

# FINANCIAL STABILITY REPORT

Autumn

# 2021

BANCO DE **ESPAÑA**  
Eurosistema





# FINANCIAL STABILITY REPORT AUTUMN 2021

# 1

## RISKS LINKED TO THE MACRO-FINANCIAL ENVIRONMENT

- 1.1 Macroeconomic environment** 25
  - 1.1.1 Systemic and materially significant countries 25
  - 1.1.2 Spain 29
- 1.2 Financial markets and the real estate sector** 31
  - 1.2.1 Financial markets 31
  - 1.2.2 Spanish real estate market 34
- 1.3 Non-financial sectors** 37
  - 1.3.1 Non-financial corporations and households 37
  - 1.3.2 General government in Spain 41
  - 1.3.3 Financial flows vis-à-vis the rest of the world and the international investment position 43

# 2

## RISKS TO THE FINANCIAL SECTOR AND ITS RESILIENCE

- 2.1 Deposit institutions** 51
  - 2.1.1 Balance sheet structure, risks and vulnerabilities 51
  - 2.1.2 Profitability and solvency 60
  - 2.1.3 Forward-looking assessment of the Spanish banking system's resilience 66
  - 2.1.4 Deposit institutions' operational risks 75
- 2.2 Non-bank financial sector and systemic interconnections** 76
  - 2.2.1 Non-bank financial sector 76
  - 2.2.2 Systemic interconnections 79

# 3

## SYSTEMIC RISK AND PRUDENTIAL POLICY

- 3.1 Analysis of risk indicators and systemic vulnerabilities** 95
- 3.2 Regulatory developments relevant to financial stability** 102

### Annexes

- 1 Consolidated balance sheet** 117
- 2 Consolidated income statement** 118

## INDEX OF CHARTS

- 1 Business turnover by sector 14
- 2 Cumulative change in bank credit to non-financial business activity between December 2019 and June 2021 14
- 3 Simulated paths of public debt 15
- 4 A breakdown of the change in profit of the banking sector 15
- 5 FLESB stress tests. Impact on the CET1 ratio in the baseline scenario and adverse scenario 17
- 6 Cyclically adjusted PER 17
- 7 Deviation of term risk premium in the interest rate on 10-year public debt from its historical average and 10-year real interest rate 18
- 8 Manufacturing PMI: speed in supplier's delivery times 18
- 9 Credit-to-GDP gap and Output gap 19
- 10 Effect of the transition costs on credit impairment probabilities (PD) 19
- 1.1 The global economy continues to recover in 2021, but with downside risks deriving from uncertainty over the unfolding of the pandemic, the persistence of bottlenecks and a possible tightening of financial conditions 26
- 1.2 Higher inflation expectations exert upward pressure on interest rates in the emerging market economies, while credit loses momentum 28
- 1.3 The baseline forecasts for the Spanish economy envisage high dynamism at short term, although certain economic and health risks persist 30
- 1.4 Stock market indices have risen, sovereign debt yields have rebounded from August and sovereign and corporate risk premia have remained at low levels 32
- 1.5 Prices of risk-bearing financial assets are still high compared with some of their determinants 34
- 1.6 House sales and prices have accelerated significantly in 2021 to date, while average prices of commercial real estate showed some signs of recovery in Q2 36
- 1.7 Firms' sales and profitability have improved, albeit very unevenly across economic sectors 38
- 1.8 The economic situation of households also recovered in 2021 H1, with income, employment and expectations all improving, albeit unevenly by employment sector and income level, which also condition households' borrowing decisions 40
- 1.9 The Spanish budget deficit has declined in 2021, but it remains above its pre-pandemic level and the projected debt reduction up to 2023 is very limited 42
- 1.10 In 2021 H1, international investors returned to the Spanish government debt market and Spain's negative net international investment position declined 44
- 2.1 The volume of lending to the resident private sector remained stable over the last 12 months, largely due to the moderation in new loans with ICO guarantees 52
- 2.2 Lending to the corporate sector declined in 2021 H1, with different sectors showing more even behaviour than in 2020. In contrast, lending to households grew in the same period 53
- 2.3 The volume of NPLs continued to decline, although some signs of credit quality impairment and uneven behaviour across sectors were observed 55
- 2.4 The signs of deterioration in the credit quality of loans with expired moratoria remain and have intensified in the case of ICO-backed loans 56
- 2.5 The volume of assets held abroad by Spanish banks has fallen since the onset of the pandemic, partly as a result of the across-the-board appreciation of the euro and the divestment in the United States 57
- 2.6 In 2021, the stabilisation of monetary policy has continued to contribute, albeit less so than in 2020, towards improving interbank and wholesale funding conditions 59
- 2.7 The Spanish banking sector's profitability improved significantly in June 2021 compared with a year earlier. This was largely because of extraordinary items and lower impairment provisioning 61
- 2.8 The geographical distribution of Spanish banks' profit is approaching its pre-crisis level and composition. Meanwhile, the profitability of the European banking sector as a whole has improved, underpinned by the lower cost of risk 62
- 2.9 Provisioning charges in 2021 H1 fell to half the amount recognised in the same period of 2020. The decline was less steep in operations in Spain 63
- 2.10 Spanish banks maintain the cost-to-income ratio advantage over their European peers 64
- 2.11 The aggregate capital ratios of the Spanish banking sector increased slightly in 2021 H1 65

- 2.12 CET1 increased across the board, while the decline in RWAs mostly affected some significant institutions 66
  - 2.13 In the geographical areas where Spanish banks have significant presence, the baseline scenario envisages a widespread recovery, whereas the adverse scenario reflects a prolongation of the contraction triggered by the COVID-19 pandemic 69
  - 2.14 The banks with the largest international presence remain firmly resilient, even to the continued global downturn envisaged under the adverse scenario 70
  - 2.15 Other SSM banks would record relatively large impairments relative to their loss-absorbing capital. Nonetheless, the ending CET1 ratio is sound, partly owing to the favourable starting position and RWA reduction 71
  - 2.16 Institutions supervised directly by the Banco de España, which start with a high capital level and exposure to lower-risk assets, experience significant impairment. However, this is offset by provisions, capital generation and deleveraging under both scenarios 72
  - 2.17 ICO guarantees limit the impact on capital of loan losses. This is particularly true under the adverse scenario, which presents an uneven credit quality impairment relative to the baseline scenario across firms of different size and sector 73
  - 2.18 European banks show strong resilience under the adverse scenario of the EBA stress test, with better-than-average resilience for Spanish banks 75
  - 2.19 Operational risk losses have declined in recent years, but there is growing concern over the future costs of cyber risks 76
  - 2.20 Euro area investment fund capital inflows persisted in H1, with the maturity of their fixed-income portfolios rising slightly since the onset of the crisis 78
  - 2.21 The level and structure of banks' direct interconnections with other sectors through their assets and liabilities have not been significantly altered by the crisis 80
  - 2.22 A slight decline is observed in the financial sectors' common holdings, especially investment and pension funds 81
- 
- 3.1 The systemic risk indicator (SRI) has risen since August 2021 and the improvement in bank systemic risk has slowed somewhat. However, both metrics remain very far from the 2020 stress levels 96
  - 3.2 Indicators such as the credit-to-GDP ratio and credit intensity have undergone corrections as a result of the rebound in economic growth, which is beginning to move closer to its potential, but has not yet reached its pre-pandemic level 98
  - 3.3 In 2021 H1, supply and demand-side factors have significantly boosted new lending to households, while contracting new lending to firms 99
  - 3.4 Countries that had room to ease macroprudential measures during the pandemic had a lower risk of severe credit contraction, with this pattern continuing in 2021 101

## INDEX OF FIGURES

1	Financial stability risks and vulnerabilities – Autumn 2021	13
---	--	----

## INDEX OF TABLES

2.1	Macroeconomic scenarios for Spain in the stress test	68
3.1	Capital buffers for systemically important institutions	102



## INDEX OF BOXES

- 1.1 The determinants of interest rates in the United States and Europe 45
  
- 2.1 Impact of the public guarantee scheme on lending relationships between firms and banks 82
- 2.2 Recourse to maturity and payment holiday extensions under the public guarantee programme for loans to firms 85
- 2.3 The sovereign-bank nexus 87
  
- 3.1 Impact of climate change risks on the banking sector 107
- 3.2 The value of housing and ecological degradation: the case of the Mar Menor 112



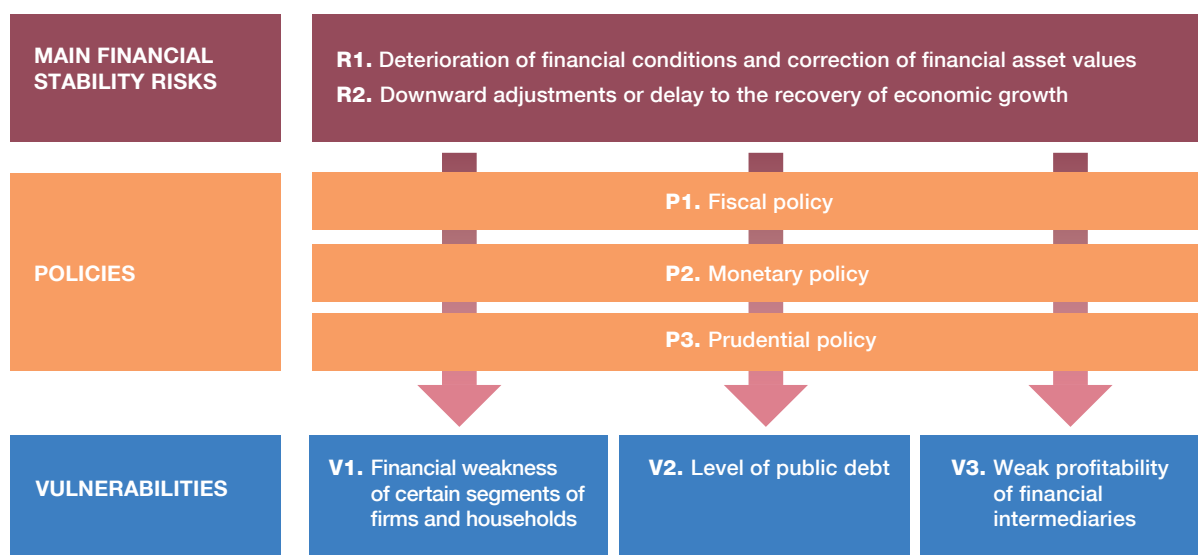
# THE STABILITY OF THE SPANISH FINANCIAL SYSTEM: MAIN RISKS AND VULNERABILITIES



## THE STABILITY OF THE SPANISH FINANCIAL SYSTEM: MAIN VULNERABILITIES AND RISKS

The macro-financial situation of the Spanish economy has improved since the publication of the last *Financial Stability Report (FSR)*; however, vulnerabilities and risks are still at heightened levels. The progress in the vaccination of the population and the effectiveness of the measures implemented by the authorities to mitigate the impact of the pandemic have allowed activity to recover progressively, in line with the central scenario of forecasts, although the sectors most affected by the health crisis are still clearly below the level of 2019. These factors explain why there has been no increase in doubtful loans in the bank credit portfolio as a whole, although there are latent impairments whose materialisation will depend on the evolution of the economy and the pace of withdrawal of the measures. In this context, bank profitability has recovered to pre-pandemic levels, although this was low compared to other sectors and geographies. In any case, it is necessary to continue to maintain a close surveillance of the financial system, since, as detailed below, vulnerabilities remain high in relation to levels prior to the onset of the crisis, and there are risks whose materialisation could hinder the process of economic and financial normalisation (see Figure 1).

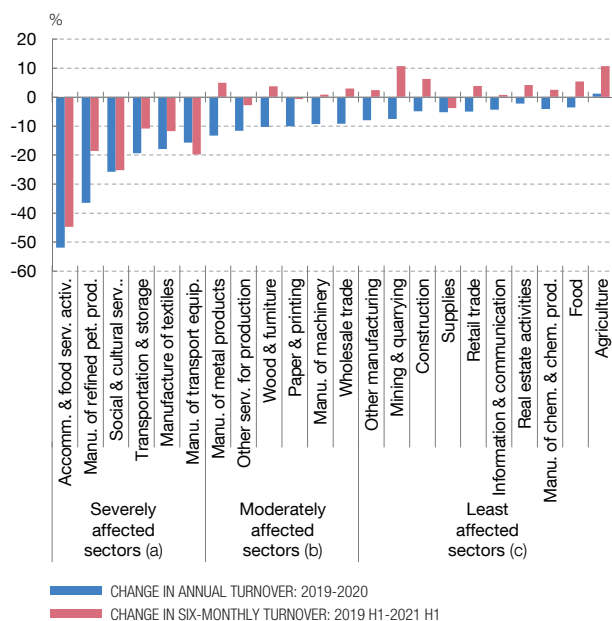
Figure 1  
FINANCIAL STABILITY RISKS AND VULNERABILITIES – AUTUMN 2021 (a)



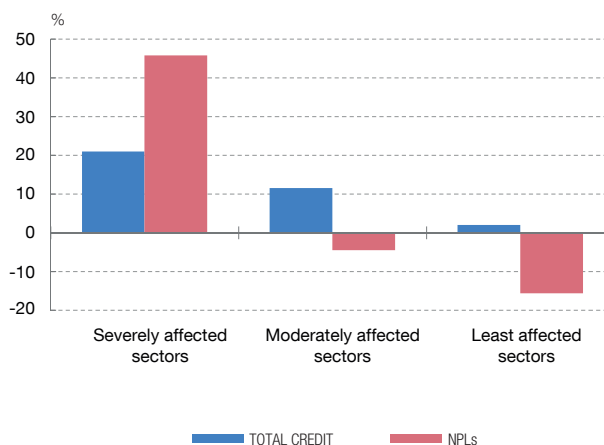
SOURCE: Banco de España.

a In this report, vulnerabilities are defined as economic and financial conditions that increase the impact or probability of materialisation of risks to financial stability. The latter are in turn identified as adverse changes in economic and financial conditions, with an uncertain probability of occurrence, which hamper or impede financial intermediation, with negative consequences for real economic activity.

1 BUSINESS TURNOVER BY SECTOR  
Rate of change relative to the same period of 2019



2 CUMULATIVE CHANGE IN BANK CREDIT TO NON-FINANCIAL BUSINESS ACTIVITY BETWEEN DECEMBER 2019 AND JUNE 2021 (d)



SOURCES: Agencia Estatal de Administración Tributaria and Banco de España.

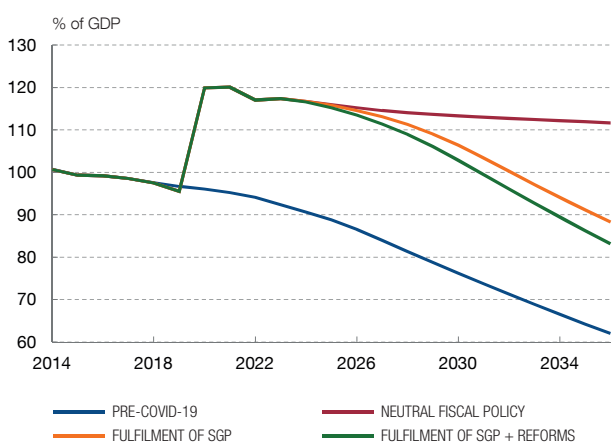
- a The severely affected sectors are those whose turnover fell by more than 15% in 2020.
- b The moderately affected sectors are those whose turnover fell by more than 8%, but less than 15% in 2020.
- c The least affected sectors are those whose turnover fell by less than 8% in 2020.
- d Credit to sectors affected to a differing degree by the COVID-19 crisis is measured on the assumption that the NACE sectors identified in Chart 1 correspond approximately to the sectors reported in template FI-130.

The main vulnerabilities<sup>1</sup> of the Spanish economy and financial system include:

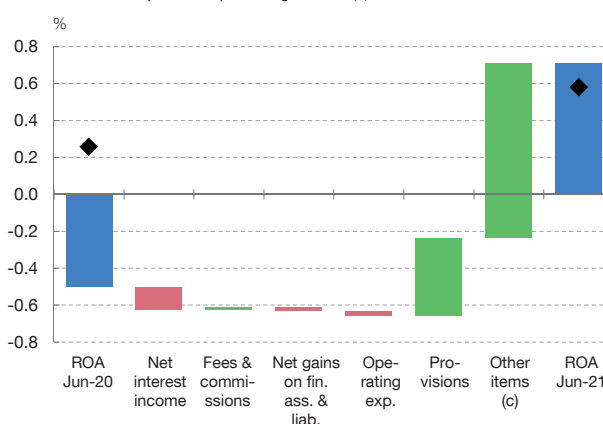
- **V1. The weak financial position of certain segments of households and firms.** By the end of the first half of 2021, most sectors of activity had regained their pre-crisis turnover levels (see Chart 1). This has allowed profitability to recover, while favourable financing conditions have moderated liquidity risks, and average debt and financial burden ratios decreased. However, the recovery remains incomplete in the hardest-hit sectors (e.g. hospitality, transport and car manufacturing), which have recorded the largest increases in bank debt, and also non-performing loans (see Chart 2). These sectors also account for the bulk of the latent impairment of bank loans. For now, scenarios of significant increases in business failures appear to have been avoided, but it should be noted that extraordinary measures continue to provide very significant support. In the case of households, the overall trends of recovering income and employment (which is now close to its pre-crisis levels), and rising saving

<sup>1</sup> In this report, vulnerabilities are defined as economic and financial conditions that increase the impact or probability of materialisation of risks to financial stability.

3 SIMULATED PATHS OF PUBLIC DEBT (a)



4 A BREAKDOWN OF THE CHANGE IN PROFIT OF THE BANKING SECTOR  
Consolidated net profit as a percentage of ATA (b)



SOURCES: Intervención General de la Administración del Estado (IGAE) and Banco de España.

- a The pre-Covid-19 scenario replicates the simulations of public debt over GDP ratio produced with data and projections with the cut-off date December 2019. The neutral fiscal policy scenario simulates the projections of debt using the last Banco de España's forecasts, see [Macroeconomic Projections for the Spanish Economy \(2021-2023\)](#), with no additional restrictions on the structural balance variation. The fulfilment of the SGP scenario assumes a consolidation plan for public debt with a reduction in the structural deficit, up to the budgeted balance, of 0.5 pp of GDP every year. The last scenario adds structural reforms that would lead to an increase of potential GDP in 0.6 pp in the long term.
- b The red (green) colour of the bars indicates a negative (positive) contribution of the item concerned to the change in consolidated profit for June 2021 with respect to June 2020. The black diamonds show ROA excluding extraordinary items. In particular, in June 2020: goodwill adjustments (-€12.2 billion), deferred tax asset adjustment (-€2.5 billion) and asset management business sale (€0.3 billion); and in June 2021: extraordinary income as a result of a merger (€2.9 billion) in particular, negative goodwill; segregation of an insurer (€0.9 billion) and extraordinary restructuring costs (-€1.2 billion).
- c Includes, inter alia, the extraordinary items mentioned in the previous note.

are firming. However, households with close links to employment in the sectors hardest hit by the health crisis and those with low incomes have benefited less from the recovery and are especially vulnerable. Moreover, their borrowing behaviour differs from that of other households. A slower than expected recovery in activity or an increase in financing costs may lead to significant increases in non-performing loans in these more vulnerable segments of households and firms.

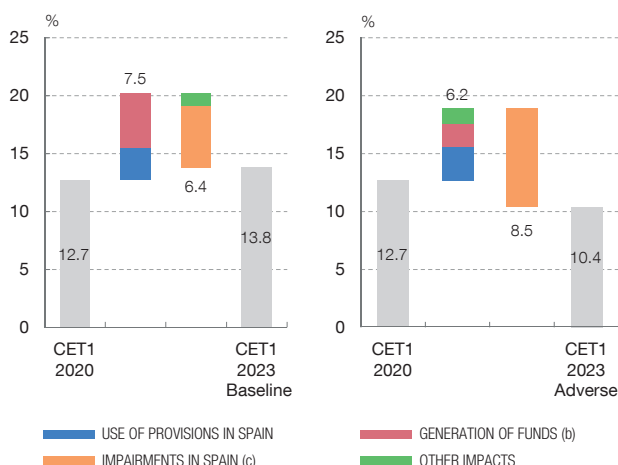
- **V2. The increase in government debt.** As noted in the FSRs published since spring 2020, a corollary of the necessary and decisive economic policy response has been an increase in public debt. In Spain, the expected reduction in the budget deficit in the coming years is notable, as a result of the improvement in the cyclical situation. However, a significant reduction in public debt in the medium term will require the elimination of the structural component of the budget deficit, in line with European regulations and, in the absence of an adequate fiscal consolidation plan, the level of debt may remain high for an extended period (see Chart 3). During this process, the high level of public debt makes the Spanish economy vulnerable to any deterioration in financing

conditions and reduces its capacity to respond to a potential risks that materialise. The cost of the increase in public debt has, so far, been limited by the expansionary monetary policy and this effect will last some time longer, given that the debt that is currently maturing was issued at higher interest rates. In this context, the recent increase in inflation stems from temporary factors, so that the monetary policy stance can be expected to remain accommodative; indeed, if monetary policy is normalised more rapidly than expected, the potential impact of this vulnerability will increase. The yield on long-term sovereign debt would probably be that most affected by the uncertainty that could arise in the financial markets in the event of a premature withdrawal of the central bank purchase programmes launched to mitigate the impact of the pandemic. In Spain, the relatively long sovereign debt maturities would reduce the immediate impact of these shocks to the interest burden.

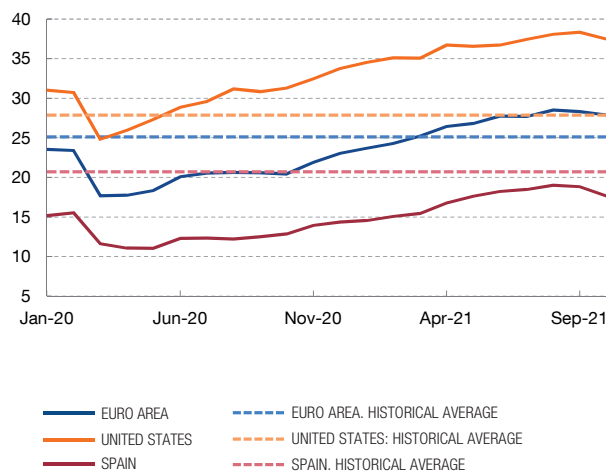
- **V3. The weak profitability of financial intermediaries.** The revival of the economy and the improved outlook have led to a reduction in the expected losses anticipated by the banking sector and, consequently, in the provisions for financial impairments. This, along with the absence of the extraordinary charges recorded in 2020, explains the rise in bank profitability in the first half of 2021, to its pre-crisis levels, even when the extraordinary income for this half is excluded (see Chart 4). The contribution of international business to Spanish banks' performance has also returned to normal in the first half of 2021, reflecting how, in contrast to initial expectations, geographical diversification is allowing to cushion the impact of this global crisis the impact of the crisis on the profitability of the banking sector, up to mid-2021, can be considered contained. This highlights the effectiveness of economic policy measures in mitigating the impact of the crisis, as reflected in the results of the stress tests for this year (see Chart 5), which show more contained capital charges under the adverse scenario than last year, although a certain degree of heterogeneity is observed across banks. In any event, the distribution across banks of the CET1 ratio under this scenario would not suggest the need for extensive supervisory intervention. However, this does not mean that there may not be latent impairment in credit portfolios that may materialise in the coming quarters and reduce the profits generated by the sector, which would further weaken the intermediation capacity of those banks with a lower level of solvency. Also, the structural challenges for the generation of profit by the banking sector and other financial intermediaries, which the health crisis has made no less pressing, continue to exist. These include, in particular, the generation of profitable business volume in a low interest rate environment, growing competition from technology firms, the increase



5 FLESB STRESS TESTS. IMPACT ON THE CET1 RATIO IN THE BASELINE SCENARIO (L-H CHART) AND ADVERSE SCENARIO (R-H CHART) (a)



6 CYCLICALLY ADJUSTED PER (d)



SOURCES: Refinitiv Datastream and Banco de España.

- a The net effect of positive (negative) flows is indicated by the figure above (below) the bar in question. The initial and final CET1 ratios are presented as "fully-loaded". Other impacts include, the change in RWAs between 2020 and 2023 and the effect of ICO guarantees. Aggregate results, including both institutions directly supervised by the SSM and the Banco de España.
- b This variable includes net operating income in Spain and net income attributable to business abroad. Thus, the possible funds generated by the banking group as a whole are compared with the impairment losses in Spain (the focus of these tests).
- c This variable shows the projection over the three years of the exercise of gross losses due to credit portfolio impairment for exposures in Spain and other types of losses (associated with the fixed-income portfolio, the management of foreclosures and the sovereign portfolio).
- d The cyclically adjusted PER is calculated as the ratio between the price of the shares and the 10-year moving average of profits. The historical averages are calculated for the period 1997-2021.

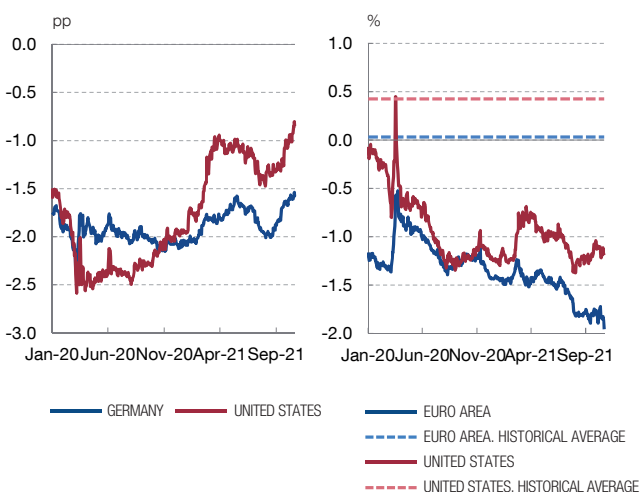
in cyber risks and the potentially negative effects associated with climate risks.

There follows a discussion of the main risks<sup>2</sup> to the stability of the Spanish financial system:

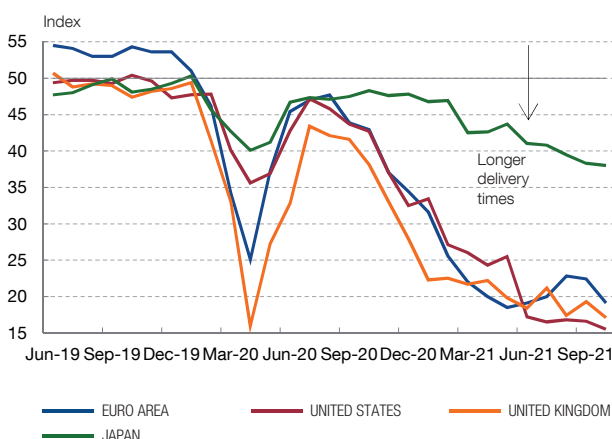
- **R1. Possible deterioration of financing conditions and the correction of financial asset values.** Despite some temporary correction episodes in the first half of the year, the prices of risk-bearing assets on international financial markets remain high (see Chart 6). The low equilibrium level of long-term real interest rates, as a result of structural factors, such as demographic and productivity trends in developed countries and the demand for safe assets, which monetary policy attempts to accommodate through significant central bank bond purchase programmes, is an important factor supporting these valuations (see Chart 7). In this respect,

<sup>2</sup> In this report, risks are identified as adverse changes in economic and financial conditions, with an uncertain probability of occurrence, which hamper or impede financial intermediation, with negative consequences for real economic activity.

7 DEVIATION OF THE TERM RISK PREMIUM IN THE INTEREST RATE ON 10-YEAR PUBLIC DEBT FROM ITS HISTORICAL AVERAGE (L-H PANEL) (a) AND 10-YEAR REAL INTEREST RATE (R-H PANEL) (b)



8 MANUFACTURING PMI: SPEED IN SUPPLIER DELIVERY TIMES



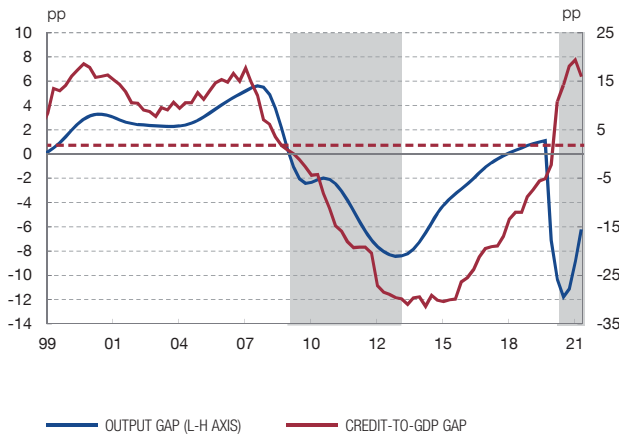
SOURCES: IHS Markit, Refinitiv Datastream and Banco de España.

- a Risk premia are obtained from a decomposition of 10-year interest rates into term risk premia and expectations about short-term interest rates. Expectations are obtained by predicting the instantaneous short-term interest rates using an ARFIMA model on each of the components of the yield curve (long-term level, slope and curvature) estimated daily. Once the short-term rate expectations are obtained, the premia can be had taking the difference between 10-year rates and short rate expectations. The historical averages of the term premia are calculated for the period 2003-2021.
- b The historical average real 10-year interest rate in the euro area and the United States is calculated for the period 2004-2021. Until July 2008 in the euro area and June 2007 in the United States data are used for indexed bonds in France and the United States. After those dates, the real interest rates are calculated in the euro area as the difference between the 10-year overnight indexed swap rate and the compensation for inflation with the same term and in the United States as the difference between the 10-year government bond and the compensation for inflation with the same term.

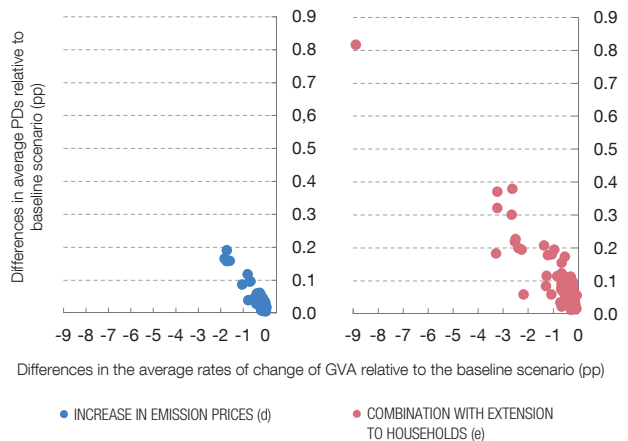
a fall in asset prices and a tightening of financial conditions (with an increase in the currently very low maturity premia, in particular) may be triggered if monetary stimulus is withdrawn at a faster rate than the financial markets expect. These adverse developments could also occur if investors' expectations of future economic developments or the solvency of certain segments of the corporate sector deteriorate. This process may spread to other assets and geographical areas given the close interconnections between markets and financial intermediaries.

- **R2. Downside risks to economic growth continue to be present, although the baseline scenario is more favourable than in previous quarters.** The progress made with vaccination programmes in 2021 has strengthened the confidence of economic agents. At the same time, economic policy measures have continued to prove their effectiveness in averting the less favourable growth scenarios that the pandemic could have given rise to. That said, downside risks - albeit more contained - remain. These are linked to adverse developments in the health situation, which might require the introduction of restrictions on certain activities. Also, the risks to activity are now skewed downwards as a result of the

9 CREDIT-TO-GDP GAP AND OUTPUT GAP (a) (b)



10 EFFECT OF THE TRANSITION COSTS ON CREDIT IMPAIRMENT PROBABILITIES (PD) (c)



SOURCES: Instituto Nacional de Estadístico and Banco de España.

- a The shaded areas show two periods of financial crisis identified in Spain since 2009. These correspond to a period of systemic banking crisis (the last crisis: 2009 Q1-2013 Q4) and the crisis caused by COVID-19 (2020 Q1-2021 Q2).
- b The output gap is the percentage difference between actual GDP and its potential value. Values calculated at constant 2010 prices. See Cuadrado, P. and Moral-Benito, E. (2016), *Potential growth of the Spanish economy*, Occasional Paper No 1603, Banco de España. The credit-to-GDP gap is calculated as the difference in percentage points between the actual ratio and its long-term trend, calculated by applying a one-sided Hodrick-Prescott filter with a smoothing parameter equal to 25,000. This parameter is calibrated to fit the financial cycles observed in the past in Spain (see Galán, J.E. (2019), *Measuring credit-to-GDP gaps. The Hodrick-Prescott filter revisited*, Occasional Paper No 1906, Banco de España). Data available to June 2021. The broken red horizontal line represents the reference CCyB activation threshold of 2 pp for the credit-to-GDP gap.
- c Each point in the chart corresponds to a sector of business activity in accordance with the NACE Rev.2 classification and represents the difference of the average PD (weighted by the number of borrowers) for this sector over a three-year horizon between a baseline trend scenario without the application of measures and adverse scenarios resulting from different extensions of the CO2 Emissions Trading Scheme. See Box 3.1 for further details.
- d This adverse scenario considers an increase in the price of CO2 emission allowances from €25 to €100.
- e This adverse scenario considers the combination of the scenario described in (d) with an extension of the requirement for allowances to more productive sectors and to households.

sharp increase in the price of energy and the emergence of global production chain bottlenecks (see Chart 8). This is leading to increases in inflation that erode agents' purchasing power and, consequently, the incipient reactivation of activity. In addition, if these factors that temporarily raise inflation were to be prolonged over time, they could end up raising the medium-term inflation expectations of the agents, and they may contribute to a tightening of financing conditions in the short term, and dampen further the potential for economic recovery (see Chart 9). A slowing of the recovery would have a negative effect on the quality of credit to households and firms, especially in the most vulnerable sectors. These may see an increase in non-performing loans even amid a general recovery, if this is asymmetric and fails to reach the hardest-hit sectors. Economic activity faces greater risks in the emerging economies; the ability of economic policy to react to shocks to activity is limited by the stronger inflationary pressures in these economies and they are exposed to a tightening of financing conditions as a result of the normalisation of monetary policy in the advanced economies.

**Precisely tuned monetary and fiscal policies continue to be essential for the recovery in economic growth to firm.** The expansionary stance of these policies still needs to be maintained in the short term since, although financial stability risks and vulnerabilities stemming from the pandemic have moderated in recent months, they continue to be high. A flexible approach adapted to changes in the economic situation and risk profile also needs to be maintained, avoiding a premature withdrawal of the stimulus before the recovery firms.

**Developments in inflation expectations and the rate of recovery of activity will be decisive in the positioning of monetary policy.** Monetary policy is expected to be less accommodative in the coming months, in particular as a result of the winding down of asset purchase programmes in Europe and the United States. However, the baseline scenario continues to assume that the increase in inflation will be temporary, so that the rate of policy tightening is not expected to accelerate.

**Fiscal policy must remain expansionary in the short-term, but a medium-term fiscal consolidation programme to contain and reduce the vulnerabilities associated with high public debt needs to be drawn up.** The fiscal policy measures deployed during the crisis need to be increasingly selective and focused on the economic sectors and population segments for which the recovery is proving to be slowest. In addition, an ambitious structural reform programme to boost the potential growth of the Spanish economy would also contribute to this objective and mitigate the other risks considered. Effective application of the Next Generation EU (NGEU) funds would help to reconcile these two aims.

**In the absence of signs of systemic financial imbalances building up in Spain, a loose prudential policy, without the activation of macroprudential tools, is also advisable.** It should be noted that, in spite of the support measures adopted, the pre-pandemic levels of activity have still not been recovered. Key indicators of financial imbalances, such as the credit-to-GDP gap, are still dominated by the sudden fall in output in Spain in 2020 and their high level should not be interpreted as signalling a build-up of risk (see Chart 9). The negative output gap has begun to close and, in line with the expectations for recovery, a significant reduction is expected by the end of next year. In any event, the reduction of output and credit gaps is subject to downside activity risks and also to the vulnerability of certain segments of households and firms, so that continuous monitoring is needed for early detection of signs of risk.

**In some European countries macroprudential policy tightening has already begun, mainly as a result of warning signals in their property markets.** In Spain, the real estate cycle does not appear to be as advanced. At aggregate level, housing is not showing signs of overvaluation; new mortgage credit is growing strongly in 2021, but from very low levels, without a significant increase in the stock or any loosening of credit standards. However, if the expansionary trend in real estate

intensifies, this risk diagnosis will need to be reassessed. In this respect, the reform of Circular 2/2016 will provide new macroprudential tools to address with a more effective and focused approach the potential build-up of risks in the future.

**Other more long-term risks must also continue to be taken into account, including those of financial digitalisation and climate change.** Digitalisation is not only generating new financial products and changing the way in which the markets that trade them are organised, but also making the financial system more vulnerable to cybernetic risks. Climate change may also have important financial stability effects, through the materialisation of both physical and transition risks. In the case of the latter, the estimated impact on bank solvency is still moderate, but adds to the pressure of the low bank profitability. At the same time, the materialisation of physical risks would potentially have a very significant long-term economic impact, which would exceed the impact of the transition costs. Thus, according to this analysis, the action required to achieve an environmentally sustainable productive model that does not contribute to the materialisation of climate change should be taken without delay.



# 1

## RISKS LINKED TO THE MACRO-FINANCIAL ENVIRONMENT





## 1 RISKS LINKED TO THE MACRO-FINANCIAL ENVIRONMENT

The headway made in global vaccination is helping to reduce restrictions on activity, despite some heterogeneity by geographical area. This has translated into a relatively widespread economic recovery. It is also reflecting in lower uncertainty, a favourable macroeconomic outlook in the medium and long term and an improvement in the non-financial sectors' financial position. However, certain segments continue to show greater financial vulnerability than before the COVID-19 crisis. At the same time, risks linked to the adverse unfolding of the pandemic, to the recent disruptions in the global production chains and to a sharper and more persistent than expected increase in inflation, which could lead to a faster withdrawal of monetary stimuli than anticipated by the financial markets, persist. The materialisation of these risks might trigger abrupt asset price corrections in the international markets, adversely impacting economic growth and financial intermediaries' credit risk. Greater buoyancy in demand and prices has also been observed in the Spanish real estate market, but the risks to financial stability appear to be contained for the time being.

### 1.1 Macroeconomic environment

#### 1.1.1 Systemic and materially significant countries

**Global economic activity has continued to recover in 2021, albeit at a more moderate pace in recent months.** Against a backdrop of the spread of the COVID-19 Delta variant, activity patterns in advanced and emerging market economies have tended to diverge (see Chart 1.1.1), in good measure owing to the uneven levels of vaccination and to the differences in economic policy support.<sup>1</sup> Also, the appearance of bottlenecks in the global supply chains, prompted among other factors by the rapid recovery in demand in advanced countries and by rising commodity and transport prices, is affecting production, particularly in the manufacturing sector (see Chart 1.1.2).<sup>2</sup>

**The recovery of activity has been accompanied globally by considerable inflation rate hikes (see Chart 1.1.3).** These increases arise from various idiosyncratic factors which are, in principle, temporary. They include the base effects

<sup>1</sup> See *Quarterly report on the Spanish economy 2021 Q3*, Economic Bulletin.

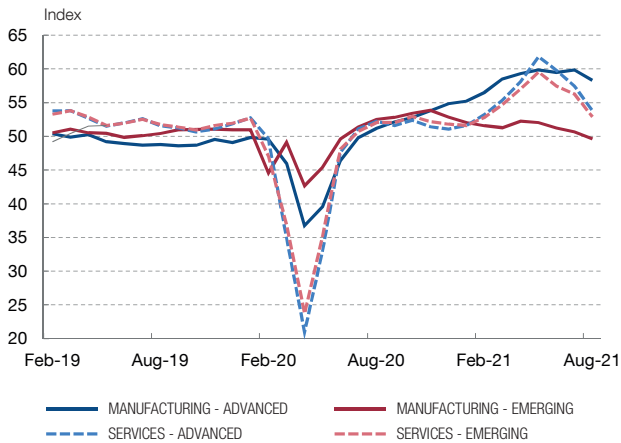
<sup>2</sup> See Box 3 "Euro area manufacturing bottlenecks", *Quarterly report on the Spanish economy 2021 Q3*, Economic Bulletin.

Chart 1.1

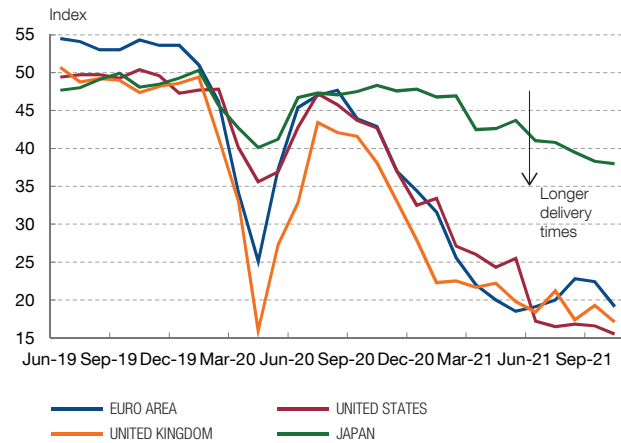
**THE GLOBAL ECONOMY CONTINUES TO RECOVER IN 2021, BUT WITH DOWNSIDE RISKS DERIVING FROM UNCERTAINTY OVER THE UNFOLDING OF THE PANDEMIC, THE PERSISTENCE OF BOTTLENECKS AND A POSSIBLE TIGHTENING OF FINANCIAL CONDITIONS**

The easing of restrictions to mobility has helped to consolidate the economic recovery over 2021, albeit with diverging outlooks between advanced and emerging market economies as a result of uneven vaccination rates and degrees of economic policy support. Global inflation rates have increased in recent months, in principle owing to temporary factors.

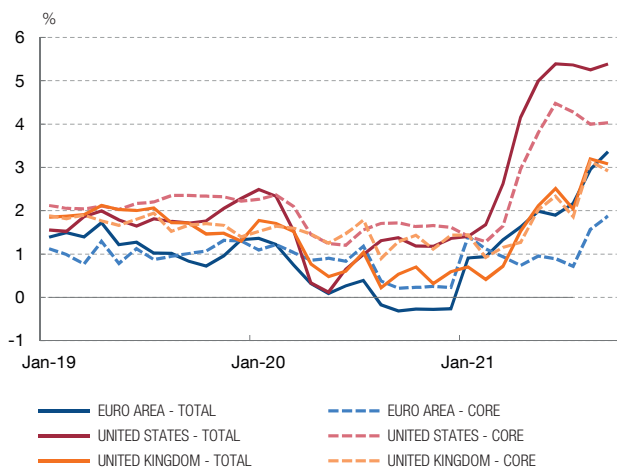
1 PMI IN ADVANCED AND EMERGING MARKET ECONOMIES



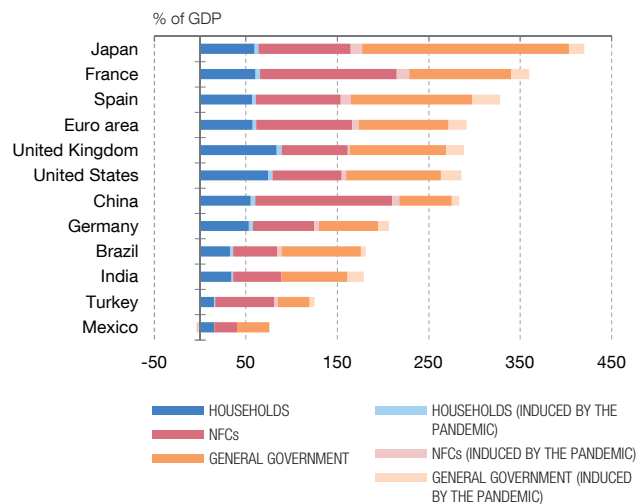
2 PMI MANUFACTURING: SPEED IN SUPPLIER DELIVERY TIMES



3 INFLATION IN ADVANCED ECONOMIES



4 DEBT BY INSTITUTIONAL SECTOR (a)



SOURCES: IHS Markit, national statistics and Institute of International Finance Global Debt Monitor.

a The levels of debt in 2019 Q4 are shown in solid colours while the change between 2019 Q4 and 2021 Q2 is shown in translucent colours.

derived from sharp falls in some services prices recorded at the height of the pandemic; the rise in energy and commodity prices from the abnormally low levels recorded in the summer of 2020; and, in 2021 Q3, the aforementioned impact of the global value chain disruptions on industrial prices and their potential pass-through to consumer prices. In certain areas, the degree of fiscal policy expansion necessary to speed up the recovery may also be playing a role.

**The current medium-term prospects of consolidation of the global economic recovery and a return to moderate inflation rates are subject to significant uncertainties.** The progressive resolution of the global health crisis, on which the outlook of ongoing improvement in activity is based, is not guaranteed. The main risks include the slow pace of vaccination outside the main advanced economies and the possible spread of new, more resistant and infectious variants of the virus. Despite the prevalence of negative output gaps, the sectoral mismatches that are arising between a buoyant demand and a supply that is slower to respond to the recovery, owing to the appearance of bottlenecks causing recent increases in certain prices, may be more persistent than expected. This could lead to second-round effects and to core inflationary pressures as a result of the de-anchoring of inflation expectations, particularly in economies with a low level of monetary policy credibility.

**Despite the favourable expectations for internal demand, especially in the advanced economies, the recovery continues to depend on the adequate calibration of monetary and fiscal policy stimuli.** A premature withdrawal of such support may have highly adverse consequences. Thus, a faster and more intense normalisation of monetary policy than expected, particularly in the United States, might lead to abrupt corrections in asset prices. These corrections would bring about adverse effects on global financial conditions and activity in a setting of high vulnerability owing to the significant increase in public and private debt in many countries (see Chart 1.1.4). Likewise, an early withdrawal of fiscal stimuli in other areas, owing to possible political or market pressures, could lead to a reassessment of expectations regarding the repayment capacity of the most heavily indebted private agents, particularly non-financial corporations. The recent liquidity difficulties and the possible insolvency of China's main real estate company, Evergrande, which had resorted heavily to external financing over the last five years, illustrates the types of risks generated by the above-mentioned increase in indebtedness. In the hypothetical case that these problems were to extend to the rest of the real estate sector or to the Chinese financial system, there would be severe consequences for growth in China, with contagion effects for the rest of the world.

**Financial conditions have tightened somewhat in the emerging market economies, although they continue to be globally favourable.** The increase in inflation has led to the start of a cycle of policy interest rate hikes in many countries in Latin America<sup>3</sup> and Eastern Europe, to avoid possible second-round effects and a de-anchoring of inflation expectations (see Chart 1.2.1). Also, economies with greater fiscal vulnerabilities, or those recording episodes of social and political tension, have observed an increase in local-currency long-term interest rates, a depreciation of their currencies against the dollar and an increase in the external sovereign debt

---

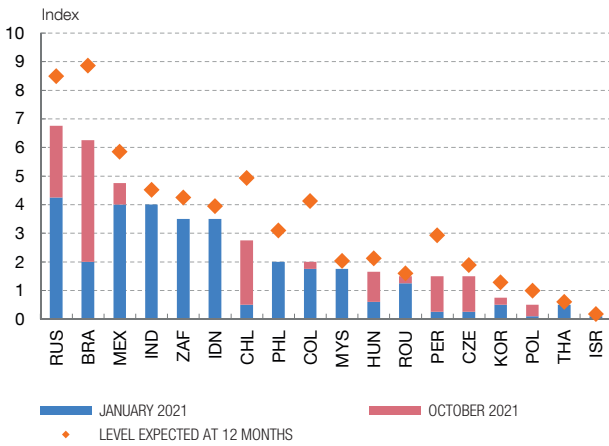
<sup>3</sup> See the [Report on the Latin American economy. Second half of 2021. Outlook, vulnerabilities and policy space](#), October 2021.

Chart 1.2

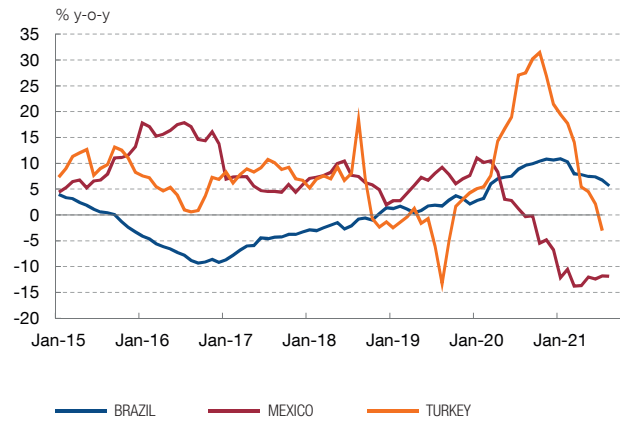
**HIGHER INFLATION EXPECTATIONS EXERT UPWARD PRESSURE ON INTEREST RATES IN THE EMERGING MARKET ECONOMIES, WHILE CREDIT LOSES MOMENTUM**

Emerging market economies' central banks have started to tighten their monetary policies and are expected to continue doing so over the next twelve months, as credit growth moderates in light of the total or partial withdrawal of public credit support plans in most of these economies.

1 POLICY INTEREST RATES IN EMERGING MARKET ECONOMIES



2 RATE OF CHANGE IN CREDIT TO THE PRIVATE SECTOR



SOURCES: Refinitiv and national statistics.

yield spreads. Also, the total or partial withdrawal of credit support plans in most of these economies has prompted a marked slowdown in bank lending, with possible adverse effects on the activity of these material countries for the Spanish banking system (see Chart 1.2.2).

**A potential deterioration of the growth outlook in light of an unfavourable unfolding of the health situation might negatively affect the financial markets of these economies and tighten their financial conditions, as economic policies would have less room for manoeuvre.** They might also be particularly affected in the event that the monetary policy stance in the advanced economies tightened more than expected or if national monetary policies had to face persistent inflationary or exchange rate pressures. The following can be noted in regard to the main emerging market countries with Spanish banking exposures:

In **Mexico**, the economy continued to recover during 2021 H1. However, there is a high degree of unevenness between the performance of services, supported by the progress made in the vaccination process, and the manufacturing sector, affected by global supply chain problems. The Mexican economy is exposed to risks similar to those of other emerging market economies, although it is more closely linked to the performance of the US economy. On the positive side, it has buffers against shocks, such as the swap line with the Federal Reserve and the flexible credit line

with the International Monetary Fund. However, political uncertainty in the domestic and international fronts might negatively affect investment, which has been sluggish in recent years.<sup>4</sup>

In **Brazil** GDP growth stagnated in Q2, after a surprising rise in Q1. The country continues to accumulate imbalances in fiscal territory. Public debt is close to 90% of GDP and largely financed at interest rates linked to inflation or to the policy interest rate, which share a very pronounced upward trend. In addition, this debt is mostly acquired by domestic banks or their investment funds, which raises the sovereign-bank nexus risk. Against this backdrop, the fiscal adjustment envisaged is subject to significant uncertainties. Political tensions have also increased significantly, and they are not expected to weaken in the short term in view of next year's presidential elections. Indeed, Brazil's financial markets have performed relatively worse, feeding back into fiscal vulnerabilities.

In **Turkey**, in 2021 H1 the economy continued to show significant buoyancy and notable imbalances which, however, have moderated with the gradual withdrawal of some stimulus measures such as the credit support. Bank lending slowed notably, with the exception of consumer loans, which maintained a strong growth rate. Although still significant, the current account deficit has decreased. Nonetheless, inflation has rebounded, standing at 19.6% year-on-year in September. Against a backdrop of sizeable external financing needs and very low international reserves, the Turkish economy's biggest risk is the loss of confidence from the financial markets. This could be the result of reductions in policy interest rates, as occurred in September and October, that may prove to be early or greater than that discounted by investors.

### 1.1.2 Spain

**The baseline projections for the Spanish economy envisage, for the short term, a continued recovery, favoured by the headway made in the vaccination campaign, the consequent lifting of the pandemic containment measures and the economic policy support.** This would help to recover the pre-health crisis level of activity over the horizon considered in the Banco de España's most recent projections, which cover up to 2023<sup>5</sup> (see Chart 1.3.1). Activity would grow more during the first half of the projection period, boosted by the epidemiological improvement and by the implementation of NGEU programme projects.

---

4 An example of external tensions in the case of Mexico is the application of the U.S.-Mexico-Canada trade agreement (USMCA) rules, which were worded ambiguously and leave room for different interpretations. In recent months, divergences have arisen between the United States and the other treaty members which might particularly affect the Mexican automotive sector.

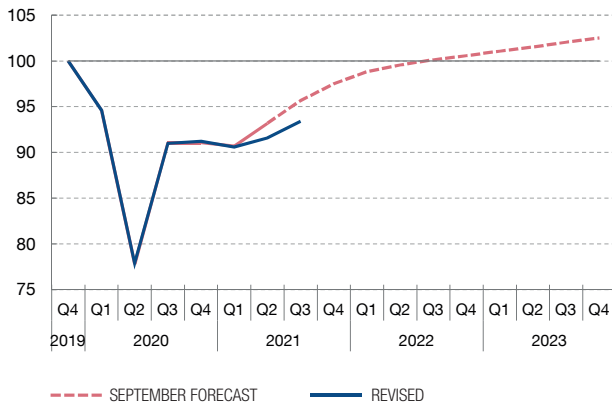
5 See Box 1 "Macroeconomic projections for the Spanish economy (2021-2023)", Quarterly report on the Spanish economy, September 2021.

Chart 1.3

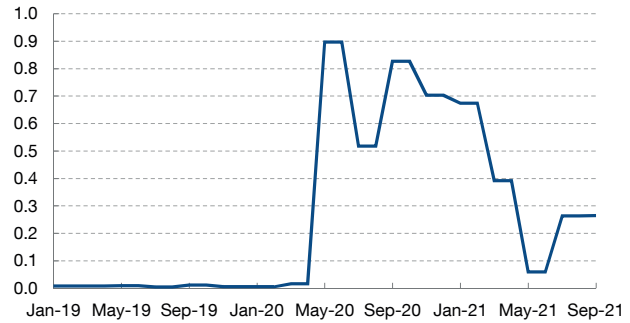
**THE BASELINE FORECASTS FOR THE SPANISH ECONOMY ENVISAGE HIGH DYNAMISM AT SHORT TERM, ALTHOUGH CERTAIN ECONOMIC AND HEALTH RISKS PERSIST**

The projections for the Spanish economy envisage high buoyancy in activity in 2021 and 2022, underpinned by the normalisation of economic relations and the maintenance of economic policy support. The pre-COVID-19 level of activity would recover over the forecast horizon, which covers up to 2023. The most significant downside risks include the potential negative effect of bottlenecks in the global production chains and a more persistent inflation increase than currently expected. Some uncertainty persists, although less than in previous quarters, over the health situation, which affects certain sectors in particular (e.g. accommodation and food service activities).

1 REAL GDP IN SPAIN. LEVEL (a)  
(100 = 2019 Q4)



2 INDICATOR OF DISAGREEMENT OVER GDP EXPERT FORECASTS FOR 2021 AND 2022 (b)



SOURCES: Instituto Nacional de Estadístico and Banco de España.

- a The Banco de España's September 2021 macroeconomic projections are shown. Their cut-off date was 14 September 2021 and they included the data available to that date, specifically the GDP flash estimate for 2021 Q2. Subsequently, the INE has published new data, which include the revision of Q2 and previous quarters and the flash estimate for 2021 Q3.
- b See C. Ghirelli et al. (2021), "Measuring economic and economic policy uncertainty and their macroeconomic effects: the case of Spain", Empirical Economics. A decline in this indicator, constructed on the basis of the standard deviation of forecasters' projections of changes in GDP for 2021 and 2022, reflects greater certainty over the behaviour of this macroeconomic aggregate over this period.

**Uncertainty regarding the Spanish economy's growth path has declined, in line with the recent improvements in the health and economic situation.** Recent favourable epidemiological and economic developments in Spain have helped to reduce uncertainty over economic growth in the short and medium terms, in line with the behaviour observed in other advanced economies (see Chart 1.3.2).

**Yet developments in the Spanish economy are influenced by several factors, including the possibility of greater persistence of disruptions to global value chains and increasing inflation.** First, if the supply problems recently observed in the global production chains ultimately weigh down on economic activity worldwide markedly and persistently, certain industrial sectors in Spain will be affected more durably. Another downside risk to activity, which has recently grown stronger, is the possibility of an increase in commodities and intermediate goods prices that is less temporary than currently assumed, with the consequent compression of households' and firms' income in real terms. This greater persistence could lead to the transfer of cost increases to final prices and wage demands, resulting in a more pronounced and long-lasting rise in inflation than that anticipated at this point in time.

**Certain downside risks related to the unfolding of the pandemic and its impact on economic activity also persist.** These downside risks are related to the spread of new COVID-19 variants potentially more resistant to vaccines, which could lead to reinstating restrictions to mobility. They may also be related to the more persistent effects of the crisis on the business sector and employment. By contrast, if the health situation improves faster than forecast, economic growth might also gain momentum, mainly owing to a more pronounced freeing up by households of the stock of savings generated during the pandemic or to an early reactivation of spending by foreign tourists.

## 1.2 Financial markets and the real estate sector

### 1.2.1 Financial markets

**The stock market indices in the main developed economies have tended to appreciate over the last few months.** This was underpinned by the progress made in the vaccination campaign, the maintenance of an accommodative monetary policy stance and better corporate earnings than anticipated by the markets. However, some episodes of stock market price corrections have also been observed, mainly linked to fears regarding the impact of the spread of the COVID-19 Delta variant on economic growth, to the fear of a contagion effect of the Chinese Evergrande real estate crisis and to investor concerns about inflationary pressures possibly leading to the withdrawal of monetary stimuli earlier than envisaged. The S&P 500 index reached new all-time highs, accumulating a gain of 8.7% at the cut-off date for this report with respect to the levels at end-April. In the same period the EURO STOXX 50 appreciated by 5.4%, while the IBEX 35 rose less (1.0%), affected by the negative impact of the spread of the pandemic in Spain over the summer in the sectors most exposed to it, such as leisure and tourism (see Chart 1.4.1).

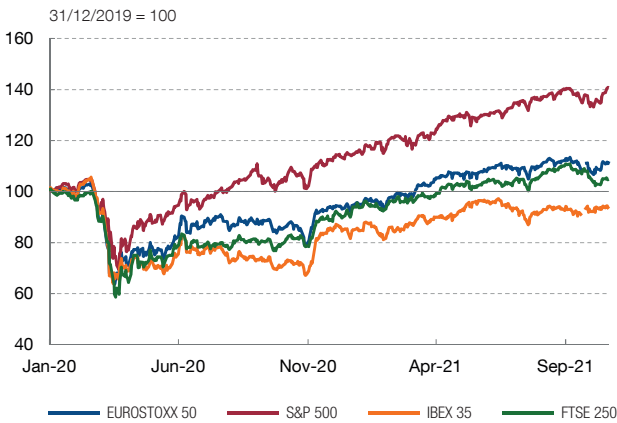
**The long-term yields of higher-rated sovereign bonds fell between April and end-August and have rebounded since then, while sovereign and corporate risk premia have remained at low levels.** The increase in long-term risk-free interest rates in recent months is linked to the rise in the upside medium-term inflation risks perceived by the financial markets. Following these movements, the long-term yields of higher-rated sovereign bonds stand at levels close to or even above (in the case of the UK and German benchmarks) those seen in Spring and much higher than posted at the start of the year (see Chart 1.4.2). The estimates available also point to an increase in term premia in recent months, although they currently remain well below their historical averages (see Chart 1.4.3). Also, since August long-term real interest rates have risen less than nominal interest rates (United States) or have even continued to fall in certain areas (the euro area), reaching highly negative levels (close to their all-time lows). This very low level of long-term

Chart 1.4

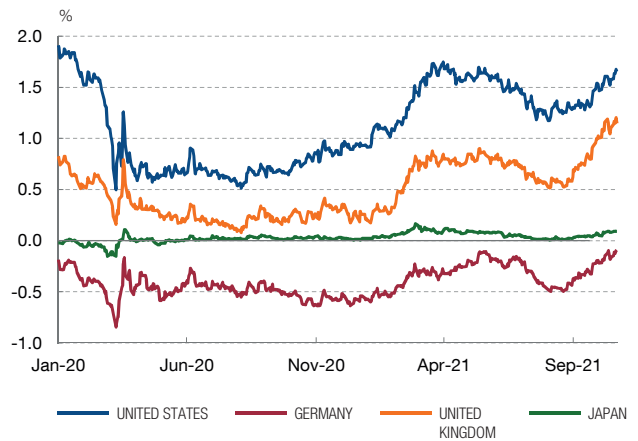
**STOCK MARKET INDICES HAVE RISEN, SOVEREIGN DEBT YIELDS HAVE INCREASED SINCE AUGUST AND SOVEREIGN AND CORPORATE RISK PREMIA HAVE REMAINED AT LOW LEVELS**

Positive corporate earnings and an accommodative monetary policy stance have supported the rise in stock market indices in international markets, although they have also been affected by one-off corrections. Long-term sovereign bond yields decreased between April and August and have rebounded thereafter, conditioned by the increase in the upside medium-term inflation risks perceived by the financial markets. Following these movements, these yields stand at levels much higher than at the beginning of the year. Despite these developments, term premia and long-term real interest rates remain at very low levels from a historical perspective. Euro area sovereign risk premia and non-financial corporations' bond premia have remained at low levels, supported by the continuation of accommodative monetary conditions and lower concern for credit risks.

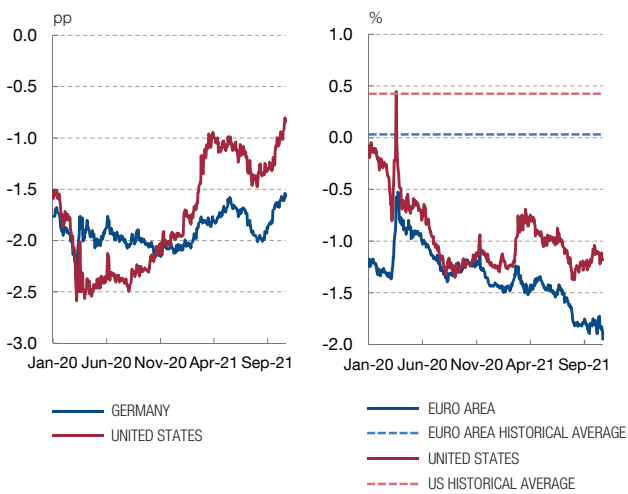
1 STOCK MARKET INDICES



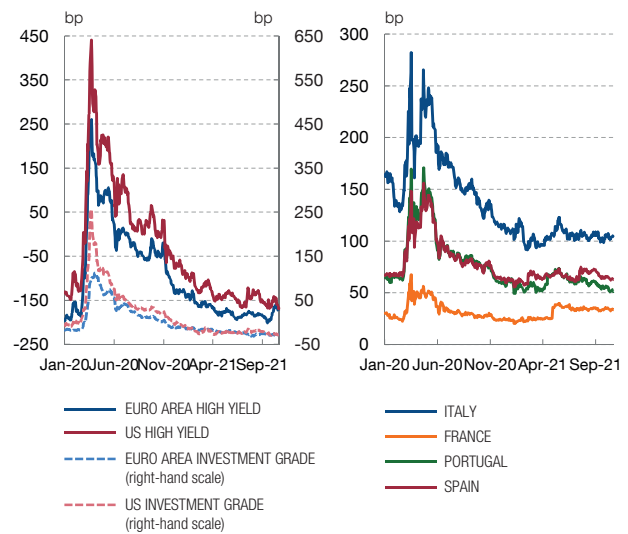
2 10-YEAR SOVEREIGN BOND YIELDS



3 DEVIATION FROM THE HISTORICAL AVERAGE OF THE TERM RISK PREMIUM IN THE 10-YEAR GOVERNMENT BOND INTEREST RATE (LEFT) (a) AND THE 10-YEAR REAL INTEREST RATE (RIGHT) (b)



4 DEVIATIONS FROM THE HISTORICAL AVERAGE OF NON-FINANCIAL CORPORATIONS' BOND SPREADS RELATIVE TO THE SWAP CURVE (LEFT) (c) AND THE 10-YEAR GOVERNMENT BOND SPREAD AGAINST GERMANY (RIGHT) (d)



SOURCES: Refinitiv Datastream and Banco de España.

- a Term risk premia are obtained from a decomposition of 10-year interest rates into risk premia by term and expectations of short-term interest rate changes. The expectations are obtained by forecasting the future short-term instantaneous interest rate using an ARFIMA model on each of the interest rate curve components (long-term level, slope and curvature) estimated daily. Once the short-term interest rate change expectations are obtained, the premium is obtained as the difference between the 10-year rates and the short-term rate expectations. The historical averages of the term premia are calculated between 2003 and 2021.
- b The historical average of the 10-year real interest rate in the euro area and the United States is calculated between 2004 and 2021. Until July 2008 in the euro area and June 2007 in the United States the data on French and US inflation-linked bonds are used. Thereafter, real interest rates are calculated in the euro area as the difference between the 10-year overnight indexed swap and the 10-year inflation compensation and in the United States as the difference between the 10-year government bond and the 10-year inflation compensation.
- c High yield: ICE Bank of America Merrill Lynch Non-Financial High Yield Index. Investment grade: ICE Bank of America Merrill Lynch Non-Financial Index. Deviations are calculated relative to the historical average between 1998 and 2021.



risk-free real interest rates appears to be linked to various structural factors (demographic factors, low productivity growth, greater inequality, high demand for safe assets, etc.) and to other more conjunctural factors, such as, in particular, central banks' asset purchase programmes. This factor has continued contributing to euro area sovereign risk and non-financial corporations bond premia remaining at low levels (see Chart 1.4.4). The latter, except in the high yield segment in the euro area, have even declined in recent months, currently standing below their historical average. This might be due to lower market concern for non-financial corporations' credit risks, which would be in line with the more favourable performance of defaults and the positive balance between upward and downward credit rating revisions in recent months. However, around one third of the outstanding balance of debt issuances in the euro area with BBB rating continues to have a negative outlook. Box 1.1 analyses in depth the factors determining sovereign debt long-term interest rates in Europe and the United States.

**A potential earlier than expected withdrawal by the markets of central banks' monetary stimuli might raise long-term risk-free interest rates further and trigger corrections in asset prices.** This scenario could materialise, for example, if the rise in inflation observed in the advanced economies were more persistent than anticipated. The possible increase in yields could be transferred more intensely to corporate bonds, since their risk premia are abnormally low according to their historical relationship with their usual determinants, such as enterprise value and uncertainty over enterprise value, leveraging and risk aversion (see Chart 1.5.1). This seems to be related to the persistence of very accommodative monetary conditions.<sup>6</sup> In the stock markets, although risk premia do not appear to have been so influenced by expansionary monetary policies and are currently above their historical average, these developments could lead to a fall in share prices. In fact, their current high level, compared with firms' earnings, seems to be largely due to low long-term real interest rates (see Chart 1.5.2). In any event, the impact of an increase in long-term interest rates on the price of risk-bearing assets would probably be cushioned if this movement were accompanied by an improvement in the macroeconomic outlook, given the beneficial effect this would have on the economic and financial position of the issuers of these assets.

**Under this hypothetical correction scenario, there would also be a tightening of financing conditions with possible adverse implications for credit risk.** First, this shock could reduce economic agents' spending, negatively affecting economic growth. Second, in this scenario, indebted agents' financial burden would tend to increase, although the speed and intensity of this effect would depend on the structure of their liabilities and on how interest rates evolve over the different maturities.

---

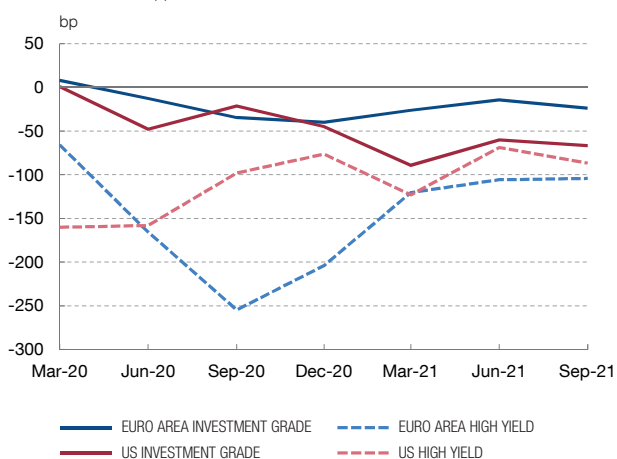
<sup>6</sup> For further details, see Box 1.1 of the *Financial Stability Report Spring 2021* and J.M. Gálvez and I. Roibás (2021), "Asset price misalignments in financial markets: an empirical analysis", Working Paper, Banco de España (forthcoming).

Chart 1.5

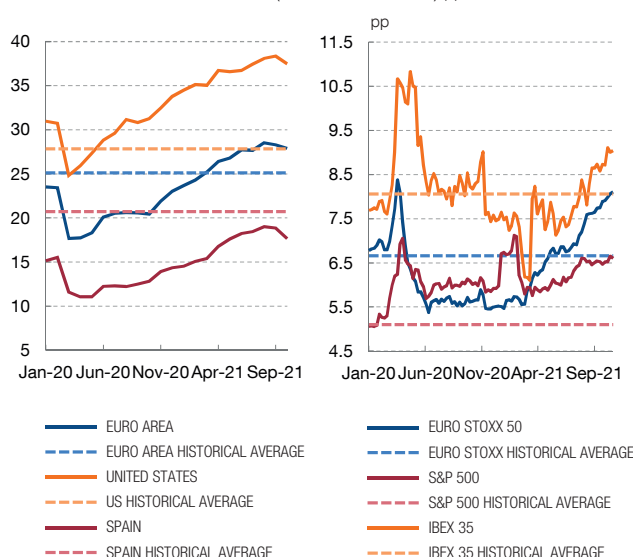
**PRICES OF RISK-BEARING FINANCIAL ASSETS ARE STILL HIGH COMPARED WITH SOME OF THEIR DETERMINANTS**

Corporate credit risk premia are below the level warranted by their historical relationship with determinants such as enterprise value and uncertainty over enterprise value, leveraging or risk aversion. For their part, stock prices in the United States and the euro area are high compared with the cyclically-adjusted earnings of listed firms. This appears to be explained not by low stock market risk premia (which are above their historical average) but rather by low long-term real interest rates.

1 CORPORATE CREDIT RISK PREMIA, DEVIATIONS FROM HISTORICAL DETERMINANTS (a)



2 CYCLICALLY-ADJUSTED PER (LEFT-HAND PANEL) (b). STOCK MARKET RISK PREMIUM (RIGHT-HAND PANEL) (c)



SOURCES: Refinitiv Datastream and Banco de España.

- a The difference between the corporate credit risk premium observed and that predicted by a corporate bond valuation model based on four factors: expected enterprise value (EV), uncertainty over expected EV, corporate sector leverage, and investor risk aversion. For more details, see Galvez and Roibás, "Asset price misalignments: an empirical analysis", Working Paper (forthcoming), Banco de España.
- b The cyclically-adjusted PER is calculated as the ratio of the share price to the 10-year moving average of earnings. The historical averages are calculated for the period 1997-2021.
- c The stock market risk premium is calculated using a 2-stage dividend discount model. For more details, see Fuller and Hsia (1984), "A simplified common stock valuation model", *Financial Analysts Journal*. The historical averages are calculated for the period 2006-2021.

**A potential worsening of the macroeconomic outlook or an increase in the uncertainty surrounding it might also trigger price corrections in corporate bonds and shares in the international markets.** This scenario might arise, for instance, if the risks described in the previous section were to materialise. This would translate into a reduction in the expected future path of firms' earnings or greater uncertainty about said path, which would adversely affect the value of shares through its negative impact on shareholder remuneration. Corporate bond prices would be affected to the extent that this situation causes risk premia to rise through an increase in perceived credit risks or lower investor tolerance thereto.

**1.2.2 Spanish real estate market**

**House sales rose sharply in the first eight months of 2021, by almost 14% over the same period of 2019, in contrast to housing supply which was more**

**contained.** The recent housing demand dynamics appear to be backed, not only by the improvement in the general economic situation and the accommodative financial conditions, but also by the materialisation of investment decisions that had been postponed following the onset of the pandemic and by changes in households' housing preferences arising from that shock (see Chart 1.6.1). In particular, these changes are being reflected in a comparatively more dynamic demand for single-family homes and new housing. But housing supply is less dynamic and, were the current patterns to continue, it could be insufficient to absorb higher demand in the coming years. In any event, in the medium term, the Housing Renovation and Urban Regeneration Plan, to be implemented within the framework of the Recovery, Transformation and Resilience Plan (RTRP), which has funding of €6,820 million out of the NGEU funds, could drive activity in the residential sector, including both renovation and new housing.

**This increase in house purchases prompted an acceleration in average house prices in Q2, reversing the slowdown observed since early 2019.** House prices, which rose by 3.3% year-on-year (see Chart 1.6.2), were stronger both in the new housing segment (6%) and, to a lesser extent, in second-hand housing (2.9%). New house prices have risen the most in recent years, which could be related to the fact that new housing can be more easily adapted to buyers' preferences and is in shorter supply than second-hand housing. Going forward, the recent sharp increase in the cost of building industry inputs, were it to persist, could put further pressure on new house prices. It should also be borne in mind that the growth in activity stemming from the implementation of the RTRP could further tighten the costs of building industry inputs and labour. Despite these recent developments in house prices, there are still no signs that these prices are, on average, significantly above their long-term equilibrium level (see Chapter 3 of this report).

**In keeping with the greater dynamism of house sales, new mortgage loans also recorded strong growth in 2021 H1.** Specifically, new lending for house purchase was some 40% higher than in 2019 H1. Nevertheless, the outstanding amount of mortgage lending has increased very moderately, as mortgage repayments have also risen, possibly because households have used the savings they accumulated in the early stages of the pandemic to early repay all or part of their mortgage loans. Another possible factor is the end of the moratorium programmes, which entails the restart of mortgage repayments that had been suspended.

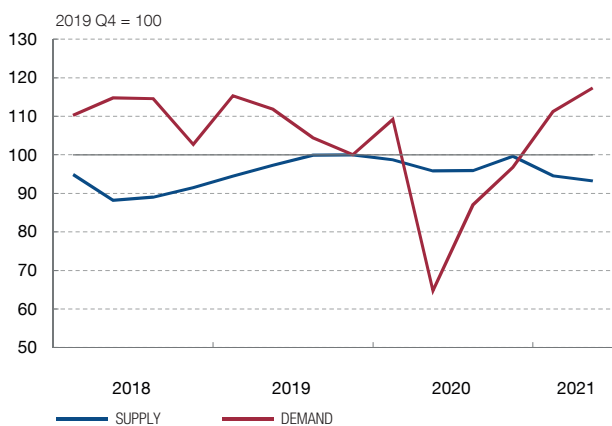
**This mortgage loan growth essentially appears to respond to demand-side factors, as there are no signs of easing of credit standards in recent months, although interest rate spreads in the fixed-rate mortgage segment have narrowed recently.** For instance, average loan-to-price (LTP) ratios have held quite steady in recent months, although for floating-rate mortgages they have dipped slightly; this suggests that mortgage lending criteria may have become somewhat more stringent. Moreover, the proportion of mortgage loans with LTP ratios over

Chart 1.6

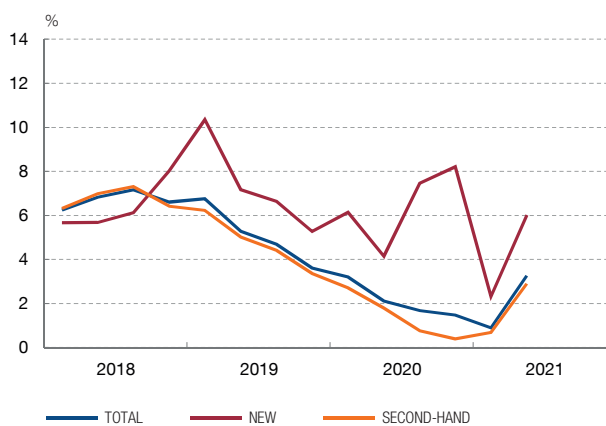
**HOUSE SALES AND PRICES HAVE ACCELERATED SIGNIFICANTLY IN 2021 TO DATE, WHILE AVERAGE PRICES OF COMMERCIAL REAL ESTATE SHOWED SOME SIGNS OF RECOVERY IN Q2**

Housing transactions have risen sharply in 2021 to date compared with the same period of 2019, while housing supply dynamics have been weak. Accordingly, average house prices accelerated in Q2, especially in the new housing segment. Although mortgage conditions have remained generally steady, fixed-rate mortgage spreads have narrowed significantly in the year. In the commercial real estate market, average prices fell again in Q1, followed by some signs of recovery in Q2.

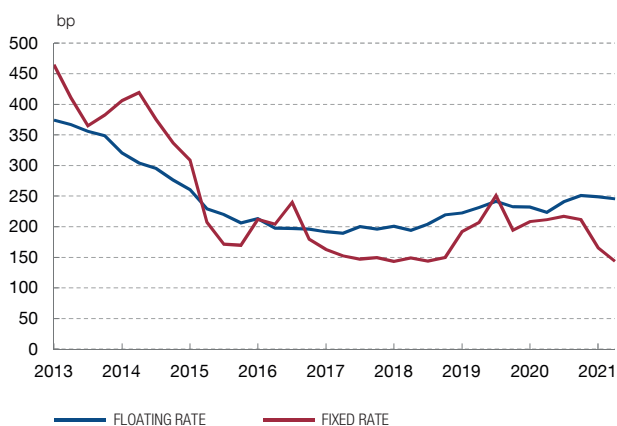
1 HOUSING SUPPLY AND DEMAND (a)



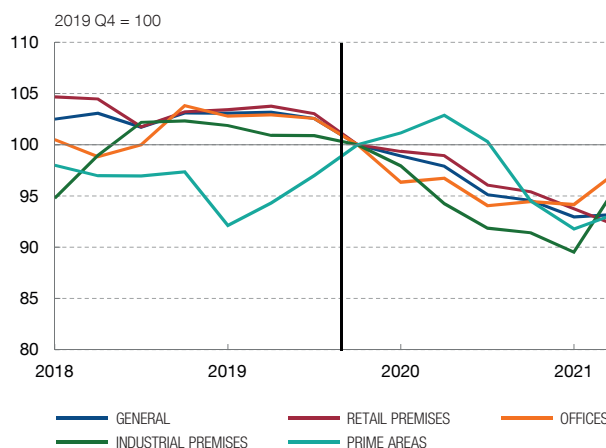
2 HOUSE PRICES  
Year-on-year change



3 RISK-FREE RATE SPREADS (b)



4 COMMERCIAL REAL ESTATE MARKET PRICE INDICES (c)



**SOURCES:** Instituto Nacional de Estadística, Ministerio de Transportes, Movilidad y Agenda Urbana, TINSa, Colegio de Registradores and Banco de España.

- a Housing supply comprises new housing, proxied by building completion certificates, and second-hand housing, proxied by the net supply of housing on the main real estate portals compiled by TINSa. Housing demand data refer to housing sales published by INE.
- b The rate spread of each new mortgage over the euro IRS curve or swap curve. For floating-rate mortgages, the 1-year IRS rate is used to calculate the spread; for fixed-rate mortgages, the term equivalent to the mortgage term is chosen. The chart depicts the median of the spreads for the two types of mortgages. The 2021 Q2 data are provisional.
- c To calculate these indices, each market is divided into strata of homogeneous real estate. A price is then estimated for each stratum, using a hedonic regression model. The indices aggregate the estimated price data for each stratum. The 2021 Q2 data are provisional.

80% has not increased. Interest rate spreads have remained steady for floating-rate mortgages, but fixed-rate spreads have narrowed to their lowest levels in recent years (see Chart 1.6.3). At the same time, fixed-rate mortgage maturities have lengthened and their share of new mortgages has increased.

**In the commercial real estate markets, prices fell back again in 2021 Q1, but showed some signs of recovery in Q2.** By market segment, prices of offices and industrial premises rose moderately in Q2, but prices of retail premises, which make up the majority of commercial real estate, continued to fall (see Chart 1.6.4). The average price of real estate in prime locations (the prime segment) also rose in Q2, after the decline observed since the start of the health crisis.

## 1.3 Non-financial sectors

### 1.3.1 Non-financial corporations and households

**The economic situation of firms evolved favourably throughout 2021 H1, although with a notable degree of heterogeneity across sectors.** Corporate earnings posted a strong recovery, so that in most branches of activity turnover returned to 2019 H1 levels (see Chart 1.7.1). However, in the economic sectors most affected by the COVID-19 crisis,<sup>7</sup> sales grew more moderately and are still well short of pre-pandemic levels. These more favourable developments in terms of business activity have driven up firms' profitability. Thus, on Central Balance Sheet Data Office Quarterly Survey (CBQ) data, the percentage of firms in 2021 H1 with negative return on assets (ROA)<sup>8</sup> is 8 pp lower than in the same period a year earlier, although it is still 5 pp higher than in 2019<sup>9</sup> (see Chart 1.7.2). This is consistent with the microsimulations made by the Banco de España, which project a gradual recovery in corporate earnings this year and over the next two years, in keeping with the greater economic dynamism expected. Nevertheless, this improvement will be slower in the economic sectors most affected by the health crisis, and is subject to the business risks indicated in section 1.1 above.<sup>10</sup>

**The recovery in economic activity, the halt in the tightening of credit standards<sup>11</sup> and longer average debt maturities all appear to be helping ease firms' liquidity risks.** Overall, in firms' debt maturity structures, longer maturities account for a higher share of the total than they did before the COVID-19 crisis, partly owing to the Official Credit Institute (ICO) guarantee scheme. Recent developments in average

7 The economic sectors most affected by the COVID-19 pandemic are those whose turnover in 2020 was down more than 15% on 2019, specifically: hospitality, oil refining, social and cultural services, transportation and storage, the textile industry and the manufacture of transport equipment.

8 Return on assets = (Ordinary net profit + Financial costs) / Net assets (net of non-interest-bearing borrowing).

9 See "Results of non-financial corporations to 2021 Q2", Analytical Articles, *Economic Bulletin* 4/2021, Banco de España.

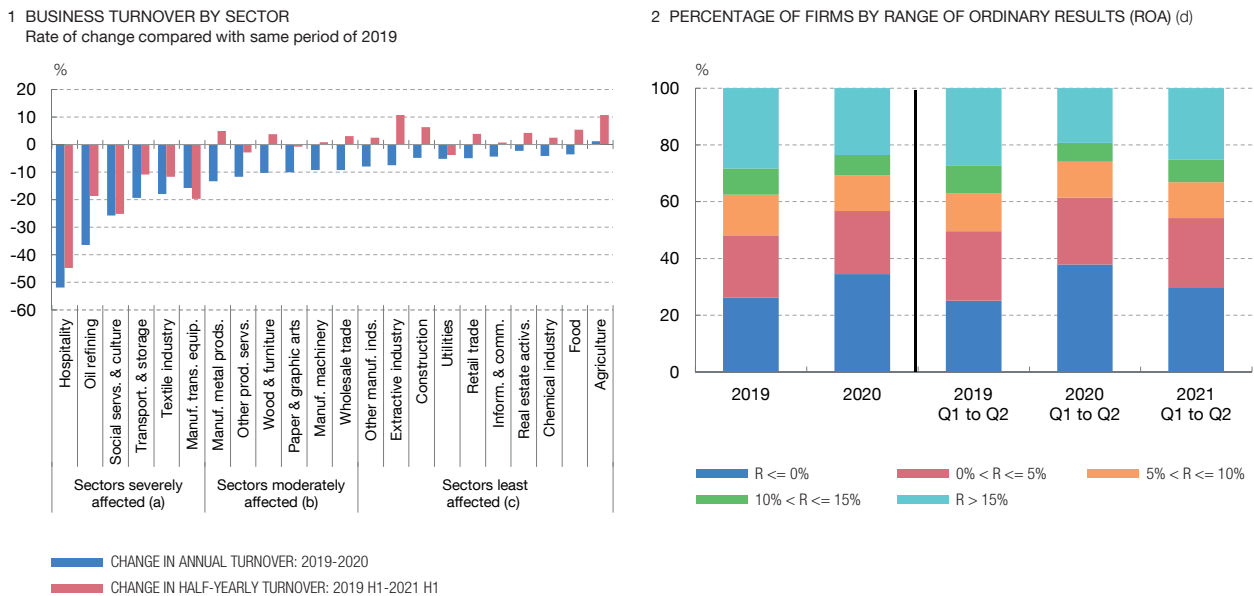
10 See "Impact of the COVID-19 crisis on Spanish firms' financial vulnerability", *Occasional Paper* No 2119, Banco de España.

11 See "The July 2021 Bank Lending Survey in Spain", Analytical Articles, *Economic Bulletin* 3/2021, Banco de España.

Chart 1.7

**FIRMS' SALES AND PROFITABILITY HAVE IMPROVED, ALBEIT VERY UNEVENLY ACROSS ECONOMIC SECTORS**

During the first half of the year, business turnover in most economic sectors returned to pre-pandemic levels. However, in the sectors severely affected by the health crisis, the recovery is proving to be slower and activity is still clearly below 2019 levels. Growth in corporate earnings has translated into an – albeit still incomplete – improvement in profitability.



**SOURCES:** Agencia Estatal de Administración Tributaria and Banco de España.

- a Economic sectors severely affected: those whose turnover fell by more than 15% in 2020.
- b Economic sectors moderately affected: those whose turnover fell by more than 8% but less than 15% in 2020.
- c Economic sectors least affected: those whose turnover fell by less than 8% in 2020.
- d CBQ data. Return on assets (R) = (Ordinary net profit + Financial costs) / Net assets (net of non-interest-bearing borrowing).

payment periods to suppliers, which on CBQ data returned, in 2021 Q2, to levels similar to their pre-pandemic levels, also point to a drop in liquidity tensions.<sup>12</sup>

**The risks related to the solvency of non-financial corporations also appear to be easing, as the recovery in economic activity has been accompanied by lower debt growth.** In consequence, average debt and debt burden ratios have fallen, in the case of the latter driven also by the decline in the average cost of outstanding debt. Developments in the volume and quality of bank debt and the use of support measures such as the ICO guarantees have been uneven across economic sectors and firms (see Chapter 2 of this report).

**The economic situation of households has also recovered, as evidenced by recent household income and labour market developments, but again with a**

<sup>12</sup> See Box 1, “Recent developments in trade finance granted and received by non-financial corporations”, in “Results of non-financial corporations to 2021 Q2”, Analytical Articles, Economic Bulletin 4/2021, Banco de España.

**certain degree of heterogeneity.** Specifically, households' gross disposable income (GDI) rose by 1% in 2021 H1, but it is still 3.9% below the 2019 levels. Also, at September 2021, effective social security registrations<sup>13</sup> were barely 1.2% lower than their pre-pandemic levels (see Chart 1.8.1), placing the number of employed workers of the Labor Force Survey (EPA), in this same period, above those observed before the pandemic. Similarly, according to the European Commission's consumer survey, at that date households either expected their economic situation to improve over the next 12 months (households in the top two income quartiles) or to hold relatively steady (households in the bottom two income quartiles)<sup>14</sup> (see Chart 1.8.2). It must also be borne in mind that since the start of the year there has been a significant cutback in some of the household income support measures, such as the loan moratoria,<sup>15</sup> and this will have had most impact on the more vulnerable households.

**The average debt ratio rose slightly in 2021 H1, while the average debt burden ratio fell due to the decline in the average cost of outstanding debt.** Thus, the debt-to-GDI ratio stood at 94.9% in June, 4.2 pp above the pre-pandemic level, while the debt burden-to-GDI ratio was 0.5 pp above its pre-pandemic level.

**The more granular data point to different lending dynamics according to certain household characteristics.** Households that had loans before the outbreak of the pandemic have generally reduced their level of debt, albeit at an increasingly more moderate pace. The lowest reductions in the outstanding sum of bank loans are recorded among higher income households (proxied according to income by postcode) and among those resident in the municipalities hardest hit by the crisis (proxied by those with the highest percentage of firms with furloughed workers) (see Chart 1.8.3). The latter might be explained, at least in part, by the greater use made of loan moratoria in the areas most affected by the crisis.<sup>16</sup> An analysis of the new debt taken on by households that had no loans at the onset of the pandemic also shows stronger lending growth in higher income areas and in those hardest hit by the crisis (see Chart 1.8.4). For all households, whether or not indebted at the start of the crisis, income is the variable that best explains credit developments.<sup>17</sup> This suggests that higher income households, and especially those in the top income quintile, were most likely to take on debt and/or to have had greater access to credit since the beginning of the pandemic.

---

13 Effective social security registrations are total registrations excluding workers subject to furlough schemes (ERTEs by their Spanish name).

14 See the European Commission's monthly [consumer survey](#).

15 For instance, the application period for bank loan moratoria, with a maximum duration of nine months, ended on 31 March 2021. See [Royal Decree-Law 3/2021](#) of 2 February 2021 adopting measures to narrow the gender gap and on other Social Security and economic matters.

16 See "Support measures in the banking sector: loan moratoria", *Financial Stability Review*, Issue 40, spring 2021, Banco de España.

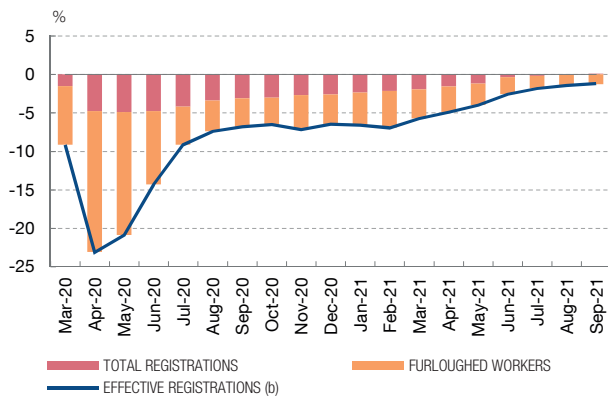
17 Stronger new lending in the municipalities with the most furloughed workers is consistent with debts taken on to meet their current expenditure. However, the positive correlation between income level and the percentage of firms with furloughed workers at the municipal level suggests that this increase in lending could reflect an income effect.

Chart 1.8

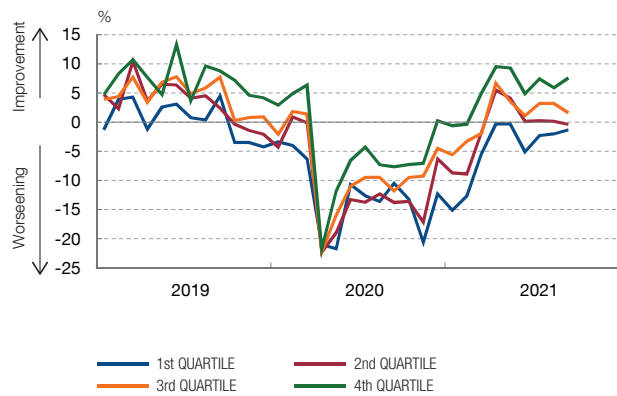
**THE ECONOMIC SITUATION OF HOUSEHOLDS ALSO RECOVERED IN 2021 H1, WITH INCOME, EMPLOYMENT AND EXPECTATIONS ALL IMPROVING, ALBEIT UNEVENLY BY EMPLOYMENT SECTOR AND INCOME LEVEL, WHICH ALSO CONDITION HOUSEHOLDS' BORROWING DECISIONS**

At September, effective social security registrations were already very close to their pre-pandemic levels; indeed, Labour Force Survey (EPA) employment figures were above those levels. Workers who are still furloughed make up almost all employment still to be recovered. This positive picture of households' situation was also reflected in their expectations for the next 12 months: in September, households expected their economic situation to improve over that horizon (the two highest income quartiles) or to hold relatively steady (the two lowest income quartiles). In general, households with outstanding loans before the health crisis have reduced their debt levels. Higher income households and those resident in municipalities with a higher percentage of firms with furloughed workers have done so to a lesser extent. These population segments also account for much of the new debt taken on by households that had no loans before the pandemic.

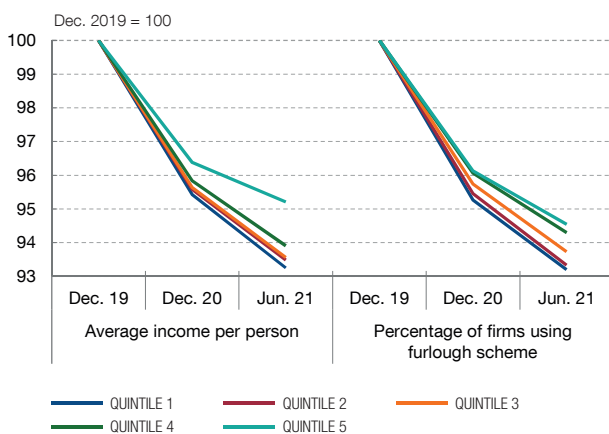
1 EFFECTIVE SOCIAL SECURITY REGISTRATIONS (a)  
Change compared with February 2020



2 EXPECTATIONS FOR THE ECONOMIC SITUATION OF HOUSEHOLDS FOR THE NEXT 12 MONTHS, BY INCOME QUARTILE (c)



3 CHANGE IN LENDING TO HOUSEHOLDS THAT HAD BANK LOANS BEFORE DECEMBER 2019 (d) (e)



4 HOUSEHOLDS WITH NO BANK DEBT AT DECEMBER 2019 (d) (e) (f)



**SOURCES:** Ministerio de Inclusión, Seguridad Social y Migraciones, European Commission, INE and Banco de España.

- a The average data for each month are taken and are seasonally adjusted.
- b Effective social security registrations are total registrations excluding furloughed workers.
- c Indicator = percentage of households expecting their economic situation to improve significantly  $\times 1$  + percentage expecting their economic situation to improve somewhat  $\times 1/2$  - percentage of households expecting their economic situation to worsen somewhat  $\times 1/2$  - percentage expecting their economic situation to worsen significantly  $\times 1$ .
- d Classification by income quintiles at postcode level. Each postcode is assigned the percentage of firms using the furlough scheme in the corresponding municipality. Households are defined considering individual borrowers (natural persons and sole proprietors). Each individual borrower is assigned the amount of credit resulting from the sum of the proportional part of each of the loans in their name.
- e Postcodes in very small municipalities for which no postcode-level income data are available have been excluded. In order for all quintiles to have equal importance, a double allocation criterion has been used in each. The postcodes (municipalities) are ranked by income, by the impact of the furlough scheme (measured as the percentage of firms using the furlough scheme over the number of firms in the municipality in March 2021) and by the stock of credit at the start of the crisis (December 2019). Thus, the first quintile includes the postcodes (municipalities) that account for 20% of loans at the start of the crisis and have the lowest income level or the lowest percentage of firms using the furlough scheme in the municipality, and so on for the other four quintiles.
- f The contribution to the change in lending to households that had no bank debt in December 2019 is defined as the ratio of their bank debt in June 2021 (accumulated as a result of new lending since December 2019) to the stock of households' bank loans at December 2019 within each quintile.



**The increase in households' aggregate wealth –on account of the rising prices of both financial and real assets and the savings accumulated– has also strengthened the financial position of households.** As consumption has increased, the household saving rate has moderated, but it is still above its historical average. In addition, the Household Budget Survey<sup>18</sup> shows that all household income quartiles made a positive contribution to the significant increase in aggregate saving in 2020, although the contribution of lower income households was smaller.

### 1.3.2 General government in Spain

**The latest data available, corresponding to 2021 H1, are beginning to reflect a certain correction in the imbalance in public finances in Spain compared with the high levels reached in 2020.** The general government deficit stood at 8.7% of GDP in June in cumulative 12-month terms, slightly more than 2 pp below the end-2020 figure (see Chart 1.9.1), while public debt stood at a still very high 123% of GDP in June. The deficit correction is explained by the pick-up in income (10.5% compared with the same period of the previous year) arising from the economic recovery under way, and by the moderation of expenditure growth, on the back of lower extraordinary expenses related to the response to COVID-19 (total expenditure remained constant compared with the same period of the previous year).

**Bearing in mind these developments, the Banco de España's latest projections, published in September,<sup>19</sup> expect the general government deficit to improve significantly in 2021 and over the next two years** (see Chart 1.9.2). After reaching 11% of GDP in 2020, the budget deficit could close 2021 around 7.6%. This forecast takes into account the measures adopted to temper the strong surge in electricity prices, and also the costs of a further extension, to the end of the year, of the COVID-19-related furlough schemes. The imbalance in public finances is expected to continue to correct in 2022 and 2023, thanks to the improved cyclical momentum expected and to the withdrawal of the extraordinary COVID-19-related measures.<sup>20</sup> Nevertheless, the deficit will still be above 3% of GDP in 2023 and public debt will decline by barely 5 pp over the projection horizon.

**The structural deficit and debt levels envisaged for the end of the projection horizon (2021-2023) place Spanish public finances in a vulnerable position, which could also continue over longer horizons.** In addition to the high level of public debt expected for 2023 (over 110% of GDP), the structural adjustment of Spanish

---

18 See the INE's [Household Budget Survey](#). Year 2020.

19 See [Macroeconomic projections for the Spanish economy \(2021-2023\)](#).

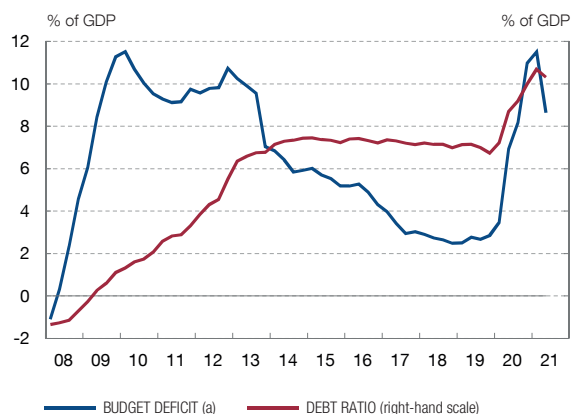
20 The draft 2022 State and Social Security Budget and the draft Budgetary Plan for 2022, which were presented after the cut-off date for the Banco de España's September projections, entail no significant change to the fiscal outlook for 2022.

Chart 1.9

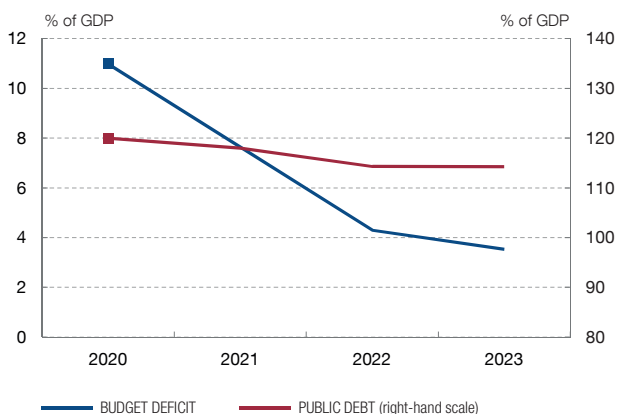
**THE SPANISH BUDGET DEFICIT HAS DECLINED IN 2021, BUT IT REMAINS ABOVE ITS PRE-PANDEMIC LEVEL AND THE PROJECTED DEBT REDUCTION UP TO 2023 IS LIMITED**

In the first half of 2021 the general government deficit declined, a process that is expected to continue during the rest of the year and over the next two years. However, if no new measures are introduced, the public debt and budget deficit levels expected for the end of the projection horizon will remain high, representing a source of vulnerability for the Spanish economy. This vulnerability is mitigated by low interest rate levels, which are reflected in reduced and declining cost of debt service. Although, in the short term, the expansionary fiscal policy should continue to help support the ongoing economic recovery, the need for a future credible and sustainable fiscal consolidation process advises that details of this process be defined and announced without delay.

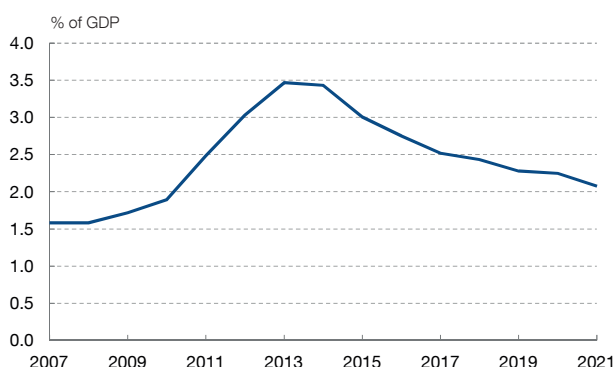
1 FINANCIAL POSITION OF GENERAL GOVERNMENT



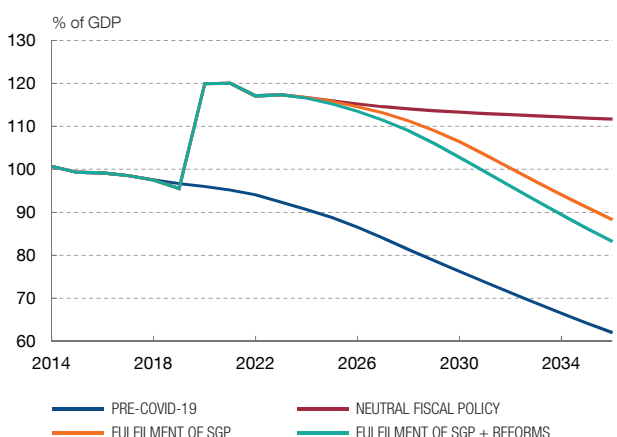
2 PUBLIC DEBT AND BUDGET DEFICIT FORECASTS (b)



3 INTEREST EXPENSES



4 SIMULATED PUBLIC DEBT PATHS (c)



**SOURCES:** Intervención General de la Administración del Estado (IGAE) and Banco de España.

- a Four-quarter cumulative data.
- b Banco de España macroeconomic projections published on 21 September 2021. The squares in 2020 denote the figure revised by the National Audit Office (IGAE) nine days later.
- c The pre-COVID-19 scenario replicates the simulations of the public debt-to-GDP ratio made with data and projections at December 2019. The neutral fiscal policy scenario simulates the debt projections drawing on the Banco de España's latest forecasts (see *Macroeconomic projections for the Spanish economy (2021-2023)*), with no additional restrictions on the change in the structural balance. Fulfilment of the SGP scenario assumes a public debt consolidation plan with a reduction in the structural deficit, up to budgetary equilibrium, of 0.5 pp of GDP every year. The last scenario adds structural reforms that would lead to an increase in potential GDP of 0.6 pp in the long term.

public expenditure and revenue remains outstanding (over 3% of GDP), along with the challenges posed by population ageing. In the short and medium term, the monetary policy of the European Central Bank (ECB) and the economic growth momentum foreseeable as a result of the take-up of the NGEU funds are expected

to help contain this vulnerability. So far, the impact of the rise in the debt ratio on interest expenses (see Chart 1.9.3) has also been mitigated by the low interest rates. However, a hypothetical future increase in interest rates would trigger a spike in interest expenses, adding pressure to the fiscal position, although this effect would not be immediate, given the maturities of the public debt. Moreover, an accommodative fiscal policy remains necessary to consolidate the economic recovery currently under way. In any event, this does not preclude the need for fiscal consolidation, to ensure that, in the medium term, the Spanish economy is in a better position to address the challenges outstanding, and in a less vulnerable position in the event of future adverse economic developments or a crisis of confidence. According to the simulation exercises performed, in the absence of budgetary consolidation measures the debt ratio would remain around 115% of GDP over the next fifteen years, under the assumption that the Spanish economy maintained growth rates similar to the average of recent decades. By contrast, fulfilment of the Stability and Growth Pact (SGP), especially if it is accompanied by structural reforms, would allow to reach over that period a lower level of indebtedness than that observed before the outbreak of the pandemic (see Chart 1.9.4).<sup>21</sup>

### 1.3.3 Financial flows vis-à-vis the rest of the world and the international investment position

**In 2021 H1, and in contrast to 2020, international investors again made net purchases of Spanish general government debt, an indication that financial flows vis-à-vis the rest of the world were returning to normal.** International investors' net purchases in 2021 H1 totalled €41.2 billion. In consequence, their holdings, which amount to around 45% of Spanish sovereign debt, ceased to fall as a proportion of the total (see Chart 1.10.1).

**The Spanish economy's negative net international investment position (IIP) stood at 78.4% of GDP in June, representing an element of vulnerability in the event of deterioration of financing conditions in the international markets.** Nevertheless, the ratio has fallen significantly since end-2020, specifically by 7.2 pp, of which 2.8 pp are explained by GDP growth. The valuation effects resulting from the increase in value of foreign assets held by Spanish residents and the decrease in value of Spanish liabilities held by international investors (see Chart 1.10.2) explains a further significant portion of this adjustment. In any event, this level of negative net IIP to GDP is still 3.4 pp higher than that existing at end-2019.

---

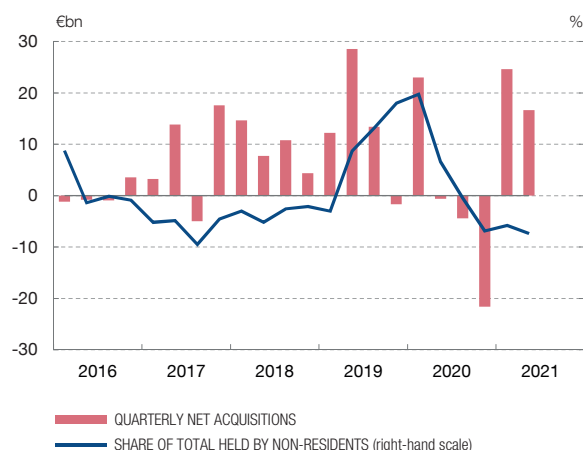
21 The SGP envisages a public finance adjustment that translates into an improvement in the structural balance of 0.5 pp of GDP per year until the level of this balance reaches zero. Furthermore, the debt rule requires that the excess of the debt-to-GDP ratio above the 60% benchmark be reduced by one twentieth per year. As the Spanish public debt ratio reached 120% of GDP in 2020, that excess is 60 pp. Therefore, according to the European rule, the debt ratio should be reduced, on average, by 3 pp per year.

Chart 1.10

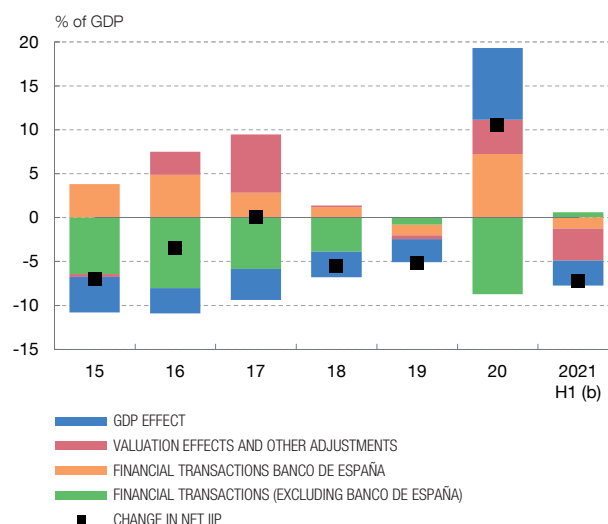
**IN 2021 H1, INTERNATIONAL INVESTORS RETURNED TO THE SPANISH GOVERNMENT DEBT MARKET AND SPAIN'S NEGATIVE NET INTERNATIONAL INVESTMENT POSITION DECLINED**

Non-resident sectors again made net purchases of Spanish general government debt in 2021 H1, an indication that financial flows vis-à-vis the rest of the world were returning to normal. In the same period, the Spanish economy's negative net international investment position (IIP) fell by 7.2 pp of GDP, thanks to positive valuation effects (due both to an increase in the value of foreign assets held by Spanish residents and a decrease in the value of Spanish liabilities held by foreign investors), net financial transactions vis-à-vis the rest of the world that were also positive (the counterpart of the current and capital account surpluses), and GDP growth.

1 INTERNATIONAL INVESTORS' NET ACQUISITIONS AND HOLDINGS OF SPANISH GENERAL GOVERNMENT DEBT



2 DETERMINANTS OF CHANGE IN NEGATIVE NET IIP (a)



SOURCE: Banco de España.

a The net IIP is the difference between the value of resident sectors' foreign assets and that of the liabilities to the rest of the world.  
 b Calculated on four-quarter cumulative GDP.

**Spain's gross external debt rose by €66.4 billion in 2021 H1; although it fell to 197.9% of GDP thanks to output growth, it is still 28.4 pp above the pre-pandemic level.** This high debt level is an element of vulnerability in the event of a possible tightening of financing conditions in the international markets. However, this vulnerability is mitigated, to a certain extent, by the debt composition, as slightly more than half is public sector debt (general government and Banco de España), and by the fact that the average repayment periods are lengthy and it is mostly euro-denominated debt.

## THE DETERMINANTS OF INTEREST RATES IN THE UNITED STATES AND EUROPE

Long-term (10-year) risk-free interest rates have seen significant fluctuations over the course of the pandemic, in both the euro area and the United States. Between the onset of the pandemic and the roll-out of vaccines, the economic uncertainty brought about by the crisis led to a reduction in risk-free nominal rates, which was also reflected in inflation expectations. The largest fall in nominal rates seen in the United States was due to the substantial cut to the monetary policy interest rate in March 2020<sup>1</sup>. Afterwards, nominal rates remained broadly stable during this stage of the crisis. In the second phase of the pandemic, as vaccines were rolled out, promising news on vaccine effectiveness and the recovery of certain sectors led to a more encouraging economic outlook and a slight rebound in real and nominal rates. This trend was reversed in mid-2021 and until August 2021, amid a worsening market outlook that led to a sizeable fall in nominal rates. Finally, since the last days of August, a further rise in nominal rates has

been taking place in the euro area, together with an increase in inflation expectations. In the US, there has also been a rise since September.

With these developments in mind, this box seeks to examine the importance of the factors underlying the changes in long-term (10-year) nominal interest rates<sup>2</sup> over the course of the pandemic, in the euro area and the United States. To this end, statistical methods have been deployed to identify the economic and financial factors that explain the changes in nominal rates<sup>3</sup>. In particular, the box examines the role played by the expected inflation as implied by derivatives, short-term rate expectations, financial market uncertainty, the economic expectations reflected by the equity market and a residual variable that addresses all other factors.

In this respect, Charts 1 and 2 show the deviation of long-term nominal rates from their historical averages, as well

Chart 1  
DETERMINANTS OF THE 10-YEAR NOMINAL INTEREST RATE IN THE EURO AREA (a)

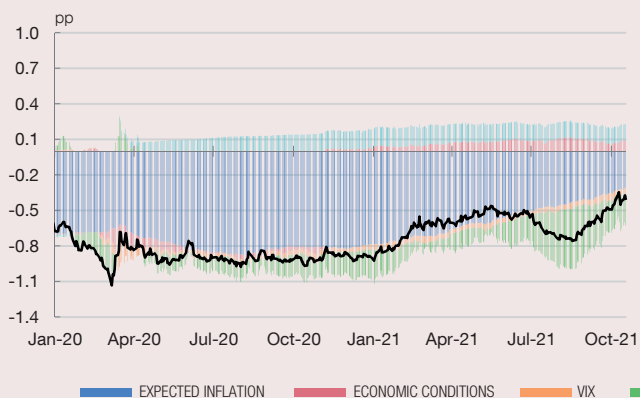
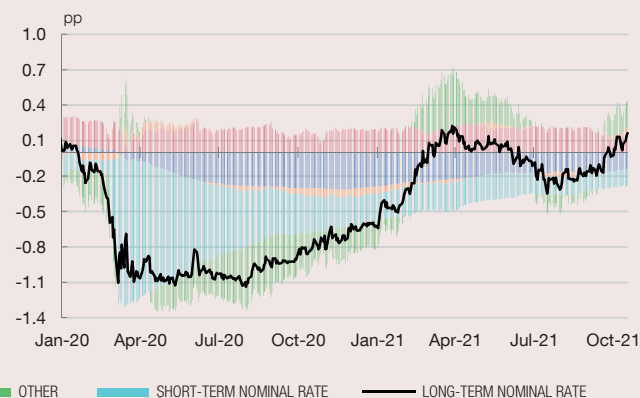


Chart 2  
DETERMINANTS OF THE 10-YEAR NOMINAL INTEREST RATE IN THE UNITED STATES (a)



**SOURCES:** Bloomberg, Datastream, Thomson Reuters and Banco de España.

**a** Deviations (in pp) are shown with respect to the historical average for the period running from August 2008 to September 2021. Expected inflation refers to 10-year inflation linked swaps (ILS), the VIX shows the implied volatility of the S&P 500, and economic conditions are proxied by the level of the S&P 500. The short-term nominal rate refers to the 3-month OIS rate.

- 1 In the United States, the Federal Funds Rate was reduced by 50 bp on 3 March, and by a further 100 bp on 16 March, to stand in the range 0-0.25%. Meanwhile, the deposit facility rate in the euro area has remained unchanged since it was set at -0.5% in September 2019.
- 2 Specifically, using the 10-year overnight index swap (OIS). 10-year inflation expectations are obtained by using Inflation-linked swaps (ILSs), i.e. derivatives whose prices are linked to future inflation.
- 3 The breakdown of the factors (see Charts 1 and 2) contributing to changes in the nominal rate in the two regions is based on deviations from the historical average, using a SVAR model (study based on independent shocks for each factor) with the following variables: the EURO STOXX 600 and S&P 500 indices, the implied volatility of the S&P 500 (VIX), expected inflation based on ILSs and short-term nominal rate expectations (measured using the 3-month OIS) over the period between August 2008 and October 2021. The contribution of each factor shows how the changes in each variable have affected the changes in the 10-year nominal rate.

**THE DETERMINANTS OF INTEREST RATES IN THE UNITED STATES AND EUROPE (cont'd)**

as the contribution made by each of the above factors. Certain aspects of such contributions vary across time and between the two geographic regions. Thus, in the case of Europe, the changes in long-term nominal rates following the restrictions on movement set in place in March 2020 can be explained by greater market uncertainty and, to a lesser degree, a worse economic outlook. In the United States, the initial fall in long-term nominal rates was essentially due to the easing of monetary policy and the rate cut immediately after the outbreak of the pandemic. One aspect common to both regions is that the contribution of expected inflation to nominal rates has been below its historical average, especially in Europe in the stage of the crisis prior to the announcement of the development of vaccines. In the case of Europe, this moderating effect of inflation expectations on rates was already apparent before the outbreak of the crisis.

Nonetheless, this situation began to change towards the end of 2020, amid a more encouraging economic environment and promising news on vaccine development. Thus, rising inflation brought upward pressure to bear on nominal rates in the euro area, especially from summer 2021 onwards. Also worth noting is the minor role played by the VIX component during this period, suggesting that

nominal rates have not been affected by greater uncertainty, even though US public debt is seen as a safe asset that serves as a haven from uncertainty.

The overall contribution made by other factors is also notable. Specifically, purchase programmes and accommodative monetary policy may have helped ensure that rates in the euro area have remained lower than might be expected solely from the economic variables expressly included in the model, particularly between June and October 2021. In the United States, these other factors have contributed to steeper rate increases in the first half of 2021. This could be explained by more optimistic expectations of growth in specific sectors, above all those dependent on the reopening of the economy (hotels, transport, leisure, etc.), which far outperformed the general index (S&P 500) used in the estimates assessing economic conditions.

In short, the changes in long-term nominal interest rates over 2021 appear to have been closely related to expectations of rising inflation following the post-pandemic resumption of activity and a brighter economic outlook. The rebound observed in the last month, which has been of greater intensity in the euro area, is mainly due to the higher levels of inflation expected.







# 2

## RISKS TO THE FINANCIAL SECTOR AND ITS RESILIENCE



## 2 RISKS TO THE FINANCIAL SECTOR AND ITS RESILIENCE

Bank lending has been notably more subdued in the first half of 2021, mainly as a result of the fall in demand. This moderation contrasts with the growth observed during the initial phases of the pandemic, which was driven by the private sector's liquidity needs and the support schemes established to mitigate the impact of the crisis. The volume of non-performing loans (NPLs) has continued to decline, although significant latent risks have been detected. Specifically, these are more pronounced in the loans granted under the support schemes which were naturally concentrated in the hardest-hit sectors and businesses. The economic upturn has led to the recovery in bank profitability which, nevertheless, remains relatively low compared with that of other sectors and non-euro area banking systems. The measures implemented by the authorities have also been key to increasing banks' solvency in the past year. In this connection, the stress tests conducted by the Banco de España and the European Banking Authority (EBA) reflect the banking sector's considerable resilience, in aggregate terms, to the materialisation of the risks identified, although there are notable differences across banks in terms of capital charges under the adverse scenario. In any case, the results of these tests do not indicate a need for extensive supervisory intervention under this scenario. The high risk-absorbing capacity of banks can be partly explained by the measures adopted by the authorities to address the economic and social effects of the crisis.

### 2.1 Deposit institutions

#### 2.1.1 Balance sheet structure, risks and vulnerabilities

##### *Credit risk*

**The volume of lending to the resident private sector in Spain remained stable in the last 12 months as a whole.** Lending by deposit institutions to the resident private sector fell by 0.2%<sup>1</sup> from June 2020 (see Chart 2.1.1), in clear contrast to the increase posted between December 2019 and June 2020, which was largely due to the economic policy measures implemented to alleviate the effects of the pandemic. The slight decline in the stock was influenced by the sharp decrease in total new lending granted to households and non-financial corporations (NFCs) in 2021 H1, which fell by 31% year-on-year. This reduction is mainly explained by the lower

---

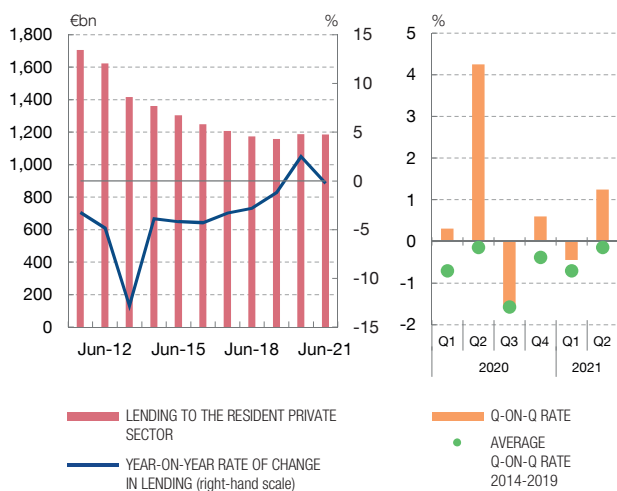
<sup>1</sup> The change in June 2021 was affected by a corporate transaction consisting of the absorption of an SLI into a significant deposit institution (DI). Excluding this operation, the year-on-year decrease in credit would be 0.8%.

Chart 2.1

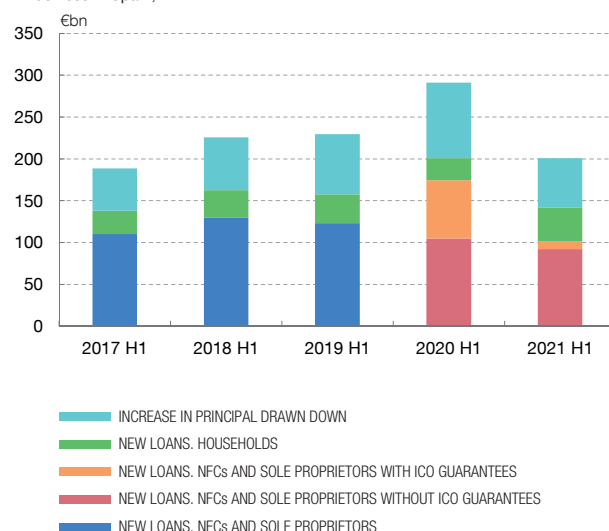
**THE VOLUME OF LENDING TO THE RESIDENT PRIVATE SECTOR REMAINED STABLE OVER THE LAST 12 MONTHS, LARGELY DUE TO THE MODERATION IN NEW LOANS WITH ICO GUARANTEES**

The stock of credit, which grew at the start of the pandemic as a result of the economic policy measures adopted (mainly ICO guarantees), remained stable over the last 12 months (-0.2% year-on-year in June 2021). In 2021 H1, new lending to non-financial corporations and sole proprietors decreased notably with respect to the previous year owing to the lower volume of new ICO-backed loans to businesses. However, new lending to households rose significantly.

1 VOLUME OF LENDING AND YEAR-ON-YEAR RATE OF CHANGE  
Business in Spain, ID



2 VOLUME OF NEW LENDING IN THE LAST SIX MONTHS. HOUSEHOLDS, NFCs AND SOLE PROPRIETORS  
Business in Spain, ID



SOURCES: Instituto de Crédito Oficial and Banco de España.

volume of new loans with ICO guarantees which amounted to less than €10 billion, far below the amount of almost €70 billion recorded in 2020 H1. The increase in principal drawn down also moderated, thus converging to pre-pandemic levels.

**Slower growth in lending to NFCs and sole proprietors, mainly those hardest hit by the pandemic, contrasted with the quickening growth of lending to households.** The volume of lending to NFCs and sole proprietors decreased by 1.6% (see Chart 2.2.1) in the last 12 months, reflecting the significant contraction, of 40%, in new lending to these enterprises in 2021 H1 overall, compared with the same period a year earlier. In fact, lending to NFCs and sole proprietors in the sectors most severely affected by the pandemic posted the strongest growth in 2020 H1.<sup>2</sup> So far in 2021, growth rates have levelled across different sectors, all of which show a clear trend towards stabilisation (see Chart 2.2.2). Lending to households rose by 1.2% year-on-year, following growth of 20.1% in new lending in H1, compared with

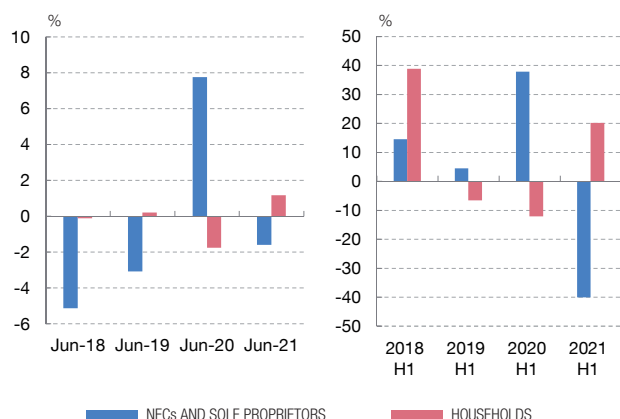
2 Lending to the hardest-hit sectors is proxied by that corresponding to the sectors with a fall in turnover of more than 15% in 2020, which can be identified in the FI-130 regulatory return. Specifically, lending to the most severely affected sectors includes hospitality, the manufacture of refined petroleum products, social services and entertainment, transportation and storage, and the manufacture of transport equipment.

Chart 2.2

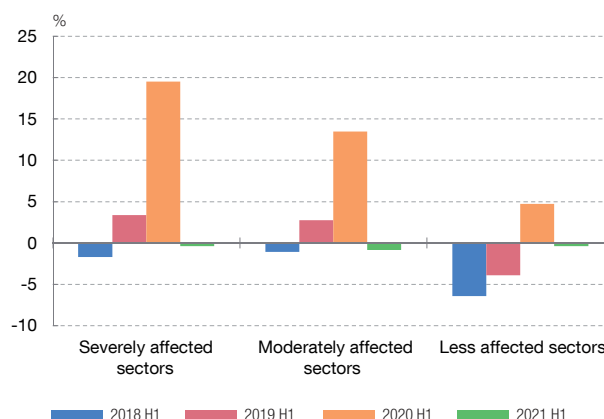
**LENDING TO THE CORPORATE SECTOR DECLINED IN 2021 H1, WITH DIFFERENT SECTORS SHOWING MORE EVEN BEHAVIOUR THAN IN 2020. IN CONTRAST, LENDING TO HOUSEHOLDS GREW IN THE SAME PERIOD**

The volume of lending to non-financial corporations and sole proprietors declined slightly in the last year, contrasting with the strong growth posted at the start of the pandemic, mainly in the most severely affected sectors. The subdued growth rates in lending to the most severely affected sectors has resulted in convergence towards that of those less affected. The stock of loans to households grew moderately in H1, while the flow of new lending was notably higher than in the same period a year earlier.

1 YEAR-ON-YEAR RATE OF CHANGE IN THE STOCK OF LOANS LEFT) AND NEW LOANS (RIGHT) Business in Spain, ID



2 SIX-MONTHLY RATE OF CHANGE IN LENDING. NON-FINANCIAL CORPORATIONS AND SOLE PROPRIETORS Business in Spain, ID (a)



SOURCE: Banco de España.

a Lending to the more severely affected sectors is proxied by that corresponding to sectors with a fall in turnover of more than 15% in 2020, which can be identified in the FI-130 regulatory return. Specifically, lending to the more severely affected sectors includes hospitality, the manufacture of refined petroleum products, social services and entertainment, transportation and storage, and the manufacture of transport equipment. Lending to moderately affected sectors is proxied using the following sectorisation in the FI-130 regulatory return: metallurgy, manufacture of machinery, other manufacturing activities, professional services, mining and quarrying, wholesale and retail trade, and repair of vehicles. Other productive activities are in the largely unaffected sectors.

the same period a year earlier. Specifically, new lending for house purchase, which notably exceeded that recorded in the same period in 2019.

**The volume of NPLs has continued to decline in 2021, albeit at a slower pace than in pre-pandemic years.** In June 2021, non-performing assets fell by 5.8% year-on-year, compared with the double-digit declines posted in the years before the pandemic. Since December 2013, NPLs have decreased by €137 billion, representing a cumulative decline of 73%.<sup>3</sup> The fact that they have not increased since the onset of the pandemic marks a departure from past economic crises in Spain, when NPLs rose strongly during the first year of economic contraction.

3 The application since 1 January 2021 of EBA guidelines (EBA/GL/2016/07) with respect to the new definition of default pursuant to Article 178 of (EU) Regulation 575/2013 has given rise to some differences in the amounts classified as “non-performing for accounting purposes” (accounting definition contained in Banco de España Circular 4/2017) and “non-performing for prudential purposes” (according to previous guidelines). Specifically, in the first six months of 2021, the so-called “NPLs for prudential purposes” accounted for around 10% more than “NPLs for accounting purposes”, which in absolute terms amounts to approximately €5.5 billion.

**The NPL ratio also continued to decline in the last 12 months, again more moderately than before the outbreak of the COVID-19 crisis.** In June 2021, the NPL ratio for lending to the resident private sector stood at 4.3% (see Chart 2.3.1), down 0.25 pp from the same month a year earlier. The lower decline in NPLs (numerator) and the stalling growth in lending (denominator) explain the moderate fall in the ratio in the last 12 months. As mentioned in previous FSRs, economic policy measures such as furlough schemes, tax moratoria and public guarantee and debt moratoria schemes have sustained the financial capacity of economic agents, particularly firms, thus cushioning the impact of the economic downturn observed in Spain as a result of the pandemic. In this connection, the rate of decline of NPLs of non-financial corporations and sole proprietors slowed, whereas in the case of households, the NPL ratio continued to fall.

**Despite the aggregate decline in NPLs, there are some signs of credit quality impairment, in particular the increase in refinanced and Stage 2 loans.** Stage 2 loans, with a higher anticipated probability of default than other performing loans,<sup>4</sup> increased substantially (53%) in the last 12 months (see Chart 2.3.2). This trend began to be observed in 2020 Q3, quickening notably in 2020 Q4, with the year-on-year rate of change in these loans continuing to rise. Forborne loans, which had declined more moderately in recent quarters, posted an increase of 8.8% year-on-year in June 2021, possibly indicating some banks' greater recourse to them to mitigate the loan repayment difficulties encountered by some borrowers, especially NFCs.<sup>5</sup>

**The sectors hardest hit by the pandemic are those with the most evident signs of current and potential credit impairment.** NFCs and sole proprietors in these economic sectors, which were particularly affected, first and foremost because of the restrictions on activity, have seen their ability to repay existing loans diminish. This initially led to higher Stage 2 loans to these sectors, especially in 2020 H2 (see Chart 2.3.3), followed by an increase in their NPLs in 2021 H1 (see Chart 2.3.4).

**The degree of credit quality impairment of loans linked to expired moratoria as of June 2021 remained unchanged, while that of loans with ICO guarantees increased.** The proportion of loans linked to expired or cancelled moratoria which showed signs of credit impairment (see Chart 2.4.1) was 20% for Stage 2 (compared with 19% in December 2020), and 9% for NPLs (compared with 8% in December 2020). This impairment could increase in the coming quarters, since a significant proportion of moratoria have expired only very recently, in the second quarter of

---

4 Pursuant to Circular 4/2017, a loan is classified as a Stage 2 exposure when credit risk has increased significantly since initial recognition, even though no event of default has occurred.

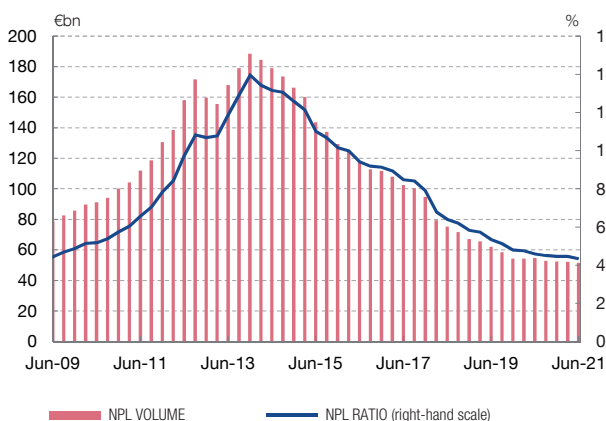
5 The increase in forborne loans largely corresponds to ICO-backed loans with extensions pursuant to the provisions of Royal Decree-Law 34/2020.

Chart 2.3

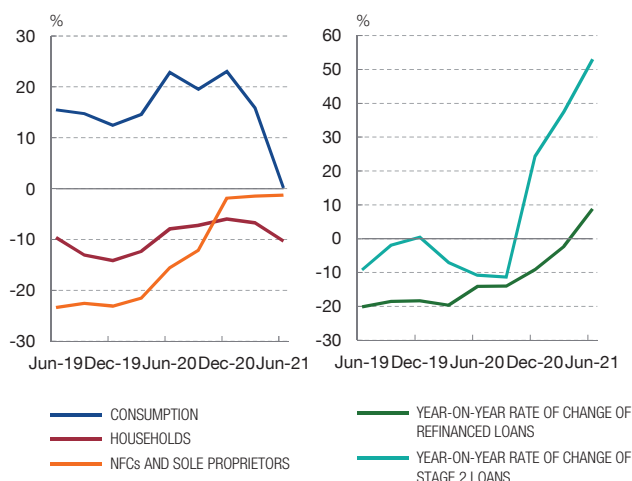
**THE VOLUME OF NPLs CONTINUED TO DECLINE, ALTHOUGH SOME SIGNS OF CREDIT QUALITY IMPAIRMENT AND UNEVEN BEHAVIOUR ACROSS SECTORS WERE OBSERVED**

The volume of NPLs continued on the downward trend of recent years, although the decline was more moderate. This, along with the stabilisation of lending between June 2020 and June 2021, led to a lower decline also in the NPL ratio. However, early signs of loan repayment difficulties by economic agents were observed, such as the strong increase in Stage 2 loans, particularly in the sectors most severely affected by the pandemic, and a year-on-year increase in refinanced loans, something which had not occurred since the end of the global financial crisis.

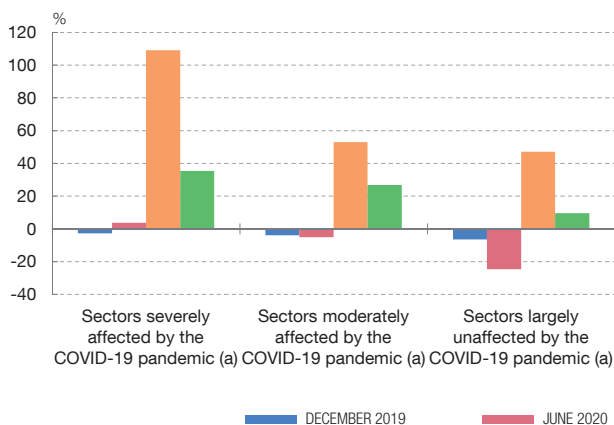
1 NPLs AND NPL RATIO OF THE RESIDENT PRIVATE SECTOR  
Business in Spain, ID



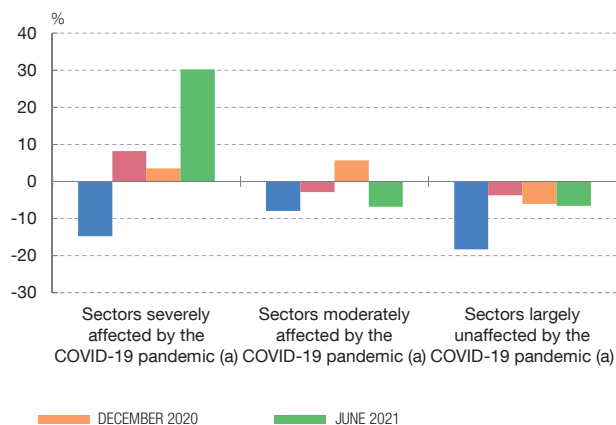
2 YEAR-ON-YEAR RATES OF CHANGE OF NPLs (LEFT) AND SIGNS OF EARLY IMPAIRMENT IN LENDING TO RESIDENT PRIVATE SECTOR (RIGHT)  
Business in Spain, ID



3 SIX-MONTHLY RATE OF CHANGE OF STAGE 2 LOANS.  
NFCs AND SOLE PROPRIETORS  
Business in Spain, ID



4 SIX-MONTHLY RATE OF CHANGE OF NPLs. NFCs AND SOLE PROPRIETORS  
Business in Spain, ID



SOURCE: Banco de España.

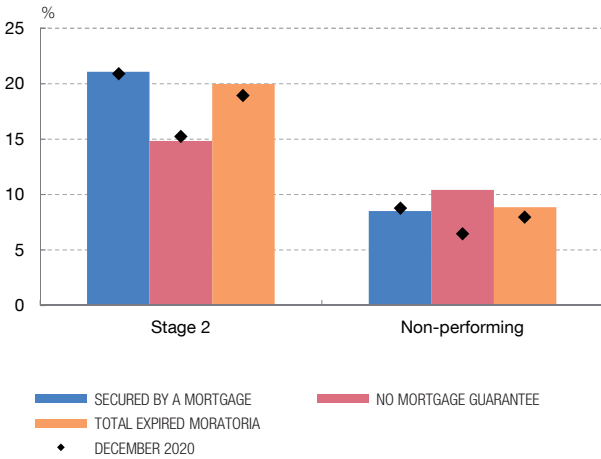
a Lending to the more severely affected sectors is proxied by that corresponding to sectors with a fall in turnover of more than 15% in 2020, which can be identified in the FI-130 regulatory return. Specifically, lending to the more severely affected sectors includes hospitality, the manufacture of refined petroleum products, social services and entertainment, transportation and storage, and the manufacture of transport equipment. Lending to moderately affected sectors is proxied using the following sectorisation in the FI-130 regulatory return: metallurgy, manufacture of machinery, other manufacturing activities, professional services, mining and quarrying, wholesale and retail trade, and repair of vehicles. Other productive activities are in the largely unaffected sectors.

Chart 2.4

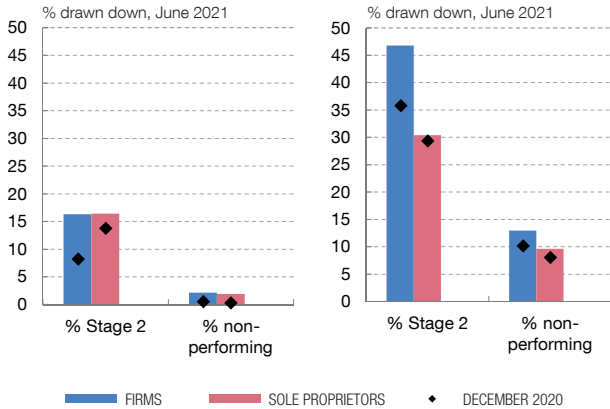
**THE SIGNS OF DETERIORATION IN THE CREDIT QUALITY OF LOANS WITH EXPIRED MORATORIA REMAIN AND HAVE INTENSIFIED IN THE CASE OF ICO-BACKED LOANS**

The credit quality of loans linked to expired moratoria worsened in 2021 H1 owing to the behaviour of those with no mortgage guarantee. The credit quality of ICO backed loans deteriorated, as the ratio of loans in Stage 2 and of non-performing loans increased. This deterioration can also be observed when analysing the overall quality of all loans arranged by customers who have been granted ICO-backed loans.

1 CREDIT QUALITY OF LOANS LINKED TO EXPIRED OR CANCELLED MORATORIA IN JUNE 2021



2 STATUS OF ICO-BACKED LOANS IN JUNE 2021  
Loan level (l-h panel) / Customer level (r-h panel) (a)



SOURCE: Banco de España.

a In the customer-level analysis, for each firm or sole proprietor with one or more ICO-backed loans all possible deteriorations are identified in any of their loans (ICO-backed or otherwise) arranged with the bank that granted it the ICO-backed loan or with other banks. If customers have problematic loans above a minimum materiality threshold, they are flagged as a customer with some sign of deterioration. In the analysis at customer-guaranteed loan level, only the possible credit problems affecting the ICO-backed loans of those customers are examined.

2021. However, the loans benefitting from moratoria account for a small percentage of banks' portfolios.<sup>6</sup> The situation of ICO-guaranteed loans granted to non-financial corporations and sole proprietors had deteriorated in June 2021 with respect to December 2020 (see Chart 2.4.2). In transactions with ICO guarantees, Stage 2 loans accounted for 16% of the credit drawn, an increase of 8 percentage points (pp). The increase was more subdued in the case of sole proprietors, but it reached the same percentage. It should be borne in mind that a large portion of these ICO-guaranteed loans currently have payment holidays, which reduces the possibility of credit risks materialising in the short term. It is also observed that the proportion of ICO loans linked to customers with one or more troubled loans (of all their loans, not only those with ICO guarantees) has increased significantly in the case of NFCs. The abundant signs of credit impairment in customers with ICO guarantees suggests that risk in ICO-backed loans may materialise to a greater extent, once the payment holidays have expired. Box 2.1 analyses in more detail the characteristics of the

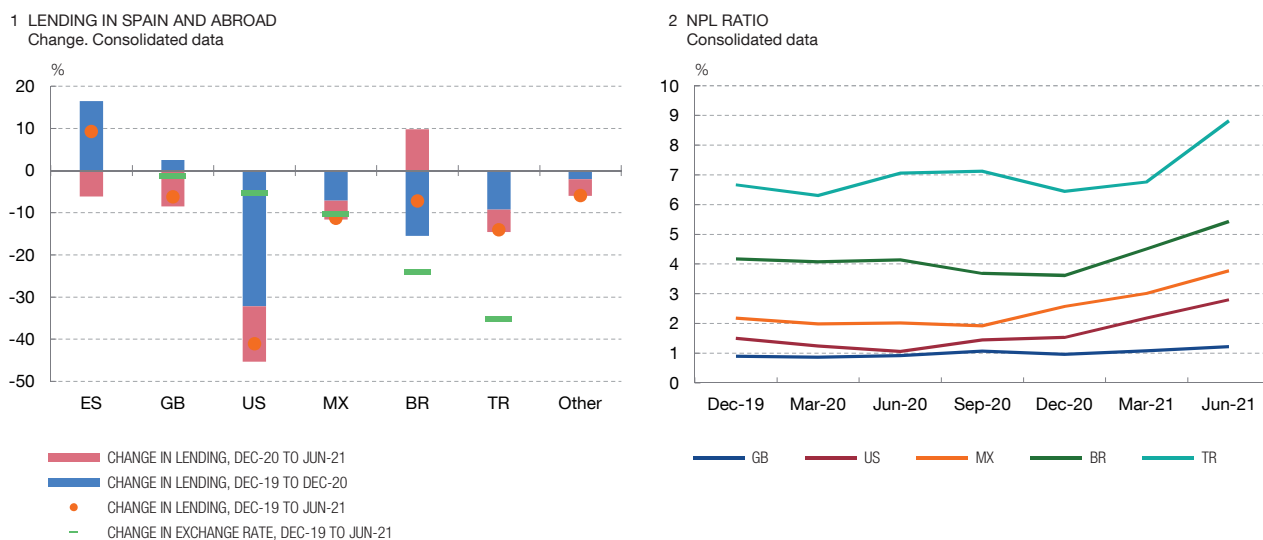
6 Loans that have become subject to moratoria at any point since the onset of the crisis amount to €60.5 billion (8.6% of all lending in the loan portfolios eligible for moratoria and 5.5% of all lending to the non-financial private sector in December 2020).



Chart 2.5

**THE VOLUME OF ASSETS HELD ABROAD BY SPANISH BANKS HAS FALLEN SINCE THE ONSET OF THE PANDEMIC, PARTLY AS A RESULT OF THE ACROSS-THE-BOARD APPRECIATION OF THE EURO AND THE DIVESTMENT IN THE UNITED STATES**

Credit exposure abroad has decreased by 11.8% since the pandemic broke. The decline observed in the United States was the result of the divestment in that geographical area by a Spanish bank. The appreciation of the euro against local currencies contributed to the decline in the exposure to Turkey, Mexico and Brazil. NPL ratios held stable during the initial quarters of the pandemic, but started to rise in 2021 H1, reaching the highest values in Turkey and Brazil.



SOURCE: Banco de España.

businesses and banks which have participated in ICO guarantee schemes, and the effect of these on the structure of banking relationships. Box 2.2 examines recent developments in the duration and expiry of payment holidays for ICO-backed loans.

**The volume of Spanish deposit institutions' assets abroad has decreased since the start of the pandemic, conditioned by the divestment made in the United States by one deposit institution and by the appreciation of the euro against the currencies of the geographical areas in which they operate.** From December 2019 to June 2021, the volume of euro-denominated assets abroad of Spanish deposit institutions fell by 11.8%. Several factors unrelated to the bank lending situation in the geographical areas in which these institutions operate contributed to this decline. In particular, there was significant divestment in the United States by a Spanish deposit institution, with reclassification of the amount to non-current assets held for sale until the transaction was completed in 2021 Q2. The decline in Turkey was mainly due to the behaviour of its currency vis-à-vis the euro. Such behaviour was similar, but less pronounced, in Brazil and Mexico (see Chart 2.5.1). Although NPL ratios remained stable in 2020 in the main geographical areas in which Spanish deposit institutions are present, they increased across the board in 2021 H1. The NPL ratio in Turkey stood at 8.8% in June 2021, up 2.4 pp since

December 2020, while Brazil posted 5.4% and Mexico 3.8%, with increases of 1.8 pp and 1.2 pp, respectively, since end-2020.

### *Financing conditions*

**Banks' financing conditions have continued to improve, assisted by the excess liquidity resulting from the ECB's purchase programmes and the refinancing operations (TLTRO III), which have pushed down interest rates on unsecured loans.** The Eurosystem's balance sheet has almost doubled since the start of the pandemic, driven by the different purchase programmes and loan facilities, which have led to a rise in the system's excess liquidity. Money market interest rates have continued to fall in this setting of ample liquidity (see Chart 2.6.1). The significant increase in refinancing operations in the summer of 2020<sup>7</sup> led to a gradual fall in the unsecured rate (€STR<sup>8</sup>) and therefore, to a considerably larger negative gap between the latter and the deposit facility rate, which has remained largely unchanged in 2021. The repo rate<sup>9</sup> has also tended to decline owing to excess liquidity, and the reduction of available collateral resulting from, among other factors, the increase in purchases by the Eurosystem. However, the relationship between the repo-deposit facility rate spread and excess liquidity has been less intense in recent months, thanks to the increase in securities lending by the Eurosystem since end-2020, and to the relaxation of collateral requirements in financing transactions in which assets other than sovereign debt are accepted.<sup>10</sup>

**The interbank funding spread<sup>11</sup> has remained relatively stable, while the market perception of credit risk at Spanish banks is very low** (see Chart 2.6.2). The interbank funding spread has remained at levels similar to those observed at the date of the last report, with a slight rebound in the months of September and October, and market expectations regarding this indicator suggest that the interbank costs could increase slightly in 2022, coinciding with the termination of the PEPP and the end of the favourable financing conditions applied to TLTRO III.<sup>12</sup>

---

7 In the fourth and fifth rounds of TLTRO III in 2020, euro area banks applied for €1,308 billion and €175 billion, respectively, leading to a net liquidity injection of €706 billion. For more information, see: *Financial Stability Report, Autumn 2020, Chapter 2: Liquidity and financing conditions*.

8 Represents the unsecured overnight borrowing costs of banks located in the euro area. Both the interest rate and the trading volume are calculated and published each business day by the ECB based on the information provided by the 48 euro area MMSR reporting banks.

9 Refers to the overnight rate, according to the data reported by banks to the MMSR, agreed with other financial institutions, the collateral used being sovereign bonds issued by Spain, Italy, Germany and France.

10 The slower-than-expected pace of purchases under the PEPP announced at the ECB Governing Council's most recent meeting could reduce the restrictions on available collateral and thus ease the downward pressure on repo rates.

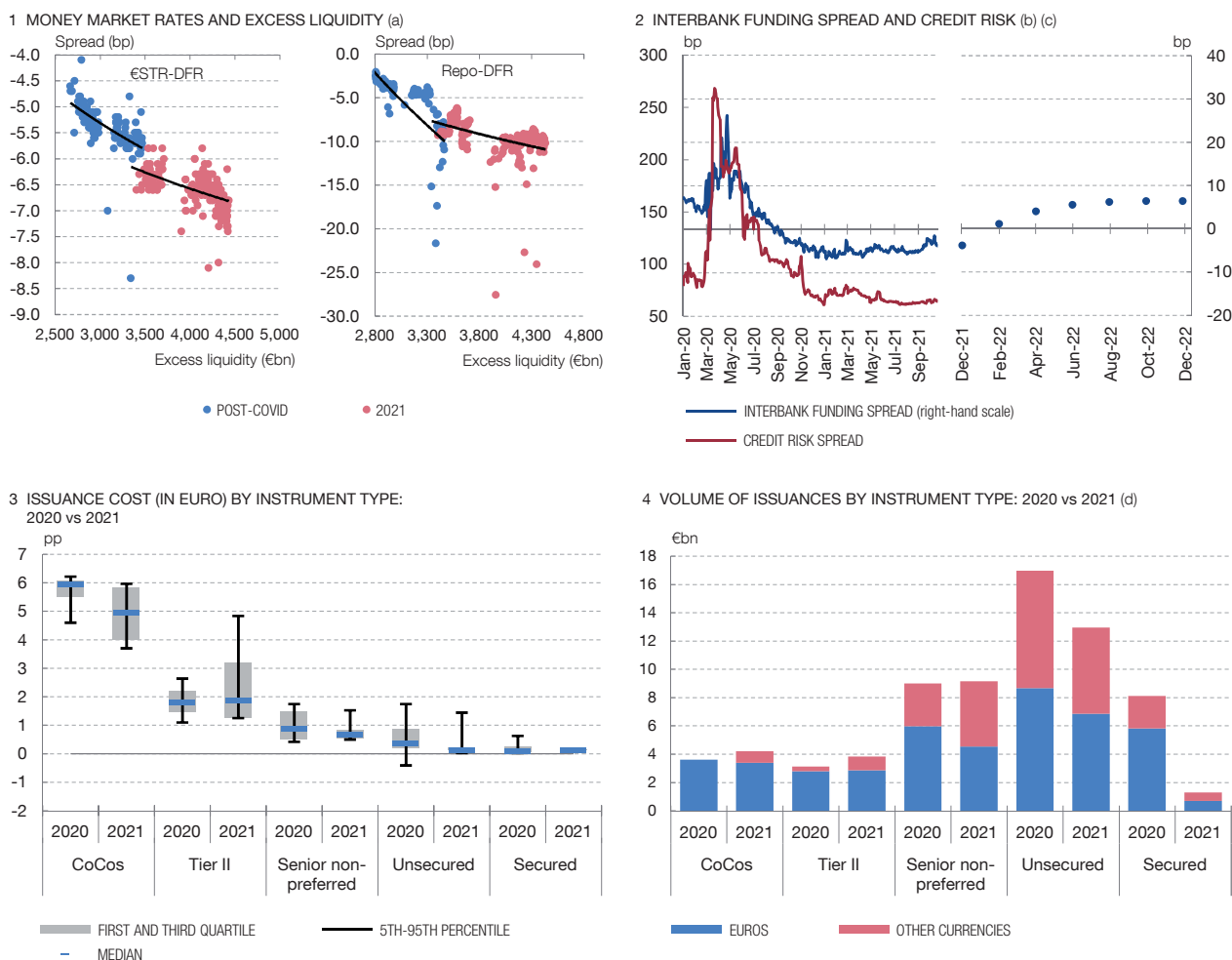
11 For more information about how this spread is calculated, see *Financial Stability Report, Autumn 2020, Chapter 2: Liquidity and financing conditions* and *Jondeau et al. (2020)*.

12 The interest rate applied to these operations will remain 50 bp below the the main refinancing rate until June 2022 and up to 50 bp below the deposit facility rate for banks meeting certain criteria.

Chart 2.6

**IN 2021, THE STABILISATION OF MONETARY POLICY HAS CONTINUED TO CONTRIBUTE, ALBEIT LESS SO THAN IN 2020, TOWARDS IMPROVING INTERBANK AND WHOLESALE FUNDING CONDITIONS**

Money market interest rates have remained on a downward path in 2021, with a strong negative correlation between money market spreads and the deposit facility rate and rising volumes of excess liquidity and growth in purchase programmes. However, the impact of purchase programmes' on lower repo rates through collateral availability seems to have diminished in 2021. Likewise, interbank funding costs are expected to recover slightly in 2022, when some monetary policy measures are set to end, but would hold at pre-COVID levels; so too would the risk premium for Spanish banks' bond issuances. Consistent with this, the cost (and volume) of bank issuances on the wholesale market remain at historically low (high) levels.



**SOURCES:** Bloomberg, Thomson Reuters and Banco de España.

- a The dots show the daily figure for the €STR-DFR and repo-DFR spreads, respectively (vertical axis), and the excess liquidity (horizontal axis). The post-COVID period runs from 26 June to 31 December 2020. The data for 2021 include from 1 January to 22 October 2021.
- b The solid line (blue) shows the spread between the Euribor-3M (3-months forward) rate and the OIS curve 3-month forward rate, while the series of points shows the projections for this spread over different time horizons.
- c The credit risk spread is calculated for unsecured debt bonds issued in euro by Spanish banks (Santander, BBVA and CaixaBank). First, the average interest rate on the secondary market for these bonds is obtained and the spread is calculated against the German Bund (risk-free) with the same maturity.
- d Comparison of the issuances in each year (2020 and 2021) up to the respective month of October.

**The cost of issuance for banks on the wholesale market has decreased across the board, whereas the volume of issues remains high (see Charts 2.6.3 and 2.6.4). Investors' perception of risk regarding debt issued by banks<sup>13</sup> is very low, as**

<sup>13</sup> Measured using the credit risk premium for unsecured bank lending (in euro), which is calculated as the spread between the interest rate on the secondary market of each listed bond and the German Bund with the same maturity.

reflected also in the wholesale funding market, where costs have decreased or held steady in 2021 for most debt instruments, particularly in the case of different types of senior debt (non-preferred, secured and unsecured). Also, the cost of issuance is less dispersed in these cases, unlike subordinated debt (Tier II) and contingent convertible bonds (CoCos), where dispersion has increased due to the divergence of costs observed between banks. The dispersion in the cost of CoCo issuance indicates that in 2020 this had been limited to larger banks, whereas in 2021, smaller banks have also been able to issue CoCos, at a higher cost. In the first ten months of 2021, banks have benefitted from these lower funding costs to increase the volume of issues of instruments directly associated with regulatory, prudential or resolution requirements, in particular, MREL-eligible instruments classified as senior non-preferred instruments.<sup>14</sup> However, this has not occurred in the issuance of secured or unsecured senior bonds, whose volume decreased with respect to 2020, largely owing to the current context of excess liquidity.

**Bank deposits have slowed, but continue to grow at a good pace.** Indeed, households and companies have moderated the pace of growth of their deposits in institutions once uncertainty has been reduced, the profitability of other financial assets has increased, there is no longer forced savings and most of the loan programme with public guarantees has been deployed. Specifically, the year-on-year rate of change of deposits from households and firms until June 2021 stood at close to 5% in business in Spain, around 2.5 pp below the rate observed in the same month of the previous year. The slowdown is being more intense among firms, which register yearly increases of just 2%. Unlike other European countries, the volume of deposits remunerated at negative rates is not material and is limited to large firms.

## 2.1.2 Profitability and solvency

### *Profitability*

**The Spanish banking system earned consolidated net profit of €13.8 billion in 2021 H1, up significantly on the figure for the same period of 2020.** After the losses recognised by the Spanish banking sector in 2020 H1, consolidated net profit has improved by €23 billion. This translates into a return on assets (ROA) of 0.71% (up 1.2 pp from -0.5% in June 2020) and a return on equity (ROE) of 11.2% (up 18.5 pp from -7.3% in June 2020).<sup>15</sup>

**Extraordinary gains and losses (a net loss in 2020 and a net gain in 2021) have a significant impact on this year-on-year improvement in profitability.** In 2021

---

<sup>14</sup> This category also includes CoCos and eligible subordinated debt instruments as Tier II capital.

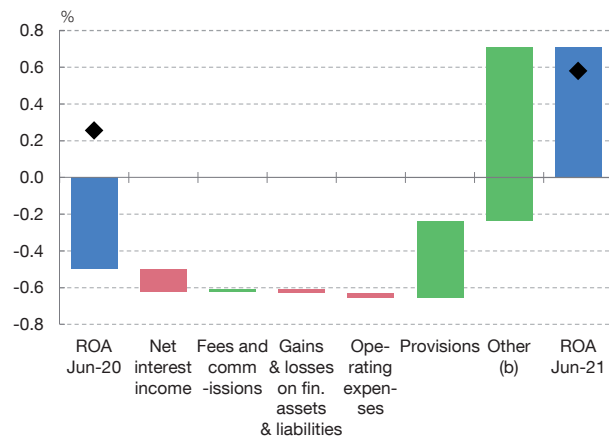
<sup>15</sup> In the case of ROE, the year-on-year difference also increased due to the 5% decline in average equity between June 2020 and June 2021, whereas average total assets held steadier during that period, growing by 1.9%.

Chart 2.7

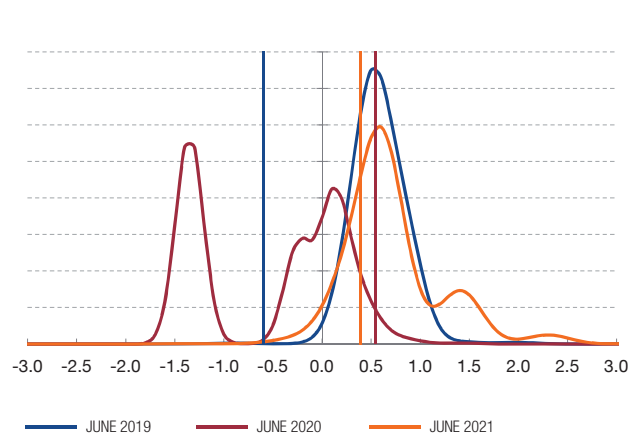
**THE SPANISH BANKING SECTOR'S PROFITABILITY IMPROVED SIGNIFICANTLY IN JUNE 2021 COMPARED WITH A YEAR EARLIER. THIS WAS LARGELY BECAUSE OF EXTRAORDINARY ITEMS AND LOWER IMPAIRMENT PROVISIONING**

After the losses recognised in June 2020, the Spanish banking sector's profitability recovered in 2021 H1. In addition to the positive impact of the extraordinary items, lower provisioning also contributed to this improvement. The increase in profitability was widespread among banks, resulting in it standing at levels similar to those prior to the outbreak of the COVID-19 pandemic.

1 BREAKDOWN OF THE CHANGE IN CONSOLIDATED PROFIT  
As a % of ATA (a)



2 DISTRIBUTION OF ROA (c)



SOURCE: Banco de España.

- a The red (green) colour of the bars denotes a negative (positive) contribution of the corresponding item to the change in consolidated profit in June 2021 compared with June 2020. The black diamonds denote the ROA excluding extraordinary items. Specifically, in June 2020: adjustments to goodwill (-€12.2 billion), the adjustment for deferred tax assets (-€2.5 billion) and the sale of an asset management business (€0.3 billion); and in June 2021: an extraordinary net gain as a result of a merger (€2.9 billion) particularly, badwill; the spin-off of an insurance company (€0.9 billion) and extraordinary restructuring costs (-€1.2 billion).
- b Including, among others, the aforementioned extraordinary items.
- c The chart depicts the density function of ROA for Spanish deposit institutions, weighted by average total assets. The density function is estimated by means of a kernel estimator, which enables non-parametric estimation and provides a continuous, smoothed graphic representation of the function. The vertical lines denote the ROA of the Spanish banking system as a whole in June 2019 (blue), June 2020 (red) and June 2021 (orange).

H1 there was a net gain of more than €2.5 billion, while in 2020 H1 there was a net loss of more than €14 billion.<sup>16</sup> Excluding these extraordinary items, the sector's ROA would have stood at 0.6%, an increase of 0.3 pp from June 2020 (which would have been 0.3%) (see Chart 2.7.1). In June 2021 the geographical distribution of the profit of Spanish banks with significant international presence returned to values similar to those of June 2019 (see Chart 2.8.1). Behind Spain, Mexico, the United States and Brazil make the biggest contribution to profit<sup>17</sup>.

16 In 2021 H1 extraordinary gains were recognised as a result of three items: the merger of two banks (whose net value stood at €2.9 billion: badwill (€4.3 billion) plus a corporate income tax benefit (€0.6 billion), less extraordinary operating expenses stemming from the labour agreement and other integration costs (€2 billion)); the spin-off of an insurance company (€0.9 billion); and restructuring costs at the two main banks (-€1.2 billion). In 2020 H1 the extraordinary items included the negative adjustments to goodwill of the two banks with the largest international presence (-€12.2 billion), the adjustment for deferred tax assets (-€2.5 billion) and the sale of an asset management business (€0.3 billion).

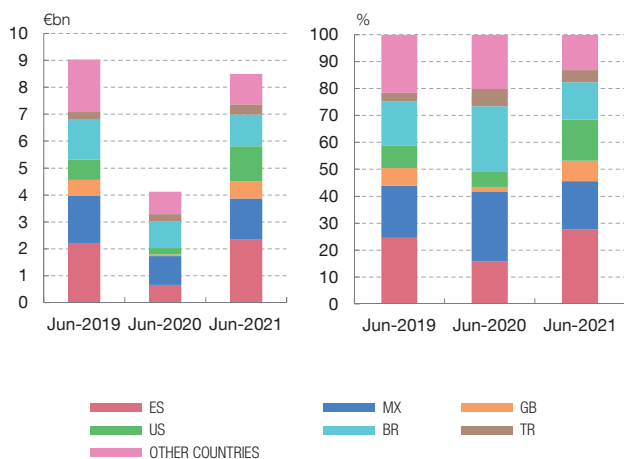
17 Earnings in local currency recovered between June 2020 and June 2021 in the five geographical areas. In the case of Brazil, Mexico and the United Kingdom, the improvement recorded in that period was partly due to the appreciation of the local currencies against the euro. The profit measured in euro diminished partially in the United States and Turkey due to the appreciation of the euro against their local currencies.

Chart 2.8

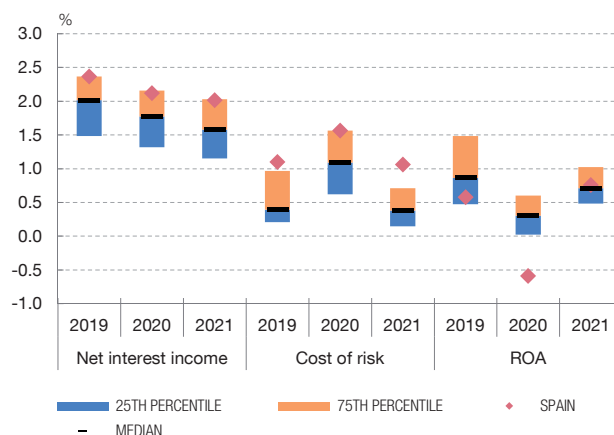
**THE GEOGRAPHICAL DISTRIBUTION OF SPANISH BANKS' PROFIT IS APPROACHING ITS PRE-CRISIS LEVEL AND COMPOSITION. MEANWHILE, THE PROFITABILITY OF THE EUROPEAN BANKING SECTOR AS A WHOLE HAS IMPROVED, UNDERPINNED BY THE LOWER COST OF RISK**

The significant decline in cost of risk (provisioning) led to an improvement in the sector's profitability at European level, despite net interest income decreasing for European banks between June 2020 and June 2021. In June 2021 the amount and geographical distribution of the profit of banks with significant international activity returned to values similar to those of June 2019.

1 GEOGRAPHICAL DISTRIBUTION OF THE PROFIT ATTRIBUTABLE TO THE PARENT EXCL. EXTRAORDINARY ITEMS OF BANKS WITH SIGNIFICANT INTERNATIONAL ACTIVITY (a)



2 THE MAIN PROFITABILITY VARIABLES: A EUROPEAN COMPARISON (b)



SOURCES: European Banking Authority and Comisión Nacional del Mercado de Valores.

- a Four banks with significant international activity are included in this chart and non-recurring items in the period 2019-2021 are excluded.
- b Percentiles calculated based on the aggregate financial ratios published by the EBA for each of the banking systems in the EU; the United Kingdom is excluded from the sample of countries in the three years considered. Net interest income is defined as interest income less interest expense divided by interest earning assets. Cost of risk is defined as provisioning charges divided by gross lending.

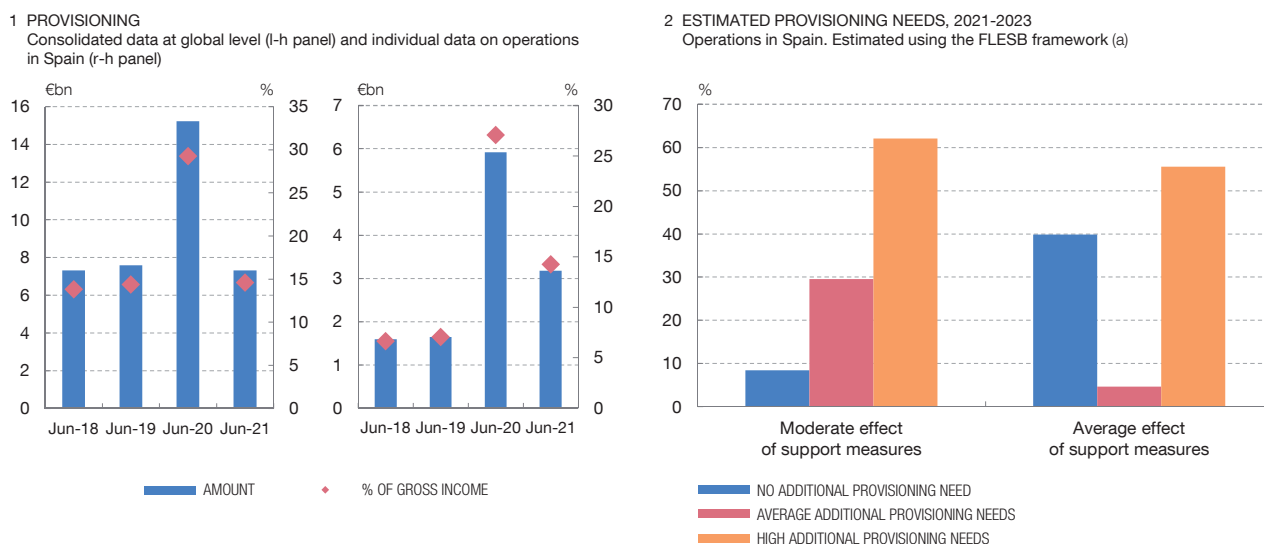
**In 2021 H1 the profitability of our European peers' banking systems also improved, with it close to returning to pre-pandemic levels.** Despite other European banks also seeing net interest income decrease between June 2020 and June 2021, the steep decline in impairment provisioning led to improved profitability in the sector at European level (see Chart 2.8.2). In recent years, Spanish banks' net interest income and impairment provisioning have been higher than those of their European peers.

**Profitability has improved across the board, and the sector's pre-pandemic profitability levels have been resumed.** Compared with the previous year, the distribution of ROA in June 2021 has shifted markedly to the right. This reflects the widespread improvement in profit in the sector. This upturn was more pronounced at a group of banks that fared worse in June 2020. Consequently, the distribution of ROA in June 2021 is similar to the pre-pandemic distribution (see Chart 2.7.2). Even so, it should be borne in mind that the banking sector's low profitability, both in Spain and in the main European countries, was already one of the sector's main challenges before the pandemic broke.

Chart 2.9

**PROVISIONING CHARGES IN 2021 H1 FELL TO HALF THE AMOUNT RECOGNISED IN THE SAME PERIOD OF 2020. THE DECLINE WAS LESS STEEP IN OPERATIONS IN SPAIN**

Provisioning charges recognised in 2021 H1 are 50% lower than those recognised in 2020 H1 as a result of the improved outlook for the potential impact of the COVID-19 pandemic on credit quality. At consolidated level, this decrease resulted in provisioning returning to pre-pandemic levels. Provisioning charges associated with operations in Spain remain above their pre-pandemic levels. The estimated additional provisioning needs over the coming years are uneven among banks and depend, among other factors, on the degree of credit impairment of the loan portfolio guaranteed by the ICO.



**SOURCES:** Banco de España and European Systemic Risk Board.

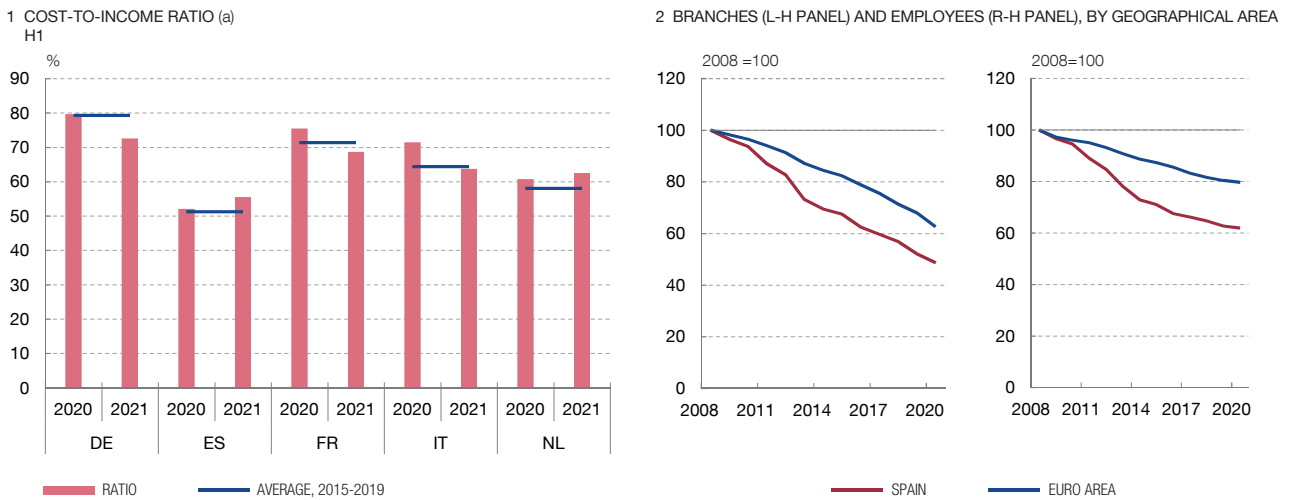
a The estimated provisioning charges for the period 2021-2023 are obtained from the baseline scenario used in the FLESB stress-testing exercise. Banks are grouped into three categories, based on the volume of estimated provisioning charges relative to the 2021 provisioning effort. The bars depict the aggregate lending of each category of bank as a percentage of total lending. The first group (no additional provisioning need) comprises banks whose 2021 provisioning effort (those provisions recognised for 2021 H1, multiplied by two to extrapolate them for the entire year) is sufficient to cover the estimated provisioning requirements for 2021-2023 under the FLESB framework. The second group (average additional provisioning needs) is formed by banks whose provisioning effort in 2021 is between 50% and 100% of the provisioning charges estimated for 2021-2023. The third group (high additional provisioning needs) consists of banks whose provisioning charges in 2021 are below 50% of the provisioning charges estimated for 2021-2023. For the estimated provisioning over the entire 2021-2023 period, two scenarios are considered in relation to the effect of the support measures (essentially the ICO guarantee scheme): moderate and average. Under the moderate scenario, the quality of credit guaranteed by the ICO is similar to that of the overall business lending portfolio. Meanwhile, under the average scenario credit quality is at a midway point between the moderate scenario and a maximum scenario where the guarantees are used in full to absorb the poorest quality credit (see Section 2.1.3 and Chart 2.17).

**Lower impairment provisioning – which, at consolidated level, returned to pre-pandemic levels – was behind the improvement in ordinary profit.** Consolidated provisioning charges for impairment losses on financial assets fell by 50% to stand at levels similar to pre-pandemic ones (see Chart 2.9.1). Provisioning in operations in Spain decreased by almost as much as consolidated provisioning, but remained above pre-pandemic levels. The potential materialisation of latent risks and their impact on credit quality might require some banks to recognise additional provisions over the coming years. This is especially true under the least-favourable scenario for the effectiveness of the support measures rolled out in response to the pandemic (see Chart 2.9.2). The scale of this additional effort is markedly uneven across banks.

Chart 2.10

**SPANISH BANKS MAINTAIN THE COST-TO-INCOME RATIO ADVANTAGE OVER THEIR EUROPEAN PEERS**

Broadly speaking, the cost-to-income ratio of our peers' banking systems has improved after the downturn recorded in 2020 H1 due to the period's atypical effects. The cost-to-income ratio of Spanish institutions in 2021 is still affected by extraordinary negative factors. From a structural standpoint, the number of branches continues to decrease throughout the euro area, while the adjustment to employment has stalled.



SOURCES: European Central Bank and European Banking Authority.

a The cost-to-income ratio is defined as the ratio between operating expenses and gross income, such that higher (lower) values refer to lower (higher) efficiency.

**Gross income fell in 2021 H1 compared with the same period a year earlier, as the decline in net interest income was not offset by the improvement in net fee and commission income** (see Annex 2). Net interest income fell 5.1% year-on-year, while net fee and commission income increased 4%. The more than 10% drop in gains and losses on financial assets and liabilities also contributed to the decline in gross income. The operating expenses of the sector as a whole rose. This led to a decline in net operating income and to an increase of almost 3 pp in the cost-to-income ratio (from 48.8% in June 2020 to 51.7% in June 2021). However, excluding the extraordinary costs associated with the merger of two banks during this period (see footnote 16), net operating income would have fallen less and the cost-to-income ratio would have improved slightly. In any event, the efficiency advantage over our European peers' banking systems has been retained (see Chart 2.10.1). From a structural standpoint, the number of branches continue to fall across the euro area, with the employment level remaining more stable (see Chart 2.10.2).

*Solvency*

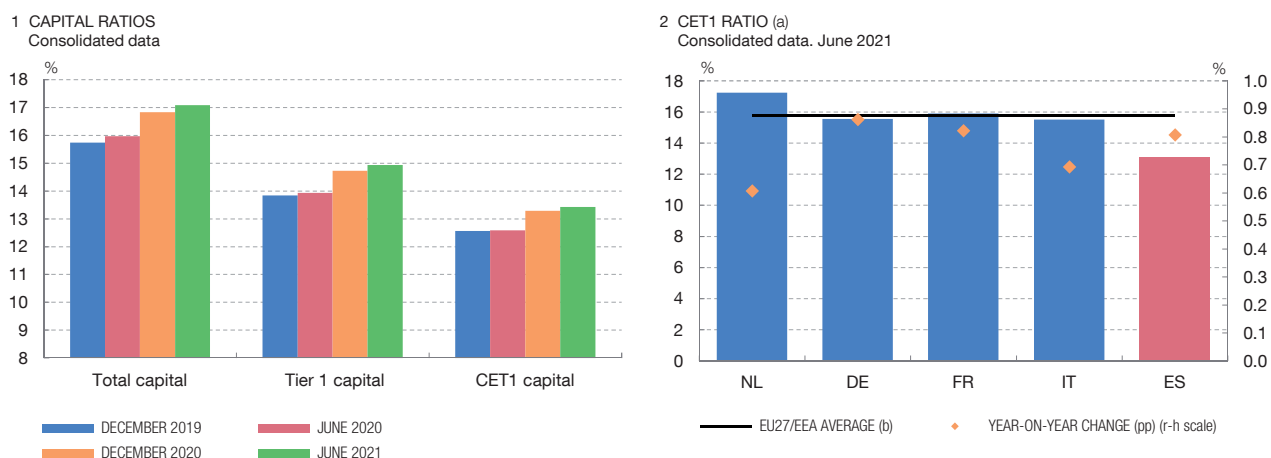
**Capital ratios improved slightly in 2021 H1, and significantly over the last 12 months** (see Chart 2.11.1). This was due both to the increase in capital levels (the ratios' numerators) and to the decline in risk-weighted assets (RWAs) (the ratios'



Chart 2.11

**THE AGGREGATE CAPITAL RATIOS OF THE SPANISH BANKING SECTOR INCREASED SLIGHTLY IN 2021 H1**

The CET1 ratio increased by 83 bp between June 2020 and June 2021 to stand at 13.4%, as a result both of the increase in capital and the decrease in RWAs. Most of this increase (69 bp) arose in 2020 H2 and was largely due to the measures adopted by the authorities to mitigate the effects of the health crisis. The CET1 ratio of Spanish deposit institutions remains the lowest of the main European countries, while year-on-year growth in the ratio was in line with the growth recorded by our peers.



SOURCES: European Banking Authority and Banco de España.

a Data for Spain are in red.  
 b EBA data include Iceland.

denominator). Two distinct stages can be identified. The improvement in the common equity tier 1 (CET1) ratio was more pronounced between June 2020 and December 2020, when it rose by 69 bp. This was the result of growth of 3.6% in CET1 and the 1.8% decline in RWAs. The measures implemented by the authorities to mitigate the impact of the pandemic largely explain these developments.<sup>18</sup> The increase in the CET1 ratio moderated between December 2020 and June 2021 (amounting to 14 bp) due to lower growth in CET1 in that period (0.4%) and a smaller decline in RWAs (0.7%). A similar pattern is observed for the Tier 1 and total capital ratios (see Chart 2.11.1).<sup>19</sup>

**The increase over the last 12 months in the Spanish banking sector’s CET1 ratio was in line with that of the main European countries.** The CET1 ratio of Spanish banks continued to trail that of the main European countries and remained around 2.7 pp off the European average (see Chart 2.11). This difference vis-à-vis the European average existed prior to the COVID-19 crisis and owes partly to structural factors such as the greater use of the standardised approach by Spanish banks.

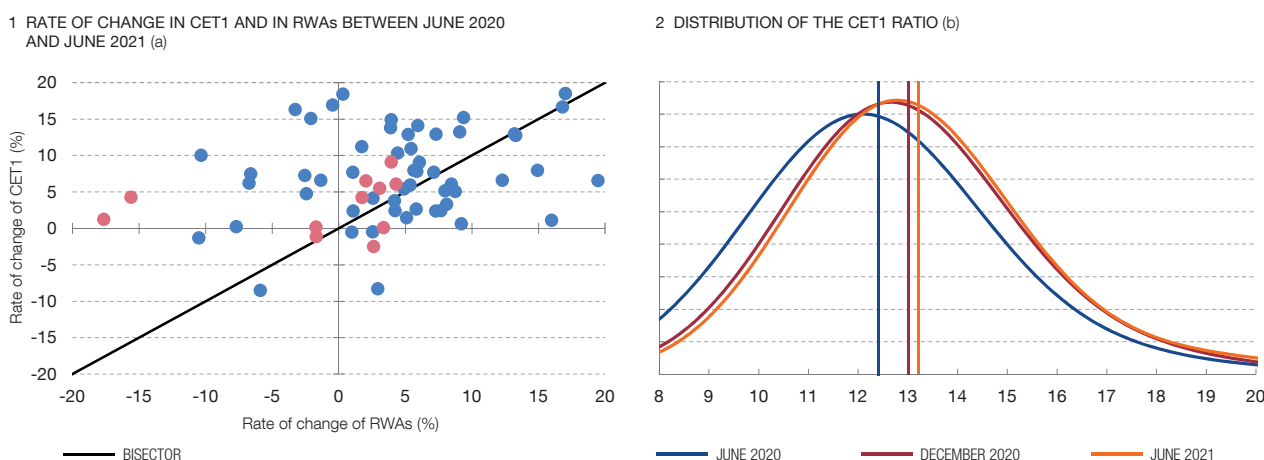
18 The loss recorded in December 2020 did not lead to lower banks solvency, largely because the significant negative extraordinary items (e.g. goodwill impairment) affect balance sheet items that are not counted towards banks’ prudential capital.

19 The bringing forward of the phase-in schedules of the Basel III framework contributed to this moderation in the growth of capital ratios. In fully loaded terms, the CET1 ratio grew most (27 bp in 2021 H1) from 12.77% in December 2020 to 13.04% in June 2021.

Chart 2.12

### CET1 INCREASED ACROSS THE BOARD, WHILE THE DECLINE IN RWAs MOSTLY AFFECTED SOME SIGNIFICANT INSTITUTIONS

Most banks increased their volume of CET1 between June 2020 and June 2021. Despite the overall decrease in RWAs in the Spanish banking sector, most banks increased their RWAs over the last year, with a small but significant number of banks reducing them. The shift towards more positive values in the distribution of the CET1 ratio was above all recorded between June 2020 and December 2020.



SOURCE: Banco de España.

- a The red dots represent banks directly supervised by the SSM. The dots above the bisector depict increases (decreases) in the volume of CET1 over the last year that are higher (lower) than the increase (decrease) in the volume of RWAs. Consequently, they refer to increases in the CET1 ratio between June 2020 and June 2021. The opposite applies for the dots beneath the bisector.
- b The chart depicts the CET1 ratio density function for Spanish deposit institutions, weighted by the amount of RWAs. The density function is estimated using a kernel estimator, which enables non-parametric estimation and provides a continuous, smoothed graphic representation of the function. The vertical lines denote the CET1 ratio for the Spanish banking system as a whole in June 2020 (blue), December 2020 (red) and June 2021 (orange).

Indeed, if solvency is measured in terms of the leverage ratio, Spain's significant institutions (5.7%) are in line with the European average.

**CET1 increased across the board, whereas the change in RWAs was more uneven** (see Chart 2.12.1). Indeed, most banks recorded a rise in RWAs. However, the total amount of RWAs in the system fell due to the notable decline at some of the bigger banks<sup>20</sup> and, in particular, to the divestment in the United States by one of the banks with the largest international presence. Overall, the CET1 ratio has improved, which is reflected by the shift of its distribution to the right (see Chart 2.12.2).

### 2.1.3 Forward-looking assessment of the Spanish banking system's resilience

*Methodology applied. The FLESB framework*

**The Banco de España has applied its own FLESB methodological framework to measure the resilience of Spanish banks in terms of solvency and liquidity.**

<sup>20</sup> Indeed, while for banks directly supervised by the SSM RWAs decreased by 2.9% between June 2020 and June 2021, for the rest of the system they rose by 3.5%.

The FLESB framework enables analysis of different macro-financial scenarios using a set of models and hypotheses developed in-house (“top-down” approach), underpinned by the granular information available through regulatory and supervisory reporting. As with last year’s exercise, this year’s also included the effect of the economic policy measures to mitigate the impact of COVID-19, taking into account the roll-out of the ICO guarantees since the cut-off date for the previous exercise.<sup>21</sup> Other developments include the consideration of the possible latent credit risk due to the combination in 2020 of a severe economic shock and important mitigating measures, in addition to the more granular modelling of credit risk in lending to business. The methodological fundamentals and main characteristics of this exercise are summarised below.

**The macroeconomic scenarios used match those designed for the 2021 stress test coordinated at European level by the EBA.**<sup>22</sup> The baseline scenario covers the most likely economic developments over the exercise’s horizon (2021-2023) and is used to assess the banking system’s solvency under normal conditions. The adverse scenario includes the materialisation of the main risks facing the European economy identified by the ESRB. These are related to the uncertainty over the course of the COVID-19 pandemic and lower confidence, which would trigger a protracted contraction in economic activity and low and even negative interest rates for longer.

**For the Spanish economy (see Table 2.1), the baseline scenario reflects a recovery, resulting in cumulative real GDP growth over the three years of 13.2%. The adverse scenario envisages a cumulative contraction of 3.2%.** Noteworthy among the other macroeconomic variables is the severity of developments in the unemployment rate (21.2% on average over the three years) and house prices (a cumulative decline of 17.0%) under the adverse scenario. Interest rates do not show signs of being significantly stressed, since the scenarios include the expectations that the monetary policy stance will remain expansionary. The paths of the macroeconomic variables for the other countries also match those included in the EBA 2021 exercise (see Chart 2.13). The baseline scenario reflects a widespread recovery, whereas the adverse scenario envisages a persistent contraction in activity, both in advanced and in emerging market economies. The FLESB also includes other variables of interest that do not feature in the EBA’s scenarios, such as credit developments in Spain and in the geographical areas where Spanish banks have a significant presence. These are projected using the Banco de España’s in-house models in a manner consistent with the other variables in each scenario.

---

21 The first scheme (for guarantees totalling €100 billion) was approved in March 2020 (Royal Decree-Law 8/2020). It was then increased in July (Royal Decree-Law 25/2020) by a further €40 billion.

22 Although the scenarios used in this year’s FLESB are the same as those used by the EBA in the stress-testing exercise conducted at European level, the assumptions, methodology, estimation of parameters and scope of application (institutions stressed and risks analysed) differ. Because of these differences, the results of the two exercises are not directly comparable.

Table 2.1

**MACROECONOMIC SCENARIOS FOR SPAIN IN THE STRESS TEST**

	Baseline scenario 2021-2023	Adverse scenario 2021-2023
GDP, cumulative growth (%)	13.2	-3.2
Unemployment rate (% of labour force), average	16.0	21.2
House prices, cumulative growth (%)	5.4	-17.0
Lending to households for house purchase, cumulative growth (%)	-0.5	-12.3
Consumer credit and other lending to households, cumulative growth (%)	-0.9	-14.5
Lending to business, cumulative growth (%)	-5.3	-15.6
12-M interbank interest rate, average (%)	-0.5	-0.6
10-year sovereign bond yield, average (%)	0.3	1.1

SOURCE: Banco de España.

**The portfolios of business loans are broken down by sector of activity and firm size to obtain a more granular estimate of the credit risk parameters.** Specifically, the sectoral breakdown of those credit portfolios has been enhanced to a level similar to two-digit Spanish National Classification of Economic Activities (CNAE by its Spanish initials) codes. In addition to the macroeconomic variables of the scenarios, this more granular treatment factors in paths for real gross value added for each sector and firms' various financial ratios, which are consistent with the scenarios in the projection horizon.<sup>23</sup>

**The exercise also envisages the possible future deterioration in credit quality, which did not materialise in 2020 because of the positive effect of the economic policy measures implemented in response to the COVID-19.** These measures have largely mitigated the economic effects of the pandemic. Yet they have also put off some of the financial consequences of the crisis until the future, when households and firms will have to repay debts incurred in 2020 to meet liquidity needs stemming from the crisis.

**To facilitate their interpretation, the results are presented in three groups of banks, as the business models and sources of risk vary across the different groups.** The first group comprises Spanish banks directly supervised by the SSM with the most significant international presence.<sup>24</sup> The second group consists of the other banks under the direct supervision of the SSM. Lastly, the third group includes

23 The paths of real gross value added for each sector are generated using the Banco de España's in-house sectoral projection models, which are consistent with the aggregate FLESB scenarios. The financial ratios are projected for each firm size and sector using models that consider the macroeconomic scenarios and real gross value added paths for each sector.

24 Among the entities with significant international activity, this group includes the three in which it is of greatest importance and more extended in time.

Chart 2.13

**IN THE GEOGRAPHICAL AREAS WHERE SPANISH BANKS HAVE SIGNIFICANT PRESENCE, THE BASELINE SCENARIO ENVISAGES A WIDESPREAD RECOVERY, WHEREAS THE ADVERSE SCENARIO REFLECTS A PROLONGATION OF THE CONTRACTION TRIGGERED BY THE COVID-19 PANDEMIC**

The scenarios for the other geographical areas where Spanish banks have significant activity are also consistent with those used in the EBA stress-testing exercise conducted at European level. The baseline scenario assumes a widespread recovery, whereas the adverse scenario envisages the materialisation of risks to financial stability related to the uncertainty surrounding the course of the COVID-19 pandemic and a drop in confidence causing a prolongation of the downturn.



SOURCE: Banco de España.

smaller banks with no significant international presence which are under the direct supervision of the Banco de España. In all cases, the impacts in terms of the fully loaded CET1 ratio are shown.

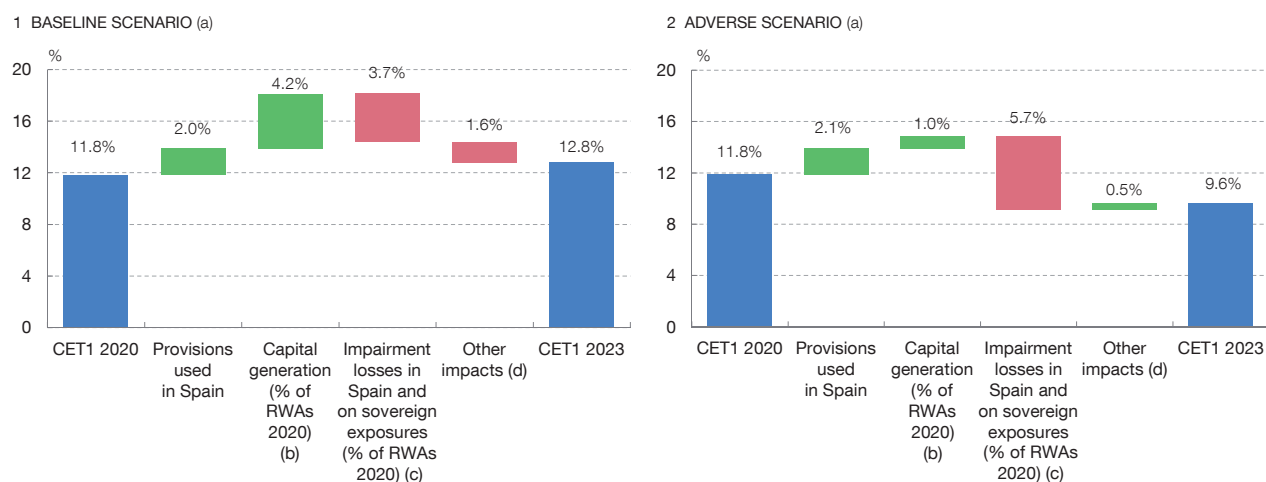
*Results of the stress tests*

**For the group of banks with greater international activity supervised by the SSM an increase of 1 pp and a decrease of 2.2 pp in their CET1 ratio were projected under the baseline and adverse scenarios, respectively** (see Chart 2.14). This group’s starting CET1 ratio was 11.8 pp, lower than that of the other two groups of banks. Under the baseline scenario, available provisions to cover impairment losses in Spain (2% of RWAs) and the capacity to generate new capital (4.2% of RWAs) offset the volume of impairment losses in operations in Spain and sovereign exposure valuation adjustments (overall, 3.7% of RWAs). As a result of the global recovery forecast over the period 2021-2023, operations outside Spain help increase net profit under the baseline scenario. Conversely, the other impacts make a negative contribution (1.6% of RWAs) to solvency, due to the net effect of other gains and losses, the effect of taxes and profit distributions. The final result is a CET1 ratio of 12.8 pp in 2023. Under the adverse scenario, the continued contraction in activity results in a significantly lower generation of capital (1% of RWAs). This is largely because of the greater impairment losses in operations outside Spain and, in

Chart 2.14

### THE BANKS WITH THE LARGEST INTERNATIONAL PRESENCE REMAIN FIRMLY RESILIENT, EVEN TO THE CONTINUED GLOBAL DOWNTURN ENVISAGED UNDER THE ADVERSE SCENARIO

Banks with significant international exposure remain notably resilient, despite the relatively high volume of impairment losses in operations in Spain under both scenarios. Under the baseline scenario the use of provisions and the generation of capital offset the impairment losses, while under the adverse scenario the additional impairment and lower capital-generation capacity lead to a decrease in the 2023 CET1 ratio compared with the starting ratio. However, it remains above the minimum requirement.



SOURCE: Banco de España.

- a The red (green) bars indicate a negative (positive) contribution of the corresponding item to the change in the CET1 ratio at the end of the projection horizon (2023) compared with the start of the exercise (2020).
- b Generation of loss-absorbing capital in the case of banks with significant international activity includes the net operating income for Spain and net profit in operations abroad.
- c Impairment losses on loans and foreclosed assets in operations in Spain and the impact on capital of a potential deterioration of sovereign exposures at consolidated level.
- d Other consolidated gains and losses, tax effects, exchange differences, dividend distribution and changes in RWAs.

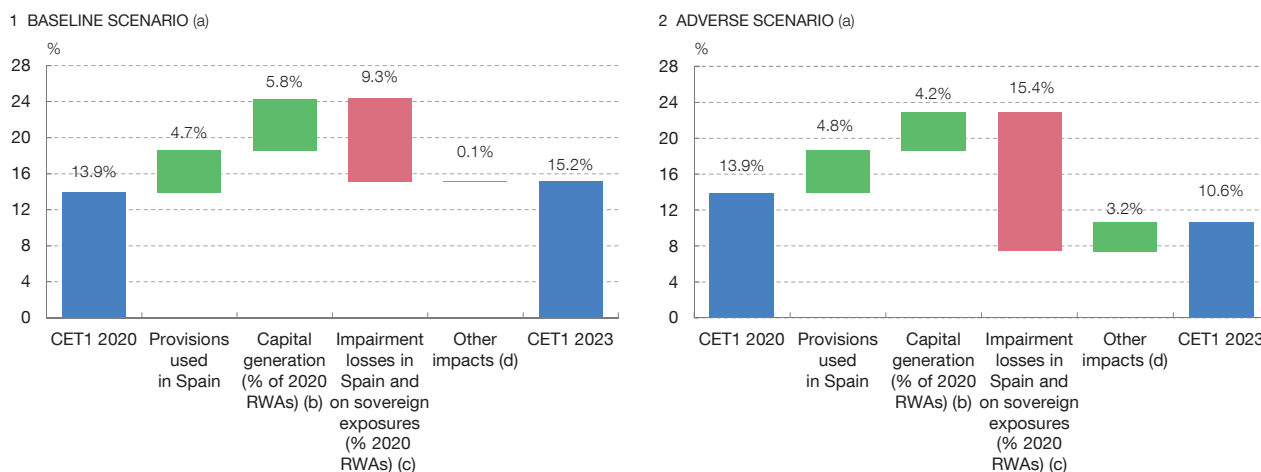
the same vein, impairment losses in Spain totalling 5.7% of RWAs. Under the adverse scenario, the CET1 ratio stands at 9.6% at the end of the projection horizon.

**For the other banks supervised by the SSM, an increase of 1.3 pp and a decrease of 3.3 pp in the CET1 ratio are estimated under the baseline and adverse scenarios, respectively** (see Chart 2.15). This group's CET1 ratio at the start of the exercise (13.9%) was better than that of banks with significant international activity. Under the baseline scenario, impairment losses in Spain (9.3% of RWAs) are significantly higher than in the case of banks with significant international activity because of the lesser geographical distribution of their risks. Provisions (4.7%) and the generation of net operating income (5.8%) more than suffice to absorb the impairment losses, thereby raising the CET1 ratio to 15.2%. Under the adverse scenario, generation of capital falls vis-à-vis the baseline scenario (4.2% of RWAs) and impairment losses increase (15.4% of RWAs). This results in solvency being undermined, despite the positive contribution (3.2%) of the other impacts, associated with the lower lending projected under this scenario. Capital consumption under the adverse scenario is higher than for the other groups of banks, resulting in a CET1 ratio of 10.6% in 2023.

Chart 2.15

**OTHER SSM BANKS WOULD RECORD RELATIVELY LARGE IMPAIRMENTS RELATIVE TO THEIR LOSS-ABSORBING CAPITAL. NONETHELESS, THE ENDING CET1 RATIO IS SOUND, PARTLY OWING TO THE FAVOURABLE STARTING POSITION AND RWA REDUCTION**

The other SSM banks record a relatively high volume of impairment losses relative to their loss-absorbing capital in the business in Spain under both scenarios. Under the adverse scenario, the use of provisions and generation of net operating income are insufficient to offset the losses. However, the end-exercise solvency position is notable, owing to a higher starting CET1 ratio and a degree of deleveraging, captured in the RWA reduction included in other impacts.



SOURCE: Banco de España.

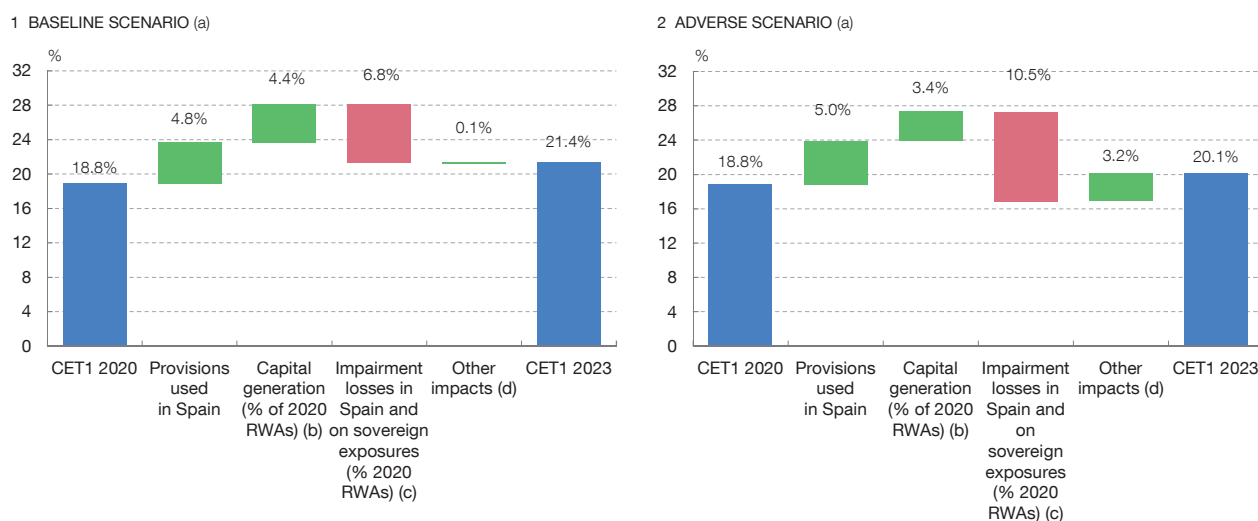
- a The red (green) colour of the columns indicates a negative (positive) contribution of the item concerned to the change in the CET1 ratio at the end of the projection exercise (2023) vis-à-vis the start of the exercise (2020).
- b The generation of loss-absorbing capital for other SSM banks mainly includes net operating income in Spain, with a very small contribution from net profit from foreign operations.
- c Impairment losses on loans and foreclosed assets in business in Spain, and the impact on capital of the potential impairment on sovereign exposures at consolidated level.
- d Other consolidated gains and losses, tax effects, exchange differences, dividend distribution and changes in RWAs.

**The CET1 ratio of the institutions supervised directly by the Banco de España improves under both the baseline and adverse scenarios, rising 2.6 pp and 1.3 pp, respectively** (see Chart 2.16), with the latter result largely stemming from **the institutions' deleveraging**. This third group of institutions has a higher starting CET1 ratio (18.8 pp) than the other groups and a simpler and more conservative business model in terms of products (a higher relative share of mortgage loans and government debt holdings). They also operate in a reduced geographical area. Under the baseline scenario, existing provisions (4.8% of RWAs) and capital generated (4.4% of RWAs) more than offset the impairment losses (6.8% of RWAs). This gives rise to an end-exercise aggregate CET1 ratio of 21.4%. Under the adverse scenario, the generation of new loss-absorbing capital declines (3.4% of RWAs) and impairment losses increase (10.5% of RWAs). However, this set of institutions ends the exercise with higher solvency on account of other effects (3.2% of RWAs). Under the adverse scenario, the CET1 ratio improvement is primarily linked to the institutions' deleveraging, given that credit – which accounts for a large share of these institutions' exposures – shrinks. Thus, under the adverse scenario the CET1 ratio stands at 20.1% in 2023, the highest value of the three groups.

Chart 2.16

**INSTITUTIONS SUPERVISED DIRECTLY BY THE BANCO DE ESPAÑA, WHICH START WITH A HIGH CAPITAL LEVEL AND EXPOSURE TO LOWER-RISK ASSETS, EXPERIENCE SIGNIFICANT IMPAIRMENT. HOWEVER, THIS IS OFFSET BY PROVISIONS, CAPITAL GENERATION AND DELEVERAGING UNDER BOTH SCENARIOS**

The CET1 ratio of the institutions supervised directly by the Banco de España improves under both the baseline and adverse scenarios, despite also deteriorating significantly. As well as starting out with a substantially higher CET1 ratio, the impairment losses are offset by the effect of provisions, capital generation and the RWA reduction.



SOURCE: Banco de España.

- a The red (green) colour of the columns indicates a negative (positive) contribution of the item concerned to the change in the CET1 ratio at the end of the projection exercise (2023) vis-à-vis the start of the exercise (2020).
- b The generation of loss-absorbing capital is determined by net operating income in Spain.
- c Impairment losses on loans and foreclosed assets in business in Spain, and the impact on capital of the potential impairment on sovereign exposures at consolidated level.
- d Other consolidated gains and losses, tax effects, exchange differences, dividend distribution and changes in RWAs.

**These results reflect Spanish deposit institutions' considerable aggregate resilience against a persistent downturn, although there is some cross-institution heterogeneity.** All three sets of institutions end the exercise with CET1 ratios above 9% under both the baseline and adverse scenarios. However, not all institutions end the exercise in the same situation and heterogeneous behaviour in terms of capital charges is observed under the adverse scenario. In any case, the distribution of the CET1 ratio across banks under the adverse scenario does not suggest the need for extensive additional supervisory intervention, in line with the results of other stress tests at European level, such as the EBA exercise discussed in this chapter. Moreover, the results are subject to the marked uncertainties facing the banking sector. Caveats specific to the current environment should also be highlighted. For instance, the possibility of more adverse adjustments in financing conditions than envisaged under the scenarios, were the growing risk of financial market correction to intensify and materialise.

**Spanish institutions also had a robust liquidity position at end-2020, supported by the ECB's monetary policy stance.** As in previous years, a stress test was conducted on the liquidity coverage ratio (LCR), with Spanish institutions maintaining appropriate liquidity levels comparable to previous tests.



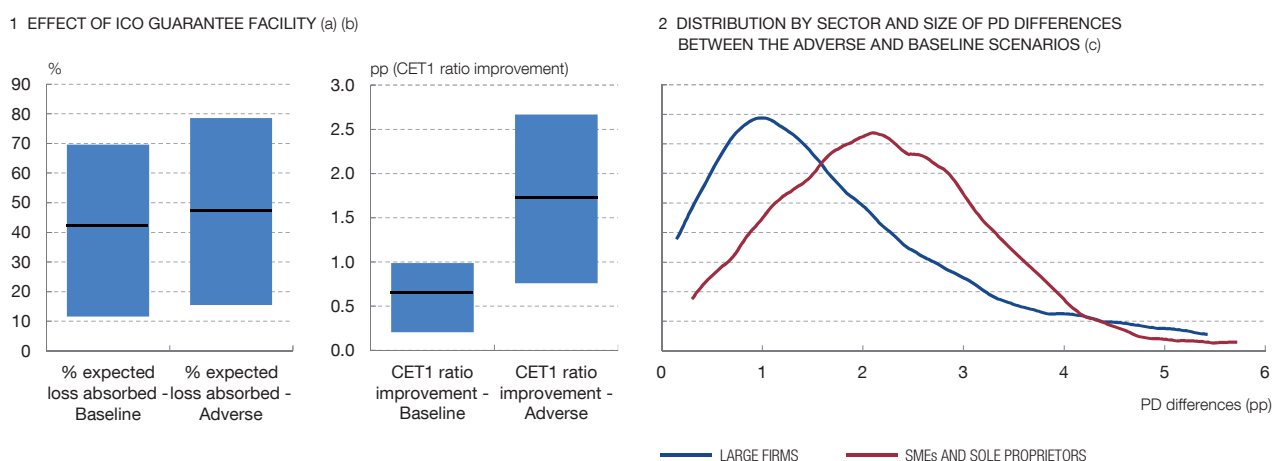
**The exercise factors in the mitigating effect on Spanish institutions' solvency had by the public guarantee scheme for business lending.** Since the scale of this effect remains uncertain, an impact range has been estimated taking into account various assumptions regarding the probability of default of the guaranteed loans (see Chart 2.17.1). The bottom end of the range assumes that the expected loss is equal to the average for the corporate credit portfolio; the top end assumes that the guaranteed loans are concentrated among higher-risk debtors. The previous section's findings are based on the impact of the ICO guarantees standing at the midpoint of this range. It should be borne in mind that the more impairment losses the programme is able to absorb, the greater its budgetary cost.

**The mitigating effects of the State guarantee scheme for business lending include reducing the loss given default, but also lowering the risk weights of**

Chart 2.17

**ICO GUARANTEES LIMIT THE IMPACT ON CAPITAL OF LOAN LOSSES. THIS IS PARTICULARLY TRUE UNDER THE ADVERSE SCENARIO, WHICH PRESENTS AN UNEVEN CREDIT QUALITY IMPAIRMENT RELATIVE TO THE BASELINE SCENARIO ACROSS FIRMS OF DIFFERENT SIZE AND SECTOR**

State guarantees for corporate credit have a positive impact on the CET1 ratio under both scenarios, particularly the adverse scenario. The more granular treatment of corporate credit portfolios means risk is captured based on sensitivity to the economic cycle and specific potential shocks that may affect each sector and firm size.



SOURCE: Banco de España.

- a The effect of the guarantee facility under an intermediate assumption, together with the restrictions on profit distribution and the impact of TLTROs, are incorporated into the main analysis, the results of which are set out in Charts 2.14, 2.15 and 2.16.
- b Shown is the range of the measure's impact on the expected loss of the corporates portfolio (left panel) and on the CET1 ratio (right panel), depending on the assumptions regarding the credit quality of loans extended to firms and sole proprietors in Spain under the ICO guarantee facility. The minimum effect assumes that the expected loss is equal to the average of the corporate lending portfolio, while the maximum effect assumes that NPL inflows are primarily concentrated among guaranteed loans. The black line denotes the midrange effect.
- c Probability of default (PD) is defined as the probability of transitioning from performing status to non-performing status in a 12-month period. This probability is estimated using a model that links observed PD to the firms' macroeconomic variables and financial ratios. The chart shows the density function of the difference (in pp) between the PD estimated for each sector under the adverse scenario vis-à-vis the baseline scenario. This is estimated for each bank, but the weighted average for each sector is shown. The weighting is based on number of holders. The density function is approximated by means of a kernel estimator, which enables non-parametric estimation and provides a continuous, smoothed graphic representation of the function.

**the loans.** The risk weight of the guaranteed portion of the loans granted under the scheme are lowered to the 0% risk weight assigned to sovereign exposures. In the event of default, the loss is assumed proportionally by the State. Thus, under the baseline scenario the assumptions regarding the guaranteed loans' credit quality would result in the guarantees absorbing between 11.5% and 69.5% of the expected loss (midpoint of 40.5%), while under the adverse scenario the range is from 15.4% to 78.5% (midpoint of 47%).<sup>25</sup> The impact on the CET1 ratio at the midpoint would be 0.6 pp and 1.7 pp under the baseline and adverse scenario, respectively.

**The firms' characteristics (size, sector, etc.) have a bearing on the PDs projected for the loans.** Hence, under the adverse scenario the increase in PD relative to the baseline scenario is larger for small and medium-sized enterprises (see Chart 2.17.2). Likewise, much cross-sector heterogeneity is observed in the difference between PDs under the baseline and adverse scenarios.

#### *Results of the EU-wide stress test published by the European Banking Authority*

**The results obtained by the EBA for 50 banks in the European Union and the European Economic Area show a CET1 capital ratio increase under the baseline scenario and a significant contraction under the adverse scenario. Under the baseline scenario,** this ratio would rise from 15% (fully loaded at end-2020) to 15.8% in 2023 (see Chart 2.18.1). The Spanish institutions participating in the exercise<sup>26</sup> would, under this scenario, record a far sharper ratio increase (2.2 pp), rising from 11.9% (fully loaded in December 2020) to 14.1% at the end of the projection horizon. Under the adverse scenario the participating institutions would, overall, see their CET1 capital ratio fall by 4.9 pp, placing it at 10.2% of RWAs at the end of the exercise. The reduction is smaller for Spanish banks (of 2.9 pp to 9%). Thus, Spanish banks show greater resilience to the adverse scenario and greater capacity to generate capital under the baseline scenario than their European peers, despite starting out with a lower capital ratio. This was also true in the 2018 EU-wide stress tests coordinated by the EBA.

**Spanish banks face one of the smallest adverse impacts on capital ratios under the adverse scenario.** A country-level analysis of the results (see Chart 2.18.2) places Spanish banks (together with those of Poland and Norway) among those that experience a smaller capital ratio impact. At the other end of the scale are

---

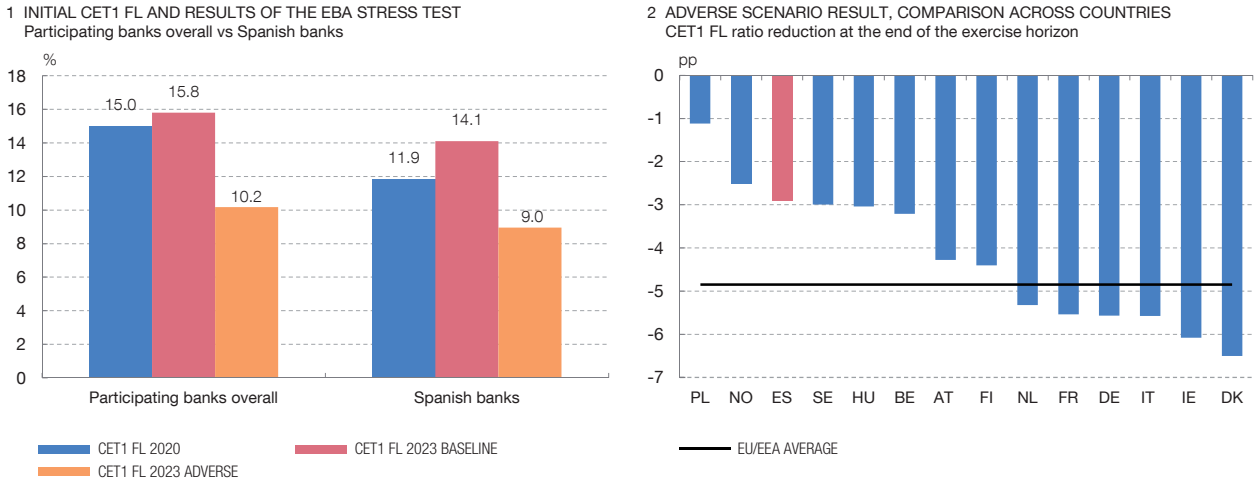
25 The top end of the range assumes that NPL inflows are concentrated among guaranteed loans, which thus absorb the bulk of the losses. This result constitutes an upper bound to the impact on capital absorbed by ICO guarantees. For its part, the lower end of the range assumes that the guaranteed loan losses are equal to the average for the corporate credit portfolio.

26 Banco Santander, S.A., Banco Bilbao Vizcaya Argentaria, S.A., Banco Sabadell, S.A. and Bankinter, S.A.

Chart 2.18

**EUROPEAN BANKS SHOW STRONG RESILIENCE UNDER THE ADVERSE SCENARIO OF THE EBA STRESS TEST, WITH BETTER-THAN-AVERAGE RESILIENCE FOR SPANISH BANKS**

The results obtained show that the participating institutions would, overall, see their CET1 capital ratio increase slightly under the baseline scenario and decline by nearly 5 pp under the adverse scenario. The solvency of Spanish banks would change more favourably than the average for participating institutions in both exercises.



SOURCE: European Banking Authority.

Danish and Irish banks, whose CET1 capital ratios end the exercise down by more than 6 pp.

**The differences – in terms of methodology, scope and risks analysed – between the EBA exercise and the FLESB lie behind certain disparities in the results obtained for Spanish banks.** The most significant differences between the two exercises are associated with the fact that the EBA methodology assumes a static balance sheet in all years. By contrast, the FLESB adapts to the macroeconomic developments implicit in the scenarios. Similarly, the EBA-coordinated exercises consider the impact of the scenarios on market and operational risk, aspects that fall partially outside the scope of the FLESB. The EBA exercise likewise considers a small sample of all Spanish deposit institutions, compared with the broader coverage provided by the FLESB. In any event, both exercises evidence the Spanish banking sector’s aggregate resilience to an adverse economic environment.

**2.1.4 Deposit institutions’ operational risks**

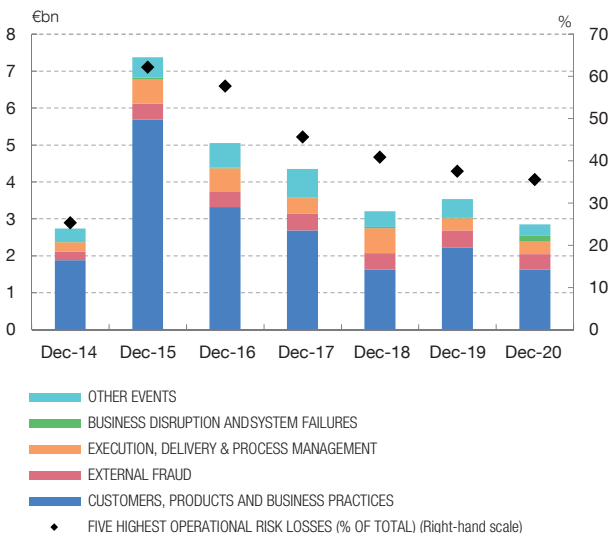
**Spanish banks’ operational risk losses have been in decline since 2015, with a simultaneous increase in perceived cyber risks.** Despite the reduction in operational risk losses (see Chart 2.19.1), the number of external fraud events has increased, with the vast majority being cyber incidents. It comes as no surprise, then, that concern surrounding cybersecurity has intensified over the last decade (see

Chart 2.19

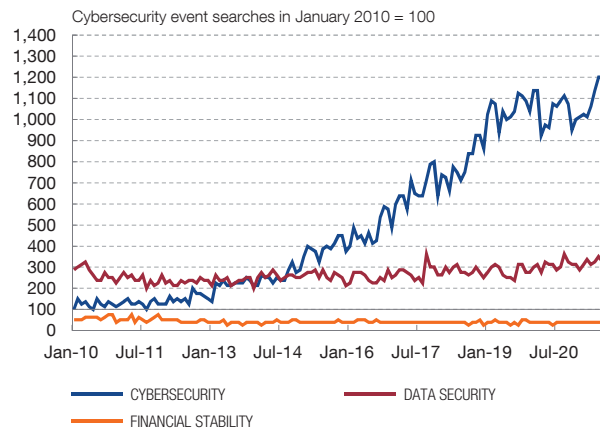
**OPERATIONAL RISK LOSSES HAVE DECLINED IN RECENT YEARS, BUT THERE IS GROWING CONCERN OVER THE FUTURE COSTS OF CYBER RISKS**

Operational risk losses have declined significantly since 2015, although the number of external fraud events has increased. Concern over the possible future impact of cyber risks is on a rising trajectory, as revealed by Google searches, although the scant data hinders any systematic measurement of their impact and cost.

1 OPERATIONAL RISK. TOTAL LOSSES  
Consolidated data. December 2020



2 GOOGLE TRENDS ON CYBERSECURITY  
(2010-2021) (a)



SOURCES: Google Trends and Banco de España.

a The number of Google Trends searches is standardised using the number of searches for cybersecurity events in January 2010 as base 100.

Chart 2.19.2). The extraordinary circumstances of 2020 and the necessary commitment to remote working created new opportunities for cybercriminals to exploit the growing reliance on communication networks. The three main types of cybersecurity incidents in 2020 were data kidnapping, data theft and server hacking. The banking sector is particularly susceptible to such attacks, as evidenced by it topping the ranking in terms of attack numbers for the fifth consecutive year. Guarding against these increasingly frequent and costly incidents entails banks implementing safeguards and mitigation measures. The immediate monetary costs stemming from cyber risk are highly uncertain. However, the total costs would be even greater and material, since the critical asset of customer confidence would be compromised.

## 2.2 Non-bank financial sector and systemic interconnections

### 2.2.1 Non-bank financial sector

#### *Specialised lending institutions*

**The credit extended by specialised lending institutions (SLIs) stabilised in the last 12 months, while NPLs declined and income statements recovered. In**

June 2021 the credit extended by SLIs to the resident private sector grew by 0.2% year-on-year, improving markedly on previous quarters. The consumer credit portfolio (a segment in which SLIs specialise) grew by 5.4% year-on-year, drawing close to pre-pandemic levels. NPLs declined sharply in the last 12 months (-13.1%), although much of that fall owed to the write-off of NPLs at a single institution. Thus, the NPL ratio in June 2021 stood at 6.5%, down 1 pp on the same month a year earlier. As with banks, the moderation of loan loss provisions has led to growth in profit after tax, in this case by 11.8%, increasing the ROA by 30 bp over the last 12 months to 1.8% in June 2021.

### *Insurance companies*

**In the insurance sector, profitability and solvency indicators were largely unchanged in 2021 H1, while the companies' premiums and total assets both grew.**<sup>27</sup> Specifically, the volume of premiums increased by 5.5% as compared with the same period a year earlier, with stronger growth in life premiums (9.3%) than non-life premiums (3.4%). The overall saving managed by insurance companies increased by 3.2% as compared with the same period a year earlier.

### *Investment funds*

**Investment funds domiciled in the euro area recorded net capital inflows in 2021 H1.** Inflows have steadily recovered since end-2020, coinciding with an improvement in economic expectations (see Chart 2.20.1), and rising returns in some segments, following the sharp outflows during the initial weeks of the pandemic in certain segments of the industry. This recovery has been intense, comfortably offsetting the outflows that took place at the onset of the crisis, with the exception of funds domiciled in Italy. Developments in capital flows differ across the various vehicles, with equity funds recording the strongest flows. Inflows have been more moderate for mixed funds, which invest in both fixed income and equity, and above all in bond and money market funds, with some jurisdictions even registering net capital outflows.

**Spanish investment funds tend to have a fixed-income portfolio with shorter maturities and larger liquidity holdings than average for euro area funds.** For the latter, the average maturity of fixed-income portfolios is around ten years, while that for funds domiciled in Spain is considerably shorter (around four and a half

---

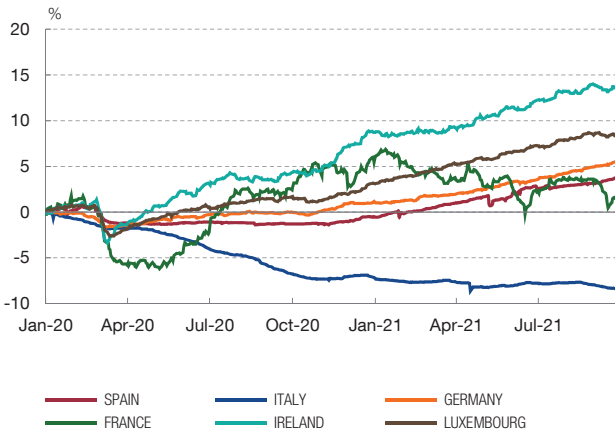
27 On 22 September 2021, the European Commission adopted the revision of the Solvency II Directive, which included a legislative proposal to amend Directive 2009/138/EC and a legislative proposal for a new Insurance Recovery and Resolution Directive. The changes to the solvency directive are expected to release capital in the sector, thus fostering long-term investment and asset growth.

Chart 2.20

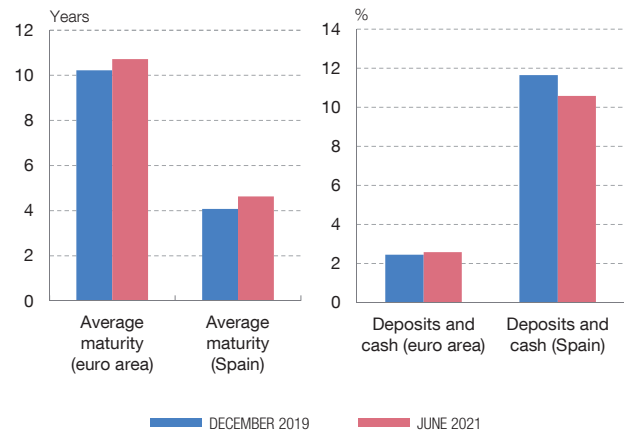
**EURO AREA INVESTMENT FUND CAPITAL INFLOWS PERSISTED IN H1, WITH THE MATURITY OF THEIR FIXED-INCOME PORTFOLIOS RISING SLIGHTLY SINCE THE ONSET OF THE CRISIS**

In recent months, net capital inflows into euro area investment funds have increased, essentially due to higher flows for equity funds. In the last year and half, the average maturity of these vehicles' fixed-income portfolios has increased moderately, meaning the value of the funds' exposures could be more sensitive to changes in interest rates. Holdings of highly liquid assets have declined slightly in the funds domiciled in Spain.

1 INVESTMENT FUND FLOWS (a)



2 INVESTMENT FUNDS IN SPAIN AND THE EURO AREA: AVERAGE FIXED-INCOME PORTFOLIO MATURITY (left panel) AND LIQUIDITY OF HOLDINGS (right panel) (b)



**SOURCES:** Refinitiv, Securities Holdings Statistics by Sector, ECB and Banco de España.

- a Cumulative change in investment fund net capital inflows and outflows, as a percentage of the total net assets of the funds of each country on 15 January 2020, drawing on a representative sample of funds domiciled in euro area countries. The data for days with atypical flow values are omitted. Data up to early-October 2021.
- b Average maturity refers to the weighted average remaining maturity (in years) of long position bonds in investment fund portfolios (the weightings are the volume of holdings). The degree of liquidity of the holdings is measured as the ratio of deposits and cash held by the investment funds to their total financial assets.

years). The value of the exposures is therefore less sensitive to changes in interest rates (see Chart 2.20.2). Regarding these vehicles' holdings of liquid assets (approximated through deposit and cash holdings as a percentage of the total), the values for funds domiciled in Spain (10.6%) are five times higher than for the euro area overall, although such holdings have declined slightly in the last two years for Spanish funds. Both the maturity and liquid asset holdings of Spanish funds appear to denote a liquidity risk profile below the average for euro area funds. However, this higher liquidity may come at the cost of lower profitability relative to funds in the euro area overall. Lastly, it should be noted that the Spanish financial system could be exposed to risks through funds not domiciled in Spain operating in global financial markets with significant cross-jurisdiction interconnections.

*Pension funds*

There has been a broad-based decline in net contributions to pension funds in the year to date, while their returns and total assets have risen. Despite the drop in net contributions, in June 2021 pension plan assets had increased by 10.9% as

compared with the same month a year earlier, with H1 also showing growth (4.7% since December 2020). This increase reflects pension funds' high annual average returns, which have climbed by 12.78 pp since June 2020 to stand at 11% in June 2021. For their part, long-term returns (25 years) have held at around 3.4% in the last 12 months.

## 2.2.2 Systemic interconnections

**The analysis of interconnections between different economic agents and markets helps identify potentially systemic vulnerabilities resulting from linkage within the financial sector itself or with the non-financial sector.** This section analyses the banking sector's direct exposure to other economic sectors and the indirect interconnections within the Spanish financial system through common holdings.

**The Spanish banking system's total assets and liabilities vis-à-vis other resident and non-resident sectors increased slightly during the first few months of the health crisis. In the case of assets, this was followed by slight moderation over the subsequent quarters.** The value of the banking sector's assets vis-à-vis other sectors has held close to 190% of GDP since end-2019, with a temporary upturn around mid-2020 (see Chart 2.21.1). For the banking sector's liabilities, which stand close to 180% of GDP, the increase recorded in mid-2020 appears not to have reversed (see Chart 2.21.2). The distribution of the assets reveals relatively uniform exposure to households and NFCs and smaller exposure to general government. Box 2.3 analyses these exposures to the public sector in greater depth; whose contribution to the risks of the banking sector during the COVID-19 crisis is very different to that during the global financial crisis. However, on the liability side exposures to households (essentially deposits) predominate. It should also be noted that the banking sector's assets vis-à-vis investment funds, insurance companies and pension funds are far lower (less than 1% of GDP) than those held with non-financial sectors and other financial sectors (19% of GDP).<sup>28</sup> The liabilities held by banks vis-à-vis insurance companies, investment funds and pension funds stand close to 2%, 4% and 1% of GDP, respectively, throughout the period. International exposures are significant, with similar shares for assets (51% of GDP) and liabilities (48% of GDP).

**Banks' indirect interconnectedness with other resident financial sectors, measured via common securities holdings, is largely unchanged relative to the pre-pandemic situation, while that of other financial sectors has declined**

---

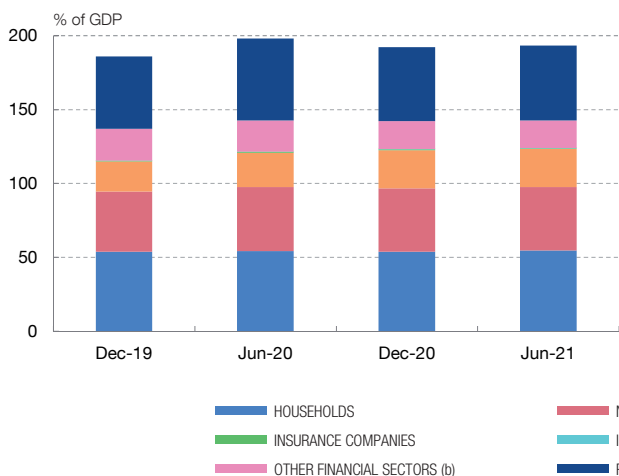
<sup>28</sup> Other financial sectors include specialised lending institutions and financial monetary institutions other than insurance companies, investment funds and pension funds (such as: financial auxiliaries, captive financial institutions and money lenders and other financial intermediaries).

Chart 2.21

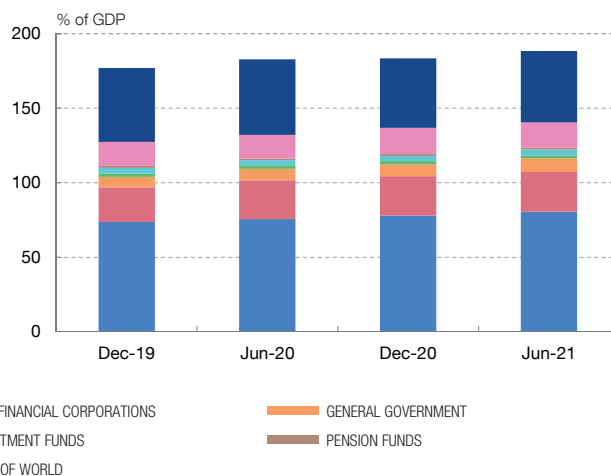
**THE LEVEL AND STRUCTURE OF BANKS' DIRECT INTERCONNECTIONS WITH OTHER SECTORS THROUGH THEIR ASSETS AND LIABILITIES HAVE NOT BEEN SIGNIFICANTLY ALTERED BY THE CRISIS (a)**

At June 2021, exposure to the resident non-financial sector predominated on the asset side (123% of GDP), while exposure to resident financial institutions was limited to 19% of GDP. On the liability side, the resident non-financial sector accounted for a somewhat lower share (116% of GDP), and in addition to liabilities vis-à-vis other financial sectors (17% of GDP, 1 pp higher than pre-crisis) there are relevant liabilities vis-à-vis insurance companies and investment and pension funds (combined share of 7% of GDP, 0.2 pp higher than pre-crisis). The international exposures are relevant, with similar shares for assets (51% of GDP) and liabilities (48% of GDP).

1 ASSETS VIS-À-VIS OTHER SECTORS OF THE ECONOMY



2 LIABILITIES VIS-À-VIS OTHER SECTORS OF THE ECONOMY



SOURCE: Banco de España.

a Individual data, presented as a percentage of 2019 GDP.

b The "other financial sectors" category includes specialised lending institutions and non-monetary financial institutions other than insurance companies and investment and pension funds (e.g. financial auxiliaries, captive financial institutions and money lenders and other financial intermediaries).

**somewhat.**<sup>29,30</sup> The interconnections between the banking sector and other financial sectors were highly stable between December 2019 and June 2021, except for a slight decline in interconnectedness with investment funds (see Chart 2.22). However, there has been a more evident reduction in interconnectedness between investment and pension funds and other financial sectors. This reduction comes alongside a compositional change, with increased interconnectedness through high credit quality assets (AAA to AA-) and unrated assets, and reduced interconnectedness through exposures of intermediate credit quality (A+ to A-). There has also been a broad-based decline in indirect interconnections between

29 The common holdings refer, for instance, to the same holdings of a bank and an insurance of debt securities issued by the same NFC or government.

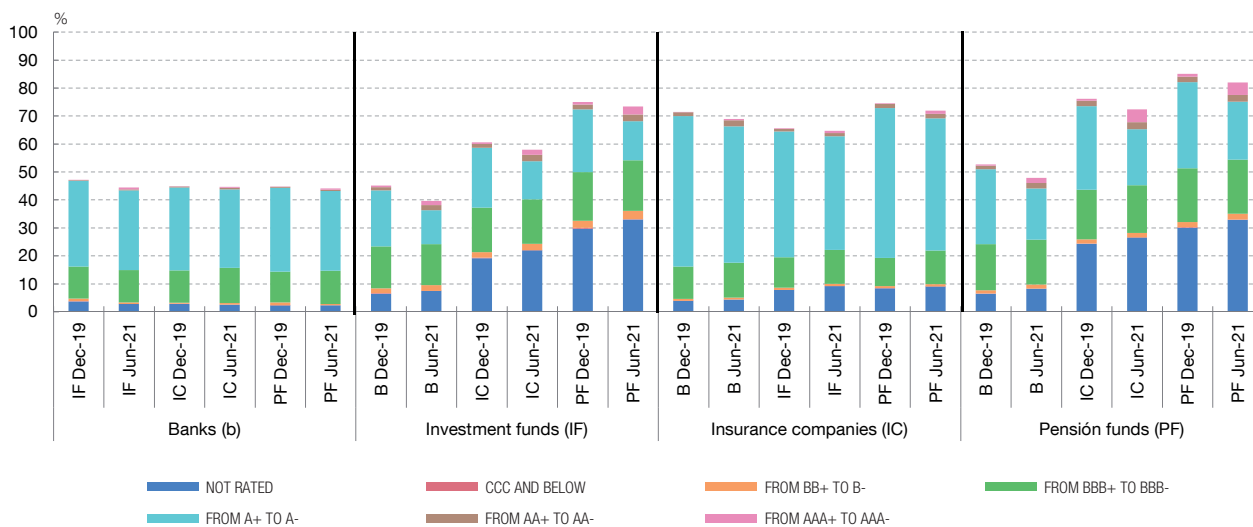
30 Marketable securities portfolios include bonds, equity and investment fund shares/units. Valued at market prices, the banking sector's portfolio stood at around €670 billion in 2021 Q2, while that of non-bank financial sectors amounted to close to: (i) €270 billion for insurance companies; (ii) €287 billion for investment funds, and (iii) €124 billion for pension funds. These amounts represent around 24% of individual financial assets for the banking sector and 80% for the resident non-bank financial sectors considered in this analysis (investment funds, insurance companies and pension funds).



Chart 2.22

**A SLIGHT DECLINE IS OBSERVED IN THE FINANCIAL SECTORS' COMMON HOLDINGS, ESPECIALLY INVESTMENT AND PENSION FUNDS (a)**

The common holdings of various financial intermediaries are concentrated in high credit quality bonds. As was the case in previous periods, common holdings represent a lower proportion of total assets for banks than for other financial intermediaries.



SOURCES: Securities Holding Statistics by Sector and Refinitiv.

a Each column represents one financial sector's common holdings with another, as a proportion of the former's total securities portfolio, with the different rating segments identified. For each financial sector, the share of common holdings with each of the other three is shown at 2019 Q4 and 2021 Q2. For example, the first column shows that, at 2019 Q4, the common holdings between banks and investment funds represented 47% of the banking sector's total securities portfolio. Of these, approximately 11% have ratings on the cusp of investment-grade (BBB+ to BBB-). Taken into account are the market value of the holdings reported by the institutions (or, if applicable, the fair value) and the long positions in the portfolio (short positions represent a very small percentage). The latest available rating at each date is used, standardised based on the S&P credit rating scale.

insurance companies and other financial sectors, albeit far more moderate and with smaller compositional changes.

## IMPACT OF THE PUBLIC GUARANTEE SCHEME ON LENDING RELATIONSHIPS BETWEEN FIRMS AND BANKS

The main aim of the ICO guarantee scheme, set in place under successive Royal Decrees (RDL 8/2020, RDL 25/2020 and RDL 34/2020), is to enable firms<sup>1</sup> to draw on the funds needed to deal with the fall-out of the crisis brought about by the sudden emergence of COVID-19. While such guarantees have had great success in providing liquidity to prop up and ensure firms' survival during the initial phases of the crisis,<sup>2</sup> their effects will be felt beyond 2020. Thus, this scheme may have longer-term consequences – analysed in this box – for the lending relationships between non-financial corporations and the banking sector. In particular, the characteristics of the firms and banks involved in ICO transactions are analysed, and the impact of the ICO scheme on the level and structure of banking relationships.

### Firm-bank characteristics associated with the granting of ICO loans

To analyse the likelihood of a firm receiving an ICO-backed loan, all firm-bank pairings on the Banco de España's Central Credit Register (CCR) in respect of new financing transactions arranged between March and December 2020 are identified. Firm-bank pairings in respect of new financing transactions requested by firms in that same period from banks with which they had no prior relationship have been added to this group. The database also includes all banking relationships at December 2019 involving the firms that have obtained and/or requested funding identified in the two preceding steps. Lastly, the database is completed with economic and financial information on this set of firms at end-2019, drawing on the Banco de España's Central Balance Sheet Data Office (CBSO) and using figures from banks' end-2019 balance sheets and income statements taken from their regulatory reporting to the Banco de España. As a result, the group

of firms that have actively sought funding is identified, and their associated structure of pre-existing banking relationships and the characteristics of the lending banks.

Drawing on all this information, a linear probability model is estimated to ascertain which variables have most influence (and with what outcome) on the likelihood of a firm having received an ICO-backed loan between March and December 2020.<sup>3</sup> The firm-specific explanatory variables include size, ex-ante credit risk score based on firms' financial ratios, and economic sector indicators and postcode. The bank-specific explanatory variables include their size, capital ratio, profitability, and liquidity and NPL ratios. Lastly, the closeness of the firm-bank relationship is measured according to each bank's share of a firm's overall bank borrowing.<sup>4</sup>

As can be seen in Chart 1, the characteristics of firms most likely to have been granted ICO guarantees are size (being an SME increases their chances by 28.5%), level of ex-ante risk (the chances increase by 10.1% for each standard deviation by which the score decreases) or belonging to a sector affected by the pandemic (increase of 11.1%). Larger banks, those with more liquid assets, with a higher NPL ratio or lower profitability are also associated with a greater likelihood of an ICO guarantee being granted (increasing, respectively, by 30.7%, 5.6%, 7.9% and 7.5% for each standard variation by which the explanatory variable worsens). Moreover, the closer the prior banking relationship (measured by the share of financing), the higher the probability (increase of 10.7% per standard deviation). These results are confirmed where the analysis is limited to firms that have relationships with several banks, including fixed firm-specific effects. It is thus possible to fully control for firm characteristics, including demand for financing.<sup>5</sup>

- 1 The analysis uses accounting and financial ratios of firms in 2019 and is thus restricted to non-financial corporations (referred to generally as firms in the rest of the box), excluding sole proprietors.
- 2 See, for example, Alves et al. (2020), *Recent developments in financing and bank lending to the non-financial sector*, Analytical Article, Economic Bulletin 4/2020, Banco de España, in particular Box 1, and R. Blanco, S. Mayordomo, Á. Menéndez and M. Mulino (2020), *Spanish non-financial corporations' liquidity needs and solvency after the COVID-19 shock*, Occasional Paper No 2020, Banco de España.
- 3 The dependent variable of the analysis takes the value of 1 in the observations where an ICO loan has effectively been obtained over this period. By contrast, the dependent variable takes the value of 0 in observations relating to: (a) new lending without an ICO guarantee; (b) loan applications rejected; and (c) previous bank-firm relationships not resulting in new financing, whether or not ICO-backed.
- 4 To prevent possible endogeneity problems, all the explanatory variables were measured at end-2019. Standard errors are corrected at bank and firm cluster level, both in this estimation and in all others described in this box.
- 5 This additional analysis includes interactions of the share in financing variable with other explanatory variables, revealing that a closer pre-existing relationship entails a higher likelihood that ICO financing will be granted where a firm with greater ex-ante risk, from an affected sector, or banks with lower capital and higher NPL ratios, are involved.

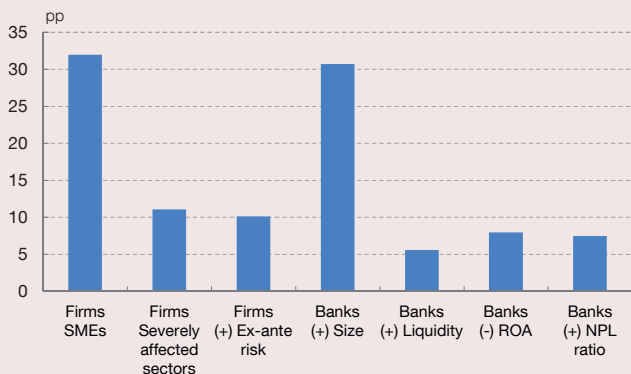
**IMPACT OF THE PUBLIC GUARANTEE SCHEME ON LENDING RELATIONSHIPS BETWEEN FIRMS AND BANKS (cont'd)**

**Impact of the ICO guarantee scheme on the level and structure of bank-firm financing relationships**

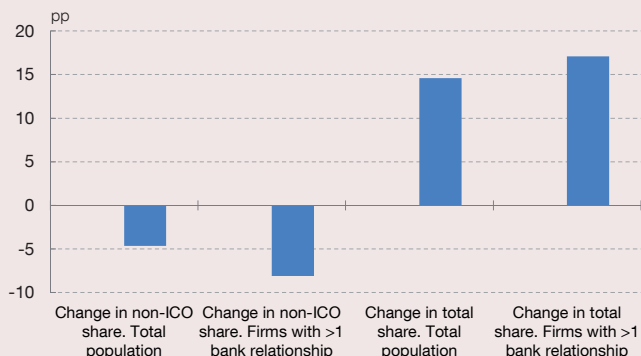
The impact of the ICO guarantee scheme on the closeness of bank-firm financing relationships was also

analysed, and the extent to which the continuation of such relationships has depended on the use of ICO-backed loans. To this end, a difference-in-differences analysis was conducted, comparing (for each firm-bank pairing) changes in their share of financing between

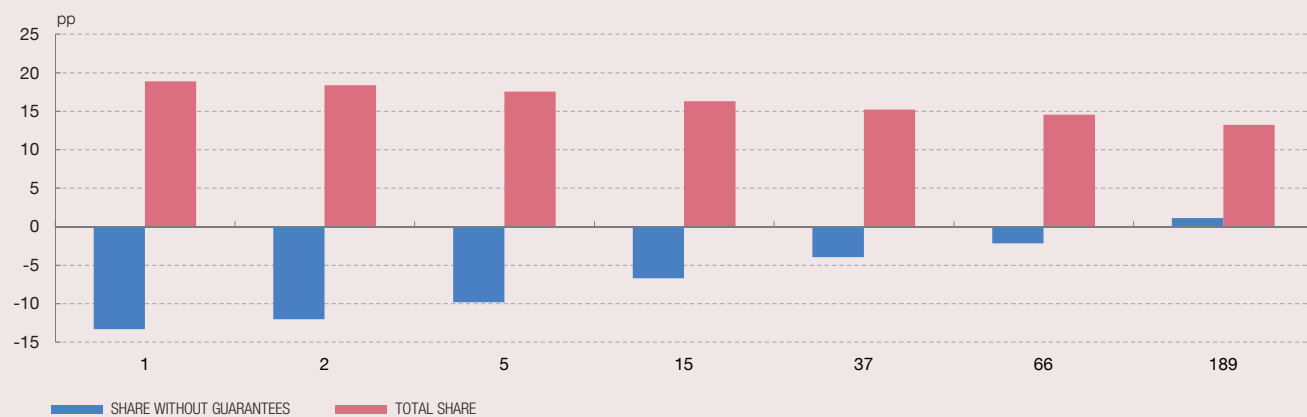
**Chart 1**  
IMPACT OF FIRM-BANK CHARACTERISTICS ON THE LIKELIHOOD OF ICO-BACKED LOANS BEING GRANTED  
March-December 2020 (a)



**Chart 2**  
IMPACT OF THE GRANTING OF AN ICO-BACKED LOAN ON THE SHARE OF THE FIRM'S FINANCING WITH THE LENDING BANK (b)  
December 2019-June 2021



**Chart 3**  
IMPACT OF THE GRANTING OF AN ICO-BACKED LOAN ON THE CHANGE IN THE LENDING BANK'S SHARE OF FINANCING, ACCORDING TO THE BORROWING FIRM'S PRE-EXISTING RESIDUAL BANK DEBT MATURITY (c)



SOURCE: Banco de España.

- a Each bar denotes the relative change in the average probability of a non-financial corporation having received at least one ICO-backed loan between March and December 2020 as the variable indicated in the x axis increases, from a standard deviation if it is continuous or shifting from zero to one if it is discrete (Firms SMEs, Firms Sector most affected). For this calculation a linear probability model was estimated using CCR data, cross-matched with CBB data on firms, and bank data extracted from their regulatory reporting to the Banco de España at end-2019. Firms' ex-ante risk is captured with a variable obtained from a scoring model, calculated based on a high number of its financial ratios. The severely affected sectors by the crisis are defined as those whose turnover decreased by more than 15% in 2020. Bank size is measured in terms of the logarithm of total assets.
- b Each bar denotes the impact (in percentage points) that a bank's arranging with a firm at least one ICO-backed loan between December 2019 and June 2021 has on the change in the share of financing of the bank and the firm between those dates, estimated using a difference-in-differences model drawing on CCR, CBB and regulatory reporting data.
- c Each bar denotes the impact (in percentage points) that a bank's arranging with a firm at least one ICO-backed loan between December 2019 and June 2021 has on the change in the share of financing of the bank and the firm between those dates, according to the residual maturity (in months) of the firm's pre-existing loans with the bank at December 2019. The bank's share of the firm's total financing and its share of financing without ICO guarantees are considered. The impact has been estimated using a difference-in-differences model drawing on CCR, CBB and regulatory reporting data, with fixed firm-specific effects (limited to firms with more than two bank relationships).

**IMPACT OF THE PUBLIC GUARANTEE SCHEME ON LENDING RELATIONSHIPS BETWEEN FIRMS AND BANKS (cont'd)**

December 2019 and June 2021. This share is defined as the amount of loans obtained from each bank as a proportion of the bank funding the firm obtains. Two definitions of this share are analysed, for firms' total bank funding and for financing excluding ICO-backed loans. In the terminology used in this type of study, firms with some type of ICO-backed loan during the period studied make up the treatment or study group, while all other observations make up the control group.<sup>6</sup> As in the previous section, the characteristics of the firms and the lending banks are also taken into account.

Chart 2 shows that the grant of an ICO-backed loan by a bank to a firm is associated with a reduction in that bank's share of bank loans without an ICO guarantee which that firm receives. Specifically, the change in the share of financing in loans without an ICO guarantee from December 2019 to June 2021 is 4.7 percentage points (pp) lower on average in this case. This effect is even more pronounced (8.1 pp lower) when the sample is restricted to firms with more than two bank relationships. When the impact of granting an ICO-backed loan on the bank's share of the firm's total financing (including the financing guaranteed) is analysed, the opposite effect is observed: the change when an ICO-backed loan is granted is 14.6 pp higher for the total sample. Once again, the impact is greater (17.1 pp higher) when the sample is restricted to firms operating with more than one bank.

These results suggest that granting ICO-backed loans makes the overall firm-bank relationship closer, although it weakens when only the group of loans without public guarantees is considered. Consequently, it may be concluded that the granting of an ICO-backed loan is associated with different loan supply behaviour by the lending bank, which seeks to reinforce its relationship with the firm, but via loans with guarantees, reducing its exposure through other transactions.

As regards financing without an ICO guarantee, the above-mentioned reduction in share has been particularly sharp among firms with short residual bank debt maturities at end-2019. This suggests that banks and firms have replaced loans that have matured or are close to maturity with new ICO-guaranteed loans (see Chart 3). The fall in the share of financing without an ICO guarantee is also sharper for firms with a greater ex-ante risk, belonging to sectors hardest hit by the pandemic, and for banks that had lower capital ratios at the start of the crisis. As regards the share of total financing, which includes ICO-backed loans, the presence of short residual maturities at December 2019 is associated with a more positive change (owing to the granting of new ICO-backed loans), albeit to a lesser extent for firms with a poorer ex-ante risk score.

<sup>6</sup> The intensity of the treatment was also analysed using a continuous variable calculated as the guaranteed amount as a proportion of the firm's assets at December 2019. The results obtained reinforce those described here, observing stronger effects for a more intense treatment (greater weight of the guarantees as a proportion of total assets).

**RECOURSE TO MATURITY AND PAYMENT HOLIDAY EXTENSIONS UNDER THE PUBLIC GUARANTEE PROGRAMME FOR LOANS TO FIRMS**

Royal Decree-Law 34/2020 entered into force in November 2020. This amended the ICO guarantee programme (established under Royal Decree-Law 8/2020 and amended by Royal Decree-Law 25/2020), with a view to staving off liquidity problems at firms by permitting, in certain cases, the extension of maturities and of payment holidays. As Box 2.1 discusses, the programme has smoothed the provision of liquidity to the corporate sector during the pandemic. It has been used most intensively by firms with higher ex-ante credit risk and by banks with weaker balance sheets prior to the onset of the crisis. However, to gain a proper understanding of the risks to financial stability, the implications of the legislative changes introduced in November 2020 (through Royal Decree-Law 34/2020) must be analysed. These legislative changes allow debtors with an ICO-backed loan to extend, by agreement with the bank, the loan maturity to eight years from the previous maximum of five. They also provide for an additional extension of a debtor’s payment holiday by up to 12 months, to a maximum of 24 months. Further, this new maturity can be directly applied to guarantees granted pursuant to Royal Decree-Law 25/2020 of 3 July 2020. This box aims to study firms’ take-up of the option to extend maturities and payment holidays.

The analysis shows that the average maturity of outstanding ICO-backed loans increased from March 2021 and peaked in April 2021. A similar trend is evident for the average duration of payment holidays (see Chart 1). These developments may be picking up a composition effect (if new loans have longer maturities than loans) or that existing loans were taking the opportunity to extend maturities or payment holidays. The analysis of existing loans identifies effective recourse to the maturity extension envisaged in the legislative change introduced by Royal Decree-Law 34/2020. This came into effect from March 2021, when the maturity extension was applied to 6.5% of loans (of these, 3.8% had the maturity extended alone and 2.7% both the maturity and the payment holiday extended), while 0.8% had the payment holiday extended only. Overall, in March 2021, 7.3% of loans took advantage of the legislative change. This percentage climbed to 20.4% in May 2021 and subsequently declined to less than 1% in June. Thus, 41% of ICO-backed loans have made use of the maturity or payment holiday extension, which underlines the measure’s importance. The high number of firms taking advantage of the extensions may signal a latent risk, which could potentially materialise from 2022 Q2 (when most payment holidays come to an

Chart 1  
IMPACT OF ROYAL DECREE-LAW 34/2020 ON THE MATURITY AND PAYMENT HOLIDAY OF ICO-BACKED LOANS TO FIRMS (a)

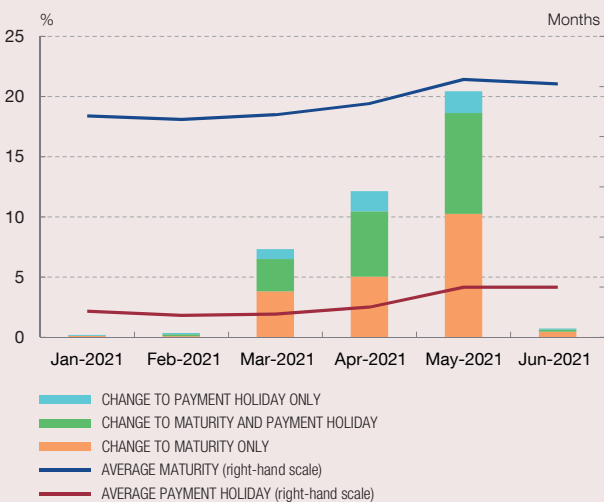
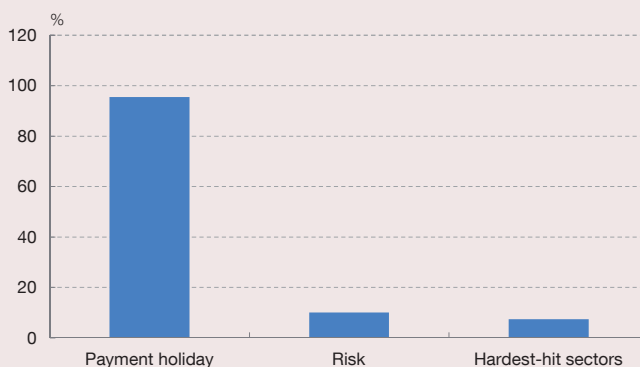


Chart 2  
DETERMINANTS OF THE AVERAGE PROBABILITY OF A LOAN USING THE MATURITY EXTENSION UNDER ROYAL DECREE-LAW 34/2020 (b)



SOURCE: Banco de España.

- a The right-hand scale shows the average residual maturity (in months) of outstanding ICO-backed loans at each date and the average payment period (in months) of outstanding loans with payment holidays at each date. Outstanding loans include both pre-existing and new loans. The left-hand scale indicates the percentage of ICO-backed loans whose maturity or payment holiday has been extended, out of those that were outstanding in the previous month.
- b Results of a linear probability model with binary variables for sector, post code and bank controls. The risk variable is the firm’s Z-score, calculated based on numerous firm-level economic-financial ratios, picking up the ex-ante credit risk.

**RECOURSE TO MATURITY AND PAYMENT HOLIDAY EXTENSIONS UNDER THE PUBLIC GUARANTEE PROGRAMME FOR LOANS TO FIRMS (cont'd)**

end) should the prospects of economic recovery fail to take root.

The study of decisions to extend maturities and payment holidays is based on all guaranteed loans obtained from the Banco de España's Central Credit Register (CCR). Those data are complemented, at the firm level, by data drawn from the Banco de España's Central Balance Sheet Data Office (CBSO) and, at the bank level, from the institutions' regulatory reporting, in both cases relating to end-2019. This dataset is subject to an econometric analysis to assess the probability of an existing guaranteed loan taking advantage of Royal Decree-Law 34/2020 to extend either its maturity or payment holiday. Specifically, the estimates of a linear probability model (see Chart 2) indicate that the probability of extending the maturity or payment holiday is higher for loans with an existing payment holiday (95.4% higher than those without, indicating the complimentary use of these measures to defer payments). Bearing in mind the very widespread

recourse to payment holidays, the relative importance of firm-level factors is comparatively lower. Thus, belonging to one of the sectors hardest hit by the pandemic increases this probability by 7.3%, while firms with higher ex-ante credit risk show an increase of 10% for each standard deviation decrease in the score. There is no overall pattern regarding the characteristics of the banks that have assented to these arrangements, and therefore their use appears prevalent across the banks.

The analysis of recourse to maturity and payment holiday extensions for ICO-backed loans suggests strong demand. Said demand is higher for loans with an existing payment holiday and for firms facing greater difficulties. The results indicate an improvement in the firms' liquidity profile, with the subsequent easing of short-term risks. However, they reinforce the importance of closely monitoring these loans during the recovery period, to ensure that any materialisation of risks to financial stability is detected at an early juncture.

### THE SOVEREIGN-BANK NEXUS

In certain contexts, the existence of a high number of financial interconnections between banks and the public sector may pose risks to financial stability. The interconnections exist primarily because banks are typically significant holders of government debt securities and, furthermore, fiscal intervention is perceived as being the last resort in the event the banking sector faces solvency problems. Potential banking system or sovereign problems may result in a doom loop. The doom loop between the banking system and the sovereign materialised directly following the global financial crisis and in the subsequent sovereign debt crisis of 2012 which affected several European countries. In the wake of the global pandemic, the ICO guarantees represent an interconnection shared by banks and the public sector with the corporate sector.<sup>1</sup> This box aims to describe how these nexus work and review the materiality of the risk to the Spanish banking system stemming from the interconnections with the sovereign after the outbreak of the global pandemic.

The sovereign-bank nexus can create feedback loops through two fundamental channels, as shown in Figure 1, which are separate from the indirect nexus with the non-financial corporate sector.<sup>2</sup> First, problems in the banking system spread to the sovereign when the latter is expected to bail out a bank. Here, the expected budgetary cost associated with the bail-out increases the sovereign's financing costs. Second, a drop in the price of sovereign debt impairs banks' sovereign debt holdings on their balance sheets. This is particularly pronounced when these holdings are significant and are mostly measured at market value. This spillover from the sovereign to banks drives up the cost of bank financing. Consequently, lending by the banking system contracts, generating a tightened "liquidity channel" (see Bocola (2016))<sup>3</sup>.

In both cases there may be feedback loops, as higher financing costs for the sovereign have an adverse effect on banks' balance sheets as holders of sovereign debt, and vice versa. In addition, the widespread increase in financing

costs reduces economic growth. This has adverse implications both for the quality of banks' balance sheets and for government budget balances.

Banks' government debt holdings are key in the sovereign-bank nexus. These holdings are justified, among other reasons, due to banks' need to hold liquid assets on their balance sheets; government debt tends to be the safest and most liquid asset on the financial markets. Indeed, general government debt holdings account for the largest share of Spanish banks' debt securities (see Chart 1). Spanish banks' exposure to sovereign risk through these holdings has remained relatively stable since December 2019 (between 9.1% and 10.5% of total consolidated assets). This contrasts with the sharp rise in bank lending to the private sector during the initial phases of the pandemic.

As a percentage of total assets, Spanish banks' holdings of Spanish sovereign debt are greater than those of French and German banks, but smaller than those of Italian banks. However, it should be noted that Spanish and Italian banks' greater exposure largely originated from the global financial crisis. This is particularly true in the case of Spanish banks. Indeed, during the years leading up to the pandemic, the Spanish banking sector had gradually reduced its exposure to the Spanish sovereign. The COVID-19 crisis disrupted this trend, albeit without increasing exposure, as occurred during the global financial crisis (see Chart 3). Specifically, the main Spanish banks' holdings of government debt, as a percentage of total assets, fell slightly during the pandemic. The decrease was greater in fair-value debt holdings, which are those that create greater exposure to the doom loop, as their valuation is updated automatically on the basis of debt market fluctuations (see Chart 4). This trend is similar to that of other euro area banking systems, except Italy, where these holdings have risen.

Finally, in the wake of the global pandemic, the corporate sector's financial problems could become central to the

1 For a general discussion of interconnections across the corporate sector see Gross, C., and C. Pancaro (2021). *Credit risk transmission during the pandemic: the sovereign-bank-corporate nexus*, Box 4, ECB Financial Stability Review.

2 See Chapter 5 of K. J. Mitchener and C. Trebesch (2021), "Sovereign Debt in the 21st Century: Looking Backward, Looking Forward", NBER Working Paper Series WP28598 for a review of the literature and the empirical evidence, and E. Farhi and J. Tirole (2018), "Deadly Embrace: Sovereign and Financial Balance Sheet Doom Loops", *Review of Economic Studies*, Vol. 85(3), pp. 1781-1823.

3 L. Bocola (2016), "The Pass-Through of Sovereign Risk", *Journal of Political Economy*, Vol. 124(4), pp. 879-926. There is also a "risk channel", as Bocola (2016) dubs it, where banks perceive private-sector assets as riskier in the face of expectations of a sovereign debt crisis and, as a result, preventively deleverage. This generates a feedback loop which further exacerbates the sovereign's position.

**THE SOVEREIGN-BANK NEXUS (cont'd)**

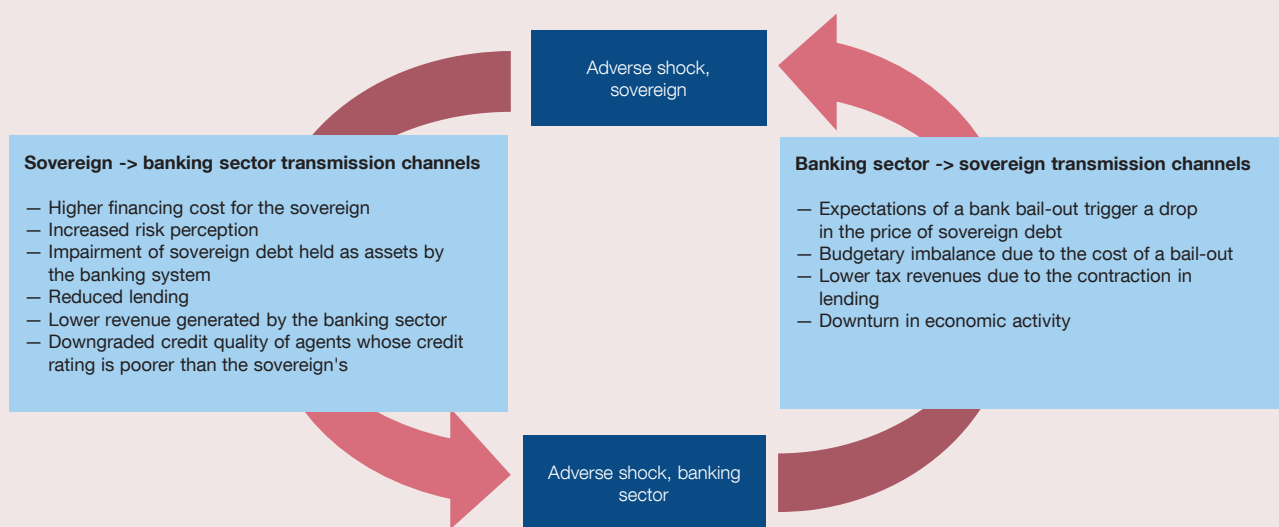
sovereign-bank nexus owing to the loan guarantee scheme for firms established by the ICO. Indeed, the policies implemented to channel credit to the corporate sector through ICO guarantees has led to an increase in the sovereign's contingent liabilities. The volume of ICO-backed lending to the corporate sector was close to 9% of GDP in June 2021, almost doubling the previous year's figure. This means that the banking sector would be less exposed to the potential impairment of loans to the corporate sector, since the public guarantees cover a significant portion of its loan portfolio. Specifically, loans with ICO guarantees account for 25% of total lending to the corporate sector and are equivalent to 40% of bank capital. However, an adverse shock to the sovereign would eventually affect the banking sector, through the feedback loop described above.

Economic policy action can significantly mitigate the risks of the sovereign-bank nexus. In the current context,

the ECB's monetary policy response to the COVID-19 crisis, and other support measures implemented by the economic authorities, have all contributed to preventing them from materialising. Thus, low interest rates, liquidity facilities, including the launch of a new TLTRO programme and the asset purchase programmes have all kept the sovereign risk premium in check, despite the increase in government debt, and banks' funding needs have been satisfactorily met in a situation of marked economic downturn. These measures have also helped reduce the impairment of debtors' credit quality and the contraction in lending by banks, thus avoiding further deterioration of the economy and banking solvency.

However, the notable support provided by monetary policy is not without its risks. Many of these derive from a low interest rate environment potentially eroding certain elements of bank profitability.<sup>4</sup> Low profitability in the banking sector poses

Figure 1  
SOVEREIGN-BANK NEXUS RISK CHANNELS OR DOOM LOOP (a)



SOURCE: Banco de España.

a The flowchart illustrates how an adverse shock to the financial valuation of the banking sector or the sovereign is transmitted to the other sector through different interconnection channels. The initial shock can originate from multiple sources, such as the materialisation of the costs of imbalances in the growth of lending in the banking sector, or an adverse shock to the sovereign's tax revenues.

4 In this connection, however, the evidence available shows a mixed final effect on profitability, owing to the containment of loan loss provisions made possible by low interest rates, especially in a particularly recessive scenario. The empirical discussion is addressed, inter alia, in: C. Pérez Montes and A. Ferrer (2018), "The impact of the interest rate level on bank profitability and balance sheet structure", *Financial Stability Review*, No 35; S. Claessens, N. Coleman and M. Donnelly (2017), "'Low-For-Long' Interest Rates and Banks' Interest Margins and Profitability: Cross-country Evidence", *Journal of Financial Intermediation*, Vol. 35, Part A; C. Altavilla, M. Boucinha and J. L. Peydró (2017), "Monetary policy and bank profitability in a low interest rate environment", *Economic Policy*, Vol. 33, Issue 96.



**THE SOVEREIGN-BANK NEXUS (cont'd)**

risks to financial stability, through various channels. First, it can encourage the search for greater yields by the banking sector, by raising or underestimating the risk profile of investments. This effect may be magnified as low profitability reduces the market value of banks, which discourages shareholders from properly assessing the risks.<sup>5</sup> Lastly, low profitability limits the growth capacity of capital and, therefore, of the solvency ratio.

The risks associated with the sovereign-bank nexus are therefore very different in an environment of low interest rates and GDP growth (persistent, more related to the generation and accumulation of interest income) from those prevailing during a period of a severe banking or sovereign crisis (concentrated in the short term, more related to financing costs and loan loss provisions and the materialisation of risks).

Chart 1  
BANKING SECTOR DEBT SECURITY HOLDINGS, BY COUNTERPARTY (% OF TOTAL ASSETS) (a)

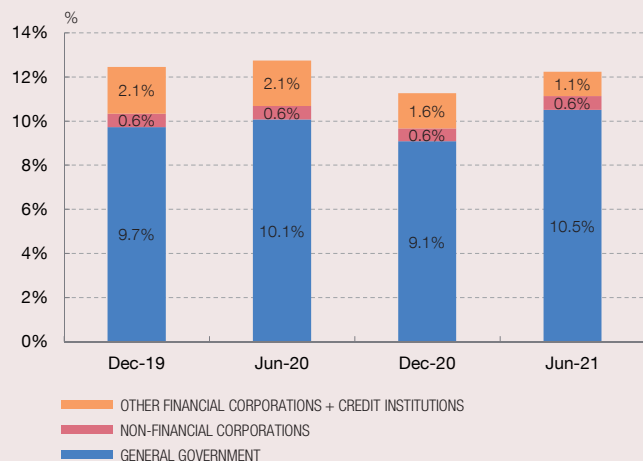


Chart 2  
BANKING SECTOR NATIONAL SOVEREIGN DEBT HOLDINGS (% OF TOTAL ASSETS) (b)

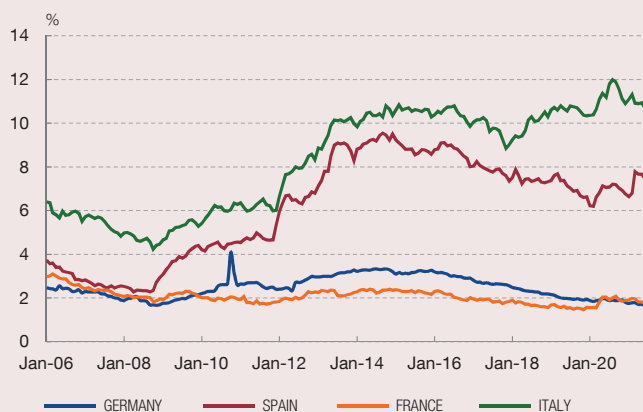


Chart 3  
DISTRIBUTION OF SOVEREIGN EXPOSURES AS A % OF TOTAL ASSETS, BY COUNTRY (c)

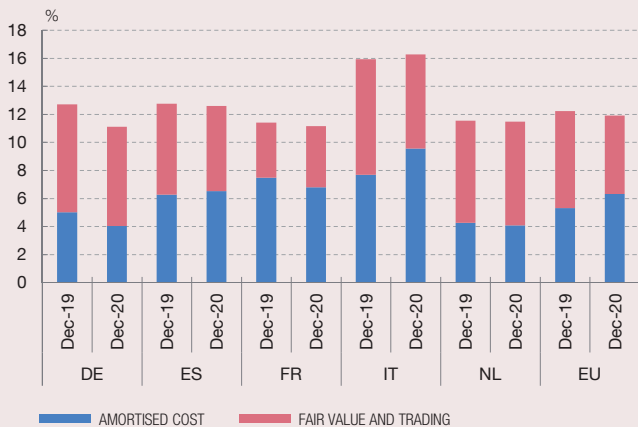
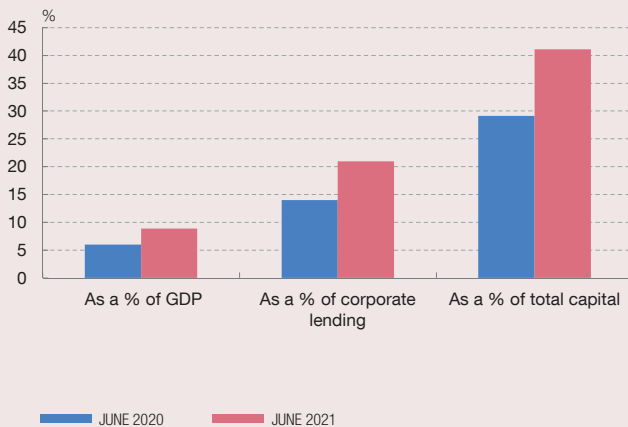


Chart 4  
VOLUME OF LENDING TO THE CORPORATE SECTOR BACKED BY AN ICO GUARANTEE



SOURCES: Banco de España, Instituto de Crédito Oficial, SDW and European Banking Authority.

- a Consolidated data. Total deposit institutions.
- b Individual data. Sovereign debt refers only to debt securities issued by the sovereign.
- c Consolidated data. Total sovereign exposure as a percentage of total assets for the sample of banks reporting for each jurisdiction to the EBA Dashboard. Sovereign exposure includes debt securities issued by the sovereign and other credit exposures thereto.

5 See S. Advjiev and J. M. Serena (2020), "Regulatory capital, market capital and risk taking in international bank lending", *BIS Working Paper* No 912.

**THE SOVEREIGN-BANK NEXUS (cont'd)**

In short, the COVID-19 crisis has not entailed any significant changes for Spanish banks' exposure to Spanish sovereign risk, and the risk considerations identified in pre-pandemic years and associated with the low interest rate environment, which are very different from

the doom-loop dynamics of the 2012 sovereign debt crisis, continue to take priority. However, the increase in public indebtedness and the important role played by the ICO guarantee schemes are an indication of potential vulnerabilities that need to be monitored going forward.





# 3

## SYSTEMIC RISK AND PRUDENTIAL POLICY



### 3 SYSTEMIC RISK AND PRUDENTIAL POLICY

This chapter analyses the various vulnerability and systemic risk indicators, focusing in particular on those used in decisions concerning the countercyclical capital buffer (CCyB). This analysis suggests that market risk has risen to some extent recently, but that it remains contained. The indicators of credit imbalances do not show warning signals either, although close monitoring is needed of the correction of those that exceeded the risk thresholds during the initial phases of the pandemic on account of the sharp fall in GDP. The chapter goes on to review various recent regulatory developments and macroprudential measures relevant to financial stability. Overall, significant activity is under way on this front, with the implementation of reforms agreed before the pandemic and of new initiatives stemming from the lessons learned in this crisis and in response to the rise of emerging risks (e.g. those associated with digitalisation, new technologies and climate change).

#### 3.1 Analysis of risk indicators and systemic vulnerabilities

**Although the tension unleashed in the financial markets by the outbreak of the pandemic had been almost completely corrected throughout 2021, it has risen slightly since August, prompted by higher volatility.** The systemic risk indicator (SRI)<sup>1</sup> increased sharply during the financial market turmoil between February and March 2020. It then moved onto a sustained downward path from April 2020, returning to almost its pre-turmoil level by end-2020 (see Chart 3.1.1). However, since August 2021 the SRI has risen slightly, owing to heightened volatility in the four segments of the Spanish financial market,<sup>2</sup> particularly in the equity segment. This higher financial market volatility is not unique to Spain, but is widespread in the international markets, in a setting in which investors are starting to factor in the possible withdrawal of part of the main central banks' monetary stimuli. Overall, this evidence suggests that market risks are currently significant and need close monitoring.

**The SRISK indicator, which measures banks' strength vis-à-vis adverse systemic shocks, saw a notable improvement in 2021 H1 and has stabilised since the summer.** SRISK<sup>3</sup> quantifies the systemic importance of individual banks and the banking sector overall, since it assesses and aggregates the impact of an extreme negative market event on each bank. This latent risk indicator provides

---

1 For a detailed explanation of the SRI calculation methodology, see [Box 1.1 of the May 2013 FSR](#).

2 Money market, government debt, equity and financial intermediaries.

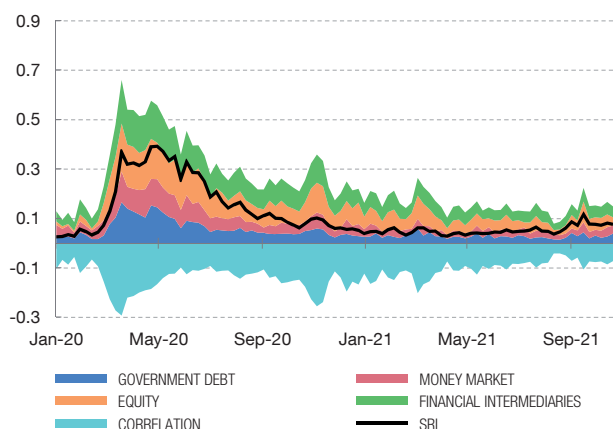
3 See C. Brownlees and R. Engle (2017) "SRISK: A conditional capital shortfall measure of systemic risk", *The Review of Financial Studies* Vol. 30, pp. 48-79.

Chart 3.1

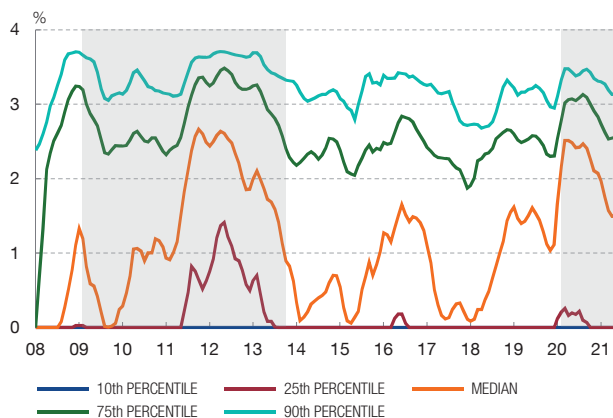
**THE SYSTEMIC RISK INDICATOR (SRI) HAS RISEN SINCE AUGUST 2021 AND THE IMPROVEMENT IN BANK SYSTEMIC RISK HAS SLOWED SOMEWHAT. HOWEVER, BOTH METRICS REMAIN VERY FAR FROM THE 2020 STRESS LEVELS**

Having held at very relaxed levels since end-2020, the SRI has risen since August 2021 due to heightened volatility in the financial markets, particularly in the equity segment. Banks' systemic risk, measured by the SRISK indicator, has decreased over 2021, in line with the favourable performance of the markets, although the progression of the improvement appears to have stabilised.

1 SYSTEMIC RISK INDICATOR (a)



2 DISTRIBUTION OF THE SRISK SYSTEMIC RISK INDICATOR (b)



SOURCES: Datastream, SNL, Instituto Nacional de Estadística and Banco de España.

- a The systemic risk indicator (SRI) aggregates 12 individual stress indicators (volatilities, interest rate spreads, maximum historical losses, etc.) from different segments of the Spanish financial system. In calculating the SRI, the effect of cross-correlations is taken into account, whereby the SRI registers higher values if the correlation between the four markets is high, and lower values where there is less or negative correlation. For a detailed explanation of this indicator, see Box 1.1 of the May 2013 Financial Stability Report. Data updated as at 20 October 2021.
- b SRISK captures the additional capital for covering bank capital requirements at market value when faced with a significant market shock, expressed as a percentage of each institution's total assets. The parameters used are  $k=4.5\%$  for the capital requirement,  $C=10\%$  for the market decline and  $h=22$  business days for the period over which the hypothetical decline occurs, see Brownlees and Engle (2017) for further details. The SRISK index for the months of 2021 Q3 is calculated from the values of assets and liabilities of 2021 Q2 with the stock prices data of the corresponding month. The series have been smoothed using a three-month moving average. Compared with the results published in the Spring 2021 Financial Stability Report, the sample of European banks has been extended to include smaller institutions.

an estimate of a bank's expected capital shortfall after a hypothetical severe crisis in equity markets entailing a correction of its market capitalisation. The changes in this indicator since mid-2020 suggest a gradual decline in systemic risk in the banking sector, although it is still above pre-pandemic levels (see Chart 3.1.2). The improvement in this indicator has slowed down since July 2021, consistent with the signs of financial market volatility captured by the SRI.

**The recovery in economic activity has helped correct part of the imbalances in the credit-to-GDP gap and the output gap that arose during the pandemic.**

The credit-to-GDP gap, which is one of the main indicators guiding the setting of the CCyB during expansionary phases of the credit cycle, widened considerably after the outbreak of the pandemic. As mentioned in previous FSRs,<sup>4</sup> in the context of the crisis prompted by the pandemic, this widening should not be interpreted as an early

4 See FSR Spring 2021.



warning of the emergence of a cyclical imbalance. It is simply the consequence of the sharp drop in GDP (the denominator in the credit-to-GDP ratio) in 2020 and of the measures to support the provision of credit to the economy. The information available for 2021 Q2 shows a significant correction in the credit-to-GDP gap for the first time since the onset of the pandemic (see Chart 3.2.1). This change in trend owes chiefly to the rebound in GDP growth, although this only partially offsets the deterioration built up since 2020. Meanwhile, credit (the ratio's numerator) has stabilised in recent quarters, after having risen significantly since 2020 Q2. Consequently, the partial correction of the widening of the credit-to-GDP gap in 2021 Q2 is a positive signal that the imbalances seen in this variable since mid-2020 may be temporary. Nevertheless, this indicator remains above the reference threshold of 2 pp, beyond which the gap is considered to show signs of imbalance in the credit cycle. It will therefore be important to monitor how the correction of this warning signal progresses over the coming quarters.

**The rebound in GDP growth has also contributed to a favourable performance of other macroeconomic indicators.** In particular, the negative output gap has begun to narrow, with the upward trend observed since late 2020 gaining momentum. In line with the expectations of recovery, this favourable trend is set to progress substantially over the coming quarters. Nevertheless, it remains at significantly negative values that are far from pre-pandemic levels (see Chart 3.2.1).

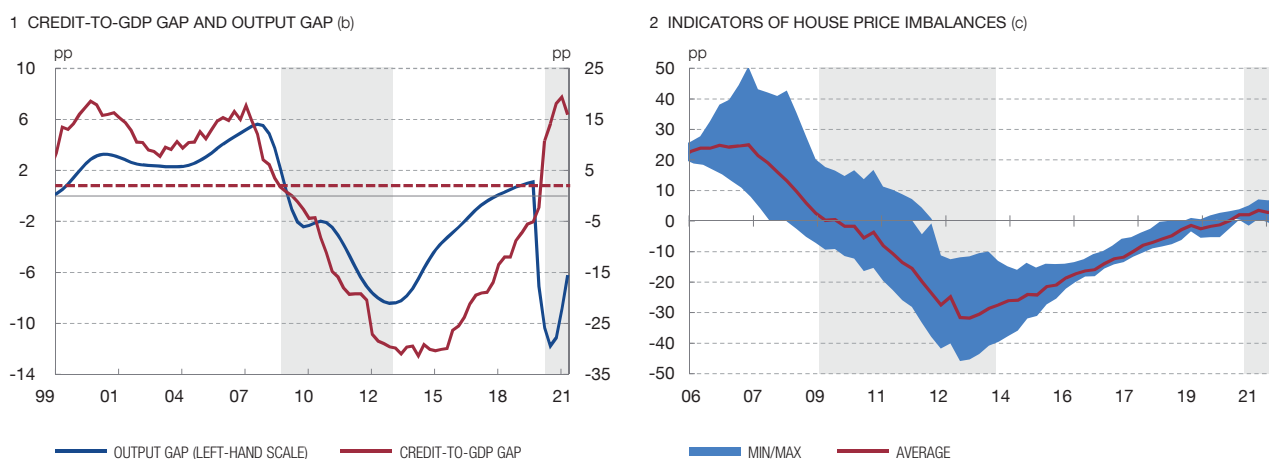
**Indicators of house price imbalances suggest that such prices stand above, but very close to, their equilibrium levels.** It is essential that possible price imbalances in the real estate market be analysed, because the situation in this market has a particular impact on the credit cycle, as it can amplify the cycle through mortgage loans and loans to the construction sector and to real estate activities. The Banco de España regularly analyses a series of indicators of house price imbalances that measure the difference between the average price index and their estimated long-term equilibrium level, provided by various econometric models. As mentioned in Chapter 1, all the indicators are currently close to equilibrium levels, with no signs of overvaluation (see Chart 3.2.2). Nevertheless, these indicators have risen since the run-up to the outbreak of the pandemic. Thus, while in 2019 they tended to be negative but close to equilibrium levels, they now tend to be positive but, again, close to equilibrium. It will therefore be important to monitor these indicators closely as well, to determine whether they stabilise at their current values or begin to rise to warning levels.

**Since the outbreak of the pandemic, notable differences have been observed in new loans to households and firms and in the contribution of supply and demand-side factors to changes therein, which were of opposite signs in 2021 H1.** Drawing on econometric models, changes in new loans to households and firms can be broken down into estimated supply and demand-side factors. The estimates from these models show that the significant decline in new loans to

Chart 3.2

**INDICATORS SUCH AS THE CREDIT-TO-GDP GAP AND CREDIT INTENSITY HAVE UNDERGONE CORRECTIONS AS A RESULT OF THE REBOUND IN ECONOMIC GROWTH, WHICH IS BEGINNING TO MOVE CLOSER TO ITS POTENTIAL, BUT HAS NOT YET REACHED ITS PRE-PANDEMIC LEVEL (a)**

The information available for 2021 Q2 shows a significant correction in indicators such as the credit-to-GDP gap and credit intensity. This recovery owes chiefly to the rebound in GDP growth, which has not yet reached its pre-pandemic level but is beginning to move closer to its potential. The credit-to-GDP gap remains above the reference threshold of 2 pp and should therefore be carefully monitored in the coming months for potential signs of imbalances in the credit cycle.



**SOURCES:** Instituto Nacional de Estadística and Banco de España.

- a The areas shaded in grey represent the periods of the two financial crises in Spain since 2009: the systemic banking crisis (2009 Q1 to 2013 Q4) and the crisis unleashed by the COVID-19 pandemic (2020 Q1 to 2021 Q2).
- b The output gap is the percentage difference between observed GDP and potential GDP. Values calculated at constant 2010 prices. See P. Cuadrado and E. Moral-Benito (2016) "Potential growth of the Spanish economy", Occasional Paper 1603, Banco de España. The credit-to-GDP gap is calculated as the difference, in percentage points, between the observed ratio and the long-term trend calculated using a statistical one-sided Hodrick-Prescott filter with a smoothing parameter equal to 25,000. This parameter is calibrated to the financial cycles historically observed in Spain. See J. E. Galán (2019) "Measuring credit-to-GDP gaps. The Hodrick-Prescott filter revisited", Occasional Paper 1906, Banco de España. Data available up to June 2021. The broken red horizontal line represents the reference CCyB activation threshold of 2 pp for the credit-to-GDP gap.
- c The area shaded in blue represents the minimum and maximum values of the four indicators of imbalances in house prices. The indicators are: i) the real house price gap, ii) the house prices to household disposable income ratio gap, iii) the ordinary least squares model which estimates house prices based on long-term trends in household disposable income and mortgage interest rates, and iv) the error correction model which estimates house prices based on household disposable income, mortgage interest rates and fiscal effects. The long-term trends are calculated in all cases using a statistical one-sided Hodrick-Prescott filter with a smoothing parameter equal to 400,000.

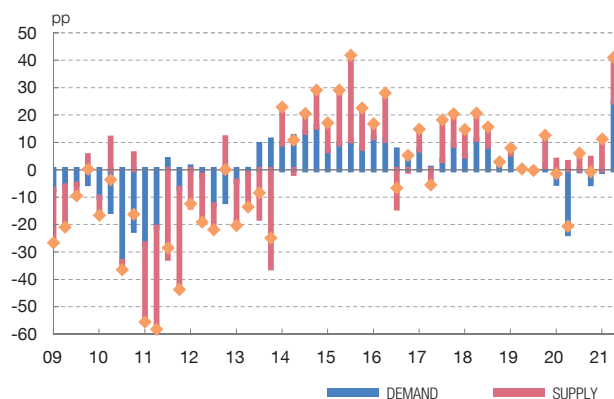
households in 2020 Q2 owed mainly to lower demand. This situation reversed swiftly in 2020 H2 and, even more so, in 2021 H1, when such lending rose sharply, further underpinned by supply-side factors (see Chart 3.3.1). New lending to firms grew notably in 2020 Q2, owing to supply-side and, to a lesser extent, demand-side factors. This reflects, on the one hand, firms' demand for liquidity due to the abrupt fall in their income and, on the other, the pick-up in supply facilitated by the guarantee schemes and other support measures adopted in response to the pandemic. However, this type of lending has declined since 2020 Q3, owing to the decrease in both demand and supply, which could point to the waning stimulation capacity of the support schemes (see Chart 3.3.2). These findings are consistent with the Bank Lending Survey for 2021 Q2, which suggests that concern about non-performing loans has led the supply of credit to firms to tighten somewhat in 2021 H1 as a

Chart 3.3

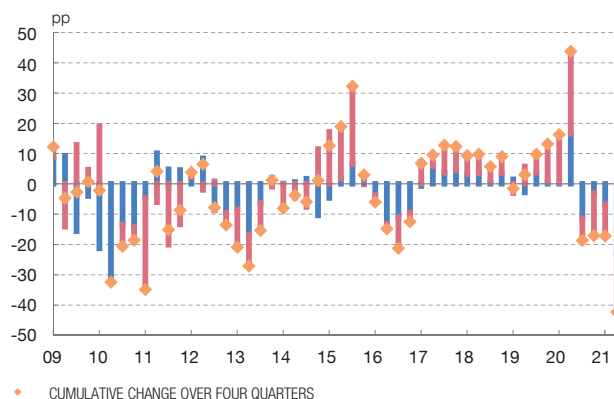
**IN THE FIRST SEMESTER OF 2021 SUPPLY AND DEMAND-SIDE FACTORS HAVE SIGNIFICANTLY BOOSTED NEW LENDING TO HOUSEHOLDS, WHILE CONTRACTING NEW LENDING TO FIRMS**

In the early months of the pandemic, loans to households declined owing to a sharp contraction in demand, while loans to firms grew notably driven by these agents' demand for liquidity and the supply stimulus provided by the support measures implemented. From 2020 H2 to 2021 H1 the pattern reversed in both cases. There has been a strong increase in lending to households, due to both supply and demand-side factors, and a contraction in lending to firms, owing to both a decline in demand attributable to lower liquidity needs and a contraction in supply, at least partly explained by the base effect induced by the support measures implemented in the second quarter of 2020.

1 BREAKDOWN OF NEW LENDING TO HOUSEHOLDS INTO SUPPLY AND DEMAND-SIDE FACTORS (a)



2 BREAKDOWN OF NEW LENDING TO FIRMS INTO SUPPLY AND DEMAND-SIDE FACTORS (a)



SOURCE: Banco de España.

a Cumulative change over four quarters. Breakdown of the supply and demand-side effects obtained using a structural vectoral autoregression (S-VAR) model through which the short-term relationships between credit and interest rate spreads are estimated, allowing for simultaneous shocks between the two variables. The models are estimated separately for lending to households and firms. Data on new lending in euro area countries are used. New lending excludes renegotiations, overdrafts and credit card balances. For further details, see Box 1 in P. Alves, F. Arrizabalaga, J. Delgado, J. Galán, E. Pérez, C. Pérez and C. Trucharte (2021) "Recent developments in financing and bank lending to the non-financial private sector", Analytical Articles, Economic Bulletin 1/2021, Banco de España.

whole. In any event, this effect may be temporary, as the latest data suggest that the supply of credit to firms is stabilising.<sup>5</sup>

**Taking this set of macro-financial indicators into account, the Banco de España has maintained the CCyB rate at 0% and does not envisage increasing it until economic activity has returned to its potential level or there are signs of imbalances arising in the credit cycle.** As it has regularly announced<sup>6</sup> since March 2020, the Banco de España continues to consider it appropriate to maintain the CCyB rate applicable to exposures in Spain at the minimum of 0% to make it easier for banks to be able to sustain the credit flow and thus contribute to alleviating the negative

5 See A. Menéndez and M. Mulino (2021) "The July 2021 Bank Lending Survey in Spain", Analytical Articles, Economic Bulletin 3/2021, Banco de España, and A. Menéndez and M. Mulino (2021) "The October 2021 Bank Lending Survey in Spain", Analytical Articles, Economic Bulletin 4/2021, Banco de España

6 The Banco de España has recently adapted its statements on the quarterly CCyB decisions on account of the amendments set out in Directive (EU) 2019/878 (CRD V) simplifying the framework for notifying CCyB measures in those quarters when the rate for this tool is not recalibrated. Specifically, the Banco de España's quarterly press releases on the CCyB that were released until March 2021 have been replaced by the dissemination of an updated Excel file with the quantitative information used to inform the latest quarterly decision (available in the CCyB section of the Banco de España's website).

pressure on economic growth. Holding the CCyB rate at 0% is consistent with the guidance on the flexible application of prudential requirements in response to this crisis advocated by the ECB and other EU (ESRB, EBA) and global bodies (BCBS and FSB).<sup>7</sup> Insofar as the economic recovery takes hold, the CCyB rate, no longer in a context of crisis, will be conditional upon the path of recovery and the possible emergence of systemic imbalances that could be tackled by this macroprudential tool.

**Some European countries are taking measures to raise the CCyB rate.** The macro-financial situation of other European economies is highly diverse. Some are already in a marked upward phase of their credit cycle, in which cyclical systemic imbalances have arisen, and have already announced measures for restoring the CCyB. Specifically, the authorities in Bulgaria,<sup>8</sup> Denmark<sup>9</sup> and Sweden<sup>10</sup> have in recent months announced that the CCyB rate is to be set at 1%, while those in the Czech Republic<sup>11</sup> and Norway<sup>12</sup> have opted to set it at 1.5%. All these measures, which are geared towards replenishing part or all of the CCyB in place in these countries at the start of the pandemic, will be effective from 2022 Q3.

**The empirical evidence during the pandemic suggests that building up macroprudential buffers in normal times and subsequently releasing them in crisis situations helps stabilise lending to the economy.** Econometric estimates can be made of the probability of different credit growth scenarios over a one-year horizon, assessing how they are affected by changes in macroprudential policy.<sup>13</sup> The results of this analysis for European countries show that expected growth already exceeds the pre-pandemic estimate. This is the case both in countries that were able to ease macroprudential measures in response to the pandemic and in those that were unable to do so owing to a lack of macroprudential space, as they had not previously activated such measures because they did not present systemic risk (see Chart 3.4).

---

7 Additionally, each year the Banco de España identifies a list of third countries (i.e. outside of the European Economic Area) that are materially significant for the Spanish banking system for CCyB purposes, based on the volume of Spanish banks' international exposures. This exercise is conducted pursuant to the methodological recommendations of the ESRB. In 2021 the Banco de España identified the following eight material countries (in alphabetical order): Brazil, Chile, Colombia, Mexico, Peru, Turkey, the United Kingdom and the United States.

8 See the [Countercyclical Capital Buffer section of the Bulgarian National Bank's website](#).

9 See "[Reactivation of the countercyclical capital buffer](#)", Danish Systemic Risk Council (Det Systemiske Risikorad) recommendation of 22 June 2021.

10 See "[FI intends to raise the countercyclical buffer rate to 1 per cent](#)", Swedish Financial Supervisory Authority (Finansinspektionen) press release of 9 September 2021.

11 See "[Provision of a general nature III/2021 on setting the countercyclical capital buffer rate for the Czech Republic](#)" of 26 August 2021, Česká národní banka.

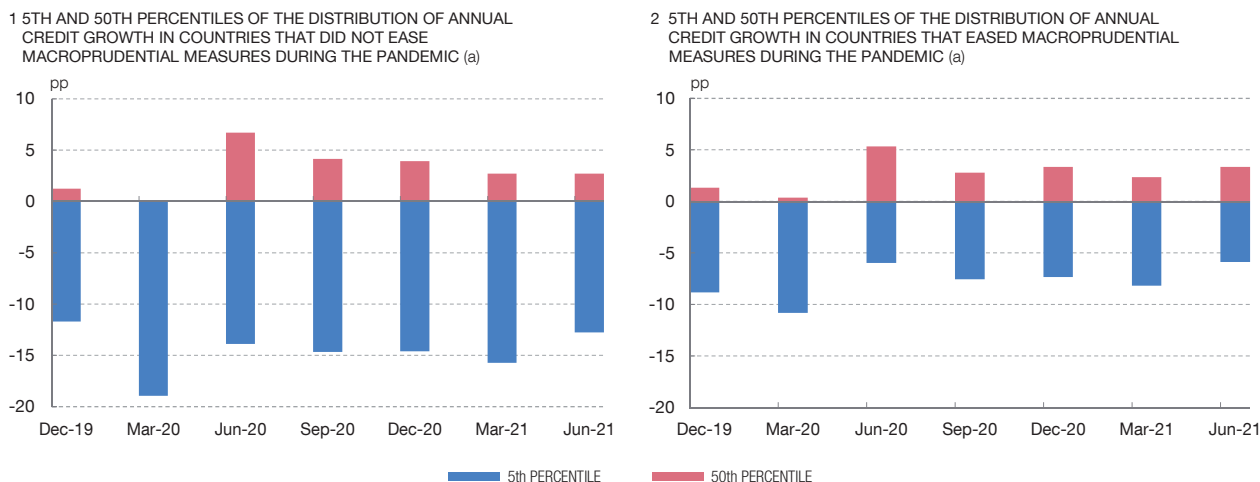
12 See "[Advice on the countercyclical capital buffer 2021 Q2](#)", Norges Bank press release of 17 June 2021. The Norwegian central bank has become the national designated authority for decision-making concerning this macroprudential tool, having been recently delegated this competence, which was previously the responsibility of the Ministry of Finance. See "[New Tasks for Norges Bank](#)", press release of 3 September 2021.

13 These estimates are made using quantile regressions of credit growth based on the methodology recently developed by the Banco de España for assessing the impact of the build-up of cyclical vulnerabilities, the bouts of financial stress and the use of macroprudential tools on GDP growth distribution. For a detailed description of its use, see [Box 3.1, 2020 Autumn FSR](#), and for methodological details, see J. E. Galán (2020) "[The benefits are at the tail: Uncovering the impact of macroprudential policy on growth-at-risk](#)", *Journal of Financial Stability*.

Chart 3.4

**COUNTRIES THAT HAD ROOM TO EASE MACROPRUDENTIAL MEASURES DURING THE PANDEMIC HAD A LOWER RISK OF SEVERE CREDIT CONTRACTION, WITH THIS PATTERN CONTINUING IN 2021**

Estimates of median credit growth over a one-year horizon (50th percentile) do not differ significantly between countries that eased macroprudential measures and those that did not. However, significant differences are seen in terms of the change in credit that would be observed under an adverse scenario (5th percentile). While, under such a scenario, credit contraction is even lower than the pre-pandemic estimate in countries that eased macroprudential measures, it is more than twice as high, exceeding the pre-pandemic estimate, in those that did not have room to ease such measures.



**SOURCE:** European Banking Authority and Bank for International Settlements.

a The bars represent the average for the countries in the group under analysis in the 5th and 50th percentiles of the estimated credit growth distribution over a one year horizon, estimated at the dates indicated. The estimates are calculated using quantile regressions of one-year credit growth on variables capturing cyclical vulnerabilities, financial stress episodes, economic growth and the use of macroprudential tools.

However, there are significant differences between these two groups of countries as regards the so-called “credit growth-at-risk”, i.e. the credit growth rate that would be observed under an adverse scenario that occurs with a 5% probability. In countries that have eased macroprudential measures, the estimated decline in credit under the aforementioned adverse scenario has remained relatively stable since the start of the pandemic and is in fact lower than the pre-crisis estimate. By contrast, in countries without this type of buffer, credit growth-at-risk is more than two times lower and remains below pre-pandemic estimates. Given the similar median growth projections for the two groups of countries, it could be concluded that the existence of macroprudential space in crisis periods results in less uncertainty about the variability of credit growth compared with the baseline scenario and, therefore, more stable lending to the real economy throughout economic cycles.

**In July 2021 the Banco de España announced the designation of other systemically important institutions (O-SIIs), together with their macroprudential capital buffers applicable in 2022.<sup>14</sup>** Designation as a systemically important

<sup>14</sup> See “The Banco de España updates the list of other systemically important institutions and sets their macroprudential capital buffer rates for 2022”, press release of 29 July 2021.

Table 3.1

**CAPITAL BUFFERS FOR SYSTEMICALLY IMPORTANT INSTITUTIONS**

Legal Entity Identifier	Institution	Designation (a)	Capital buffer to be required in 2022 (b)
5493006QMFDDMYWIAM13	Banco Santander, S.A.	G-SII and O-SII	1.0%
K8MS7FD7N5Z2WQ51AZ71	Banco Bilbao Vizcaya Argentaria, S.A.	O-SII	0.75%
7CUNS533WID6K7DGF187	CaixaBank, S.A.	O-SII	0.375%
SI5RG2M0WQQLZCXKRM20	Banco de Sabadell, S.A.	O-SII	0.25%

**SOURCE:** Banco de España.

**a** G-SII means Global Systemically Important Institution.

**b** The capital buffer applicable to CaixaBank, S.A. will be 0.5% from 1 January 2023 onwards (to be confirmed in next year's O-SII decision).

institution entails the requirement of an additional capital surcharge, which aims to internalise the greater impact on financial stability were these banks to experience difficulties, and to mitigate possible competitive advantages they might have in the markets owing to their systemic nature. The list of O-SIIs has changed from previous years because BFA Tenedora de Acciones, S.A.U. (holding company of Bankia, S.A.) is no longer considered as such on account of the merger by acquisition of Bankia, S.A. by CaixaBank, S.A. in March 2021. CaixaBank's greater systemic importance following this merger entails a 0.25 pp increase in its O-SII capital buffer, according to the methodology used by the Banco de España to determine this macroprudential requirement. In the light of last year's crisis, this increase to 0.5% will be applied gradually until 1 January 2023, such that in 2022 the institution's buffer will be 0.375% (see Table 3.1).

## 3.2 Regulatory developments relevant to financial stability

**Since the publication of the Spring FSR, some of the exceptional temporary measures introduced in the wake of the pandemic have been withdrawn, while progress has continued in various initiatives to develop and strengthen the banking sector's prudential regulation.** Most notably, the results of the stress tests on European banks and the improved macroeconomic outlook across the board have made it possible to lift the EU-wide precautionary restrictions on profit distribution by financial institutions. This return to normal has been accompanied in some countries by the tightening of some macroprudential measures, as analysed in Section 3.1. In recent months, the European Commission has begun the review of the macroprudential framework of EU banking regulation and has announced the legislative proposal for the technical developments for implementing the outstanding Basel III reforms in the EU. Other important areas of regulatory and supervisory focus will continue to be crypto-assets and climate change risks.

**The recommendations introducing system-wide restrictions in Europe on profit distribution by financial institutions prompted by the COVID-19 pandemic have been repealed.** The economic upturn anticipated by the latest projections, the reassuring outcome of the EBA and SSM stress tests and lower uncertainty led the ECB to decide<sup>15</sup> in July not to extend beyond 30 September 2021 its recommendation, in place since the start of the pandemic, that all significant credit institutions under its direct supervision limit dividend distribution. In coordination with other national authorities, the Banco de España also agreed<sup>16</sup> not to extend its recommendation for less significant institutions in Spain, which also expired on 30 September. At the same time, the ESRB also decided<sup>17</sup> to allow its dividend recommendation affecting various sectors of the EU financial system to expire as of 1 October. All these authorities have publicly reiterated the need to remain prudent in decisions on dividend distribution, equity buybacks and remuneration policies, paying particular attention to business model sustainability.

**Various studies suggest that the limitations on dividend distribution have had a significant positive impact on new lending and solvency ratios.** Empirical analysis of granular bank lending data shows that Spanish institutions which did not distribute dividends in 2020 were more active granting loans and, consequently, helped to mitigate the impact of the crisis on the real economy.<sup>18</sup> At the global level, in countries where restrictions were implemented, capital ratios recovered from the falls in 2020 Q1, or even increased, despite the fall in profit. Conversely, capital ratios continued to decline in countries where no restrictions were implemented initially.<sup>19</sup>

**The European macroprudential framework in the capital requirements legislation (CRR and CRD) will be reviewed in the coming months.** As laid down in Article 513 of Regulation (EU) 2019/876 (CRR), by 30 June 2022, and every five years thereafter, the European Commission shall review whether the macroprudential rules contained in the EU regulations in force are sufficient to properly mitigate systemic risks. This review will allow the use and design of macroprudential tools to be examined in the light of the practical experience gained in recent years since macroprudential tools were effectively introduced in 2016 and of some of the lessons learned from the COVID-19 pandemic crisis in particular. Specifically, the desirability of increasing the share of releasable buffers, as opposed to structural buffers, and the practical difficulties faced by banks when using their buffers could be considered.

---

15 See “ECB decides not to extend dividend recommendation beyond September 2021”, ECB press release of 23 July 2021.

16 See “Recomendación sobre distribución de dividendos y remuneración variable”, Banco de España statement of 23 July 2021 (only available in Spanish).

17 See “The General Board of the European Systemic Risk Board held its 43rd regular meeting on 23 September 2021”, ESRB press release of 24 September 2021.

18 See D. Martínez Miera and R. Vegas (2021) “Impact of the dividend distribution restriction on the flow of credit to non-financial corporations in Spain”, Analytical Article, *Economic Bulletin* 1/2021, Banco de España.

19 See B. Hardy (2021) “Covid-19 bank dividend payout restrictions: effects and trade-offs”, *BIS Bulletin* 38.

**To review the macroprudential framework, the European Commission has requested advisory reports from the ECB, the EBA and the ESRB.** Through a call for advice<sup>20</sup> addressed to these three authorities, the Commission seeks to obtain qualitative and quantitative evidence to support possible legislative changes. The three authorities consulted will need to submit their views by 31 March 2022 so that the European Commission can propose a legislative reform no later than December 2022, which will then be negotiated with the Council and the European Parliament.

**Further progress has been made on pending EU prudential regulatory developments.** Notable in the macroprudential realm is the amendment of the regulatory technical standards (RTSs) for identifying G-SIIs, which set out the additional methodology for identifying these institutions.<sup>21</sup> In addition, the EBA has submitted to public consultation the review of the prudential treatment of exposures secured by immovable property. Under this prudential treatment, the relevant authorities may set higher risk weights or increase the minimum LGD values when these do not adequately reflect risk or are inadequate and could adversely affect financial stability in the Member State. The EBA's draft RTS was submitted to public consultation<sup>22</sup> and its final version is expected to be ready in the coming months.

**On 27 October, the European Commission published a proposal to review the regulation applicable to the banking sector<sup>23</sup>, which includes legislative changes to implement the Basel III agreement<sup>24</sup>, considering the specific characteristics of the European banking sector.** The proposal aims to strengthen EU banks' resilience, without resulting in significant increases in capital requirements, and introduces an extended transitional period, starting in 2025 for some aspects. It also sets rules on the management, monitoring and disclosure to third parties of environmental, social and governance (ESG) risks, in keeping with the objectives of the EU's sustainable finance strategy. Lastly, the supervisory toolkit is

---

20 See "Call for Advice - Review of the EU Macroprudential Framework", European Commission, 8 July 2021.

21 See Commission Delegated Regulation (EU) 2021/539 of 11 February 2021 amending Delegated Regulation (EU) No 1222/2014 supplementing Directive 2013/36/EU of the European Parliament and of the Council with regard to regulatory technical standards for the specification of the methodology for the identification of global systemically important institutions and for the definition of subcategories of global systemically important institutions.

22 See "EBA consults on draft technical standards specifying how to identify the appropriate risk weights and conditions when assessing minimum LGD values for exposures secured by immovable property", EBA press release of 29 April 2021.

23 See "Banking Package 2021: new EU rules to strengthen banks' resilience and better prepare for the future", legislative proposal of the European Commission of 27 October.

24 With regard to the implementation of Basel III in Europe, two letters sent to the European Commission by 25 EU central banks and national supervisory authorities (including the Banco de España) and by the ECB and the EBA were made public. Both letters called on the Commission to implement the Basel III agreement in a full, consistent and timely manner. See "The EU should stick to the Basel III agreement", letter of 7 September 2021 signed by the central banks and banking supervisory authorities of Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Estonia, Greece, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain and Sweden. See "EU implementation of outstanding Basel III reforms", letter of 7 September 2021 co-signed by the Chairperson of the EBA, the Vice President of the ECB and the Chair of the Supervisory Board of the ECB.



enhanced in certain areas to ensure sounder and more prudent management of EU banks. In addition, the European Commission has published a proposal to amend some prudential and resolution rules in order to clarify the regime of requirements for liabilities payable in chains of subsidiaries (the so-called Daisy chains) and the requirements in the area of resolution of institutions of global systemic importance (G-SII). This proposal will be processed in an accelerated and separate manner.

**Faced with the increasing relevance of climate-related impacts on finance, both the EBA and the BCBS have published reports on this matter.** In June, the EBA released<sup>25</sup> a report on management and supervision of ESG risks. The report includes a comprehensive proposal on how ESG factors and ESG risks should be integrated into the strategy, governance and risk management of credit institutions and investment firms, as well as into supervisory processes. To enhance the supervisory review and evaluation process (SREP), in this report the EBA sees a need to extend the time horizon of the assessment and proposes including environmental and climate-related factors and risks into the business model. Later this year, the EBA plans to publish the disclosure requirements (Pillar 3) for credit institutions regarding the risks identified in this report.

**In April, the BCBS published two analytical reports on climate-related financial risks.**<sup>26</sup> The two reports broach: (i) climate-related risk drivers and their transmission channels to the banking system and (ii) the corresponding measurement methodologies. Although climate risk can be captured in traditional financial risk categories, they both acknowledge that additional progress is needed to better estimate these risks. In this setting, the reports provide a conceptual basis for identifying gaps in the current Basel framework and possible measures to address them. The BCBS is working on a set of supervisory practices which it plans to consult on by the end of the year and will continue to analyse whether supervisory, regulatory or transparency measures are needed. Box 3.1 of this Report sets out the stress tests conducted on Spanish banks by the Banco de España to gauge the implications of the materialisation of some of these climate-related risks. Box 3.2 quantifies the potential implications of an episode of environmental deterioration, which can help measure the impact of the materialisation of climate-related physical risks in the future.

**The continued growth and innovation seen in crypto-assets, including so-known stablecoins, further underlines the importance of the work of the BCBS and the FSB in this area, which focuses on analysing the implications this may have for the stability of the financial system.** Although banks' exposure to crypto-assets is currently limited, innovation in crypto-assets and related services, coupled with some banks' increased interest, could heighten concerns about global financial

---

25 See "EBA publishes its Report on management and supervision of ESG risks for credit institutions and investment firms", EBA press release of 23 June 2021.

26 See "Basel Committee publishes analytical reports on climate-related financial risks", BCBS press release, April 14 2021.

stability and the risks to the banking system in the absence of a specific regulatory framework.<sup>27</sup> The BCBS has run a public consultation on its proposals for the prudential treatment of banks' crypto-asset exposures this year.<sup>28</sup> In 2020, the FSB issued a series of high-level recommendations for the regulation, supervision and oversight of "global stablecoin" (GSC) arrangements,<sup>29</sup> a specific type of crypto-asset which seeks to hold a stable value by pegging it to another asset, such as a stable fiat currency. The recommendations promote coordinated and effective regulation, supervision and oversight of GSCs to address the financial stability risks they pose, both domestically and globally, and are part of a broader FSB work programme which will continue until at least 2023.

**The transposition in Spain of the changes in the bank recovery and resolution framework (BRRD II)<sup>30</sup> is also progressing.** The BRRD II introduced significant new features in the EU resolution framework, such as a reviewed methodology for determining the minimum requirement for own funds and eligible liabilities (MREL), a requirement equivalent to TLAC standard for G-SIIs and the possibility for resolution authorities to suspend the contractual obligations of institutions. Its transposition into Spanish law has begun with Royal Decree-Law 7/2021 amending Law 11/2015, among other regulations, and is expected to conclude shortly with the publication of a royal decree amending Royal Decree 1012/2015.

**The European Commission has also started to review the bank crisis management and deposit insurance framework, with the aim of making it more flexible and efficient and increasing depositor protection, ensuring they receive equal treatment.** This review is part of the agenda to complete the Banking Union, which will culminate in the creation of a European Deposit Insurance Scheme (EDIS). The Commission is also contemplating harmonising insolvency regimes,<sup>31</sup> which would include quasi-resolution tools for the administrative winding-up of credit institutions and would ensure the support of insolvency deposit insurance schemes as an alternative to paying the covered deposits.<sup>32</sup> The proposal for a Directive is expected to be published towards the end of 2021.

---

27 As part of the Digital Finance Strategy for the European Union, in September 2020 the European Commission submitted Proposal for a Regulation COM/2020/593 on markets in crypto-assets to the European Parliament and the Council, which would potentially correct this situation in Europe.

28 See "Basel Committee consults on prudential treatment of crypto-asset exposures", BCBS press release of 10 June 2021.

29 See "Regulation, Supervision and Oversight of Global Stablecoin Arrangements", FSB report of 13 October 2020.

30 See Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC.

31 See Report from the Commission to the European Parliament and the Council on the application and review of Directive 2014/59/EU (Bank Recovery and Resolution Directive) and Regulation 806/2014 (Single Resolution Mechanism Regulation) of 30 April 2019.

32 See Combined evaluation roadmap/inception impact assessment, European Commission, 10 November 2020.

## IMPACT OF CLIMATE CHANGE RISKS ON THE BANKING SECTOR

Climate change and the need to implement measures to move towards a more sustainable economy pose risks to the banking sector. Some stem from the materialisation of physical risks associated with extreme climate conditions, such as rising sea levels and water stress in certain areas. Another set of risks is associated with the transition to a more sustainable economy, since the implementation of measures to prevent or mitigate climate change would entail significant changes to human and economic activity. These two types of risks could materialise simultaneously, as risk mitigation measures may be late or insufficient. In both cases, assessing their impact requires the use of quantitative tools.

This box summarises the first work undertaken by the Banco de España to quantify the impact of transition risks on the banking sector using analytical models. The results should be viewed with caution, as only part of the channels are modelled, with a methodology that captures just some of the adjustment costs. In addition, the box presents a more exploratory study of the potential long-term impact of physical risks on credit risk, comparing them with transition risks, using scenarios from the Network for Greening the Financial System (NGFS). This allows an assessment to be made of the advantages of taking action now to prevent climate change and avoid the costs that would arise if the physical risks materialise.

The scenarios used in this first analysis to assess the impact of climate change-related transition risks were prepared using the Carbon Tax Sectoral (CATS) model.<sup>1</sup> This is a general equilibrium model with a very detailed sectoral structure (51 non-energy and two energy sectors), designed to capture the impact of an increase in the cost of greenhouse gas emissions. The calibration of the model replicates the main characteristics of the Spanish economy in terms of productive structure, energy intensity, emissions by type of technology, etc.

With this model, simulations were carried out to assess the impact on the Spanish economy of four different shocks: 1) an increase in the price of emission allowances (from €25 to €100 per tonne of CO<sub>2</sub> equivalent); 2) an extension of the Emissions Trading Scheme (ETS) to all firms, including those currently excluded for belonging to the so-called non-ETS sectors; 3) a combination of the two foregoing measures; and, additionally, 4) the extension of the ETS to also include emissions generated directly by households. The baseline scenario used to study the implementation of these measures considers an economic trend in Spain that is analogous to that prior to the COVID-19 crisis.

According to the results of the model, the effect of these shocks on economic activity in aggregate terms would be noticeable but not huge (see Table 1). However, there are a number of reasons why these effects might constitute a

Table 1  
IMPACT OF SIMULATED SHOCKS ON ECONOMIC ACTIVITY

Differences in accumulated rates of change (t+1, t+2, t+3) vis-à-vis the baseline scenario

	GDP	Range of impact on non-energy sectoral GVA (a)	
		Lower bound	Upper bound
Emissions price increase	-0.6	-5.3	0.1
Extension of ETS coverage	-0.3	-2.1	0.1
Combination	-1.3	-8.4	0.3
Combination incl. extension to households	-1.9	-9.1	0.3

SOURCE: Banco de España.

a The lower bound of the range of impact on sectoral GVA under each scenario is the most negative difference between the accumulated rates of change over the three years of the exercise and the corresponding measures under the baseline scenario. The upper bound represents the analogous most positive difference. The scenarios 1) increase in the price of emission allowances; 2) extension of the ETS coverage; 3) combination (of the two shocks); and 4) combination including extension to households, correspond to those described in the text with the same numbering.

1 See P. Aguilar, B. González and S. Hurtado (2021), "Carbon Tax Sectoral Model (CATS): a sectoral model for climate change stress test scenarios", *Occasional Paper*, Banco de España (forthcoming).

**IMPACT OF CLIMATE CHANGE RISKS ON THE BANKING SECTOR (cont'd)**

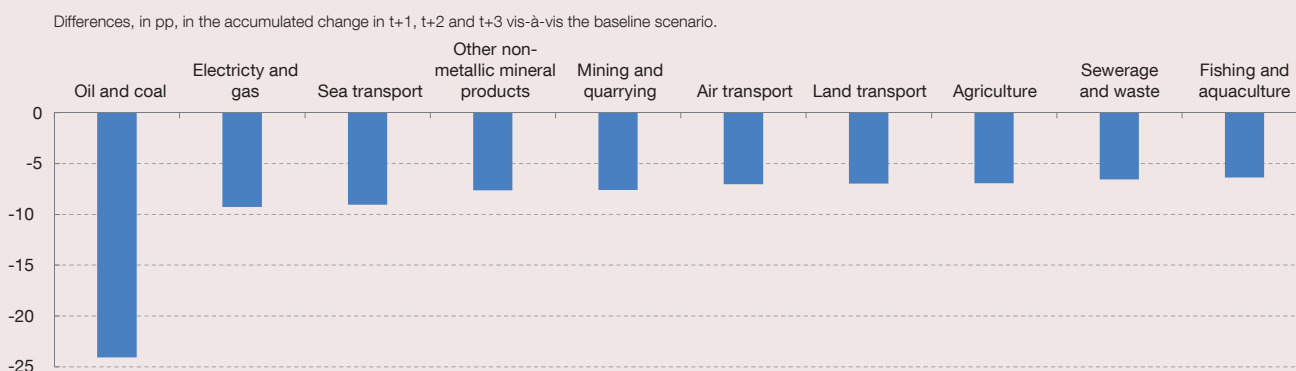
lower bound. First, reallocating resources between sectors, as envisaged by the model, could be difficult in practice because of, for example, the high specialisation of human capital. In addition, the model does not consider the reallocation of physical capital, meaning that technological obsolescence costs are excluded by construction.

Second, the model treats households homogeneously, underestimating the costs of climate change, as its impact is greater on lower-income families. Moreover, in the model the Spanish economy is not open to external trade. Thus, it only captures climate change effects through domestic demand, while those stemming from lower external demand are not considered. Lastly, the simulations are conducted under the assumption that the rise in energy prices in the scenarios is insufficient to cause permanent increases in inflation that are passed through to interest rates or that translate into sharp financial market corrections or significant shocks to house prices. A stronger influence of these nominal factors could generate more adverse scenarios.

Despite these limitations, the model's detailed sectoral structure makes it possible to identify some sectors where this shock has a greater impact. The clearest example is energy sectors, whose value added is substantially reduced. But the effects also extend not only to the more directly affected non-energy sectors (e.g. the chemical sector) but even to those most closely related to them via their purchases (e.g. the manufacture of machinery and equipment) or sales (e.g. the waste treatment sector). Through these mechanisms, under the more severe scenarios, the sectors most exposed to such shocks would be significantly impacted, directly or indirectly (see Chart 1).

To model the impact of these scenarios on the banking sector, a framework of comparable granularity for measuring corporate default risk is needed.<sup>2</sup> That is why sectoral granularity has been increased in the probability of default (PD) projection of the Forward Looking Exercise on Spanish Banks (FLESB) model used for stress testing. These sectoral PDs (50 sectors) vary according to the size of the firm and sector-specific and aggregate economic and financial variables.<sup>3</sup>

Chart 1  
EFFECT ON THREE-YEAR SECTORAL GVA GROWTH OF THE INCREASE IN THE EMISSIONS PRICE AND THE EXTENSION OF THE SCHEME TO ALL FIRMS AND HOUSEHOLDS IN THE TEN MOST AFFECTED SECTORS



SOURCE: Banco de España.

2 A broad sectoral sensitivity is central to transition risk modelling (see “Guide to climate scenario analysis for central banks and supervisors”, NGFS, June 2020).

3 Each model by sector and size is estimated for a panel of banks, drawing on data for the 2000-2020 period. Its final specification is selected using an algorithm that identifies a PD projection model from all the possible combinations of explanatory variables with valid specifications, and according to statistical and economic criteria. For more information, see A. Ferrer, F. J. García, N. Lavín, I. Pablos and C. Pérez (2021) “Un primer análisis de los riesgos de transición energética con el marco de pruebas de resistencia FLESB del Banco de España”, forthcoming in the Banco de España’s Autumn 2021 Financial Stability Review.

IMPACT OF CLIMATE CHANGE RISKS ON THE BANKING SECTOR (cont'd)

It should be noted that this framework captures transition scenarios' sectoral heterogeneity in two ways: i) by including economic and financial variables in all models, and ii) by constructing separate models by sector and size, providing different elasticities whenever the available information so allows.<sup>4</sup> Considering sectoral financial ratios makes it possible to analyse PD sensitivity to firms' hypothetical responses aimed at reducing their emissions (e.g. increasing borrowing to acquire new, greener technologies).

The impact on PDs of the transition scenarios varies among sectors. It is summarised in Chart 2, which presents a scatter plot, with each point representing a sector, showing the differences in GVA growth (three-year average, X axis) and in PD (average for 2021-2023, Y axis) between

different scenarios and the baseline scenario. Specifically, the left-hand panel shows these differences for the emissions price increase scenario, while the right-hand panel depicts those for the scenario that also envisages extending ETS coverage to all firms and households (severest scenario). As is to be expected, the sectors hit hardest by the climate transition (those with the largest falls in GVA vis-à-vis the baseline scenario) tend to present higher PD increases.

As shown in Chart 3, these higher probabilities of default would impact cumulative bank profitability. To illustrate this impact, the ratio of accumulated profit after tax divided by the volume of average risk-weighted assets (RWAs), both as per the scenario, is considered. The difference in this ratio

Chart 2  
EFFECT OF TRANSITION COSTS ON PROBABILITIES OF DEFAULT (PD) (a)

X axis: differences in average rates of change in GVA vis-à-vis the baseline scenario (pp)  
Y axis: differences in average PDs vis-à-vis the baseline scenario (pp)

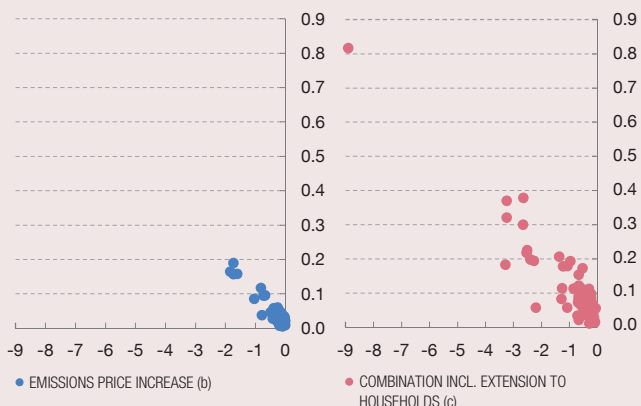
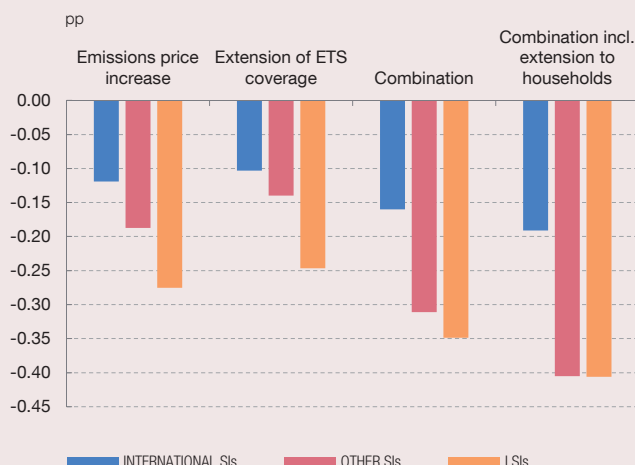


Chart 3  
EFFECT OF TRANSITION COSTS ON THE RATIO OF PROFIT AFTER TAX TO RWAs (d) (e) (f)



SOURCE: Banco de España.

- a Each point on the chart relates to a sector of business activity in accordance with the Spanish National Classification of Economic Activities and depicts the difference in that sector's average PD, weighted by the number of borrowers, over a three-year horizon between a trend-based baseline scenario (under which no measures are applied) and adverse scenarios resulting from different extensions of the CO<sub>2</sub> emission allowances trading scheme. See Box 3.1 for further details.
- b This adverse scenario considers an increase in CO<sub>2</sub> emission allowance prices from €25 to €100.
- c This adverse scenario considers a combination of the scenario described in (b) and an extension of the requirement for allowances to other productive sectors and to households.
- d The bars show the difference in the ratio of profit after tax to RWAs between the corresponding scenario and the baseline scenario, for each of the three groups of institutions.
- e The effects of the transition costs are calculated under four alternative scenarios. The first scenario, "emissions price increase", considers an increase in CO<sub>2</sub> emission allowance prices from €25 to €100. The second scenario, "extension of ETS coverage", considers the extension of the ETS coverage to all firms. The "combination" scenario simultaneously considers the CO<sub>2</sub> emission allowance price increase and the extension of the ETS coverage to all firms. Lastly, the "combination including extension to households" considers the ETS coverage also being extended to households.
- f To calculate the ratio, the numerator (profit after tax) is cumulative for the three years in the exercise, while the denominator reflects the value of average RWAs in the same period.

4 The estimation algorithm assesses whether the number of observations is sufficient to estimate a separate model for each sector and firm size. When the available data are insufficient for estimation at the highest level of disaggregation in a sector, the estimated elasticities of the broader industry to which it belongs are assigned to it overall.

**IMPACT OF CLIMATE CHANGE RISKS ON THE BANKING SECTOR (cont'd)**

vis-à-vis the baseline scenario is presented for three groups of institutions: Spanish institutions directly supervised by the Single Supervisory Mechanism (SSM) that have significant international activity (International SIs), the rest of the institutions supervised directly by the SSM (Other SIs) and institutions supervised directly by the Banco de España (LSIs). The emissions price increase has a larger impact for the three groups than the extension of ETS coverage, with the worst deterioration in smaller institutions with no significant international presence, as the scenario analysed only considers policy changes in Spain. Insofar as the emission allowance scheme is also implemented in other jurisdictions, the impact on International SIs' profitability can be expected to be more similar to that for the other groups.<sup>5</sup> Under the scenario that combines both effects, the differences in terms of profit generation as a percentage of RWAs are -0.16 pp, -0.31 pp and -0.35 pp for the three groups of institutions, respectively. If the extension of ETS coverage to households is also included, the declines with respect to the baseline scenario stand at -0.19 pp, -0.41 pp and -0.41 pp, respectively. In terms of ROE,<sup>6</sup> the difference in the adverse scenarios compared with the baseline scenario for the aggregate of institutions (i.e. all three groups) would be in a range of between approximately 0.9 pp and 1.5 pp. The institutions would not incur significant capital charges under any of the scenarios, which shows that the transition costs can be considered acceptable.

If the transition to a more sustainable economy is not completed or carried out in time, climate change will lead to the materialisation of physical risks. These can be expected to have potentially much stronger implications for the economy, the financial sector and society as a whole than those estimated in respect of transition risks in the first part of this box. Should climate change occur, the environmental fallout of a temperature rise (desertification, floods, fires, rising sea levels, etc.) would generate asset losses for institutions through various channels, in particular in respect of exposures subject to credit, market or operational risks.

Quantification of this risk is currently at an incipient stage owing to the challenges it poses: uncertainty about the future emissions and temperature trajectories, limited data, and forecast horizons that are much longer than usual, requiring new methodological developments,<sup>7</sup> as it is normally assumed that, in such long time frames, agents will react. Nevertheless, studying physical risk is unavoidable in order to understand and assess the future effects that climate change could have on the financial system if no action to adopt measures is taken.

To illustrate the possible impact of physical risk, a simplified example of the effect on credit risk is presented below. For this purpose, the NGFS long-term risk scenarios have been considered.<sup>8</sup> These scenarios reflect transition risk and also physical risk, especially in the later years of the horizon. They consider a horizon up to 2070 and two pathways: an Orderly Transition scenario, where the shift to a net-zero emission economy is swift and effective (similar to that considered in the previous exercise), and a Hot House World scenario, where no measures are applied and environmental degradation is therefore pronounced. A statistical model was then constructed for the aggregate 12-month PDs for households and for firms, and the two figures were projected up to 2070 under each scenario.<sup>9</sup>

Chart 4 depicts the difference in annual GDP growth under the scenario with larger materialization of physical risks (Hot House World) with respect to the Orderly Transition scenario. At the start of the pathway, when the transition costs predominate over physical costs, the difference is slightly positive, but the trend reverses in the longer term when the environmental costs of inaction materialise to their full extent. By 2070 annual GDP growth under the Hot House World scenario is 2.1 pp lower than under the Orderly Transition scenario. In the long term, physical risks would thus entail a high deterioration in activity, far exceeding the cost of the Orderly Transition.

5 By construction, the scenarios exclude these costs, as they derive from a closed economy model (where the Spanish economy does not have an external sector).

6 ROE has been estimated as accumulated three-year profit after tax as a percentage of average equity in the same period. Equity is estimated assuming a trajectory proportional to that of RWAs.

7 See "Climate-related risk and financial stability", ECB/ESRB Project Team on climate risk monitoring, July 2021, for further discussion of these difficulties.

8 The pathways are obtained using the REMIND-MAgPIE 2.1-4.2 model, see "NGFS Climate Scenarios Database", June 2021.

9 The exercise has limitations, such as not considering the potential deterioration of some assets (e.g. housing) that are used as loan collateral. Events such as sea-level rises or widespread torrential rain could substantially affect the value of such collateral in Spain, as highlighted in Box 3.2.

IMPACT OF CLIMATE CHANGE RISKS ON THE BANKING SECTOR (cont'd)

Chart 5 shows the difference in the projected PD paths for households and firms under each scenario, in the same terms as in Chart 4.<sup>10</sup> Similar to the case of GDP growth, at the start of the pathway, credit default risk is somewhat higher under the Orderly Transition scenario (as reflected in the previous exercise) but, in the longer term, this situation is reversed owing to the materialisation of physical risk, and much higher probabilities of default are observed in the Hot House World scenario. In 2070 the PD for households is 0.57 pp higher under the Hot House World scenario than under the Orderly Transition scenario, with this difference increasing to 1.11 pp for firms. Even if these differences could be interpreted as being contained in marginal terms, they are relevant since they reflect permanent deteriorations in credit quality, which have a significant impact when accumulated over the life of the loan.

These findings show that ignoring the costs of the materialisation of climate change would lead to an underestimation of the costs of credit risk, and that investing in an orderly transition is clearly favourable in the medium and long run, in terms of mitigating economic and financial risks.

Despite its simplifications, this second exercise is useful for highlighting that, depending on how swiftly and intensely the transition to a net-zero emission economy is carried out, the long-term economic deterioration caused by the effects of climate change could have a significant and sustained impact on credit quality. The economic authorities, including the Banco de España, are working to overcome the aforementioned methodological challenges and have begun to develop regulatory frameworks for data collection, analyses and tools to improve the measurement and modelling of its impact.

Chart 4  
DIFFERENCES IN GDP GROWTH (SPAIN) (a)

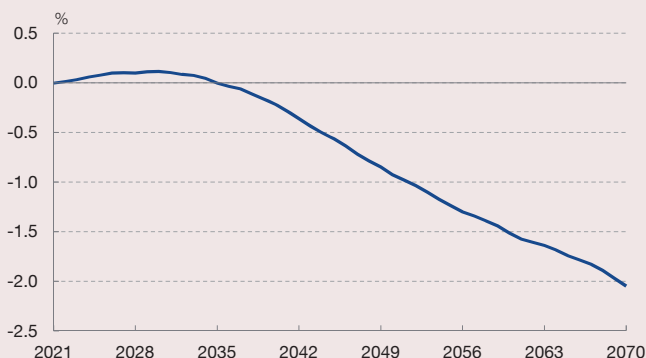
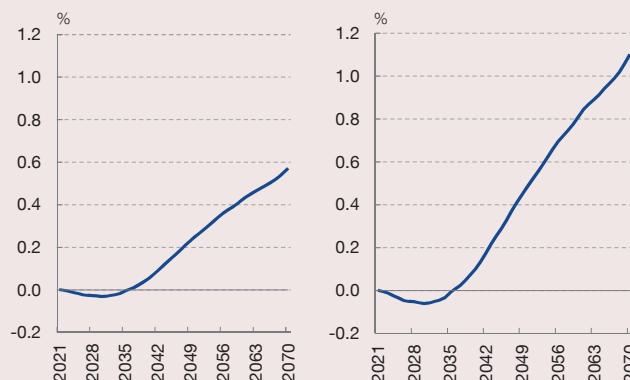


Chart 5  
DIFFERENCES IN PROBABILITY OF DEFAULT (a)  
Households (left) and firms (right)



SOURCES: NGFS and Banco de España.

a Differences in the Hot House World scenario with respect to the Orderly Transition scenario.

10 PD is projected by sequentially applying the model estimated using historical data. The model depends on GDP growth (the path of which up to 2070 is taken as given) and on the PD lag, such that it is possible to predict, from period to period, the PD up to 2070.

**THE VALUE OF HOUSING AND ECOLOGICAL DEGRADATION: THE CASE OF THE MAR MENOR<sup>1</sup>**

The scarcity of past events of materialisation of the physical risks associated with climate change makes it particularly difficult to estimate their costs. At the same time, actions to avoid or mitigate this materialisation, which also have their cost, have to be taken in the present. Consequently, while the cost of acting is known quite accurately (the necessary investment), the benefits (costs avoided when the risk does not materialise) are much more uncertain. One way of increasing certainty consists in analysing the economic impact of environmental disasters that have already occurred; even if these are not a direct consequence of climate change, they share some of the characteristics of those that are. This box offers an example of this type of approximation, focusing on the Mar Menor region of Spain.

The Mar Menor, the largest salt-water lagoon in Europe, located in the region of Murcia, has in recent years experienced a process of degradation known as eutrophication. This process involves an increase in nutrients that leads to abnormal growth of phytoplankton and stimulates the proliferation of algae in the lagoon. This in turn means that not enough light can filter through and, consequently, a large part of the ecosystem has been destroyed since 2015. Decomposition of the resulting dead matter absorbs large quantities of oxygen; on several occasions this has led to large amounts of dead fish washing up on the shore.

According to the report by the Spanish Institute of Oceanography on the evolution and current state of the Mar Menor (2020),<sup>2</sup> the analysis of 50 years of time series data shows that the chlorophyll levels in the lagoon stood within a range characteristic of a low nutrient system until the phytoplankton proliferation episode of 2015. That year thus marks a turning point in the ecological evolution of the Mar Menor.

Various studies have attempted to measure the economic cost of this environmental catastrophe. Carvalho-Machado Sáez (2020)<sup>3</sup>, for example, compares Social Security registrations in Mar Menor municipalities with those for neighbouring municipalities, but fails to obtain robust or statistically significant findings. Other studies, in the

political and environmental sciences fields, measure the economic impact using the cost of restoring the lagoon, ignoring the economic costs that the degradation may already be causing.

The aim of this box is to analyse whether this situation is affecting the value of living in the Mar Menor region. If economic activity is generated in the Mar Menor region and it is attractive to tourists or residents the value of this present and future utility will be reflected in the price people are prepared to pay to live in and enjoy this natural environment.

From an analytical viewpoint, it is important to note that the area affected is very specific, the period of time in which the phenomenon commences is clearly defined (2015), and nearby housing with similar characteristics but unaffected by the Mar Menor phenomenon (the Mediterranean coast of south Alicante) can be used as a control group.

The variable to be analysed is the price per square metre of housing sold in the areas of interest. The data are drawn from the Association of Registrars, whose databases cover all housing transactions, with details of the square metres of the properties sold, their prices, etc. The dwellings are grouped according to postcodes, distinguishing between areas affected by the ecological deterioration (Mar Menor) and unaffected areas (south Alicante). Sales of housing in south Alicante are used as the control group because this area borders on the Mar Menor region and is the same distance by car from the cities of Murcia and Madrid. To the south, the Mar Menor region adjoins Cartagena, an area with very different characteristics from the coastal zone that concerns us. As may be seen in Chart 1, the behaviour of the price per square metre in these two areas clearly diverges. The median return on a residential investment made in 2015 in the Mar Menor region would be 0% in 2021, while an investment in south Alicante would have generated a return of more than 43% over the same period.

In order to analyse this difference statistically and confirm whether there has been a significant difference

1 This box draws on the findings of the forthcoming paper “Environmental destruction and Housing Prices: The Case of Mar Menor in Spain” (2021) by María de la Luz García Lorenzo, Javier García Villasur, Matías Lamas and Gabriel Pérez Quirós.

2 See the study by the [Spanish Institute of Oceanography \(2020\)](#).

3 “Socio-economic Impact of Mar Menor Harmful Algal Bloom in 2015-2016.” Caterina Carvalho-Machado Sáez. Universidad Carlos III de Madrid.



**THE VALUE OF HOUSING AND ECOLOGICAL DEGRADATION: THE CASE OF THE MAR MENOR (cont'd)**

in the behaviour of prices in the Mar Menor area following the ecological deterioration, a differences in differences method is used. This procedure compares, at postcode level, dwellings sold in the Mar Menor area (the affected group) with those sold in south Torrevieja (the unaffected or control group). The working hypothesis is that there were no significant differences in the behaviour of house prices between these two areas before 2015. However, from 2015, the prices of the Mar Menor districts began to lag behind.

The left-hand panel of Chart 2 shows the estimation of the statistical differences between the prices of the two areas over time, taking 2014 as the base year. As can be seen in the chart, there is a negative effect on the evolution of the price of housing sold in the Mar Menor area from 2016. This effect increases up until 2019 and can be quantified as more than €500 per square metre at the end of the sample. Given the initial level of the price per square metre in the Mar Menor area, this approximately amounts to a 45% lower rise in value

compared with housing in south Alicante. The result is consistent with the aggregate data in Chart 1.

It is important, from a technical point of view, to confirm that this difference in the evolution of prices is not due to a change in the characteristics of the housing sold in these two areas. For this purpose, a sub-sample of the previous estimation is used consisting of dwellings sold at least twice in the period analysed. Comparing transactions involving the same dwellings at earlier and later points in time controls for the possibility that changes in the composition of the housing sold affect the evolution of prices. The results of the estimation of the price differences are presented in the right-hand panel of Chart 2 and are comparable to those in the left-hand panel. This appears to confirm that the impact of the environmental degradation of the Mar Menor may have given rise to a difference in the return on residential investment of 45% over six years.

From the standpoint of financial stability two questions arise in this context. First, the extent of the wealth effect associated with this reduction in the rate of return and, second, the

Chart 1  
MEDIAN PRICE PER SQUARE METRE OF HOUSING IN AFFECTED (MURCIA) AND UNAFFECTED (ALICANTE) POSTCODES (a)

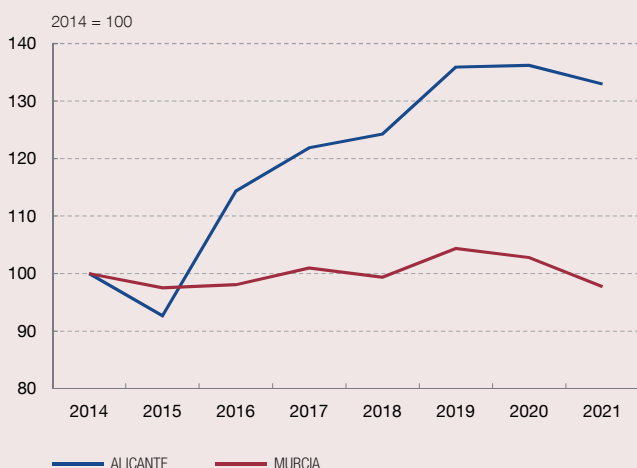
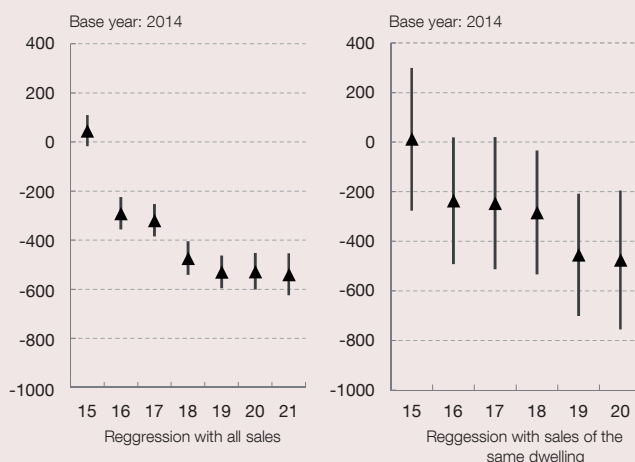


Chart 2  
ESTIMATED DIFFERENCE BETWEEN THE PRICE PER SQUARE METRE IN AFFECTED (MURCIA) AND UNAFFECTED (ALICANTE) POSTCODES (b)



SOURCE: Colegio de Registradores.

- a The chart compares changes in house prices in postcodes in Murcia affected by the environmental catastrophe in the Mar Menor with those in postcodes in the south of Alicante with similar characteristics.
- b Both panels show the average effect on the price per square metre of a dwelling located in an area affected by the environmental catastrophe (Murcia) rather than in an unaffected but similar area (south of Alicante), taking the period prior to 2015 as the base or reference. To calculate these effects, a regression is carried out in which the price per square metre of the dwellings sold is explained according to whether they are located in one area or the other, also bearing in mind the year in which the transaction took place. The triangles represent the estimated coefficients and the lines the 95% confidence intervals for these estimates. In the left-hand panel, the sample includes all house sales in these areas. In the right-hand panel, only repeat transactions are included (sales of the same dwelling in different time periods). The latter allows changes in prices of the same unit to be assessed, thus controlling for possible changes in the composition of the houses sold over time, but leads to less precise estimates (wider confidence intervals), as the number of observations is reduced. In this panel the year 2021 is excluded owing to a lack of information on repeat transactions.

**THE VALUE OF HOUSING AND ECOLOGICAL DEGRADATION: THE CASE OF THE MAR MENOR (cont'd)**

consequences it may have on credit standards for loans secured by housing affected by an ecological deterioration of this type. Obviously, if this problem is limited to a very specific area, such as the Mar Menor, then the stability of the Spanish financial system will not be threatened. However, should it extend to a much wider area, which may occur, for example, if the sea level rises significantly as a result of climate change, the consequences may be material.

Answering the first question on the wealth effect requires an estimation of the number of dwellings existing in the affected Mar Menor postcodes. A rough estimate is obtained using information from cadastral statistics. According to the latter, the total number of dwellings in the Mar Menor area in 2021 was 117,000. Given that the median dwelling is 72 square metres and the median price per square metre is €1,095 the total value of the housing is €9,224 million. The failure of the price of these dwellings to rise during the period analysed implies a loss of wealth of €4,150 million, relative to a scenario in which the ecological catastrophe did not occur.

A first approximation to the answer to the second question on credit market conditions is obtained by analysing the

evolution of the median mortgage in both areas. In the Mar Menor area, the median mortgage remained unchanged between 2014 and 2021, at around €60,000. The median mortgage in the south Alicante area increased by more than 100%, from €44,000 in 2014 to a high of more than €90,000 in 2021, which shows the dynamism of one area compared with the stagnation of the other. The findings suggest that an ecological deterioration like the one described has the potential to significantly reduce the value of the available collateral, making access to credit more difficult in the affected areas.

In short, this exercise, which gives a precise estimate of the serious economic impact of the environmental deterioration in the Mar Menor region, seeks to illustrate more generally the importance of the physical risks of climate change for financial stability and, specifically, the wealth of households and the quality of banks' mortgage portfolios. This analysis suggests that, should the materialisation of climate change lead to comparable environmental damage in other areas of the Spanish Levante, the economic damage and its implications for financial stability could be significant.





## Annex 1

**CONSOLIDATED BALANCE SHEET (a)  
DEPOSIT INSTITUTIONS**

Assets	Jun-21	Change Jun-21/Jun-20	Relative weight Jun-20
	€m	%	%
Cash and balances with central banks	472,011	34.6	9.0
Loans and advances to credit institutions	226,070	-13.9	6.7
General government	105,686	5.1	2.6
Other private sectors	2,162,012	-1.6	56.1
Debt securities	517,379	-3.9	13.7
Other equity instruments	44,728	47.3	0.8
Investments	25,508	-5.1	0.7
Derivatives	118,706	-35.2	4.7
Tangible assets	58,923	-5.3	1.6
Other	155,294	-6.2	4.2
<b>TOTAL ASSETS</b>	<b>3,886,319</b>	<b>-0.8</b>	<b>100.0</b>
Memorandum items			
Financing to private sector	2,207,070	-3.0	58.1
Financing to general government	522,355	3.6	12.9
Total NPLs	87,447	4.8	2.1
Total NPL ratio	2.7	10 (c)	
Liabilities and equity	Jun-21	Change Jun-21/Jun-20	Relative weight Jun-20
	€m	%	%
Balances from central banks	383,949	14.2	8.6
Deposits from credit institutions	216,164	-22.0	7.1
General government	112,913	5.7	2.7
Other private sectors	2,223,985	2.3	55.5
Marketable debt securities	404,737	-6.5	11.0
Derivatives	113,690	-34.2	4.4
Provisions for pensions, tax and other	27,977	1.9	0.7
Other	153,693	7.3	3.7
<b>TOTAL LIABILITIES</b>	<b>3,637,108</b>	<b>-0.9</b>	<b>93.7</b>
Memorandum items			
Eurosystem net lending (b)	290,262	47.8	0.0
Own funds	281,500	4.1	6.9
Minority interests	15,971	-22.1	0.5
Valuation adjustments relating to total equity	-48,261	9.7	-1.1
<b>TOTAL EQUITY</b>	<b>249,210</b>	<b>0.9</b>	<b>6.3</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>3,886,319</b>	<b>-0.8</b>	<b>100.0</b>

**SOURCE:** Banco de España.

a The figures for total assets, total liabilities and net equity, and for the components thereof, correspond directly to the consolidated account reported to the Banco de España in confidential returns.

b Difference between funds received in liquidity-providing operations and funds delivered in liquidity-absorbing operations. June 2021 data.

c Difference calculated in basis points.

**CONSOLIDATED INCOME STATEMENT  
DEPOSIT INSTITUTIONS**

	Jun-21		Jun-20	Jun-21
	€m	% Change Jun-21/Jun-20	% ATA	% ATA
Financial revenue	44,804	-10.1	2.63	2.32
Financial costs	12,168	-21.5	0.82	0.63
Net interest income	32,636	-5.1	1.81	1.69
Return from capital instruments	792	28.9	0.03	0.04
Net financial income	33,429	-4.5	1.84	1.73
Share of profit or loss of entities accounted for using the equity method	1,468	43.7	0.05	0.08
Net commissions	13,197	4.0	0.67	0.68
Gains and losses on financial assets and liabilities	2,847	-11.2	0.17	0.15
Other operating income (net)	7	-95.7	0.01	0.00
Gross income	50,948	-2.2	2.74	2.64
Operating expenses	26,337	3.6	1.34	1.36
Net operating income	24,611	-7.7	1.40	1.27
Asset impairment losses (specific and general provisions)	7,438	-51.1	0.80	0.38
Provisioning expense (net)	3,260	85.6	0.09	0.17
Income from disposals (net)	4,131	-	-0.76	0.21
Profit before tax (including discontinued operations)	18,044	-	-0.25	0.93
Net income	13,775	-	-0.50	0.71
<i>Memorandum item</i>				
Income attributable to the controlling entity	12,533	-	-0.55	0.65

**SOURCE:** Banco de España.

**NOTE:** The consolidated income statement includes pro-forma information pertaining to the months of activity of a significant institution absorbed in 2021 through a merger process.

## BANCO DE ESPAÑA PUBLICATIONS

The Banco de España publishes various types of documents that provide information on its activity (economic reports, statistical information, research papers, etc.). The full list of Banco de España publications can be found on its website at <http://www.bde.es/f/webbde/Secciones/Publicaciones/Relacionados/Fic/Catalogopublicaciones.pdf>.

Most of these documents are available in pdf format and can be downloaded free of charge from the Banco de España website, <http://www.bde.es/bde/es/secciones/informes/>. A request for others can be made to the following e-mail address: [publicaciones@bde.es](mailto:publicaciones@bde.es).

The cut-off date of this report: 22 October 2021

Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

© Banco de España, Madrid, 2021  
ISSN: 1696-3520 (online)

## SYMBOLS AND ABBREVIATIONS

AEAT	Agencia Estatal de Administración Tributaria (State tax revenue service)	ID	Data obtained from individual financial statements
ATA	Average total assets	IGAE	Intervención General de la Administración del Estado (National Audit Office)
BCBS	Basel Committee on Banking Supervision	IIP	International investment position
BIS	Bank for International Settlements	INE	Instituto Nacional de Estadística (National Statistics Institute)
bn	Billion	IRS	Interest-rate swap
bp	Basis points	LEI	Legal entity identifier
BRRD II	Bank Recovery and Resolution Directive	LGF	Loss given default
CBQ	Banco de España Central Balance Sheet Data Office Quarterly Survey	LSI	Less significant institution
CBSO	Banco de España Central Balance Sheet Data Office	LTP	Loan-to-price ratio
CCR	Banco de España Central Credit Register	m	Million
CCyB	Countercyclical capital buffer	MMSR	Money Market Statistical Reporting
CET1	Common Equity Tier 1	MOVE	Merrill Lynch Option Volatility Estimate
CNAE	Clasificación Nacional de Actividades Económicas (Spanish National Classification of Economic Activities)	MREL	Minimum requirement for own funds and eligible liabilities
CNMV	Comisión Nacional del Mercado de Valores (National Securities Market Commission)	MRO	Main refinancing operation
CoCo	Contingent convertible bond	NACE	Statistical classification of economic activities in the European Community
COVID-19	Coronavirus disease 2019	NBER	National Bureau of Economic Research
CRD	Capital Requirements Directive	NFC	Non-financial corporation
CRR	Capital Requirements Regulation	NGEU	Next Generation EU
DFR	Deposit facility rate	NGFS	Network for Greening the Financial System
DI	Deposit institution	NPL	Non-performing loan
EAPS	Economically active population survey	OIS	Overnight interest swap
EBA	European Banking Authority	O-SII	Other systemically important institution
ECB	European Central Bank	PD	Probability of default
EDIS	European Deposit Insurance Scheme	PEPP	Pandemic emergency purchase programme
EEA	European Economic Area	PER	Price-to-earnings ratio
EDP	Excessive Deficit Protocol	PMI	Purchasing Managers' Index
EIOPA	European Insurance and Occupational Pensions Authority	pp	percentage points
EMCI	Emerging markets currency index	Q	Quarter
EPA	Encuesta de población activa (Labour Force Survey)	q-o-q	Quarter-on-quarter
ERTE	Expediente de regulación temporal de empleo (furlough schemes)	RDL	Royal Decree-Law
ESG	Environmental, social and governance	ROA	Return on assets
ESRB	European Systemic Risk Board	ROE	Return on equity
€STR	Euro short-term rate	RTRP	Recovery, Transformation and Resilience Plan
ETS	Emissions Trading Scheme	RTS	Regulatory technical standards
EU	European Union	RWA	Risk-weighted asset
EURIBOR	Euro Interbank Offered Rate	Sareb	Sociedad de Gestión de Activos Procedentes de la Reestructuración Bancaria (asset management company for trading assets arising from bank restructuring)
EV	Enterprise Value	SGP	Stability and Growth Pact
FL	Forward-looking	SI	Significant institution
FLESB	Forward-looking exercise on Spanish banks	SLI	Specialised lending institution
FSB	Financial Stability Board	SME	Small and medium-sized enterprise
FSR	Financial Stability Report	SREP	Supervisory review and evaluation process
GDI	Gross disposable income	SRI	Systemic risk indicator
GDP	Gross domestic product	SSM	Single Supervisory Mechanism
GSC	Global stablecoin	TLAC	Total loss-absorbing capacity
G-SII	Global systemically important institution	TLTRO	Targeted Longer-term refinancing operation
GVA	Gross value added	USMCA	United States-Mexico-Canada Agreement
H	Half-year	y-o-y	Year-on-year
ICO	Instituto Oficial de Crédito (Official Credit Institute)		

## ISO COUNTRY CODES

AT	Austria	DE	Germany	IE	Ireland	NL	Netherlands
AU	Australia	DK	Denmark	IT	Italy	NO	Norway
BE	Belgium	EE	Estonia	JP	Japan	PL	Poland
BG	Bulgaria	ES	Spain	KR	South Korea	PT	Portugal
BR	Brazil	FI	Finland	KY	Cayman Islands	RO	Romania
CA	Canada	FR	Francia	LT	Lithuania	SE	Sweden
CH	Switzerland	GB	United Kingdom	LU	Luxembourg	SI	Slovenia
CL	Chile	GR	Greece	LV	Latvia	SK	Slovakia
CN	China	HR	Croatia	MT	Malta	TR	Turkey
CY	Cyprus	HU	Hungary	MX	Mexico	US	United States
CZ	Czech Republic						