.2

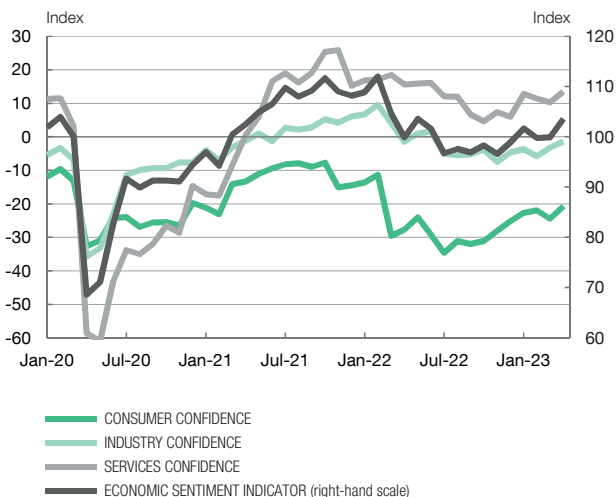
IN SPAIN ACTIVITY IS PERFORMING UNEVENLY ACROSS DEMAND COMPONENTS AND, ABOVE ALL, ACROSS SECTORS

The reopening of the economy boosted the contact-intensive sectors in 2022 H1, while higher energy costs have weighed on energy-intensive manufacturing sectors. Uncertainty linked to the war in Ukraine, higher prices and, more recently, higher borrowing costs dented household confidence. Spanish GDP has practically returned to its pre-pandemic level.

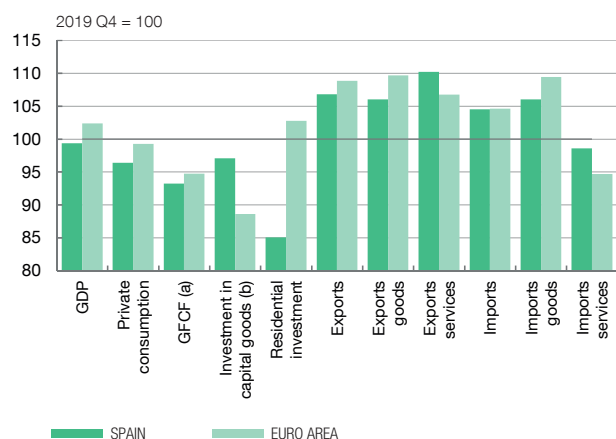
1 INDUSTRIAL OUTPUT IN 2022 AND ENERGY DEPENDENCE, BY SECTOR



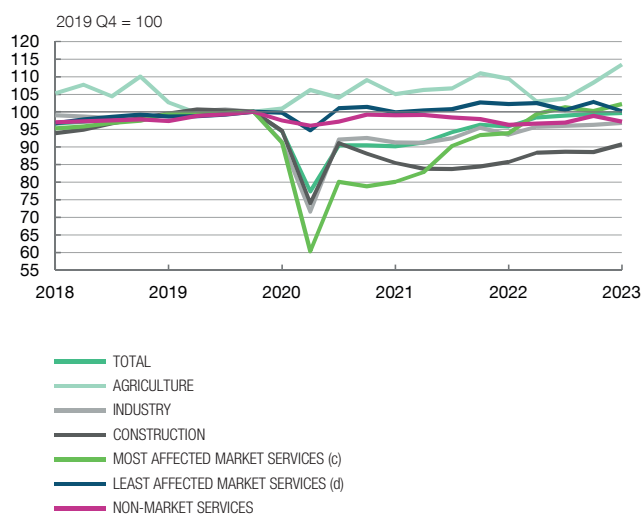
2 CONFIDENCE INDICATORS



3 GDP AND DEMAND COMPONENTS IN 2022 Q4



4 GVA, BY SECTOR OF ACTIVITY



SOURCES: Banco de España, European Commission, Eurostat, INE and Inter-Country Input-Output tables (ICIO-2018 OECD).

- a Gross fixed capital formation.
- b Includes cultivated biological assets and intangible assets.
- c Wholesale and retail trade, transportation and accommodation and food service activities, professional, scientific and administrative activities and arts and recreation services.
- d Information and communication, financial and insurance activities and real estate activities.



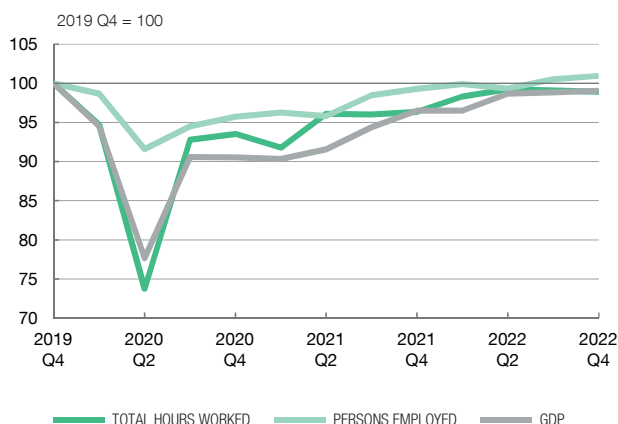
The relatively positive performance of the external sector, the strength of employment and fiscal momentum have all underpinned activity. Developments in foreign trade are analysed in Section 6 of this chapter, which underlines that the current account balance has fared fairly well, despite the surge in imported energy prices, thanks to the strong recovery in

Chart 1.3

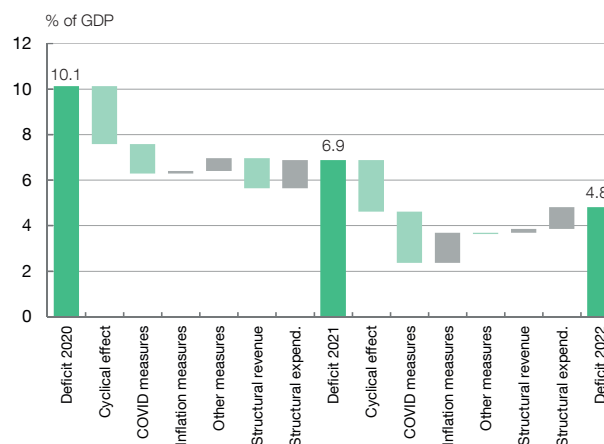
STRONG EMPLOYMENT AND FISCAL MOMENTUM HAVE UNDERPINNED ECONOMIC ACTIVITY

Employment momentum remains strong. Fiscal actions have boosted activity momentum, through the measures adopted to mitigate the effects of the inflation crisis. Meanwhile, the favourable economic cycle position and the lifting of the COVID-19 related measures have permitted a partial deficit correction.

1 EMPLOYMENT AND GDP GROWTH SINCE 2019



2 SPANISH GENERAL GOVERNMENT DEFICIT (a)



SOURCES: Banco de España, IGAE and INE.

a Decomposition of the change in the deficit between the cyclical effect, the fiscal cost of the COVID-19 measures, the fiscal cost of the energy crisis support measures ("inflation measures"), the cost of other temporary measures, and cyclically-adjusted revenue and expenditure (structural expenditure also includes interest expense). The light green bars denote an improvement, and the grey bars a deterioration, in the budget deficit.



international tourism and the growth in exports of non-travel services. Employment, measured in terms of hours worked, has converged towards pre-pandemic levels, supported by wage moderation (see Chart 1.3.1).¹³ In 2022 the total number of hours worked rose by 4.1%, followed by another sharp increase, in quarterly terms, in 2023 Q1.

The cumulative growth in the number of persons employed compared with the pre-pandemic period has risen faster than economic activity. In 2023 Q1 the number of persons employed was 2.3% higher than the pre-pandemic total.¹⁴ Moreover, this increase has outpaced the increase in total hours worked, such that the average working day has shortened. There are various reasons for this, some of which are specific to the recent period, such as the significant increase in employment observed since late 2019 in non-market services (essentially, the public sector), where the average number of hours worked is lower than in the rest of the economy, or the persistently high number of persons on sick leave in 2022.¹⁵ Other factors have to do with longer-term trends, for instance the decline over recent decades in the average working day, which is related to factors such as the growth in the

¹³ See Chapter 2 of this report.

¹⁴ On Quarterly National Accounts (QNA) data. The seasonally adjusted Spanish Labour Force Survey (EPA) figures set this positive gap at 3.7%.

¹⁵ Hurtado and Izquierdo (2023).

share of the services sector in the Spanish economy, the increase in the part-time employment rate and the higher female labour market participation rate.¹⁶

Recently the unemployment rate has fallen significantly. The strength of employment, together with the more modest growth in the labour force, has led to a steady decline in the unemployment rate, which in 2023 Q1 stood at 13.3%. Also, since early 2022, there has been strong growth in permanent contracts, and a corresponding decline in the temporary employment rate, a development associated with the labour reform passed in late 2021 (for more details, see Chapter 2 of this report). By economic sector, the growth in employment has been concentrated in the private sector, which on data up to 2023 Q1 accounts for 85% of jobs created in the last year, although in cumulative terms since the start of the pandemic the public sector records the most job creation, accounting for 56% of the almost 500,000 jobs created since end-2019.

The fiscal momentum to address the energy crisis and high inflation amounted to 1.4% of GDP in 2022. However, the general government deficit fell by 2.1 pp of GDP in the year, to 4.8% (see Chart 1.3.2), as a result of the large-scale recovery in activity and prices and the reduction in the volume of temporary measures (as those adopted to mitigate the effects of the pandemic were quantitatively larger than those designed to ease the energy crisis). In any event, as described in detail in Chapter 2, public finances are still a considerable source of vulnerability for the Spanish economy.

The economic projections for 2023-2025 expect the post-pandemic gap between Spanish and euro area GDP levels to gradually close. Economic output will be driven by the expected easing of inflationary pressures (with the consequent recovery in agents' real income and confidence), an end to the disruptions that still trouble global supply chains, and further deployment of the NGEU funds.¹⁷ Yet this will be increasingly countered by the impact of monetary policy tightening.

In any event, the uncertainty is high and persistent and there is a risk that less positive scenarios might materialise. The main sources of uncertainty notably include the possibility of new episodes of global geopolitical instability, which may be accompanied by fresh energy price rises. There is also considerable uncertainty regarding the pace of decline of non-energy inflation, which will depend on aspects such as demand strength, the emergence of significant second-round effects on inflation (via margins or wages) and the degree of monetary policy tightening needed (which also has a highly uncertain impact on the financial vulnerability of households and firms, on their consumption and investment decisions and on aggregate demand overall). Any financial stress that may arise from the very rapid, intense and globally synchronised monetary policy tightening is a further source of uncertainty, especially after the financial turmoil experienced in March. Moreover, on the domestic front, uncertainties remain as to the possible contribution that households' savings accumulated during the pandemic

¹⁶ Cuadrado (2023).

¹⁷ Banco de España (2023a).

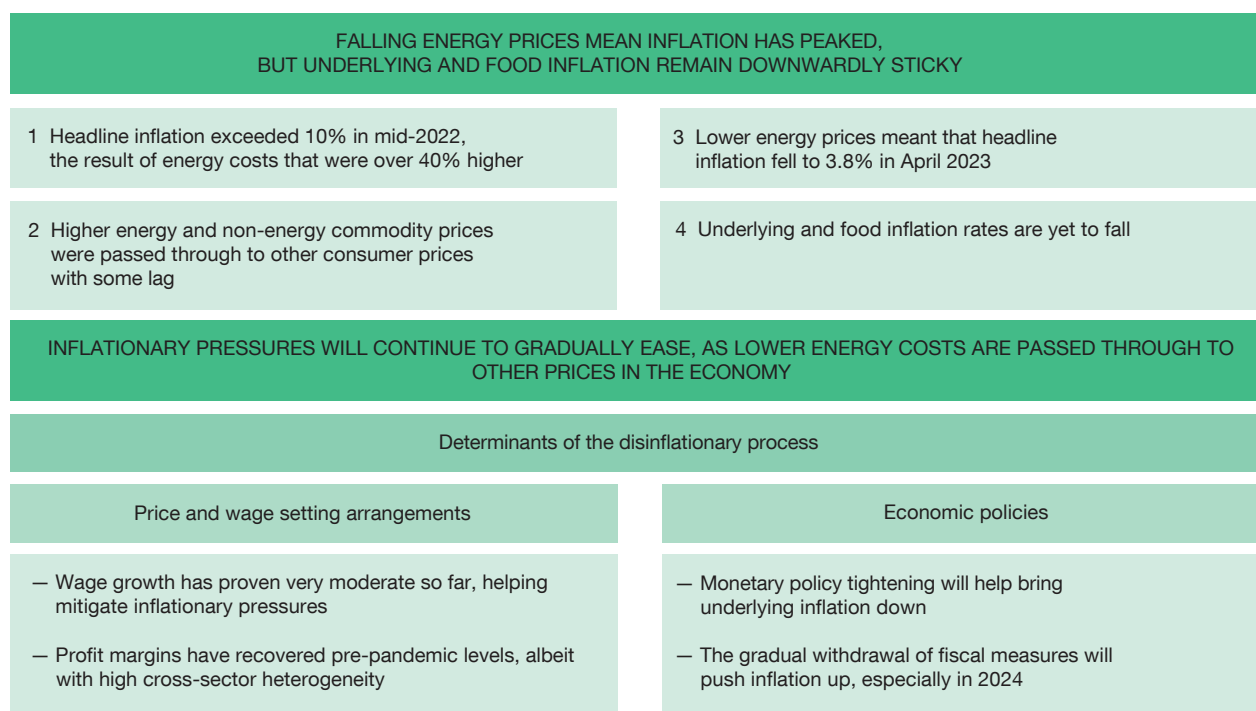
may make to private consumption, and regarding the pace of execution of the projects associated with the NGEU programme and their capacity to boost the potential growth of the economy.

4 Slowing energy prices in Spain have helped significantly lower headline inflation in recent months, but underlying inflation remains high

The rate of change of consumer prices peaked in summer 2022 and then started to fall (see Figure 1.2). The year-on-year growth rate of the HICP amounted to 10.7% in July 2022, its highest level since 1984; it declined sharply thereafter, to 3.1% in March 2023 (see Chart 1.4.1).¹⁸ Headline inflation was mainly driven by the energy component. The surge in this component had begun in spring 2021, but was exacerbated a year later by the consequences of the war in Ukraine. Of the energy goods, gas prices – which have a very significant influence over electricity prices – rose particularly sharply.¹⁹ However, lower gas and, to a lesser extent, lower oil prices meant that the rate of change of the energy component, which had amounted to 40.9% in July 2022, began to fall

Figure 1.2

THE RISE IN INFLATION IN 2022 AND THE SUBSEQUENT PRICE DECELERATION



SOURCE: Banco de España.

¹⁸ According to the flash estimate, the HICP rose to 3.8% in April.

¹⁹ Pacce, Sánchez and Suárez-Varela (2021).

quickly from mid-2022.²⁰ More recently, a considerable base effect has also contributed to the decline in year-on-year energy inflation (as current price levels have been compared with those of a year earlier, when energy prices had soared). As a result, energy inflation stood at -25.5% in March 2023. In addition, the depreciation of the euro in 2022 H1 (especially against the dollar, in which the bulk of global commodity transactions are conducted) made not only energy products but also all other imported consumer goods more expensive. Conversely, in recent months the appreciation of the euro has helped moderate the prices of imported goods.

The rise in inflation has been mitigated by the measures deployed by the authorities since mid-2021. As detailed in Section 1.7 and Box 1.1, these measures are estimated to have lowered the HICP growth rate by 0.8 pp and 2.3 pp in 2021 and 2022, respectively. In addition, the gradual withdrawal of the measures as currently envisaged will increase inflation rates in 2023 and 2024 by 0.3 pp and 1.6 pp, respectively. The measures that made the largest contribution to containing inflation in 2022 were the lower VAT rates on electricity and gas, the gas price cap for electricity generation and the fuel rebates.²¹ The measures expected to have a greater impact in 2023 are the public transport subsidies and the lower VAT on basic foodstuffs.²²

Both the initial rise in energy inflation and its subsequent decline have been considerably sharper in Spain than in the euro area. How wholesale electricity price shocks are passed through to retail consumer prices in Spain largely explains this different behaviour,²³ and meant that March 2022 saw the widest inflation differential between Spain and the euro area since records began and March 2023 the narrowest.

The initial rise in energy prices has been passed through to food consumer prices and non-energy industrial goods and services prices (i.e. the underlying component of the HICP). The pass-through has been somewhat lagged, but, on the basis of the available evidence, stronger than in previous episodes.²⁴ The war has also driven up the price of some agricultural commodities, as it has hindered their production and international trade. Other factors, such as low rainfall in various regions of the world, have also contributed to this rise (see Chart 1.4.2).²⁵ The increase in other input prices and some decoupling of supply and demand after the pandemic are also behind the rise in underlying inflation.²⁶

Unlike energy inflation, underlying and food inflation remain high. Overall, underlying inflation (excluding energy and food) amounted to 4.6% in March, after recording an all-time high of 5.2% in February. Services inflation is slightly below its summer 2022 peak. The full reopening of activity in these productive sectors initially prompted their prices to accelerate.

²⁰ The decline in natural gas prices owed, among other factors, to the measures implemented by the European Union to save natural gas and the past winter's mild temperatures, as can be seen in European Commission (2022a, 2022b). These factors meant that in early 2023 stocks of this commodity were at their highest since 2017.

²¹ Pacce and Sánchez (2022).

²² Banco de España (2023a).

²³ Pacce, Sánchez and Suárez-Varela (2021).

²⁴ González-Mínguez, Hurtado, Leiva-León and Urtasun (2022).

²⁵ Borralló, Cuadro-Sáez, Pacce and Sánchez (2023) describe in more detail the various factors behind higher food prices.

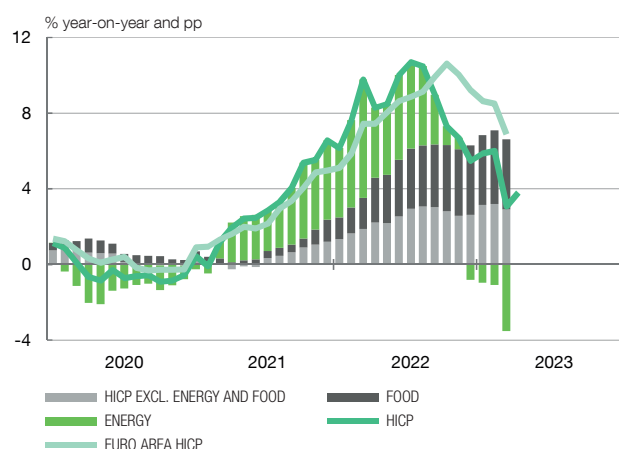
²⁶ Pacce, del Río and Sánchez (2022).

Chart 1.4

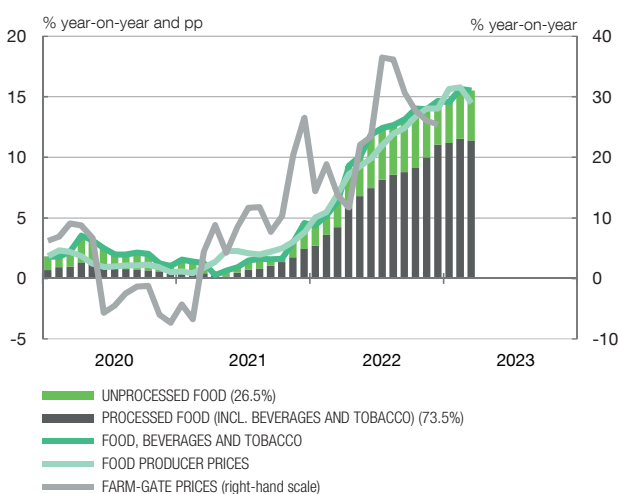
NON-ENERGY INFLATION REMAINS VERY HIGH, DESPITE THE FALL IN ENERGY PRICES

Among the HICP components, first energy prices, then food prices, started to rise, with inflationary pressures subsequently feeding through to underlying inflation. Since mid-2022, energy inflation has fallen swiftly, but the rates of the other components are proving sticky.

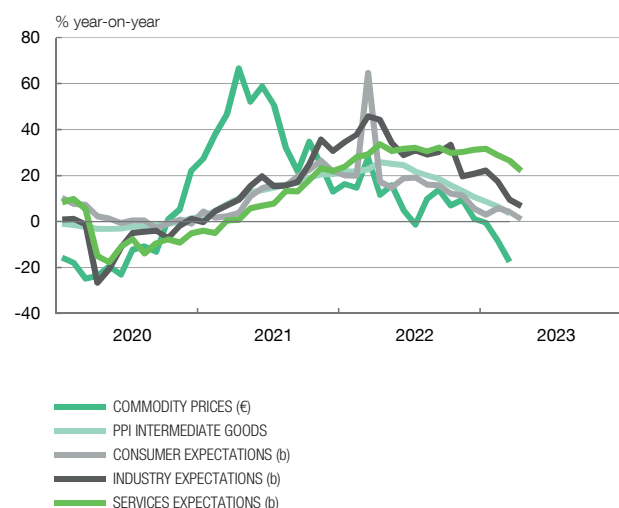
1 HICP AND CONTRIBUTIONS



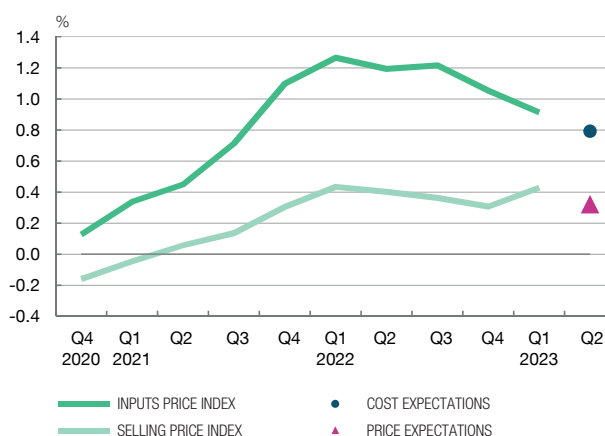
2 HICP-FOOD, BEVERAGES AND TOBACCO: RATES AND CONTRIBUTIONS (a)



3 COST PRESSURES AND PRICE EXPECTATIONS



4 FIRMS' PRICES AND COSTS (c)



SOURCES: Banco de España, European Commission, Eurostat, INE and Ministerio de Agricultura, Pesca y Alimentación.

a In brackets, the 2023 weight of each HICP-Food, beverages and tobacco component.

b European Commission business and consumer surveys.

c Results of the Banco de España Business Activity Survey (EBAE). The price and cost indices are constructed by assigning the following values to the firms' qualitative responses: significant increase = 2; slight increase = 1; unchanged = 0; slight decrease = -1; significant decrease = -2.



However, lower energy and transport prices and the moderate growth of unit labour costs (ULCs) have been conducive to their subsequent incipient deceleration.²⁷ Non-energy industrial goods inflation slowed in March 2023. This deceleration should be expected to bear out in the near future, given the normalisation of the composition of household demand (towards higher

²⁷ The moderate deceleration in services prices owes in part to the government measures subsidising public transport.

consumption of services at the expense of goods), fading bottlenecks and the decline in the prices of certain commodities. Some of these factors will also help slow food price growth. However, low rainfall and high average temperatures will very likely moderate these developments.

A very high proportion of products still have particularly elevated inflation rates. The percentage of the 129 HICP sub-indices excluding energy and food with inflation rates above 4% has tended to stabilise at 45% since July 2022, but has not yet started to fall.²⁸

There are some signs of price growth moderating in the initial stages of production processes. First, energy and non-energy commodity prices have moderated (see Chart 1.4.3). Second, the growth of industrial producer prices for non-energy intermediate goods has decelerated considerably (from above 25% in spring 2022 to 3.5% in March 2023). Third, the latest results of the Banco de España Business Activity Survey (EBAE) show that the proportion of firms reporting an increase in the prices of their inputs (see Chart 1.4.4) and of those expecting further increases in cost pressures in the future is falling.²⁹ Fourth, according to the European Commission's confidence surveys, since mid-2022 economic agents have revised down their expectations for future price developments considerably. Lastly, tighter financial conditions (including the recent euro appreciation) should be expected to increasingly help bring underlying inflation down.

The final demand deflator started to decelerate in 2022 Q4.³⁰ Between mid-2021 and 2022 Q3, the energy commodity price shock translated into a particularly sharp rise in external price pressures, measured by the import deflator. This explained most of the increase in the final demand deflator (see Chart 1.5.1). More recently, the deceleration in the final demand deflator is merely the result of the moderation of import deflator growth, due to lower energy prices, while the value added deflator has continued to accelerate.³¹

From a cost perspective, unit profits have of late contributed more to value added deflator growth than ULCs. The pace of growth of the value added deflator – which, as indicated in footnote 30, is a measure of the prices of goods and services produced in Spain – combines the growth of ULCs and unit profits (compensation of employees and gross operating surplus (GOS), respectively, per unit of output). The year-on-year growth rate of unit profits in 2022 and 2023 Q1 far outstripped that of ULCs. From a longer-term perspective, given that at the onset of the pandemic the opposite was true, the cumulative increase between end-2019 and 2023 Q1 in unit profits has only slightly exceeded that in ULCs (see Chart 1.5.2).

Profit margins, measured by the gross profit ratio (gross operating surplus divided by gross value added (GVA)) of non-financial corporations (NFCs), have continued to recover

28 Items with price growth above 4% accounted for 52% of the consumption basket in March 2023, far higher than the 17% recorded in January 2022.

29 Fernández-Cerezo and Izquierdo (2023).

30 This deflator distils the path of the prices of goods and services demanded for consumption and investment in Spain and those exported to the rest of the world. It is constructed by aggregating, with the corresponding weights, the prices of goods and services from the rest of the world and those produced in Spain (measured, respectively, using the import and value added deflators).

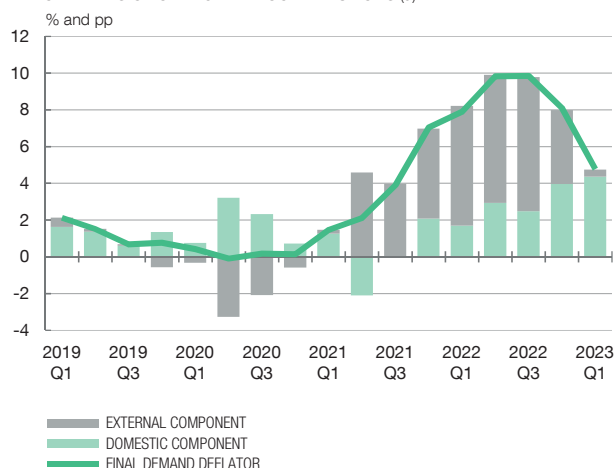
31 However, the price growth of goods and services acquired abroad remains higher than that of those produced in Spain.

Chart 1.5

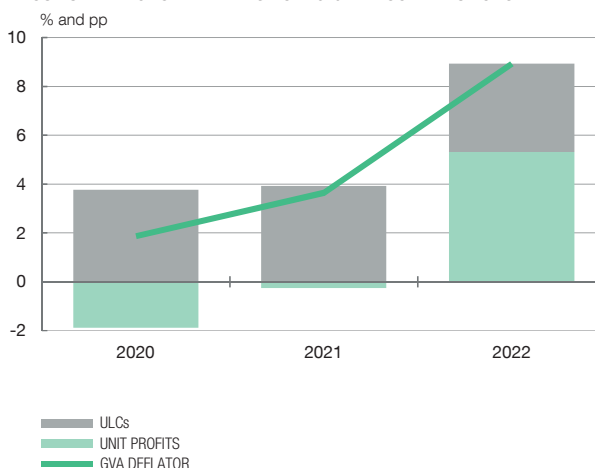
HIGH IMPORTED INFLATION HAS PROMPTED AN INCREASE IN DOMESTIC PRODUCTION INFLATION, BUT COSTS REMAIN CONTAINED

The rates of change of final demand prices remain very high, but, while the contribution of the import component is falling, that of domestic production is rising. From a cost perspective, ULCs and unit profits stand close to their pre-crisis levels.

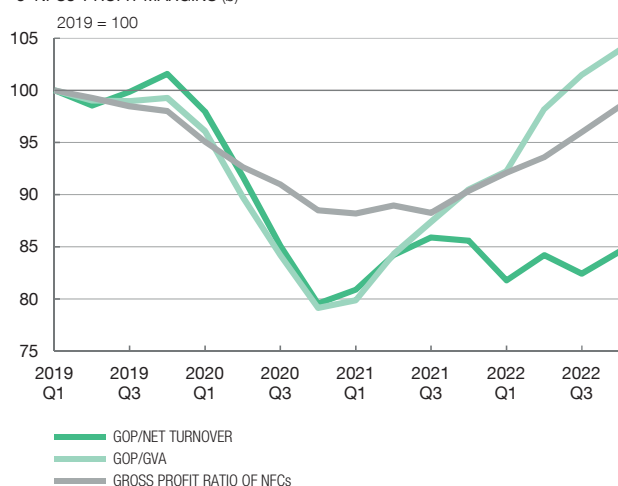
1 FINAL DEMAND DEFLATOR
Y-O-Y RATES OF CHANGE AND CONTRIBUTIONS (a)



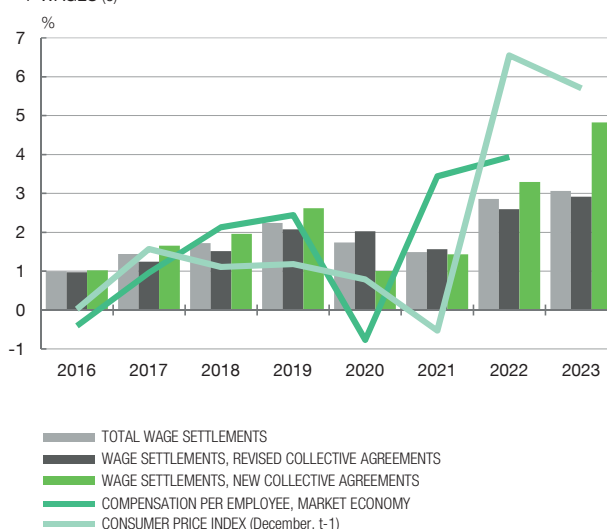
2 MARKET ECONOMY GVA DEFLATOR
CUMULATIVE GROWTH RATE SINCE 2019 AND CONTRIBUTIONS



3 NFCs' PROFIT MARGINS (b)



4 WAGES (c)



SOURCES: Banco de España, INE and Ministerio de Trabajo y Economía Social.

- a The contribution of the external and domestic component to the year-on-year growth of the final demand deflator is an approximation.
b Data from the Banco de España CBQ are used for GOP/Net turnover and GOP/GVA. For the gross profit ratio of NFCs, data from the Non-Financial Accounts for the Institutional Sectors are used. Cumulative four-quarter data.
c The data for 2023 refer to collective agreements registered to March.



in recent quarters, reaching levels similar to pre-pandemic levels. On information from the Non-Financial Accounts for the Institutional Sectors and the Banco de España Central Balance Sheet Data Office Quarterly Survey (CBQ), this ratio, which fell at the onset of the COVID-19 crisis, has risen steadily since then, exceeding its pre-pandemic level in 2022 (see Chart 1.5.3). However, there is considerable heterogeneity across sectors and firm types. The rise in the ratio of gross operating profit (GOP) to GVA in 2022 was compatible with a slight decrease, from 2021 Q4, in

the ratio of GOP to net turnover, keeping it clearly below its 2019 level. This indicator reflects that, in aggregate terms, costs are only partially being passed through to prices.

Despite the steep rise in consumer prices, wage settlements are proving moderate, which has resulted in a significant fall in real wages. Wage settlements amounted to 2.7% in 2022 (see Chart 1.5.4). Indexation clauses also had a limited impact last year (around 0.2 pp), essentially for two reasons: their modest prevalence in collective agreements (below 20%) and the existence of different conditions and thresholds for their application, which limit their impact on labour costs.³² Overall, compensation per employee grew by 3.2% in 2022, far below inflation. In the collective agreements already registered for 2023, wage settlements have increased, albeit moderately for the time being, to 3.1% in March. However, those negotiated for 2023 are significantly higher in the agreements reached so far this year (4.8%) than in those executed previously (2.9%).³³

Profit margin containment and labour cost moderation will be key to avoiding significant second-round effects on inflation. The emergence of a price-cost spiral would compound the current inflationary pressures, with adverse consequences for the economy's competitiveness, which would result in job losses and lower output. It would therefore be desirable for social partners to reach a national income pact that shares the loss of income triggered by higher imported commodity prices between firms and workers.³⁴ At the cut-off date for this report, Spain's social partners appear to have reached an initial agreement that could serve as the basis for defining this national income pact under the Employment and Collective Bargaining Agreement.

Non-energy inflation is expected to gradually decelerate over the period 2023-2025. This forecast is based on: the persisting global supply chain disruptions fading away; the gradual impact on demand of monetary policy tightening; the recent energy cost declines progressively passing through to the prices of other goods and services; and the effects of the appreciation of the euro since last autumn. In any event, these projections rest on two critical assumptions. First, that the pass-through of past cost increases is near completion, and that the pass-through of the recent declines will come to the fore over the coming months. Second, that in line with the evidence available to date, no significant second-round effects that might trigger feedback loops between the current inflationary pressures will emerge over the projection horizon.

5 Inflation and tighter financing conditions weakened consumption and investment in 2022 H2

The decline in household purchasing power and interest rate rises have held back growth in private consumption. These factors have adversely impacted the purchasing

³² [Herrera and Izquierdo \(2022\)](#).

³³ New collective agreements registered to March still only cover a relatively low number of workers (just over half a million).

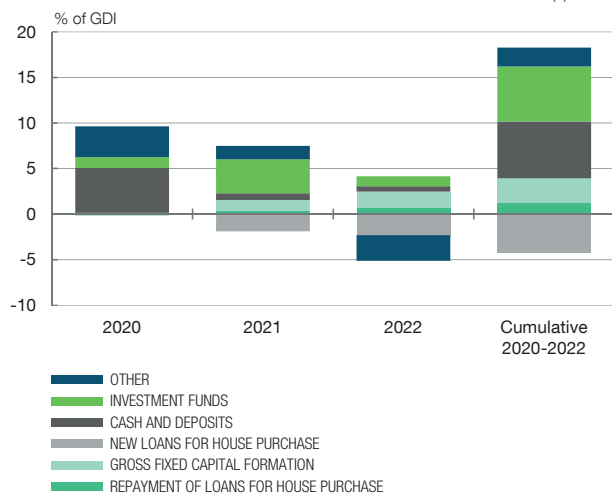
³⁴ [Hernández de Cos \(2022\)](#) describes in detail the general principles to take into account when designing the national income pact.

Chart 1.6

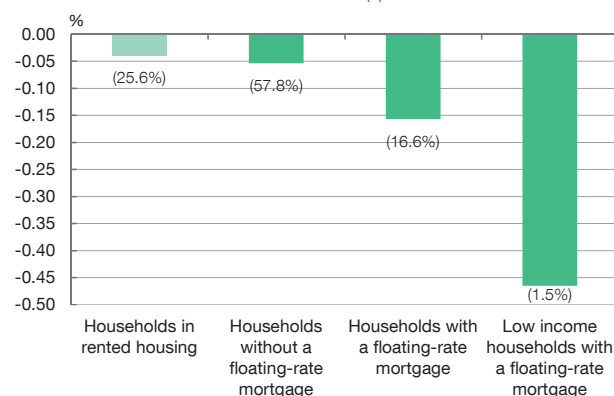
INFLATION AND TIGHTER FINANCING CONDITIONS HAVE WEIGHED ON GROWTH IN CONSUMPTION AND INVESTMENT

Higher prices and tighter financing conditions have adversely impacted consumption. In a highly adverse setting, the extraordinary savings built up by households during the pandemic have hardly given any impetus to this demand component.

1 SURPLUS SAVINGS BUILT UP DURING THE PANDEMIC AND SAVING AND INVESTMENT FLOWS IN EXCESS OF THEIR 2019 LEVELS (a)



2 IMPACT OF A 100 BP INCREASE IN MORTGAGE RATE EXPECTATIONS ON EXPECTED GROWTH IN CONSUMPTION (b)



SOURCES: Banco de España, Consumer Expectations Survey and INE.

- a Surplus saving is calculated as the flow of saving (as a percentage of gross disposable income) in excess of its 2019 level. Saving and investment flows also reflect the amount channelled towards different assets and liabilities above the 2019 level. "Other" comprises the flows channelled towards assets and liabilities not depicted in the chart, in addition to statistical discrepancies between the financial account and the capital account, net capital transfers and net acquisitions of non-produced assets.
- b Expected impact on consumption based on interest rate expectations. Expected changes in income level are controlled for in the estimation. Household fixed effects are also included. Standard errors clustered at household and time level. For households living in rented housing, the expected impact of changes in interest rates on the growth in consumption is estimated less accurately and is not significant. The figures in brackets denote the proportion of households in each of the groups depicted in the chart as a percentage of the total population.



power of households (especially those with floating-rate debt), which have lowered their saving ratio in recent months. In 2022 H2, the household saving ratio stood below its pre-pandemic level. However, the aggregate reduction in saving has proven insufficient to sustain consumption, which fell considerably in 2022 Q4 and has continued to decline in 2023 Q1.³⁵

Almost 45% of the burgeoning extraordinary savings built up during the pandemic are held in bank deposits, but these funds are unlikely to give a significant impetus to consumption. Since 2021 households have channelled a growing proportion of their surplus saving into non-financial assets (mainly housing) and, more recently, into repaying mortgage debt arranged earlier (see Chart 1.6.1). However, according to Banco de España estimates, almost half of the extraordinary savings built up during the pandemic are held in cash and

³⁵ While in early 2021 the real value of financial assets was 12% above end-2019 levels, by end-2022 this gap had narrowed to somewhat less than 4%.

deposits and, therefore, would be immediately on hand for spending.³⁶ Even so, these funds will likely only provide limited support to consumption in the future. This is because most of these extraordinary savings were accumulated by higher income households, which have a lower marginal propensity to consume and more headroom, via their current income, to soften the impact on consumption of higher prices and interest rates.^{37, 38}

Tighter financial conditions are having an uneven impact on the consumption of the different types of households. Specifically, according to the survey data presented in Chart 1.6.2, given the expectations for higher mortgage rates, households with floating-rate mortgage debt expect to reduce their consumption more than other groups. This is especially pronounced for low income indebted households, which also tend to have higher debt burdens and tighter liquidity constraints and to make more use of consumer credit.

Residential investment has also proven considerably weak recently (see Chart 1.7.1). This is due to the gradual loss of household purchasing power, the high uncertainty and the fact that bank lending has progressively become more expensive and difficult to access. House purchases and mortgage lending flows have declined since 2022 Q2, while housing starts currently remain at all-time lows. In keeping with these developments, house price growth has slowed since 2022 Q2. House prices are moderating less sharply than in other major European economies, where prices had grown more steeply in recent years. The shortage of specialised labour and higher construction material costs are simultaneously behind the sluggishness of new housebuilding and the downward stickiness of house prices.³⁹

Private productive investment has lost considerable momentum since spring 2022 (see Chart 1.7.1). Business investment has also been affected by this adverse setting.⁴⁰ Since mid-2022, this has resulted in a deceleration in external financing granted to firms and, in particular, in demand for credit for investment, which, as the Bank Lending Survey has shown in recent quarters, has been held back by the increase in interest rates. By contrast, credit for working capital has proven stronger, possibly because of the higher cost of commodities (see Chart 1.7.2). In any event, private investment has performed considerably better since the onset of the pandemic than during the global financial crisis.

Both investment in machinery and investment in transport equipment slowed from spring 2022. Nevertheless, investment in machinery remains above its pre-pandemic level and, furthermore, has regained momentum in early 2023. By contrast, investment in transport equipment stands well below its pre-health crisis level and in early 2023 continued to follow

³⁶ Alves and Martínez-Carrascal (2023).

³⁷ Specifically, the top two quintiles of the income distribution account for almost 70% of the increase in the aggregate saving ratio in 2020.

³⁸ Furthermore, the increase in interest rates could encourage greater use of these funds to repay floating-rate loans and for financial investments, rather than for consumption.

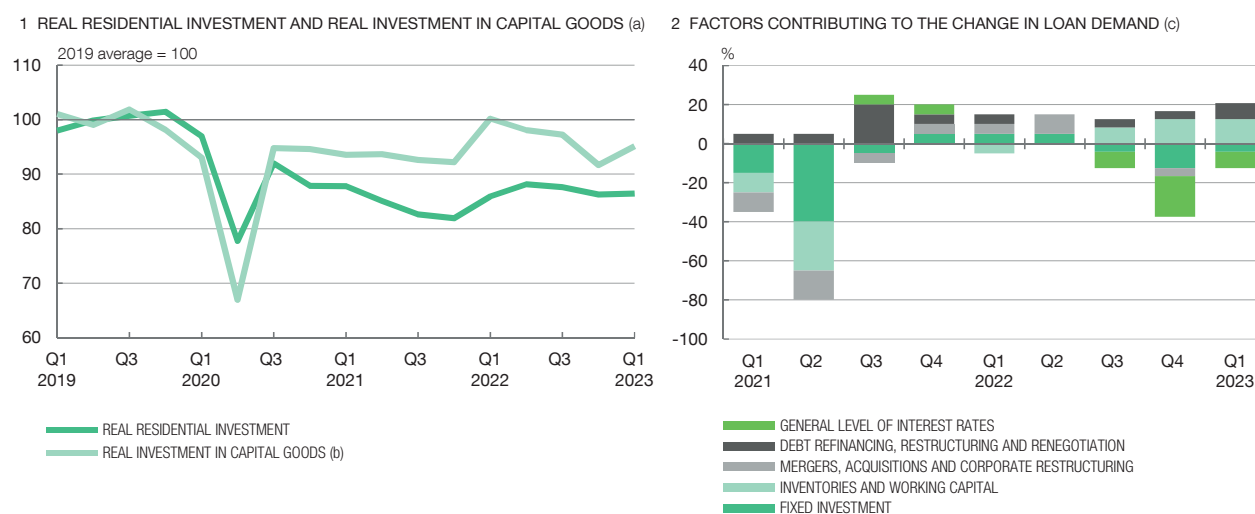
³⁹ San Juan (2023).

⁴⁰ Aguilar, Ghirelli and Jiménez-García (2023) provide evidence of the relative importance of these factors. In any event, the high uncertainty and deterioration in financing conditions have partially lagged effects that operate in 2023.

Chart 1.7

INVESTMENT, WHICH HAD SLOWED IN RECENT QUARTERS, REMAINS WEAK IN EARLY 2023

Residential investment has waned recently: house purchases have fallen since mid-2022 and supply remains at all-time low levels. Both residential and business investment, particularly investment in capital goods, have been dented by the rise in borrowing costs and the lower availability of financing.



SOURCES: Banco de España and INE.

a Seasonally and calendar-adjusted series.

b Gross fixed capital formation in capital goods, machinery and cultivated biological assets.

c Percentage of banks reporting that the factor has contributed considerably to increasing demand $\times 1$ + percentage of banks reporting that it has contributed somewhat to increasing demand $\times 1/2$ - percentage of banks reporting that it has contributed somewhat to reducing demand $\times 1/2$ - percentage of banks reporting that it has contributed considerably to reducing demand $\times 1$. Data from the Banco de España Bank Lending Survey (BLS).



the downward path of prior quarters. In addition, according to the EBAE, gross fixed capital formation has performed better at larger firms.

Lastly, although government spending under the NGEU programme increased in 2022, it did so relatively modestly and, therefore, its impact on the spending of final agents remains limited. Information from tenders and awards under the Recovery and Resilience Facility suggests that the volume awarded in 2022 amounted to approximately 0.8% of GDP. Looking ahead, the gradual roll-out of the Strategic Projects for the Economic Recovery and Transformation (PERTE by their Spanish initials) should be expected to further boost private investment in 2023.⁴¹

6 The external sector was key to sustaining output growth

The Spanish economy's external sector has performed fairly well recently. First, net external demand made a sizeable contribution (2.4 pp) to GDP growth in 2022, thanks in large

⁴¹ To date a total of 12 PERTEs have been authorised. Under these projects, public funds supplement private investment initiatives in strategic sectors.

part to robust services exports. Second, last year saw moderate gains in competitiveness, offsetting the losses incurred since the onset of the pandemic. Lastly, in terms of nominal trade, while the goods and services surplus shrank by 0.1% of GDP in 2022, this was set against the much sharper downturns observed in the other large euro area economies.

As far as real trade flows are concerned, services exports were notably buoyant, particularly in terms of international tourism. Tourism flows recovered remarkably well over the course of 2022, following the lifting of mobility restrictions. Nonetheless, in the opening months of 2023, total foreign visitor numbers remain slightly below the early 2019 figures. The post-pandemic recovery has brought with it some welcome changes in the composition of tourism flows, which has shifted somewhat towards segments with greater purchasing power, with higher-category accommodation now accounting for a bigger share of total overnight stays.⁴² This, combined with the fast price growth in the sector, has meant that revenues have continued growing (in nominal terms), standing well above their pre-pandemic levels at the start of 2023.

Exports of non-travel services are also seeing very fast growth. The recent performance of this demand component is further confirmation of one of the most striking features of the Spanish economy's performance since the global financial crisis. Particularly noteworthy, by type of activity, is the rise in exports of transport, business and telecommunications, and IT and information services. The factors behind this encouraging trend include the internationalisation and increasing digitalisation of Spain's business sector and, in the case of transport services, the return of foreign tourists (see Chart 1.8.1). Imports of both travel and non-travel services were also very robust in the year overall, albeit less markedly than in the case of exports.

Conversely, trade in goods has seen much more muted growth recently, above all in terms of exports. 2022 and the early months of 2023 saw a modest rise in sales of goods abroad, in keeping with the considerable weakness of global trade. While the overall mood was subdued, exports were stronger in some sectors, such as energy products and certain capital goods. By contrast, exports in other productive sectors faced headwinds owing to global supply chain disruptions, although they subsided as the year progressed. A case in point was the automotive sector, with the semiconductor shortage taking its toll on manufacturing and exports during much of the year. Nonetheless, this situation has reversed more recently, as the underlying causes of such shortages recede. Thus, in early 2023, vehicle exports (and indeed manufacturing) are on the rise.

Meanwhile, in real terms goods imports are growing faster than their usual main determinants (final demand and price competitiveness) would suggest. Three factors explain this strength.⁴³ First, the increased demand (possibly structural in nature) for certain goods produced by sectors with a high import content, such as the IT and telecommunications

⁴² [García, Gómez and Martín \(2023a\)](#).

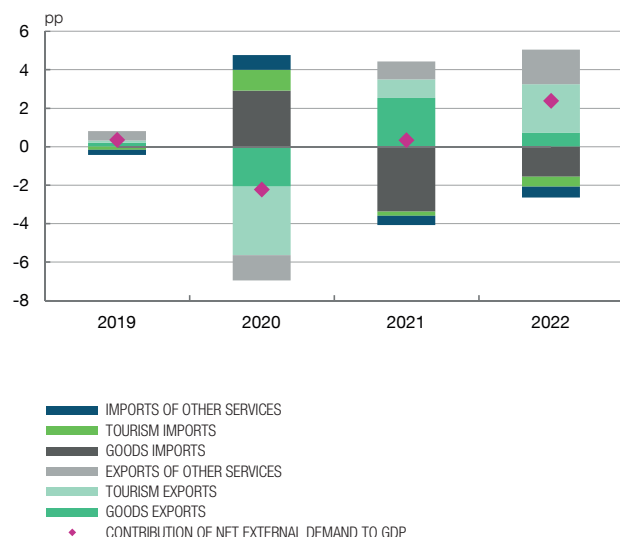
⁴³ [García, Gómez and Martín \(2023b\)](#) (only available in Spanish).

Chart 1.8

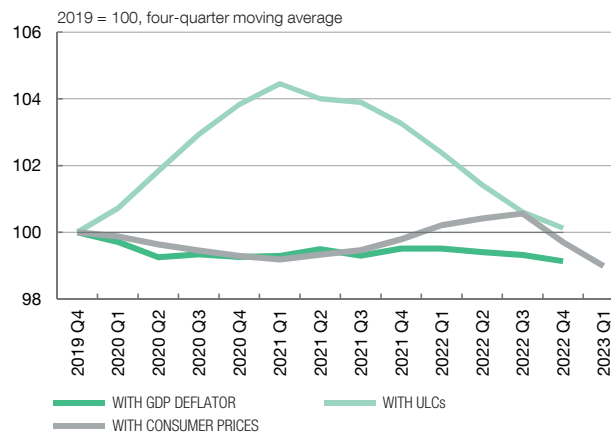
NET EXTERNAL DEMAND CONTRIBUTED SIGNIFICANTLY TO GDP GROWTH IN THE MOST RECENT PERIOD

Services exports have given a notable boost to the external sector's contribution to activity, thanks to the return of international tourism and the all-round strength of non-travel services. The rising cost of energy commodities has adversely impacted the real terms of trade.

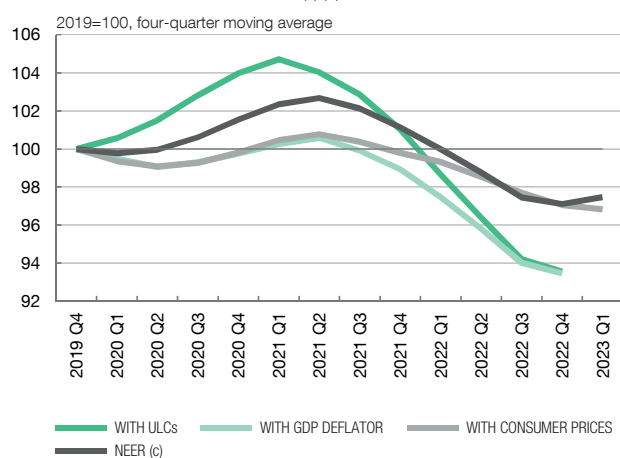
1 THE EXTERNAL SECTOR'S CONTRIBUTION TO CHANGE IN REAL GDP



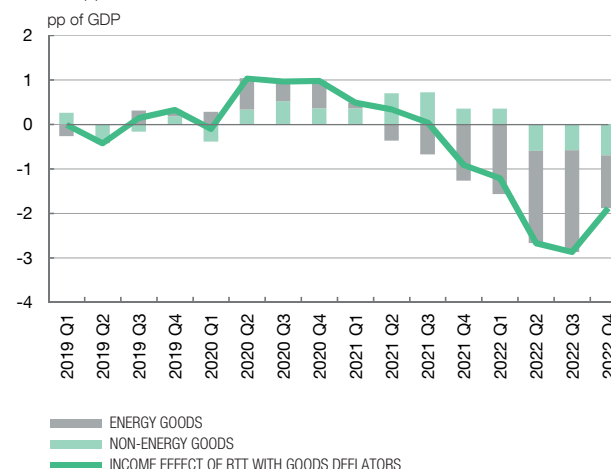
2 COMPETITIVENESS INDICATORS: SPAIN VIS-À-VIS THE OTHER EURO AREA COUNTRIES (a)



3 COMPETITIVENESS INDICATORS: SPAIN VIS-À-VIS A GROUP OF 18 NON-EURO AREA INDUSTRIALISED COUNTRIES (a) (b)



4 INCOME EFFECT OF REAL TERMS OF TRADE (WITH GOODS DEFLATORS). SPAIN (d)



SOURCES: ECB, INE and Ministerio de Asuntos Económicos y Transformación Digital.

- a Increases (decreases) in the indices reflect losses (gains) in competitiveness.
 b Vis-à-vis a group of 18 non-euro area trading partners, comprising Australia, Canada, Denmark, Hong Kong, Japan, Norway, Singapore, South Korea, Sweden, the United Kingdom, Switzerland, the United States, Bulgaria, China, the Czech Republic, Hungary, Poland and Romania.
 c Nominal effective exchange rate.
 d The disaggregation of deflators into energy and non-energy components is calculated based on the export and import UVIs (unit value indices of exports and imports).



sector. Second, the significant boost to energy imports. This can be attributed both to Spain's own exports of such goods (once reprocessed) to other economies more dependent on Russian oil and gas, and to the stockpiling strategies deployed in 2022 in the face of the threat of supply disruptions. Looking ahead, this increase in energy purchases looks likely to persist for as long

as the war in Ukraine lasts. The third factor has to do with the partial substitution of domestic production by imports from outside Europe in the case of the more energy-intensive manufacturing sectors (e.g. chemicals and basic metals), given the competitiveness lost due to the fact that the cost of these inputs has risen more on the continent.⁴⁴ This state of affairs, should it persist, could have adverse consequences in the long term, even if the underlying causes were to reverse, since the damage caused to the profit margins of these firms could deter them from deciding to invest or hire new staff in Europe.

Despite rising energy costs, the Spanish economy has proven more competitive in recent times. Compared with the euro area, in 2022 the ULC indicator returned to levels comparable to 2019 levels, reversing the overall loss of competitiveness seen during the pandemic (see Chart 1.8.2). Compared with the non-euro area industrialised countries, this trend was further bolstered by the depreciation of the nominal effective exchange rate (see Chart 1.8.3). Tourism exports were boosted by the improvements in competitiveness captured by the consumer price-based indicators, which proxy the overall competitiveness of an economy, including services.⁴⁵

The worsening of the real terms of trade as a result of rising energy prices was compounded in 2022. This deterioration was significant in the middle stretch of 2022, with an adverse impact on national income of around 3% of GDP (see Chart 1.8.4). This loss of income can largely be attributed to the soaring relative prices of energy imports, coinciding with most severe natural gas market turbulence. Nonetheless, since 2022 Q2, non-energy goods have also played a part in the worsening of the real terms of trade. More recently, in 2022 Q4, the downward correction to energy commodity prices went some way to reducing the deterioration in the real terms of trade.

Despite the sharp rise in energy prices, the contraction in the current account surplus was relatively small in 2022 (falling by 0.4 pp of GDP, to 0.6%). The goods deficit widened considerably in 2022, largely due to the impact of more expensive imported energy on the energy balance. Nonetheless, the non-energy balance also deteriorated, with the rising cost of other commodities and a depreciating euro playing a key role. Moreover, the aggregate primary and secondary income deficit grew somewhat, as rising interest rates were gradually passed through to the corresponding net payments. However, a large proportion of these developments was offset by the improvement in the services surplus, which, as noted above, was largely the result of the return of international tourism, although the increase in the non-travel services surplus also played a part.

44 A reliable supply of energy at a competitive price relative to other geographic regions is key to competing on international markets, particularly in the case of the more energy-intensive sectors. In this regard and despite the declines seen since summer 2022, gas remains more expensive than in other regions, putting Spain and its European neighbours at a competitive disadvantage and potentially leading to the delocalisation of production. Chapter 4 looks at this issue in more depth.

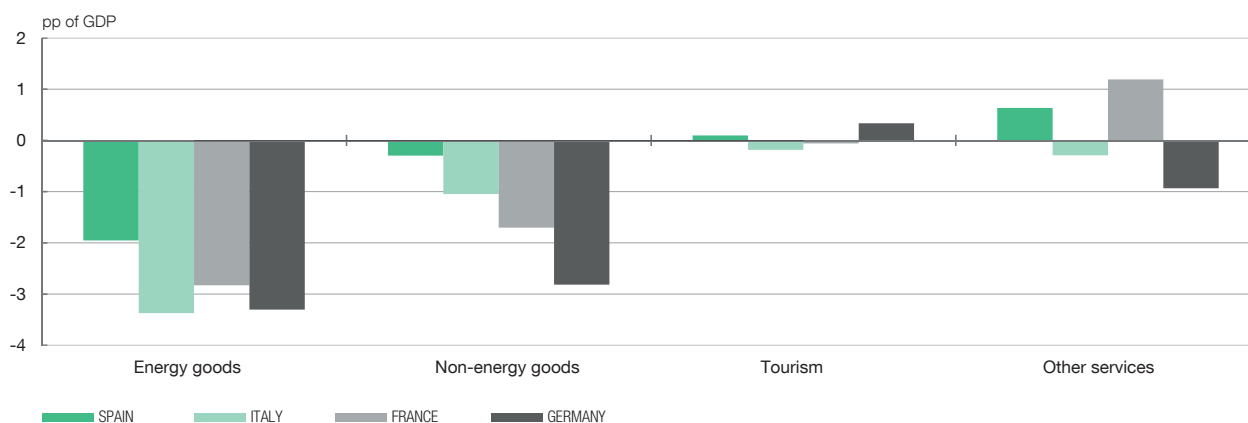
45 In terms of consumer prices, the inflation differential with the euro area deteriorated significantly during much of 2021 and in early 2022, immediately after the outbreak of war, owing to the faster pass-through of wholesale natural gas prices to electricity prices in Spain. Nonetheless, this trend reversed after the summer, due to the implementation of the Iberian mechanism and, in particular, to the slowdown in energy commodity prices.

Chart 1.9

THE DETERIORATION IN THE GOODS AND SERVICES BALANCE BETWEEN 2019 AND 2022 WAS MUCH MORE MODEST IN SPAIN THAN IN THE OTHER MAIN EURO AREA COUNTRIES

Energy re-exports mitigated the negative impact of rising energy costs on the energy goods balance. The non-energy goods balance has also improved significantly.

DIFFERENCES IN THE GOODS AND SERVICES BALANCES BETWEEN 2019 AND 2022 (a)



SOURCES: Banco de España, Eurostat and INE.

a The breakdown of the goods balance into its energy and non-energy components is estimated using the data on foreign trade in goods disaggregated by product (Eurostat and Customs Department).



The severe shocks since 2019 have so far led to a much more modest deterioration in Spain's goods and services balance than in the other main euro area countries. In Spain, this balance worsened by 1.5 pp of GDP between 2019 and 2022, versus 7.2 pp, 3.2 pp and 4.6 pp in Germany, France and Italy, respectively (see Chart 1.9). By component, it is worth noting that the energy deficit grew by 1.9 pp of GDP in Spain, whereas this figure ranged from 3.1 pp to 3.3 pp of GDP in the other three economies. As noted above, this can be attributed to the notable buoyancy of re-exports of energy goods (once processed in Spain), which include significant value added. Furthermore, while the non-energy goods balance has worsened in all four countries, it has done so to a lesser degree in Spain (0.3 pp of GDP) than in Germany, France and Italy (2.8 pp, 1.6 pp and 0.7 pp, respectively). Spain's tourism balance barely changed between 2019 and 2022, much like in France and Italy.⁴⁶ Lastly, France's non-travel services balance improved more than Spain's, though Italy and (above all) Germany saw declines.

7 Domestic and supranational European economic policy responses in recent quarters

The European authorities have responded resolutely to the Russian invasion of Ukraine and the challenges it has posed by implementing a wide range of measures in multiple areas.

⁴⁶ Though Germany is traditionally an exporter of tourists, its tourism balance has nonetheless improved compared with the pre-pandemic period, due to the fall in foreign travel.

For instance, different packages of sanctions and restrictions have been adopted over recent quarters, aimed essentially at increasing the cost of the war for Russia and its economy. In addition, to boost the EU Member States' responsiveness, in May 2022 the European Commission agreed to keep the general escape clause of the Stability and Growth Pact activated in 2023. The clause was activated at the onset of the pandemic and, before the outbreak of the war in Ukraine, was expected to be deactivated as of 2023. Lastly, the Commission approved a new State aid Temporary Framework, which relaxed the rules on grants and subsidised public loans for the sectors hardest hit by the energy crisis and aims to drive the transition to an emission-free economy.

In the energy domain, the launch of the Commission's REPowerEU programme stands out. This plan combines a series of initiatives aimed at diversifying the EU's fossil fuel supply sources, stepping up energy saving and speeding up the deployment of renewables. To achieve these goals, among other measures, Member States can use the remaining RRF loans – and new RRF grants funded by the auctioning of Emission Trading System allowances – to adopt further energy actions. Additional regulations were also established in the context of, for example, gas inventories, renewables targets and joint natural gas purchases. For further details on the European economies' response and adaptability to the energy crisis, from both a short and a medium and long-term perspective, see Chapter 4.

In late 2021 the ECB launched its monetary policy tightening process in response to the high and persistent inflationary pressures. Chapter 3 describes in detail how the ECB has been adjusting its monetary policy stance over recent quarters – leading, among other measures, to a rapid rise in the policy interest rates, totalling 375 bp between July 2022 and May 2023 – and how these monetary policy decisions are filtering through, via different channels, to economic activity as a whole.

The national authorities of the EU Member States have also adopted manifold initiatives in response to the surge in prices. These measures have essentially sought to limit the increase in domestic prices – energy prices above all, but also food prices, in some cases – and/or support economic agents' incomes amid the erosion of their purchasing power since 2021. Overall, these measures – which have mostly been blanket measures, rather than targeted at the most vulnerable groups – amount to around 2 pp of euro area GDP. In addition, persistent high inflation has meant that, in most cases, these measures have been extended to much of 2023.

It is estimated that the measures adopted in Spain since mid-2021 to mitigate the consequences of high inflation will have a budgetary impact of around €37 billion between 2021 and 2025 (see Box 1).⁴⁷ This cost is likely to be concentrated in 2022 and 2023, accounting for shares of 1.4% and 0.9% of GDP, respectively, slightly lower, therefore, than that estimated for the euro area overall.⁴⁸

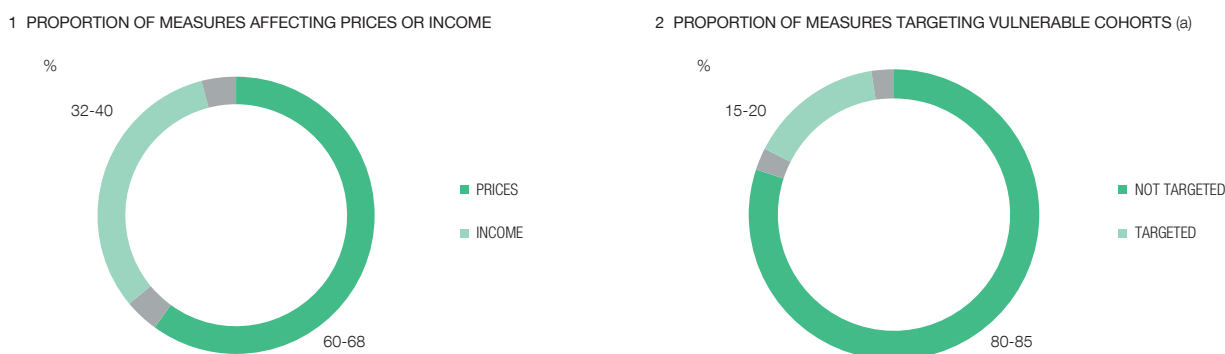
⁴⁷ This cost has been calculated on the assumption that the measures rolled out will remain in force for the duration announced by the authorities. In any event, the exact cost of these initiatives cannot be estimated at this point in time, since the duration of such measures will depend on how prices themselves develop.

⁴⁸ According to Eurosystem estimates, overall these fiscal measures are estimated to amount to around 1.9% and 1.8% of the euro area's GDP in 2022 and 2023, respectively (Checherita-Westphal and Dorrucchi, 2023).

Chart 1.10

MOST OF THE ANTI-INFLATION MEASURES ADOPTED HAVE NOT TARGETED VULNERABLE COHORTS

In proportion to the total funds deployed, most of the measures adopted to combat inflation were not aimed at alleviating the situation of vulnerable cohorts and had a direct impact on prices (rather than supporting agents' income).



SOURCES: Banco de España, drawing on information from the Government of Spain, IGAE and AEAT.

a The colour grey indicates uncertainty as to the classification of the measures.



An initial taxonomy of the measures breaks them down into those aimed at easing the increases in the price of some of the goods whose price has risen the most and those that seek to prop up the income of certain groups of agents. On the available calculations, in terms of the total funds allocated, most of the measures adopted in Spain pertain to the first of these two categories. Specifically, between 60% and 68% (see Chart 1.10.1).

The first type of measure has sought to slow the rising cost of energy (and, more recently, food), generally in the form of tax reductions. In particular, the measures include cuts to the VAT on certain energy goods and foods and the excise duties on electricity and gas, rebates on the price of certain products (e.g. the subsidy for fuel consumed by households, in force until end-2022)⁴⁹ and modifications to the electricity price setting arrangements by temporarily capping the price of the gas used in electricity production. In general, the advantage of price-capping or tax-cutting initiatives is that they are relatively easy and quick to implement. Yet there are also two drawbacks. First, while such measures help to slow the inflation rates for some goods in the short term, they also skew price signals, thus reducing (in the specific case of energy goods) the incentives to curb consumption and encourage efficient usage. Moreover, given the temporary nature of these measures, they may simply serve to defer inflation, which could therefore re-emerge once such measures have been withdrawn. Further, given that these measures are largely general in scope, they could entail an excessive fiscal stimulus and come at a high budgetary cost, an aspect of particular importance in countries such as Spain that have limited fiscal headroom.

The second type of measure seeks to mitigate (in the form of transfers) the decline in households' and firms' real income brought about by rising prices. One advantage of

⁴⁹ The subsidy was universal up to 31 December 2022. As from 1 January 2023, households are no longer eligible, and it is now restricted to consumption for professional use.

actions of this sort is that they can, in principle, be designed to be means-tested, so that they only benefit those most vulnerable to the inflationary surge. The difficulty, however, lies in the fact that they are, in principle, harder to design, since the vulnerable cohorts must be identified, ensuring that the relief actually reaches them (which takes time). In Spain, measures targeting households include, e.g. personal income tax deductions, larger increases to minimum pensions and minimum living income than in the case of other welfare benefits, and direct transfers to vulnerable households, as defined by income and wealth (such as the €200 grant approved in late 2022). Measures targeting firms included subsidies for those operating in certain productive sectors.

Overall, the measures rolled out in Spain (and in the euro area) do not sufficiently target the hardest hit agents. On the available evidence,⁵⁰ the bulk of the public actions adopted since late 2021 to address the fallout from high inflation appear to have benefited Spanish households and firms across the board. Specifically, measures targeting the economic agents most vulnerable to the energy crisis and rising prices account for 15% to 20% of the estimated overall budgetary cost in the period running from 2021 to 2025 (see Chart 1.10.2).⁵¹ This group includes most of the initiatives in the form of transfers referred to above, but also the occasional price measure, such as reduced gas and electricity rates. The rest of the funds mobilised (between 80% and 85% of the fiscal cost envisaged) is associated with initiatives that have a fairly broad scope.

Measures better designed to target the most vulnerable agents would have been more effective, at a lower fiscal cost, in mitigating the impact of the inflationary crisis on such agents, while, in turn, minimising the potential inflationary impact of the measures themselves. The broad-based nature of the measures entails a very high budgetary cost, and the difficulties faced by the most vulnerable households and firms could therefore have been more adequately addressed with fewer resources.⁵² The failure to target the measures was particularly notable in the case of the subsidy on fuel for household consumption, since only a small portion of its budgetary cost was allocated to lower-income households, who benefited less in relative total expenditure terms than their higher-income counterparts. The elimination of this measure at the end of 2022 was an important step towards better targeting the domestic economic policy actions. Although slower to implement, an alternative design of the measures based on income transfers to the most vulnerable cohorts would yield levels of protection comparable to those obtained with the initiatives adopted, but at a lower budgetary cost and, at the same time, without distorting price signals or serving to prolong inflationary pressures.

Overall, the measures rolled out have reduced inflation and boosted activity. The available estimates suggest that, taken together, the raft of initiatives set in place reduced the

50 For a more detailed analysis of this breakdown and the distributional effects of the measures rolled out, see [García-Miralles \(2023\)](#).

51 [Checherita-Westphal and Dorrucchi \(2023\)](#) show that the measures adopted in the euro area as a whole have also been of an eminently general nature.

52 For more details, see [García-Miralles \(2023\)](#)

average inflation rate by 2.3 pp and contributed 1.1 pp to the GDP growth rate in 2022⁵³ (see Box 1). That said, given the temporary nature of the initiatives adopted and the fact that they are set to expire at some point this year, they are expected to have the opposite effect on GDP in 2024 and on inflation in 2023 and 2024. As a result of this partial reversal of the effects, the price level in 2024 is only likely to be around 1% lower than before the measures were introduced.

⁵³ In late 2022, the authorities approved a Code of Good Practice for mortgages to mitigate the adverse effects of swift interest rate hikes on households (see [Royal Decree-Law 19/2022](#) of 24 November 2022, only available in Spanish). At a macroeconomic level, the direct relief for the financial pressure on vulnerable mortgagors thanks to the application of this new code is expected to act as a marginal short-term boost to GDP. For more details, see [Banco de España \(2023b\)](#).

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The sharp rise in inflation since early 2021 has led to the deployment of various measures by euro area governments to alleviate its effects on the economy. This box presents an estimate of the aggregate impact on inflation and on Spain's economic activity of the actions taken by the Spanish Government.

As elsewhere, the design of the different measures deployed in Spain shows high heterogeneity across at least four different dimensions: (i) whether or not there are explicit budgetary costs, (ii) whether the measures are temporary or permanent, (iii) their impact on agents' incomes or on product prices, and (iv) whether or not they are available to all agents or targeted at the most vulnerable groups. As regards the first of these aspects, most of the support measures implemented, such as tax cuts and grants to vulnerable groups, involve a budgetary cost.¹ However, others, such as the mechanism to cap the price of gas on the Iberian market, do not have a direct effect on public finances. If only the measures with a direct budgetary impact are considered, the bulk of this cost is concentrated in 2022 and 2023 (1.4% and 0.9% of GDP, respectively) (see Table 1). For the period 2021-2025, the estimated budgetary impact stands at between 2.5% and 2.9% of GDP.

Against this backdrop, the channels of the impact of the different measures on inflation and economic activity depend on their characteristics. Thus, some measures have a direct effect on inflation by automatically reducing energy consumer prices (e.g. the reduction or elimination of access charges, lower energy taxes and the gas price cap). However, even though other measures do not directly affect price levels, they may indirectly affect them through their effect on agents' disposable income and demand (for instance, grants to vulnerable households or certain productive sectors).² In addition, measures with a direct impact on inflation may also have an indirect effect on agents' demand (and on economic activity) by affecting their real disposable income.

In view of these considerations, the aggregate impact of the different measures should be estimated within a methodological framework that allows both the direct and

indirect effects to be incorporated. In this box, the Quarterly Macroeconometric Model of the Banco de España (MTBE, by its Spanish abbreviation) is used for this purpose.³ The MTBE is a large-scale macroeconomic model used to prepare medium-term macroeconomic forecasts for the Spanish economy and to estimate counterfactual scenarios to simulate, for instance, risk scenarios or the effects of different types of economic policy measures. This model can be used to calculate the macroeconomic effects of the measures, considering the distinct nature of each one.

According to the simulations made with this model, the implementation of support measures to tackle the energy crisis in Spain had a significant effect, in terms of both boosting economic activity and containing inflationary pressures (see Chart 1). Specifically, the measures contributed 0.2 pp, 1.1 pp and 0.1 pp to GDP growth in 2021, 2022 and 2023, respectively. According to the information currently available, most of the measures will be withdrawn in 2023 and 2024, generating a negative contribution to the GDP growth rate of nearly -0.6 pp in 2024.⁴ In any event, it should be borne in mind that these effects are calculated under a counterfactual scenario which assumes that failure to introduce the measures has no adverse consequences, when in fact it could have led to perverse macroeconomic dynamics, given the particular impact of the crisis on the most vulnerable agents. Thus, the measures succeeded in mitigating the initial consequences of the inflationary surge (albeit at the cost of drawing out its effects over a longer period).

As regards inflation, the simulations suggest that the deployment of the different measures lowered the HICP growth rate by 0.8 pp and 2.3 pp in 2021 and 2022, respectively. However, as was foreseeable given their temporary nature, their progressive withdrawal in 2023 and 2024 is expected to raise the rate of change of consumer prices by 0.3 pp in 2023 and 1.6 pp in 2024.

The individual impact of each measure is greater in the case of those aiming to lower the cost of energy bills.

1 The analysis conducted in the box excludes measures with a budgetary impact which, although adopted in response to the inflationary crisis, cannot be considered as measures to directly support private agents. This is the case with taxes on energy utilities and financial institutions.

2 It is estimated that between 32% and 40% of measures with a budgetary impact directly affect agents' incomes, while the rest operate through the direct effect that tax cuts, rebates or subsidies have on effective product prices.

3 For further details, see [Arencibia, Ana, Samuel Hurtado, Mercedes de Luis and Eva Ortega](#). (2017). "New version of the Quarterly Macroeconomic Model of the Banco de España (MTBE)", *Occasional Paper* - Banco de España, 1709.

4 The reason why the withdrawal of measures in 2023 does not impact GDP until 2024 is that many of them affect the economy with a lag.

MACROECONOMIC IMPACT OF SUPPORT MEASURES TO ADDRESS THE SURGE IN INFLATION AND THE ENERGY CRISIS (cont'd)

Table 1
SUPPORT MEASURES FOR HOUSEHOLDS AND FIRMS IN RESPONSE TO THE ENERGY CRISIS AND INFLATION (a)

The authorities have implemented a broad raft of measures aiming to counter the effects of the rise in the prices of various goods and services on the incomes of households and firms. It is estimated that these measures will have a total budgetary cost of €34-€40 billion over the period 2021-2025 (2.5-2.9% of GDP).

	Applied as from	Expected expiry date	Targeted	Budgetary cost in period 2021-2025 (€m)
(1) Income measures				[-17,800, -15,200]
VAT: temporary reduction in rates on electricity and gas	01.07.2021 (b)	31.12.2023	No	[-6,300, -5,500]
Excise duty: temporary reduction in rate on electricity	01.09.2021	31.12.2023	No	[-3,300, -2,900]
VAT: temporary reduction in rate on food	01.01.2023	30.6.2023	No	[-700, -600]
Personal income tax: earned income deduction, reductions for self-employed and regional reductions	01.01.2023	Permanent (c)	No	[-7,500, -6,200]
(2) Spending measures				[19,120, 22,100]
Fuel rebate for households and professional drivers (d)	01.04.2022	30.06.2023	No	[5,300, 6,000]
Extension of fuel rebate for professional drivers	01.01.2023	30.06.2023	No	[400, 500]
Grant to firms affected by energy price increase	01.04.2022	31.12.2022	Yes	[2,100, 2,300]
Grants to productive sectors	01.04.2022	31.12.2023	Yes	[1,000, 1,200]
€200 cheque for vulnerable households (both packages)	01.07.2022	31.12.2023	Yes	[920, 1,500]
15% increase in non-contributory pensions (including minimum income scheme)	01.04.2022	31.12.2022	Yes	[650, 850]
Public transport subsidy (e)	01.09.2022	31.12.2023	No	[1,700, 2,000]
Student grant expansion	01.09.2022	31.12.2022	Yes	[350, 450]
Subsidies to the electricity/gas sector to reduce bills (f)	01.09.2022	31.12.2022	No	[6,500, 6,900]
Social rebate on heating	01.10.2022	Permanent	Yes	[600, 900]
(2-1) Total funds				[34,320, 39,900]
(3) Other measures with no direct budgetary cost				
Suspension of tax on electricity generation (g)	01.07.20201	31.12.2023		
Reduction in electricity charges	01.10.20201	31.12.2022		
Iberian exception	15.06.2022	31.12.2023		
Cap on rental increases	01.04.2022	31.12.2023		
Price cap for butane gas	01.07.2022	30.06.2023		

SOURCES: Banco de España, drawing on information from the Spanish government, IGAE, Agencia Tributaria, the Spanish Household Budget Survey and the Spanish Survey of Household Finances.

- a The estimated budgetary impact of these measures is subject to a high degree of uncertainty and is regularly revised in accordance with newly available data.
- b The reduction in VAT on electricity was applied from 01.07.2021 and on gas from 01.10.2022.
- c Including the reduction in personal income tax for the self-employed, due to expire on 31.12.2024.
- d It is estimated that around 50%-60% of this rebate is received by households. The extension from 01.01.2023 until 30.06.2023 for professional drivers is included.
- e Free local train services have been extended to the whole of the year. The subsidy for regional transport has been extended to 30.06.2023.
- f Including the extraordinary subsidy to the electricity sector (from 01.09.2022), assumption of the shortfall arising from the regulated rate for small natural gas consumers (from 01.10.2022) and making electricity and gas contracts more flexible (from 01.01.2023).
- g The temporary suspension of the tax on electricity generation (IVPEE by its Spanish initials) is not considered to have a direct budgetary impact as, by law, the receipts are used to cover the electricity sector's costs.

Thus, the reduced VAT rates on gas and electricity, the exemption from payment of charges in electricity bills and the cap on the increase in the regulated rate for small natural gas consumers would explain, as a whole,

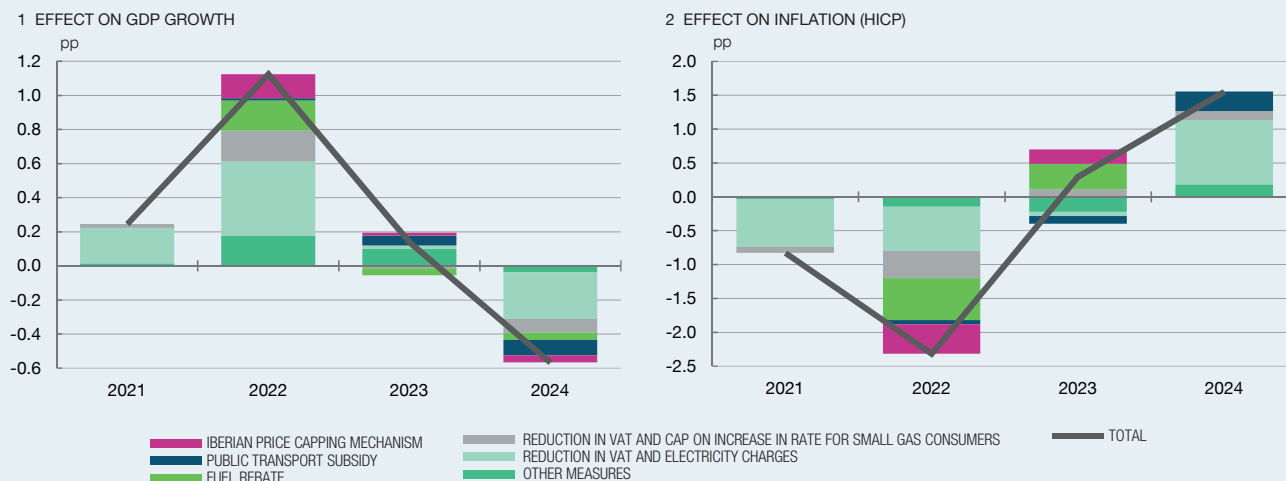
around one-half of the contribution of all the measures to the increase in GDP growth and the decline in inflation in 2022 (0.6 pp and -1.1 pp, respectively). Similarly, other measures aimed at reducing energy bills, such as the

MACROECONOMIC IMPACT OF SUPPORT MEASURES TO ADDRESS THE SURGE IN INFLATION AND THE ENERGY CRISIS (cont'd)

Chart 1

IMPACT OF THE SUPPORT MEASURES IN RESPONSE TO THE ENERGY CRISIS

The fiscal measures designed to support economic agents in the face of the energy crisis appear to have been key to invigorating economic activity and reducing price pressures in 2022.



SOURCES: INE and Banco de España.

cap on the price of gas for electricity generation⁵ and the fuel rebates appear also to have had a significant impact on inflation in 2022 (reducing it by 1.1 pp). However, their impact on GDP seems to have been more moderate.

It is also very important to note that, although the measures implemented have had a positive effect on economic growth and have helped to contain inflation in the short term, they have also entailed a high budgetary cost, at a time when fiscal space is limited in Spain.⁶ In addition, some of these actions have tended to distort price signals, hampering the efficient allocation of resources, which is an especially

important consideration in the current context of the green transition.⁷ For further details on the design of these government initiatives and on the fiscal policy challenges facing our economy in the coming years, see Section 7 of this chapter and Chapter 2 of this report, respectively.

Lastly, it should be noted that the estimates presented in this box are subject to a high degree of uncertainty, mainly stemming from the possibility that energy prices may diverge from their projected path, which would affect the estimated impact of the measures, probably giving rise to changes in their composition and duration.

5 For more details, see [Matías Pacce, and Isabel Sánchez](#). (2022). "Box 4. Impact on inflation of the mechanism to cap gas prices on the Iberian market". *Economic Bulletin* - Banco de España, 2/2022.

6 As stated in the Spain-specific recommendations of the Council of the European Union as part of the European Semester programme.

7 [Natalia Fabra, Karsten Neuhoﬀ and Nicolas Berghmans](#). (2023). "European economists for an EU-level gas price cap and gas saving targets". CEPR-VoxEU.



2

ROBUST AND SUSTAINABLE GROWTH AND CONVERGENCE WITH THE EURO AREA: CHALLENGES AND OPPORTUNITIES

1 Introduction

The Spanish economy has not managed to reach the per capita income level of the euro area in recent decades.¹ This chapter explores the main reasons for this failure, which are fundamentally that productivity and the employment rate in Spain are persistently lower than those of other European countries. The many challenges and opportunities that are entailed in remedying these structural weaknesses are discussed as well, along with the role that must be played by public policies in this process and, in particular, by the proper use of funds from the Next Generation EU (NGEU) programme. Further, the Spanish Recovery, Transformation and Resilience Plan (RTRP) must be rigorously and ambitiously designed and implemented.

In any case, a growth path associated with the continuation or build-up of significant macroeconomic, financial or social vulnerabilities is unsustainable. With this in mind, this chapter outlines the main macro-financial imbalances that have been rectified in the Spanish economy in recent decades and looks at some of the most significant sources of future vulnerability. One of the most serious of these is the high stock of government debt and the pockets of vulnerability that have been observed among some households – linked, to a great extent, to high levels of inequality.

Mitigating the adverse effects of these shortcomings on the potential and sustainability of economic growth in Spain in the coming years requires the implementation of ambitious public-sector interventions in a wide range of areas. The success of these policies depends on, among other factors, their objectives (which must be clear and measurable) being carefully defined in advance. It is also contingent on such interventions being rigorously and transparently evaluated following their implementation in order to determine the extent to which each one enables goals to be met efficiently.

2 The lack of convergence with per capita income in the euro area

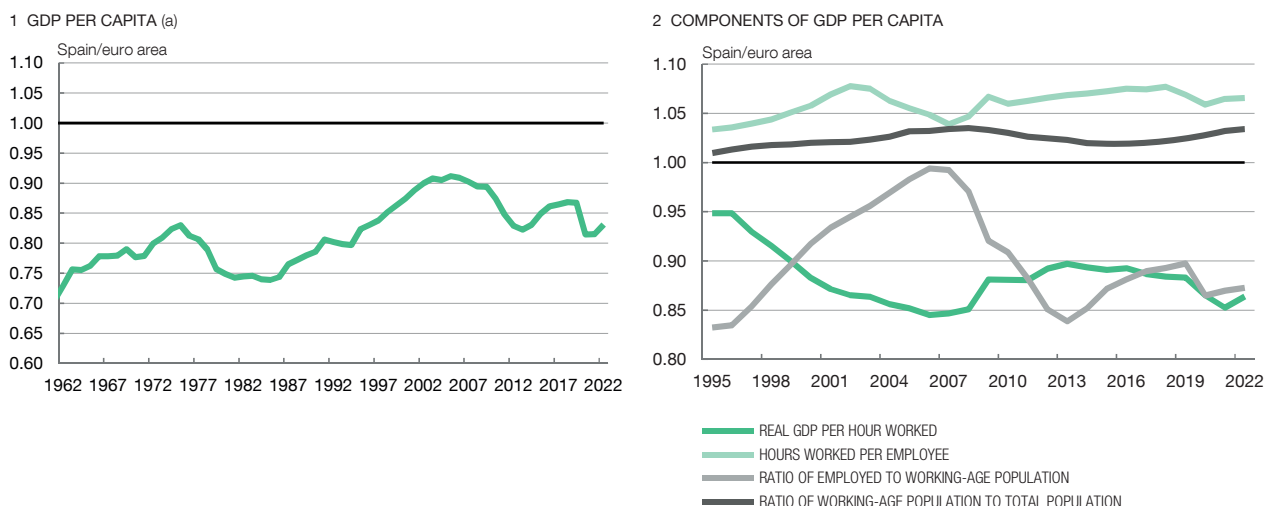
The Spanish economy's growth in recent decades has not been enough to achieve convergence with the per capita income level of the euro area. In 2005 the gap between Spanish GDP and that of the wider euro area shrank to its narrowest in recent history – 8.8% (see Chart 2.1.1). This was the result of a very long period of strong growth in Spain, especially after joining the European monetary union (EMU). However, that growth path, which was

¹ In this report, differences in GDP per capita between Spain and the other 19 euro area countries are calculated in real terms and account for Spain's relatively lower purchasing power.

Chart 2.1

THE CONVERGENCE OF SPANISH GDP PER CAPITA WITH THAT OF THE EURO AREA HAS SLOWED SINCE 2008 OWING TO WEAKER EMPLOYMENT PERFORMANCE AND LOWER PRODUCTIVITY

In 1960 Spanish GDP per capita was 32% lower than the euro area average. By 2008 this difference had dropped to just 10 pp. The global financial crisis of 2008 reversed that convergence, largely as a consequence of the poorer performance of the employment rate in Spain. Likewise, productivity in Spain has lagged that of the euro area by 10% to 15% since 2008.



SOURCE: Eurostat.

a GDP per capita in Spain relative to the 19 euro area countries in real and relative purchasing power parity terms.



largely linked to the build-up of significant macroeconomic and financial imbalances, was later shown to be unsustainable.² Since then, the process of convergence between the Spanish economy and the euro area has stagnated and even reversed.³ In 2019, prior to the onset of the COVID-19 pandemic, Spain's GDP per capita was 13% below the euro area average. The most recent data point to this figure having reached 17% in 2022.

This lack of convergence is fundamentally driven by the persistence of two well-known shortcomings in the Spanish economy: low productivity and employment. The change in GDP per capita can be explained as the outcome of overall developments in four factors: hourly labour productivity, hours worked per employee, the employment rate (i.e. the ratio of employed people to the working-age population) and the ratio of the working-age population to total population.⁴ When the lack of convergence between the

2 Banco de España (2017a).

3 Such divergence from the euro area is not limited to Spain. It has occurred in other southern European countries, such as Italy, Portugal and Greece, in the wake of the global financial crisis. It stands in contrast to the ongoing convergence seen in eastern European countries. For more details, see Pina and Sicari (2021).

4 These variables could be described with the following expression:

$$\frac{\text{GDP}}{P_{\text{total}}} = \frac{\text{GDP}}{\text{Hours}} \frac{\text{Hours}}{L} \frac{L}{P_{16-64}} \frac{P_{16-64}}{P_{\text{total}}}$$

where $\frac{\text{GDP}}{P_{\text{total}}}$ represents GDP per capita, $\frac{\text{GDP}}{\text{Hours}}$ hourly labour productivity, $\frac{\text{Hours}}{L}$ hours worked per employee, the employment rate and $\frac{P_{16-64}}{P_{\text{total}}}$ the working-age population as a share of total population.

GDP per capita of Spain and the euro area is analysed in this context, it can be seen that it is the result of persistent shortfalls in hourly labour productivity and the employment rate – 12% each on average since 2008 (see Chart 2.1.2). Moreover, these differences have historically correlated negatively (apart from most recently), meaning that as one shrank, the other would often be seen to grow.⁵

Remedying these shortcomings should be one of the central aims of Spanish economic policy and will demand very substantial changes to many of the economy's structural aspects. The rest of this section delves into the various challenges and opportunities posed by improving productivity (see Section 2.1) and employment (see Section 2.2). It also looks at the roles that public policies and, in particular, the mobilisation of funds from the NGEU programme, have to play in this process.

2.1 The role of innovation in productivity

Spain's sluggish productivity is linked to the performance of total factor productivity. Productivity is associated with the amount of tangible capital per worker and the other factors that increase per-worker productivity. These other factors are together known as total factor productivity (TFP) and include a range of elements, such as organisation and training, as well as innovation and other intangibles that add value to a firm's output. According to [EU KLEMS](#), the average annual contribution of TFP to value-added growth between 1995 and 2019 was negative in Spain (-0.23%), far from the positive contributions seen in other major euro area countries, such as Germany (0.71%) and France (0.52%).

One aspect that is useful to explain Spain's relatively lacklustre productivity is its low share of innovation, which is one of the main drivers of productivity in the long term.⁶ Between 2020 and 2021, the ratio of research and development and innovation (R&D&I) expenditure to GDP stood at an average of 1.2% in Spain – 0.8 percentage points (pp) below that of the euro area as a whole (see Chart 2.2.1).⁷ Long-standing shortcomings in Spain contributed to this shortfall relative to the euro area, which affects R&D&I in the public sector and, in particular, the private sector (see Chart 2.2.2).

In general, innovation and productivity dynamics are the product of several interconnected factors. Two key factors are the levels of physical and human capital. In addition, the regulatory and institutional framework is a primary determinant of: (i) the economy's sectoral structure, (ii) firm size, (iii) the ease of cross-firm and cross-sectoral

5 For more information on this negative correlation of changes in the gaps in employment and productivity between Spain and the wider euro area, see [García-Santana, Moral-Benito, Pijoan-Mas and Ramos \(2020\)](#).

6 [Romer \(1986\)](#), [Lucas \(1988\)](#) and [Aghion and Howitt \(1992\)](#).

7 If a more recent period is considered, since 2013, for example, the difference is similar (0.9 pp). Conversely, when investment in intangibles (which includes investment in software, databases, design, advertising and organisational set-up, among others things, alongside investment in R&D&I) is used to measure drive for innovation, the results obtained also suggest the existence of a persistent shortfall in Spain relative to the euro area ([Banco de España, 2018](#)). Nevertheless, comprehensive metrics for innovation that also cover items such as on-the-job training are also needed.

allocation (or reallocation) of productive resources, and (iv) the ability to finance investment projects. At the same time, public policies relating to the stimulus, coordination and financing of innovation-related activities must not be overlooked.

Various international innovation indicators, which provide weighted values for this set of factors, place Spain well behind global leaders in this area. For example, according to the European Commission's (EC) [European Innovation Scoreboard \(2022\)](#), Spain is in the "moderate innovators" group in the European Union (EU), far behind "innovation leaders" (Sweden, Finland, Denmark, the Netherlands and Belgium) and "strong innovators" (Ireland, Luxembourg, Austria, Germany, Cyprus and France). For its part, the [Global Innovation Index](#) (World Intellectual Property Organization, 2022) reaches a similar verdict regarding Spanish innovation's place on the world stage, ranking the country 29th globally and 18th in Europe.

There is plenty of room for improvement to boost innovation and, along with it, productivity in Spain. Generally speaking, the various measures that could be put in place could be split into four groups, that aim to: (i) encourage business growth and mechanisms for cross-firm and cross-sectoral allocation of factors of production, (ii) bolster innovative activities, (iii) increase human capital, and (iv) strengthen the central role played by institutions and general government. Although all of the above are closely interconnected, each one is analysed below for explanatory purposes (apart from human capital, which is addressed in Section 2.2.2 in terms of its impact on labour supply).

2.1.1 Fostering business growth and mechanisms for cross-firm and cross-sectoral allocation of factors of production

Any factor that artificially constrains business growth or the ability to reallocate factors of production across firms and sectors ultimately results in less buoyant innovation and productivity in the economy.⁸ This is the case because, generally speaking, one of the main incentives for a firm to engage in innovation is to grow and increase its market share or, if the firm is participating in a highly dynamic and competitive economy, not to be left behind and maintain its market share. It is precisely in this context that innovation emerges as one of the most important tools available to firms looking to lift their productivity and set themselves apart from the competition.

Many hindrances of this nature have been identified in Spain in recent decades, such as those relating to the volume and quality of regulation. The volume and complexity of regulation governing economic activity in Spain has grown substantially in recent years – to the point that, for example, the central and regional governments approved 10,873 new rules

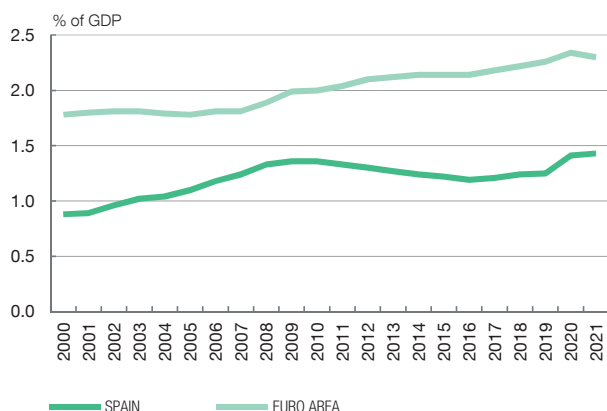
⁸ Firm size is just one aspect when discussing the productive system. Other factors that can also affect varying levels of productivity across firms must be taken into account, such as the degree of internalisation.

Chart 2.2

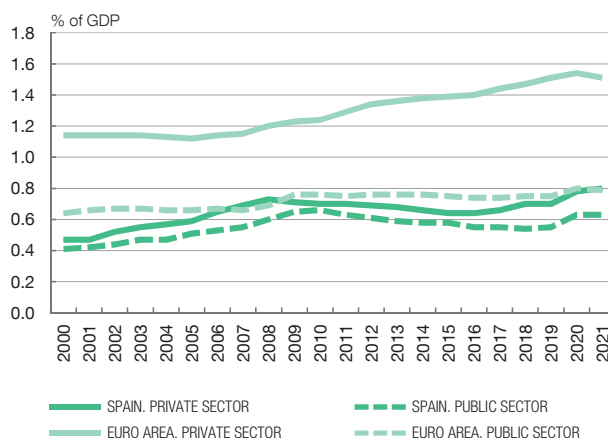
R&D&I INVESTMENT IN SPAIN IS BELOW THE EURO AREA AVERAGE

Over the period 2000-2021, the R&D&I-to-GDP spending ratio stood on average at 1.2% in Spain, 0.8 pp below that of the wider euro area. Weaker public and, especially, private sector R&D&I investment were factors behind this gap in the drive for innovation.

1 R&D&I INVESTMENT IN SPAIN AND THE EURO AREA



2 PUBLIC AND PRIVATE SECTOR R&D&I INVESTMENT IN SPAIN AND THE EURO AREA



SOURCE: Eurostat.



and regulations in 2022 alone.⁹ A high volume of rules and regulations that are increasingly complex and vary across regions and municipalities can have a negative impact on both economic agents' decisions and the general government's ability to guarantee market unity, both domestically and at European level. Altogether, this limits firms' ability to grow and stifles their incentive to innovate and specialise.

Other barriers comprise various mechanisms that affect firms' creation, growth and winding-up. There are, for example, several employment and tax-related regulatory thresholds (linked to arbitrary categories of firm size), which adversely affect business growth.¹⁰ In spite of significant improvements in financing in recent years,¹¹ Spanish firms – in comparison with firms in the euro area – continue to be heavily reliant on bank loans (see Chart 2.3.1) and have relatively limited access to venture capital. This funding structure restricts not only firms' growth possibilities and their leeway to respond to potential shocks, but also negatively affects

⁹ Bardhan (2002), Mora-Sanguinetti and Pérez-Valls (2020), Lucio and Mora-Sanguinetti (2021), Lucio and Mora-Sanguinetti (2022), Mora-Sanguinetti (2022b) and Mora-Sanguinetti, Quintana, Soler and Spruk (2023).

¹⁰ Almunia and López-Rodríguez (2018).

¹¹ In Spain, the alternative fixed-income market has enjoyed continuous growth during its nine years of operation, such that its volume of issuances reached €13.7 billion in 2022. Furthermore, the introduction of the corporate sector purchase programme by the European Central Bank (ECB) in 2016 also appears to have contributed to improved capital market access for smaller listed firms. Alves, Mayordomo and Ruiz-García (2022).

their ability to carry out innovation projects, which, by their very nature, have a relatively high risk profile (see Section 2.1.2 for more details).¹²

These factors have resulted in an economy with a business sector that is skewed towards small firms with a very small percentage of innovative businesses.¹³ 79% of firms in Spain have between one and four employees, the highest percentage in the EU and far higher than the figures seen in, for example, Germany (62%), France (70%), and Italy (74%).¹⁴ Since the ability to take on an innovation project tends to be significantly lower for smaller firms than larger ones, Spain's specific corporate make-up results in a very small proportion of innovative businesses – 31%, compared with 50% in the EU, according to Eurostat's [Community Innovation Survey](#).¹⁵

Relatively persistent shortcomings have also been observed in resource allocation regardless of size. There is evidence that there was a significant accumulation of capital in low-productivity firms between 1995 and 2007 in Spain.¹⁶ In part, this was the result of firms having heterogeneous access to financing, which was more closely linked to their available collateral or their relationship with general government than productivity. If this misallocation of resources had been avoided, this period would have seen total factor productivity grow by 10% instead of fall by 8%. More recently, [Albrizio, González and Khametshin \(2023\)](#) use an indicator that approximates the degree of inefficiency in capital allocation using the dispersion of firms' marginal revenue of capital and find that, even if the most recent period after the outbreak of the pandemic is excluded, barely any progress has been made in the efficiency of this allocation in recent years (see Chart 2.3.2).¹⁷

Various initiatives have been undertaken in recent quarters in an attempt to bolster business growth and facilitate the efficient reallocation of factors. These include the [Law on business start-ups and growth](#), which aims to streamline business start-up, providing increased flexibility in alternative financing mechanisms and encouraging small firms' participation in public procurement tenders. Likewise, [the reform of the Insolvency Law](#) attempts to correct some of the inefficiencies that have characterised insolvency proceedings in Spain (e.g. on average, such proceedings take a long time and the proportion of insolvent

12 For evidence of the positive effects of well-diversified sources of funding on the resilience and investment of non-financial corporations, see [De Fiore and Uhlig \(2015\)](#), [Tengulov \(2020\)](#) and [Bongini, Ferrando, Rossi and Rossolini \(2021\)](#).

13 The sectoral breakdown of the Spanish economy is, in comparison with other European economies, skewed towards services, such as wholesale and retail trade and accommodation and food service activities. These sectors are typically less buoyant in terms of productivity and are less likely to engage in innovation. However, this does not explain why Spain continues to lag behind other countries in aggregate productivity, innovation and firm size. The same picture emerges when these metrics are compared internationally in various industries ([Cuadrado, Moral-Benito and Solera, 2020](#)).

14 The same is true of the percentage of firms with fewer than ten employees, according to Eurostat data.

15 This section refers to the relationship between size and productivity given, among other things, the fact that smaller companies are less likely to invest in innovation. It should be noted that there is also, in any case, an inverse correlation between productivity and size since more productive companies are more likely to grow ([Moral-Benito, 2018](#)).

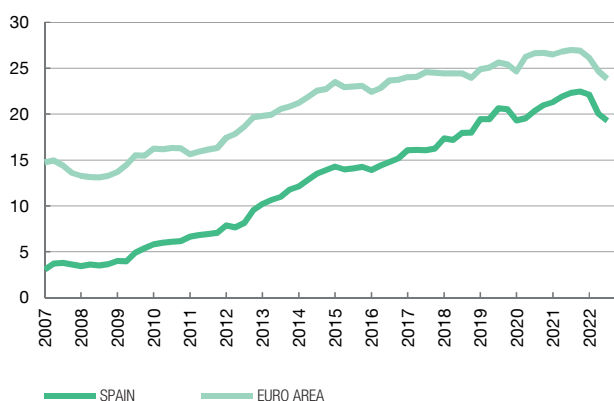
16 This is suggested by, for example, [Gopinath, Kalemli-Ozcan, Karabarbounis, and Villegas-Sanchez \(2017\)](#) and [García-Santana, Moral-Benito, Pijoan-Mas and Ramos \(2020\)](#).

17 With an efficient equilibrium, the marginal products of capital should be balanced and, therefore, differences represent market inefficiencies in products or factors.

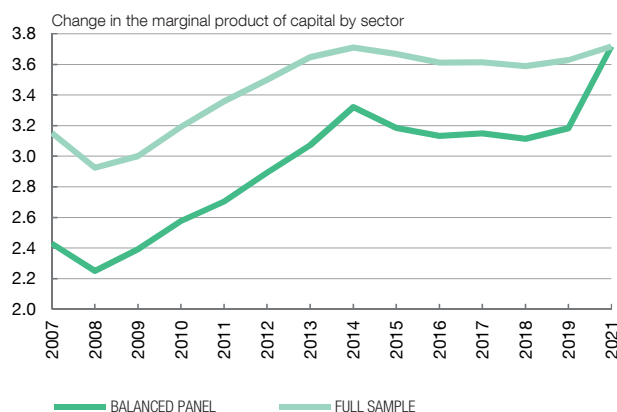
Chart 2.3

SPAIN HAS SEEN A FALL IN NON-FINANCIAL CORPORATIONS' DEPENDENCE ON BORROWING, ALTHOUGH MORE PROGRESS CAN BE MADE IN PRODUCTIVITY TERMS IF CAPITAL ALLOCATION ACROSS FIRMS IS IMPROVED

Spanish corporate sector indebtedness has been continuously falling from its pre-financial crisis peak to a level similar to that of the euro area. Furthermore, Spanish firms have enjoyed substantially improved access to the funding via debt securities. However, room for improving productivity remains purely by investments flowing to more productive companies.

1 SHARE OF DEBT SECURITIES IN TOTAL DEBT (a)
NFCs

2 INDEX OF MISALLOCATION OF RESOURCES ACROSS FIRMS (b)



SOURCES: ECB and Banco de España, using the methodology of Albrizio, González and Khametshin (2023).

a Debt securities plus bank loans.

b The variance in the marginal product of capital is the indicator for misallocation of resources used in Albrizio, González and Khametshin (2023) and is based on Hsieh and Klenow (2009). The reasoning for this is that, in a frictionless economy, there should be no observable difference in the dispersion of marginal products within each industry because more productive firms should grow, attract more capital and workers, which would then reduce the marginal products.



firms that are eventually wound up is high).¹⁸ The new law establishes a pre-insolvency mechanism known as a “restructuring plan” that allows business debt forbearance at an early stage, known as “probable insolvency”.¹⁹ Furthermore, a new bespoke procedure has been added for microfirms, one that is cheaper and more streamlined than the standard insolvency proceedings. Lastly, improvements have been made to the fresh-start mechanism, adding the possibility of debt waiver without prior liquidation of a debtor’s assets and based on a three-year payment plan and extending the waiver of unpaid claims to include debts to the public authorities, up to a certain threshold.

Similarly, the approval of the **Law on developing the ecosystem of emerging businesses**, more widely known as the **Start-up Law**, was intended to bolster entrepreneurship and **R&D&I activities**.²⁰ Of the range of measures adopted, the tax and employment incentives for

¹⁸ García-Posada Gómez and Vegas Sánchez (2018).

¹⁹ Probable insolvency is used to describe a situation in which it can objectively be predicted that a borrower will be unable to regularly discharge obligations that fall due within two years unless a forbearance plan is put in place.

²⁰ Among other things, it is intended to stimulate investment in innovative activities – to attract, revive 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.

R&D&I activities stand out, as does the attempt to streamline the bureaucracy involved in setting up innovative firms.

Looking to the future, a review will be needed of how far these initiatives are able to provide fixes for the weaknesses seen in this area. In the short term, these review exercises will be hampered by the intensity and exceptional nature of many of the shocks that have recently affected the economy, which makes it difficult to distinguish between merely temporary developments and more structural ones. This is especially apparent, for example, in recent figures for business creation and destruction and in insolvency proceedings, which were heavily affected by the shutting-down and subsequent reopening of the economy as a consequence of the pandemic and by the various financing facilities, moratoria and grace periods instituted by the authorities.

In any case, room for improvement remains. Specifically, it would be worthwhile undertaking a review of the regulatory thresholds previously discussed which discourage business growth. It is also important to reduce the delay on general government payments,²¹ which currently hampers business financing, especially for small firms. The above must be done without neglecting further progress towards ensuring market unity, bolstering competition and continuing to broaden sources of funding available to firms (the latter requires initiatives at the European level, for example, in the capital markets union).

2.1.2 Encouraging innovative activities

There are some idiosyncrasies to innovative activities that make it advisable to complement private initiatives with targeted public policy support. Innovative activities tend to generate knowledge spillovers that are not always exploitable by those making the investments. This positive externality associated with innovation means that, even in a frictionless economic and institutional environment, private incentives for innovation lead to aggregate effort in this area that falls short of what would be ideal from a social perspective. Conversely, innovation processes are typically subject to considerable uncertainty and tend to have relatively low rates of success. Often, they produce an intangible asset with an economic value that is much higher for the developer than for the funding provider. All of the above, and the fact that there are significant asymmetries in terms of information available to innovators and their potential backers, pose significant hurdles to financing for this type of activity when compared with, for example, investment in conventional tangible assets. This is especially true for innovative companies that do not have collateral on hand or existing credit history, and may lead to an inefficiently low drive for innovation for the economy as a whole.

Public policies can add momentum to business innovation through a range of instruments. Options include direct public investment, as well as public procurement for

²¹ According to the EC's [Single Market Scoreboard](#), in 2021 the general government made payments later than the legal limit of 22 days and longer than the average in other EU countries (15.7 days).

innovation, tax incentives for innovative firms, the allocation of direct transfers for basic research, the design of proper governance of innovative systems and other measures that help newly created innovative firms capture funding.²²

Properly designed public investment can lead to positive spillovers to private investment (both overall and on R&D&I). However, in Spain, and in particular following the global financial crisis, it has been persistently below the average observed for the euro area (see Chart 2.4). Digital infrastructure is the exception, where Spain occupies a relatively strong position in the EU-27, according to the EC's [European Innovation Scoreboard](#).

The NGEU programme, both in its scope and its structural approach, represents a unique opportunity to remedy this situation. Public investment in general – and in R&D&I in particular – must play a central role in the execution of this programme.²³ Of course, the eventual impact of these funds on the Spanish economy's productive capacity will be fundamentally based on the type of investments made and the accompanying structural reforms. In any case, various analytical exercises carried out by the Banco de España show that if, as part of the NGEU programme, projects are selected that have a high degree of complementarity between public and private investment and ambitious structural reforms are put in place (see Figure 2.1), the impact on the potential growth of the Spanish economy in the medium term could be highly significant.²⁴

Moreover, all of the above must take place in a context in which some factors will, predictably, dampen private investment. These factors include significant uncertainty and higher borrowing costs, as a result of considerable tightening of monetary policy in Europe and around the world in recent quarters to combat inflation (see Chapters 1 and 3 of this Annual Report). In particular, higher interest rates will have a particularly marked negative effect on financial soundness and the investment capacity of more indebted firms, which are already less open to undertaking new investment.²⁵

The [Science Law](#) sets a target for government funding of R&D&I at 1.25% of GDP in 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. Again, it is important to note that however important it is to increase funding, it must be properly directed towards projects that generate positive externalities by making the most of synergies between various public and private initiatives and boosting the role of venture capital firms.

22 See [Bloom, Van Reenen and Williams \(2019\)](#) on the basic design of government measures and [Akcigit, Hanley and Serrano-Velarde \(2021\)](#), on the proper allocation of transfers to basic research when accounting for its complementarity with applied research.

23 Under the RTRP, 7% of all of the resources from the NGEU programme are expected to be allocated to R&D&I activities.

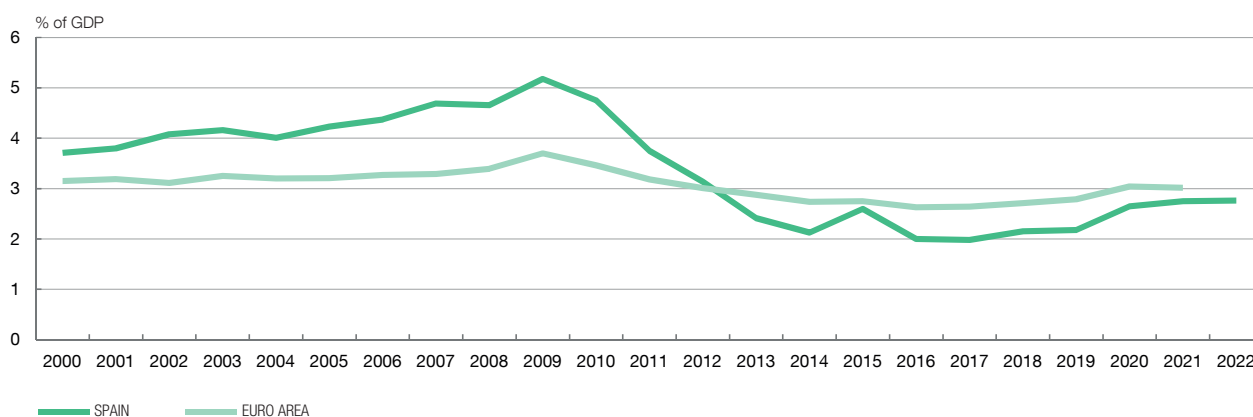
24 [Cuadrado, Izquierdo, Montero, Moral-Benito and Quintana \(2022\)](#) and Domínguez-Díaz, Hurtado and Menéndez (2023).

25 [Argimón and Roibás \(2023\)](#).

Chart 2.4

PUBLIC INVESTMENT IN SPAIN HAS BEEN BELOW THAT OF THE EURO AREA SINCE 2013

Investment in Spain contributed substantially to economic growth between 2000 and 2008, although its momentum was halted by the crisis in 2008. Public investment in Spain has not recovered to its pre-crisis level and is well below the average of the euro area. Both investment in construction as well as in machinery and intangible assets are below euro area levels.



SOURCE: Eurostat



There is also room to evaluate and improve the design of tax incentives and direct subsidies for R&D&I projects. The most significant tax incentives for innovation in Spain currently revolve around corporate income tax deductions. Although implicit subsidies for these incentives are, in theory, among the highest in the [OECD](#), their effective application is noticeably worse as a result of the multiple administrative requirements and way in which corporate taxes are calculated ([AIReF, 2020](#)). On this basis, various separate studies call for their reform.²⁶ 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 also deliverables.²⁷ Likewise, measures that would allow innovative firms that do not make enough taxable profits to claim direct reimbursement for investments could be considered.

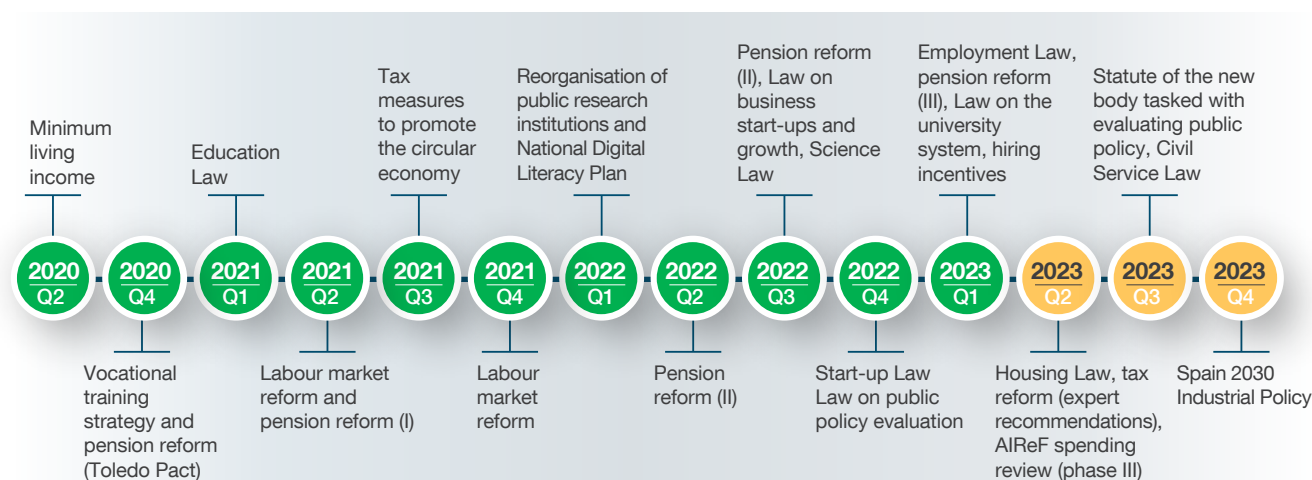
2.1.3 Reinforcing the central role of institutions and general government

The quality of institutions in general and, in particular, general government, have been shown to be a very important driving factor for economic growth. Beyond the established public policies and regulatory framework in place, trust in institutions and the proper operation of the

²⁶ The *White Paper for the Reform of the Tax System* (only available in Spanish) (Comité de Personas Expertas, 2022) provides a thorough overview of the problems in the design of R&D&I incentives in Spain, along with wide-ranging proposals for the reform and improvement of these incentives in line with global best practices. See also Almunia and López-Rodríguez (2023), forthcoming.

²⁷ See, for example the assessments of the effectiveness of tax incentives for R&D in: the United Kingdom, [Gucer and Liu \(2019\)](#) and [Dechezleprêtre, Einiö, Martin, Nguyen and Van Reenen](#) (in press); Canada, [Agrawal, Rosell and Simcoe \(2020\)](#); and the United States, [Rao \(2016\)](#).

Figure 2.1

MAIN ACTIONS CARRIED OUT AND SCHEDULED IN THE SPANISH RTRP (a)

SOURCE: Banco de España, drawing on the Recovery and Resilience Facility operational arrangements between the European Commission and Spain.

a Reforms already completed are in green, while pending reforms are in yellow.

general government (for example, in terms of its efficiency, agility and predictability) are key factors in the decision-making of economic agents. This is especially true for decisions relating to innovation, which are subject to considerable uncertainty.

Loss of trust in institutions can have negative repercussions in several areas and, once lost, tends to take a very long time to regain. Multiple analyses in the economic literature suggest, for example, that low trust in institutions can be linked to lower levels of compliance with regulations and recommendations, greater political fragmentation and a reduced preference for income redistribution policies.²⁸ In particular, [Sanz \(2022\)](#) shows (with data from an online survey carried out in Spain in 2020) that a 10% increase in trust in the political system correlates to a 2.9% increase in citizens' preference for higher taxes. 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.²⁹

Trust in Spanish institutions and the general government's management capability is low relative to other European countries. This is set against a backdrop of decades of weakening trust in institutions in general – a decline that has been worse in Spain than in other

²⁸ Within this literature, see, among others [Bargain and Aminjonov \(2020\)](#), [Sanz, Solé-Ollé and Sorribas-Navarro \(2022\)](#) and [Helliwell, Huang, Wang and Norton \(2021\)](#).

²⁹ For example, [Becker, Boeckh, Hainz and Woessmann \(2016\)](#), [Daniele, Aassve and Le Moglie \(2023\)](#) and [Solé-Ollé and Sorribas-Navarro \(2018\)](#).

European economies.³⁰ Furthermore, several EC indicators point to there being room for improvement in the management capability of the Spanish general government relative to other European governments. For example, in terms of the transposition of directives by EU Member States, Spain's transposition deficit is double that of the European Council's target.³¹

In particular, the Spanish judicial system is showing signs of stagnation in its efficiency, with some regions falling below the European average, which may also be a cause of the economy's low productivity. Spain has high litigation rates in comparative terms, and there are significant differences at local level. Such deficiencies highlight the need to identify and correct the underlying factors.³²

The design and implementation of the NGEU programme represent a significant challenge for the Spanish general government. Both short-term growth and the medium- and long-term growth potential of the Spanish economy will depend on the general government's ability to effectively and efficiently manage the large volume of incoming NGEU funds. A rigorous selection procedure for projects to be funded is critical to achieving this. However, it will also be important that there be a real-time assessment process in place to allow possible shortcomings to be identified and mitigated as they arise, in both procedural issues and funded projects. The enormous complexity underlying the management of these funds demands a great deal of transparency so that the process ultimately strengthens people's trust in their institutions rather than diminishing it further.

There is also a huge opportunity to modernise and digitalise. One of the priorities of the Spanish RTRP is modernisation of the Government, 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 their level of digitalisation upwards, 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. Building up general government's effectiveness and efficiency should help lift productivity and have positive spillovers on private sector decision-making on spending, investment and innovation.

The process of modernising general government must go hand-in-hand with improving efficiency in public expenditure, which includes, among other things, incorporating incentives to staff management. In this respect, the Independent Authority for Fiscal Responsibility's (AIReF) *Spending Review* (which is discussed in Section 3.1.1) suggests that

30 According to the [Eurobarometer \(2022\)](#), 10% of Spaniards say that they trust political parties. Among EU countries, this figure is higher only than those of France (8%) and Latvia (6%), and is similar to that of Greece (11%). Furthermore, trust in the three branches of the State is also low, although mixed. In 2022 23% of those surveyed trusted the Government, 18% Congress, and 47% the judiciary.

31 For example, in terms of the transposition of directives, Spain is one of the EU Member States with the highest deficits. In public procurement in 2021, 12% of tenders in Spain were uncompetitive (the EU average was 6%), while 45% were awarded to an SME (61% for the EU as a whole) and the average resolution period stood at 152 days (compared with 99 days in the EU) (data from the EC's [indicators of the transposition of directives](#) and [indicators of access to public procurement](#)).

32 [Mora-Sanguinetti \(2022a\)](#).

there is room for improvement in some important areas.³³ Likewise, the Law on public policy evaluation aims to incorporate ex ante and ex post assessments into the legislative processes of central government. This Law should be completed with the creation of the new State evaluation agency. In addition, the draft Civil Service Law includes changes to performance assessments and internal promotion procedures that must be judged by, among other things, their impact on the quality of the provision of public services.

2.2 The employment rate and labour supply: key features

A persistently low level of employment is another crucial factor in understanding the economy's lack of convergence towards the per capita income level of the euro area.

The employment level in Spain only converged noticeably towards that of the euro area average between 2000 and 2007 (see Chart 2.5.1) – a time when the country was, as discussed above, enjoying vigorous but unsustainable growth, since it was largely based on the build-up of significant macroeconomic and financial imbalances. This progress in employment rates quickly came undone during the global financial crisis. Since that time, the gap has been gradually falling but, in spite of buoyant employment in Spain in recent years, there was still a 4.7% shortfall at end-2022. It is illustrative that if all other economic factors remained the same, eliminating this gap would mean 1.3 million new jobs in Spain.

Spain's relatively low rate of employment is a reflection of the higher relative impact of unemployment. The employment rate is the ratio of people who are employed to the working-age population. Its level and movements can, therefore, be broken down into two elements. First, the participation rate, which measures what percentage of the working-age population is actually willing to participate in the labour market. Second, the unemployment rate, which reflects the proportion of people who are willing to work but are not able to do so.³⁴ This breakdown reveals that nearly all of the gap in the employment rate between Spain and the euro area is down to the higher level of unemployment in Spain (see Chart 2.5.2).

This lower employment rate can be seen in all population groups. It affects all age groups (see Chart 2.5.3), both men and women (see Chart 2.5.4) and different levels of education.³⁵

There are a range of factors that have together contributed to this lower rate of employment. Their relevance is discussed in later sections as follows: the institutional

33 The activities that make up the *Spending Review* are split into two cycles: one between 2018 and 2021 and another between 2022 and 2026. The second will explore, among other things, the efficiency of social benefits, such as the minimum income scheme and benefits for temporary disability.

34 These variables could be described with the following expression:

$$\frac{L}{P_{16-64}} = \frac{P_{\text{active}}}{P_{16-64}} \left(1 - \frac{P_{\text{unemployed}}}{P_{\text{active}}} \right),$$

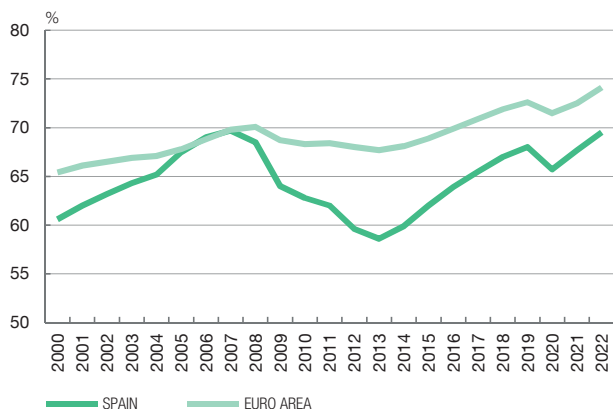
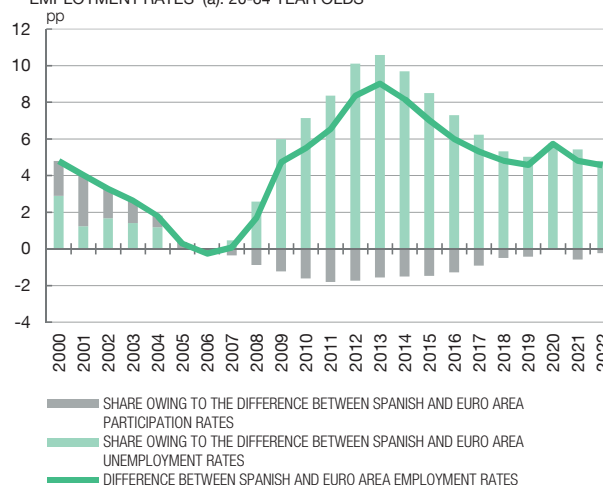
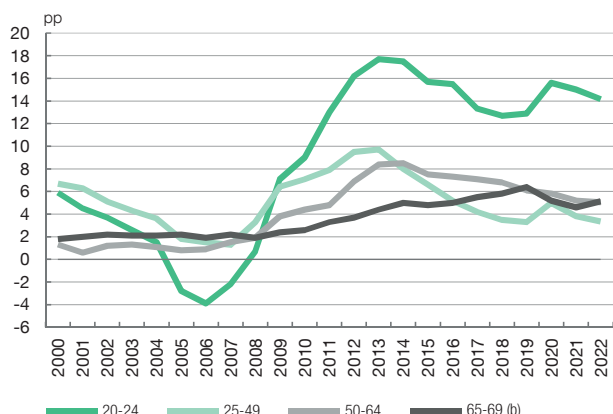
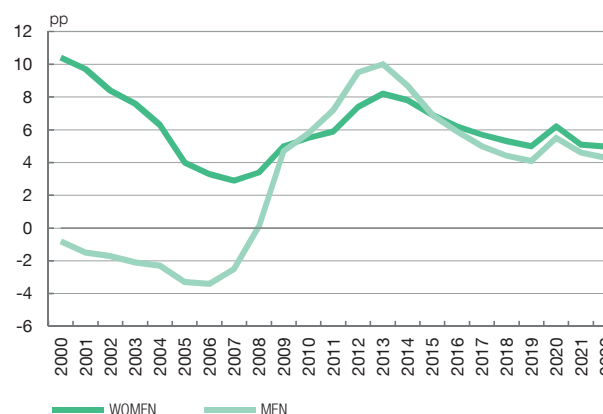
where L represents people employed in the economy, P_{16-64} the working-age population, P_{active} the active population and $P_{\text{unemployed}}$ the unemployed population.

35 Focusing on the latter, for example, the biggest difference is in secondary education (around 9% in 2022), but the disparity holds true for tertiary education as well (around 4%). Only among workers with just primary education does the gap in the employment rate between Spain and the euro area practically disappear.

Chart 2.5

THE SPANISH EMPLOYMENT RATE REMAINS BELOW THE EURO AREA AVERAGE

The Spanish employment rate remains below the euro area average. The difference between Spanish and euro area employment rates rose from 2008 onwards. It has been coming down since 2013 and stood at 4.7 pp in 2022. In 2022 the Spanish employment rate was lower for both men and women. The difference was largest for 20-24 year olds.

1 EMPLOYMENT RATE IN SPAIN AND THE EURO AREA. 20-64 YEAR OLDS**2 DISAGGREGATED DIFFERENCE BETWEEN SPANISH AND EURO AREA EMPLOYMENT RATES (a). 20-64 YEAR OLDS****3 DIFFERENCE BETWEEN SPANISH AND EURO AREA EMPLOYMENT RATES BY AGE GROUP****4 DIFFERENCE BETWEEN SPANISH AND EURO AREA EMPLOYMENT RATES, BY GENDER. 20-64 YEAR OLDS**

SOURCE: Eurostat (Labour Force Survey).

a The difference between Spanish and euro area employment rates can be calculated as the sum of two components: the difference between the two unemployment rates multiplied by the euro area participation rate and the difference between the two participation rates, multiplied by (1 - Spanish unemployment rate).



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framework (see Section 2.2.1) and the human capital (see Section 2.2.2). Section 2.2.3 then addresses several aspects relating to population ageing and changes in hours worked, which could significantly affect both the employment rate and labour supply, in the future.

2.2.1 The institutional framework

The Spanish labour market's structure has given rise to significantly higher unemployment levels and more widespread use of temporary job contracts than the euro area average

(see Charts 2.6.1 and 2.6.2). Another particularity of the Spanish labour market was its tight relationship with the business cycle and, in particular, the fact that the early stages of recessions would yield swingeing job cuts. This fact was partly a consequence of the more widespread use of temporary contracts, and also reflected various rigidities in the Spanish labour market which focussed the bulk of the response to adverse shocks on levels of employment, instead of provoking changes in other areas of industrial relations.³⁶

The high levels of unemployment and widespread use of temporary contracts have negatively affected the Spanish economy in many ways. Beyond the adverse impact that this high level of precarious employment has on per capita income in Spain, there is an extensive economic literature³⁷ documenting the significant negative effect that job insecurity (which especially affects young people in Spain) has on, among other things, workers' careers and their accumulation of human capital. Unstable employment hampers workers' ability to gain independence and establish new households and families and affects their confidence in future income and emotional well-being, while also being a factor in inequality.

More recently, several regulatory changes have altered the labour market. For example, the conditions under which companies could make use of furlough schemes (ERTEs, by their Spanish acronym) were made more flexible and improved in response to the pandemic in early 2020. The Banco de España's analysis shows that such schemes lessened labour shedding (in comparison with previous recessionary periods) and also subsequently facilitated the return to work of affected employees.³⁸

Among other measures, the 2021 labour market reform cut down on temporary contracts in exchange for making some permanent hiring modalities more flexible, expanded the role of ERTes as an employment adjustment mechanism and restored the leading role of sectoral agreements in setting wages. One of the more immediate outcomes of this reform has been the sharp decline in the number of temporary contracts, which fell slightly more than 8 pp between 2021 and 2022 to 17.3%. According to Social Security registrations, around half of this fall was the result of temporary contracts being converted to permanent full-time contracts: one quarter came from the conversion of temporary contracts to permanent part-time contracts and the rest from larger-scale use of permanent seasonal contracts.

Any thorough assessment of this labour market reform will require analysis of its impact on a range of areas. On its own, the drop in the ratio of temporary contracts is not enough to properly assess the overall impact of the labour market reform. To do this, it is essential to account for its impact on other variables, such as employment, unemployment, wages, productivity and other key macroeconomic aggregates, including consumption and household

36 Blanchard and Jimeno (1995) and Estrada, Izquierdo and Lacuesta (2009).

37 For example, Bentolila, Dolado and Jimeno (2020) and García-Louzao, Hospido and Ruggieri (2022).

38 Izquierdo, Puente and Auciello (2022) cover this topic in more depth. It has also been observed that, if the different characteristics of each company is controlled for, those that made more use of ERTes in 2020 enjoyed a stronger recovery in 2021.

savings. To illustrate the importance of analysing all of these effects together, a recent study by the Banco de España suggested that, insofar as this reform resulted in an increased perception of employment stability, new workers with permanent contracts in 2022 may have reduced their precautionary saving, which could have caused (all else being equal) a short-lived spurt in aggregate consumption in 2022.³⁹

More time is needed. In particular, it will take time for the effects of the new reform to fully manifest on key economic variables. A longer time frame is required to distinguish causal structural impacts. For example, although many aspects of the labour market have been performing well in recent quarters, changes in hours worked have been showing some signs of weakness lately and have even fallen back since H2 2022. This caused the hours worked per employee to fall, which could mean, if the indicator stabilises at its new lower figure, an acceleration in the downward trend that this variable has been seeing in Spain in recent decades (for more details, see Section 2.2.3).

Data analysis must be performed with as much granularity as possible. Any shock will have an extremely uneven impact on different groups, which may not be revealed if the impact analysis is carried out with highly aggregated data. In the case of the new labour market reform, which is expected to have very asymmetric effects on various groups of workers and firms, it is especially important that granular data are available and analysed. A recent study by the Banco de España highlighted the fact that levels of temporary contracts varied greatly across geographical areas and sectors, with idiosyncratic firm factors underlying most of these differences.⁴⁰ So, although more aggregate data suggest that labour turnover in Spain fell in 2022, if a more granular analysis is carried out looking at the type of contract, it can be seen that there was a significant increase in the rates of transitioning to unemployment from permanent contracts in this period (see Table 2.1).

It is important to highlight the fact that the high levels of unemployment seen in Spain in recent decades have a strong structural component. Even during the period of vigorous growth between 2000 and 2007, the unemployment rate did not fall below 8%. More recently, in spite of the robust recovery in activity in 2021 and 2022, and the fact that there are signs of the Spanish labour market overheating (for example, the rise in the number of job vacancies and the scarcity of jobseekers in certain sectors), the unemployment rate still stands at around 13%. The euro area average is currently around 7%.

It is essential to examine the role of active and passive employment policies. For example, [Bertheau, Acabbi, Barceló, Gulyas, Lombardi and Saggio \(2023\)](#) show that unemployed workers in Spain find it more difficult to find another job – both the length of unemployment and the resulting losses of income are higher than in other countries. Some of this can be attributed to the lower investment in active employment policies in Spain.

³⁹ Anghel, Barceló and Villanueva (2023).

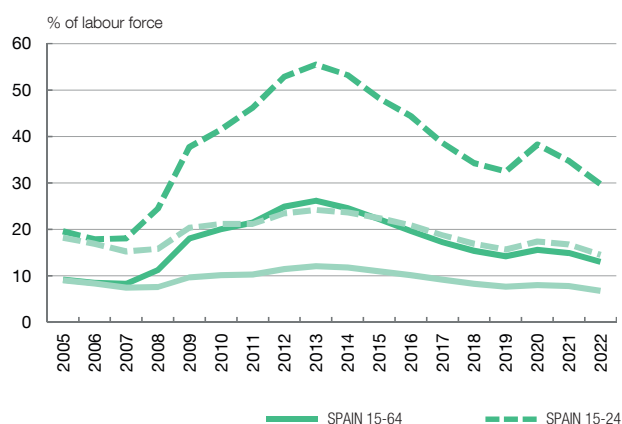
⁴⁰ Auciello-Estévez, Pijoan-Mas, Roldan-Blanco and Tagliati (2023).

Chart 2.6

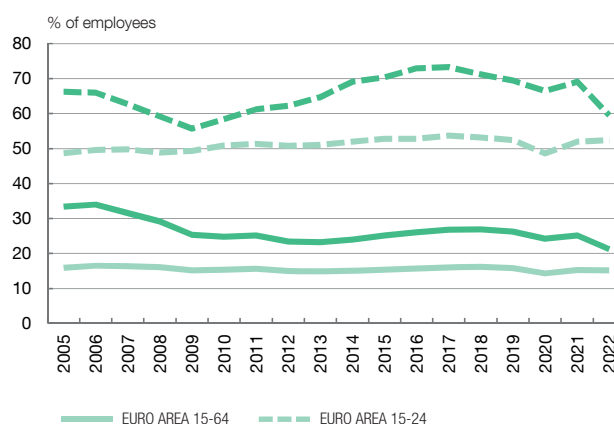
THE UNEMPLOYMENT RATE AND THE SHARE OF TEMPORARY EMPLOYMENT IN SPAIN ARE SIGNIFICANTLY ABOVE THE EURO AREA AVERAGE

Spain has traditionally had an unemployment rate and a share of temporary employment significantly higher than the euro area average. In 2022 the Spanish unemployment rate was 13 %, 6.2 pp higher than the euro area average, while the share of temporary employment, despite dropping substantially, stood at 21.3 %, 6 pp above that of the euro area. These gaps are larger for young people.

1 UNEMPLOYMENT RATE



2 SHARE OF TEMPORARY EMPLOYMENT



SOURCE: Eurostat (Labour Force Survey).



On the subject of active employment policies, the [Employment Law](#) was recently approved. This new law sets out active employment, employability and job mediation policies, coordinates between active policies and unemployment protection policies, establishes a portfolio of services that must be offered by public employment services, specifies sources of funding for these services and determines how they should be assessed. In its entirety, the new law aims to improve coordination between the various public bodies that give effect to active policies and increase their effectiveness by making ongoing assessments central to their design and implementation.

Looking to the future, increasing the effectiveness of active employment policies will also require the availability of human and financial resources and appropriate incentivisation, in both training supply and demand. If public employment services are to have more influence on job mediation (they currently have very little impact in this area) and if their training and labour market insertion work is to be more effective, better professional profiling of unemployed people, rigorous assessment of training and labour market insertion programmes and the adjustment of resources based on the findings of these assessments are all essential.

If the above is to be achieved without watering down protections for the more vulnerable and while maintaining appropriate incentives on the labour supply side, greater coordination between active and passive labour market policies is needed.

Table 2.1

RATES OF TRANSITION TO UNEMPLOYMENT, BY CONTRACT TYPE

The labour market reform reduced temporary employment by more than 8 pp, but it may have also affected hiring in other ways. For example, in 2022 there was a substantial rise in the rates of transitioning to unemployment from permanent contracts. A rigorous and overall assessment of the labour market reform is not yet possible.

	Average 2015-201	2022
Permanent	0.14	0.26
Full time	0.08	0.12
Part time	0.16	0.25
Seasonal	1.11	1.76
Temporary	1.82	1.77
Full time	1.88	1.77
Part time	1.92	1.94
Total	0.66	0.56

SOURCE: Ministerio de Inclusión, Seguridad Social y Migraciones.

The social safety net has widened in recent years through several different interventions. For example, unemployment protection coverage expanded to include more groups and there was an increase in the unemployment benefit replacement rate for the first six months of unemployment. However, as shown in Box 2.1, some elements of these benefits can discourage rapid re-entry to the labour market. Something similar may occur with the design of the minimum living income (see Section 3.2). It is vital to analyse the potential consequences of such initiatives on the labour supply and tailor their design to mitigate any unwanted repercussions.

2.2.2 Human capital

Human capital endowment is a key determinant of productivity, capacity to innovate and the employment rate. The level of human capital and, in particular, the population's technological training and digital skills are closely linked to the knowledge absorption and innovative capacity of an economy (see Chart 2.7.1). Likewise, countries with greater human capital endowment also tend to have higher employment rates (see Chart 2.7.2). For example, R&D&I investment in European countries with a higher level of human capital, based on the numeracy scores under the Programme for the International Assessment of Adult Competencies (PIAAC), is on average 1 pp higher than in Spain, while their employment rate is on average 10 pp higher (equivalent to over 2 million jobs).

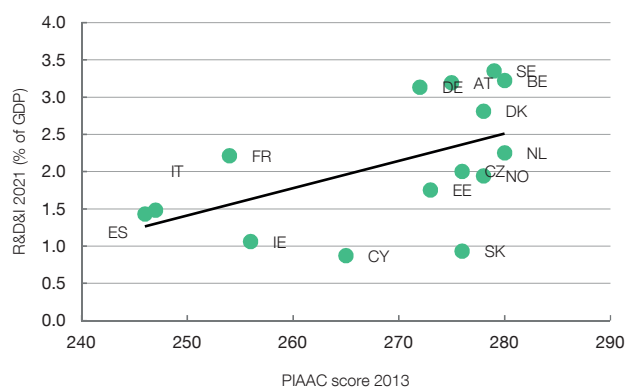
Despite a notable improvement in recent decades, the educational attainment level of employers, the self-employed and employees in Spain is lower than the euro area

Chart 2.7

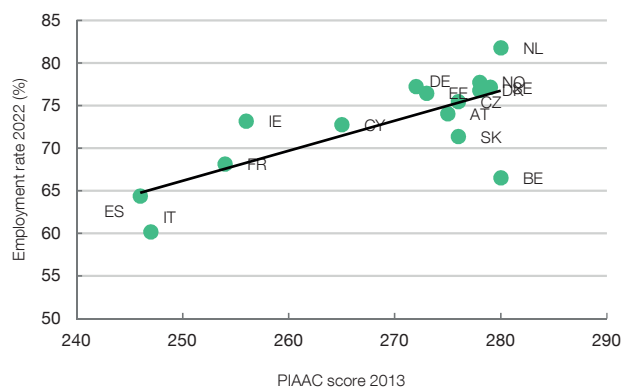
A COUNTRY'S HUMAN CAPITAL IS A DETERMINANT OF ITS CAPACITY TO INNOVATE AND EMPLOYMENT RATE

The level of human capital of the EU countries, measured as the scores in the PIAAC numeracy assessment, is positively correlated with R&D&I investment as a percentage of GDP. Similarly, countries with greater human capital endowment also tend to have higher employment rates. However, the proportion of STEM graduates in Spain is relatively low, added to which is the difficulty in attracting university students from abroad.

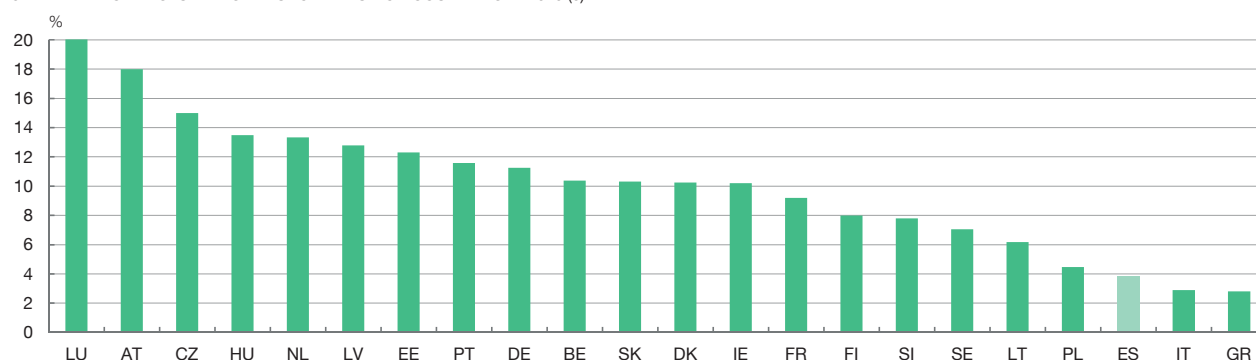
1 CORRELATION BETWEEN PIAAC SCORE AND R&D&I INVESTMENT (a)



2 CORRELATION BETWEEN PIAAC SCORE AND EMPLOYMENT RATE (a) (b)



3 INTERNATIONAL STUDENTS IN EUROPEAN UNION COUNTRIES IN 2020 (c)



SOURCES: Eurostat and OECD.

- a Including data for the EU countries that have participated in the OECD's PIAAC assessment.
 b The employment rate is that of the group aged 15-64.
 c Data available for the 22 countries of the EU-27 that are OECD members.



average. Thus, on Eurostat data, 35.2% of the self-employed, 32.9% of employers and 28.5% of employees had a low educational attainment level in Spain in 2022. These figures are well above those observed in the euro area as a whole (20.7%, 18.9% and 18.2%, respectively).⁴¹ Moreover, the early school leavers' rate, i.e. the percentage of the population aged 18-24 that did not complete upper secondary education and are no longer in education or training, was 13.9% in Spain in 2022 (up 0.6 pp on a year earlier), compared with 9.7% in the euro area (in 2021, the latest available year).

⁴¹ In addition to the educational level attained, there are other indicators quantifying entrepreneurial quality, such as the [World Management Survey](#).

This educational attainment gap has important implications for productivity and employment. For instance, according to [Anghel, Cuadrado and Tagliati \(2020\)](#), Spain's lower educational attainment level is responsible for around a third of the numeracy skills gap between the country's adult population and the euro area average, based on PIAAC scores. Moreover, [Martínez-Matute and Villanueva \(2021\)](#) state that work experience does not appear to be an effective substitute for education when developing skills for more qualified jobs.

The differences in educational attainment level are also relatively persistent. A recent Banco de España study suggests that the average level of educational attainment in 2001 of residents born in a locality in 1974 predicts, with a correlation of over 0.90, that of residents of the same age in that locality, born 10 years later.⁴² This persistence is also seen across generations, with the correlation between the attainment levels of parents and their offspring standing close to 0.35, similar to that observed in other countries,⁴³ which undermines equality of opportunity.

It is essential that structural measures be developed to promote the accumulation of human capital, especially at the current juncture. Against a backdrop of profound demographic and technological change, in which the world economies are in the midst of the green and digital transition, the coming years will likely see a major sectoral and occupational reallocation of employment.⁴⁴ A high level of uncertainty still surrounds how many workers will be reallocated, what their characteristics will be and, consequently, the scale and direction of this reallocation. But carrying it out will come at a greater cost if employability is limited by deficiencies in the education and training of the working-age population.

In this context, education and training policies take on an even more important role than usual. The education and vocational training system needs to be adapted to the new technological and demographic environment, to minimise the impact on employment of the profound structural changes under way. Any needed reallocation of Spanish workers would not be without difficulty, especially in sectors such as agriculture, small retail trade, hotels and restaurants, and domestic help, where, compared with the euro area, Spain has more older workers with a lower level of education.⁴⁵ This is because there is evidence that, irrespective of the level of educational attainment, the older population have lower numeracy and literacy skills than the younger population.⁴⁶

Policies should be geared towards increasing human capital and fostering versatility. Adapting human capital to new technologies calls not only for increasing the population's level of educational attainment, but also for reorienting academic studies towards those disciplines that better complement the skills associated with new technologies. In addition, longer working

42 Grébol, Machelett, Stuhler and Villanueva (2023).

43 This statistical relationship is known as "The Great Gatsby Curve". See [Corak \(2013\)](#).

44 [Autor, Mindell and Reynolds \(2022\)](#).

45 [Anghel and Lacuesta \(2020\)](#).

46 This pattern is observed in both the standardised international assessments of the overall adult population and the National Statistics Institute's (INE) survey on information and communication technology equipment and use.

lives - which will be unavoidable given current demographic trends - make it more necessary for workers to have sufficient and versatile skills to enable them to change job and occupation over their working life, especially in a context of rapid obsolescence of certain professional skills and greater loss of cognitive skills among the older population.

Increased interest among the young in vocational training should reduce early school leaving and ease the scarcity of specialist technical workers. Recent years have seen growing interest in vocational training among students in compulsory secondary education and even higher secondary education. In particular, the number of students aged 17 in intermediate vocational training as a percentage of the total (i.e. individuals enrolled in such programmes or in higher secondary education) has risen from 10% to over 15% in the last five years. Similarly, the number of those aged 19 in higher vocational training as a percentage of the total (i.e. those either enrolled in these programmes or at university) increased from 20% to 25% over the same period. The new Organic Vocational Training Law ([Organic Law 3/2022](#) of 31 March 2022) specifically seeks to adapt training to this higher demand and facilitate the transition to the labour market, by increasing on-the-job training (to the detriment of academic education) and promoting lifelong learning. It is crucial to assess the lifetime employment return associated with different percentages of practical and academic studies in vocational training, as there is evidence that practical studies are useful for fostering an immediate transition to the labour market, but not necessarily for developing a professional career, where academic studies would have the advantage.⁴⁷ Moreover, fostering worker participation in lifelong training courses⁴⁸ will require lowering the institutional barriers to business growth and combating job instability.

While a high percentage of the Spanish population accesses higher university education, there seems to be some room for improvement in students' exit skills. According to the OECD's PIAAC database, Spanish adults with a university degree have low literacy and numeracy scores by international standards. The problems in attracting university students from abroad (see Chart 2.7.3) could be another example of the low education quality of the system. The recent Organic Law on the university system (LOSU, by its Spanish abbreviation) fosters a series of measures to improve the quality of education and adapt the system to the structural challenges facing the Spanish economy. Among other aspects, the Law adopts changes to university autonomy, staff selection systems and contract types for teaching and research staff. It would also be useful to make progress in linking the system's funding to excellence targets.

Also worthy of mention is the relatively low proportion of graduates in STEM subjects (Science, Technology, Engineering and Mathematics). On Eurostat data for 2020, 24% of Spanish students in tertiary education are enrolled in a field related to the natural sciences, mathematics, statistics, information and communication technologies, engineering, manufacturing and construction, compared with 28% in the euro area, with Spain only ahead

47 Hanushek, Schwerdt, Woessmann and Zhang (2017) and Brunello and Rocco (2017).

48 Anghel and Lacuesta (2020).

of Cyprus, the Netherlands, Belgium, Malta and Slovakia.⁴⁹ If improvements are to be made on this front, raising academic achievement in mathematics both at secondary and higher secondary level will be essential, as will increasing teacher training and professionalism.

A detailed efficiency analysis should also be carried out of public spending on education.

In 2010-2021 Spain spent an average of 4.2% of GDP on education, less than the 4.7% spent on average in other euro area countries. But, in addition to spending levels, it is important to identify and resolve any inefficiencies in the use of public funds earmarked for education, as is already being carried out by the AIReF in various autonomous regions.

2.2.3 Other key factors in labour supply

Looking ahead, population ageing and hours worked per employee could play a key role in the course of labour supply and per capita income in Spain and thus in the country's convergence with the euro area. As Chart 2.1.2 shows, no significant differences between Spain and the euro area have been observed over recent decades in terms of the course of hours worked per employee or the employment rate. Indeed, the gap between Spain and the euro area in these two aspects was slightly positive between 1995 and 2022. However, the rest of this section sets out some reasons why Spain may see a particularly poor performance by these two determinants of per capita income in the years ahead that could restrain labour supply and hamper the convergence to euro area income levels.

Population ageing will gather pace in Spain over the coming decades, more so than in the EU and the euro area as a whole. According to the INE's latest population projections, Spain's dependency ratio - calculated as the ratio of the population aged 65 and over to those aged 16-64 - will rise from 31% in 2021 to nearly 54% in 2050. Moreover, if recent demographic trends continue, this population ageing, far from being temporary, will become permanent. Specifically, the INE projects that the dependency ratio will still exceed 50% in 2070 (see Chart 2.8.1). Drawing on the latest Eurostat projections, an international comparison shows that the Spanish economy can expect to see a significantly stronger demographic transformation than that envisaged for the majority of European economies (see Chart 2.8.2).

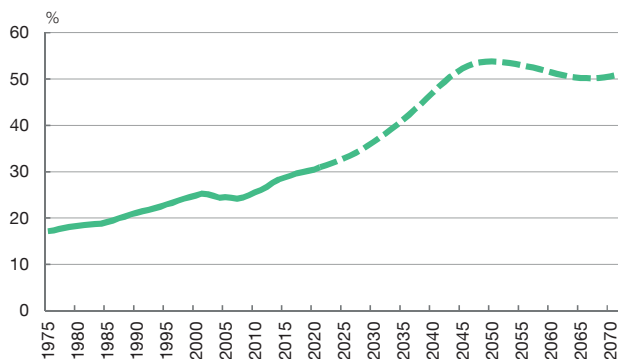
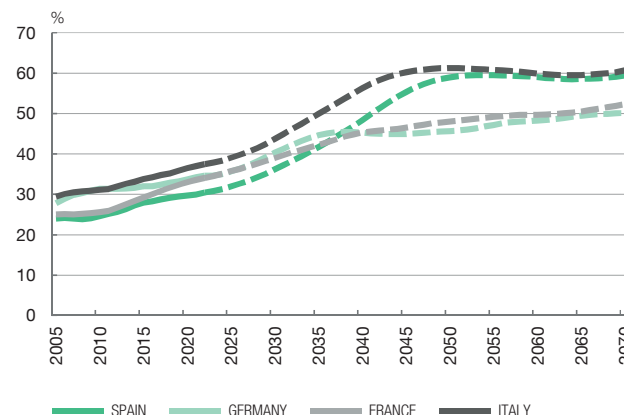
Not only will this demographic shift affect the proportion of the working-age population, but it will also have an adverse impact on Spanish per capita income by reducing the employment rate. As Chart 2.5.3 shows, there is significant disparity in the employment rate by age group. For example, in 2022 it stood at 77.8% for the population aged 25-49, but below 64% for those aged 50-64. Should such disparity persist over time, population ageing would lead to a drop in the employment rate. Specifically, all else being constant, Spain's employment rate could decline by 1.2 pp between 2022 and 2030.

⁴⁹ The Eurostat series used for this quantification is EDUC_UOE_ENRT03. Moreover, in the [Global Innovation Index](#) (World Intellectual Property Organization, 2022), Spain is ranked 61 out of 109 countries by number of graduates in science and engineering.

Chart 2.8

POPULATION AGEING WILL GATHER PACE IN SPAIN OVER THE COMING DECADES

The INE's latest projections anticipate a marked increase in the dependency ratio. Specifically, according to these projections, the ratio will increase from 31.0% in 2021 to 53.8% in 2050, falling back to 50.6% in 2070. This demographic shift will be significantly stronger than that envisaged for the other major European economies.

1 DEPENDENCY RATIO
(POPULATION AGED OVER 65 / POPULATION AGED 16-64)2 COMPARISON OF DEPENDENCY RATIO IN OTHER EURO AREA COUNTRIES (a)
(POPULATION AGED OVER 65 / POPULATION AGED 16-64)

SOURCES: INE and Eurostat.

a EUROPOP2023 projections.



Population ageing would be even more pronounced were it not for the positive and relatively high net migration expected in Spain in the years ahead. On the latest INE population projections, Spain is expected to see annual net migration in the period 2030-2070 of 200,000-300,000 people who will, broadly speaking, be younger than the domestic population. For comparison purposes, net inflows to Spain fell from 310,000 individuals in 2008 (the first year for which migration statistics are available), to below 150,000 in 2021.

The capacity of new migration policies to effectively smooth any mismatches arising in the labour market should be continuously monitored.⁵⁰ In order to tackle the labour supply shortages observed in some productive sectors, the Spanish authorities enacted legislation in 2022 to relax the catalogue of difficult-to-cover occupations, facilitate the entry of foreign entrepreneurs, incorporate training in the concept of “rootedness” and allow foreign students to access the labour market.⁵¹ Looking ahead, it would be desirable to assess the extent to which these legislative changes effectively help mitigate supply-demand mismatches. Moreover, as the majority of European economies face a considerable demographic challenge (albeit, as already mentioned, over different horizons and of varying intensities), some degree of coordination with their migration policies should be attained.

⁵⁰ In any event, addressing the numerous challenges posed by population ageing goes beyond migration policy, and calls for resolute action on multiple fronts. Among other measures, it would be desirable, for example, to analyse the reasons for Spain's low birth rate and to strengthen support for families and labour market opportunities for young mothers.

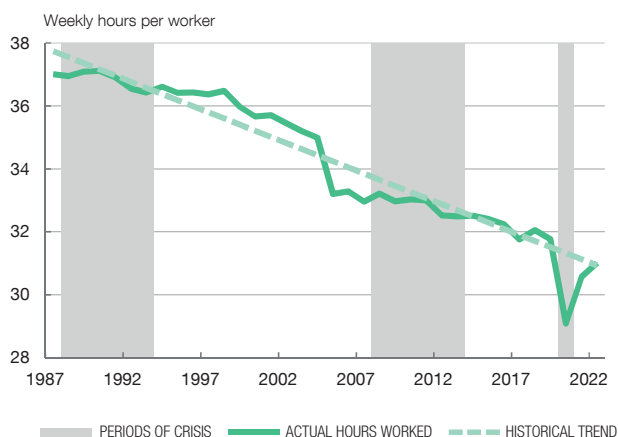
⁵¹ [Royal Decree 629/2022](#) of 26 July 2022.

Chart 2.9

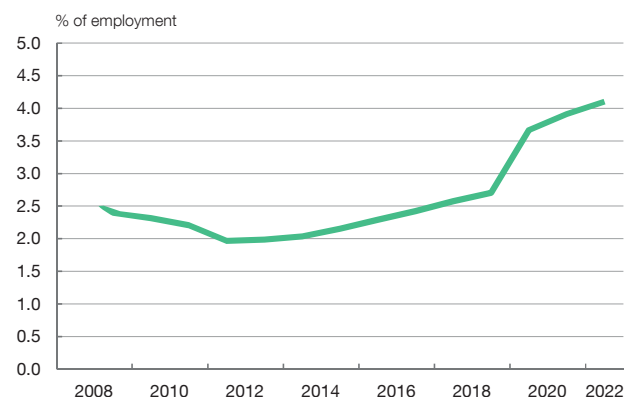
LABOUR SUPPLY IS ALSO DETERMINED BY WORKING HOURS AND GENERAL HEALTH

In Spain, average weekly working hours have decreased from around 37 in the mid-1980s to 31 in 2022. There has also been an ongoing pronounced increase in sick leave since the outbreak of COVID-19, such that, in 2022, an average of 4.1% of workers reported that they had not worked in the prior week because of illness, temporary disability or injury.

1 AVERAGE WEEKLY WORKING HOURS PER WORKER



2 LOSS OF WORK DAYS DUE TO ILLNESS, INJURY OR DISABILITY



SOURCES: INE and Banco de España.



The number of hours worked per employee is also a key determinant of labour supply and per capita income. For example, if employment (i.e. the extensive margin) increases but each person works fewer hours (i.e. the intensive margin decreases), with all else being constant, the pace of growth in hours worked in the overall economy and, therefore, in total labour supply and aggregate output, will be lower than that of employment.

In Spain, average weekly working hours have decreased in recent decades, from 37 in 1987 to 31.8 in 2019 (see Chart 2.9.1). A recent Banco de España study⁵² reveals that, broadly speaking, this decline in hours worked per employee reflects structural factors common to other European countries. These factors notably include technological progress (which has yielded productivity gains, leading to an increase in the time devoted to leisure at the expense of time spent working), changes in the sectoral structure of the economy (with a gradual increase in the weight of the services sector) and the trend towards more part-time work. The COVID-19 pandemic accelerated this decline in average working hours, although the most recent data point to a slight recovery of the previous secular trend.

Various factors suggest that the downward trend in hours worked per employee could persist. For example, the projected demographic changes would suggest that, by 2033, the average working week could be nearly three hours shorter than the current figure, assuming that the employment rates by age group remain constant. Along the same lines, if the Spanish economy were to converge towards a sectoral structure akin to the EU average, the annual number of hours worked per individual would be around two and a half hours lower than the current figure.

⁵² Cuadrado (2023).

An additional aspect that may have a bearing on these dynamics is the Spanish population's health and its evolution over time. The latest Centro de Investigaciones Sociológicas healthcare barometers show an increase in demand for healthcare services in Spain. The number of workers losing work days as a result of illness, temporary disability or injury has also risen (see Chart 2.9.2). According to a recent Banco de España study,⁵³ some of these developments appear to be in line with the predictions made in the literature studying COVID-19 sequelae among a widely vaccinated population. If these developments prove to be long-lasting and associated with a prolonged deterioration in the population's general health, they may require a structural increase in health expenditure and have an adverse, but highly uncertain, impact on labour supply and, therefore, the economy's potential output.

Health is a key determinant of labour supply, especially among those approaching retirement. Health problems that prevent people from working increase with age and hamper the longer working life that should accompany the expected and observed increase in longevity. It is worth noting here that workers approaching retirement tend to overestimate how quickly their health will deteriorate and often decide to retire sooner on the basis of incorrect subjective perceptions.⁵⁴

Labour supply is also affected by mental illness, which may have been exacerbated as a result of the pandemic. In addition to shaping physical health and employment status, mental health is a key determinant of educational and employment success and has an even greater bearing than these on subjective happiness indicators.⁵⁵ In developed countries, mental health problems are the main cause of illness in the working-age population, accounting for around one-third of cases of incapacitation and absenteeism. The fact that the prevalence of such illnesses may have been exacerbated by the pandemic is another reason to pay greater focus on preventing and treating mental illness within the population.

Given its importance, priority should be given to assessing the efficiency of public spending on health in Spain. Aside from the fact that this expenditure item as a percentage of GDP is lower in Spain (6.4% on average in 2010-2021) than in the euro area (7.4%), various AIREF reports point to there being some room for improving the efficiency of hospital pharmacy spending and investment in high-tech capital goods.

3 Main imbalances in the Spanish economy

A growth path that is associated with persistent or accumulating macroeconomic, financial or social vulnerabilities is not sustainable. As discussed in the previous section, if the Spanish economy is to make headway in the process of convergence with average euro area per capita income levels, resolute public policy measures will be needed in a variety of

⁵³ Hurtado and Izquierdo (2023).

⁵⁴ Denis (2021).

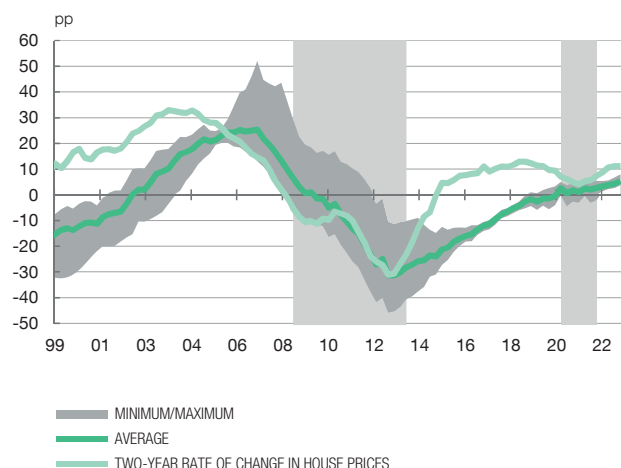
⁵⁵ Layard (2013).

Chart 2.10

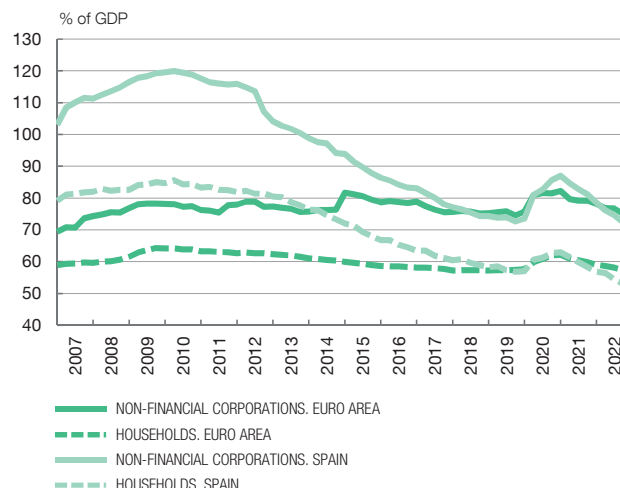
GROWTH IN HOUSE PRICES HAS EASED, AND SPANISH HOUSEHOLDS AND FIRMS HAVE CONTINUED TO DELEVERAGE

House prices grew once more between 2019 and 2022, but the signs of overvaluation are contained. Moreover, Spanish households and firms have continued the deleveraging that began in 2010, reaching levels similar to, or even below, the euro area average.

1 INDICATORS OF HOUSE PRICE IMBALANCES (a) (b)



2 CONSOLIDATED DEBT OF NON-FINANCIAL CORPORATIONS AND HOUSEHOLDS



SOURCES: INE, Banco de España and ECB.

- a The grey shaded areas show two financial crisis periods identified in Spain since 2009: the last systemic banking crisis (2009 Q1-2013 Q4) and the crisis triggered by COVID-19 (2020 Q1-2021 Q4). Data updated at December 2022.
- b The shaded area represents the minimum and maximum values of the four indicators of imbalances in house prices. Both the four indicators and the two-year rate of change in house prices have an equilibrium value of zero.



areas, primarily to increase productivity and employment momentum and, thus, boost the growth rate. However, it is important to ensure that the growth path is not only robust but also sustainable. High growth cannot be maintained over a prolonged period of time if it is associated with the persistence or build-up of macroeconomic, financial or social vulnerabilities or imbalances.

The Spanish economy has shown a more balanced growth pattern since the outbreak of the global financial crisis, and has corrected some of the macro-financial imbalances that built up in the prior expansionary phase. For instance, in the composition of aggregate economic activity, construction investment has seen its share of Spanish activity drop in recent years, with its average weight in GDP falling from 18.4% in 2000-2007 to 9.5% in 2013-2022, slightly below the 10.3% observed in the euro area. Turning to house prices, after a very abrupt correction of 37% in cumulative nominal terms between 2007-2013, they grew at an average annual rate of 4.6% in 2019-2022, below the rate of 6.1% observed in the euro area. Although the indicators of house price imbalances in Spain have shown signs of a slight overvaluation since mid-2021, these signs remain contained (see Chart 2.10.1 and the Banco de España's *Financial Stability Report*, Spring 2023).

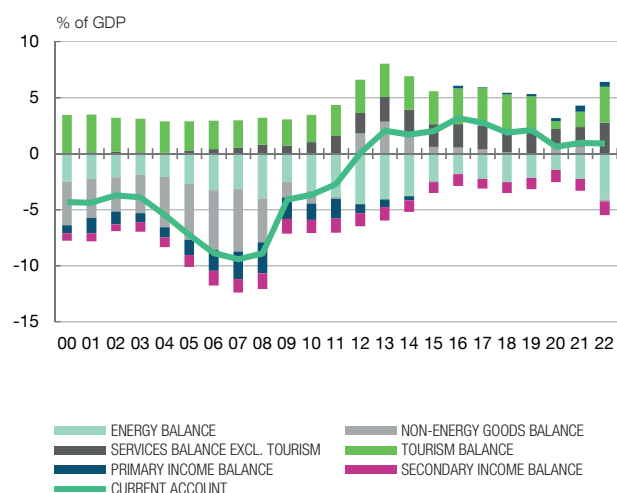
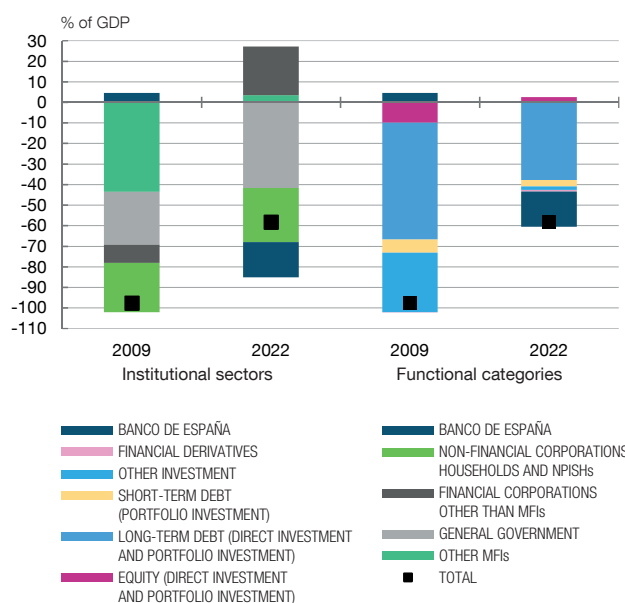
The intense deleveraging carried out by households and firms is noteworthy. In 2010 Q2, the private non-financial sector's debt in Spain amounted to 205.5% of GDP, 61 pp higher than

Chart 2.11

THE SPANISH ECONOMY HAS MANAGED TO MAINTAIN A CURRENT ACCOUNT SURPLUS AND REDUCE ITS EXTERNAL DEBT

Despite higher energy prices, Spain once again posted a current account surplus in 2022, thanks to the momentum of services exports, while the country continued to gradually correct its high debt to the rest of the world.

1 CURRENT ACCOUNT BALANCE

2 IIP: CHANGES AND COMPOSITION BY SECTOR AND FUNCTIONAL CATEGORY
Rate of change vs 2019

SOURCES: INE, Departamento de Aduanas and Banco de España.



the euro area average (see Chart 2.10.2). Since then, except for during the health crisis, Spanish households and firms have undertaken a process of deleveraging, which has led to a substantial improvement in their financial situation and reduced their debt ratios to levels similar to, or even below, those recorded in the euro area as a whole. These developments have also taken place against a backdrop of rationalisation, recapitalisation and restructuring of the financial sector, which has helped appreciably shore up the sector's solvency and liquidity ratios and the quality of its balance sheets.⁵⁶ It should be emphasised, however, that this substantial improvement in the aggregate financial position of Spanish households, firms and banks does not mean that their future economic outlook is free of risk. In this respect, various Banco de España studies in the last few quarters have highlighted that the recent rise in prices and borrowing costs could significantly increase the financial vulnerability of certain groups of households and firms.⁵⁷ Moreover, the Banco de España's latest *Financial Stability Report* provides an exhaustive review of the main risks that the Spanish financial sector must face at the current juncture and in the near future.

⁵⁶ Banco de España (2017a) provides a detailed description of the transformation process undertaken by the Spanish financial sector since the start of the global financial crisis.

⁵⁷ Menéndez and Mulino (2022); Mulino (2022); *Financial Stability Report*, Autumn 2022 and Spring 2023; or Section 4.3.2 of Chapter 3 of this *Annual Report*.

Also worthy of mention is the notable correction of the external imbalances of the Spanish economy in recent years. Between 2012 and 2022 Spain posted a positive current account balance equal to 1.6% of GDP in annual average terms (see Chart 2.11.1). This stands in contrast to the large and persistent deficits of 6.2% of GDP in annual average terms observed between 2000 and 2008. In recent years, for the first time in Spain's modern economic history, current account surpluses have coexisted with a phase of prolonged activity growth, which underscores the largely structural nature of the correction of Spain's external imbalances.⁵⁸

The structural improvement in the external imbalances has been particularly visible with the outbreak of the pandemic (which drastically reduced tourism flows) and the energy crisis (which significantly increased energy import prices). Indeed, despite these two very sharp shocks having had such an adverse impact on two of its main items, Spain's current account balance has remained in positive territory for the last three years, averaging a surplus of 0.7% of GDP between 2020 and 2022.⁵⁹ This has been largely possible thanks to the momentum of exports and stable export companies.⁶⁰ Since 2019, growth in nominal goods exports of goods and services has comfortably outpaced that of the main euro area economies, standing at 26.8% in Spain compared with 20.1% in Germany, 16.7% in France and 24.9% in Italy. Consequently, Spanish exports have continued to gain weight, accounting for 40.4% of GDP in 2022 (by way of illustration, they accounted for less than 26% of GDP in 2008).

Spain's negative net international investment position (IIP) vis-à-vis the rest of the world has fallen appreciably, and the vulnerabilities associated with the composition of this balance are also somewhat smaller now. In 2022 the Spanish economy's negative net IIP was equivalent to 60.5% of GDP (see Chart 2.11.2). While this is still comparatively high within the euro area (exceeded only by those of Greece, Ireland, Cyprus and Portugal), it has decreased by over 37 pp since peaking at 97.6% of GDP in 2009. Although the associated vulnerabilities are subject to considerable uncertainty, they appear to be somewhat smaller now than in 2009. This seems to be attributable to the changes in the composition of the negative net IIP in recent years, which have led to an increase in the relative weight of general government and Banco de España liabilities (which tend to have lower refinancing risks than private sector liabilities) and of long-term debt instruments (which, again, usually have lower refinancing risks than other financial instruments).

Nevertheless, the sustainability of the Spanish economy's growth path faces enormous structural challenges. Cases in point include the challenges associated with climate change and the green transition that the Spanish economy, along with the other main world economies, needs to address in the coming years (see [Chapter 4](#) of the Banco de España's *Annual Report*

⁵⁸ For more details on the main factors lying behind this correction, see [Banco de España \(2017b\)](#).

⁵⁹ Since the pandemic, imports of medical products and of IT and telecommunications products have also increased. See [García Esteban, Gómez Loscos and Martín Machuca \(2023\)](#) (English version forthcoming).

⁶⁰ Between 2019 and 2022 the number of stable export companies (defined as those with exports of over €5,000 for at least four consecutive years) rose by 8.3%.

2021). Closely related to these challenges are the considerable vulnerabilities that the particular energy framework in Spain and the EU entails for their economic outlook, especially in an international geopolitical context marked by increasing fragmentation in which the EU must strengthen its strategic autonomy (see [Chapter 4](#) of this report).

These structural challenges notably include those deriving from the high level of public debt and the social vulnerability that may derive from high inequality (see [Chapter 4](#) of the Banco de España's *Annual Report* 2020). Each of these challenges is analysed in depth in the rest of this section.

3.1 Public indebtedness

3.1.1 Recent developments and short-term outlook

Despite declining as a percentage of GDP, the general government deficit and debt remained at very high levels in 2022, both on a historical and an international comparison.

In 2021-2022 the budget deficit in Spain continued the decline observed in 2020-2021 and fell by 2.1 pp, to stand at 4.8% of GDP (see Chart 2.12.1). Nevertheless, it was still 1.7 pp above 2019 levels and 1.2 pp higher than the euro area average. The public debt-to-GDP ratio declined by 5 pp in 2022, to stand at 113.2%, 15 pp above 2019 levels and almost 22 pp higher than in the euro area.

Recent developments in public finances have mainly been determined by four factors.

These are: (i) the strong recovery in real economic activity, with GDP growth exceeding 5% in both 2021 and 2022; (ii) the roll-out, extension and gradual adjustment of numerous public measures geared to mitigating the negative impact on Spanish households and firms of the different adverse shocks that have affected Spain's economy in the last few years; (iii) the high inflation rates, which have had a very mixed influence on the behaviour of various budgetary items; and (iv) the higher buoyancy of tax revenue than would be consistent with the developments in the macroeconomic bases and the fiscal measures approved.

On balance, these factors helped reduce the fiscal imbalance in 2022. First, in a setting in which the health crisis had practically passed, the budgetary cost of the measures deployed in 2020 to address the pandemic continued to decrease during 2022. This tax saving was greater than the additional cost incurred in 2022 as a result of the measures approved to mitigate the impact of higher prices and the energy crisis on households and firms.⁶¹ Second, the strong recovery in real activity and high inflation rates had a very positive impact on tax revenue, which grew 9.3% in 2022 and proved even more buoyant than indicated by its

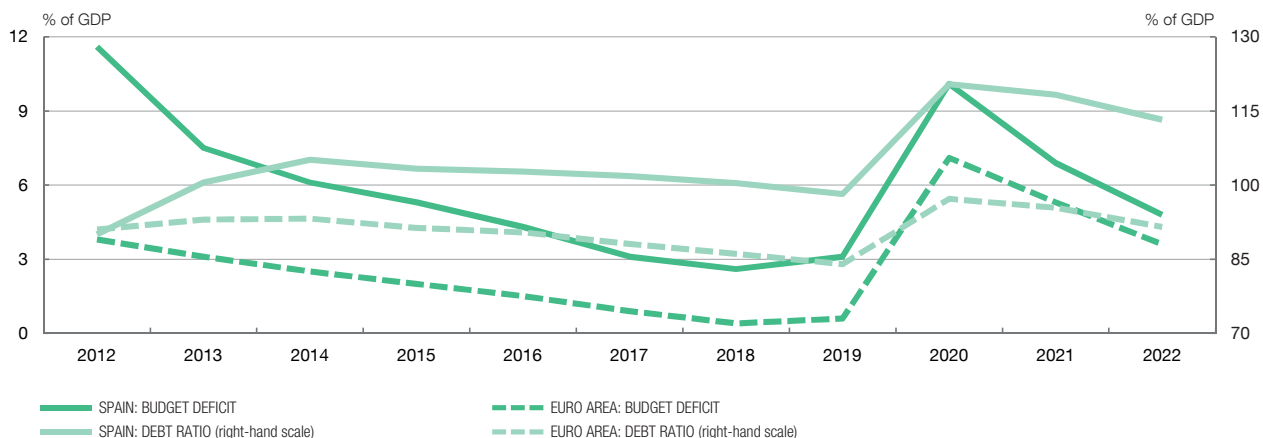
⁶¹ According to Banco de España estimates, these revenue and spending measures will have a budgetary cost of approximately 1.4 pp of GDP in 2022 and 0.9 pp of GDP in 2023. For more details on these measures and on their macroeconomic impact, see Box 1.1 of Chapter 1 of this report.

Chart 2.12

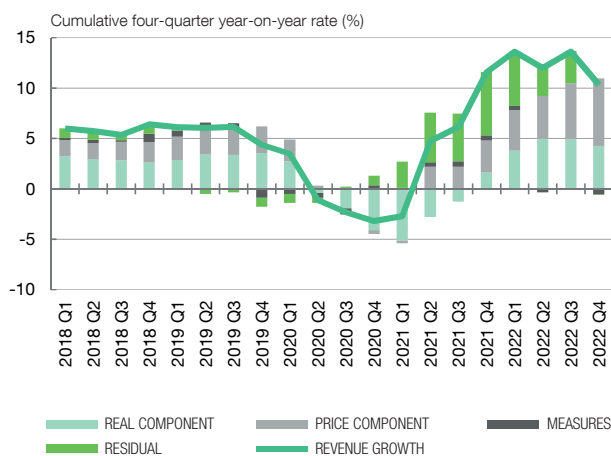
BOTH THE BUDGET DEFICIT AND PUBLIC DEBT REMAIN AT HIGH LEVELS, CREATING A SITUATION OF VULNERABILITY IN THE MEDIUM TERM

In the last two years, the general government deficit has declined by over 5 pp, but it remains 1.7 pp above the pre-pandemic level, while public debt has risen from 98.2% of GDP to 113.2%. At the same time, just over one-quarter of the growth in tax revenue in 2021 and 2022 cannot be explained by its usual determinants, with the attendant risk of these resources reversing in the future. For its part, primary public spending, adjusted for the cycle and for temporary measures, has increased significantly in recent years. This all points to a vulnerable public finances position in the medium term.

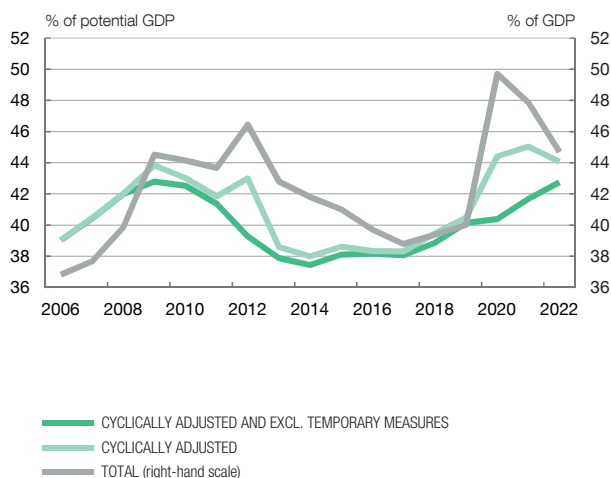
1 GENERAL GOVERNMENT FINANCIAL POSITION



2 CHANGES IN REVENUE FROM VAT, CORPORATE INCOME TAX, PERSONAL INCOME TAX AND SOCIAL SECURITY CONTRIBUTIONS (a)



3 CHANGES IN PRIMARY SPENDING (b)



SOURCE: Banco de España, drawing on data from IGAE, Agencia Tributaria and INE.

- a Update of the calculations presented in García-Miralles and Martínez Pagés (2023).
b Excluding NGEU.



macroeconomic bases and the fiscal measures implemented. This is highlighted in a recent study by the Banco de España (García-Miralles and Martínez Pagés, 2023), which breaks down public revenue growth in recent years into the main explanatory factors. Specifically, this study underscores that price growth was responsible for nearly 47% of the increase observed in tax revenue in 2021-2022, owing mainly to the direct impact of inflation on

consumption taxes and to the lack of indexation of certain tax system parameters (see Chart 2.12.2).⁶² Meanwhile, 27% of the revenue increase in that period could not be explained by the models or the usual determinants of tax revenue, i.e. it would be a positive *residual*.

However, the impact of these factors on public finances will foreseeably become less favourable or even turn negative in the years ahead. For example, on the revenue side, both the Banco de España and the analysts' consensus forecast suggest that economic activity and prices will grow at appreciably lower rates in 2023-2025 than in 2022, which will bear adversely on the buoyancy of tax revenue in the years ahead. Indeed, public revenue already began to see a sharp slowdown in 2022 H2, and indirect taxes posted negative year-on-year rates by the end of the year. Moreover, although there is considerable uncertainty as to the nature and degree of persistence of the positive tax *residuals* detected for a large part of 2021 and 2022, the historical evidence suggests that part of these residuals may reverse over time, dampening tax revenue.⁶³ The Banco de España's estimates show that there were already certain negative tax *residuals* in 2022 Q4.

The upward impact of inflation on public spending occurs with some lag.⁶⁴ The specific features of some of these public expenditure items mean that the impact of the high rates of inflation was not fully reflected in 2022, and will become more visible over the coming years. For instance, Spanish pensions are indexed to the consumer price index (CPI) with a one-year lag. As regards the public debt interest burden, in 2022 these financing costs increased sharply as a result of the monetary policy tightening. However, this hike will only filter through gradually as new debt is issued. If the dynamics currently anticipated by the financial markets and the macroeconomic scenario envisaged by the Banco de España hold unchanged, debt interest expenditure as a percentage of GDP could increase from 2.4% in 2022 to 2.7% in 2025.

The estimates available show that Spain's budget deficit has a high structural component. According to the estimates in Spain's Stability Programme Update 2023-2026, the structural budget deficit was 3.6% of GDP in 2022, while the latest IMF estimates put it above 4% of GDP, which is significantly higher than the 3% of GDP estimated for 2019, before the outbreak of the pandemic.⁶⁵ In this respect, it should be noted that the deterioration forecast in the structural deficit between 2019 and 2023 is expected to be largely determined by the increase in structural primary expenditure observed in recent years, rather than by

62 Similar to the contribution observed in the period 2018-2019, before the outbreak of the pandemic.

63 In the Stability Programme Update 2023-2026 recently published by the Spanish authorities, reference is made to the structural nature of the sound performance of tax revenue. In this respect, if the projections of this report are fulfilled, most of the positive tax residuals observed in recent years would not reverse in the future.

64 For more details about the lags in the response of public spending and revenue to the increase in inflation, see [Hernández de Cos \(2022\)](#). As regards the ultimate impact of inflation on the general government budget balance, using the Quarterly Macroeconometric Model of the Banco de España (MTBE, by its Spanish abbreviation), an imported energy price shock (in line with that observed for a large part of 2021 and 2022) that pushes inflation up by 1% would lead to an estimated deterioration in the general government balance of 0.2 pp of GDP three years later. In other words, the effect of such a shock on the budget deficit over a medium-term horizon would be negative.

65 In the Banco de España's latest estimates, the structural deficit amounted to 3.9% in 2022.

temporary measures or by the economic cycle effect (see Chart 2.12.3). A significant portion of this increase appears to be related in particular to pension expenditure.

3.1.2 Public debt dynamics in the medium and long term

This section describes the possible paths of Spanish public debt over the coming decades under different scenarios. These paths are determined by drawing on various analytical tools developed by the Banco de España – within the framework of the broad economic literature dealing with public debt sustainability analysis – and a set of assumptions on the future macro-financial performance and fiscal policy of the Spanish economy. The debt dynamics obtained from these quantitative exercises are presented in the second part of this section. First, the implications that population ageing and the public pension system will have for the future course of the general government accounts are set out, as these implications are a central element to any sustainability analysis of public finances.

3.1.2.1 The role of the pension system

The far-reaching demographic changes under way in Spain will, in the coming decades, lead to a significant increase not only in spending on pensions, but also on health and long-term care. Since 2012, pension expenditure has risen by 26%, factoring in inflation and owing, almost in equal measure, to the increase in the number of pensions and in the real average pension. As a result, in 2022, pension expenditure represented 13.1% of GDP, up 1.6 pp on 2012. The coming decades will see the population ageing process accelerating strongly (for more details, see Section 2.2.3), further driving up the weight of this expenditure item. Different estimates of the size of this future increase in pension spending, which take into account the latest regulatory changes, are presented below. In any event, this will not be the only consequence of the demographic shift on public finances. AIReF's latest projections suggest that spending on health and long-term care will also trend upwards, by 2.3 pp and 1 pp, respectively, between 2019 and 2050.⁶⁶

In recent years Spain's public pension system has undergone a number of reforms. Thus, at the end of 2021, automatic indexation of pensions to the CPI was established and the sustainability factor introduced in 2013, which had sought to link initial pensions to life expectancy, was removed.⁶⁷ In parallel, new incentives to raise the retirement age were approved, transfers from the central government to the Social Security were increased, and a temporary and specific-purpose rise in social security contributions was introduced as part of a new intergenerational equity mechanism. In addition, a new contribution system under the

⁶⁶ The *2021 Ageing Report* projects an increase in expenditure on health and long-term care of 1.4 pp and 0.5 pp of GDP, respectively, between 2019 and 2050.

⁶⁷ Law 21/2021 of 28 December 2021, guaranteeing the purchasing power of pensions and establishing other measures to strengthen the financial and social sustainability of the public pension system (only available in Spanish).

Special Regime for the Self-Employed was approved at end-July 2022, with a view to aligning the contribution bases for the self-employed with their net income.⁶⁸

In 2023, new measures have been adopted, mainly aimed at shoring up revenues from social security contributions.⁶⁹ Specifically, these measures include an increase in the maximum contribution base that exceeds that of growth in prices and in the maximum pension, along with a surcharge for wages exceeding the maximum contribution base. The contribution rate associated with the intergenerational equity mechanism, which has been extended until 2050, has also been raised. These revenue-raising measures have been complemented by additional changes aimed at bolstering the sufficiency and equity of pension benefits (by increasing minimum pensions and modifying the regulatory base calculation period) and bridging the gender gap in pensions.

Moreover, an automatic adjustment mechanism has been set up which envisages the adoption of fresh measures or, failing that, an additional increase in social security contributions should pension expenditure depart from the baseline path. This mechanism will be activated starting in March 2025 if pension expenditure exceeds 13.3% of GDP on average in the period 2022-2050, once the increase in revenues arising from the regulatory changes approved since 2020 has been factored in.⁷⁰ This new instrument once again provides an automatic adjustment tool –after the removal of that introduced in the 2013 reform– to bolster its financial sustainability.

Table 2.2 summarises the main regulatory changes approved for the Spanish pension system from 2021 to 2023, and provides various estimates of their potential impact, either on the revenue or on the expenditure side. The table presents the estimates made by the Banco de España, along with those recently published or used as benchmarks by other institutions (specifically, AIReF, the Ministry of Inclusion, Social Security and Migrations (MISSyM) and Fedea).⁷¹ The estimates refer to the impact of introducing each of the measures analysed, with all else being constant, on the pension system's expenditure or revenue in 2050, as a percentage of GDP. These estimates are subject to considerable uncertainty and

68 Royal Decree-Law 13/2022 of 26 July 2022, establishing a new contribution system for the self-employed and improving activity suspension benefits (only available in Spanish).

69 Royal Decree-Law 2/2023 of 16 March 2023, on urgent measures to enhance pension entitlements, bridge the gender gap and establish a new sustainability framework for the public pension system (only available in Spanish).

70 In particular, from March 2025 and every three years, AIReF must assess the average annual impact in the period 2022-2050 of the revenue-raising measures approved in 2020. If this assessment shows that the measures represent 1.7% of GDP, no fresh actions will be needed, provided that pension expenditure on average in 2022-2050 does not exceed the benchmark level (15% of GDP). This benchmark level will increase or decrease by the same percentage points as those by which the impact of the revenue-raising measures deviates from 1.7%. The pension expenditure path against which the benchmark will be compared will be that projected in the most recent *Ageing Report*. Should the level of pension spending exceed the benchmark, the Government must submit to the Toledo Pact Committee a proposal to correct the deviation, which may include revenue or expenditure measures, or both. If Parliament does not reach an agreement to approve corrective action, the social security contribution linked to the intergenerational equity mechanism will automatically increase, on 1 January of the following year, by the amount required to offset 20% of the deviation. It will continue to increase every year as required for a 20% annual correction, until new measures are adopted or the deviation is removed.

71 AIReF (2023), Escrivá (2023), Fuente (2023a) and Fuente (2023b).

Table 2.2

QUANTIFICATION OF THE MAIN MEASURES ADOPTED IN THE PENSION REFORM

Description of the measure	Percentage of GDP in 2050				Notes
	AIReF	MISSyM	Fedea	BdE	
A MEASURES – REVENUE PERSPECTIVE					
New contributions system for the selfemployed	0.5	0.4	0.8	0.5	Set transition period: 2023-2031.
Intergenerational equity mechanism	0.4	0.5	0.4	0.5	Duration: 2023-2050. Consists of an increase of 0.6 pp in the contributions for common contingencies in 2023. The rate rises by 0.1 pp each year until it reaches 1.2% in 2029, at which point it holds stable. The contributions will go to the Social Security Reserve Fund, from which payments can be made from 2033. The additional contributions broadly reflect the same firm-worker split established for the contributions for common contingencies.
Higher maximum contribution base	0.4	0.5	0.4	0.3	The maximum base will rise in line with the CPI plus 1.2 pp between 2024 and 2050. From 2051 it will only rise with the CPI.
Surcharge on wages above the maximum base	0.1	0.1	0.1	0.1	As of 2025. The surcharge follows a progressive scale with three steps. Rates vary between 0.92% and 1.17% in 2025 and will rise annually until they reach a minimum rate of 5.5% and a maximum of 7% in 2045. The minimum rate applies to wages between the maximum base plus 10%, while the maximum rate applies to compensation in excess of 50% above the maximum base. The firm-worker split for the surcharge is in line with the rate for contributions for common contingencies (83% for firms, 17% for the worker).
Automatic adjustment mechanism	—	—	—	—	In effect from 2026. The mechanism is activated if average pension expenditure between 2022 and 2050 minus income metrics measured from 2020 onwards (also calculated as an average over the period 2020-2050) exceed 13.3% of GDP. These figures shall be calculated every three years, beginning in March 2025. If the aforementioned condition is met, the Government must bring a proposal to the Toledo Pact Committee and Parliament to correct the deviation. If there is no agreement, the intergenerational equity mechanism will increase as much as is needed the next year to offset 20% of the deviation and will continue to rise each year to H19or until additional measures are put in place.
B MEASURES – EXPENDITURE PERSPECTIVE					
Indexing pensions to CPI	2.7	2.7 (a)	2.7 (a)	2.7 (a)	
Elimination of the sustainability factor	0.8	0.8 (a)	0.8 (a)	0.8 (a)	
Incentives for later retirement	-0.8	-1.5	-0.1	—	
New early retirement penalty scheme	0.0	0.0	0.0	0.0	The new scheme only has a relevant impact on workers who retire with the maximum pension possible, but clauses are in place to lessen the impact. First, new coefficients for these pensions come into force in 2024 and there is a ten-year transition period. During this decade, the penalty only rises gradually. Second, the increase in coefficients is only applied if the increase in the maximum pension is enough to absorb the rising reduction factors, "such that the pension does not fall below what would have been due under the regulations in force in 2021". Although this clause is somewhat open to interpretation, it seems to envisage that the new coefficients shall not be implemented if, when applied to the maximum pension each year, they result in a lower pension than would be due given the application of the coefficients currently in place on the maximum pension in 2021

SOURCES: AIReF (2023), Ministerio de Inclusión, Seguridad Social y Migraciones, Fuente (2023, 2023b) and Banco de España.

a 2021 Ageing Report.

Table 2.2

QUANTIFICATION OF THE MAIN MEASURES ADOPTED IN THE PENSION REFORM (cont'd)

Description of the measure	Percentage of GDP in 2050				Notes
	AIReF	MISSyM	Fedea	BdE	
B MEASURES – EXPENDITURE PERSPECTIVE					
Increase in pensions for the self-employed	—	—	0.7	—	Fedea is the only institution to have calculated the increased expenditure resulting from the rise in contributions from the self-employed. Note that, given the fact that the pension system provides more than one euro in pension payouts for each euro paid in, an increase in the contribution base entails an actuarial shortfall in the system. However, since this actuarial deficit comes into play in the long term, the measure will have a positive impact on net revenues for the first few decades of implementation.
Increase in the maximum pension	-0.4	0.1	0.1	0.0	The maximum pension will rise in line with the CPI plus 0.115 pp from 2024 to 2050. From 2050 to 2065 the amount in addition to the CPI will be higher in order to recover some of the gap resulting from changes to the maximum contribution base. According to AIReF, the measures cut pension spending because in their model's base scenario, maximum pensions scale with wages and, therefore, grow more quickly than if they rise with the CPI plus 0.115 pp.
Modification of the calculation period for the regulatory base	0.0	0.2	0.2	—	Transition period established for 2026-2043. From 2044 the calculation period for the regulatory base will be based on the last 29 years of contributions, excluding the worst 24 months. Between 2026 and 2040, the calculation period will be the best for the worker of the following options: the last 25 years of contributions and the combination of a span of more than 25 of the most recent years with the possibility of excluding a certain number of the worst months of contributions. Between 2041 and 2043 both options will be available, although the reference of the last 25 years of contributions will increase by 6 months each year and be compared with the result of taking the last 29 years and excluding the worst two years. Between 2023 and 2025 the current formula will remain in place, which looks at the 25 years of contributions prior to retirement.
Increase in minimum pensions	0.0	0.1	0,3 (b)	0.2	Transition period established for 2024-2026. From 2027 the minimum amount of benefits for pensioners over the age of 65 with dependants cannot be below the poverty threshold calculated for a household of two adults. For other contributory pensions, an increase has been established equivalent to half of that stipulated for the pensions previously discussed. For non-contributory pensions, the reference has been set at 75% of the poverty threshold of a single-person household.
Measures to reduce the gender gap	—	—	—	—	10% increase in the gender gap reduction supplement in pensions between 2024 and 2025, mainly aimed at women with children and improving integration of gaps in women's contributions

SOURCES: AIReF (2023), Ministerio de Inclusión, Seguridad Social y Migraciones, Fuente (2023a and 2023b) and Banco de España.

b Includes the increase in the gender gap reduction supplement.

should be reviewed on an ongoing basis as more information becomes available. Further details of the measures analysed and their potential impact are provided below:

- **CPI-indexed pensions and removal of the sustainability factor.** According to AIReF and the European Commission's *Ageing Report*⁷² estimates, indexing pensions to prices will increase pension expenditure by around 2.7 pp of GDP in 2050. Removing the sustainability factor will raise this expenditure item by some 0.8 pp of GDP.

⁷² AIReF (2023) and Ministry of Economic Affairs and Digital Transformation (2021).

- **Incentives to delay the age of retirement.** Estimating the impact of this measures is subject to an extraordinary degree of uncertainty, since it depends on the extent to which it effectively influences workers' decision to retire. No conclusive empirical evidence is as yet available in this regard. Reflecting this considerable uncertainty, AIReF presents scenarios in which the savings associated with this measure in 2050 oscillate within a very broad range, from 0.2 pp to slightly over 1.5 pp of GDP, under a baseline scenario of a reduction in spending of around 0.8 pp. The same is true for the scenarios envisaged by the MISSyM, which estimate savings in 2050 ranging from 0.6 pp to 1.6 pp of GDP, under a baseline scenario of a reduction in spending of 1.5 pp.⁷³
- **New contribution system for the self-employed.** According to Banco de España, AIReF and MISSyM estimates, the new system could raise revenues from social security contributions by some 0.4 pp or 0.5 pp of GDP in 2050, insofar as the contribution bases for this group of workers are aligned with their net income.⁷⁴ However, none of these institutions quantifies the impact that the new system could have in terms of expenditure, as a result of higher benefits on retirement. In this respect, Fedea's estimates suggest that the increase in expenditure in 2050 could be very similar to that of revenue.
- **An increase in the maximum contribution base that exceeds price growth, and a surcharge for wages exceeding the maximum contribution base.** Assuming inflation of 2%, the real increase in the maximum contribution base would be 22% in 2040 and 37.1% in 2050, while the additional charge for higher wages would range from a minimum of 0.92% in 2025 to a maximum of 7% in 2045. According to the Banco de España's estimates, overall, these measures would raise revenues from social security contributions by around 0.5 pp of GDP in 2050 (as much as 0.6 pp according to MISSyM calculations). In any case, it is important to underline that, although these measures shore up the pension system's resources, they also undermine the contributory principle for workers affected by the cap on the contribution base. A recent study by the Banco de España drawing on Continuous Sample of Working Histories (MCVL, by its Spanish abbreviation) data shows that the groups most frequently affected by capped contributions are men, middle-aged workers and employees in large corporations.⁷⁵
- **Intergenerational equity mechanism.** The contribution rate associated with this mechanism has been set at 0.6% in 2023 and will rise by 0.1 pp a year to reach 1.2 pp in 2029, holding at that level until 2050. The revenues raised by this measure are estimated at around 0.4 pp of GDP (according to AIReF) and some 0.5 pp of GDP (according to Banco de España estimates), once the contribution rate has reached 1.2%. These revenues

⁷³ The key assumptions on which the scenarios of both institutions rest are the percentage of workers who decide to delay retirement to take advantage of the new incentives and the number of years by which retirement is delayed.

⁷⁴ During the first three years of the transitional period established for the new system, the effect on revenues from social security contributions will be negligible, since the increase in the contribution rate of higher earners will be offset by the decrease in that of lower earners.

⁷⁵ Anghel, Puente and Ramos (2023). Forthcoming.

will bolster the Social Security Reserve Fund, for which progressive limits on disbursements have been set from 2033.⁷⁶

- **Thresholds for minimum pensions, the recipients of which have dependants, and for non-contributory pension benefits.** From 2027, minimum pensions may not be less than 60% of the median income of a two-adult household, while non-contributory pension benefits must be 75% of the poverty threshold of a single-person household.⁷⁷ This measure is aimed at bolstering the sufficiency of the lowest benefits. According to the Banco de España's estimates, based on the current value of these thresholds, the projected increase would be around 12% for the minimum retirement pension, the recipient of which is aged over 65 and has a dependent spouse, 20% in the case of pensions for widow(er)s with dependants and 12% for non-contributory pensions. These measures could mean growth in pension expenditure of around 0.2 pp of GDP.⁷⁸
- **Change in the regulatory base calculation period.** This measure adds to the current formula (which takes into consideration the last 25 contribution years) the option of lengthening the calculation period, disregarding a specific number of lowest-contribution months. From 2044, the calculation period will take the last 29 contribution years, excluding the 24 worst contribution months, which will benefit the least stable contribution histories. Taking the 2019 MCVL data as reference, the Banco de España's estimates suggest that the formula ultimately adopted for the regulatory base calculation period could entail an increase in the average initial pension of 0.3%, compared with the current formula.⁷⁹

While subject to much uncertainty, an overall analysis of the main legislative changes to the Spanish pension system since 2021 suggests that it will foreseeably be necessary to adopt new measures from 2025 to shore up the system's financial sustainability. As mentioned earlier, estimating the impact that the various measures deployed in recent years may have on the Spanish pension system's revenue and expenditure over the coming decades is subject to an extraordinary degree of uncertainty. In any event, the wide range of estimates – by the Banco de España and other institutions – currently available suggest that, as a result of the legislative changes approved since 2021, the Spanish pension system will, in the long term, probably have to assume greater expenditure obligations, that are not fully offset by the revenues raised. In this setting, and in the framework of the recently established automatic adjustment mechanism, it may be necessary to adopt new measures from 2025 to strengthen the financial sustainability of

⁷⁶ In 2033, disbursements from this Fund cannot exceed 0.1% of GDP. This limit will increase over time, to reach 0.91% of GDP in 2047, after which it will be reduced to 0.5% of GDP by 2053.

⁷⁷ For other minimum contributory pensions, the increase is equal to half of that stipulated for minimum pensions whose recipients have dependants.

⁷⁸ This estimate is based on 2021 MCVL microdata and on the amount of non-contributory pensions observed in 2023. Note that AIReF estimates a limited cost for this measure, as the projected growth of the minimum amounts and of non-contributory pensions would be consistent with that estimated by its projection model.

⁷⁹ This calculation is based on the sample and methodology used in [Muñoz-Julve and Ramos \(2022\)](#).

the pension system.⁸⁰ However, it is important to underscore that the decision to activate this mechanism will depend, among other factors that are difficult to determine at present, on AIReF's formal assessment of the revenue-raising measures in March 2025 and the path of pension expenditure projected in the *Ageing Report* to be published in the spring of 2024.

A further source of uncertainty is the potential impact of the revenue-raising measures adopted in 2023 on employment, wages and the competitiveness of the Spanish economy. The estimates shown in Table 2.2 do not include the potential effect on employment, wages and the competitiveness of the Spanish economy of the higher labour costs stemming from some of the recently approved legislative changes. Quantifying these effects is complex and subject to great uncertainty. In this respect, the economic literature fails to provide conclusive evidence, for example, of the precise degree of elasticity with which aggregate employment could respond to an increase in social security contributions in the present circumstances.⁸¹ A simulation exercise conducted using the MTBE suggests that a 1 pp increase in the average effective rate of social security contributions⁸² could lead to a decrease of close to 0.25%⁸³ in employment after four years, which would represent a not insignificant downside risk to the (ex ante) revenue estimates shown in Table 2.2. However, other analyses point to appreciably different (including both upward and downward) elasticities.⁸⁴

The above considerations, especially bearing in mind the significance of the changes implemented, make an ongoing, transparent and thorough assessment of the magnitude of their effects advisable, including their impact on intergenerational equity. In particular, ex post analyses revealing the scope of the incentives to delay the retirement age would be desirable, given that these incentives are key to containing pension expenditure in the future. The possible effects of the increase in social security contributions on the labour market and Spanish firms' competitiveness should also be examined, since, as mentioned earlier, they may lower the impact on revenues estimated ex ante. Similarly, insofar as these increases will not give rise to enhanced pension entitlements, they will be implemented gradually (with an uneven impact across different cohorts and, in some cases, varying across the wage distribution), it might be desirable to analyse their effects in terms of redistribution and intergenerational equity, so as to make the system more transparent. Lastly, it is essential that changes in the level of benefits are monitored over time, particularly those in minimum and non-contributory pensions, in order to guarantee a sufficient economic level for all citizens in their old age.

80 From the perspective of the automatic adjustment mechanism, AIReF's most recent calculations regarding the revenue-raising measures estimate growth in Social Security resources of 1% of GDP on average between 2022 and 2050, while spending on pensions in AIReF's baseline scenario would rise to 15.1% of GDP on average during the same period. Under these circumstances, the automatic adjustment mechanism would be activated in order to correct a deviation of 0.8 pp of GDP.

81 For a meta-analysis of the impact of social security contributions on wages and employment, see [Melguizo and González-Páramo \(2013\)](#).

82 According to AIReF, the effective rate will rise to around 2.7 pp once the approved changes in social security contributions have been fully implemented (not including the automatic adjustment mechanism).

83 Similar estimates by AIReF produce similar results. See Box 2 in [AIReF \(2023\)](#).

84 For example, [Saez, Matsaganis and Tsakloglou \(2012\)](#), [Bennmarker, Mellander and Öckert \(2009\)](#), [Korkeamäki and Uusitalo \(2009\)](#), [Benito and Hernando \(2008\)](#) and [Boscá, Doménech and Ferri \(2009\)](#).

Finally, it is important to note that, in parallel with the reform of the public pension system, a number of measures have been adopted in recent years to boost occupational pension schemes, to the detriment of the incentives associated with individual pension schemes.⁸⁵ These measures notably include the creation of public occupational pension funds, the setting up of mechanisms - through collective bargaining - to increase the share of the population covered by occupational schemes, the introduction of tax incentives to encourage this type of collective instrument, and the simultaneous reduction of incentives associated with individual pension schemes.⁸⁶ According to a recent report,⁸⁷ this relative cutback on tax incentives for individual schemes and, in particular, the lowering of the limit on contributions which reduces the personal income tax base, places Spain among the EU countries with the least favourable fiscal framework regarding these schemes. This might explain, at least in part, the significant decline in contributions to individual schemes observed since 2020. Specifically, in 2022, contributions to the individual system are estimated to have fallen by 60.4% compared with 2020, whereas contributions to occupational schemes decreased by 6.4%. Thus, overall contributions to private pension systems are estimated to have declined by 48.5% in that period. Looking ahead, it is essential to assess the extent to which these developments are temporary or permanent, and to analyse whether the regulation of the different pensions schemes needs to be adapted. All this, to protect the important role that private savings can play as a supplement to the benefits offered by the pay-as-you-go public pension system, in addressing the future challenges posed by population ageing.

3.1.2.2 The future path of public debt under different scenarios

The Banco de España has developed several analytical tools that help determine the future path of the public debt ratio under different fiscal policy and macro-financial assumptions. In these models, public debt dynamics in the medium and long term, in general terms, stem from the future behaviour assumed for a series of key variables (including the real GDP growth rate, inflation and public debt financing costs) and the numerous interconnections between them.⁸⁸ For a fuller characterisation of these dynamics, the models described in a recent Banco de España study explicitly include the uncertainty regarding future macro-financial developments over the simulation horizon. To this end, recent empirical evidence is

⁸⁵ Law 12/2022 of 30 June 2022, regulating incentives for occupational pension schemes, amending the consolidated text of the Law regulating pension schemes and pension funds, enacted by Royal Legislative Decree 1/2002 of 29 November 2002 (only available in Spanish).

⁸⁶ The personal income tax reductions for contributions and payments made to pension schemes, non-profit insurance institutions, assured pensions schemes, occupational pension schemes and private insurance plans exclusively covering the risks of severe or extreme dependency have a ceiling that is calculated as the lower of: 30% of the sum of net salary income and net income from economic activities or a fixed amount. This amount was set at €8,000 until 2020. In 2021, it was reduced to €2,000 with the option of a €8,000 increase provided it came from employer contributions. In 2022, the amount was reduced to €1,500 with the option of a €8,500 increase in the form of employer or employee contributions to the same pension scheme for an amount equal to or lower than an amount determined on the basis of the respective employer contribution.

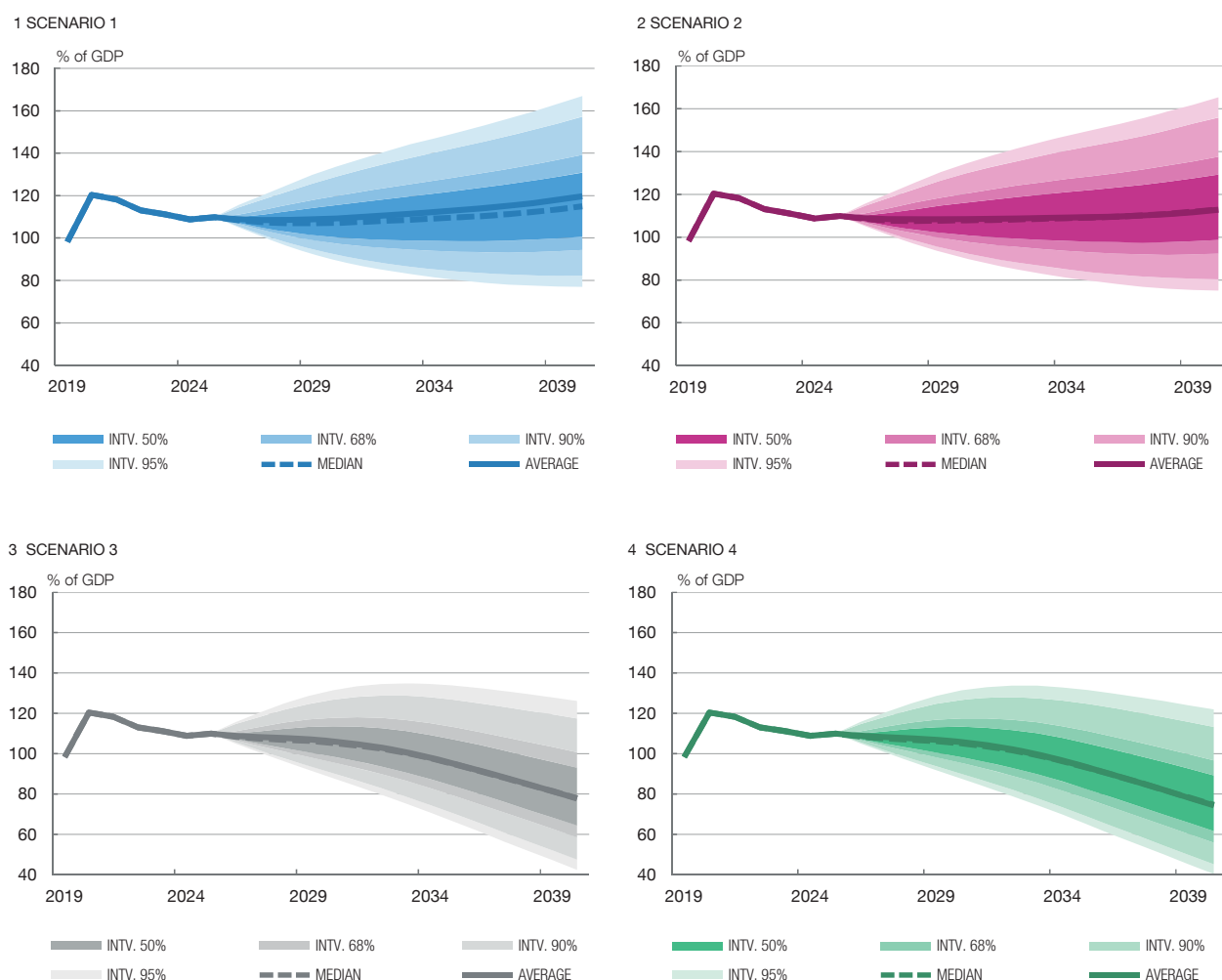
⁸⁷ Instituto de Estudios Económicos (2022).

⁸⁸ For example, Hernández de Cos, López Rodríguez and Pérez (2018).

Chart 2.13

PUBLIC DEBT WILL MOVE ON AN UPWARD PATH UNLESS A FISCAL CONSOLIDATION PLAN IS IMPLEMENTED (a)

Given the uncertainty surrounding the macro-financial environment, the current vulnerability of public finances and the projected future costs arising from population ageing would place the public debt ratio on an upward path at the end of the simulation horizon. An ambitious consolidation plan could bring it back to more sustainable levels.



SOURCES: INE, AIReF and Banco de España.

a All the scenarios include a deterioration in the structural primary balance up to 2040 owing to ageing costs (pensions, health and long-term care). Scenario 1 assumes a fiscal policy that makes a consolidation effort consistent with the new measures contained in the 2023 reform of the pension system, but without considering activation of the automatic mechanism for raising revenue from social security contributions aimed at correcting deviations in pension spending. Scenario 2 is based on the former, but does envisage activation of the automatic mechanism. Alternatively, scenario 3 assumes a fiscal policy that makes a further adjustment to the structural primary balance of 0.5 pp of potential GDP each year, until structural balance equilibrium is reached. Scenario 4 modifies scenario 3 with long-term potential GDP growth of 1.9% (instead of 1.4% as assumed in all the other scenarios).



used to gauge the scale and recurrence of possible shocks which may, in the future, affect the main variables that have a bearing on public debt paths.⁸⁹

In the coming years, public debt will remain very close to or even exceed current levels, unless an ambitious budgetary consolidation plan is implemented. According to the

⁸⁹ Alloza, Martínez-Pagés and Varotto (2023).

simulations conducted by the Banco de España, a failure to make fiscal adjustments in Spain or to activate the pension system's recently approved automatic adjustment mechanism (which provides for the adoption of new measures or an increase in social security contributions when pension expenditure departs from the baseline path) in the coming years, would lead to a continued rise in the public debt-to-GDP ratio, to around 120% by 2040 (scenario 1; see Chart 2.13.1). Indeed, under such a scenario, at the end of the simulation horizon, Spanish public debt would exceed 98% of GDP (the level posted in 2019, before the outbreak of the pandemic), with 80% probability. In an alternative scenario, in which no fiscal adjustments are made, but in which the automatic adjustment mechanism introduced in the latest reform of the pension system is activated, public debt would hold relatively stable in the coming years, albeit at comparatively very high levels, but would resume an upward path at the end of the simulation horizon (scenario 2; see Chart 2.13.2).⁹⁰

The sustainability of Spain's public finances would be significantly bolstered in the coming years if a fiscal consolidation plan and an ambitious package of structural reforms are implemented. Indeed, if, for example, the Spanish economy were to reduce its structural primary deficit by 0.5 pp of GDP in annual average terms,⁹¹ the public debt ratio would move on a downward path in the medium term and could fall to 78% of GDP by 2040 (scenario 3; see Chart 2.13.3). Moreover, should this fiscal consolidation effort be accompanied by a structural reform plan resulting in greater potential output growth, the public debt ratio would decline further, to close to 74% of GDP by 2040 (scenario 4; see Chart 2.13.4). In this scenario, even factoring in the uncertain macro-financial environment, the Spanish public debt ratio would stand below 98% of GDP in 2040, with a probability of more than 85%.

3.1.3 The much-needed fiscal consolidation plan

The Spanish economy must embark in 2023 on a fiscal consolidation process that gradually reduces the structural deficit in its public finances. The short, medium and long-term outlook of Spain's public finances (described in earlier subsections) is characterised by persistently very high levels of public debt. This leaves less fiscal space in the event of possible future adverse macro-financial shocks and represents a considerable source of vulnerability for the Spanish economy. This vulnerability could prove particularly troubling in the current situation, given the intense process of monetary policy tightening, the emerging tensions in the financial markets and the enormous and persistent degree of uncertainty surrounding both the global economic scenario and the geopolitical environment. The Stability Programme Update projects a reduction in the structural budget deficit of 0.2 pp of GDP in 2023.

⁹⁰ In these scenarios, as mentioned earlier, there is considerable uncertainty as to the possible impact of the revenue-raising measures adopted in 2023 on employment, wages and the competitiveness of the Spanish economy.

⁹¹ This scenario considers fiscal consolidation of 0.5 pp up to 2034, when the structural primary balance would reach an equilibrium. By way of comparison, the Stability Programme Update 2023-2026 recently published by the Spanish authorities considers a reduction in the Spanish economy's primary structural balance of 1.6 pp of GDP in cumulative terms between 2022 and 2026, to reach a positive primary structural balance in 2026.

In the short term, the roll-out of the NGEU European funds could soften the impact of the economic slowdown that might be triggered by the start of the fiscal consolidation process. The way in which the European authorities have designed the NGEU programme means that Member States' use of the funds it provides does not entail an increase in their current budget deficits. However, depending on how the funds are allocated, the programme could stimulate activity in the short term, in addition to its capacity to boost the economy's growth potential in the medium and long term. In particular, according to the Banco de España's latest projections, the roll-out of the NGEU programme in Spain could make a contribution of 0.6 pp to GDP growth in 2023. This fiscal impulse would more than offset the negative impact on activity in 2023 of beginning to gradually reduce the structural budget deficit.

Embarking on a gradual process of bolstering public finances could be compatible with maintaining some of the tax support measures in place for the more vulnerable groups. In recent quarters, the Banco de España, the ECB and other international institutions have argued that in order to address rising inflation and the energy crisis, it was important to avoid an across-the-board fiscal impulse which might amplify the already high inflationary pressures. They also argued that it was desirable for the measures deployed by the authorities to be temporary, targeted at the most vulnerable groups and to avoid significant skewing of price signals or of economic agents' incentives, for example, with a view to consuming less energy. More recently, as energy prices have dropped significantly and economic activity has proved remarkably resilient, it would be advisable to start rolling back the various measures deployed, promptly and in a concerted manner. Given that the bulk of these measures were, in fact, relatively widespread, they could be withdrawn and substantial tax savings obtained, even if certain initiatives targeted at the most vulnerable households and firms were introduced or maintained. A recent study by the Banco de España ([García-Miralles, 2023](#)) shows how this two-fold objective could be achieved in the case of the Spanish economy.

Aside from the fiscal policy stance adopted in 2023, on a broader time scale, a multi-year fiscal consolidation plan will have to be designed and implemented. It would be desirable for such a plan, in which all tiers of government should participate, to be underpinned by a prudent macroeconomic forecast and to detail the revenue and expenditure measures that will enable the gradual restructuring of public finances. This would not only strengthen the sustainability of public finances, but would also boost confidence and certainty about economic policies. The Stability Programme Update projects a reduction in the total structural balance of 1.1 pp of GDP in cumulative terms between 2022 and 2026, which rises to 1.6 pp in terms of the structural primary balance. This, together with the cyclical improvement expected by the Government, would place the budget deficit at 2.5% of GDP in 2026 (3% in 2024) and public debt at 108% of GDP in 2025.

The following considerations on public expenditure and revenue could serve as a guide for designing this consolidation strategy. The challenge of the strategy of gradually reducing the structural budget deficit lies in combining the comprehensive review of the efficiency of public spending with that of the tax system. For more details about these aspects,

in addition to those mentioned in the previous section on the pension system's revenue and expenditure, see [Chapter 2 of the Banco de España *Annual Report 2021*](#) and [Hernández de Cos \(2022\)](#).

On the expenditure side:

- **It is essential to identify the budget items where expenditure efficiency can be enhanced.** In this respect, it would be desirable to continue pressing forward with the explicit inclusion of some of the recommendations made by AIReF in recent years regarding the possibility of improving the efficiency of key expenditure items, such as active labour market policies, subsidies, tax relief, hospital expenditure and hiring incentives.⁹²
- **The distribution of public expenditure between items must be optimised in order to promote more robust and equitable economic growth.** It should be noted that spending on education, health and government investment - budget items that are essential to drive economic growth and reduce inequality - has consistently accounted for a lower share in Spain than in the EU overall in recent years.⁹³

On the revenue side:

- **A comprehensive review of the Spanish tax system is needed to assess whether, overall, the different taxes meet their goals in the most efficient and effective manner possible.** A useful starting point for this analysis is the [White Paper for the Reform of the Tax System](#), published in March 2022, which presents an in-depth diagnosis of the Spanish tax system and proposes a raft of measures for a future tax reform.
- **It might be appropriate, for reasons of efficiency and equity,⁹⁴ to shift the burden of taxation under the Spanish tax system from income to consumption, which is relatively low in Spain compared with other European economies.⁹⁵** The distributive effects of this strategy could be neutralised by means of various compensatory measures for the most vulnerable groups, for example, through adjustments in personal income tax or different transfer schemes.
- **The significant cost associated with the consumption tax relief measures - some €53 billion in 2022 - should be reviewed to determine whether they effectively and efficiently meet their initial goals.** The distributive effects of a potential reduction in

92 For these recommendations, see AIReF's [Spending Review](#). For the Government's follow-up of these recommendations, see [Informe de seguimiento de las recomendaciones de los Spending Reviews](#).

93 Public spending on education in Spain has accounted for 4.2% of GDP on average in the last decade, 0.6 pp below the EU average (0.8 pp, not taking into account the period affected by the pandemic). Government investment expenditure in Spain stood at around 2.4% of GDP during the same period, 0.7 pp below the European average.

94 For example, [Correia \(2010\)](#) and [Nguyen, Onnis and Rossi \(2021\)](#).

95 In the last ten years, on average, revenue from taxes such as VAT and other similar taxes has been 0.8 pp lower in Spain than that of the weighted average of the EU, and up to 1.5 pp lower when compared with the arithmetic mean of this group of countries.

these tax benefits could also be offset through different fiscal strategies targeted at the most vulnerable population groups.⁹⁶

- **The ambitious climate goals Spain has assumed point to the need to strengthen and raise green taxes in Spain, which consistently raise a lower share of revenue than other European economies.**⁹⁷ Green taxation, coordinated at the international level, is an efficient mechanism for reducing the negative effects associated with climate change and incentivising the green transition. As above, increasing green taxes should be accompanied by compensatory measures – some predominantly temporary – to mitigate the effects of this policy on certain groups of households and firms that are particularly exposed to the effects of the green transition.⁹⁸
- **The growing digitalisation and globalisation of economic activity require furthering the international coordination and harmonisation of taxation.** This is the surest means of preventing any erosion of tax bases and Spain’s economic competitiveness.

In any event, aside from these budgetary considerations, it is important to underscore that economic growth is key to any consolidation process. Any fiscal adjustment plan that seeks to bolster the sustainability of public finances in the coming years would need to be complemented by the implementation of an ambitious package of structural reforms - to reduce some of the shortcomings consistently shown by the Spanish economy in recent decades (see Section 2) - and the careful selection of investment projects to be funded by the NGEU programme (see Chart 2.13.4 and [Cuadrado, Izquierdo, Montero, Moral-Benito and Quintana, 2022](#)).

3.1.4 Reform of the European fiscal rules and governance framework

There is broad consensus on the need to reform the EU’s fiscal governance framework, a key element of the European institutional architecture. A fiscal rule framework that strengthens the sustainability of public finances is essential to ensure macroeconomic stability and the smooth functioning of the euro area. However, Europe’s current institutional infrastructure has many shortcomings in this area, and the repeated attempts to address them in recent decades have resulted in a complex and procyclical set of rules that has failed to prevent the build-up of fiscal and macroeconomic imbalances and does not provide many incentives for compliance.⁹⁹

⁹⁶ Both the AIReF’s *Spending Review* and the *White Paper for the Reform of the Tax System* (only available in Spanish) point to the inefficiency and high cost of a redistributive policy based on the widespread use of reduced and super-reduced rates of VAT. In this respect, a flat rate of VAT, combined with transfers or negative personal income taxes for lower-income households, would enable the same distributive goals to be achieved more efficiently.

⁹⁷ Over the past two decades, when compared with the arithmetic mean of the EU-27, Spain’s environmental revenue gap has remained stable at around 1 pp ([Banco de España, 2022a](#)).

⁹⁸ [Basso, Dimakou and Pidkuyko \(2023b\)](#).

⁹⁹ [Alloza, Andrés, Burriel, Kataryniuk, Pérez and Vega \(2021\)](#).

On 26 April 2023, the European Commission (EC) published a legislative proposal for the reform of this fiscal governance framework.¹⁰⁰ The cornerstone of the EC's proposal - prior to its final adoption by the Council of the EU - is to forge consensus with Member States around multi-year budgetary plans that are mainly targeted at ensuring that public debt ratios are placed on a downward path or stay at prudent levels.¹⁰¹ Within this framework, centred on medium-term fiscal sustainability, the EC proposes that the fiscal commitments undertaken through the introduction of an expenditure rule are implemented. The main purpose of this rule would be to set limits on expenditure in boom periods, to build up fiscal buffers for use in crisis periods. This rule would be complemented by safeguards¹⁰² vis-à-vis public debt trajectories and public expenditure growth as a percentage of potential GDP. The EC also proposes that the four-year period for which the fiscal adjustment plans would be agreed with Member States to ensure that their public debt stays on a downward path could be extended by up to an additional three years if they undertake structural reforms and public investment that have a positive impact on potential growth and improve debt sustainability.

The EC's proposal is an essential step towards completing the review of the current European fiscal rule framework. Certain aspects of the EC proposal should be viewed favourably, such as the fact that it centres the debate on debt sustainability, proposes an expenditure rule as a key adjustment instrument given that expenditure is the main variable controlled by the fiscal authorities, considers – through longer adjustment periods – the need to undertake sizeable investments in the coming years to move ahead, for example, with the economy's green and digital transition, and provides for greater cross-country heterogeneity both in terms of countries' goals and the design of their fiscal consolidation paths. Another welcome aspect of the proposal is that it includes the need for national independent fiscal institutions to assess the suitability of the measures adopted and envisaged vis-à-vis the objectives set in the agreed fiscal adjustment programmes.

However, the EC's proposal also raises some questions. Although it addresses positive aspects such as the strengthening of countries' accountability for complying with the fiscal rules and a review of financial sanctions,¹⁰³ the new framework also needs to include a better defined system of incentives to mitigate the procyclical behaviour of public finances and boost the pace of consolidation during boom periods. Also, the EC's proposal may be largely ineffective in significantly reducing the extreme complexity of the current fiscal rules. Indeed, the practical application of debt sustainability analyses, for the purpose of informing fiscal policy decisions, is a remarkably complex task.¹⁰⁴ Moreover, there are aspects of the EC

¹⁰⁰ [European Commission \(2022b\)](#).

¹⁰¹ In this setting, the EC maintains a public debt-to-GDP reference value of 60% and continues to consider it necessary for the budget deficit to remain below the 3% reference value in the medium term.

¹⁰² These safeguards include: (1) ensuring that the adjustment effort is not postponed until the end of the trajectory; (2) that the public debt-to-GDP ratio at the end of the period covered by the adjustment path is lower than that of the year prior to the start of the adjustment path; and (3) that Member States' net expenditure growth is maintained below potential GDP growth over the medium term for the period covered by the path, in line with the current expenditure rule.

¹⁰³ The legislative proposal discards the reputational sanctions included in the EC's initial proposal, announced in the November 2022 press release, and redefines the fines to increase the incentives for compliance, removing the minimum amount and proposing that they accumulate every six months until effective action is taken, up to a maximum of 0.5% of GDP.

¹⁰⁴ See, for example, [Heimberger \(2023\)](#).

proposal that are not sufficiently detailed, such as the technical criteria that Member States must meet to obtain the three-year extension of their adjustment period.

In any event, beyond this review of the fiscal rules (which should result in the adoption of a new framework in the coming months), there is considerable scope for improvement to continue strengthening Europe's institutional infrastructure and economic governance. For instance, among other measures, it would be desirable to create a common European financing instrument that includes the investments required to meet common goals, for example, in the green and digital transitions.¹⁰⁵ It would also be desirable to establish a permanent European unemployment insurance system and central fiscal capacity. Along these lines, some of the initiatives adopted during the pandemic, such as the temporary Support to mitigate Unemployment Risks in an Emergency (SURE) programme, could be expanded.¹⁰⁶ The time frame for the NGEU programme could also be reviewed, to reduce the risk that some of the investment necessary for digitalisation, the fight against climate change and for the EU's Open Strategic Autonomy¹⁰⁷ may not be completed. And this without forgetting the important progress still needed to complete the banking union and the capital markets union.

3.2 Household vulnerabilities

Focusing on the differential impact of economic developments on different population groups is crucial. The main macroeconomic aggregates often conceal considerable heterogeneity in how their dynamics affect different types of households and firms. There is ample evidence in the academic literature indicating that, depending on their scale and persistence, these differences may ultimately have significant overall implications. For example, insofar as they involve the build-up of vulnerabilities in certain population groups and a high level of inequality, some macro-financial developments could undermine social cohesion and foment social conflict, with adverse repercussions for investment security,¹⁰⁸ the incentive to work and opportunities for future generations.¹⁰⁹

In recent years, the Banco de España has very actively contributed to identifying these differential impacts in the Spanish economy. Drawing on analysis of highly granular datasets, the Bank has published papers and articles on, among others, the following matters:

¹⁰⁵ See, for example, Bianchi, Melosi and Rogantini Picco (2022).

¹⁰⁶ See Alonso (2023) and Burriel, Kataryniuk and Pérez (2022) for an analysis of the benefits of this programme, both in terms of macroeconomic stability and interest savings for public finances.

¹⁰⁷ For more details about the various initiatives undertaken by the EU in recent years to strengthen its Open Strategic Autonomy in response to the increasing risks of trade and financial fragmentation globally, see Ioannou and Pérez (2023).

¹⁰⁸ See, for example, Grossman (1991) and Dijkstra, Poelman and Rodríguez-Pose (2020).

¹⁰⁹ See, among others, Persson and Tabellini (1994), Alesina and Rodrik (1994) and Corak (2013).

From a more conjunctural perspective¹¹⁰

- In the current inflationary setting, the particularly heterogeneous exposure of different types of households to soaring energy and food prices.
- The potential increase in certain households' financial vulnerability as a result of the sharp rises in interest rates in recent quarters.
- The role that some of these measures could play in mitigating these vulnerabilities, e.g. in the case of the new Code of Good Practice for mortgages under [Royal Decree-Law 19/2022](#) and the €200 grant adopted under [Royal Decree-Law 20/2022](#).

From a more structural perspective¹¹¹

- The quantification – using different metrics – of economic inequality and poverty in Spain, and changes therein.
- Depopulation in certain geographical areas of Spain and its causes.
- The risks of financial exclusion faced by certain groups amid the increasing digitalisation of financial services.
- Heterogeneous credit risk developments across households, depending on their debt ratios and type of debt.
- The highly asymmetric exposure of different types of households to global warming and the green transition.

The aforementioned papers and articles have documented, inter alia, certain pockets of social, economic and financial vulnerability in Spanish households, which appear to be especially concentrated on those with lower incomes. In this regard, some of the most commonly used measures of inequality – such as wage inequality, income inequality and relative poverty – have followed a similar pattern in recent years. These indicators rose very significantly after the global financial crisis and then started to fall gradually from 2014. Although the decline reversed sharply with the outbreak of the pandemic, the indicators resumed a downward path in 2021 and 2022, mainly as a result of the recent buoyancy of activity and employment and the various initiatives deployed by the authorities (see Charts 2.14.1 and 2.14.2). Broadly speaking, these indicators currently remain close to their pre-pandemic levels, which, in turn, were higher than before the global financial crisis.

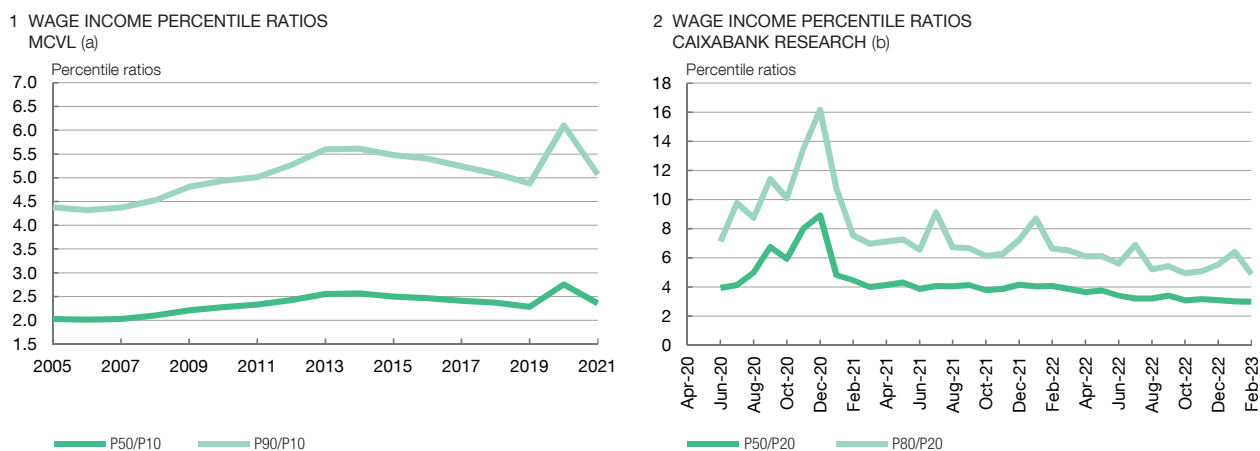
¹¹⁰ For further details, see Chapters 3 and 4 of this *Annual Report*. See also Barceló, Villanueva and Vozmediano (2021), Basso, Dimakou and Pidkuyko (2023a), García-Miralles (2023) and the special feature in the Banco de España's *Financial Stability Report* (2023b).

¹¹¹ See, for example, Alonso, Gutiérrez, Moral-Benito, Posada, Tello-Casas and Trucharte (2022), Anghel et al. (2018), Crespo, El Amrani, Gento and Villanueva (2023) and Basso, Dimakou and Pidkuyko (2023b).

Chart 2.14

WAGE INEQUALITY INDICATORS

The COVID-19 pandemic changed the pattern of wage inequality in Spain, which had followed a downward path since 2014. The positive performance of employment in 2021 and 2022 brought it down quickly, although it remains higher than before the global financial crisis.



SOURCE: Banco de España calculations, drawing on Ministerio de Inclusión, Seguridad Social y Migraciones (MCVL) microdata and CaixaBank Research internal data.

- a Ratios between two percentiles of the daily wage income distribution, including ERTes.
b Ratios between two percentiles of the income distribution, after public-sector transfer payments.



The root cause of these vulnerabilities varies significantly and mitigating their effects requires that government measures be put in place in very different areas. These areas include regulation (of the labour and housing markets, among others), taxation, public services (e.g. education and health care) and income policies and transfers. All these tools are capable of impacting income inequality levels in the economy and the vulnerabilities to which certain households are exposed, even though they act at different stages of economic activity, and may have very different implications in terms of equity and efficiency.¹¹²

It also requires an ongoing and thorough assessment of the capacity of these measures to attain the proposed goals and their implications in terms of equity and efficiency. For instance, according to [AIReF \(2022\)](#), the minimum living income (MLI) has so far only achieved a fraction of its potential. Specifically, AIReF considers that 700,000 households (excluding the Basque Country and Navarre) could benefit from the MLI. However, on the latest available information (for end-2021), only 40% of potential beneficiaries had received the MLI and only 56% of its budget had been executed. This non-take-up¹¹³ is precisely one of the factors being assessed as part of the social inclusion pathway projects envisaged under the agreements

¹¹² For an analysis of these policies and the stage of the economic process at which they act, see [Rodrik and Stantcheva \(2021\)](#).

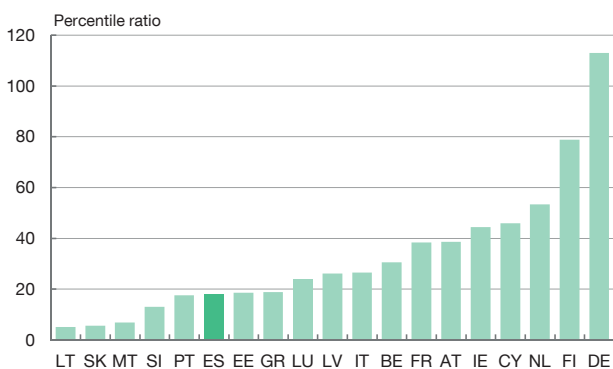
¹¹³ Non-take-up is defined as the ratio of the number of potential benefit recipients that do not receive it to the total number of potential beneficiaries. Analysis of non-take-up should be conducted from two complementary perspectives: a policy perspective, which seeks to improve the mechanisms and understand the reasons why people who should be beneficiaries are not; and a technical perspective, which seeks to enhance the information sources used to estimate the potential beneficiaries and to quantify the final beneficiaries. The report of the United Nations Special Rapporteur on extreme poverty and human rights, presented at the end of June 2022 in Geneva, indicates that, globally, the most common causes of non-take-up in the context of minimum incomes are a lack of awareness of benefits and of information about how to apply (the most common cause in Europe) and stigmatisation.

Chart 2.15

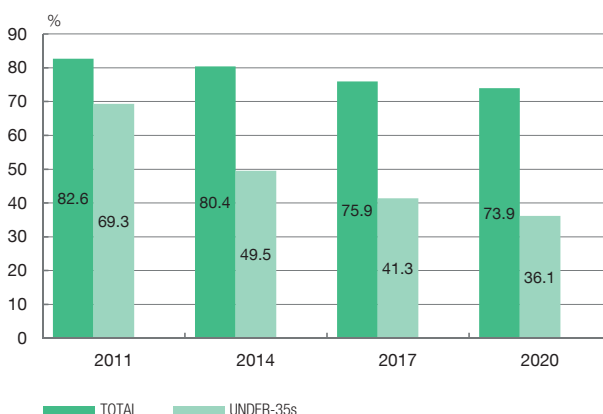
WEALTH INEQUALITY AND HOUSING AFFORDABILITY

By international standards, Spain has a moderate level of wealth inequality, which is associated with more widespread ownership of real assets. The fall in the owner-occupancy rate since 2014 has contributed to increasing inequality. In 2021, 48.9% of Spanish households living in rented housing were at risk of poverty or of social exclusion and 40.9% spent more than 40% of their disposable income on housing.

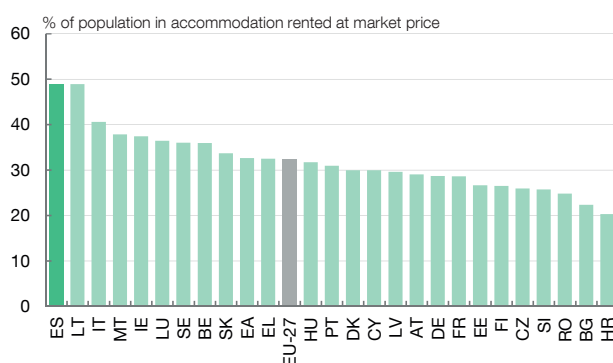
1 P80/P20 NET WEALTH RATIO. EURO AREA COUNTRIES



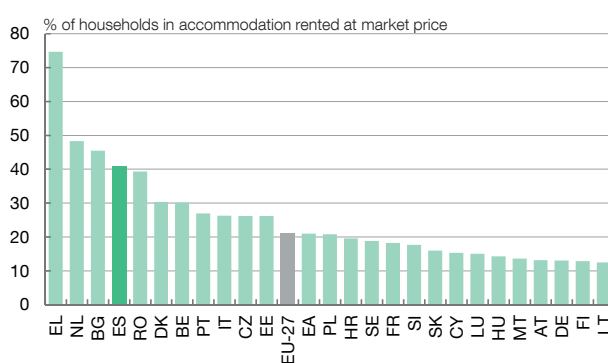
2 OWNER-OCCUPANCY RATE



3 POPULATION AT RISK OF POVERTY OR SOCIAL EXCLUSION



4 HOUSEHOLDS SPENDING OVER 40% OF THEIR DISPOSABLE INCOME ON HOUSING



SOURCES: ECB (HFCS), Banco de España (EFF 2020) and Eurostat (EU-SILC 2021).

a AT: Austria; BE: Belgium; BG: Bulgaria; CY: Cyprus; CZ: Czech Republic; DE: Germany; DK: Denmark; EE: Estonia; EL: Greece; ES: Spain; FI: Finland; FR: France; HR: Croatia; HU: Hungary; IE: Ireland; LT: Lithuania; LU: Luxembourg; LV: Latvia; MT: Malta; NL: Netherlands; PL: Poland; PT: Portugal; RO: Romania; SE: Sweden; SI: Slovenia; SK: Slovakia; EU-27: European Union.



between the Ministry of Inclusion, Social Security and Migration and the Fundación Centro de Estudios Monetarios y Financieros.¹¹⁴ Among other assessments, a thorough analysis of the effectiveness of the incentives to work included in the MLI would also be desirable.¹¹⁵

¹¹⁴ Non-take-up is not exclusive to the MLI, but is rather prevalent in this type of policy. For instance, in 2015 and 2016, 64% of eligible households submitted applications for the viable forbearance of principal residence mortgages under the Code of Good Practice proposed in [Royal Decree-Law 6/2012](#), with 35% actually benefiting from it. In the same vein, according to data from Fundación Foessa's [Survey on Social Needs and Integration](#), conducted between mid-March and end-May 2021, less than 9% of Spanish households were aware of the different extraordinary housing-related measures adopted in response to the outbreak of the health crisis and around 2% had applied for one or more of the measures.

¹¹⁵ [Rica and Gorjón \(2019\)](#) assess a minimum income scheme (similar to the MLI) implemented in the Basque Country and find that on average it did not delay the beneficiaries' entry into the labour market, although the impact varied across demographic groups. They document a delayed entry into the labour market for low-skilled and younger beneficiaries, but a swifter entry among medium and high-skilled individuals and the over-45s.

Specifically, to avoid potentially discouraging labour supply, the regulations implementing the MLI establish a mechanism whereby a portion of any increase in the beneficiaries' income resulting from finding work would not lower the amount of the supplement during two years.¹¹⁶ However, the time component of this exemption and the very complexity of the proposed mechanism could mean that these exceptions prevent the pursued degree of labour market insertion from being achieved.

Housing affordability, which has tightened in recent years, for both home ownership and rentals, is one domain in which particular vulnerability is observed. Housing market developments have a highly pronounced impact on vulnerability and inequality levels. For instance, there is evidence that a high owner-occupancy rate tends to reduce wealth inequality. The latest available data from the [European Household Finance and Consumption Survey](#) show that, by international standards, Spain had a moderate level of wealth inequality in 2017. This was mainly because ownership of real assets – particularly the principal residence – was more widespread in Spain than in other European economies (see Chart 2.15.1). However, the sharp fall in the owner-occupancy rate in Spain since 2014, especially among young adults (see Chart 2.15.2), has contributed to driving up wealth inequality in the country in recent years.¹¹⁷

Steep rents (when compared with labour income) increase the proportion of the population at risk of social exclusion and of households whose ability to spend on other goods and services is constrained. In 2021, 48.9% of Spanish households living in rented housing were at risk of poverty or of social exclusion, the highest percentage in the EU (see Chart 2.15.3). Meanwhile, 40.9% spent more than 40% of their disposable income on housing, compared with 21.2% on average in the EU (see Chart 2.15.4), a circumstance that particularly affected lower-income households.

In light of this, the following section gives an overview of rental market developments in Spain in recent years and some of the measures deployed by the authorities in this arena.

3.2.1 The residential rental housing market in recent years

The residential rental housing market in Spain has grown very considerably over the last decade. This growth is reflected in the estimated net increase of 800,000 households and a further 2 million people living in rental housing in 2021, compared with 2011 levels.¹¹⁸ The percentage of Spanish households whose principal residence is not owner-occupied thus

¹¹⁶ Three tranches are established: the portion of the increased income up to 60% of the minimum income will not reduce the supplement received; the portion ranging from 60% to 100% will reduce the supplement by 60%-80% of the increase, depending on the beneficiary's personal situation and employment status; and the portion of the increase that exceeds 100% of the minimum income shall reduce the supplement by a ratio of 1:1.

¹¹⁷ [Banco de España \(2022b\)](#).

¹¹⁸ Auciello-Estévez and López-Rodríguez (2023).

rose by 4.2 pp, to 24.2% in 2021.¹¹⁹ This ratio remained lower than the average observed in the EU-27 economies (30.1%) and the euro area (34.2%).

The growth in the rental market is largely explained by the strength of demand from young adults in urban areas. The increase in demand for rental housing has been higher among new households with a young reference person who is employed but whose income is relatively lower. In particular, the percentage of households with a reference person aged 30-44 not living in owner-occupied housing rose from 27.2% in 2011 to 42% in 2021. This trend appears to have been stronger in the main urban areas, where economic activity and population growth are concentrated.¹²⁰

Among lower-income groups, the higher demand for rental housing is associated with the labour market situation and mortgage lending standards. The percentage of those living in rental housing is relatively higher among workers that do not have full-time contracts and the unemployed. The same is also true of young adults, a larger proportion of whom are at the lower tail of the income distribution. Meanwhile, the greater prudence in mortgage lending standards as regards the collateral value in recent years – reflected in the lower average loan-to-price (LTP) ratio in new mortgage loans to households – also appears to have pushed a larger proportion of young households to the rental market.¹²¹ This shift seems to have been more pronounced in those geographical areas where growth in house prices has outpaced that of new resident households' income, resulting in these agents being unable to save the amount needed to purchase their own house.

The insufficient growth of supply to absorb the strong increase in demand appears to lie behind the considerable momentum of rental prices since 2014. According to the official statistics available providing different metrics of rental prices for the rental housing stock, median rents per square metre grew markedly, by 20% in cumulative terms, in 2015-2021 (12% in real terms).¹²² This increase primarily reflects the higher marginal prices of new dwellings entering the market and contract renewals, in contrast to the more moderate rates applied in updates of existing contracts in line with the CPI for rents up to 2021.

119 Under the classification in the [European Union Statistics on Income and Living Conditions](#) (Eurostat), rented accommodation includes accommodation provided either at a reduced rate (below market price) or rent-free. In the case of Spain, in 2021, 15.1% of households lived in accommodation rented at market price, 6.2% in rent-free accommodation and 2.8% in accommodation rented at below market price. See [INE \(2022\)](#).

120 For example, the rental housing stock in Barcelona accounted for 38.5% of principal residences in 2021 ([Observatori Metropolità de l'Habitatge de Barcelona, 2022](#)). Worthy of mention at regional level is the proportion of households not living in owner-occupied housing in Catalonia and the region of Madrid (28.2% in 2021 in both cases) and in regions with significant tourism activity, such as the Balearic Islands (36.2%) and the Canary Islands (35.4%).

121 The LTP ratio is calculated as the ratio of the mortgage loan's principal to the recorded price of the property. The average ratio for new mortgage loans, weighted by the capital of each new mortgage, has been around 80% since 2014, compared with the ratios exceeding 100% during the period 2004-2007. See [Financial Stability Report, Autumn 2022, Banco de España](#).

122 [State reference system of housing rental prices \(Ministry of Transport, Mobility and Urban Agenda, 2023\)](#) (available only in Spanish). The statistics show high geographical disparity, with cumulative growth of over 30% in median rents per square metre in cities such as Valencia, Palma and Malaga between 2015 and 2021. In the areas suffering relative greater supply shortages, cumulative growth in median rents in the main urban areas exceeded 40% in this period.

After the pandemic, 2022 saw a stronger recovery in rental demand than in supply, with a new upward dynamic in nominal prices. The statistics on rental asking prices published by the main real estate portals indicate a change in trend in these prices after mid-2020 and year-on-year declines of between 3.5% and 4% in 2021. These declines reversed over 2022, when the market saw a notable recovery, with nominal rental asking prices growing by between 7% and 7.5%. However, taking into account cumulative inflation in the period 2021-2022 (11.7%), rental asking prices in real terms at end-2022 were around 7.5% lower than real prices in 2020.

The recent buoyancy of rental prices has arisen in a setting of constrained supply on account of the limited increase in the public provision of social rental housing and the emergence of alternative housing uses. The small public stock of social rental housing in Spain is attributable to the commitment to owner-occupied government-sponsored housing in previous decades and the scant budgetary resources assigned to social housing at both State and regional level. On the estimates in Ministry of Transport, Mobility and Urban Agenda (2023), the stock of publicly owned social rental housing comprises around 290,000 dwellings, home to an estimated 1.6% of households. These figures stand in contrast to the stock of social rental housing in other European economies, where it represents on average 7.5% of total housing stock in the EU, and accounts for a significant share in, for example, France (14%), the United Kingdom (16.7%) and the Netherlands (34.1%). In this setting, initiatives have recently been proposed to boost investment in public sector housing, in order to progressively increase the public stock of social rental housing over the medium and long term.¹²³ Recent years have also seen an increase in the number of tourist rental accommodations (estimated to account for 1.2% of total housing stock, or 1.6% of total principal residences)¹²⁴ and the emergence of new forms of short-term leases in markets in which housing demand is high.

The future Law on the right to housing¹²⁵ places greater emphasis on the need to increase the supply of rental housing. Thus, the new Law provides for more social rental housing through greater public-private collaboration, a progressive increase in the public stock of rental housing and greater tax incentives for individual landlords who lease residential properties at reduced prices in areas under housing pressure.

However, some of the measures included, such as rent control, could have unwanted effects in the medium term. The new Law envisages measures to limit rental updating¹²⁶ and authorises competent territorial governments to cap rental prices, if deemed appropriate, in areas under housing pressure, in accordance with the State regulatory framework. According to the economic literature, while price controls can reduce rents in regulated areas in the short

¹²³ See, for example, [Project 2 of the Recovery, Transformation and Resilience Plan](#) and the [State Housing Affordability Plan 2022-2025](#) (both available only in Spanish), setting the objectives and projected resources needed to work towards gradually increasing the public stock of rental housing in the medium term.

¹²⁴ [Experimental Statistic. Measurement of the Number of Tourist Dwellings in Spain and their Capacity](#) (INE).

¹²⁵ At the time of this report going to press, the Law on the right to housing is in the final phase of its passage through Parliament.

¹²⁶ The measures announced include setting a 3% cap on rental updates in 2024 and creating a new price index for these updates from 2025 onwards.

term, they can also bear adversely on rental supply and create real estate market segmentation. Specifically, documented supply responses include a decline in the number and quality of dwellings available on the market, shifts in supply and price increases in unregulated segments. Further, these effects and their size prove more significant when the controls are in place for prolonged periods of time.¹²⁷ In the case of Spain, the analysis available on the recent experience in Catalonia points to lower average rental prices in the near term and certain shifts in supply, although the fact that this policy was applied during the pandemic hampers its assessment.¹²⁸

Aside from the need to boost the public stock of rental housing, the scale of the current supply-demand mismatch may also require resolute support from the private rental housing sector. Boosting public and private supply would dampen the upward rental price dynamics in the areas under housing pressure. To this end, measures that asymmetrically distort price signals should be avoided, greater effective legal certainty should be provided to landlords, and regulatory uncertainty in this market ought to be reduced. Tax and regulatory measures could be considered with a view to increasing the supply of rental housing from the professional private sector. Specifically, these could include introducing tax incentives for legal persons subject to their maintaining a certain amount of dwellings for rent at reduced prices, or easing local urban planning that limits and governs the use of land and property for residential purposes in areas under housing pressure (see [López-Rodríguez and Matea, 2020](#), for a discussion of the design of such policies).

Once the new Law has been approved, it will be essential to diligently assess its capacity to effectively meet its objectives. In particular, attention must be paid to signs of the aforementioned adverse effects emerging, so that the legislation can be adapted to prevent the materialisation of such risks.

¹²⁷ See, for example, [Sims \(2007\)](#), [Autor, Palmer and Pathak \(2014\)](#) and [Diamond, McQuade and Qian \(2019\)](#). The available studies on the recent experience in Germany indicate that rental price controls have increased prices in unregulated areas ([Mense, Michelsen and Kholodilin, 2023](#)) and that the price reductions have had a smaller impact in lower-income areas ([Breidenbach, Eilers and Fries, 2022](#)).

¹²⁸ For example, [Jofre-Monseny, Martínez-Mazza and Segú \(2022\)](#) estimate that the policy applied in Catalonia has reduced average rents by between 4% and 6%, but do not identify any changes in rental supply in the short term. By contrast, [Monràs and García-Montalvo \(2023\)](#) estimate similar reductions in average prices, but document price increases in “low-price” properties, shifts in the composition of units on the market and a significant reduction in supply, concentrated on properties with prices above the reference prices established by the regulation.

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CONTRIBUTORY UNEMPLOYMENT BENEFITS: A GRANULAR ANALYSIS DRAWING ON SOCIAL SECURITY ADMINISTRATIVE LABOUR RECORDS

In recent decades, unemployment rates in Spain have been – and remain – persistently higher than in other European countries. In this setting, among other actions, a comprehensive review of Spain's active and passive labour market policies is essential. The main purpose of this box is to make a first, tentative and partial contribution to this necessary review process (partial because the analysis presented here focuses exclusively on passive labour market policies and, specifically, on contributory unemployment benefits).

For this purpose, the first step is to perform a diagnostic exercise of how contributory unemployment benefits have functioned in Spain in recent decades. This is an indispensable first step in any economic policy review.

Second, the box explores whether it would be possible to adjust the present design of the Spanish benefit system to encourage benefit recipients to return to employment. In all cases, without affecting *ex ante* the overall level of protection afforded to workers and the unemployed by the current system, which is an essential safety net in the Spanish economy.

In general, passive labour market policies are any measures that seek to provide an income for the unemployed while they are out of work. In Spain, contributory unemployment benefits are the main such measures;¹ in 2022 they accounted for 69.5% of the total expenditure on passive labour market policies (which amounted to €19,623 million).

Contributory unemployment benefits are available to all workers who involuntarily lose their jobs and have contributed for at least one year since they last received unemployment benefit. Their maximum duration ranges from four months (after one year's contributions) to two years (after six years' contributions or more). The initial benefit amount is 70% of the average salary on which contributions were paid in the last six months worked. This percentage – the replacement rate – falls to 60% as from the seventh month. Maximum and minimum limits apply to these amounts, depending on the recipients' family situation: they currently range between a minimum of €560 to €749 per month and a maximum of €1,225 to €1,575 per month.

This box first aims to describe the contributory unemployment benefits in place in Spain between 1987 and 2019, i.e. before the onset of the COVID-19 pandemic, which considerably distorted Spanish labour market dynamics in 2020-2021. In particular, three issues are analysed: (i) the maximum benefit duration at the start of spells of unemployment; (ii) the proportion of these benefits that ended before their recipients found new employment; and (iii) how the monthly benefit amount evolved over time.

The granular information provided by the social security administrative labour records (*Muestra Continua de Vidas Laborales*, hereafter MCVL) is used to analyse these issues. The MCVL comprises hundreds of thousands of individual social security records that include episodes of non-employment and distinguish whether or not individuals have received contributory unemployment benefits. Drawing on that information, it is possible to estimate the maximum potential benefit duration and amount.²

Chart 1 depicts the potential duration of these benefits at the start of spells of unemployment and shows that most benefits had either a very short or a very long duration. Indeed, approximately half of all benefits granted between 1987 and 2019 had a maximum potential duration of four or six months. At the opposite end of the scale, 18% of all new benefits had a potential duration of 22 or 24 months.

Among the recipients of benefits with longer potential duration, the following accounted for a larger share of the total: older persons (average age of 43, compared with an average of 35 for recipients of benefits with a duration of six months or less); more highly-educated workers (11.3% in social security contribution groups 1 and 2,³ compared with 8.5% in shorter duration benefits); and men (63% of the total in this group).

Table 1 shows the percentage of unemployment benefits that ended before the recipients found new employment. Naturally, this percentage varies significantly according to the potential maximum benefit duration. In the full sample, approximately half of all benefits lasting four months ended before their recipients returned to employment. This percentage declines as the potential benefit duration increases, as the recipients have more time to find new employment. Yet even in the longest durations, in 18% of

1 Other passive labour market policies include non-contributory unemployment benefits and pre-retirement payments. Income support policies not directly related to involuntary job loss – such as the minimum income scheme – cannot strictly speaking be considered passive labour market policies.

2 For more details on how these variables can be estimated, see Cristina Guillaumon, Mario Izquierdo and Sergio Puente (2023), "Duration vs. replacement: A microsimulation analysis of unemployment benefits", Occasional Papers – Banco de España, forthcoming.

3 University-educated.

CONTRIBUTORY UNEMPLOYMENT BENEFITS: A GRANULAR ANALYSIS DRAWING ON SOCIAL SECURITY ADMINISTRATIVE LABOUR RECORDS (cont'd)

Chart 1
INITIAL DURATION OF CONTRIBUTORY BENEFITS STARTING BETWEEN 1987 AND 2019

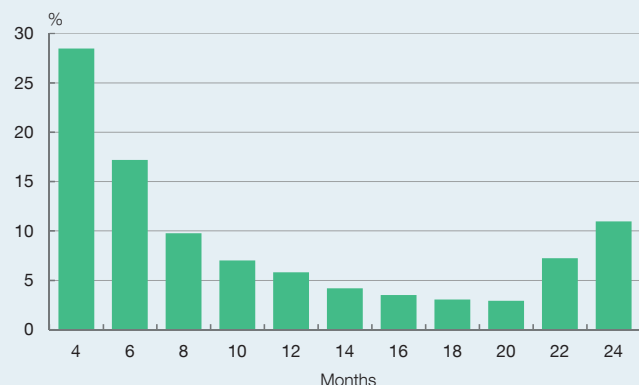


Chart 2
DISTRIBUTION OF CONTRIBUTORY BENEFITS STARTING BETWEEN JULY 2012 AND 2019, BY THEIR CONSTANT / DECLINING PROFILE

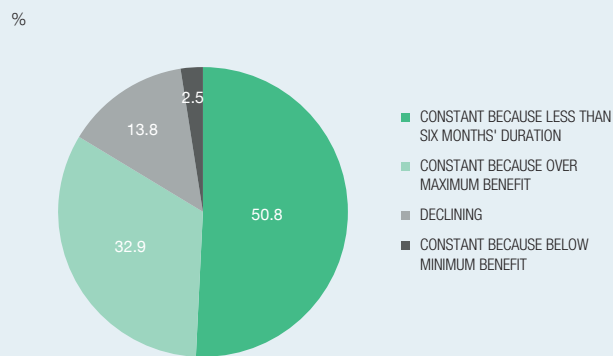
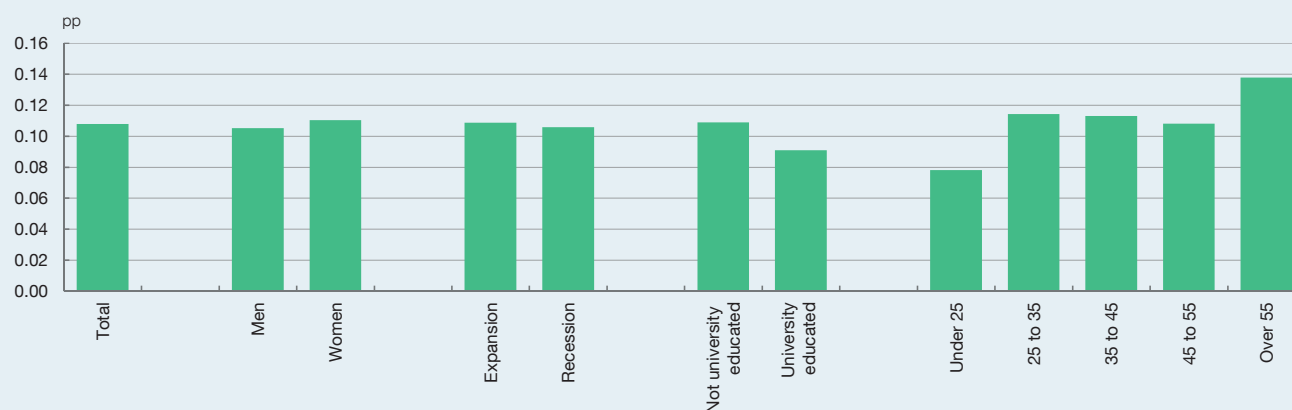


Chart 3
SIMULATED INCREASE IN THE MONTHLY PROBABILITY OF A RETURN TO EMPLOYMENT (a)



SOURCE: Banco de España, drawing on MCVL data.

a The columns denote the change in the probability of employment being found when the initial duration of all benefits is reduced by 5% and the monthly benefit amount is increased by 2 pp with no change to the minimum and maximum benefits. The model used is a linear probability model of employment being found applied to the benefit parameters. A set of control variables is also used to ensure that the effect of the benefits is isolated from their possible correlation with other observable variables. The control variables include age, length of unemployment spell, family size, level of education, controls for month and year, and fixed individual effects. Most variables are included semi-parametrically, to avoid the imposition a priori of concrete functional forms.

Table 1
PERCENTAGE OF BENEFITS THAT END BEFORE NEW EMPLOYMENT IS FOUND, BY INITIAL DURATION AND TIME OF RETURN TO EMPLOYMENT

%	4 months	6 to 10 months	12 to 16 months	18 to 22 months	24 months
1987-2019	50	31	22	18	18
2000-2007	47	26	17	14	14
2008-2012	52	32	21	15	13
2013-2019	44	25	21	21	20

SOURCE: Banco de España, drawing on MCVL data.

CONTRIBUTORY UNEMPLOYMENT BENEFITS: A GRANULAR ANALYSIS DRAWING ON SOCIAL SECURITY ADMINISTRATIVE LABOUR RECORDS (cont'd)

cases the benefits ended before their recipients found new employment. Table 1 also shows that this percentage depends not only on potential benefit duration but also on the stage of the economic cycle, although the differences observed in this respect are not very significant.

Regarding the benefit amount per month, the MCVL provides each individual's contribution base. Accordingly, to calculate the amount received each month, it is sufficient to estimate their respective family situation and apply the corresponding percentage⁴ and the minimum and maximum limits to that base. These limits, and the large proportion of short duration benefits, ultimately meant that in over 86% of cases the monthly benefit amount was constant over the period analysed.

Indeed, Chart 2 shows that the monthly amount of more than half of all benefits granted between July 2012 and 2019 was constant over time as the benefit duration was less than six months. In addition, although in principle the longer duration benefits had a declining profile, falling from 70% to 50% of former salary as from the seventh month, many (32.9% of the total) did not decline because both of the above percentages gave benefit amounts over the maximum limit. Among the smaller benefits, there were also a few (2.5% of the total) that remained constant over time because the percentages of former salary were below the minimum benefit amount.

Having described the present contributory unemployment benefit system, the second aim of this box is to explore whether it would be possible to adjust any parameter of this system to make it more conducive to encouraging the unemployed back into work, while preserving at all times the overall level of protection that this passive labour market policy affords to workers and the unemployed in Spain.

For this purpose a microsimulator⁵ developed by the Banco de España is used, which enables assessment of the extent

to which certain changes in the parameters of the benefit system could affect the probability of benefit recipients returning to employment. The microsimulator includes controls for the main characteristics of the individuals considered, as these can have a significant impact on the probability of their returning to employment, irrespective of the specific design of the benefit system. For example, in the sample considered, the monthly probability of a person aged 16 to 25 returning to employment was 8.4%, whereas for the over-55s it was substantially lower (5%). Similar differences are found between expansions (7.6%) and recessions (5.6%), between contribution groups 1 and 2 (8.6%) and all the other groups (6.9%), and between men (8.1%) and women (6%).

Once these important differences at the individual level have been taken into account, the microsimulator enables quantification of the impact that certain changes in potential benefit duration and amount could have on the probability of benefit recipients returning to employment.⁶ In this respect, the effects of a hypothetical design of the benefit system are explored, where the current level of overall protection is maintained *ex ante*, but the monthly benefit amount is increased and the potential benefit duration is reduced. Specifically, for purposes of illustration, a scheme is considered in which the potential duration of all benefits is reduced by 5% and the monthly benefit amount is simultaneously increased, by raising the replacement rates by 2 percentage points (pp), that is, from 70% to 72% and from 60% to 62%, with no change to the minimum and maximum limits.⁷

Chart 3 shows that, as a consequence of this change in the design of the benefit system, the probabilities of returning to employment increase for all the groups considered, with an average monthly increase in this probability of approximately 0.11 pp. This positive impact is larger for older benefit recipients and those with a lower level of education. Also, in

4 In the case of benefits lasting more than six months, the replacement rate was 50% between July 2012 and 2021, compared with 60% earlier. For that reason, only the data from July 2012 to 2019 are analysed here. The findings obtained with earlier data are similar, with a very similar percentage of declining benefits, a slightly higher percentage of benefits that remain constant because they exceed the maximum benefit and a slightly smaller percentage that remain constant because they have a duration of less than six months.

5 Microsimulation is a modelling technique that operates at the individual level and enables estimation of the effects that a change in a specific policy could have on each of the individuals considered. For more details on how the microsimulator used in this box is constructed, see Cristina Guillaumón, Mario Izquierdo and Sergio Puente, (2023). "Duration vs. replacement: A microsimulation analysis of unemployment benefits", Occasional Papers – Banco de España, forthcoming.

6 This estimate is made using a linear probability model, where the dependent variable takes the value of 1 if the individual starts work the following month. It is based on a sample that includes all the non-employed. To capture the possible heterogeneity in the effects, the benefit parameters are estimated using 600 different coefficients, covering the matches between the different benefit periods remaining and all other observable variables.

7 Other schemes in which the minimum and maximum benefits are also raised give qualitatively similar results to those presented here.

CONTRIBUTORY UNEMPLOYMENT BENEFITS: A GRANULAR ANALYSIS DRAWING ON SOCIAL SECURITY ADMINISTRATIVE LABOUR RECORDS (cont'd)

line with the results presented in Table 1, the cyclical position of the economy makes no appreciable difference to the overall positive impact of this alternative scheme.

The results of this analytical exercise, which are in line with others documented in the academic literature, suggest there could be some room for improvement in the design of unemployment benefits. The granularity of the exercise also enables identification of the groups that would be potentially most affected by the simulated changes, so that different compensatory measures could be designed to neutralise any possible adverse effects.

In any event, the results presented here should be interpreted with caution, for a number of reasons. First, the absence of any large-scale changes in the unemployment benefit system in recent decades, which makes it more difficult to accurately quantify the effects that potential changes could have on workers' behaviour or overall economic performance.

Second, the analysis ends in 2019, so as to avoid the notable labour market distortions caused by the COVID-19 pandemic. However, since then, among other significant

legislative changes, a labour market reform was approved in late 2021. In this respect, it is still too early to accurately assess the impact of that reform on Spanish labour market dynamics and, therefore, on some of the main developments analysed here.

Third, this box focuses exclusively on passive labour market policies. Yet the probability of returning to employment is also highly influenced by the design and effectiveness of active labour market policies, which suggests that a joint analysis of both instruments would be advisable.

Lastly, the exercises performed in this box only assess the possible impact of changes to the benefit system on the speed of returning to employment. It would also be interesting to analyse whether the design of the system can also affect the quality of the new employment created. For instance, the extent to which longer potential benefit periods could encourage benefit recipients to find a better match, on their return to employment, between their skills and their new job. All these questions will be subject to more in-depth future analysis.

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- 8 Several studies have underlined the importance of benefit duration in the return to employment, both for Spain and other European countries. For Europe see, for example: Jennifer Hunt (1995), "The effect of unemployment compensation on unemployment duration in Germany", *Journal of Labor Economics*, Vol. 13(1), pp. 88-120; Marco Caliendo, Konstantinos Tatsiramos and Arne Uhlenndorff, (2013), "Benefit duration, unemployment duration and job match quality: a regression-discontinuity approach", *Journal of Applied Econometrics*, Vol. 28(4), pp. 604-627; Kenneth Carling, Bertil Holmlund and Altin Vejsiu (2001), "Do benefit cuts boost job finding? Swedish evidence from the 1990s", *The Economic Journal*, Vol. 111, pp. 766-790; Knut Røed and Tao Zhang (2003), "Does unemployment compensation affect unemployment duration?", *The Economic Journal*, Vol. 113, pp. 190-206; and Jan C. van Ours and Milan Vodopivec (2006), "How shortening the potential duration of unemployment benefits entitlement affects the duration of unemployment: evidence from a natural experiment", *Journal of Labor Economics*, Vol. 24(2), pp. 351-378). For Spain, see: Olympia Bover, Manuel Arellano and Samuel Bentolila (2002), "Unemployment duration, benefit duration and the business cycle", *The Economic Journal*, Vol. 112, pp. 223-265; José María Arranz and Juan Muro (2004), "An extra time duration model with application to unemployment duration under benefits in Spain", *Hacienda Pública Española / Revista de Economía Pública*, Vol. 171 (4/2004), pp. 133-156; and Yolanda Rebollo-Sanz (2012), "Unemployment insurance and job turnover in Spain", *Labour Economics*, Vol. 19(3), pp. 403-426.
- 9 In this respect, Arash Nekoei and Andrea Weber (2017), "Does extending unemployment benefits improve job quality?", *American Economic Review*, Vol. 107(2), pp. 527-61, using data for Austria, find that for workers with higher job tenure, extending benefit duration from 30 to 39 weeks reduces the probability of their experiencing a wage loss over 40% on their return to employment. These results cannot be directly extrapolated to the Spanish economy, as these benefit periods are considerably shorter than their Spanish equivalents.



3

THE CURRENT EPISODE OF PRICE PRESSURES IN THE EURO AREA, THE MONETARY POLICY RESPONSE AND ITS EFFECTS

1 Introduction

This chapter analyses the current inflationary episode in the euro area and Spain and its short and medium-term outlook. This process started in 2021, mainly as a result of various global factors that had a negative impact on supply. However, inflationary pressures became more widespread over the course of 2022 and domestic demand factors have also begun to play an important role in the most recent price dynamics. While still high, particularly in the more stable components and in food, inflation has started to ease in recent quarters. Looking ahead, inflation is expected to move over the medium term towards rates consistent with the monetary policy target, although there are some risk factors that generate uncertainty about the scale of the disinflation process.

The monetary policy response to the rise in prices is also described and its effects on financial conditions, economic activity and inflation dynamics in the euro area are assessed. Over the past few quarters, the world's main central banks – including the European Central Bank (ECB) – have responded to the persistently high inflationary pressures by significantly tightening their monetary policies. This chapter analyses in detail how this monetary policy tightening is being transmitted to the economy. As part of this exercise, particular attention is paid to how this episode compares with previous tightening episodes, and to the uneven impact that these monetary policy decisions are having across jurisdictions and economic agents.

It is particularly important that the transmission of monetary policy be studied in the current situation as, for several reasons, it is not clear whether monetary policy is operating as it did in previous episodes. First, the last cycle of significant and sustained monetary policy tightening began in 2005, almost two decades ago. Since then, the euro area economy and the global economy have undergone major transformations in various dimensions. Second, there is no precedent in recent decades for monetary policy tightening as intense and rapid as the current one. Lastly, the current tightening cycle was preceded by a long period of expansionary monetary policy – including new unconventional instruments, such as the purchase of financial assets – which now needs to be reversed. Given these distinct elements, which could suggest that the historical evidence on monetary policy transmission may not be directly applicable in the current context, it is essential to rigorously and thoroughly monitor how monetary policy transmission has been operating in recent quarters so that this analysis can guide monetary policy conduct.

2 The rise in inflation and its key determinants over the medium term

Since 2021, the rise in inflation in the euro area and Spain¹ has been driven by a succession of factors (most of them global and extraordinary) that have had varying degrees of influence in recent quarters (see Figure 3.1). This section first provides a brief overview of the factors driving up inflation. This is followed by an analysis of the recent moderation of inflation and its changing nature. Lastly, the medium-term outlook and some of the most significant risk factors are presented.

2.1 The rise in inflation

The euro is facing an extraordinary inflationary episode in terms of its scale and persistence. This episode began worldwide in 2021,² but it gathered pace in 2022, exacerbated by the impact on commodity markets of the Russian invasion of Ukraine. As a net energy importer highly dependent on the supply of key inputs (most notably, gas) from the regions at war, Europe was particularly exposed to these effects.³ This made the inflationary shock highly exceptional in terms of both its scale and persistence, and the fact that it affected different commodities simultaneously, including food,⁴ which made the spread of inflationary pressures to a large part of the consumption basket practically inevitable. For much of 2021 and 2022, these factors were further compounded by the depreciation of the euro, particularly against the US dollar, which made imported goods and services more expensive. As discussed below, the depreciation was the result, among other factors, of a sharper tightening of monetary policy in other regions, particularly the United States.

The rise in inflation in 2022 was stronger and more persistent than expected. This was evidenced by the successive upward revisions to inflation forecasts in both the euro area and Spain, which largely reflected a stronger upward momentum in energy commodity prices than that incorporated in the assumptions underlying the forecasts.⁵ But they were also indicative of a complex pass-through of the sharp increases in commodity prices to consumer prices.

The materialisation of indirect effects of the energy shock was particularly important. Unlike direct effects – which capture, for instance, the impact of higher oil and gas prices on the cost of energy to the consumer – indirect effects spread more gradually through production costs and affect the productive sectors unevenly depending on their cost structure. For example, their impact is higher in sectors such as transport services, where energy accounts for a large share of the production costs. But the propagation of indirect effects through the

1 For more details about inflation developments in Spain, see Chapter 1 of this *Annual Report*.

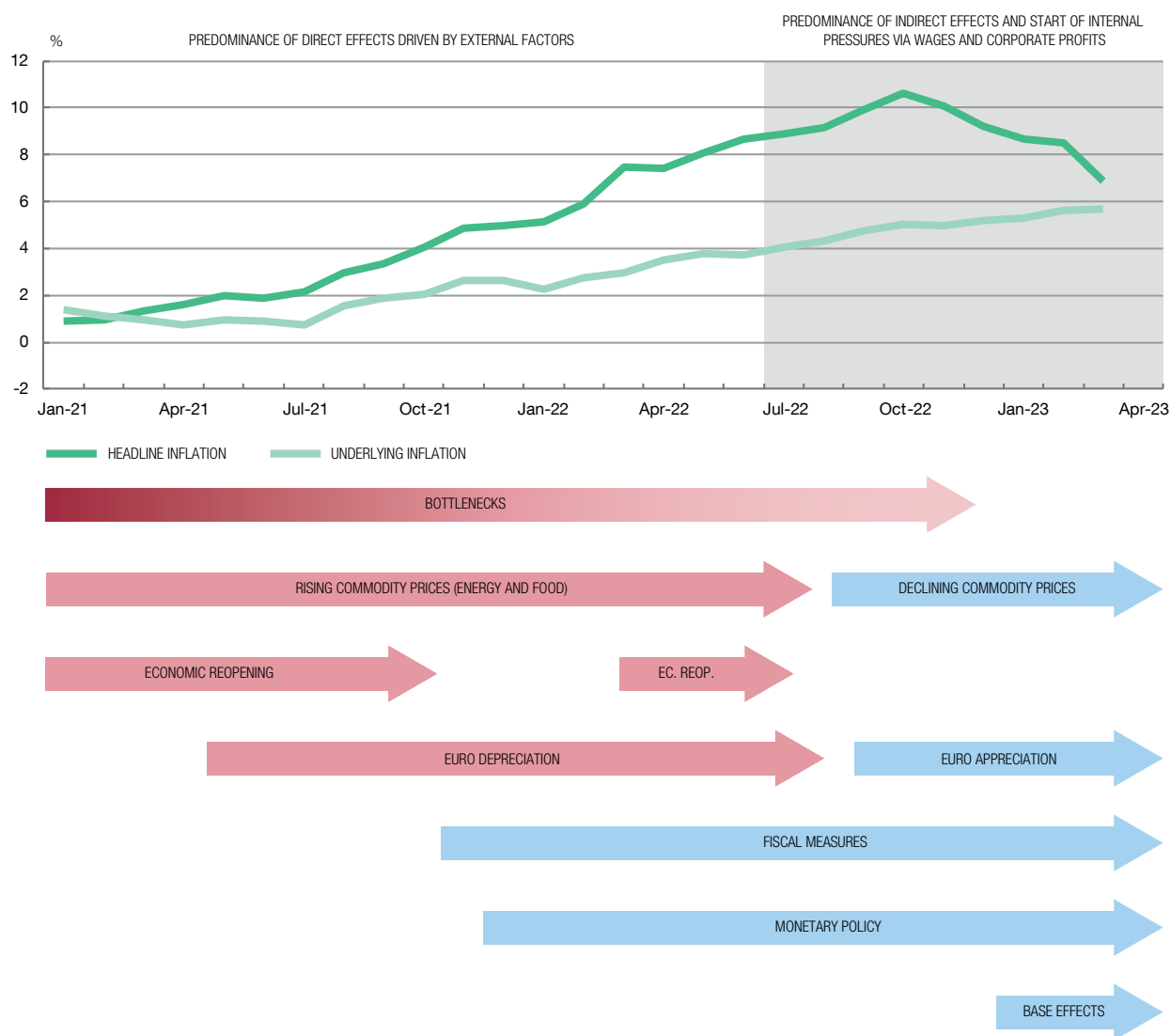
2 For more details on the origins of this inflationary process, see also [Banco de España](#) (2022a).

3 See Chapter 4 of this *Annual Report*.

4 Eminently global factors also explain the rise in food commodity prices. See [Bodnár and Schuler](#) (2022) and [Borralló, Cuadro-Sáez, Páez and Sánchez](#) (2023) for an analysis of cereal and milk prices in Europe.

5 The Eurosystem projection exercise is based on the assumption that commodity prices will change as indicated by futures contracts at the time of the forecast. For more details, see [Chahad, Hoffmann-Drahonsky, Page and Tirpák](#) (2023).

Figure 3.1

MAIN DETERMINANTS OF EURO AREA INFLATION (a)

SOURCE: Banco de España.

a The arrows mark the start and end of the factor in question. A red (blue) arrow indicates that the factor has an upward (downward) effect on inflation. The factors used to determine the start and end dates are as follows: for bottlenecks, the indicator detailed in Burriel, Kataryniuk, Moreno Pérez and Viani (2023), "New supply bottlenecks index based on newspaper data", Documento Ocasional - Banco de España, 2304; for commodity prices, a composite indicator that captures oil, gas and food prices; for exchange rates, the euro nominal effective exchange rate; for the economic reopening, a mobility indicator drawing on data from Google Global Mobility Reports; and for monetary policy, the start in December 2021 corresponds with the introduction of the first stimulus withdrawal measures by the ECB (See Figure 3.2).

production and distribution chain ends up making production processes more expensive practically across the board.⁶ Moreover, against a background of global inflation and depreciation of the euro, imported intermediate inputs also exerted pressure on costs.

In fact, the spread of the inflationary pressures across the consumer basket was stronger than expected. This reflected, first, the sheer size of the energy shock, which forced

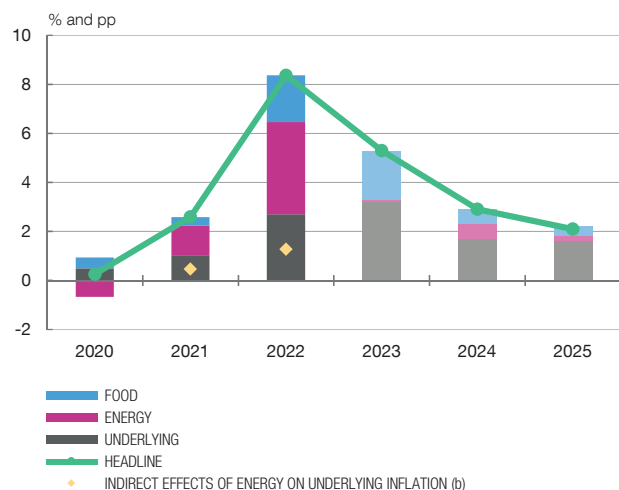
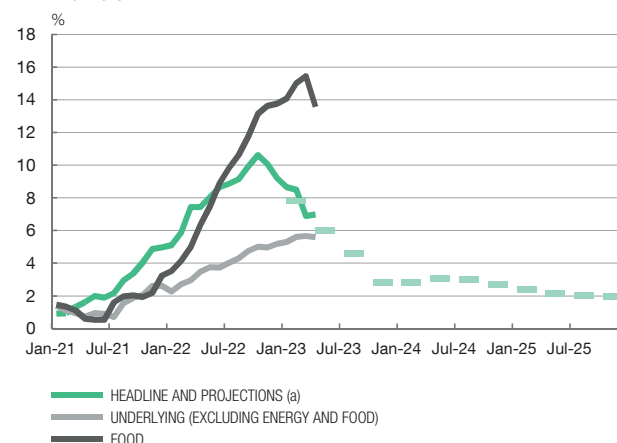
6 For a description of the distribution of energy costs across the Spanish business sector see Matea and Muñoz-Julve (2022).

Chart 3.1

THE INFLATIONARY EPISODE INTENSIFIED IN THE EURO AREA IN 2022, BUT HAS BEGUN TO EASE

Food and energy prices, including indirect effects, accounted for 80% of euro area inflation in 2022. Euro area headline inflation began to decline in autumn 2022, driven by the moderation in the energy component. By contrast, food and underlying inflation remained high and are expected to be more persistent.

1 INFLATION AND CONTRIBUTION BY COMPONENT (a)

2 EURO AREA INFLATION
HICP y-o-y growth

SOURCES: Eurostat and ECB.

a Data observed to 2022 and March 2023 ECB staff macroeconomic projections.

b The indirect effect is calculated by applying the historical elasticities in the Eurosystem projections macroeconomic models to data from a composite indicator combining oil and gas prices.



firms to adjust selling prices more frequently than in response to smaller shocks.⁷ In addition, some circumstances linked to the pandemic also contributed to the spread of inflation. These included bottlenecks in global supply chains, the growth in demand for certain types of goods and services (such as more contact-intensive services) following the lifting of the restrictions and the higher consumption of housing-related goods and services. Moreover, the significant savings accumulated during the pandemic and the strength of the labour market helped support consumption.⁸ As a result, in 2022 underlying inflation (i.e. excluding energy and food) was close to 4% in the euro area and Spain,⁹ doubling the forecast made at end-2021 and also exceeding the mid-2022 projection, which put underlying inflation slightly above 3% in 2022 for both regions.

Food and energy prices, including indirect effects, accounted for 80% of euro area inflation in 2022. Average inflation in 2022 reached 8.4%, of which 23% was explained by the food price component and 60% by energy prices, including an estimated impact of energy-

7 Costain, Nakov and Petit (2022). For a specific analysis of the Spanish economy, see González Mínguez, Hurtado, Leiva-León and Urtasun (2022).

8 That said, there is limited evidence that it was used for consumption, as illustrated by Martínez-Carrascal (2022).

9 The INE publishes an alternative underlying inflation measure for Spain based on the domestic Consumer Price Index (CPI), which excludes energy products and unprocessed food. It is therefore an aggregate that includes processed food. Its average annual rate of change in 2022 was 5.2%.

related indirect effects on underlying inflation of 1.3 percentage points (pp) – 15% of the harmonised index of consumer prices (HICP) – on average in 2022 (see Chart 3.1.1).

Against this background, medium-term inflation expectations shifted slightly upwards.

The long-term inflation forecasts of the Survey of Professional Forecasters (SPF) and of Consensus and those estimated on the basis of two-year forward two-year inflation swaps rose from 1.7%, 1.9% and 1.6% on average, respectively, to 2% (2.1% in the case of the SPF) on average in 2022. Meanwhile, the Survey of Consumer Expectations raised the median value of the three-year inflation outlook to 3% in mid-2022.

2.2 The incipient moderation of inflation and its changing nature

Euro area inflation began to decline in autumn 2022, and slightly earlier in Spain, in both cases underpinned by the energy component.

As Chart 3.1.2 shows, euro area inflation rose steadily up to October 2022, when the year-on-year HICP rate peaked at 10.6%. At that point, food HICP showed an increase of more than 13% and energy HICP of 40%, with gas and electricity accounting for approximately half of the increase in euro area consumer energy prices. Headline inflation then began to decline, reaching 7% in April 2023, according to the flash estimate. This fall in inflation owed exclusively to consumer energy prices. But underlying and food inflation are still very high, standing at 5.6% and 13.6%, respectively, in April.

In Spain, inflation began to moderate earlier, also underpinned by the energy price correction.

Inflation stood at 3.8% in April, according to the preliminary estimate, down from its peak of 10.7% in July 2022. Underlying inflation continued to rise up to February 2023, when it reached 5.2%, and began to decline – to 4.6% – in March. By contrast, food inflation has continued to climb and, as in the euro area, was over 15% in March, despite the impact of the reduced VAT rate on certain basic foodstuffs introduced in Spain in January 2023, with an estimated high level of pass-through.¹⁰

In the near term, headline inflation is expected to continue to head down.

According to the March ECB staff macroeconomic projections, euro area inflation is set to fall to slightly below 3% in 2023 Q4.¹¹ This downward path entails a decline in inflation from 8.4% on average in 2022 to 5.3% in 2023. Meanwhile, the Banco de España's latest forecasts for Spain envisage a sharper fall in inflation, from 8.3% in 2022 to 3.7% in 2023.¹²

The fall in headline inflation is partly due to short-term mechanical factors.

One of these stems from the fact that inflation is generally measured by the year-on-year rate of growth of consumer prices. Accordingly, the rate of inflation depends on the initial point of calculation, or in other words, on the price level a year earlier. In this respect, the fact that prices rose

10 [Quarterly report and macroeconomic projections for the Spanish economy. March 2023.](#)

11 [March 2023 ECB staff macroeconomic projections.](#)

12 [Quarterly report and macroeconomic projections for the Spanish economy. March 2023.](#)

sharply in 2022 has given rise to very significant negative base effects in 2023, which could come to dominate short-term movements in inflation, especially in consumer energy prices. The cumulative base effect between January and March amounts to a fall of 3 percentage points (pp) in euro area inflation (4 pp in Spain), and will account for around a further 4 pp (less than 1 pp in Spain) up to year-end (see Chart 3.2.1). Meanwhile, the new HICP consumer basket weights, applicable since January 2023, reflect a shift in households' consumption towards services and a lower weight of the more inflationary items, especially energy and food. It is estimated that the weightings update had a downside impact of 0.2 pp and 0.4 pp on euro area headline and underlying inflation, respectively, in January. In Spain, the effect of the change in weights was on the upside, and this together with methodological changes and the end of the fuel rebate for non-professional drivers temporarily halted the decline in inflation at the start of the year.¹³

The commodity price correction and the recent appreciation of the euro have also helped moderate inflation. The price of Brent fell by 40% in 2022 H2 and has since fluctuated around \$80 per barrel (see Chart 3.2.2). The European natural gas benchmark reached all-time highs in August 2022, over €300 per megawatt hour (MWh), and has since fallen sharply, to around €40 per MWh in April, levels not seen since summer 2021 (see Chart 3.2.3). These changes reflect the slowdown in global demand and the high European gas reserves built up, thanks to the energy saving measures introduced and, especially, to the mild autumn and winter weather. Oil and gas futures prices suggest that this favourable performance should continue. Meanwhile, in October 2022 the euro began to appreciate and, as analysed in more detail below, has recovered part of the significant depreciation experienced since early 2021. In any event, lower energy prices will be passed through with some delay, once more via the direct and indirect effects mentioned earlier. These delays are especially lengthy in the case of gas prices.¹⁴ The decline in the cost of energy will also be passed through to the production of food commodities and processed food. Agricultural commodity prices remain very high, having fallen only modestly so far.

Inflation is also being affected by the various fiscal measures deployed by the authorities to mitigate the impact of rising prices on households and firms. In 2022 the national authorities in the main euro area countries significantly increased fiscal support to protect firms and households in the face of the energy crisis and high inflation. The bulk of these measures have been extended into 2023 and fresh ones have been introduced. In total, the stimulus measures amount to almost 2% of euro area GDP in both years (1.4% and 0.9% in 2022 and 2023, respectively, in Spain) (see Chart 3.2.4). Although these measures helped contain inflation in 2022 and are expected to do so again in 2023, the scale of their impact this year is still uncertain. In addition to the uncertainty stemming from their design and implementation, some of these

13 The upside effect of the weightings reflects, among other factors, that consumer energy prices were already falling in January (by 8% year-on-year). Also, the reduction in the weight of energy was more pronounced in Spain; indeed, in 2023, its weight in Spanish HICP fell below its weight in euro area HICP. The main methodological change was the incorporation into the measure of gas and electricity prices of the part relating to the free market. See [Quarterly report and macroeconomic projections for the Spanish economy. March 2023](#).

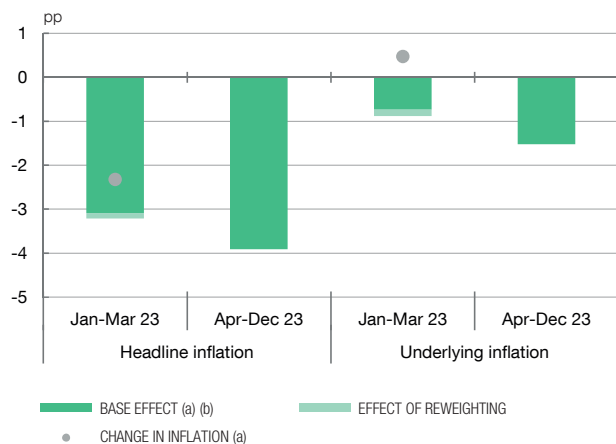
14 López, Párraga and Santabábara (2022).

Chart 3.2

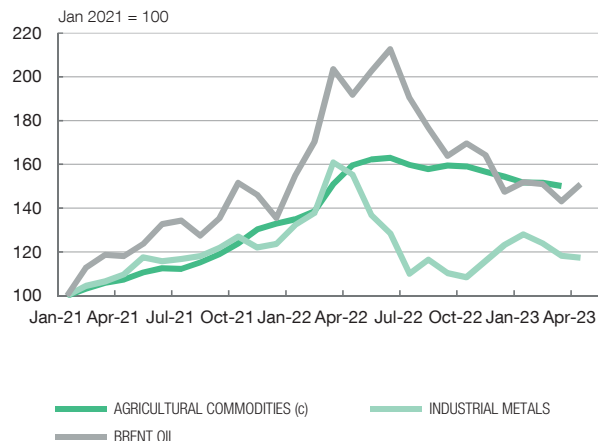
THE INCIPIENT DECLINE IN EURO AREA HEADLINE INFLATION IS SHAPED BY A NUMBER OF FACTORS

The fall in headline inflation is partly due to short-term mechanical factors (such as base effects), but also the commodity price correction and the recent appreciation of the euro. The fiscal measures are also mitigating inflation, but their withdrawal could have reverse (upside) effects in the coming years, particularly in 2024.

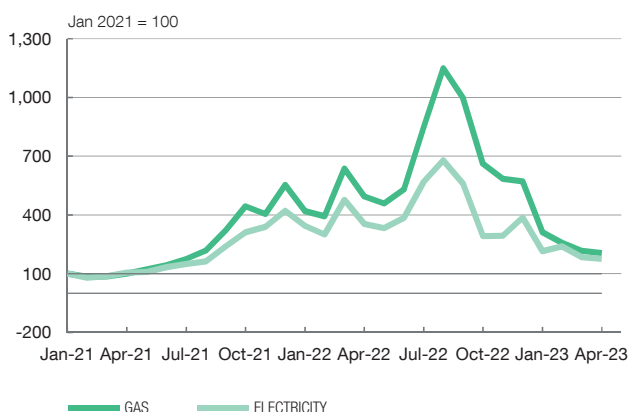
1 BASE EFFECTS AND CONSUMER BASKET WEIGHTS



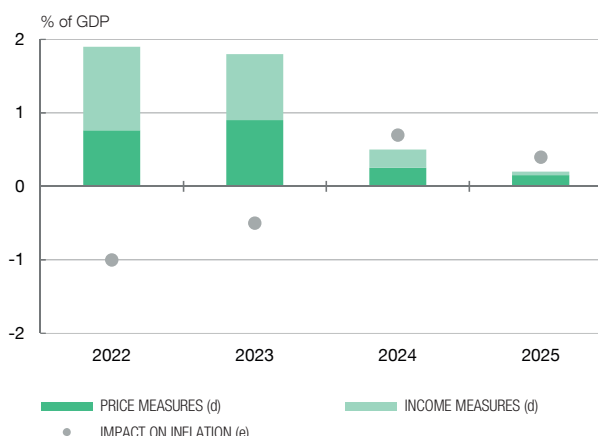
2 NON-ENERGY COMMODITY AND OIL PRICES



3 GAS AND ELECTRICITY: EUROPEAN WHOLESALE MARKET PRICE



4 COMPENSATORY FISCAL MEASURES FOR ENERGY AND INFLATION



SOURCES: Eurostat, Refinitiv, DG-Agri, ECB and Banco de España.

- a Cumulative since December 2022.
- b The base effect is calculated for each month as the difference between the month-on-month price change in the same month of the previous year compared with the average for the five previous years.
- c Aggregate index based on European Union prices (except coffee and sugar, for which international market prices are used). Constructed as the sum of the following components weighted by their relative share in HICP in 2022: cereals (25%), eggs and dairy (21%), edible oils (5%), meat (35%), sugar (9%) and coffee (5%). See Borrillo, Cuadro-Sáez and Pérez (2022).
- d The measures are classified based on the European Commission methodology. Price measures are those that directly affect the cost of consuming an additional unit of energy. Income measures do not directly depend on the quantity of energy consumed.
- e The impacts on inflation are shown at aggregate level for the euro area as percentage point deviations against a reference scenario of no compensatory fiscal policy measures for energy and inflation. The simulations are conducted under the simplified assumption that the fiscal shocks are exogenous and there is no monetary policy response.



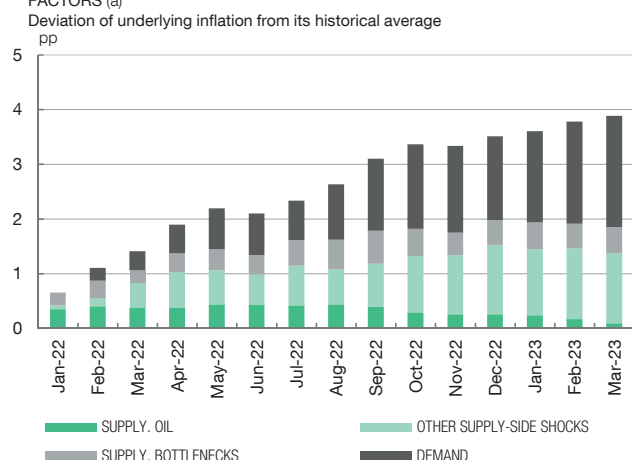
measures include energy price caps and, therefore, whether or not they are activated will depend on energy market developments. Moreover, the withdrawal of these measures will have the reverse effect, exerting upside pressure on prices in the coming years, especially in 2024. The scale of these effects will depend on the pace of their withdrawal.

Chart 3.3

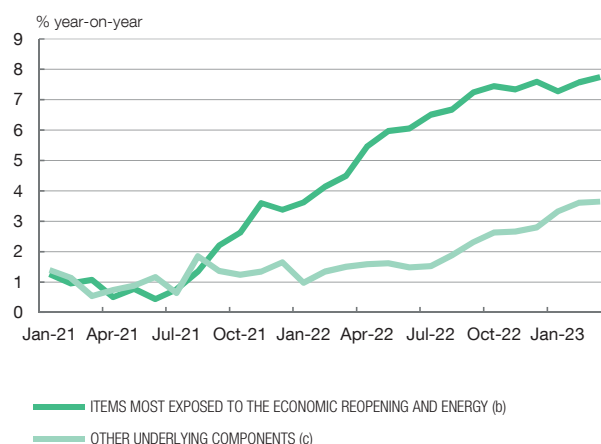
UNDERLYING INFLATION IN THE EURO AREA IS PROVING TO BE MORE PERSISTENT

Underlying inflation is still driven by the pass-through of past shocks, a process in which both demand and supply factors play a role. The latest data suggest that inflationary pressures are still spreading.

1 UNDERLYING INFLATION IN THE EURO AREA: SUPPLY AND DEMAND FACTORS (a)



2 UNDERLYING INFLATION IN THE EURO AREA BY COMPONENT



SOURCES: Eurostat and ECB.

- a Contributions extracted from a structural BVAR model with four variables: oil prices, the Federal Reserve's global supply chain pressure index (SCPI), HICP and industrial output. The variables are seasonally adjusted. The sample is monthly and covers the period 2002-2022. Supply and demand-side shocks and bottlenecks are identified using sign restrictions, assuming that demand-side shocks shift production and prices in the same direction, and supply-side shocks and bottlenecks shift them in different directions. Bottlenecks are identified based on movements in the SCPI. Oil is considered exogenous to the other variables in terms of its impact. See Alonso, Kataryniuk and Martínez-Martín (2021).
- b Aggregate of the "household equipment and maintenance", "transportation" and "recreation, hospitality and tourism" sub-indices. See Pacce, del Río and Sánchez (2022).
- c This sub-index includes "clothing and footwear", "housing (excluding energy and maintenance)", "health", "communications", "education" and "other miscellaneous goods and services". It includes rent for main residences but not tourist rentals.



Some underlying inflation components are showing signs of steadying, but the data suggest that inflationary pressures are still spreading. During 2022 there was a particularly strong upward trend in consumer prices for home equipment and maintenance, transport and activities involving more social contact.¹⁵ These items were more exposed to higher energy and food prices, global supply chain disruptions and the rapid reactivation of demand when the economy reopened. The aggregate price index of all these components for the euro area (see Chart 3.3.2) indicates a certain degree of steadying in their inflation rate, albeit at high levels over 7% since summer 2022. The index for Spain posted growth of around 6% year-on-year in March, on account of the lower relative inflation in the transportation component. Excluding these expenditure components, in the remaining basket, which accounts for more than 30% of the HICP, inflation has been highly contained throughout the inflationary episode. However, since mid-2022 it has climbed, from around 1.5% in the euro area (or even less in Spain) to 3.5% in 2023 Q1 (3% in Spain), suggesting that inflationary pressures continue to spread. The increase in the proportion of components with inflation rates over 4%, to almost 64% in the case of euro area underlying HICP (45% in Spain), reflects the same pattern.

¹⁵ Pacce, del Río and Sánchez (2022).

Underlying inflation will remain high in the short term as it is still driven by the pass-through of past shocks. Following the high underlying inflation (3.9%) recorded in the euro area in 2022 (3.8% in Spain), the March 2023 ECB staff macroeconomic projections point to a further increase in 2023 to 4.6% (3.9% in Spain according to the Banco de España's latest projections). The estimates in Chart 3.3.1 show that demand and supply-side pressures on prices remain high. Demand factors had a lesser bearing at the start of 2022, but their contribution gradually increased up to the autumn, and has steadied since at high levels. Supply-side factors associated with higher production costs and supply chain bottlenecks – the predominant factors at the start of 2022 – account for around half of the deviation of euro area underlying inflation from its historical mean at the start of 2023.

2.3 The medium-term inflation path and risk factors

Euro area inflation is expected to continue to decline towards levels compatible with the medium-term monetary policy target. The latest ECB staff macroeconomic projections published in March expect inflation to fall gradually from 8.4% on average in 2022 to 5.3% in 2023, 2.9% in 2024 and 2.1% in 2025. Meanwhile, in Spain, a sharper initial fall is expected, from 8.3% in 2022 to 3.7% in 2023, followed by a slower descent in 2024 to 3.6% (assuming that the fiscal measures come to an end) and a fresh decline in 2025 to 1.8%.¹⁶ The improvement in global supply chain bottlenecks, the reversal of the indirect effects in light of the decline in energy prices and the economic slowdown observed in 2022 H2 will help curb underlying inflation. The ECB's monetary policy decisions and their transmission through tighter financial conditions will play an increasingly important role in moderating demand, as described below.

Although the upside risks to inflation have moderated, there are risk factors that introduce uncertainty as to the reach of the disinflation process. First, the degree of resilience of the euro area economy and the course of the global economy, against a backdrop of monetary policy tightening worldwide and significant geopolitical risks. Second, the possibility that lower commodity prices may be slower to pass through to consumer prices than higher ones were. Lastly, the upside risks from second-round effects via wages or profit margins.

The euro area economy has proved resilient to the current inflationary setting and geopolitical tensions. The economic slowdown in the euro area since mid-2022 has been more modest than expected and the GDP growth outlook for 2023 has been revised up slightly in recent months (to 1% in the March ECB staff macroeconomic projections). This recent strength has not been underpinned by domestic demand performance, but rather by the build-up of stocks and the contribution of the external sector. However, qualitative data available for 2023 Q1 point to growing confidence among consumers and firms, in a setting in which inflation is correcting and despite the recent financial sector turmoil.

¹⁶ [Macroeconomic projections for the Spanish economy \(2023-2025\)](#). Banco de España (2023).

A further source of uncertainty is the course of the global economy, against a backdrop of monetary policy tightening and significant geopolitical risks. The more restrictive monetary policy stance and consequent tightening of financial conditions are weakening the global economy. In this respect, financial instability episodes such as those seen in March in the face of financial problems at some medium-sized US banks and Credit Suisse in Switzerland could fuel recessionary forces. Although these episodes have had a limited impact, any resurgence of financial instability could further tighten financial conditions and stoke up uncertainty. Moreover, prolongation of the war in Ukraine or demand factors linked, inter alia, to the macroeconomic situation of other economies, especially China, could exert renewed pressure on commodity prices.

The impact on global inflation of China's economic reopening, after abandoning its zero-COVID policy, is currently one of the main sources of uncertainty. On the one hand, stronger growth in China would drive up global demand, especially for commodities, which would exert upward pressure on inflation. On the other, China's reopening could accelerate the elimination of bottlenecks from global production chains and boost global supply capacity to meet demand, which would allow the current high inflationary pressures to ease somewhat. At this stage it is highly uncertain which of these channels will ultimately prevail and to what extent; it will depend, among other factors, on the composition of the economic recovery in China. Inflation moderated and the various indicators of supply chain difficulties continued to improve worldwide throughout 2023 Q1, despite the strong growth in China.

Asymmetries could appear in the consumer price response. In particular, in view of the recent declines in some commodity prices, the pace of the ensuing decline in the prices of consumer goods and services could be slower than the pace of their increase when these inputs rose in price during a good part of 2021 and 2022. The economic literature is inconclusive as regards the possible existence of asymmetries. For instance, in the case of oil prices, [Kilian and Vigfusson](#) (2011) rule out the existence of asymmetries for both economic activity and inflation for the United States, while [An, Jin and Ren](#) (2014) conclude, also for the United States, that the impact on inflation is less marked after a drop in oil prices than after an increase. In the case of food commodities, [Ferrucci, Jiménez-Rodríguez and Onorantea](#) (2011) find that, in the euro area, increases in input prices are passed through to food consumer prices to a greater degree than equivalent declines in input prices.

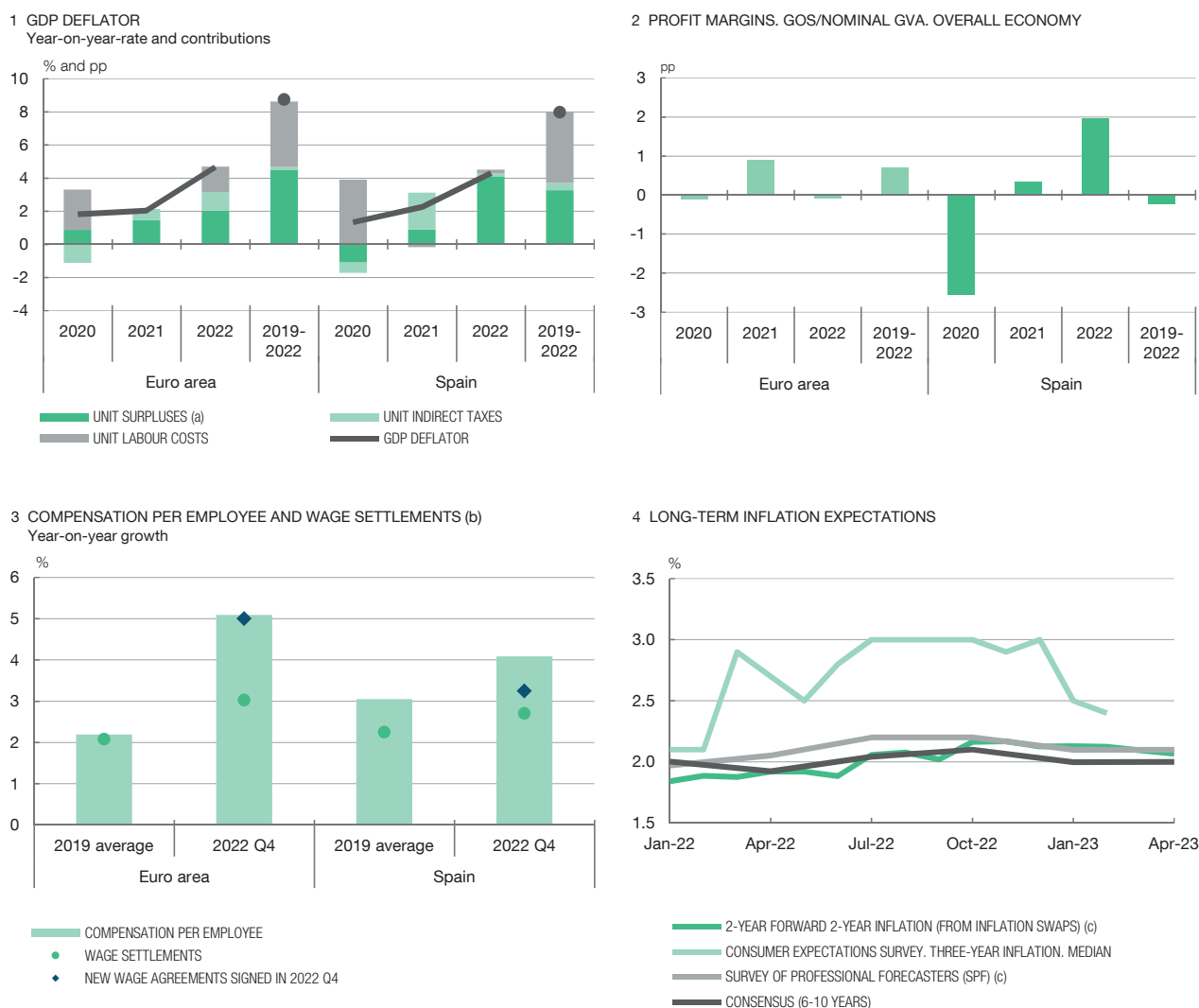
The wage and profit margin response will be a key determinant in the future course of inflation. Domestic inflationary pressures are gaining ground in the euro area and in Spain. The euro area GDP deflator rose by 4% on average in 2022 (4.3% in Spain), with an accelerating profile over the year, compared with an average of 2% in 2021 (2.3% in Spain) (see Chart 3.4.1). In 2022 the accounting decomposition of this indicator points to contained wage pressure, reflected in unit labour costs,¹⁷ which were somewhat more restrained in Spain than in the

¹⁷ The ratio of compensation per employee to real GDP, or in other words, unit labour costs, i.e. compensation per employee divided by apparent labour productivity.

Chart 3.4

SECOND-ROUND EFFECTS ARE A RISK FACTOR THAT COULD AFFECT FUTURE INFLATION

Although upside risks to inflation have moderated, there are elements of uncertainty about the scale of the disinflation process. These include possible second-round effects via corporate profits and labour costs. The anchoring of medium to long-term inflation expectations at 2% is key for wage and price-setting.



SOURCES: Eurostat, European Commission, Consensus Economics, ECB and Banco de España.

- a Ratio of gross operating surplus (GOS) to real GDP. GOS includes mixed income.
- b Excluding one-off payments.
- c Adjusted for risk premia. See Gimeno and Ortega (2023).
- d SPF inflation expectations are 4-5 years ahead. The latest survey was in April and refers to 2027.



euro area. By contrast, unit operating surpluses¹⁸ made an increasing contribution in the year. However, if the period 2019-2022 is considered, the contributions of unit labour costs and unit operating surpluses to the growth of the GDP deflator are relatively similar, both in the euro area and in Spain. Meanwhile, at the aggregate level, profit margins are generally proxied by

¹⁸ The ratio of gross operating surplus (GOS) to real GDP.

the ratio of GOS to nominal gross value added (GVA). Although this measure must be interpreted with caution, as it does not only reflect profit performance, in the euro area margins have now exceeded their pre-pandemic levels, while in Spain they are still somewhat lower (see Chart 3.4.2). This, in principle, does not suggest there may be feedback effects with inflation.

Pressures to recoup lost purchasing power could increase in the coming quarters and could have second-round effects on inflation. Wage negotiations are taking place against a backdrop of tight labour markets. In particular, the unemployment rate has dropped to low levels (6.5% in the euro area and 12.8% in Spain in March), at the same time as labour shortages perceived by firms have steadied at very high levels in historical terms. In this setting, some indicators, such as new collective bargaining agreements, point to growing wage pressure, especially in the euro area (see Chart 3.4.3). In Spain, the most recent agreements signed point to a lower increase in wage pressure than in the euro area. If this pattern is confirmed in the wage negotiations during the rest of the year, this could signal smaller risks of second-round effects on inflation. As regards margins, the economic weakness forecast in the short term, moderate demand in the medium term as a consequence of the tightening of financing conditions, and the clearing of supply bottlenecks are all expected to exert downward pressure on profit margins. However, stronger demand, the emergence of financial vulnerabilities at firms or persistent supply difficulties could give rise to a more dynamic than expected margin performance.

Lastly, inflation expectations, which currently remain anchored around 2%, will be crucial for price and wage setting. According to the latest Consumer Expectations Survey (CES) conducted in February 2023, median expectations for inflation three years ahead stood at 2.4%, compared with expectations of 3% since mid-2022 (see Chart 3.4.4). Meanwhile, the long-term inflation forecasts of the Survey of Professional Forecasters (SPF) for 2027 and Consensus estimates for the 2028-2032 average shifted down slightly, to 2.1% and 2%, respectively, in the April survey.

3 The monetary policy response to inflationary tensions

In view of the growing inflationary pressures, and similarly to other central banks, since the last stretch of 2021 the ECB has adopted a tighter monetary policy stance, aiming to achieve its main objective of keeping inflation at 2% over the medium term. Although these measures involve short-term costs in terms of economic activity, maintaining price stability is the main contribution that a central bank can make to ensure sound economic growth in the long term.

The current monetary policy tightening cycle is different from previous ones in terms of its intensity and speed and the range of instruments used. The policy rate rise has been the biggest and swiftest so far in the history of monetary union. These hikes in interest rates,¹⁹ which have been the ECB's main monetary policy tool, as they offer greater certainty

¹⁹ Specifically, the interest rate on the deposit facility, the marginal lending facility and the main refinancing operations.

regarding their transmission to financial conditions and the euro area economy, have been accompanied by other measures related to the targeted longer-term refinancing operations (TLTROs) and financial asset purchases.

In a first phase, net asset purchases were discontinued. In March 2022, net asset purchases under the pandemic emergency purchase programme (PEPP) came to an end, as announced in December 2021, and net asset purchases under the asset purchase programme (APP) were recalibrated and then terminated on 1 July 2022 (see Figure 3.2). These measures sought to normalise financial conditions through the gradual withdrawal of the monetary stimulus generated in previous years when inflation was running below target.

Once the net purchases were terminated, the policy rate hikes began. The 50 basis point (bp) rate rise in July 2022 – the first rate hike for more than a decade – lifted the deposit facility rate out of negative territory. From then on, in view of the uncertainty as to the course of inflation in the short and medium term, the ECB abandoned its forward guidance and adopted a data-dependent approach for its monetary policy decisions. This subsequently led to the biggest rate hikes in the history of the euro, including two consecutive 75 bp rate rises in September and October 2022, subsequent 50 bp increases at the following meetings up to March 2023, and a 25 bp increase at the latest meeting in May. In total, up to the cut-off date for this report, policy interest rates have risen by 375 bp since July 2022.

Following these moves, policy rates are now in restrictive territory, in a setting marked by the prospect of persistently high inflation. In other words, these interest rates are above the available estimates for their neutral level (that which holds real GDP at its potential value and inflation steady at its target level).²⁰

To strengthen the transmission of the rate hikes to financing conditions in the banking sector, in October 2022 the ECB Governing Council decided to recalibrate the criteria applicable to the third series of TLTRO (TLTRO III). Specifically, the applicable interest rates were recalibrated, raising the average expected cost of the financing obtained through these operations. This measure encourages early repayment of the outstanding amounts and helps speed up the reduction in the Eurosystem's balance sheet. At the cut-off date for this report, approximately 55% (€1.2 trillion) of the maximum amount of TLTRO III funds, whose last tranche matures in December 2024, remained outstanding.

The reduction in holdings of assets acquired under the APP began in March 2023 and will continue at a measured and predictable pace. After the net purchases under its purchase programmes were discontinued, the ECB Governing Council decided that from the

²⁰ This neutral – or natural – interest rate is not directly observable and can only be estimated, with a certain degree of uncertainty, using econometric techniques. The deposit facility rate expected by analysts in the long term, which stood at 2% according to the results of the March ECB Survey of Monetary Analysts (SMA), may be used to proxy the natural interest rate. The concept, determinants and implications for monetary policy of the natural interest rate are discussed in detail in [Galesi, Nuño and Thomas \(2017\)](#).

Figure 3.2

ECB MONETARY POLICY DECISIONS SINCE DECEMBER 2021

	Interest rates	Asset purchases and liquidity operations
Dec-2021		APP: €40 billion in 2022 Q2, €30 billion in Q3 and €20 billion from October PEPP: net purchases to be discontinued at end-March 2022; reinvestments to continue at least until end-2024
Feb-2022		Confirmation of measures announced in December 2021
Mar-2022		APP: pace of purchases recalibrated PEPP: net purchases discontinued
Apr-2022		APP: announcement of intention to discontinue net purchases in 2022 Q3
Jun-2022	Intention to raise interest rates	APP: net purchases to be discontinued as of 1 July Ad hoc meeting: flexibility in reinvestments under the PEPP and announcement of design of an anti-fragmentation instrument
Jul-2022	+50 bp DFR: 0.0%	TPI: approval of Transmission Protection Instrument (TPI)
Sep-2022	+75 bp DFR: 0.75%	
Oct-2022	+75 bp DFR: 1.50%	TLTRO III: terms and conditions recalibrated
Dec-2022	+50 bp DFR: 2.0%	APP: from beginning of March 2023, decline of €15 billion per month (on average) up to end-June 2023
Feb-2023	+50 bp DFR: 2.50%	APP: details of ways to reduce holdings
Mar-2023	+50 bp DFR: 3.0%	
May-2023	+25 bp DFR: 3.25%	APP: the Governing Council expects to discontinue reinvestments under the APP as of July 2023

SOURCE: Banco de España.

NOTE: APP = asset purchase programme; PEPP = pandemic emergency purchase programme; DFR = deposit facility rate; TLTRO III = third series of targeted longer-term refinancing operations.

beginning of March 2023 it will not reinvest all of the principal payments from maturing securities purchased under the APP. The decline will amount to €15 billion per month on average. More recently, at its May meeting, the Governing Council announced that it expected to discontinue the reinvestments under the APP as of July 2023.

The ECB maintains its commitment to ensure the uniform transmission of its monetary policy stance to all euro area countries, to prevent unwarranted financial market fragmentation. The ECB Governing Council decided that, as a first line of defence against financial fragmentation risks not warranted by country-specific fundamentals, it would apply flexibility in reinvesting redemptions coming due in the PEPP portfolio.²¹ If this were insufficient, the ECB has at its disposal a new Transmission Protection Instrument (TPI),²² to guarantee appropriate and effective transmission of monetary policy throughout the euro area. Under the TPI, the Eurosystem may make secondary market purchases of securities issued in jurisdictions that are experiencing a deterioration in financing conditions not warranted by country-specific fundamentals, provided in all cases that certain criteria are met.

The Governing Council's future decisions will ensure that policy rates will be brought to levels sufficiently restrictive to achieve a timely return of inflation to the 2% medium-term target and will be kept at those levels for as long as necessary. The Governing Council will continue to follow a data-dependent approach to determining the appropriate level and duration of restriction. In particular, the Governing Council's policy rate decisions will continue to be based on its assessment of the inflation outlook in light of the incoming economic and financial data, the dynamics of underlying inflation and the strength of monetary policy transmission.²³

4 The transmission of monetary policy to financial conditions, activity and inflation

The impact that the measures adopted by the ECB have had and will have in the future is felt in different stages and through different channels. These channels initially affect financial conditions in the economy and subsequently affect activity and inflation (see Figure 3.3). While it is too early to make a detailed assessment of all the consequences of the monetary tightening conducted, it is possible to study its transmission to financial conditions and, from there, to infer its potential impact on inflation and activity using macroeconomic tools. To this end, this section first describes the different transmission channels from a conceptual point of view. The evidence available so far on their reach is then presented. Finally, the impact on economic activity and prices is estimated.

4.1 The transmission channels of monetary policy

In a first stage, the tightening of monetary policy impacts financial conditions through different channels, the first of which is the capital markets channel. An increase in policy interest rates expected by the market is passed through immediately to risk-free interest

21 [Statement after the ad hoc meeting of the ECB Governing Council](#), ECB press release of 15 June 2022.

22 The Governing Council announced the approval of the TPI on 21 July 2022. For more information on its design, see [The Transmission Protection Instrument](#), ECB press release of 21 July 2022.

23 For more details, see [Hernández de Cos](#) (2023).

Figure 3.3

TRANSMISSION CHANNELS OF MONETARY POLICY TIGHTENING

STAGE 1: TRANSMISSION TO FINANCIAL CONDITIONS	SPEED OF TRANSMISSION
Capital markets channel: ↑ cost of market financing	Very fast ("immediate")
Bank channel: ↑ cost of bank financing and deposit remuneration	Fast (6-12 months)
Income channel: ↑ interest income and payments	Slow (more than 12 months)
Wealth channel: ↓ value of financial wealth and real wealth	Very fast in financial wealth and fast in real wealth
Exchange rate channel: appreciation of the euro	Very fast ("immediate")
STAGE 2: TRANSMISSION TO THE REAL ECONOMY	SPEED OF TRANSMISSION
Intertemporal substitution effect: contraction in spending due to higher interest rates	Slow (12-18 months)
Income effect: contraction in spending due to lower income	Slow (12-18 months)
Wealth effect: contraction in spending due to lower wealth	Slow (12-18 months)
Exchange rate effect: the appreciation of the euro reduces external demand and exerts downward pressure on the price of imported goods	Slow (12-18 months)
Euro area trade channel: lower exports due to the contraction in activity in other euro area countries	Slow (12-18 months)
Price declines due to the drop in aggregate demand and the appreciation of the euro	Very slow (18-24 months)

SOURCE: Banco de España.

rates²⁴ at different horizons (what is known as the risk-free rate curve) that are traded on the capital markets. The latter are also influenced by changes in the term premium, which reflects the compensation demanded by investors for bearing the risk of unexpected future changes in short-term interest rates.²⁵ The interbank yield curve, which captures the interest rates on interbank lending transactions at different horizons, also shifts upwards, as these yields capture the risk-free rates plus liquidity and bank credit risk premia. Similarly, the pass-through

²⁴ Risk-free interest rates are defined as interest rates that do not incorporate credit risk, but may incorporate risks associated with changes in short-term interest rates.

²⁵ The term premium is the difference between the long-term yield on a bond and the expected interest rate over that time horizon. This premium is not observable. This chapter uses an estimate based on Barahona and Rodríguez-Moreno (2023).

of the increase in risk-free interest rates to the financing conditions of the various agents that raise capital market funding through bond issuance (such as general government, large corporations and commercial banks) also takes place immediately. This is because the yields on these bonds are determined by adding a premium to risk-free interest rates or interbank yields that depends on characteristics such as these assets' credit and liquidity risk. The reduction in the Eurosystem's asset portfolio is putting additional upward pressure on these yields.²⁶

Banks pass higher financing costs through to their customers in what is known as the bank channel of monetary policy transmission. This channel is particularly relevant in the euro area, given the important role banks play in financial intermediation. First, the increase in the cost of commercial bank funding in the capital markets puts pressure on the remuneration of deposits, which further raises the cost of these financial intermediaries' liabilities. In the current setting, the cost of these liabilities is also pushed up by the maturity of the TLTROs, insofar as banks have to refinance these liabilities generally at a higher cost of funds. Second, the higher remuneration of bank reserves and government debt makes lending less attractive for banks. These financial intermediaries end up tightening credit terms and conditions for firms and households, albeit with a lag of between six months and one year, a more gradual process than what happens in capital markets.²⁷ The specific characteristics of banks and of different countries' banking systems may affect the intensity with which they tighten credit standards, in terms of both price and quantity.²⁸

Rising interest rates drive up agents' financial income and expenditure in what is known as the income channel. Households, firms and general government see a rise in both income from their interest-bearing assets, such as bank deposits, and expenditure associated with debt servicing payments. While at the individual level the net effect may be either positive or negative, depending on each agent's wealth position, at the aggregate level the net impact of an interest rate rise on each of these groups is generally negative.

The tightening of monetary policy also leads to lower asset prices and, in the case of the euro area, to an appreciation of the euro. Higher interest rates raise the discount factor implicit in the value of financial or real assets, such as equities or housing, which translates into a decline in their price (wealth channel). Moreover, if there are no changes in the monetary policy of the rest of the world, an interest rate rise by the ECB tends to appreciate the exchange rate of the euro against other currencies, as investment in this currency offers a higher return (exchange rate channel).

26 In theory, the tapering of asset purchases by a central bank puts upward pressure on long-term yields through three channels. First, a signalling channel, through which the central bank communicates to the markets its commitment to maintaining a contractionary monetary policy, thereby raising expected short-term interest rate levels. In addition, by reducing its asset portfolio the central bank returns to the market both long-term risk (through the duration extraction channel) and default risk (through the default risk extraction channel). See [Costain, Nuño and Thomas \(2022\)](#) and [Eser, Lemke, Nyholm, Radde and Vladu \(2019\)](#).

27 See, for example, [Lane \(2022\)](#).

28 For more details on the euro area, see [Altavilla, Canova and Cicarelli \(2020\)](#) and [Gambacorta and Marqués-Ibáñez \(2011\)](#). For the case of the United States, see [Kashyap and Stein \(1995\)](#), [Kashyap and Stein \(2000\)](#) and [Kishan and Opiela \(2000\)](#).

In a second stage, the tightening of monetary policy lowers aggregate demand and reduces inflation. Various channels, which are generally linked to those described in the first stage, are also at work in this stage. First, interest rate rises change present and future consumption decisions through the intertemporal substitution channel: when interest rates rise, households and firms reduce their consumer spending and their investment and increase their savings.²⁹ Second, there is an income effect whereby lower net interest income acts as a constraint on their spending decisions. Third, capital losses as a result of lower asset prices also drive down spending, in what is known as the wealth effect. Fourth, the appreciation of the euro has a negative effect on external demand and exerts downward pressure on the price in euro of imported goods (exchange rate effect). Fifth, the tightening of monetary policy reduces imports from other euro area countries, as economic activity in these countries is also impacted (euro area trade channel). Lastly, there are several indirect channels through which the above direct channels change labour market conditions (including wages) and the fiscal stance. As a result, monetary tightening moderates activity and prices with some lag, typically estimated at around 18-24 months.³⁰

4.2 Evidence for the first stage: effects on financial conditions

4.2.1 The capital markets channel

The euro area risk-free rate curve³¹ has shifted very sharply upwards since end-2021, in line with changes in the expected path of policy interest rates. This upward shift started in late 2021, before the ECB began raising its policy interest rates in July 2022, as markets anticipated these hikes some months in advance. The curve subsequently continued its upward shift as market expectations for monetary policy decisions were revised. At the cut-off date for this report, the 1-year risk-free rate was up by 405 bp and its 10-year counterpart by 268 bp.

However, the increase in risk-free rates, in particular for longer-dated terms, was also attributable to the sharp rise in term premia, something not witnessed in previous policy rate hiking cycles. In particular, for the 10-year horizon, the term premium is estimated to account for half (139 pp) of the increase in the risk-free rate (see Charts 3.5.1 and 3.5.2). Conversely, in the 2005 cycle, and over a comparable period of time, this premium increased by just 44 bp, while in the 1999 tightening cycle it declined by 69 bp. A number of factors could be behind the increase in term premia in the current cycle. First, the higher interest rate risk perceived by investors, reflecting the heightened uncertainty over the future path of inflation

²⁹ This would be the case for net borrowers.

³⁰ For example, [Bernanke and Gertler](#) (1995), using a VAR model with US data, suggest that GDP begins to decline four months after a tightening of monetary policy and bottoms out after about two years. They also show that price levels start to decline one year after the tightening. See also [Cloyne, Ferreira and Surico](#) (2019), [Havranek and Rusnák](#) (2012), [Cloyne, Ferreira, Froemel and Surico](#) (2023), and [Lane](#) (2022).

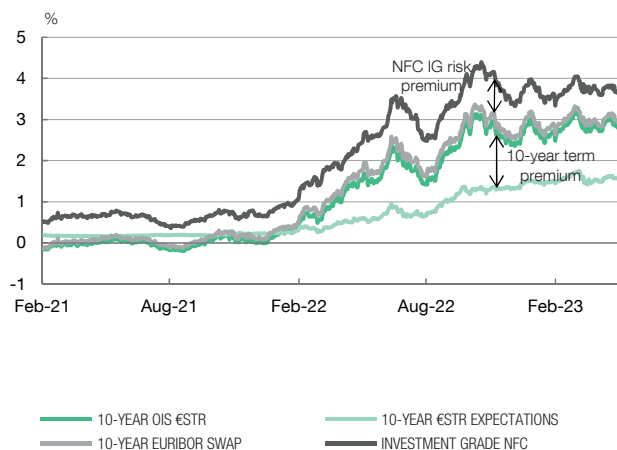
³¹ The overnight risk-free rate is proxied by the euro short-term rate (€STR), which is an indicator of the interest rate on unsecured overnight lending between euro area banks. For longer terms, the risk-free rate is proxied by the overnight indexed swap (OIS) rate, which is the fixed component of interest rate swaps in which the floating component is indexed to the €STR.

Chart 3.5

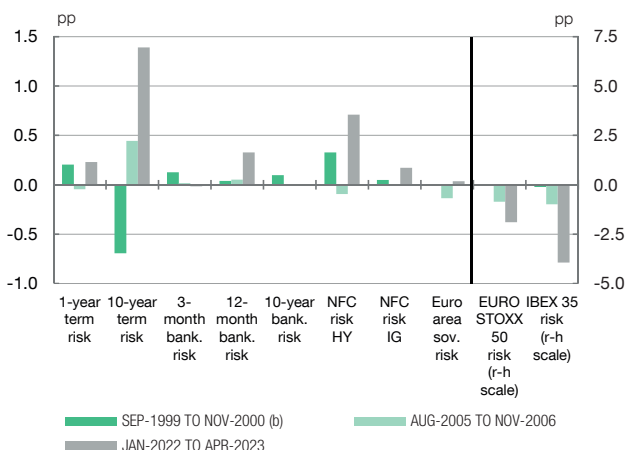
THE TIGHTENING OF MONETARY POLICY HAS FED THROUGH TO CONDITIONS IN CAPITAL MARKETS

Expectations of monetary policy tightening have been passing through to risk-free interest rates since the beginning of 2022, before the first rise in policy rates. At the long end of the curve, yields have also reflected the significant increase in term premia, which was not the case in other historical periods of policy rate hikes. Moreover, the increase in long-term risk-free rates appears to have been strongly influenced by monetary policy in the United States, again in contrast to other monetary policy tightening cycles. Lastly, real risk-free interest rates have also risen markedly from their levels in early 2022.

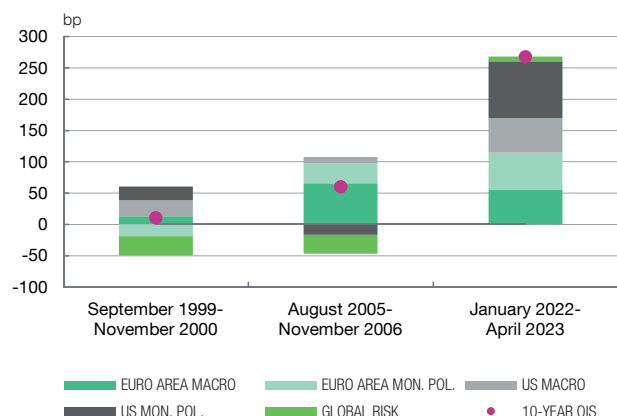
1 10-YEAR YIELDS



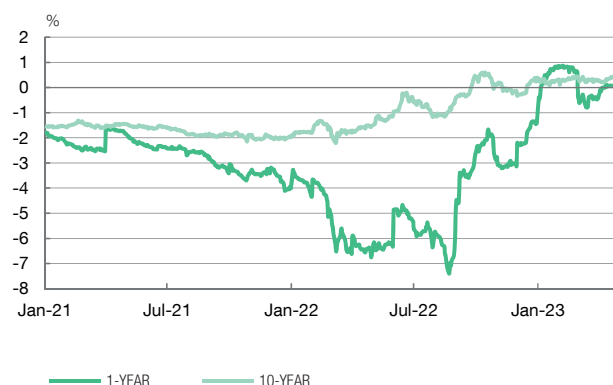
2 CHANGES IN VARIOUS PREMIA DURING ECB RATE HIKING CYCLES (a)



3 BREAKDOWN OF THE CUMULATIVE CHANGE IN THE 10-YEAR OIS RATE IN DIFFERENT TIGHTENING CYCLES (c)



4 REAL INTEREST RATES (d)



SOURCES: Refinitiv Datastream, Bloomberg Datalicence and Banco de España.

- a Cumulative change in the various risk premia during the rate hiking cycles. These include (i) the term premia for 1-year and 10-year risk-free interest rates; (ii) the spreads between 3-month, 6-month and 10-year interbank interest rates and risk-free interest rates at the same maturities; (iii) the spread between non-financial corporate bond yields in the high yield and investment grade segments and the swap curve; (iv) the spread between the 10-year GDP-weighted yield on euro area countries' sovereign debt and the 10-year risk-free interest rate; and (v) the equity risk premia of the EURO STOXX 50 and the IBEX 35 indices.
- b The 10-year term premium and 10-year banking risk are calculated based on the 10-year German bond. The hiking cycle that began in 1999 ended in November 2000, which is when expectations of rate cuts begin to emerge.
- c Calculated using a two-country BVAR model that includes the euro area 10-year OIS rate, euro area and US share prices, the bilateral nominal USD/EUR exchange rate and the spread between the euro area 10-year OIS rate and the US Treasury bond. Identification using impact sign restrictions, following Brandt, Saint Guilhem, Schröder and Van Robays (2021), and estimated using daily data for the period 1999-2023. To illustrate the cumulative change of the various shocks influencing the bilateral nominal USD/EUR exchange rate in the period September 1999 to November 2000, the sample of data is extended to the start of 1999, using the German Bund price as a proxy for the euro area 10-year OIS rate. The hiking cycle beginning in 1999 ends in November 2000, which is when expectations of rate cuts begin to emerge.
- d Calculated by subtracting from the OIS rate the value of the inflation-linked swap (ILS) at the same maturity.



and monetary policy. Second, the anticipated decline in the Eurosystem's asset portfolio (or "quantitative tightening") will entail a reversal of the absorption of duration risk that was associated with the asset purchase programme ("quantitative easing") of previous years and which led to the compression of these premia.³² Lastly, higher long-term interest rates in the United States, associated with the country's monetary policy tightening, appear to have exerted pressure on long-term yields in the euro area. According to econometric models,³³ the results of which are shown in Chart 3.5.3, the shocks associated with US monetary policy explain 90 bp of the 268 bp increase in the euro area 10-year risk-free rate.

Real risk-free rates – the relevant measure for agents' consumption and investment decisions – have also risen significantly. Indeed, since end-2021 the 1-year risk-free rate³⁴ has climbed by 425 bp overall, having fallen heavily until the summer of 2022 – driven by changes in 1-year expected inflation – followed by an equally marked increase thereafter. The real 10-year risk-free rate, which followed a rising path throughout the period analysed, has increased by 227 bp (see Chart 3.5.4).

Interbank rates – used as a reference to set the cost of raising funds on the debt markets and of bank financing – have risen in line with risk-free rates. However, these two interest rates – which reflect the counterparty risk in interbank loans, along with other factors such as the liquidity conditions and the microstructure of bank funding markets³⁵ – have moved in opposite directions across the various terms. Specifically, the spread between them increased slightly in the case of the 1-year EURIBOR, the main reference rate for Spain's mortgage market (see Chart 3.5.2). This suggests that the cost of floating rate mortgage funding has risen even more sharply than the risk-free rates indicate, which happened to a lesser extent in the 2005 and 1999 hiking cycles. However, in 3-month interbank loans, whose interest rates generally serve as a reference for firms' short and medium-term floating rate financing through bank loans or debt securities, the premium barely changed in the last two cycles, but increased slightly in the 1999 cycle. Lastly, for the 10-year interbank rate³⁶ – which generally serves as a reference for setting long-term financing conditions for households and firms – the premium has barely changed in the current cycle. This was also the case in the 2005 cycle, while during the 1999 tightening episode it increased slightly.

Higher risk-free rates have also immediately fed through to the cost of capital market-based funding for firms and general government, although the spread between the two has widened somewhat, and more so than in previous monetary policy tightening cycles. The increase in these risk premia may have been conditioned by the current heightened

32 Benigno, Canofari, Di Bartolomeo and Messori (2022).

33 A two-country structural VAR model identified with sign restrictions is used, following Brandt, Saint Guilhem, Schröder and Van Robays (2021), which includes the euro area 10-year OIS, euro area and US share prices, the bilateral nominal USD/EUR exchange rate and the spread between the euro area 10-year OIS rate and the 10-year US Treasury bond.

34 Real risk-free rates are proxied as the difference between the nominal rate and the inflation-linked swap (ILS) rate for the same term. This rate, referred to as inflation compensation, captures both inflation expectations and an inflation risk premium.

35 Michaud and Upper (2008).

36 Since there is no 10-year EURIBOR rate, this variable is proxied through the fixed component of a 10-year interest rate swap where the variable component is the 6-month EURIBOR.

macroeconomic and geopolitical uncertainty, by the low starting levels for these premia (largely due to the Eurosystem's bond purchase programmes) and by expectations that these holdings will be reduced.³⁷ Further, the increase in the sovereign risk premium might also be related to some countries' high debt ratios compared with those in 2005 and 1999. In any event, the rise in this premium in the current cycle appears to have been attenuated by the flexibility of the PEPP reinvestment policy and the announced launch of the TPI.

Quantitative tightening – which will reduce the Eurosystem's asset holdings – could, if it is faster than expected by the markets, put additional upward pressure on the different agents' capital market-based funding costs. Indeed, a sharper-than-expected decline in these holdings could cause term, corporate and sovereign premia to rise (see Box 3.1).

For its part, the cost of equity for listed euro area and Spanish firms, which measures the cost of share issuance, has barely risen since end-2021. According to the estimates available, this largely owes to the sharp drop in equity risk premia, which has been more pronounced than in previous monetary policy tightening cycles (see Chart 3.5.2).

4.2.2 The bank channel

Euro area credit institutions have gradually passed higher market rates through to their new loans and deposits. Between end-2021 and February 2023 (the latest available figure at the cut-off date for this report), the average interest rate on new loans to households for house purchase rose by 1.9 pp in the euro area (2 pp in Spain), while the increase in consumer credit and other lending was 2.2 pp (1.9 pp in Spain). In bank lending to firms, the average interest rate was up by 2.7 pp (2.3 pp in Spain).³⁸ During the same period, the average interest rate on households' and firms' time deposits climbed by 1.6 pp and 2.6 pp, respectively (0.8 pp and 2.1 pp, respectively, in Spain).

In the euro area, market rates are, overall, passing through to the cost of new lending to households for house purchase at a similar pace to past cycles³⁹ but somewhat more quickly in the case of lending to firms. As Chart 3.6 shows, in new loans for house purchase with interest rate reset periods of more than one year – the bulk of these loans –, the pass-through is in keeping with previous episodes of monetary policy tightening; however, the pass-through has been slightly slower than in previous cycles in the case of reset periods of a year or less. By contrast, in lending to firms higher market rates are passing through more swiftly than in past cycles, both in short-term loans or those with interest rate reset in the next 12 months (the majority) and in loans with longer fixed interest rate periods. This stronger

³⁷ De Santis, Geis, Juskaite and Vaz Cruz (2018)

³⁸ Narrowly defined effective rates (NDEs), which exclude related charges, such as repayment insurance premia and fees. They are also trend-cycle interest rates, i.e. they are adjusted for seasonal and irregular components (small changes in the series with no recognisable pattern in terms of periodicity or trend). Therefore, the series are subject to revision when the components are re-estimated on the basis of new observations.

³⁹ Mayordomo and Roibás (2023).

Chart 3.6

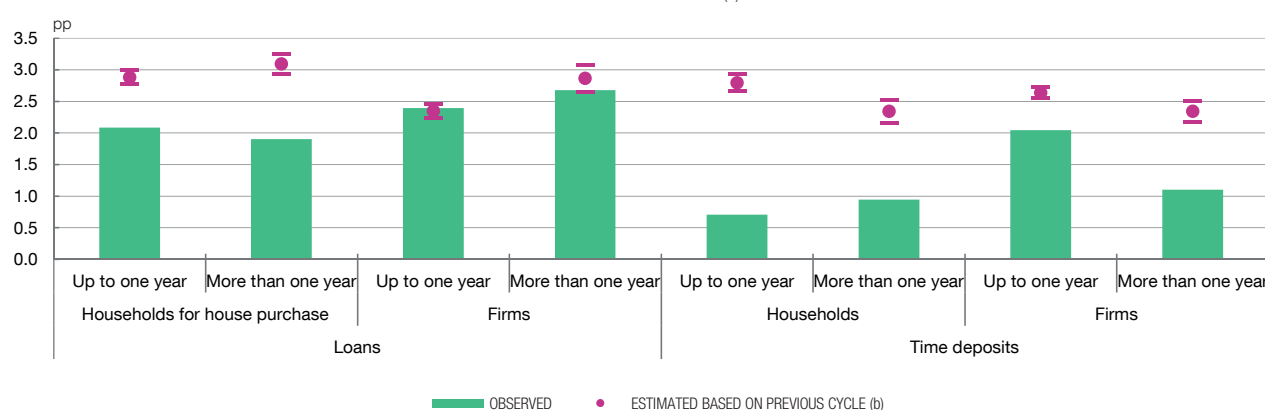
BANKS HAVE GRADUALLY PASSED INCREASES IN MARKET INTEREST RATES THROUGH TO THEIR RATES ON NEW LENDING AND DEPOSITS

In the euro area, higher interest rates are passing through to the cost of new loans to households for house purchase at a similar pace to past episodes, except in loans with an interest rate reset period of up to one year, but in Spain the pass-through has been slower. In lending to firms, the pass-through in the euro area is currently faster than in the past, while in Spain it is similar to that observed in previous cycles. As for new time deposits, the pass-through in the euro area is slower in the current cycle for households and similar to past episodes for corporate deposits, while in Spain it is slower in both segments.

1 CUMULATIVE CHANGE IN BANK RATES FROM DECEMBER 2021 TO FEBRUARY 2023. EURO AREA (a)



2 CUMULATIVE CHANGE IN BANK RATES FROM DECEMBER 2021 TO FEBRUARY 2023. SPAIN (a)



— OBSERVED • ESTIMATED BASED ON PREVIOUS CYCLE (b)

SOURCES: Banco de España, ECB and Refinitiv Datastream.

a Interest rates are narrowly defined effective rates (NDEs), which exclude related charges, such as repayment insurance premia and fees, and are adjusted seasonally and for the irregular component (small changes in the series with no recognisable pattern in terms of periodicity or trend). The term refers to the frequency with which interest rates are reset.

b Resulting bank interest rate if the observed interest rate developments between January 2022 and February 2023 had been passed through to bank interest rates as in past periods, in line with the historical pattern captured by a standard error-correction model estimated between January 2003 and August 2007. The horizontal lines show the confidence bands.



pass-through could be linked to the weaker macroeconomic environment in the current cycle compared with past episodes, which appears to have translated into higher credit risk premia.

Conversely, in terms of remuneration on new time deposits,⁴⁰ in the current cycle the pass-through of higher market rates has been slower for the deposits of euro area

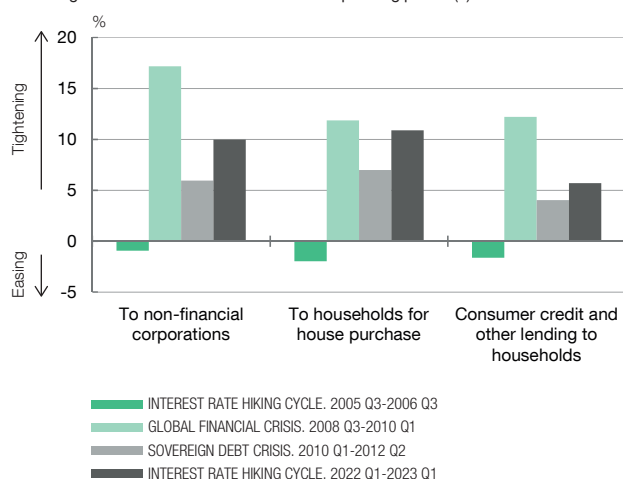
⁴⁰ According to the historical regularities, the remuneration of sight deposits tends to be less sensitive to changes in market rates. However, market rates are likewise passing through to these deposits more slowly in the current cycle than in past episodes. Since end-2021 the average remuneration of these deposits in the euro area has risen by just 9 bp for households (to 0.1%) and 28 bp for firms (to 0.2%).

Chart 3.7

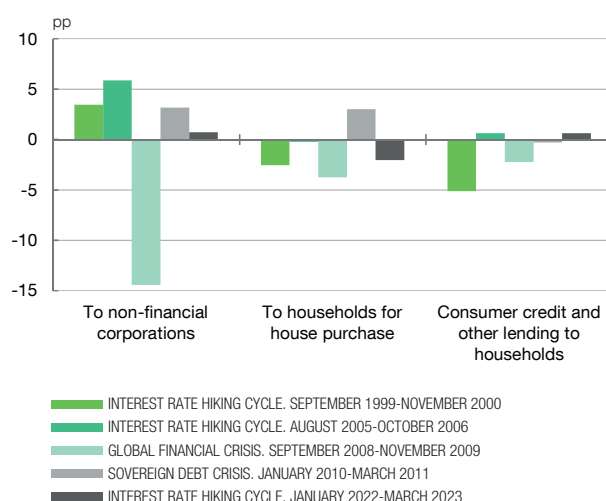
THE TIGHTENING OF MONETARY POLICY HAS GONE HAND IN HAND WITH A CONTRACTION IN THE SUPPLY OF CREDIT AND A LOSS OF MOMENTUM IN NET FINANCING FLOWS

Credit standards appear to have tightened across the board since the beginning of 2022, in both the euro area and Spain. This is in contrast to the easing observed in the previous interest rate hiking cycle, which is explained not only by banks' higher funding costs and balance sheet constraints, but mainly by a higher risk perception among banks, in line with the negative supply shocks. The loss of momentum in net financing flows is generally proving sharper than in the previous monetary tightening cycle of 2005.

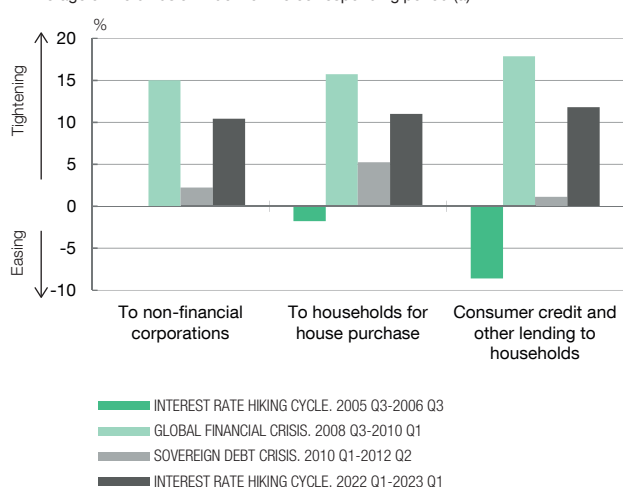
1 CHANGE IN EURO AREA CREDIT STANDARDS
Average of the diffusion index for the corresponding period (a)



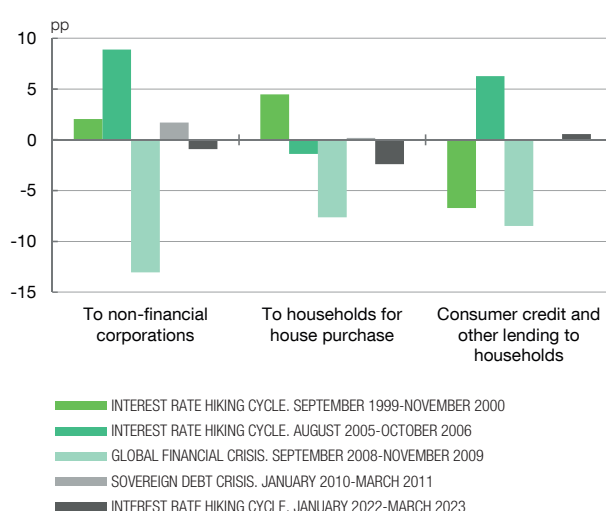
2 CHANGE IN YEAR-ON-YEAR CREDIT GROWTH IN THE EURO AREA (b)



3 CHANGE IN CREDIT STANDARDS IN SPAIN
Average of the diffusion index for the corresponding period (a)



4 CHANGE IN YEAR-ON-YEAR CREDIT GROWTH IN SPAIN (b)



SOURCES: ECB and Banco de España.

- a Percentage of banks that have tightened standards considerably x 1 + percentage of banks that have tightened standards somewhat x 1/2 - percentage of banks that have eased standards somewhat x 1/2 - percentage of banks that have eased standards considerably x 1.
b Does not include securitised credit.



households, and similar or somewhat slower, depending on the term, for those of firms.

In the case of households, the slower pass-through is observed both in deposits of up to one year and those with longer terms, although the difference is starker for the former (see Chart 3.6.1). A slower pass-through, albeit less so, is likewise evident in time deposits provided

to firms with a maturity of up to one year, while for longer-term deposits the pass-through is similar to that observed in past cycles. The lower pass-through to time deposits observed across most segments in the current cycle could owe to credit institutions' lower funding needs, amid ample liquidity in the euro area banking system, which reduces the pressure on banks to raise their deposit remuneration. Further, this remuneration may have been prevented from rising until it once again stood below market rates; such remuneration exceeded market rates during the negative interest rate period (particularly in the case of household deposits) because it did not stand at a level below 0%.

Broadly speaking, in Spain the pass-through of higher market rates to the cost of credit and deposit remuneration has, to date, been more sluggish than might be expected based on the historical regularities. This is particularly noticeable in households' time deposits (see Chart 3.6.2). The possible explanatory factors for this are discussed later in this chapter.

Bank lending rates have risen in step with the tightening of access to credit, which, coupled with lower demand for funds, has translated into a marked slowdown in net financing flows to households and firms, both in the euro area and in Spain. According to the Bank Lending Survey (BLS), credit standards have been tightened since early 2022 in both regions and across all segments, as compared with the stability or even easing observed during the 2005 rate hiking cycle (see Charts 3.7.1 and 3.7.3). This tightening – which was even more pronounced than that observed during the sovereign debt crisis, although not as sharp as that during the global financial crisis – appears attributable not only to banks' higher cost of funds and balance sheet constraints (linked to monetary policy tightening), but also – and more so – to their greater risk perception, which would be consistent with the severity of the negative supply shocks in the current inflationary episode (in contrast with the positive demand shocks that predominated during the 2005 monetary policy tightening cycle). Likewise, demand for credit has decreased during this cycle, due both to higher interest rates and to the worsening macroeconomic environment and heightened uncertainty. All of which has led to a sharper overall drop in net financing flows than recorded in the 2005 cycle⁴¹ (see Charts 3.7.2 and 3.7.4). In the case of firms, the slowdown in bank lending has likewise been more pronounced than in the 1999 cycle.

4.2.3 The income channel

Higher interest rates have begun to have an impact on the income of euro area households and firms. To February 2023 (the latest data available), the impact in the case of euro area households has been an increase in net interest payments on banking products equivalent to 0.3% of their gross disposable income (GDI), while euro area firms have seen an

⁴¹ Another potential contributor to this drop were voluntarily repayments of outstanding debt – amid a rising cost of floating rate loans –, likely underpinned by the significant stock of saving built up during the pandemic.

increase equivalent to 2.2% of their gross operating surplus (GOS).⁴² As discussed in more detail later in this chapter, these effects have been more pronounced in Spain, particularly for households (1% of GDI) – essentially reflecting the strong prevalence of floating rate contracts in the stock of mortgages – and to a lesser extent for firms (2.7% of GOS).

In any event, the income channel has, in net terms, been weakened in the short term, as a result of the changes seen in recent years in the breakdown and volume of households' and firms' outstanding asset and liabilities. On the liabilities side, the lower exposure to interest rates hikes in the near term owes essentially to changes in the structure of the debt, since the aggregate debt of euro area households and firms has hardly increased as a percentage of their income (indeed, in Spain it has decreased).⁴³ Further, the debt burden has become less sensitive to interest rate hikes. Indeed, as Chart 3.8 shows, the volume of euro area household debt whose interest rate is due to reset in the next 12 months declined from 35% of GDI in 2012 to 24% in 2021 (from 108% to 60% in Spain),⁴⁴ while for firms it declined from 230% to 171% of GOS in the same period⁴⁵ (from 326% to 207% in Spain). Conversely, in terms of deposits the income channel's positive effect gained momentum, mainly on account of changes in volume. Euro area households' sight deposits, saving deposits and time deposits with an agreed maturity of up to one year increased from 83% of GDI in 2012 to 106% in 2021 (from 86% to 121% in Spain), and those of firms from 84% to 125% of GOS (from 74% to 143% in Spain) during the same period.⁴⁶

However, in net terms, the changes in the pass-through to new bank lending rates in the current cycle have strengthened the income channel. For households, this effect arises from the slower pass-through to deposit remuneration,⁴⁷ especially in Spain, while in the case of firms it owes to a faster pass-through to the cost of credit, as discussed above.

In the case of general government, as compared with previous cycles, the higher level of indebtedness has amplified the pass-through of higher interest rates to the debt burden. As Chart 3.9.1 shows, in 2021 government debt stood at 97% of GDP for the euro

42 The net income effect is calculated as the difference between the increase in bank loan interest payments and the increase in interest income from time deposits (calculated based on the stock of bank balances at end-2021) relative to that income in 2021. Owing to the non-availability of data, the increase in interest payments associated with firms' debt securities is excluded from the calculation. In the case of households, the net impact on income is negative (higher net interest payments) despite a larger volume of deposits than of bank debt. This is because the average cost of outstanding debt rises more sharply than the average remuneration of total deposits. In the case of firms, in addition to this effect, it should be noted that the volume of bank debt exceeds that of deposits.

43 In the period 2005-2021, in the euro area households' bank debt rose by 6 pp as percentage of their GDI, while that of firms barely changed as a percentage of their GOS.

44 Data for the interest rate structure of bank debt are available from 2012. The percentages are obtained by multiplying the volume of lending by resident banks whose interest rate resets within a year by the total bank debt-to-income ratio.

45 Bank loans to firms with residual maturity of up to one year are also included, given that they typically renew their short-term loans. Also included are debt instruments, i.e. securities with original maturity of up to one year and those with longer maturities that will be redeemed in the next 12 months.

46 As a proportion of total deposits, these deposits have risen from 84% in 2012 to 91% in 2021 for households and from 91% to 95% for firms.

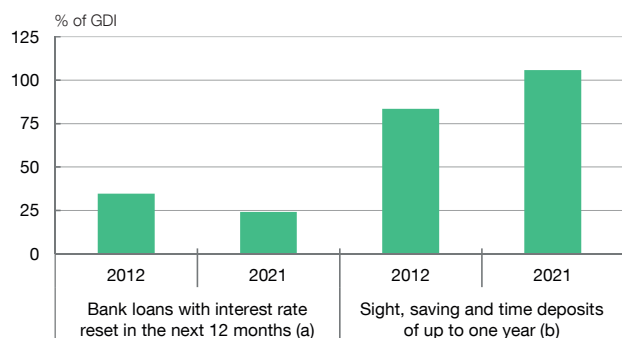
47 In line with other rate hiking cycles, the remuneration of sight deposits is largely unchanged.

Chart 3.8

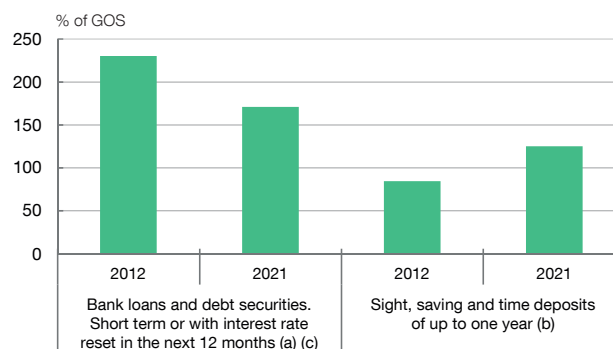
CHANGES IN RECENT YEARS IN THE COMPOSITION AND VOLUME OF HOUSEHOLDS' AND FIRMS' ASSETS AND LIABILITIES HAVE WEAKENED THE NEGATIVE INCOME CHANNEL ASSOCIATED WITH HIGHER INTEREST RATES

In the euro area, the lower exposure, in the short term, of households and firms to interest rate changes owes mainly to the decline in the proportion of debt whose interest rate is due to reset in the next 12 months and by an increase in the volume of deposits. In Spain, the lower exposure mainly owes to deleveraging and the growth in deposits. For households, other contributors were the higher proportion of outstanding fixed rate debt and the higher proportion of sight and time deposits of up to one year, and for firms, the increase in the share of debt maturing in more than one year.

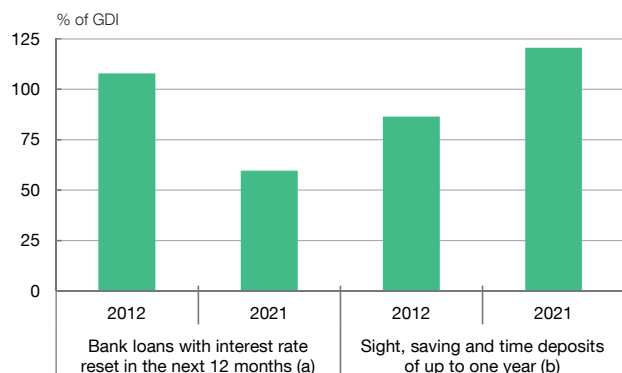
1 EXPOSURE OF HOUSEHOLDS TO INTEREST RATE CHANGES.
EURO AREA



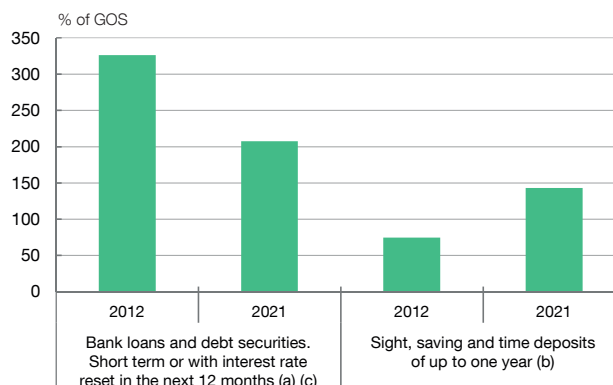
2 EXPOSURE OF FIRMS TO INTEREST RATE CHANGES.
EURO AREA



3 EXPOSURE OF HOUSEHOLDS TO INTEREST RATE CHANGES.
SPAIN



4 EXPOSURE OF FIRMS TO INTEREST RATE CHANGES.
SPAIN



SOURCES: ECB and Banco de España.

- a Obtained by multiplying the volume of resident bank loans whose interest rate is reset within a year by the ratio of total bank loans to income.
b Obtained by multiplying the volume of sight and time deposits of up to one year at resident banks by the ratio of total bank deposits to income.
c The bank loans whose interest rate is reset within a year also include those with residual maturity of up to one year, given that firms typically renew their short-term loans. The fixed income component includes securities with an original maturity of up to one year and those with longer maturities that will be redeemed in the next 12 months.



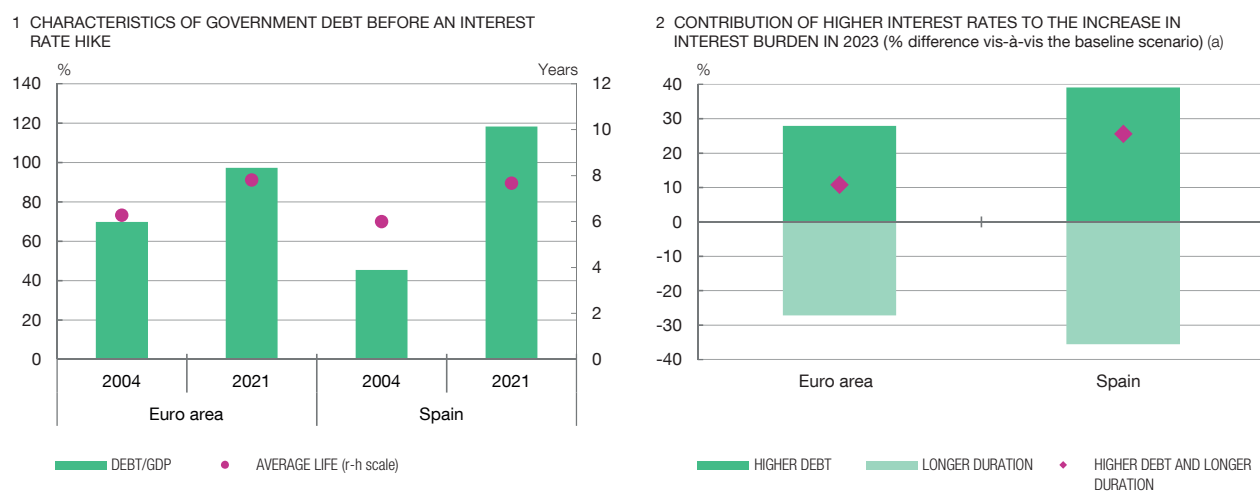
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area as a whole and 118% for Spain, well above the 70% and 45%, respectively, observed in 2004, before the 2005 monetary policy tightening cycle got under way. Since the higher interest rates are now applied to a larger volume of debt, they have entailed a sharper increase in interest payments. In particular, as Chart 3.9.2 shows, the impact of higher interest rates on the euro area interest burden in 2023 has been 28% more pronounced than would have

Chart 3.9

DETERMINANTS OF THE IMPACT OF HIGHER INTEREST RATES ON THE INTEREST EXPENSE OF GENERAL GOVERNMENT

The growth in government debt between 2004 in 2021 amplified the effect of higher interest rates on interest expense, while the longer duration of debt has acted in the opposite direction. The net effect of these two factors is a sharp increase in interest burden in the euro area and Spain.



SOURCES: Eurostat, European Commission Winter 2022 Economic Forecast and Banco de España.

a Estimates based on the debt sustainability model for the Spanish economy detailed in Burriel, Kataryniuk and Pérez (2022).



been the case had the debt-to-GDP ratio stood at 2004 levels.⁴⁸ In Spain this impact has been stronger still (39%) due to the sharper rise since 2004 in the country's debt-to-GDP ratio (73 pp compared to 27 pp for the euro area).⁴⁹

However, this effect has been dampened by the lengthening of the average life of outstanding debt. National treasuries capitalised on the prevailing low interest rate environment during the last decade to significantly extend the maturity of new debt issuances. Thus, for the four largest euro area economies, the average duration of the stock of debt increased from 6.3 years in 2004 to 7.8 years in 2021 (from 6 years to 7.8 years in Spain). The longer average maturity of government debt results in a slower pass-through of higher interest rates to the debt burden, as the stock of debt, and thus the interest paid, is renewed less quickly. It is estimated that, as a result of the increased average duration of outstanding debt in the euro area since 2004, the impact in 2023 of higher interest rates on general government interest expense has been 27% smaller than would have been the case had the average maturity remained constant (see Chart 3.9.2). This effect is somewhat larger in Spain (35%), since the average maturity of its debt has been extended somewhat further (1.7 years compared with 1.5 years for the euro area). In net terms, the effect associated with the higher volume of

⁴⁸ The increase in general government interest expenses is estimated using a government debt sustainability model that factors in the maturity and instrument structure of government debt (Burriel, Kataryniuk and Pérez (2022)). The model assumes that interest rates rise in line with the shift observed in the forward interest rate curve.

⁴⁹ At end-2022, the debt-to-GDP ratio stood at 91.6% in the euro area and 113.2% in Spain.

debt is predominant. Thus, it is estimated that in 2023 the general government financial burden for the euro area and for Spain will be 11% and 26% higher, respectively, than would have been the case had debt volumes (as a percentage of GDP) and average debt maturity held at 2004 levels.⁵⁰

4.2.4 The wealth and exchange rate channel

The value of household wealth has been affected by monetary policy tightening, via its adverse impact on asset prices, although other factors have also had an influence.

According to the ICE BofA Euro Non-Financial Index, debt securities have been the worst-performing asset class, down by 14.8% between December 2021 and the cut-off date for this report. The broad EURO STOXX index was 3.7% down on end-2021 levels, while the IBEX 35 was up 5.5% in the same period. The resilience of these indices to higher interest rates has been supported largely by the lower equity risk premium, as discussed in Section 4.2.1. There has been a significant slowdown in house prices since early 2022, putting the end-2022 year-on-year growth rate at 2.9% in the euro area and 5.5% in Spain, down from 9.8% and 8.5%, respectively, in 2022 Q1. Overall, in 2022 gross household wealth increased by 1.9% in nominal terms in the euro area and by 3.7% in Spain. However, in real terms household wealth declined by 6.7% in the euro area and by 1.7% in Spain due to higher inflation.

Despite interest rates rising sharply in the euro area, the euro exchange rate has, on balance, tended to depreciate against other currencies, although there has been reverse movement in the most recent period. The euro exchange rate fluctuated significantly last year, moving for most of 2022 in depreciation territory in nominal terms against its main trade partners and, in particular, in the bilateral exchange rate against the US dollar, reaching cumulative depreciation of as much as 4% against its trade partners and 17% against the US dollar (see Chart 3.10.1).

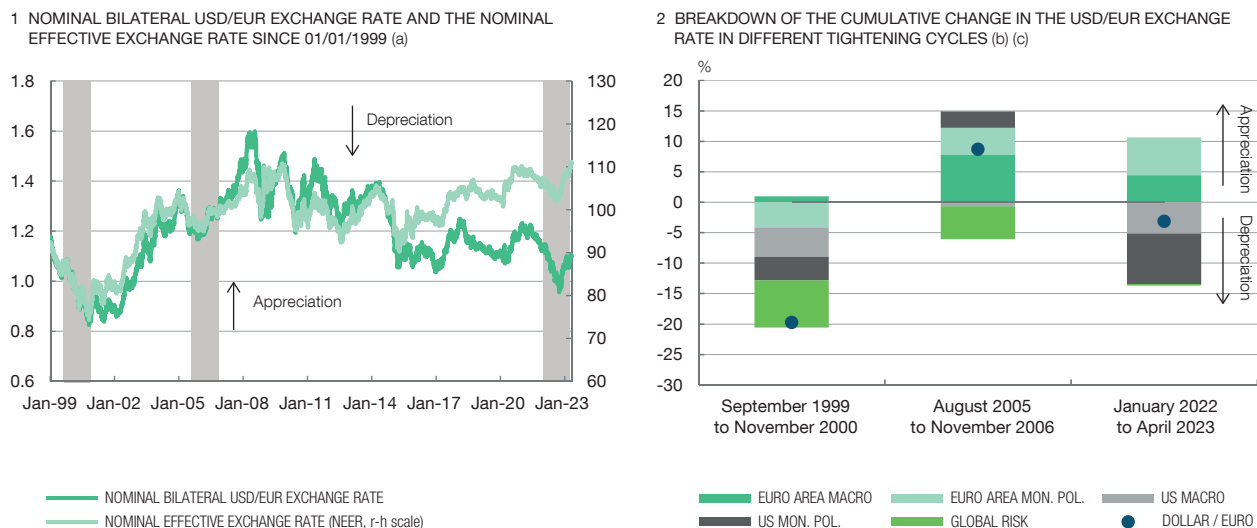
This depreciation mainly reflects an earlier and stronger monetary policy tightening in other regions compared with the euro area. Between December 2021 and April 2023, the euro exchange rate depreciated by 3.1% against the US dollar. According to an econometric model designed to identify the origin of shocks to this bilateral exchange rate, US monetary policy-related shocks contributed to an 8.3% cumulative depreciation of the euro against the dollar during that period, more than offsetting the cumulative effect in the opposite direction associated with ECB monetary policy (6.2%). US monetary policy has had a far more significant offsetting impact in the current cycle than in previous episodes of tightening monetary conditions (see Chart 3.10.2).

⁵⁰ The net effect is calculated against a counterfactual scenario of lower debt and shorter debt maturity. The combined effect of the two factors may not necessarily equal the sum of the individual effects, as illustrated in Chart 3.9.2. This is because the effect of assuming a shorter debt maturity is far smaller when applied to a significantly lower volume of debt.

Chart 3.10

DESPITE THE MONETARY POLICY TIGHTENING IN THE EURO AREA, THE EURO TENDED TO DEPRECIATE DURING MUCH OF 2022

The nominal euro exchange rate against the US dollar depreciated substantially in the first half of 2022, above all due to the interest rate spread against the United States and higher global risk aversion. The Fed's monetary policy has exerted significant downward pressure on the euro compared with previous monetary tightening cycles.



SOURCE: Banco de España.

- a The shaded areas denote the monetary policy tightening cycles in the euro area.
- b Two-country BVAR model that includes the euro area 10-year OIS rate, euro area and US share prices, the bilateral nominal USD/EUR exchange rate and the spread between the euro area 10-year OIS rate and the US Treasury bond. Identification using impact sign restrictions, following Brandt, Saint Guilhem, Schröder and Van Robays (2021), and estimated using daily data for the period 2005-2022. To illustrate the cumulative change of the various shocks influencing the bilateral nominal USD/EUR exchange rate in the period September 1999 to November 2000, the sample of data is extended to the start of 1999, using the German Bund price as a proxy for the euro area 10-year OIS rate.
- c The hiking cycle beginning in 1999 ends in November 2000, which is when expectations of rate cuts begin to emerge. Latest observation: 28 April 2023.



4.3 Uneven transmission of monetary policy to financial conditions

4.3.1 Cross-country heterogeneity

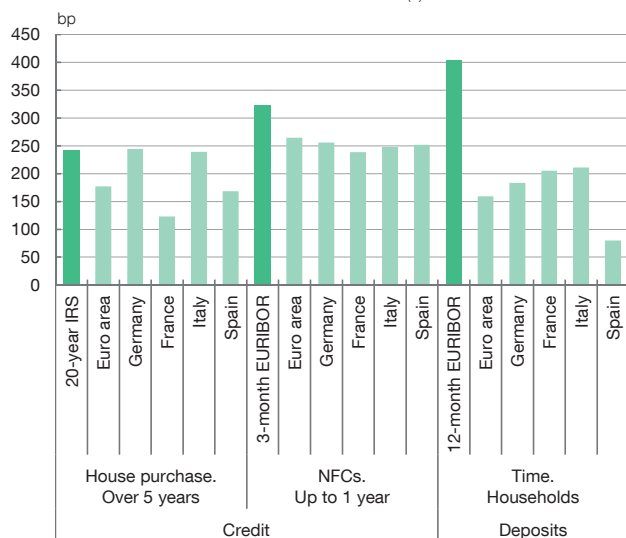
There is significant cross-country heterogeneity in the transmission of monetary policy to new bank lending in some segments. This is particularly true in loans for house purchase whose interest rate resets in more than five years (see Chart 3.11.1). For instance, since end-2021 the cost of mortgage borrowing in Italy and Germany has increased in line with the reference market rate, while in France the transmission is only around 50%. Likewise, deposit remuneration has risen unevenly, with Spain recording the smallest increase of the four largest euro area countries. Specifically, the increase in Spain is 79 bp smaller than that of the euro area and represents just 20% of the change in the 12-month EURIBOR. Conversely, in loans to firms with an interest rate reset period of up to one year – the bulk of this segment – the pass-through of higher reference rates has been very similar across jurisdictions.

Chart 3.11

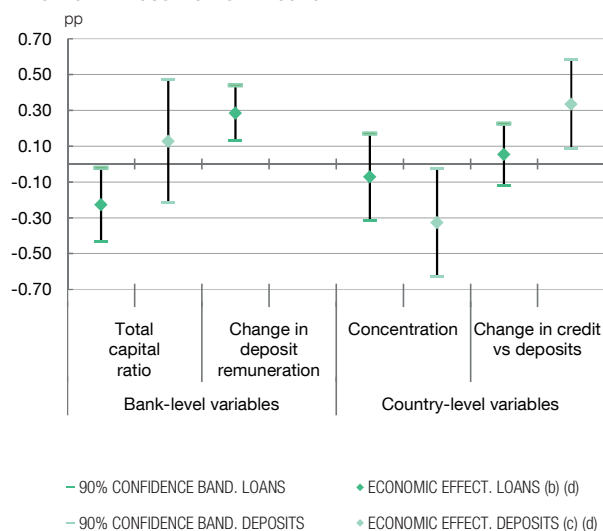
HIGH HETEROGENEITY ACROSS EURO AREA COUNTRIES IN THE TRANSMISSION OF MONETARY POLICY IN SOME SEGMENTS, INFLUENCED BY THE CHARACTERISTICS OF EACH COUNTRY'S BANKS AND BANKING SYSTEM

The heterogeneity in new loans for house purchase with a maturity of more than five years is very marked, while the differences are less pronounced for loans of up to one year in the non-financial corporation (NFC) segment. For its part, time deposit remuneration has increased to a lesser extent in Spain during this cycle. As for the determinants, the speed of monetary policy transmission depends both on banks' idiosyncrasies and on the differences in each country's banking sector structure and competitive environment. Better-capitalised banks and those whose funding costs have risen least have had a more muted response to higher interest rates. Further, banks in jurisdictions with lower reliance on deposit funding to underpin lending or with higher banking sector concentration have raised deposit rates more moderately.

1 CHANGE IN THE COST OF NEW LOANS AND IN MARKET RATES BETWEEN DECEMBER 2021 AND FEBRUARY 2023 (a)



2 DETERMINANTS OF THE CHANGE IN INTEREST RATES ON NEW MORTGAGE LOANS AND HOUSEHOLDS' DEPOSITS



SOURCES: Banco de España, ECB and Refinitiv Datastream.

- Bank interest rates are narrowly defined effective rates (NDEs) and are adjusted for seasonal and irregular components. The term denotes the frequency at which the loan interest rate is reset.
- Economic effect derived from a bank-level regression analysis in which the dependent variable is the change in the average monthly interest rate between September and December 2022 for new mortgage loans with an interest rate reset period of more than five years relative to the average for the same period in 2021.
- Economic effect derived from a bank-level regression analysis in which the dependent variable is the change in the average monthly remuneration between September and December 2022 on time deposits with agreed maturity of less than two years relative to the average for the same period in 2021.
- The economic effect is found by multiplying the estimated value of the coefficient (and its confidence bands) by the standard deviation of the distribution of the corresponding explanatory variable. Weighted least squares are used for the estimation, taking as weighting factor each bank's outstanding mortgage balance at December 2021 in the first regression, and each bank's outstanding balance of household time deposits at the same date in the second regression. Shown are the economic effects associated with the variables for which a significant effect is found in either of the two regressions. The total capital ratio is defined as the sum of Tier 1 and Tier 2 capital as a proportion of risk-weighted assets. The change in deposit remuneration is found as the increase in the average monthly interest rate between September and December 2022 of all bank deposits relative to the average for the same period in 2021. Bank concentration is measured as the total assets of the five largest banks operating in a country as a proportion of the total assets of all banks in that country. The "Change in credit vs deposits" variable is defined as the increase in the stock of credit extended by all banks in a given country between December 2021 and December 2022 less the increase in the stock of deposits in the same period, as a proportion of the country's GDP. Both regression analyses use bank-level controls and a measure of each country's banking system liquidity, the effects of all of which are not statistically significant.



The different speeds of monetary policy transmission to mortgage and deposit rates seem to reflect both banks' idiosyncrasies and differences in each country's banking sector structure. According to evidence based on a regression analysis – using data for a sample of individual banks from all euro area countries –, better-capitalised banks and those whose funding costs have risen least have raised interest rates on new mortgages to a lesser

extent (see Chart 3.11.2).⁵¹ This may owe to the fact that such banks have less need to build up capital organically by increasing their net interest income.⁵² Moreover, according to these same analyses, the cross-country heterogeneity in deposit remuneration mainly owes to differences between the banking systems in terms of their need to raise funds in order to lend and the degree of bank concentration. Specifically, in jurisdictions with lower reliance on deposit funding to underpin lending, banks have raised deposit rates more moderately.⁵³ Similarly, banks operating in countries with higher levels of bank concentration have raised deposit remuneration in recent quarters to a lesser extent.⁵⁴ Thus, of the total difference between Spain and the euro area in terms of the increase in remuneration on households' time deposits (some 79 bp), approximately half would owe to reliance on deposit funding and 18% to bank concentration.⁵⁵ Bank concentration explains a smaller share of this difference because the measure of concentration in Spain is only slightly higher than the euro area average.⁵⁶

The cross-country heterogeneity is even more marked in the pass-through of higher interest rates to net bank interest payments made by households and firms. In Spain and Italy, where there is a higher proportion of floating rate household mortgages,⁵⁷ the average cost of household debt rose by 1.2 pp and 0.9 pp, respectively, far more than in the euro area as a whole (0.5 pp). As a result, higher interest rates had a larger negative impact on net income in these countries than in the euro area overall. In that same period, net interest payments in Spain and Italy increased by an amount equivalent to 1% and 0.4%, respectively, of households' GDI, compared with 0.3% for the euro area as a whole (see Chart 3.12.1). Conversely, the impact on household income in Germany and France was positive in net terms, essentially due to the prevalence of fixed rate mortgages. In the case of firms, Spain and in particular Italy again recorded a more negative net impact on income, owing to the higher proportion of short-term and floating rate loans. Specifically, firms' net interest payments increased during the period by an amount equivalent to 4.8% of GOS in Italy and 2.7% in Spain compared with 2.2% for the euro area overall (see Chart 3.12.2).

The transmission of monetary policy tightening has also been uneven in sovereign debt markets, although the announcement of the TPI programme and the flexibility in PEPP

51 For more details, see Mayordomo and Roibás (2023).

52 These findings are consistent with those of Holton and Rodríguez d'Acri (2018) and Altavilla, Canova and Ciccarelli (2020) for other periods of change in bank lending reference rates.

53 For each country, banks' reliance on deposit funding to underpin lending is proxied using the ratio of the difference between the increase in the stock of lending by all banks in that country between December 2021 and December 2022 and the increase in the stock of deposits in the same time window relative to the country's GDP.

54 Van Leuvensteijn, Sorensen, Bikker and Van Rixtel. (2013) reach similar findings.

55 This contribution is the product of the coefficient resulting from the regression analysis and the difference between the value of the corresponding variable for Spain and the euro area relative to the difference in the increase in deposit remuneration between the two jurisdictions.

56 Specifically, in Spain the share in total assets of the five largest banks is only some 3 pp higher than the average for the euro area countries with banks in our sample. In fact, Spain stands squarely at the median of the distribution of this measure of concentration. Conversely, Spain is one of the countries in the sample where the stock of bank credit grew less than the stock of deposits between December 2021 and December 2022. This explains the relatively larger contribution of this variable which proxies reliance on deposit funding to sustain lending. In any event, it is important to note that the measure of concentration used here cannot be directly interpreted as a measure of the effective competition in the different euro area banking systems.

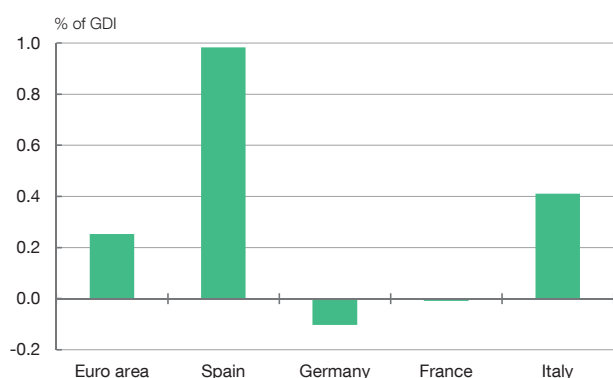
57 In 2021, the proportion of the stock of loans to households whose interest rate would be reset in the next 12 months stood at 67% for Spain and 59% for Italy, compared with the euro area average of 25%.

Chart 3.12

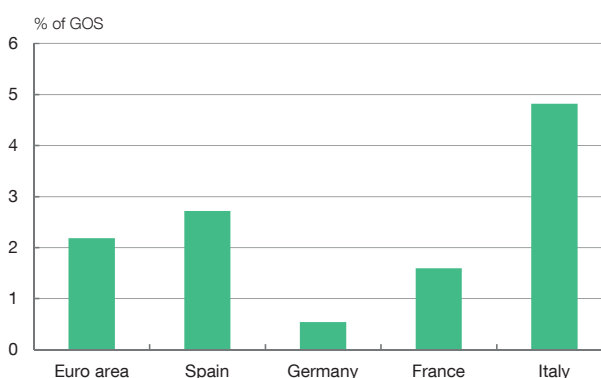
THE CROSS-COUNTRY HETEROGENEITY IS EVEN MORE MARKED IN THE PASS-THROUGH OF HIGHER INTEREST RATES TO HOUSEHOLDS' AND FIRMS' NET BANK INTEREST PAYMENTS

In Spain and Italy, where there is a higher proportion of floating rate household mortgages, the average cost of household debt has risen far more sharply than in the euro area overall. As a result, higher interest rates have had a larger negative impact on net income in these countries than in the euro area as a whole. Conversely, the impact on household income in Germany and France has been positive in net terms, essentially due to the prevalence of fixed rate mortgages. In the case of firms, Spain and in particular Italy again recorded a more negative net impact on income, which is consistent with the higher proportion of short-term and floating rate loans.

1 CHANGE IN HOUSEHOLDS' NET INTEREST PAYMENTS BETWEEN DECEMBER 2021 AND FEBRUARY 2023 (a)



2 CHANGE IN FIRMS' NET INTEREST PAYMENTS BETWEEN DECEMBER 2021 AND FEBRUARY 2023 (a)



SOURCE: European Central Bank.

a Calculated as the difference between the increase in bank loan interest payments and the increase in interest income on sight and time deposits (calculated based on the stock of bank balances at end-2021) relative to 2021 income.



reinvestment appears to have curbed the divergence. Between early 2022 and the cut-off date for this report, the spread between the sovereign debt yield and the 10-year OIS rate widened more sharply in countries with higher debt-to-GDP levels. In Italy and Greece this spread widened by 34 bp and 25 bp, respectively, compared with 13 bp in Spain. Conversely, the spread narrowed or barely changed in countries with higher credit ratings, such as Germany and France, influenced in part by stronger demand for high quality collateral assets. Thus, the spread narrowed by 20 bp in Germany and widened by 1 bp in France. In any event, the deviation among these spreads was restricted following the ECB Governing Council's ad hoc meeting of 15 June 2022, when it pledged to act against market fragmentation risk – which was followed by the introduction of the TPI in July – and decided to apply flexibility in reinvestments under the PEPP.

House price developments have likewise been uneven across euro area countries since early 2022. Although the pattern has been one of a general slowdown, the downtrend has been more marked in countries where house prices had risen more sharply over the last decade and were showing signs of overvaluation.⁵⁸ For instance, at end-2022 Germany, the Netherlands, Luxembourg and Slovakia registered nominal year-on-year house price declines

⁵⁸ European Systemic Risk Board (2022).

of 5%, 2.1%, 1.4% and 0.8%, respectively, compared with an increase of 2.9% in the euro area as a whole.

The differences between euro area countries in terms of mortgage market characteristics and banking industry structure and competition may lead to an uneven transmission of monetary policy to economic activity and inflation. The above-documented differential impacts on the funding costs, deposit remuneration and net interest income of households and firms may ultimately give rise to cross-country differences in sensitivity to monetary policy at the macroeconomic level; for instance, to the extent that those differential impacts at micro level translate into differing dynamics in terms of residential investment or the performance of aggregate consumption and the labour market.⁵⁹

4.3.2 Cross-household and firm heterogeneity

The evidence available indicates that the pass-through of higher interest rates to the average cost of Spanish household debt has been highly uneven and amplifies the effect on aggregate consumption. Chart 3.13.1 shows the distribution of the impact on households of a 400 bp and 500 bp increase in market rates, by income percentile and the proportion of liquid assets (defined as sight deposits as a proportion of the household's total income). The households that experience a larger impact on their net interest expenses (defined as loan interest payments minus interest income from deposits) are those with a proportion of sight deposits below the population median. A 400 bp market rate increase raises their interest expenses by between 1.1% and 2.2% of their income, depending on the quintile of the income distribution in which they stand, once the conditions on floating rate loans have been reset. Since the propensity to consume typically decreases proportionally to liquid assets, these results suggest that the heterogeneity presented in Chart 3.13.1 has an amplifying impact on aggregate consumption.⁶⁰

There is also significant heterogeneity across firms, which is likely to amplify the effect of higher interest rates on aggregate investment. The firms most affected would be those with a liquidity ratio (defined as cash and cash equivalents as a share of total assets) below the median of the distribution (see Chart 3.13.2). Within this group, firms less than five years old (approximately 10% of all firms) are estimated to experience a larger impact. While a market rate increase of 400 bp would result in the median gross debt burden ratio⁶¹ for all firms rising by 3.2 pp, that increase would be 22.1 pp for firms that have a low liquidity ratio and are less than five years old. The recent empirical and theoretical literature indicates that such firms have a relatively high marginal propensity to invest⁶² (e.g. when in a growth phase

59 Pica (2023); Slacalek, Tristani and Violante (2020) and Calza, Monacelli and Stracca (2013).

60 The covariance between marginal propensities to consume and household-level characteristics are key to understanding the aggregate role of heterogeneity (Patterson (2023)).

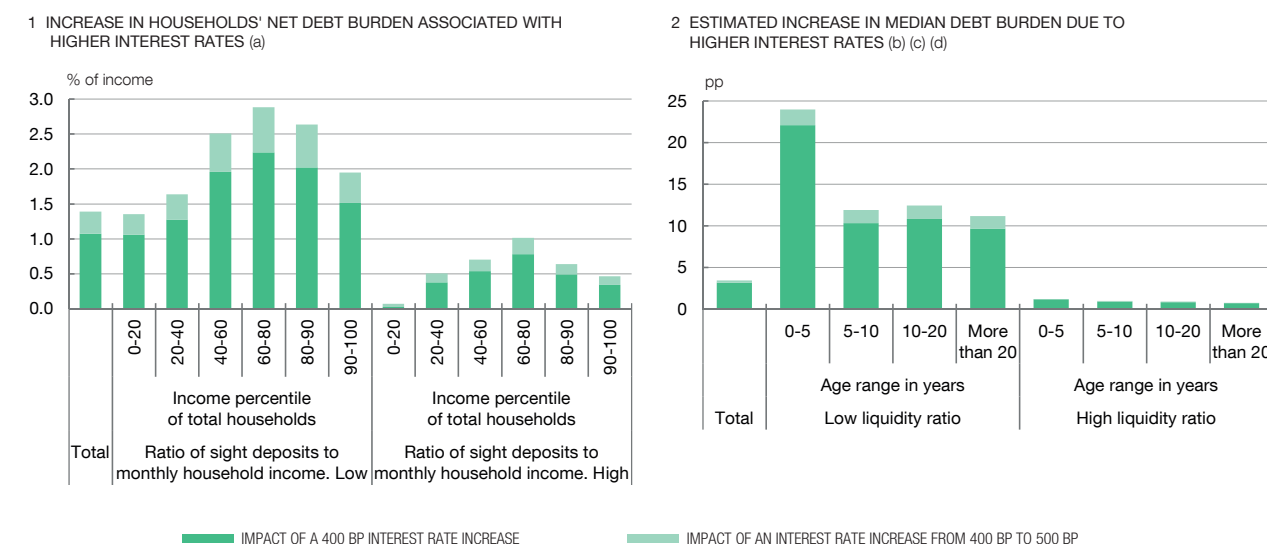
61 Gross debt burden is defined as the ratio between interest expenses and the sum of operating income and interest income. Prior to the interest rate hikes, the median of this ratio for indebted companies stood at 12.4%.

62 Cloyne, Ferreira, Froemel and Surico (2023), Jeenas (2019), Otonello and Winberry (2020).

Chart 3.13

HIGHER INTEREST RATES HAVE HAD A HIGHLY HETEROGENEOUS IMPACT ACROSS SPANISH HOUSEHOLDS AND FIRMS

A 400 bp increase in market rates would drive up households' net debt burden by 1.1 pp. These effects tend to be more acute for households with a lower volume of sight deposits as a share of their total income and with above-median income. The most affected firms are those less than five years old and with relatively low liquidity. Their median gross debt burden would increase by 22.1 pp in response to a 400 bp increase in market rates.



%

	Total	0 - 20	20 - 40	40 - 60	60 - 80	80 - 90	90 - 100
Household income							
Percentage of households with floating rate loans	29.1%	10.9%	21.1%	27.9%	40.9%	45.9%	45.4%
Firms' liquidity ratio (d)							
Percentage of firms with interest-bearing borrowing	66.3%	79.9%	77.3%	72.3%	62.9%	49.6%	31.3%

SOURCES: Banco de España and Spanish Survey of Household Finances (2020).

- a The impact of interest rate increases captures the change in net financial burden (debt service expense less deposit interest income). It is assumed that higher interest rates are fully passed through to the cost of floating rate debt. In the case of deposits, a pass-through of 8% is assumed for sight deposits and of 44% for time deposits. The sight deposit ratio is considered high if it stands above the median ratio for all households and low otherwise.
- b Debt burden is defined as interest expense / (gross operating profit + interest income).
- c Higher interest rates are fully passed through to interest rates on floating rate debt and credit.
- d The liquidity ratio is defined as cash and cash equivalents / total assets. The liquidity ratio is considered low if it stands below the median liquidity ratio for all firms and high otherwise.



or facing low cash flows). If so, the heterogeneity observed in terms of the effect of higher interest rates on firms' financial burden would entail an amplifying impact on aggregate investment.

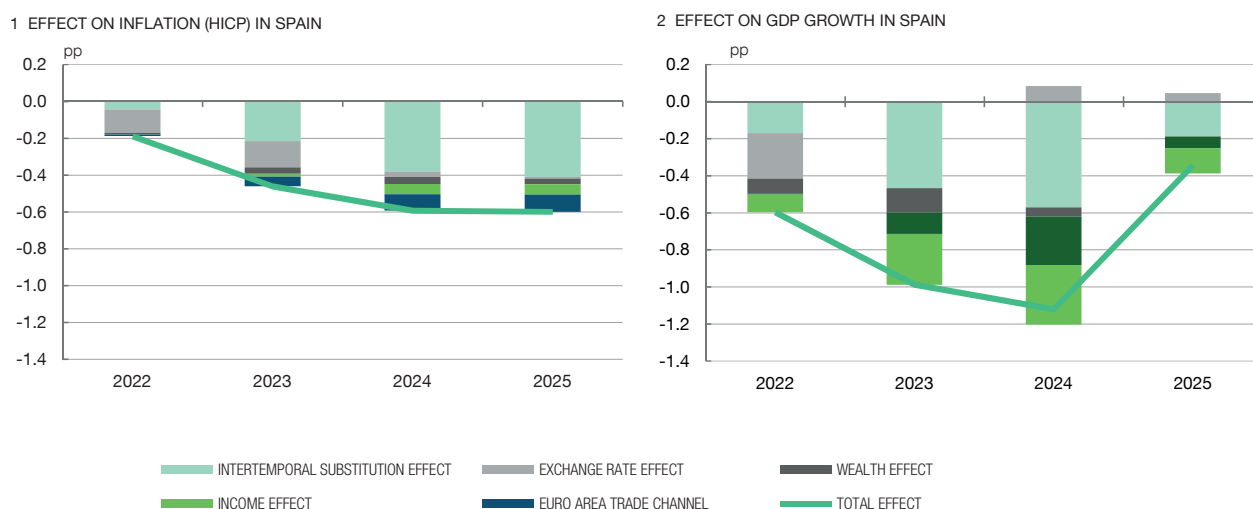
4.4 Evidence on the second stage: effects on economic activity and inflation

The monetary policy tightening is already beginning to pass through to real activity and inflation, but the bulk of the impact will be felt from this year onwards. According to the

Chart 3.14

THE MONETARY POLICY TIGHTENING THROUGH THE DIFFERENT CHANNELS IS ALREADY PASSING THROUGH TO ACTIVITY AND INFLATION IN SPAIN

Monetary policy tightening is beginning to pass through to real activity and inflation in Spain, according to estimates based on the Quarterly Macroeconometric Model of the Banco De España (MTBE).



SOURCE: Banco de España calculations.

NOTE: The results are based on a quarterly semi-structural model at quarterly frequency, namely the Quarterly Macroeconometric Model of the Banco de España. For more details, see Estrada, Fernández Sánchez, Moral and Regil (2004).



Quarterly Macroeconometric Model of the Banco de España (MTBE, by its Spanish abbreviation), in a counterfactual scenario in which the different channels described above act in line with the empirical regularities observed in the past and no additional shocks affect any area of the economy,⁶³ in 2022 the monetary policy tightening of recent quarters would have reduced inflation in Spain by around 0.2 pp (see Chart 3.14). However, given the considerable lag between monetary policy actions and their effect on activity and inflation, the bulk of the impact on inflation is expected to materialise from this year onwards. In particular, the estimates indicate that, all else being constant, monetary policy tightening will reduce inflation by 0.5 pp in 2023 and by 0.6 pp in both 2024 and 2025. In the case of GDP, the tightening is estimated to have reduced growth by 0.6 pp in 2022, although the peak effect (of around 1.1 pp) is expected in 2024.

The exchange rate effect and intertemporal substitution effect are the two main channels of transmission to inflation. The breakdown by channel shows the significance of the impact of the euro exchange rate appreciation on inflation in Spain in the first two years (2022-2023). From 2023 onwards the contraction in economic agents' spending as a result of higher interest rates (intertemporal substitution effect) is expected to be the main contributor of downward pressure on inflation and GDP growth, while the income effect is also significant, albeit less so.

⁶³ In the case of the transmission channels for the first stage, the evidence documented in the previous sections has been taken into account.

The estimated effects may underestimate the macroeconomic impact associated with the swift and strong increase in interest rates. This owes essentially to two factors. First, the current cycle of monetary policy tightening has been particularly intense, both in scale and speed, which could give rise to non-linear effects not captured by linear models such as the MTBE. An example of such non-linear effects would be disruptive episodes in financial markets, such as the relatively short-lived and contained episode witnessed in early March, prompted by concerns over the solvency and liquidity of some banks, mainly in the United States. Second, the foregoing estimates ignore the potential amplifying effect on aggregate activity that could stem from the starkly asymmetric impact of the current monetary policy tightening cycle, as document above, on the different types of households and firms.

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THE IMPACT OF A FASTER THAN EXPECTED REDUCTION IN EUROSISTEM ASSET HOLDINGS ON EURO AREA SOVEREIGN BOND YIELDS

In March 2023 the European Central Bank (ECB) launched a process of reduction of the portfolio of assets held under the Eurosystem's asset purchase programme (APP), ceasing to reinvest all of the principal payments from maturing securities and allowing the size of this portfolio to decrease at a pace of €15 billion per month. At its latest monetary policy meeting, held in early May, the ECB announced that it intended to continue reducing the APP portfolio at a measured and predictable pace, discontinuing reinvestments under the APP as of July 2023. Since, according to the May 2023 ECB Survey of Monetary Analysts (SMA), financial markets had virtually discounted this decision, it should not prompt significant changes in sovereign bond yields over the coming months.

Against this backdrop, the purpose of this box is to highlight the importance of reducing the APP portfolio at a measured and predictable pace, by simulating the potential response of euro area sovereign bond yields in a hypothetical scenario in which financial markets are surprised by the pace of the decline in this portfolio. Specifically, two alternative paths for the APP sovereign bond portfolio are simulated. The first is the path expected by the financial markets in March 2023 according to the SMA of that month. The second is an accelerated path, in which between May 2023 and December 2024 the APP portfolio declines by an additional €15 billion per month relative to the run-off expected by the analysts in March.¹

Chart 1 depicts the balance of the Eurosystem's sovereign bond portfolio, distinguishing between two groups of issuers: Germany and France, deemed "core" (dark green lines), and Spain and Italy, deemed "periphery" (light green lines). The unbroken lines depict the change expected in March 2023 by the monetary analysts,² while the broken lines denote the alternative scenario.

To simulate the impact of an APP portfolio run-off surprise, this box uses a bond arbitrage model,³ assumes that the surprise occurs in April and assesses its impact on European sovereign bond yields in that month.

In the model used, the run-off of Eurosystem bond holdings under its asset purchase programmes increases sovereign bond yields through two channels. The first channel reflects the reduction in duration risk absorbed by the Eurosystem. This translates into an increase in the term premium incorporated into sovereign bond yields as the compensation required by investors due to the risk of changes in short-term interest rates during the time to the bonds' maturity. The second channel reflects the reduction in sovereign risk absorbed by the Eurosystem, which increases the sovereign risk premium required by investors on account of the risk of a potential default on those bonds. In both cases, these effects reverse the impact of the Eurosystem's prior increase in its sovereign bond holdings, which caused it to absorb more of these risks.

Chart 2 depicts the impact of the hypothetical change in the expected APP portfolio run-off (depicted in Chart 1) on the sovereign bond yields of Spain and Italy versus Germany and France, as well as the impact on average euro area sovereign bond yields (proxied by the sum of the four countries). It shows the results for two alternative model calibrations, which provide a range for these effects and allow the uncertainty surrounding them to be factored in. In the first estimation, the model is parametrised to be consistent with the actual impacts of the pandemic emergency purchase programme (PEPP), which took place amid severe financial market turbulence and affected yields on periphery bonds much more than those on core bonds. In the second estimation, the model's parameters are consistent with the elasticity of the APP's impact, which did not vary as much across countries.⁴ The chart

1 From January 2025, the run-off will be at the same pace as envisaged in those expectations.

2 The model used assumes a monetary union comprising two member states, in this case "Core" and "Periphery", and therefore groups the two core countries as if they were one and does the same for the two periphery countries. The balance of core country bonds in the model is calculated as the sum of the balances of Germany and France, and the yields on those bonds are calculated as the average of the German and French yields, weighted by GDP. Data for Spain and Italy are likewise aggregated to calculate the periphery country data. To calculate the impact of the faster portfolio run-off, it is assumed that the additional €15 billion monthly decline affects core and periphery bonds in proportion to their current percentage of the total balance of the APP portfolio.

3 The model is used to decompose changes in the yield curve into components related to the expected short-term rate, the term premium and the default premium. For further details, see James Costain, Galo Nuño and Carlos Thomas. (2022). "The term structure of interest rates in a heterogeneous monetary union". Documentos de Trabajo – Banco de España, 2223. The model extends to a monetary union the paper of D. Vayanos and J. Vila. (2021). "A preferred-habitat model of the term structure of interest rates". *Econometrica*, 89(1), pp. 77-112.

4 Specifically, in the first estimation the parameters of the bond arbitrage model are inferred to reproduce the impact of the announcement of the PEPP in March 2020 on the sovereign yields of the aforementioned core and periphery countries, while, in the second estimation, the model is parametrised to reproduce the impact of the APP, as configured in January 2015, on the same yields.

Box 3.1

THE IMPACT OF A FASTER THAN EXPECTED REDUCTION IN EUROSISTEM ASSET HOLDINGS ON EURO AREA SOVEREIGN BOND YIELDS (cont'd)

Chart 1
BOND PORTFOLIO BALANCE EXPECTED BY THE MARKET (a)

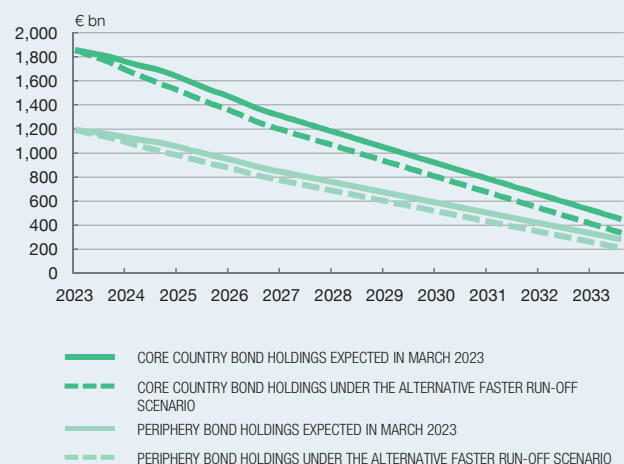
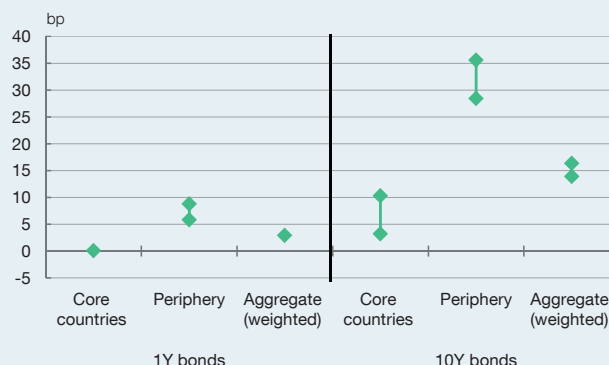


Chart 2
IMPACT ON SOVEREIGN BOND YIELDS OF A FASTER RUN-OFF OF THE EUROSISTEM'S BOND PORTFOLIO (b)



SOURCES: ECB, Bloomberg, Refinitiv Datastream and Banco de España.

NOTE: Analysis conducted using the model in Costain, Nuño and Thomas (2022), "The term structure of interest rates in a heterogeneous monetary union".

- Bond portfolio refers to sovereign bonds held by the central banks under the APP and the PEPP. Expectations for changes in the portfolio are drawn from the Survey of Monetary Analysts (SMA) conducted in March 2023. "Core countries" comprises German and French bond holdings and "Periphery", Spanish and Italian bond holdings.
- The chart depicts changes in euro area sovereign bond yields resulting from an APP bond holding run-off faster than €15 billion per month, between May 2023 and December 2024. "Core countries" refers to the average for Germany and France, "Periphery" to the average for Spain and Italy and "Aggregate" to the average for the four countries weighted by each country's GDP in 2022. The bands denote the range obtained via the two alternative estimations of the model: one where the elasticity of the impact is equal to that observed for the PEPP, and another using the elasticity of the APP's impact.

depicts the change in the sovereign yields for each group of bonds that, according to the model, would be observed in April 2023 after the market expectations for the APP portfolio balance are revised to reflect a faster run-off.

In both cases the impact is, as expected, greater on the longer-term bond yields of the three groups of countries depicted. Specifically, the impact on the average euro area long-term sovereign bond yield is estimated to range between 14 basis points (bp) and 16 bp, whereas it is between 2-3 bp in the case of one-year bonds. In part, this reflects an increase in the term premium, which pushes up the yield on ten-year bonds, but does not change the yields on shorter terms. However, the impact on the average euro area ten-year sovereign bond yield is also due to the additional increase observed for the periphery countries, which the market deems more likely to default on their debts. For these countries, investors

would require a sovereign risk premium, which affects the yields on bonds across all maturities, from the shortest (moderately) to the longest (considerably). Specifically, the yields on Spanish and Italian one-year bonds could increase by 6-9 bp (versus zero impact on core country bonds), while rising by 28-36 bp in the case of ten-year bonds (3-10 bp for Germany and France).

The results of the model therefore suggest that the duration risk channel could be less important than the sovereign risk channel in the context of a faster than initially expected APP portfolio run-off, especially if the change in expectations for that run-off coincides with bond market conditions similar to those when the PEPP was announced. Consequently, although in the hypothetical scenario proposed the financing costs of all euro area countries would increase, they would do so more in those jurisdictions where markets perceive greater sovereign risk.



4

SPAIN AND THE EUROPEAN UNION IN THE FACE OF THE ENERGY CRISIS: NEAR-TERM ADJUSTMENTS AND CHALLENGES PENDING

1 Introduction

The war in Ukraine has highlighted the extraordinary level of vulnerability of the energy framework of all the EU Member States. Before the start of the war, fossil fuels still accounted for almost three-quarters of the European economies' energy consumption. This energy mix entailed considerable external dependence, given that the EU imports almost all of the fossil fuels it consumes. The EU also lacks sufficient energy interconnection infrastructure, especially for electricity and natural gas. All these factors have shaped an environment that is highly susceptible to a negative shock such as that which has occurred – a sharp drop in the volume of energy imports from some countries and a surge in energy prices – having a very substantial and uneven negative impact on the European economies. In addition, this impact could not be easily distributed or smoothed across them (see Section 2).

However, in recent quarters, the resolute response of the European authorities and the notable capacity for adjustment exhibited by the EU economies have averted potentially highly disruptive scenarios. In particular, within a very short space of time, energy supply sources have been diversified – the bulk of the imports from Russia having been replaced – and overall energy consumption in the EU has been reduced. And all this has been achieved without widespread supply cuts or significant economic contraction. Yet there have also been certain favourable factors at play – such as the relatively mild winter in Europe and the fall in Chinese liquefied natural gas (LNG) imports in 2022 as a result of the country's zero-COVID policy – that could reverse in the coming quarters (see Section 3.1).

In any event, the current energy crisis is having a highly asymmetric impact on households and firms (see Sections 3.2 and 3.3). This impact is shaped, inter alia, by households' and firms' different initial exposure to the energy goods that have risen in price (with lower income households and smaller and more energy-intensive firms most exposed, ex ante), by the extent to which they have been able to cut their consumption of those goods and by the effect of the measures deployed by the authorities (most of which have been general measures, not targeted at the most vulnerable groups). Over the last few quarters, firms have responded to rising energy costs by raising their prices, renegotiating their supply agreements and endeavouring to increase their energy efficiency, among other measures. The impact has been considerably uneven by sector and firm type, with smaller and less productive firms proving more vulnerable to the present energy crisis.

Looking forward, correcting the structural shortcomings identified in the EU's energy framework is consistent with advancing – possibly even faster than initially envisaged – the European green transition towards a carbon neutral economy. Some of the foundations for this transformation have already been laid, such as the various initiatives

launched under the umbrella of the European Green Deal and the Next Generation EU (NGEU) and REPowerEU programmes.¹ In any event, despite these initiatives, achieving the – highly ambitious – commitments assumed is still a huge challenge.

Over the coming decades, reducing the EU's energy import dependency and achieving the green transition will require the large-scale deployment of renewable energy sources, additional energy efficiency gains and further development of the EU's energy interconnection infrastructure (see Section 4.1). All the foregoing will entail considerable challenges. On the technological side, for instance, some of the green technologies currently available are still at an initial phase of development or are not cost competitive. Moreover, this transformation will also give rise to a substantial increase in demand for certain commodities – such as rare earths – that are scarce in the EU. This could trigger new dependencies on imports from third countries. In any event, despite the challenges, the boost to renewable energy sources could pose a major opportunity for the Spanish economy given that, within the EU, Spain has the second-highest land-based wind power capacity and the highest solar power capacity, and it also has world-leading firms in both sectors.

For progress to be made in the energy transformation, the European policy response to the current crisis will also have to be adaptable, provide certainty and ensure that the green transition does not lead to a structural loss of competitiveness for our productive system (see Section 4.2). Within the EU there must a joint response to the risks and threats that all the Member States face. In this respect, in the framework of the joint European response to the current energy crisis, it is vital that certain key aspects continue to be reinforced. In particular, as regards funding, the volume of investment that will be necessary in the coming years to meet the challenges associated with the green transition far exceeds the sums envisaged in the current European programmes and the national possibilities of many of the region's economies. Accordingly, more resolute progress in the joint funding of these public goods for the EU will be needed, for instance by establishing a permanent EU fiscal capacity.

2 The European Union's energy framework before the start of the war in Ukraine

2.1 The energy mix and its heterogeneity across countries

Despite renewable energy sources having gained weight in both the Spanish and the EU energy mix in recent decades, fossil fuels continued to account for almost 70% of primary energy consumption in 2021^{2,3} (see Chart 4.1.1). Among fossil fuels, oil was the

1 For more details on these initiatives, see Banco de España (2022b), Dormido, Garrido, L'Hotellerie-Fallois and Santillán (2022) and L'Hotellerie-Fallois, Manrique and Marín (2023).

2 Primary energy consumption is the total amount of energy resources demanded, whether for end-user consumption or for conversion into another form of energy (for instance, electricity).

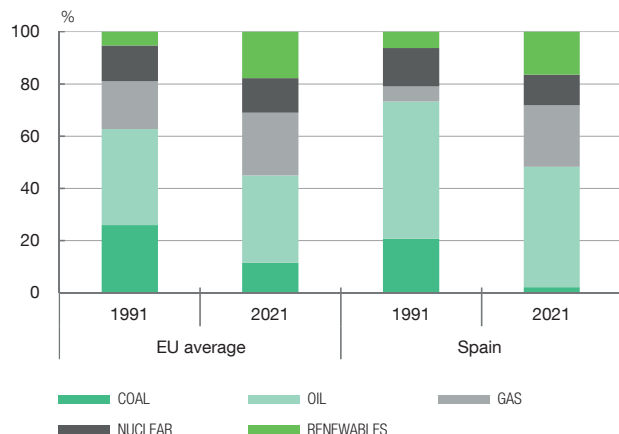
3 Outside the EU, in 2021 fossil fuels accounted, for instance, for 76% in the United Kingdom and 81% in the United States, and for 83% in China where coal is the main energy input (55% of the total).

Chart 4.1

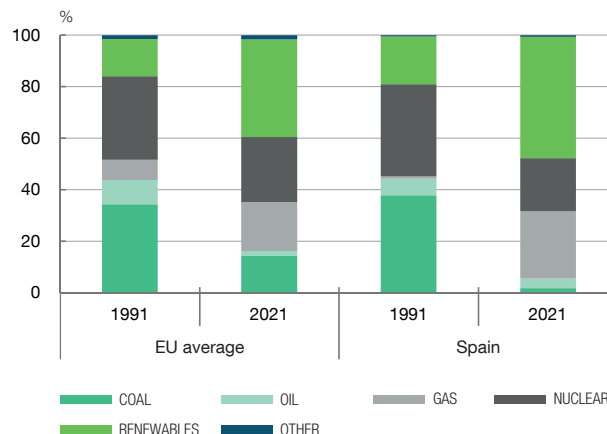
ENERGY DEMAND IN THE EU AND SPAIN

Although fossil fuels remain important, in recent decades their share of the energy mix has been reduced in favour of renewables. Energy consumption patterns are highly uneven across the European economies. In Spain, oil is still the main energy source, largely owing to the higher consumption of the transportation sector, followed by natural gas which is mainly used by industry.

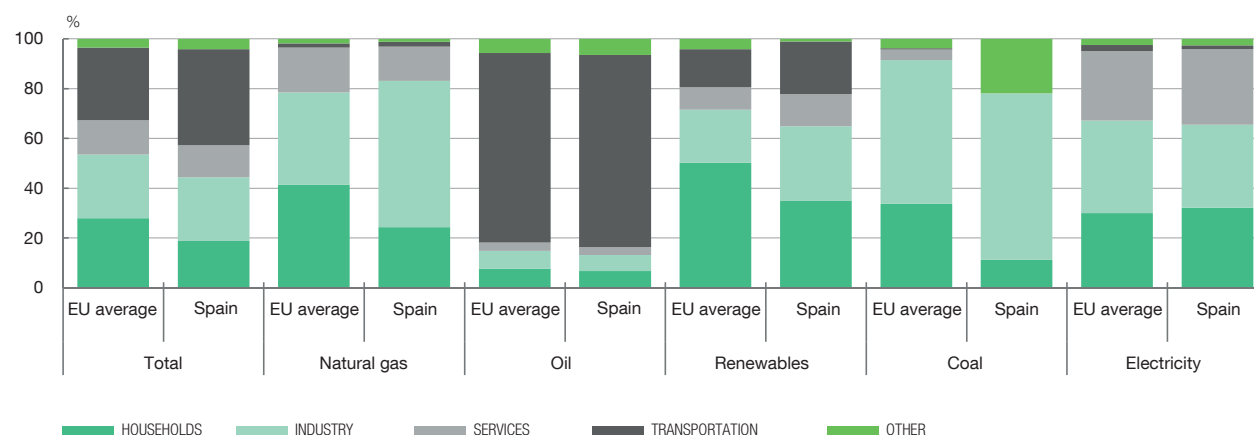
1 PRIMARY ENERGY CONSUMPTION (a)



2 ELECTRICITY GENERATION BY SOURCE (b)



3 FINAL ENERGY CONSUMPTION BY SECTOR IN 2021 (c)



SOURCE: Eurostat.

- a** Gross available primary consumption according to Eurostat's energy balance, which excludes secondary energy sources.
- b** Based on gross electricity generation, which includes the electricity sector's own consumption. "Oil" includes both the primary source and oil products. "Coal" includes coal and other solid fossil fuels according to the Eurostat classification. "Other" includes other sources, such as manufactured gases, peat products and non-renewable waste.
- c** Distribution based on economic agents' final consumption according to Eurostat's energy balances. The transportation sector includes different means of national transport, excluding international aviation and maritime transport. "Other" includes additional sectors, such as agriculture and fisheries. "Oil" includes both the primary source and oil products. "Coal" includes coal and other solid fossil fuels according to the Eurostat classification.



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main energy source in 2021, followed by natural gas and coal. Renewable energy sources⁴ accounted for 16% of total primary energy consumption in Spain and for 18% in the EU in 2021, triple the 1991 levels, while nuclear power accounted for 12% and 13% of primary consumption, respectively.

⁴ The following are considered renewable energy sources, according to the Eurostat definition: solar power, hydro power, geothermal energy, wind power, tidal power, biofuels and renewable energy from waste.

Various factors have contributed to the energy transformation, notably including greater electricity generation from renewable sources, changes in the sectoral structure of economies and efficiency gains. In particular, between 1991 and 2021, the weight of renewables in electricity generation rose by 29 percentage points (pp) in Spain and by 23 pp in the EU, to 38% and 47% of the total, respectively (see Chart 4.1.2). The proportion of natural gas as an input for electricity generation also increased considerably, while that of oil and coal fell substantially. Moreover, the change in the energy mix has been affected by the changes observed in the sectoral composition of economic growth, insofar as there is a notable degree of heterogeneity across sectors as regards the number and type of energy sources used, and by the energy efficiency gains achieved in each sector.⁵ Indeed, as Box 4.1 shows, both energy intensity (defined as the amount of energy consumed per unit of output) and carbon intensity (understood as the amount of CO₂ issued per unit of output) have improved in Spain and in the EU in recent decades.

In any event, before the start of the war in Ukraine, there were significant differences in energy mix across the main European countries. These differences broadly reflect persistently different national energy policy strategies, asymmetries in national productive systems and heterogeneity in countries' natural resources. For instance, France has traditionally focused on nuclear power, which in 2021 accounted for 48% of its energy consumption, well above the 12% of Spain and the 0% of another 14 EU countries. Meanwhile, also in 2021, in Poland, the Czech Republic and Germany – the EU's main coal-producing countries – coal accounted for 47%, 31% and 19%, respectively, of their energy mix, much higher than in Spain (2%) and in the EU on average (11%).

At the European level, Spain stood out for its higher use of oil, mainly owing to the Spanish transportation sector's high consumption. Before the start of the war in Ukraine, oil accounted for a considerably higher percentage of the primary energy mix in Spain (46%) than in the EU on average (33%) (see Chart 4.1.1). This was because the transportation sector – which accounts for approximately three-quarters of all the oil consumed in Spain and in the EU (see Chart 4.1.3)⁶ – was less energy efficient in Spain than in the EU overall.⁷ This more than offset the fact that transportation accounted for a smaller share of the economy in Spain than in Europe (4% compared with 5.5%, in gross value added terms, in 2021).

Natural gas consumption was similar in Spain and the EU, at around 24% of total consumption, albeit with a very different composition. In 2021, demand for gas for electricity generation was higher in Spain than in the EU. Among end users, industry's demand for gas was also higher in Spain. Indeed, industry accounted for 59% of final consumption of natural gas in Spain in 2021, partly because of the high weight of the chemical and construction sectors in the Spanish productive system. By contrast, Spanish households' consumption of

⁵ Serrano-Puente (2021).

⁶ Final energy consumption corresponds to the energy consumed by end-users, for instance households and firms, excluding the primary energy used in energy conversion. In this respect, approximately one-third of primary energy consumption in Spain is used to generate and distribute electricity that is subsequently demanded by end-users.

⁷ According to the Spanish Institute for Energy Diversification and Saving (IDEA, by its Spanish abbreviation), in 2019 the Spanish transportation sector was 21% more energy intensive than that of the EU as a whole.

natural gas was relatively low: 24% of final consumption, compared with 41% in the EU. This is mainly on account of households' lower demand for heating than in other European countries, and the still significant presence of oil-related products – essentially heating oil, butane and propane – in Spanish heating systems.

The same differences were also observed in renewable energy consumption. In 2021, renewable primary energy consumption was very similar in Spain (16%) and the EU (18%), although in Spain the breakdown was tilted more towards electricity generation and industrial demand. Specifically, industrial firms accounted for 30% of final renewable energy consumption in Spain, compared with 21% for European firms. By contrast, Spanish households accounted for 35% of final renewable energy consumption, below the EU average of 50%. There could be various reasons for this, including the regulations applicable and the various policies launched in Spain in recent decades to encourage self-consumption.⁸

2.2 The import dependencies associated with the energy mix

In recent decades, the EU's energy import dependency has increased and it is greater than that of the main world economies. Between 1990 and 2019 (before the outbreak of the COVID-19 pandemic and the war in Ukraine), the EU's energy import dependency rose by 10 pp, to 60%.⁹ The EU is more energy dependent on third countries than the United States (which has been a net exporter of energy products since 2019) and China (which in 2019 only imported 22% of its final energy consumption).

In 2019 the EU imported practically all of the oil (97%) and natural gas (90%) that it consumed (see Chart 4.2.1); **these imports were also relatively concentrated** (see Chart 4.2.2). Before the war in Ukraine began, 33% of all EU energy imports were from Russia. Other key trading partners were Norway, the United Kingdom and the United States. However, none of them accounted for more than 9% of the EU's total energy imports.

Natural gas, uranium, anthracite and oil were the European energy imports most vulnerable to global trade disruptions. The EU's vulnerability to energy imports can be quantified by calculating dependency indicators that capture the concentration of imports on a few exporting countries, the EU's scarce domestic production and the substitutability of external supply.¹⁰ Table 4.1 depicts these three indicators for the main energy products; the

⁸ See, for example, López Prol and Steininger (2017) and Mir-Artigues, del Río and Cerdá (2018).

⁹ Import dependency refers to net imports of solid fossil fuels, oil and oil products, electricity and natural gas as a percentage of gross available energy. Renewables and nuclear energy are deemed domestic production. In any event, in 2021 the share of energy imported by the EU from third countries remained very high (56% of total energy consumed).

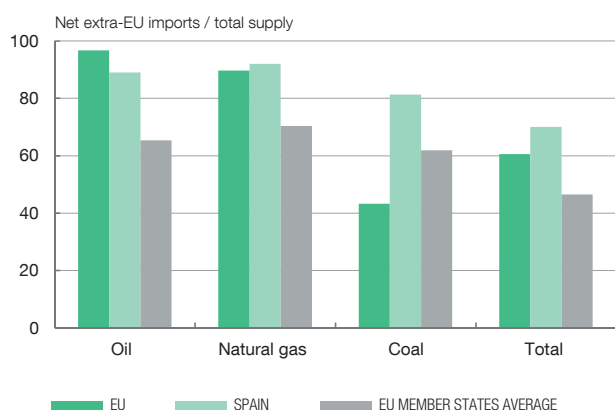
¹⁰ The import concentration of each product is measured using the Herfindahl-Hirschman index, which is obtained as the sum of the squared shares of each exporting country in EU imports. Domestic production and the substitutability of sources are obtained via two metrics: intra-EU imports as a percentage of total imports and the ratio of extra-EU imports to total European exports. For further details on how these indicators are calculated, see European Commission (2021) and Ioannou and Pérez (2023).

Chart 4.2

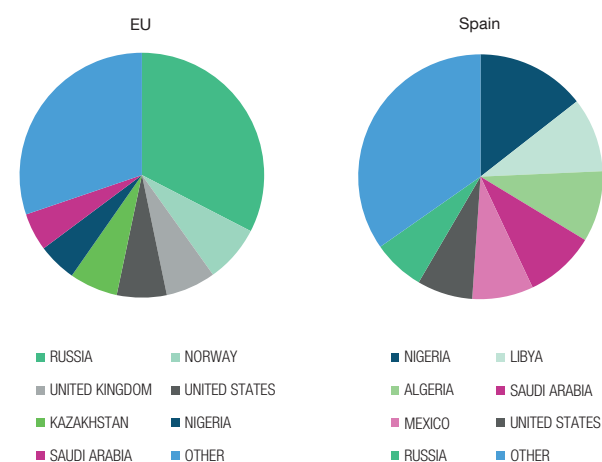
EUROPEAN ENERGY DEPENDENCE

Compared with the EU overall, Spain is more dependent on third countries for its energy purchases, although its imports are more diversified across providers.

1 EU AND SPANISH ENERGY DEPENDENCE IN 2019 (a)



2 LARGEST SUPPLIERS OF ENERGY PRODUCTS IN 2019 (b)



SOURCES: CEPII-BACI and Eurostat.

- a EU: net imports from non-EU countries as a percentage of gross available energy. EU Member States average: imports from non-EU countries as a percentage of domestic production, total imports and stockbuilding. "Oil" includes both the primary source and oil products. "Coal" includes coal and other solid fossil fuels according to the Eurostat Standard International Energy Product Classification (SIEC).
- b Value shares of energy imports (anthracite, coal, coke, peat, crude, oil products, natural gas, propane, butane, uranium and fuelwood). The shares of the different providers of gaseous natural gas are calculated drawing on the Eurostat NRG database (Balteanu and Viani, 2023).



closer to red the colour, the higher a good's relative vulnerability.¹¹ Based on these metrics, with data to 2019, the EU's most vulnerable import dependencies related to natural gas, uranium, anthracite and oil, products that are particularly scarce in the EU, hard to substitute and – except for crude oil and LNG – imported from just a few exporting countries. In addition, when considering the degree of alignment of the European economies' main suppliers of energy products with the EU's international positions,¹² there are further signs of vulnerability in the case of oil products (one-third imported from Russia), LNG (whose main suppliers are Qatar and Russia) and coal (45% imported from Russia).¹³

- 11 The heatmap is constructed by standardising the dependency indicators for the different energy products, using the mean and the standard deviation calculated for the whole sample of energy goods, to obtain a vulnerability indicator. The products are classified and colour-coded according to the quintile to which their vulnerability indicators belong, with colours closer to red signalling the products whose imports are characterised by a higher relative vulnerability. In the heatmap, products are ordered by their share of European energy imports.
- 12 The last column in Table 4.1 weights the import concentration index using an indicator of differences in voting patterns at United Nations General Assembly sessions on human rights in the period 2010-2019 between the exporting country and the EU (proxied by Belgium, Germany, Spain, France, Italy and the Netherlands). According to the literature, this indicator proxies countries' geopolitical alignment (Bailey, Strezhnev and Voeten, 2017).
- 13 Conversely, imports of natural uranium, despite being relatively concentrated, could be slightly less vulnerable to disruptions to global trade, as more than one-half is imported from Canada, a country that is traditionally aligned with the EU's international positions.

Table 4.1

VULNERABILITY OF THE EU'S ENERGY IMPORTS (2019) (a)

	Concentration	Scarcity	Substitutability	Concentration + political proximity
Crude oil				
Oil products				
Gaseous natural gas				
Liquefied natural gas				
Coal				
Liquefied petroleum gases				
Electricity				
Enriched uranium				
Anthracite				
Natural uranium				
Coke				
Fuelwood				
Peat				

SOURCES: Banco de España, drawing on Eurostat, CEPII-BACI and Bailey, Strezhnev and Voeten (2017).

a The indicators of import concentration, scarcity and substitutability for each product are standardised by the mean and the standard deviation for the whole sample (z-score). The energy products are classified and colour-coded according to the quintile to which their z-scores belong; colours closer to red signal higher vulnerability. The last column shows the import concentration index in which each country's import shares are weighted with an indicator of "political proximity" to the EU, based on UN voting patterns and calculated following Bailey, Strezhnev and Voeten (2017). The products are ordered according to their share of European energy imports.

In 2019 Spain's energy imports were more diversified than those of the EU as a whole.

Among the EU economies, Spain and France have the lowest figure in the index used by the European Commission to measure the concentration of energy imports from third countries.¹⁴ In 2021 Spain's third-country energy import concentration was 33% below that of Germany and Italy, and 70% lower than the median value for the EU overall. Nevertheless, while in aggregate terms the Spanish economy's external energy suppliers were highly diversified, up to 2021 a large share of Spain's natural gas imports (43% of total imports of this input in real terms) came from Algeria.

However, Spain was more dependent on foreign energy than the EU, and this energy dependence has also increased over recent decades. In Spain, the percentage of energy imported from non-EU countries rose from 63% in 1991 to 70% in 2021 (see Chart 4.1.1), placing it in the top quintile of the European economies with the highest external energy dependence.¹⁵

¹⁴ Balteanu and Viani (2023).

¹⁵ Energy imports from non-EU countries as a percentage of domestic production, total imports and stockbuilding.

2.3 The insufficient integration of energy markets within the EU

Despite the EU having promoted the strengthening of energy interconnections between the different Member States over the last 15 years, they are still incomplete. The lack of sufficient infrastructure that facilitates energy market interconnection and integration within the EU is patent in the cases of natural gas and electricity. By contrast, how developed this infrastructure is for crude oil and coal is less important, as these commodities are mainly supplied by sea.

Integration of the natural gas market at European level is limited by the existing infrastructure. Before the onset of the war in Ukraine, most of the EU's natural gas imports came by pipeline from Russia, Norway, North Africa and Azerbaijan (see Chart 4.3.1). However, this gas was essentially received in just a few central European and Mediterranean countries and there was – and still is – no infrastructure to widely redistribute it across the EU. Furthermore, the EU's seaborne LNG import capacity was much smaller than its pipeline gas import capacity and was limited by the existing regasification plants, which only 30% of Member States had. In any event, the possibility of some of the European countries with high regasification capacity (such as Spain) being able to redistribute this gas within the EU was once again limited by the lack of sufficient interconnection infrastructure in the region.

Moreover, cross-border electricity interconnection capacity is highly uneven. Despite most of the European electricity system being interconnected via continental Europe's electricity transmission grid (which makes the existence of an internal electricity market possible), in practical terms, electricity interconnection capacity within the EU is limited by multiple factors.¹⁶ In this respect, the ratio of electricity import capacity to installed generation capacity (the cross-border capacity ratio) is highly uneven across Member States (see Chart 4.3.2). Specifically, in some periphery countries (such as Spain and Portugal) the electricity interconnection capacity with the rest of Europe is very low, with a cross-border capacity ratio of close to 6%, well below the European target of 15% by 2030.

Other highly diverse aspects also contribute to EU energy markets behaving particularly heterogeneously across Member States. Leaving to one side the various factors mentioned above, there are many other – essentially technical – aspects that considerably – and highly unevenly – affect how energy markets function in each Member State and, in particular, the level and volatility of energy prices for households and firms.

For example, there are considerable cross-country differences in how changes in wholesale electricity prices are passed through to retail prices. Compared with the rest of the EU, this pass-through is relatively swift and strong in Spain, where a very considerable

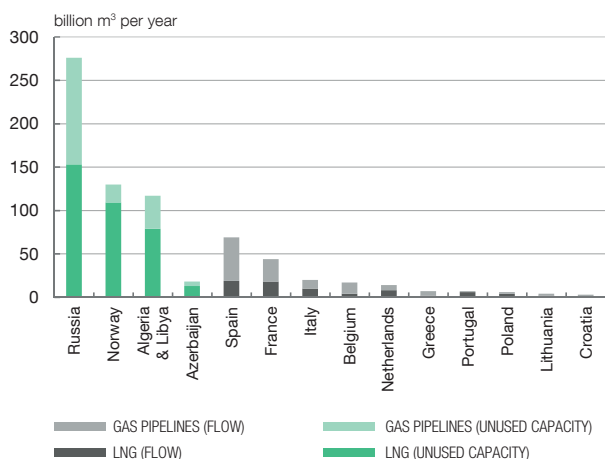
¹⁶ For example, due to the existence of technical restrictions stemming from different transmission line densities, on account of geographical features (such as mountain ranges and islands) and because of hurdles created by different national legislation on territorial organisation (including, among others, legislation on environmental protection and the demarcation of protected areas, and urban planning legislation, which determines the different uses for land (i.e. for residential, industrial, tertiary and public services use)).

Chart 4.3

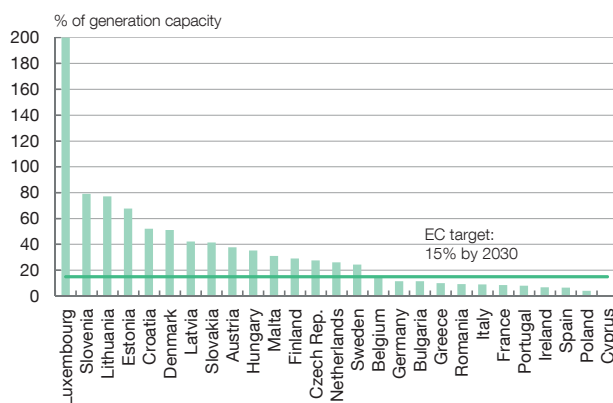
ENERGY INTERCONNECTIONS IN THE EU

Despite all the EU's efforts, European energy interconnections are still insufficient. In the natural gas market, integration is constrained by the existing infrastructure that was traditionally highly dependent on pipelines and on Russia. In addition, the slow development of electricity interconnections has meant that some countries, such as Spain, have very limited connections to the rest of the system.

1 EU GAS IMPORTS AND UNUSED CAPACITY IN 2021



2 CROSS-BORDER CAPACITY RATIO



SOURCES: European Commission and IMF.



percentage of consumers are directly bound to the daily price on the wholesale market by the regulated rate for small consumers.^{17, 18} By contrast, in France, for example, since 2011 one-quarter of nuclear power is not traded on the wholesale market, but is instead sold directly to retailers at a regulated price. This therefore affects the level and volatility of retail electricity prices in France.

Moreover, taxes and other regulated charges account for a sizeable proportion of the energy prices paid by consumers, which varies considerably across the European economies. For instance, the tax burden on fuels (VAT and the hydrocarbon excise duty) in Spain is lower than the EU average (see Chart 4.4.1).¹⁹ Meanwhile, taking 2019 as reference, taxes and regulated charges²⁰ accounted for a relatively high percentage of Spanish and average EU gas and, above all, electricity bills (see Chart 4.4.2). Compared with the EU, this percentage was somewhat higher in Spain in the case of bills charged to households (72% and 62% in electricity and gas bills in Spain, as opposed to 69% and 55%, respectively, in the EU), but lower in those charged to firms.

¹⁷ Pacce, Sánchez and Suárez-Varela (2021).

¹⁸ One of the conditions for the European Commission to approve the “Iberian exception mechanism” was the reform of the current regulated rate for small consumers (Royal Decree-Law 10/2022 of 13 May 2022).

¹⁹ Banco de España (2022b), in Section 4.1.

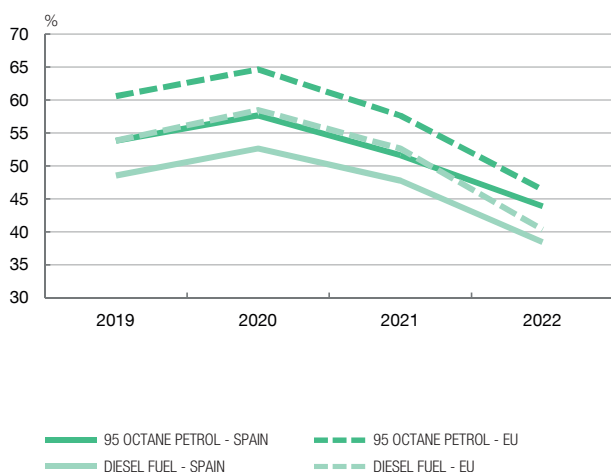
²⁰ In Spain, these regulated charges include, for example, network costs (encompassing transmission and distribution costs). In the case of electricity, they also include the specific remuneration arrangements for power plants using renewables, cogeneration and waste, the cost of paying down the tariff deficit and the higher cost of non-mainland systems. For further details on the different components of the electricity rate in Spain, see Matea Rosa, Martínez Casares and Vázquez Martínez (2021).

Chart 4.4

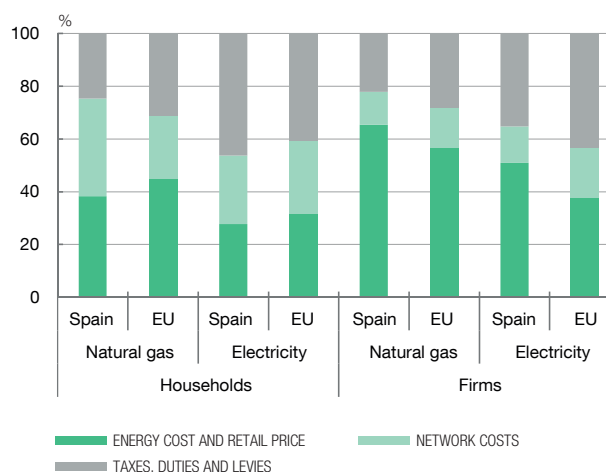
ENERGY PRICE STRUCTURE

Taxes and other regulated charges make up a large part of energy prices. In Spain they account for a smaller share than the EU average, save in household gas and electricity bills.

1 SHARE OF TAXES IN VEHICLE FUEL PRICES



2 NATURAL GAS AND ELECTRICITY PRICE STRUCTURE (2019)



SOURCE: Eurostat.



3 European economies' near-term adjustment to the energy crisis

The European authorities have responded resolutely to the Russian invasion of Ukraine and the challenges it has posed by implementing a wide range of measures in multiple areas. For instance, different packages of sanctions and restrictions have been adopted over recent quarters, aimed essentially at increasing the cost of the war for Russia and its economy.²¹ In addition, to boost the EU Member States' responsiveness, in May 2022 the European Commission agreed to keep the general escape clause of the Stability and Growth Pact activated in 2023. The clause was activated at the onset of the pandemic and, before the outbreak of the war in Ukraine, was expected to be deactivated as of 2023. The Commission also approved a new State aid Temporary Framework, which relaxes the rules on grants and subsidised public loans for the sectors hardest hit by the energy crisis and aims to drive the transition to an emission-free economy.

In the energy domain, the launch of the Commission's REPowerEU programme stands out.²² This plan comprises a series of initiatives aimed at diversifying the EU's fossil fuel supply sources, stepping up energy saving and speeding up the deployment of renewables. To achieve these goals, among other measures, Member States can use the remaining RRF loans – and new RRF grants funded by the auctioning of Emission Trading System allowances

²¹ European Commission (2022a).

²² See, for example, REPowerEU Plan, European Commission.

– to adopt further energy actions. Additional regulations have also been established in the context of, for example, gas inventories, renewables targets and joint natural gas purchases.²³

The national authorities of the EU Member States have approved manifold initiatives in response to the surge in inflationary pressures that followed Russia’s invasion of Ukraine. These measures have essentially sought to limit the increase in domestic prices – energy prices above all, but also food prices, in some cases – and/or support economic agents’ incomes in light of the erosion of their purchasing power since 2021. Overall, these measures – which have mostly been blanket measures, rather than targeted at the most vulnerable groups – amount to around 2 pp of euro area GDP.²⁴ In addition, while virtually all these measures were initially approved for a relatively limited period, persistent high inflation has meant that, in most cases, they have been extended to much of 2023.

Overall, the roll-out of all these initiatives across Europe and in the different Member States has shaped recent macroeconomic developments in the EU. Economic activity slowed considerably in Europe – and globally – in 2022 H2, as a result of the impact of different adverse shocks to economic activity in much of 2021 and 2022 H1. Specifically, these shocks translated into a considerable cumulative loss of purchasing power for households and firms, a marked deterioration in confidence and significantly tighter monetary policy and global financial conditions. However, in part because of the roll-out of the aforementioned initiatives across Europe and in the different Member States, and also as a result of the partial reversal of some of the adverse supply shocks that were affecting activity, in the final stretch of 2022 and in early 2023, European economic activity proved considerably resilient, performing better than expected, and a sizeable contraction of GDP was avoided. During this period, there was also an intense substitution of the EU’s energy sources and a sharp reduction in gas consumption, which staved off a potentially disruptive scenario where widespread gas cut-offs would have been necessary in some European countries last winter (see Section 3.1). Meanwhile, headline inflation appears to have peaked, although underlying and food inflation remain quite sticky.

Broadly speaking, activity in Spain in recent quarters has behaved relatively similarly to activity in the main European economies, although inflationary dynamics in Spain and the rest of Europe have been somewhat different, with headline inflation slowing more quickly in the former. There are many factors behind these developments. These include the aforementioned quicker and stronger pass-through of wholesale electricity prices to retail prices in Spain, some of the measures implemented by the Spanish authorities and, in particular, the cap on generation costs to lower the electricity price on the wholesale market (the “Iberian mechanism”), which had a considerable downward impact on inflation in Spain in 2022.²⁵ Box 1.2 of this Annual Report provides an estimation of the overall impact that the different measures implemented by the Spanish authorities to mitigate the effects of rising prices and the energy crisis have had on GDP and inflation in Spain in recent quarters.

23 L’Hotellerie-Fallois, Manrique and Marin (2023).

24 Checherita-Westphal and Dorrucchi (2023).

25 Pacce and Sánchez (2022).

For more details on prices and activity in Spain and the euro area, and on the European Central Bank's monetary policy over recent quarters, see Chapters 1 and 3 of this Annual Report. Leaving the aggregate impacts to one side, Sections 3.2 and 3.3 below home in on the uneven impact the current energy crisis is having on different types of Spanish households and firms.

3.1 Substitution of energy sources

Partly as a result of some of the measures described above, in recent quarters EU countries have proven relatively adept at reducing their energy imports from Russia. In particular, European imports of Russian coal and coke came to a complete halt in 2022 Q4. Moreover, Russia's share of the EU's pipeline natural gas imports fell from slightly over 50% in 2021 to 13% by end-2022. The same period also saw a decline in the country's share of European imports of oil (from 26% to 13%) and LNG (from 16% to 10%).

This was possible in large part thanks to the substitution of the commodities previously imported from Russia with those from other international suppliers. For instance, recent quarters have seen an EU-wide increase in imports of pipeline gas from (in particular) Norway, North Africa and Azerbaijan. LNG imports from (in particular) the United States, Qatar and Nigeria have also risen.²⁶ In the case of Spain, the country imported relatively little energy from Russia before the outbreak of war in Ukraine. Thus, the need to replace such imports with those from other suppliers was somewhat less pressing in Spain than was the case, e.g. in some Central European economies.²⁷ In any event, over the course of 2022 the flow of gas from Algeria to Spain slowed appreciably – down 40% on 2021 – making it necessary to source this fuel (mainly in liquefied form) from elsewhere – notably, from the United States, Nigeria, Russia and Egypt – and ultimately resulting in a higher cost for the Spanish economy.²⁸

The fall in gas consumption also appears to have played a part. Indeed, in 2022 gas consumption in the EU fell by 13% relative to the average of the past few years, although this reduction was notably uneven across countries, agents and sectors (see Chart 4.5).²⁹ Taken together, the industrial sector and households reduced their consumption by 15% in the EU and 14% in Spain. Based on more disaggregated data, which cannot always be compared across countries, consumption fell particularly sharply in the industrial sector.³⁰ Nonetheless,

26 For more details, see Balteanu and Viani (2023).

27 Quintana (2022).

28 Liquefied gas is generally more expensive than its gaseous counterpart, since two additional transformation processes are needed before it can be used.

29 The data included here on the reduction in natural gas consumption shown in this chapter refer to the change in 2022 relative to the average for 2019-2021. By contrast, the voluntary target for reducing natural gas consumption in the EU is defined in terms of the change between 1 August 2022 and 31 March 2023 compared with the average of the previous five years. On ENAGÁS data, the reduction taking into account this time frame is 11%. In any event, according to Council Regulation (EU) 2023/706 of 30 March 2023, these goals should take into account exceptional circumstances in the electricity market of a neighbouring country – as was the case for nuclear and hydro generation – that entail an increase in exports. This would allow the voluntary reduction in consumption to be limited by the volume of natural gas corresponding to the additional exports.

30 Enagás (2023a, 2023b) (only available in Spanish).

Chart 4.5

ADJUSTMENT FOLLOWING RUSSIA'S INVASION OF UKRAINE

Russia's invasion of Ukraine has prompted a considerable reduction in Europe's consumption of gas.

CONSUMPTION OF NATURAL GAS IN 2022 VERSUS AVERAGE FOR 2019-2021 AND SECTORAL CONTRIBUTIONS (a)



SOURCE: Bruegel.

a Change in average annual consumption broken down into electricity generation and households and firms. For those countries (Lithuania and Slovakia) for which data for the full year are unavailable, the changes to November 2022 are depicted. "EU average" refers to the average of the 21 countries for which data for the full year are available.



in general terms, the decline in industrial output was partially offset by the substitution of gas with other energy inputs and, in some cases, by reorienting production towards less energy-intensive goods. Meanwhile, the fall in gas consumption was less pronounced in the electricity sector – a 2% decrease in the EU and a 16% rise in Spain.³¹ This can largely be explained by the 2022 decline in the generation of nuclear power – falling 14% with respect to the 2019-2021 average, mainly as a result of the problems detected in French reactors – and hydroelectric power – down 15%, owing to the drought that affected much of Europe last year. This meant that more electricity had to be generated using gas, a state of affairs that was particularly noticeable in Spain, associated with an increase in exports to France and the effect of the mechanism to cap gas prices in the Iberian market.³²

In any event, it is still too early to assess the extent to which the significant capacity the European economies have demonstrated in adapting their energy demand in the short term and restructuring their energy procurement will last. It is worth noting here that, while the current energy crisis has accelerated the EU's green transition, reducing the heavy dependence on outside energy identified in Section 2.2 will still take many years – for instance, to sufficiently boost renewable energy potential – and will pose considerable challenges – for further details, see Section 4.

31 According to [estimates](#) by the Bruegel think tank.

32 See, for example, García and Pacce (2023) and [Hidalgo-Pérez, Mateo-Escobar, Collado Van-Baumberghen and Galindo \(2022\)](#).

For instance, certain conjunctural factors conducive to these adjustments could reverse in the coming quarters. These factors notably include the unusually milder temperatures this past winter in Europe. This prompted a fall in the demand for gas that was particularly sharp in countries where lower temperatures are the norm at this time of year. Also worth noting was the 20% drop in China's LNG imports in 2022 as a result of the country's zero-COVID policy, which constrained its economic activity and enabled the EU to expand its options for procuring gas. If these factors were to reverse in the short term – China abandoned its zero-COVID policy in late 2022 – and certain adverse scenarios were to materialise, the possibility of natural gas prices in Europe coming under further strain cannot be ruled out, nor can shortages in the supply of this fuel in some EU countries this coming winter.³³

Moreover, some of these adjustments were made in response to developments that, should they persist, could have a significant adverse impact on future levels of economic activity in the EU. During the current energy crisis, energy prices have risen much more sharply in the EU than in most of the world's main economies. If these developments were to become entrenched, energy consumption in the EU would in all likelihood continue to fall, albeit at the expense of a significant (and potentially structural) loss to its industrial base. Indeed, Banco de España simulations³⁴ reveal that, if the rise in energy costs in the EU (sharper than elsewhere in the world) seen in the current energy crisis were to persist, Europe's industrial output would fall appreciably, to be replaced by imports, particularly in the sectors that produce intermediate inputs, such as basic metals, chemical products, paper and plastic (see Chart 4.6).

3.2 Spanish households' exposure and adjustment to the energy crisis

The impact of the energy crisis on Spanish households is shaped by several factors. Notably, these include households' initial exposure to the rising cost of energy, their ability to reduce their consumption of such energy and the effect of the measures set in place by the authorities. As will become clear later on in this section, there is significant disparity across different types of household in all these respects.

The ex ante exposure of Spanish households to the rising cost of energy is particularly marked among lower-income households. Over recent quarters, various Banco de España papers have revealed this pronounced asymmetry in the initial exposure of Spanish households to the energy crisis. For example, based on the household expenditure patterns recorded in the Household Budget Survey (HBS), [García-Miralles \(2023\)](#) shows that lower-income households devote a larger share of their total spending to electricity and food consumption.³⁵ For its part, natural gas consumption is relatively similar across households, regardless of income level, while higher-income households account for a larger share of spending on fuel.

33 [Alonso, López, Santabárbara and Suárez-Varela \(2022\)](#).

34 Using a general equilibrium sectoral model that incorporates imperfect substitution between factors of production –including energy– and an endogenous stock of capital. For more details, see [Quintana \(2022\)](#).

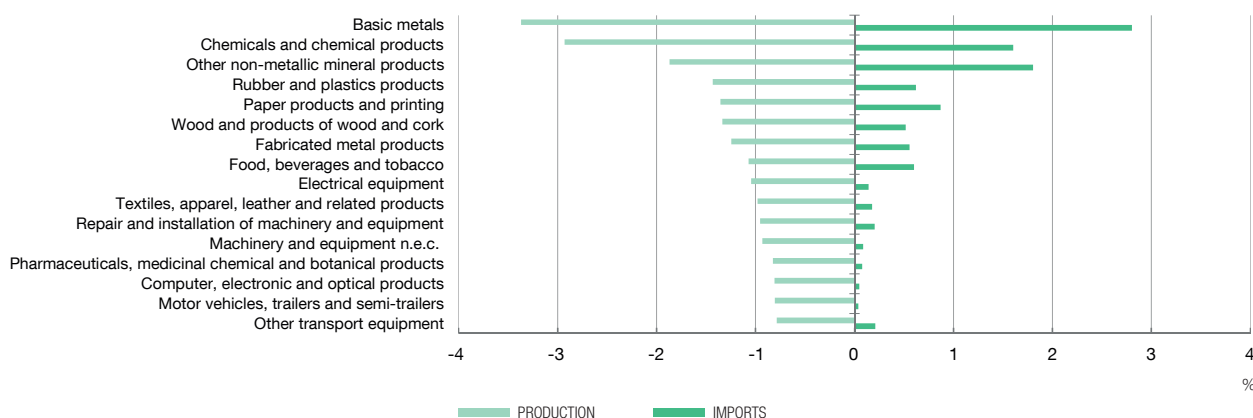
35 See [Basso, Dimakou and Pidkuyko \(2023\)](#) and Chart 3.16 of [Banco de España \(2022a\)](#)

Chart 4.6

POSSIBLE EFFECTS OF A SUSTAINED INCREASE IN ENERGY COSTS IN THE EU

Higher energy commodity prices entail a considerable increase in producer costs in the EU, especially in the most energy-intensive sectors.

CHANGE IN PRODUCTION AND SUBSTITUTION OF IMPORTS IN THE EU IN RESPONSE TO AN ENERGY PRICE SHOCK (a)



SOURCE: Banco de España.

a A permanent 30% increase in the EU's energy costs compared with those of the rest of the world is considered. The simulations are implemented in a sectoral general equilibrium model that incorporates the imperfect substitution of factors of production (including energy).



As a result of these different spending habits and the differing extents to which the prices of all these goods have risen over recent quarters, lower-income households are estimated to have experienced a considerably higher rate of inflation over that period than their higher-income counterparts.

This disparity can also be seen in terms of the households with disproportionately high energy expenditure. The EU Energy Poverty Observatory (EPOV) defines such households as those whose share of energy expenditure in income is more than twice the national median share.³⁶ An analysis of data from the Banco de España's Spanish Survey of Household Finances (EFF) suggests that, at end-2020, 2.8 million Spanish households found themselves in such a situation.³⁷ This represents around 15% of Spanish households, a relatively small share when compared with other European countries (e.g. 20% in France and 17% in Italy and Germany). A more detailed breakdown reveals that the Spanish households with disproportionately high energy expenditure can essentially be found in the lowest 30% of the income distribution (see Chart 4.7.1). Moreover, these households spend a larger share of their income on staple goods, a category that includes food, utilities and payments related to their primary dwelling (see Chart 4.7.2).

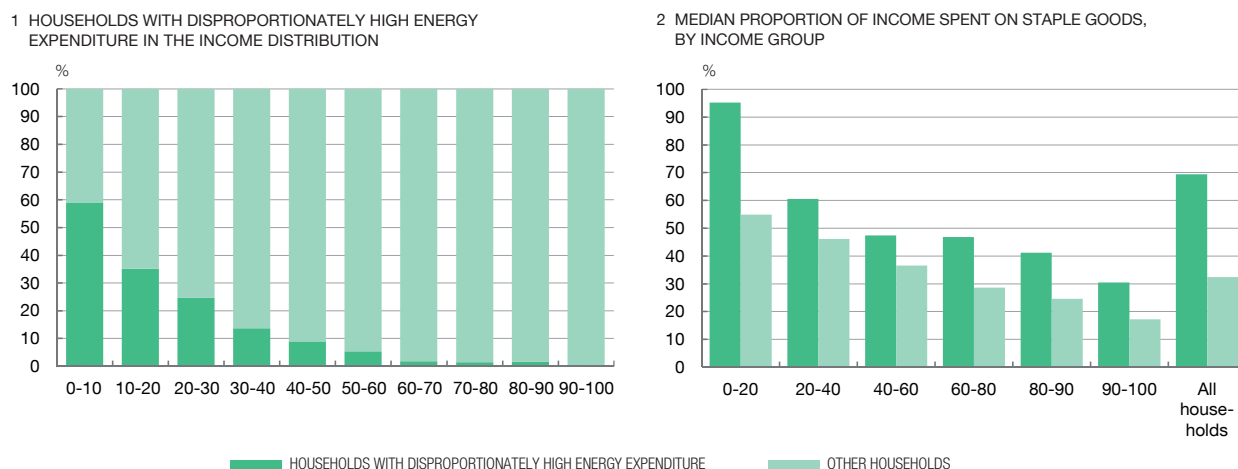
³⁶ This metric is one of the four official indicators used to characterise situations of energy poverty by the EPOV. The other three are hidden energy poverty (i.e. the share of households whose absolute energy expenditure is below half the national median), the ability to keep a home adequately warm and arrears on utility bills. See [Energy Poverty Advisory Hub](#) (European Commission).

³⁷ Energy expenditure is proxied in the EFF by the total expenditure on electricity, water, gas, telephone services and internet.

Chart 4.7

HOUSEHOLDS WITH DISPROPORTIONATELY HIGH ENERGY EXPENDITURE

Households with disproportionately high energy expenditure are mostly in the three lowest deciles of the income distribution and spend a higher proportion of their income on staple goods.



SOURCE: Banco de España, drawing on the Spanish Survey of Household Finances 2020.



The ability of Spanish households to adapt their demand for energy in the short term is relatively limited, both in historical terms and in the current environment. Indeed, estimates of how sensitive the demand for energy is to prices suggest that such demand is fairly inelastic in Spain. Specifically, based on historical data, the price elasticity of short-term demand in Spain can be put at -0.20 for diesel and electricity, and -0.24 for natural gas.³⁸ Nonetheless, on more recent data, referring to the current energy crisis, [Lacuesta, López Rodríguez and Matea \(2022\)](#) find that electricity and vehicle fuel consumption in Spain fell even less in 2022 H1 than would be suggested by the historical price elasticities estimated in previous research. This state of affairs could stem from several factors. It could, for example, be the result of an expectation on the part of households that price rises are likely to be relatively short-lived, of the compensatory measures set in place by the authorities, and of the existence of considerable savings built up during the pandemic, which have softened the impact of price rises on consumption. In any event, the ability of Spanish households to adapt their energy demand is likely to vary across different types of household – particularly in terms of income.³⁹

Lastly, certain decisions adopted by the authorities have also influenced the impact of the energy crisis on Spanish households in recent quarters. Although lower-income households have been found, ex ante, to be more exposed than other households to rising energy prices, various measures approved by the authorities appear to have mitigated, at

³⁸ [Labandeira, Labeaga and López \(2016\)](#) (only available in Spanish).

³⁹ [Cahana, Fabra, Reguant and Wang \(2022\)](#) detail some of the channels through which this can happen.

least partially, this greater initial adverse impact.⁴⁰ These notably include the increases (in varying amounts) approved in 2022 to the national minimum wage, to contributory and non-contributory pension benefits, to permanent disability benefits and to the minimum income scheme. All of these measures have a greater relative impact on the lower-income household cohort. For example:

The decision to cut VAT on food, electricity and gas, and the fuel subsidy. [García-Miralles \(2023\)](#) notes that the total budgetary cost of these measures (throughout their lifetime) would stand at around €9.6 billion. In terms of their distributive impact, the above article finds that, while the reduction in VAT on electricity, gas and food resulted in greater tax savings relative to total spending for lower-income households, the fuel subsidy led to higher relative savings for higher-income households. In any event, an €860 transfer targeting the most vulnerable households – particularly those found in the first three deciles of the income distribution – would have yielded levels of protection comparable to those obtained with such measures, but at a lower budgetary cost and without distorting price signals.

The €200 grant approved at end-2022 for households with low income and wealth levels.⁴¹ Estimates based on the EFF suggest that this measure could benefit around 3.6 million Spanish households, of which one-third face disproportionately high energy expenditure (see Chart 4.8.1). In this regard, with a view to improving the design of public policies, [Meyer and Sullivan \(2003\)](#) propose supplementing the information on income with data on the expenditure of the poorest households. This is because, for this cohort, expenditure measures tend to better capture their well-being than income measures. In any event, by income deciles, it is estimated that around one-half of the households found in the lowest 40% of the income distribution could be eligible for this grant (see Chart 4.8.2).

3.3 The sensitivity and adaptation of Spanish firms to the crisis

The energy expenditure of firms is highly heterogeneous in Spain, both across economic sectors and in terms of firm size.⁴² Specifically, according to the INE's Structural Business Statistics, passenger and goods transportation were the Spanish subsectors with the highest energy expenditure-to-turnover ratios in 2019 (see Chart 4.9.1). In these subsectors, fuel other than natural gas accounted for the lion's share of the energy consumed. Meanwhile, in industry, the most energy-intensive subsectors were the manufacture of cement, lime and plaster (with the second largest electricity expenditure across all sectors), ceramic building materials and refractory ceramic goods (the last two subsectors having the highest natural gas expenditure ratios). Elsewhere, in the energy-intensive sectors, the larger the firm, the lower their energy expenditure as a share of turnover tended to be (see Chart 4.9.2).

40 For more details on the measures adopted in Spain to support households and firms in response to the energy crisis, see Box 1.2 of this Annual Report.

41 Royal Decree-Law 20/2022 of 27 December 2022.

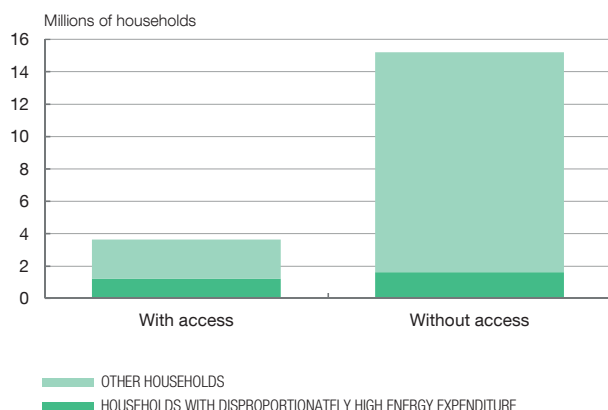
42 For a more detailed breakdown of this heterogeneity, see [Matea and Muñoz-Julve \(2022\)](#).

Chart 4.8

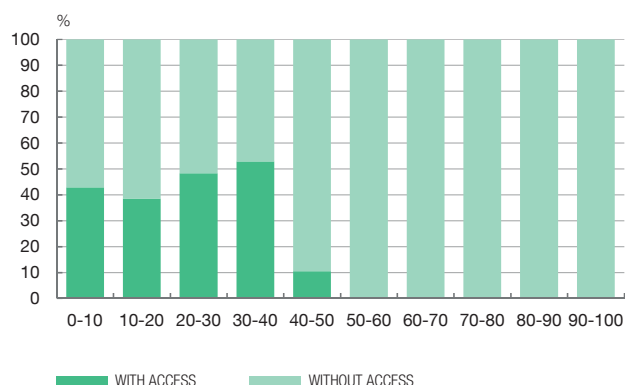
ACCESS TO THE €200 GRANT

Around 3.6 million households are eligible for the €200 grant to mitigate the effects of the energy crisis, although roughly 1.2 million of them have disproportionately high energy expenditure. Virtually all households that are eligible for this grant are in the lowest 40% of the income distribution.

1 HOUSEHOLDS WITH DISPROPORTIONATELY HIGH ENERGY EXPENDITURE AND ACCESS TO THE €200 GRANT



2 ACCESS TO THE €200 GRANT, BY INCOME DECILE



SOURCE: Banco de España, drawing on the Spanish Survey of Household Finances 2020.



These differences in energy intensity appear to have had a decisive influence on how the crisis has impacted the Spanish economy's different sectors and firms, and on how they have responded.⁴³ In 2022, Spanish firms' energy costs rose by an average of just over 30%, although the increase was significantly larger, in general terms, for firms in industrial subsectors and firms whose main source of energy was gas. Meanwhile, the percentage of firms reporting that rising energy costs had had an adverse impact on different real variables was relatively small (10% in the case of production, 15% in the case of turnover and 9% in the case of employment), albeit rising significantly in terms of the impact on certain key nominal variables. In particular, almost 40% of firms stated that higher energy costs had led them to raise their selling prices, while 46% reported narrowing profit margins.⁴⁴ Again, all these figures vary considerably depending on the energy intensity of each individual firm (see Chart 4.10).

In a bid to reduce their energy expenditure, firms primarily sought to renegotiate their supply contracts (46% of the firms surveyed) and to improve their energy efficiency (40% of the total). To a lesser extent, albeit still very significantly, almost 30% of firms reported having invested in renewable energies, while a further 7% stated that they have plans to do so at some point in 2023. Overall, these sorts of mitigation initiatives were implemented more frequently at firms that experienced a sharper rise in energy costs, at larger firms and at firms

⁴³ See Izquierdo (2023, forthcoming) for a more detailed analysis of the results obtained in the specific module on these aspects in the Banco de España Business Activity Survey (EBAE), prepared in February 2023. The latest results of this survey can be found in [Fernández-Cerezo and Izquierdo \(2023\)](#).

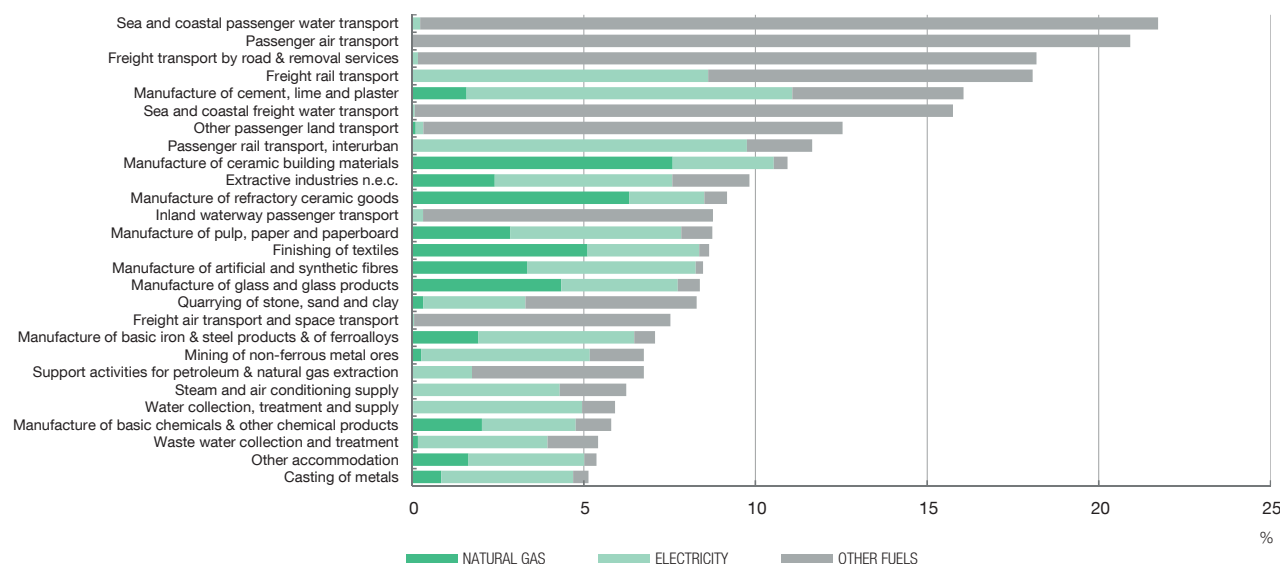
⁴⁴ In line with the results published by the INE on 20 April in relation to an energy module of the Business Confidence Indicator (BCI) (only available in Spanish).

Chart 4.9

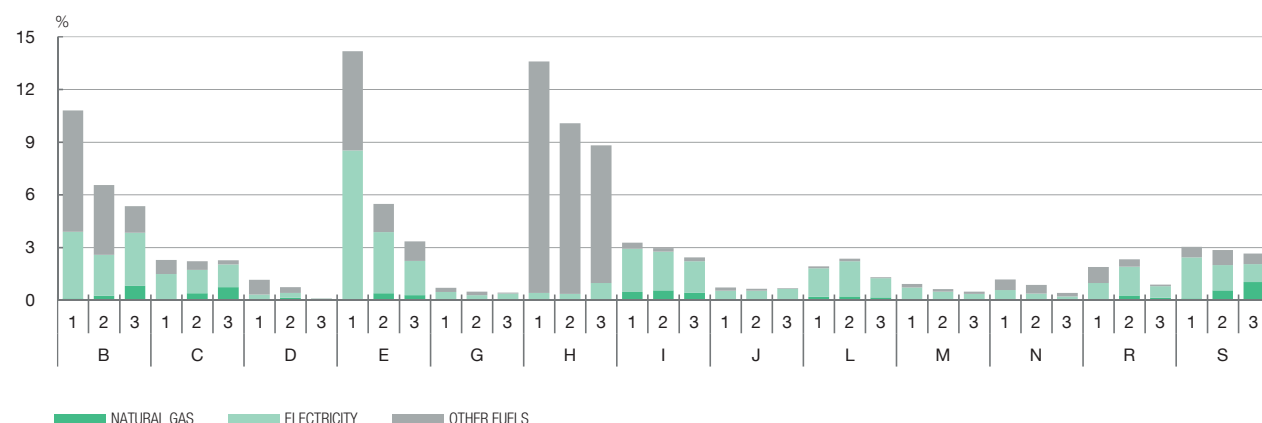
ENERGY EXPENDITURE IN 2019, BY TYPE OF ENERGY PRODUCT, SECTOR, SUBSECTOR AND FIRM SIZE

Energy expenditure in transportation is concentrated on fuels other than natural gas, whereas all other sectors are more dependent on electricity. However, this structure by sector masks large-scale heterogeneity by subsector. Within each subsector there are no major differences by firm size, although there are big differences in the energy-intensive subsectors.

1 RATIO OF ENERGY EXPENDITURE TO TURNOVER OF THE MOST ENERGY-INTENSIVE 3-DIGIT SUBSECTORS, BY ENERGY PRODUCT (a)



2 RATIO OF ENERGY EXPENDITURE TO TURNOVER OF 1-DIGIT SECTORS, BY ENERGY PRODUCT AND FIRM SIZE (b)



SOURCE: Banco de España, drawing on Estadística Estructural de Empresas 2019 (INE).

- a** 3-digit subsectors with a ratio of energy expenditure to turnover over 5%. "Manufacture of basic chemicals and other chemical products" corresponds to "Manufacture of basic chemicals, nitrogen compounds, fertilisers, plastics and synthetic rubber in primary forms".
- b** The numbers 1, 2 and 3 denote firms with 0 to 9 employees, 10 to 49 employees, and 50 or more employees, respectively. The letters denote as follows: B: extractive industries; C: manufacturing; D: electricity, gas, steam and air conditioning supply; E: water supply, sewerage, waste management and remediation activities; G: wholesale and retail trade and repair of motor vehicles and motorcycles; H: transportation and storage; I: accommodation and food service activities; J: information and communication; L: real estate activities; M: professional, scientific and technical activities; N: administrative activities and support service activities; R: arts, entertainment and recreation; and S: other service activities.



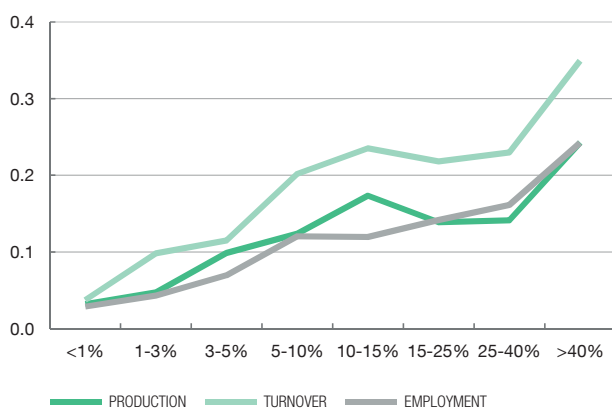
whose main energy source was gas. Meanwhile, various alternatives with a direct impact on production, such as temporary stoppages, replacing production with imported inputs or the substitution of domestic suppliers with foreign ones, were deployed by firms comparatively

Chart 4.10

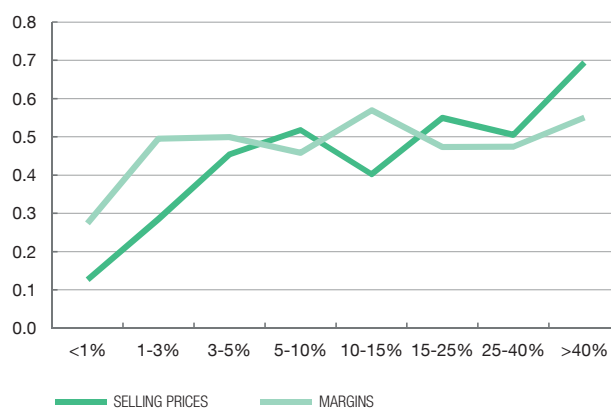
IMPACT OF THE ENERGY CRISIS

The energy crisis had most impact on prices and margins, while less than 10% of firms saw an impact on real variables, such as production and employment. However, the higher the proportion of energy costs, the higher the impact on these variables, so for firms with a higher proportion of energy costs the negative impact on their activity has been very significant.

1 PROPORTION OF FIRMS REPORTING A NEGATIVE IMPACT BY WEIGHT OF ENERGY COSTS



2 PROPORTION OF FIRMS REPORTING A NEGATIVE IMPACT BY WEIGHT OF ENERGY COSTS



SOURCE: EBAE, module on the impact of the energy crisis.



less frequently. Specifically, these types of measures were adopted by only 5%, 4% and 5%, respectively, of the firms surveyed, generally the most energy-intensive ones.

Smaller and less productive firms generally proved more vulnerable to the rise in energy costs.⁴⁵ Indeed, an analysis of the likelihood of the firms surveyed reporting an adverse impact on production reveals, even after controlling for firms' energy intensity and for the extent of the energy cost increase they experienced, that smaller and less productive firms were more likely to suffer an adverse impact on their production levels in 2022 (see Chart 4.11). Moreover, the impact on selling prices was greater at smaller firms and firms with higher debt levels, which is consistent with the fact that firms in a worse financial position are more likely to have passed rising energy costs on to their customers.

4 The challenges posed by the energy transition

Despite the notable adaptability demonstrated by the European economies over recent quarters, numerous challenges on a huge scale will have to be addressed decisively in the coming years if the structural vulnerabilities identified in the EU's energy framework are to be mitigated. For the most part, remedying such vulnerabilities goes hand in hand with

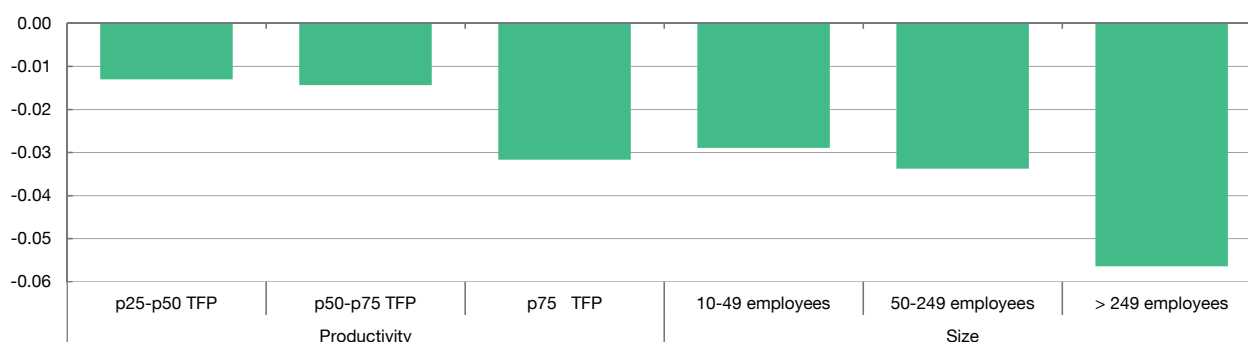
⁴⁵ Analysis conducted by combining the responses in the energy module of the EBAE with the available data on the Central de Balances Sheet Data Office integrated database.

Chart 4.11

IMPACT OF THE ENERGY SHOCK BY FIRM TYPE

Less productive and smaller firms were more likely to reduce their production in the face of higher energy costs.

CHANGE IN THE PROBABILITY OF THE ENERGY SHOCK HAVING A NEGATIVE IMPACT ON PRODUCTION (a)



SOURCE: EBAE, module on the impact of the energy crisis.

a On the estimated probability for a firm in the 25th percentile of productivity in its economic sector and with fewer than 10 employees. For this reference, the estimated probability of the energy shock having had a negative impact on production is 0.116. The regression controls for economic sector, firms' energy intensity, the increase in energy costs, the main energy source and the debt ratio.



pressing forward (perhaps even faster than was initially envisaged) with the EU's green transition towards a carbon-neutral economy. Some of the groundwork for this transformation process has already been laid. Noteworthy examples include the various initiatives falling under the European Green Deal and the NGEU and REPowerEU programmes.⁴⁶ In any event, and notwithstanding these initiatives, following through on the (highly ambitious) commitments undertaken remains a huge challenge.⁴⁷

Given the size of the challenges entailed by the EU's energy transition, all policy responses and economic agents must play a very active role in forging ahead with the process. In this regard, Chapter 4 of the Banco de España's Annual Report 2021 looks in detail at the role to be played (within the remit of their competences) by national governments, central banks and the financial system as a whole (among other key players) in driving the green transition. Following on from that analysis, the rest of this section delves deeper into two specific aspects: the challenges and opportunities entailed by (accelerating) the roll-out of renewable energies, and certain challenges posed by the transformation of EU's energy system in terms of funding and the public policy response, particularly at a supranational European level.

⁴⁶ For further details of these initiatives, see Banco de España (2022b), Dormido, Garrido, L'Hotellerie-Fallois and Santillán (2022), and L'Hotellerie-Fallois, Manrique and Marín (2023).

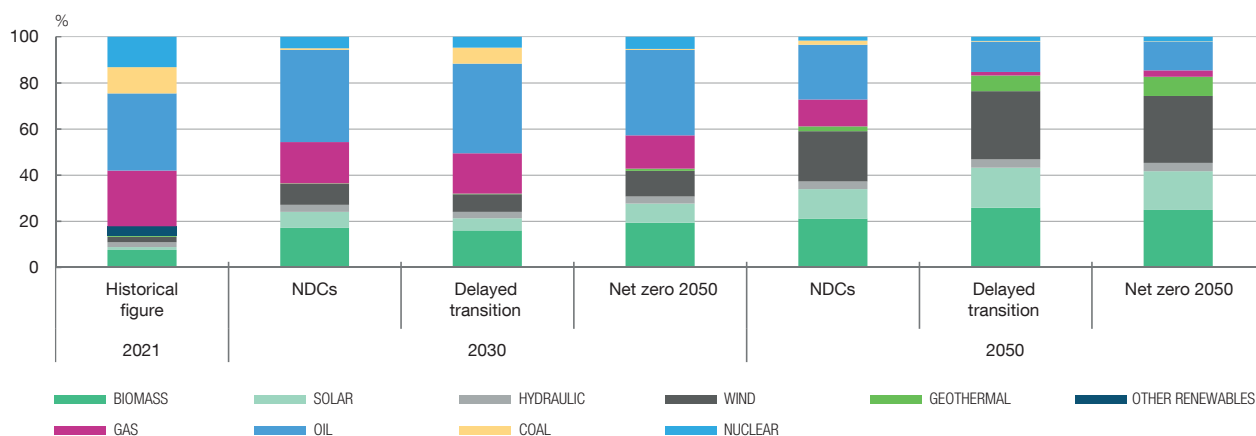
⁴⁷ Indeed, various international institutions have stated that the investment needed to achieve climate neutrality, both globally and at European level, would have to be doubled from its current level – for example, International Energy Agency (2021a) and IRENA (2021). Thus, the European instruments currently in place would only cover part of such stimulus in the short and medium term – see, for instance, Lenaerts, Tagliapietra and Wolff (2022).

Chart 4.12

NGFS ENERGY TRANSITION SCENARIOS

The change in energy consumption and production patterns stemming from the mitigation of climate change will help reduce the EU's dependency.

PRIMARY ENERGY CONSUMPTION IN THE EU, BY SOURCE (a)
(NGFS SCENARIOS)



SOURCES: Eurostat, IIASA and NGFS.

a Historical figure based on gross available consumption according to Eurostat's energy balance, excluding secondary energy sources. The three scenarios are from the REMIND-MAGPIE model of the IIASA NGFS climate database. "Other renewables" includes additional renewables according to Eurostat's Standard International Energy product Classification.



4.1 Promoting renewable energies: challenges and opportunities

Reducing the EU's external energy dependency and the green transition will require a large-scale deployment of renewable energy sources (which have higher levels of domestic production) and additional energy efficiency improvements over the coming decades. By way of illustration, Chart 4.12 shows how demand for energy would change in the EU at the end of this decade if renewable energies were boosted in line with the green transition scenarios envisaged by the Network for Greening the Financial System (NGFS). In particular, renewable energy sources, which in 2021 accounted for 19% of the EU's total primary energy consumption, would have to represent between 32% and 43% of such consumption in 2030, depending on how ambitious the climate goals are.⁴⁸

The promotion of renewable energies could represent a major opportunity for the Spanish economy: Spain has the second highest onshore wind power generation potential and the highest solar power generation potential in the EU (see Chart 4.13.1). Among other factors, this is due to its geographical location, its weather conditions and the availability of land for facilities. In this connection, the [Integrated National Energy and Climate Plan 2021-2030](#) (INECP) envisages that between 2015 and 2030 Spain's installed wind power

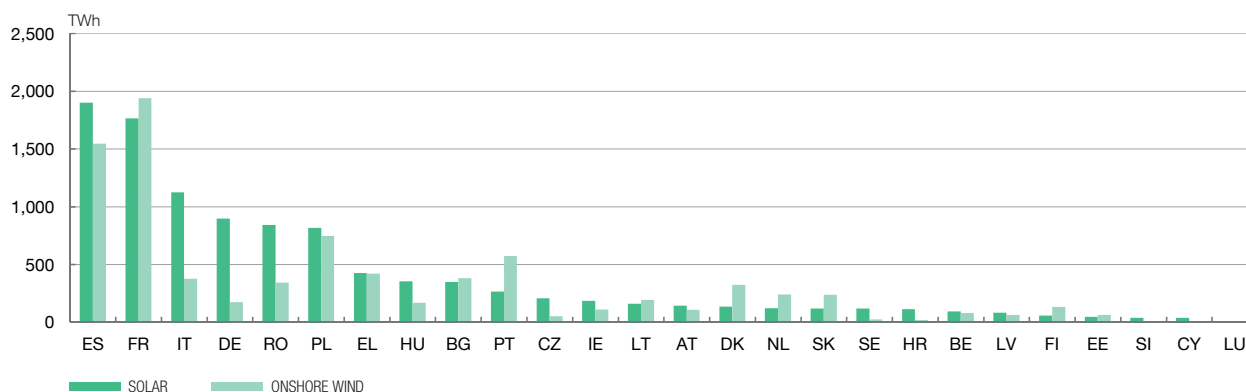
48 The NGFS has prepared three illustrative scenarios (see also, [Monasterolo, Nieto and Schets \(2023\)](#)): (i) the "Net Zero 2050" scenario, which assumes that a gradual application of mitigation policies will reduce global warming to 1.5°C by 2100 relative to pre-industrial levels; (ii) the "Delayed Transition" scenario, with the same goal, but with a more delayed application of mitigation policies; and (iii) the "Nationally Determined Contributions" (NDCs) scenario, the least ambitious one, which reflects the application of the current national commitments under the Paris Agreement framework.

Chart 4.13

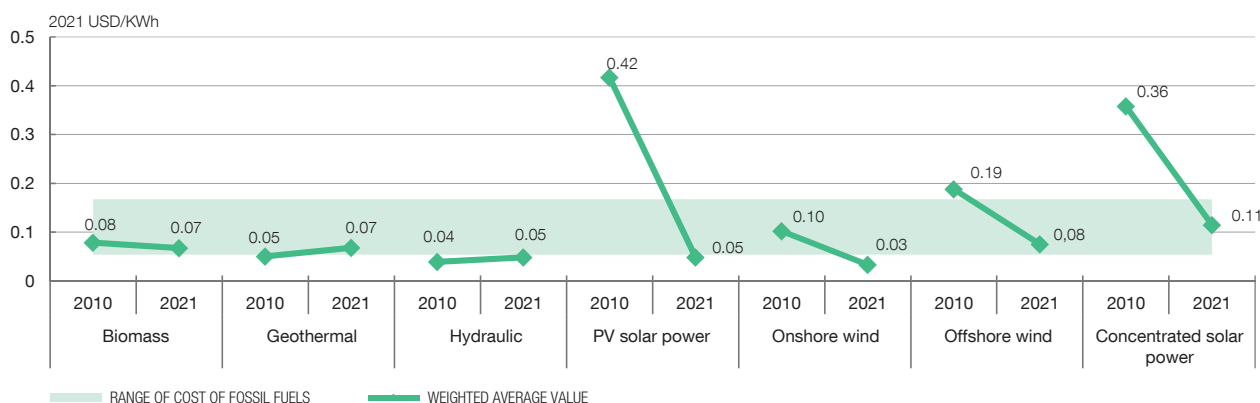
THE EFFICIENCY OF RENEWABLES AND THE COMPARATIVE SITUATION OF SPAIN

The cost of renewable energy generation has fallen considerably over the last decade. In this situation, the Spanish economy's renewable energy potential would be very high compared with Europe, due to its favourable geographical and weather conditions.

1 RENEWABLE ENERGY POTENTIAL (a)



2 LEVELISED COST OF ELECTRICITY FROM RENEWABLE ENERGY GENERATION TECHNOLOGIES, 2010-2021 (b)



SOURCES: International Renewable Energy Agency and Joint Research Centre (ENSPRESO).

- a The ENSPRESO dataset provides technical wind, solar and biomass potentials, based on geographical location scenarios. For wind, resource evaluation also considers setback distances and wind speed. For solar, potentials are derived from irradiation data and available area for solar applications.
- b The levelised cost of electricity is a measure of the average cost of electricity generation for a generator over its lifetime. It is used to compare the costs of the different electricity generation methods.



capacity will increase from 23 GW to 50 GW and its photovoltaic solar capacity will do so from 5 GW to 40 GW.⁴⁹

Spain also has firms that produce an important portion of the components required to install wind and solar power technologies. In particular, Spain is home to global leading wind turbine manufacturing firms, with annual exports of around €500 million, making it the third EU economy by export volume, after Germany and Denmark.⁵⁰ The solar tracker

⁴⁹ At 31 December 2022 Spain's installed wind power and photovoltaic solar capacity stood at 30 GW and 20 GW, respectively.

⁵⁰ Eurostat provides information on wind turbine exports. In 2021 Germany exported €2,084 million, Denmark €1,620 million and Spain €500 million.

manufacturing industry in Spain is also among the global leaders. However, Spain does not have firms that manufacture photovoltaic panels – which account for around 35% of the cost of a photovoltaic plant and are largely imported from Asia.⁵¹

In any event, the deployment of renewable energies will also entail considerable challenges, for instance in technological development.⁵² In recent years, wind and photovoltaic solar power have become substantially more competitive and their generation costs are currently lower than those of new fossil fuel energy generation plants (see Chart 4.13.2). Nonetheless, achieving the medium-term decarbonisation goals assumed will require further advances in technologies that are currently in the early stages of development or are not yet cost competitive.⁵³ This is the case, for instance, of key products and technologies such as batteries, green hydrogen, and carbon capture, use and storage systems.

The energy transition will also lead to a substantial increase in the demand for certain very specific raw materials. The European Commission estimates that in 2030 demand for rare earths (used in the manufacture of wind turbines and fuel cells) and lithium and cobalt (used in the manufacture of lithium-ion batteries) will be five times higher than now.⁵⁴ Similarly, according to the green transition scenarios envisaged by the NGFS, total demand for critical raw materials will be up to seven times higher than at present.⁵⁵

In the absence of supply-side adjustments, this greater demand for certain raw materials could give rise to price pressures, bottlenecks and new external dependencies for the EU. Many raw materials that are critical for the green transition are concentrated in a few producing countries: China, the Democratic Republic of Congo and Australia in extraction, and China in refining.⁵⁶ A greater demand for these products by the EU could, therefore, increase its dependency on external trading partners, with potential geopolitical implications. To mitigate these risks, the European Commission announced a set of actions, within the framework of the Open Strategic Autonomy, to enhance European economies' resilience and reduce strategic dependencies on key products. To this end, in March 2023, the European Commission proposed the Critical Raw Materials Act,⁵⁷ to ensure the EU's access to the supply of critical raw materials over the coming decades – through trade agreements with some of the main producing countries – while controlling the transformation processes of these materials, which are needed for industrial uses.

⁵¹ [UNEF \(2022\)](#).

⁵² Another challenge is that some investments in renewable energies can generate negative externalities in the places they are deployed, – for instance, by causing biodiversity loss – without generating local benefits, e.g. in terms of creating stable jobs in the affected municipalities. Mitigating this asymmetry may require some kind of compensatory public policy. See [Fabra, Gutiérrez, Lacuesta and Ramos \(2023\)](#).

⁵³ [International Energy Agency \(2023\)](#).

⁵⁴ [European Commission \(2020\)](#) and [International Energy Agency \(2021b\)](#). Other key raw materials in the manufacture of green technologies are nickel, manganese and graphite.

⁵⁵ [Miller, Dikau, Svartzman and Dees \(2023\)](#).

⁵⁶ [International Energy Agency \(2021b\)](#).

⁵⁷ [European Commission \(2023\)](#).

The transition towards a greener and more sustainable economy may cause sharp changes in the demand for labour. According to Eurostat, between 2014 and 2021 employment in renewable energy generation in Spain practically tripled, to 52,000 jobs. In the same period, total employment in the environmental goods and services sector increased by 65%, to 541,000 jobs. Despite these developments, the green transition will require many more of these jobs, both in Spain and globally. Some studies⁵⁸ suggest that the training opportunities needed to fill these green vacancies are not growing fast enough and this could ultimately slow down, and even increase the cost of, the energy transition process.

Lastly, the promotion of renewable energies does not take away from the importance of developing better energy interconnection infrastructure among EU Member States.

It is still essential to enhance integration between energy generating areas and the main areas of consumption, to create energy networks that are more flexible and interconnected across the different systems, to improve local energy generation and storage capacities, and to avoid the energy isolation of some regions, such as the Iberian Peninsula. According to European Commission data,⁵⁹ the completion of the European electricity infrastructure interconnection projects currently under way would reduce wholesale electricity prices by 2.5% on a permanent basis. It would also help to ensure the security of energy supply and to substantially mitigate the negative impact on the EU economies as a whole that would derive from potential future adverse energy supply shocks, such as that triggered by Russia's invasion of Ukraine in recent quarters.

4.2 Funding the green transition and other public policy challenges

To press ahead with the economy's energy transformation, public policies must play a leading role. As detailed in [Chapter 4 of the Banco de España's Annual Report 2021](#), these policies must act decisively across multiple spheres. For example, through green taxation, an aspect in which the Spanish economy, compared with European ones, has ample room for manoeuvre. This would enable economic agents to better internalise the climate-related consequences of their decisions. Also, by boosting public investment and innovation, both being key instruments for accelerating the development of new green technologies and which, in the current situation, may benefit from European programmes that are already in place, such as NGEU and REPowerEU.⁶⁰ In any event, it is essential for public policies to attempt to provide certainty and a stable operational framework for economic agents, to bear in mind the considerable asymmetric impact which the green transition implies for various types of households, firms and sectors, and to pursue an ongoing assessment of the different actions deployed (see Figure 4.1).




⁵⁸ See, for example, [Linkedin \(2022\)](#).

⁵⁹ [European Commission \(2022b\)](#).

⁶⁰ Within the NGEU programme, part of the funds associated with the Recovery and Resilience Facility (RRF) must be dedicated to green R&D&i activities. In Spain, this percentage is 8% of the total funds available (slightly above that required by the European authorities) and includes initiatives such as the PERTE for renewable energies, renewable hydrogen and storage.

Figure 4.1

THE ROLE OF KEY PLAYERS IN THE FACE OF THE GREEN TRANSITION (a)

 GOVERNMENTS	 FINANCIAL SECTOR	 CENTRAL BANKS
<ul style="list-style-type: none"> — Increasing green taxation and boosting public investment. — Deploying compensatory measures to mitigate adverse effects on the most vulnerable groups. — Enhancing the regulation of economic activity, setting standards on environmental issues and efficiency gains. — Providing economic agents with certainty and a stable operational framework. 	<ul style="list-style-type: none"> — Efficiently channelling the huge volume of funds that needs to be invested in the green transition. — Properly assessing its own and other economic agents' exposure to climate risks. — Developing and harmonising new financial instruments. 	<ul style="list-style-type: none"> — Incorporating climate considerations into their monetary policy operational frameworks. — Monitoring the risks to financial stability posed by climate change and the green transition. — Enhancing the regulation and prudential supervision of climate risks.

SOURCE: Banco de España.

a The leading role played by public policies in the green transition is discussed in detail in Section 4 of Chapter 4 of the Banco de España's *Annual Report 2021*. Section 5 of Chapter 4 addresses the different aspects of the key role played by the financial system, while Section 6 analyses the role played by central banks, within their respective remits.

These actions are especially important at European level. Both the COVID-19 pandemic and the war in Ukraine have proven the importance of responding jointly within the EU to the risks and threats that are common to all Member States, even though their effects may occasionally be uneven across countries. Within the framework of Europe's joint response to the current energy crisis, it is essential to continue reinforcing certain key aspects.

The European policy response to the current crisis must be agile, provide certainty and ensure that the green transition does not lead to a structural loss of competitiveness for the European economies. Along these lines, the Green Deal Industrial Plan, which was recently presented by the European Commission, seeks to enhance the competitiveness of Europe's industry and, as one of the pillars it is based on, addresses the creation of a simplified, faster and more predictable regulatory framework.⁶¹ In any event, avoiding a loss of competitiveness in the EU vis-à-vis the rest of the world during the green transition process will be no easy task. Especially in a setting in which, at the same time, some of the main world economies have already started to invest massively in green innovation, such as the United States with the approval of the Inflation Reduction Act, while others show a relatively limited climate ambition, which may also give them a certain competitive advantage in the short term.

⁶¹ [The Green Deal Industrial Plan, European Commission.](#)

Many highly diverse initiatives are being considered to reduce the risk of delocalisation of European industry, but it will be necessary to wait until the final proposals have been drawn up and to diligently assess their ability to efficiently fulfil the proposed goals.

This broad range of initiatives includes, in addition to some of those already mentioned, the review of the Emissions Trading System, the creation of a carbon border adjustment mechanism and the plans to reform the European electricity market design. Generally speaking, overall, the aim is for the cost of energy – which has recently increased more in the EU than in the other main world economies – not to become a structural competitive disadvantage for European firms.

In addition, it is essential for European policies to contribute to maintaining a level playing field within the EU. Although, as has been mentioned throughout this chapter, a very important part of the response to the energy crisis has been coordinated at European level – such as in the case of joint gas purchases and reductions of consumption – and has had a supranational component from a budgetary viewpoint, public actions have been primarily national since the outbreak of the crisis. This has been reflected in the heterogeneity of the measures adopted, in terms of design, scope and cost. In this connection, the existence of highly differing budgetary headroom between countries in a setting of a more relaxed enforcement of State aid regulations could distort the functioning of the European single market and introduce diverging economic dynamics among Member States.

Among other actions, this will require more decisive advances in the common funding of public assets at EU level. Just as international coordination in the field of regulation is essential to face the green transition, so too is the use of joint investment coordination and funding instruments. These instruments facilitate the creation of synergies, improve efficiency and help countries address the investment gap in new technologies. Some of these mechanisms, such as NGEU and REPowerEU, are already in place. However, the volume of investments that will be needed in the coming years to address the challenges associated with the energy transformation goes well beyond the amounts envisaged in such programmes and the domestic capacity of many European economies.⁶² Among other actions, this will call for further progress in the development of a permanent fiscal capacity at the European level to finance these types of investments (in line with the European Commission's proposal for a European Sovereignty Fund)⁶³ which will ultimately become European public assets (see Chapter 2 of this Annual Report for further details about the challenges pending in the configuration of the European institutional framework).

In any event, without the active involvement of the financial system, it will be impossible to efficiently channel the large volume of funds needed to carry out the green transition. Financial institutions, central banks and public authorities – within the scope of their mandates – must continue to collaborate and progress decisively in the development of sustainable

62 The RRF, a key instrument of NGEU, aspires to use €724 million in investment projects and structural reforms mainly to fast-forward the green and digital transitions. Until 2026, these funds would cover around 25% of the EU's annual investment needs under the most ambitious scenario (zero emissions by 2050).

63 [Conclusions of the special meeting of the European Council \(9 February 2023\)](#).

finances worldwide (see Figure 4.1 and, for further details, [Chapter 4 of the Banco de España's Annual Report 2021](#)). In the European context, these initiatives should be supplemented with a greater boost from the capital markets – completing the steps pending in the EU capital markets union – to facilitate innovative firms' access to finance. In this respect, developing the venture capital markets further would foster the growth of private sector firms capable of coming closer to the technological frontier. Occasionally, such development may stem from public-private collaboration, following the example of the EIC Accelerator, which combines direct grants with access to venture capital funds.

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ENERGY INTENSITY AND CARBON INTENSITY IN SPAIN AND IN EUROPE

The trends in an economy's energy intensity and carbon intensity are key to understanding the behaviour of its CO₂ emissions and to assessing its ability to reduce them with the smallest possible impact on the level of economic activity. The "Kaya identity"¹ shows how these variables are related:

$$\text{CO}_2 = \text{Population} \times \underbrace{\frac{\text{GDP}}{\text{Population}}}_{\text{Economic activity}} \times \underbrace{\frac{\text{Energy}}{\text{GDP}}}_{\text{Energy intensity}} \times \underbrace{\frac{\text{CO}_2}{\text{Energy}}}_{\text{CO}_2 \text{ per unit of energy}}$$

$$\frac{\text{CO}_2}{\text{GDP}} \rightarrow \text{Carbon intensity}$$

According to this identity, the volume of an economy's CO₂ emissions can be broken down into several factors: population, level of activity (in particular, the level of GDP per capita) and carbon intensity, which is defined as the amount of CO₂ the economy emits per unit of output produced.

Historically, the first two variables of the Kaya identity (population and the level of activity) have been the main drivers of an economy's greenhouse gas emissions (i.e. the higher their values the greater the emissions). However, in recent decades, some (mainly developed) economies have managed to gradually loosen the link between their economic growth and their CO₂ emissions (a process known as "decoupling") by reducing their carbon intensity.

This box analyses carbon intensity trends in Spain and in Europe over recent decades. It is helpful for this purpose to break down carbon intensity into two new variables. First of all, energy intensity, which is defined as the amount of energy the economy consumes per unit of GDP. A reduction in this variable can thus be interpreted as an improvement in the economy's aggregate level of energy efficiency. And second, the amount of CO₂ emissions per unit of energy consumed, which declines, for example, when progress is made in decarbonising energy generation.

As seen in Chart 1, between 1991 and 2020, global CO₂ emissions increased, essentially as a result of the development of emerging market economies (such as China and India). In the United States, Europe and Spain, meanwhile, emissions fell. In these economies, emission reductions were compatible with economic growth and

were driven by a decline in carbon intensity. These emission reductions stemmed from an improvement in energy efficiency and a decrease in CO₂ emissions per unit of energy consumed, the contributions of these two factors being practically identical in the case of the Spanish economy.

To better understand these dynamics, Chart 2 shows, at sector level, carbon intensity and its two main components for Spain and for the aggregate of the four main euro area economies, during the period 2000-2020.² As seen in the chart, carbon intensity fell during this period in all the sectors considered. That said, the magnitude and composition of this fall varied considerably from one sector to another.

In Spain, there were significant falls in carbon intensity in services and manufacturing, which were essentially driven by the decarbonisation of their energy mix. In transport, by contrast, the reduction in carbon intensity was more modest and stemmed solely from energy efficiency improvements.

This sectoral divergence appears to be related to the composition of energy demand in each subsector and, in particular, its degree of electrification. As seen in Chart 3, the electrification of transport is limited both in Spain and

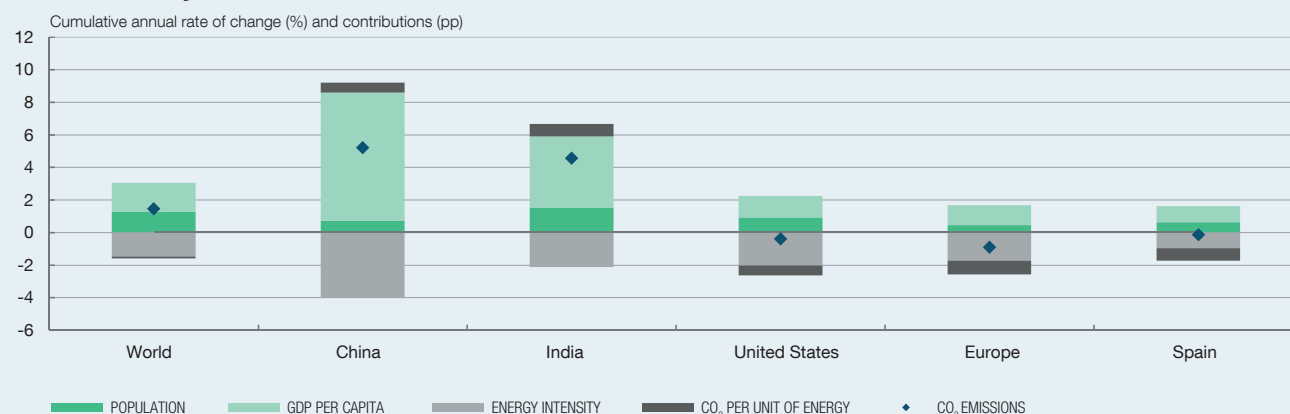
1 Y. Kaya and K. Yokoburi. (1997). *Environment, energy, and economy: strategies for sustainability*. United Nations Univ. Press.

2 Data at this specific sector level are only available for these countries from 2000 onwards.

Box 4.1

ENERGY INTENSITY AND CARBON INTENSITY IN SPAIN AND IN EUROPE (cont'd)

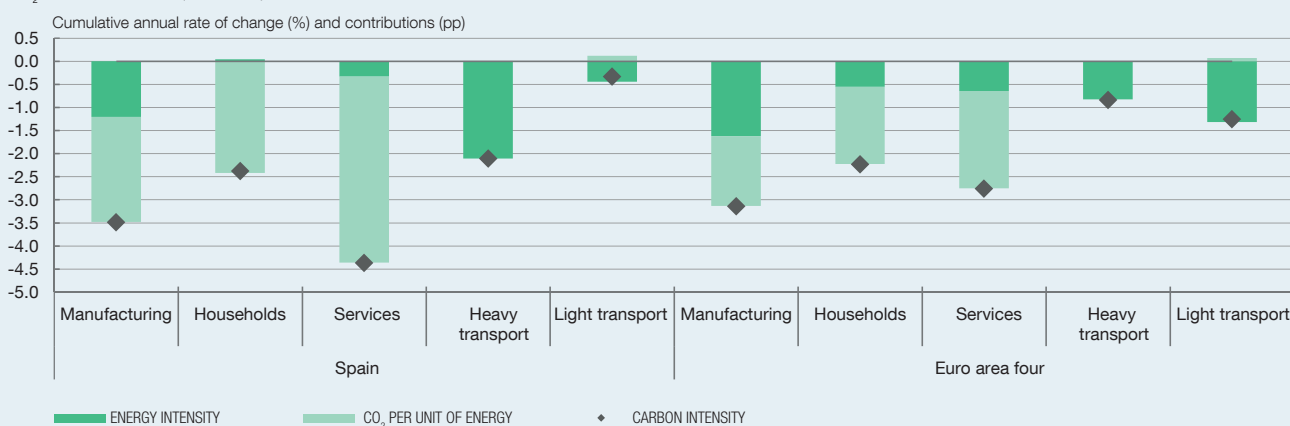
Chart 1

KAYA IDENTITY: DETERMINANTS OF CO₂ EMISSIONS AND THE ROLE OF ENERGY EFFICIENCY**CONTRIBUTION TO CO₂ EMISSIONS GROWTH (1991-2020) (a)**

SOURCE: International Energy Agency (Greenhouse Gas Emissions from Energy, 2022).

a The Europe aggregate refers to those EU countries that belong to the OECD.

Chart 2

SECTORAL CHANGES IN CARBON INTENSITY IN SPAIN AND IN THE EURO AREA FOUR (2000-2020)**CO₂ PER UNIT OF GDP (2000-2020) (a)**

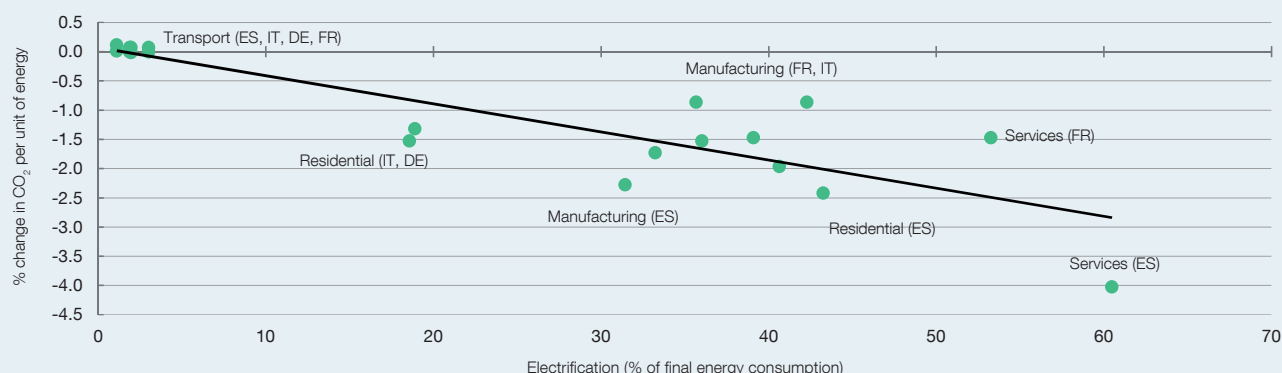
SOURCE: International Energy Agency (Energy Efficiency Indicators, 2022).

a In Italy, the carbon intensity data for the services sector are only available up to 2019. The euro area four aggregate is composed of Spain, Italy, France and Germany, weighted by their respective shares in the total emissions of the aggregate for 2019. The CO₂ indicator per unit of energy is based on final energy consumption data.

ENERGY INTENSITY AND CARBON INTENSITY IN SPAIN AND IN EUROPE (cont'd)

Chart 3

DEGREE OF ELECTRIFICATION OF ENERGY DEMAND AND DECARBONISATION OF THE ENERGY MIX IN SPAIN AND THE EURO AREA FOUR

CO₂ PER UNIT OF ENERGY AND DEGREE OF ELECTRIFICATION (a)**SOURCES:** International Energy Agency (Energy Efficiency Indicators, 2022) and Eurostat.

a Data on CO₂ emitted per unit of energy for the residential, manufacturing, services and transport (distinguishing between heavy and light transport) sectors in Spain, Italy, Germany and France, for the period 2000-2020, are used. For the degree of electrification, information on the final consumption of economic agents, obtained from Eurostat's energy balances for 2020, is used.

in the main European countries, and this appears to have hampered the decarbonisation of their energy consumption over recent decades. By contrast, in the residential sector and in services (and, to a lesser extent, in manufacturing), the higher share of electricity in energy demand appears to have facilitated the decarbonisation of energy consumption during the period analysed.

At any rate, it should be noted that, when composition effects are taken into account, i.e. the share of each sector in the economy's productive system, and how it has changed in recent years, transport's contribution to the reduction in carbon intensity in Spain over the period analysed has been very significant, given the importance of this sector in Spain's total CO₂ emissions.³

³ This box focuses on the factors behind changes in CO₂ emissions. A similar analysis, focusing on the determinants of changes in Spain's final energy consumption reveals that in recent decades the efficiency improvements at sector level (in transport, for example) and the shifts in the Spanish economy's productive system have made practically identical contributions to the reduction in final energy consumption in Spain.

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Cibeles frontage.

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Pablo Hernández de Cos, Governor of the Banco de España.

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Vulcan, the god of industry, fire and metals, depicted with his customary attributes, a blacksmith's hammer and an anvil, and a dented wheel in reference to modern machinery. Stained-glass window in the Banking Hall of the Cibeles headquarters (detail).

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An allegory of Abundance and Wealth, linked to the idea of security, permanence and solvency achieved through progress. Stained-glass window in the Banking Hall of the Cibeles headquarters (detail).

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Representation of Mercury, the god of cunning and commerce, of boundaries and of travelers who cross them, carrying the caduceus with two entwined serpents. Stained-glass window in the Banking Hall of the Cibeles headquarters (detail).

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The fountain of life, evocative of wealth, abundance and the rebirth and source of water, the fourth and final element of nature after those represented in the previous pictures (fire, earth and air). Stained-glass window in the Banking Hall of the Cibeles headquarters (detail).

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ACRONYMS AND ABBREVIATIONS

AEAT	State tax revenue service	IIP	International Investment Position
AIReF	Independent Authority for Fiscal Responsibility	IMF	International Monetary Fund
AMCESFI	Spanish Macroprudential Authority	INE	National Statistics Institute
APP	Asset Purchase Programme	IRENA	International Renewable Energy Agency
BCBS	Basel Committee on Banking Supervision	LTP	Loan-to-price ratio
BE	Banco de España	MCVL	Social security administrative labour records
BIS	Bank for International Settlements	MREL	Minimum requirement for own funds and eligible liabilities
BLS	Bank Lending Survey	MTBE	Quarterly Model of the Banco de España
CBQ	Central Balance Sheet Data Office Quarterly Survey	NCBs	National central banks
CBSO	Central Balance Sheet Data Office	NDCs	Nationally determined contributions
CCR	Central Credit Register	NDER	Narrowly defined effective rate
CCyB	Countercyclical capital buffer	NFCs	Non-financial corporations
CNE	Spanish National Accounts	NGEU	Next Generation EU
CNMV	National Securities Market Commission	NGFS	Network for Greening the Financial System
CPI	Consumer Price Index	NPISHs	Non-profit institutions serving households
DFR	Deposit facility rate	NPLs	Non-performing loans
DGS	Deposit guarantee scheme	OECD	Organisation for Economic Co-operation and Development
EBA	European Banking Authority	OIS	Overnight index swap
EBAE	Banco de España Business Activity Survey	PELTROs	Pandemic emergency longer-term refinancing operations
ECB	European Central Bank	PEPP	Pandemic Emergency Purchase Programme
EFF	Spanish Survey of Household Finances	PIAAC	Programme for the International Assessment of Adult Competencies
EFSF	European Financial Stability Facility	PMI	Purchasing Managers' Index
EIB	European Investment Bank	PPP	Purchasing power parity
EONIA	Euro Overnight Index Average	QNA	Quarterly National Accounts
EPA	Spanish Labour Force Survey	R&D&I	Research, development and innovation
ERTE	Furlough-like and short-time work schemes	REACT EU	Recovery Assistance for Cohesion and the Territories of Europe
ESCB	European System of Central Banks	RRF	Recovery and Resilience Facility
ESM	European Stability Mechanism	RTRP	Recovery, Transformation and Resilience Plan
ESRB	European Systemic Risk Board	SAFE	ECB Survey on the Access to Finance of Enterprises
€STR	Euro short-term rate	SGP	Stability and Growth Pact
ETS	Emissions trading system	SMA	Survey of Monetary Analysts (ECB)
EURIBOR	Euro Interbank Offered Rate	SMEs	Small and medium-sized enterprises
EUROSTAT	Statistical Office of the European Communities	SPF	Survey of Professional Forecasters (ECB)
FASE	Financial Accounts of the Spanish Economy	SRB	Single Resolution Board
FDI	Foreign direct investment	SRM	Single Resolution Mechanism
FSB	Financial Stability Board	SSM	Single Supervisory Mechanism
GDI	Gross disposable income	TFP	Total factor productivity
GDP	Gross domestic product	TPI	Transmission Protection Instrument
GFCF	Gross fixed capital formation	TLTROs	Targeted longer-term refinancing operations
GHG	Greenhouse gas	ULCs	Unit labour costs
GOP	Gross operating profit	UNEF	Spanish Solar Photovoltaic Association
GOS	Gross operating surplus	VAT	Value Added Tax
GVA	Gross value added	WIPO	World Intellectual Property Organization
HICP	Harmonised Index of Consumer Prices	WTO	World Trade Organization
ICO	Official Credit Institute		
IEA	International Energy Agency		
IGAE	National Audit Office		

COUNTRIES AND CURRENCIES

In accordance with the protocol order, the EU Member States are listed using the alphabetical order of the country names in the national languages.

BE	Belgium	EUR (euro)
BG	Bulgaria	BGN (Bulgarian lev)
CZ	Czech Republic	CZK (Czech koruna)
DK	Denmark	DKK (Danish krone)
DE	Germany	EUR (euro)
EE	Estonia	EUR (euro)
IE	Ireland	EUR (euro)
GR	Greece	EUR (euro)
ES	Spain	EUR (euro)
FR	France	EUR (euro)
IT	Italy	EUR (euro)
HR	Croatia	HRK (Croatian kuna)
CY	Cyprus	EUR (euro)
LV	Latvia	EUR (euro)
LT	Lithuania	EUR (euro)
LU	Luxembourg	EUR (euro)
HU	Hungary	HUF (Hungarian forint)
MT	Malta	EUR (euro)
NL	Netherlands	EUR (euro)
AT	Austria	EUR (euro)
PL	Poland	PLN (Polish zloty)
PT	Portugal	EUR (euro)
RO	Romania	RON (New Romanian leu)
SI	Slovenia	EUR (euro)
SK	Slovakia	EUR (euro)
FI	Finland	EUR (euro)
SE	Sweden	SEK (Swedish krona)
UK	United Kingdom	GBP (Pound sterling)
JP	Japan	JPY (Japanese yen)
US	United States	USD (US dollar)

CONVENTIONS USED

M1	Notes and coins held by the public + sight deposits
M2	M1 + deposits redeemable at notice of up to three months + deposits with an agreed maturity of up to two years
M3	M2 + repos + shares in money market funds and money market instruments + debt securities issued with an agreed maturity of up to two years
Q1, Q4	Calendar quarters
H1, H2	Calendar half-years
bn	Billions (10 ⁹)
m	Millions
bp	Basis points
pp	Percentage points
...	Not available
—	Nil, non-existence of the event considered or insignificance of changes when expressed as rates of growth
0.0	Less than half the final digit shown in the series