

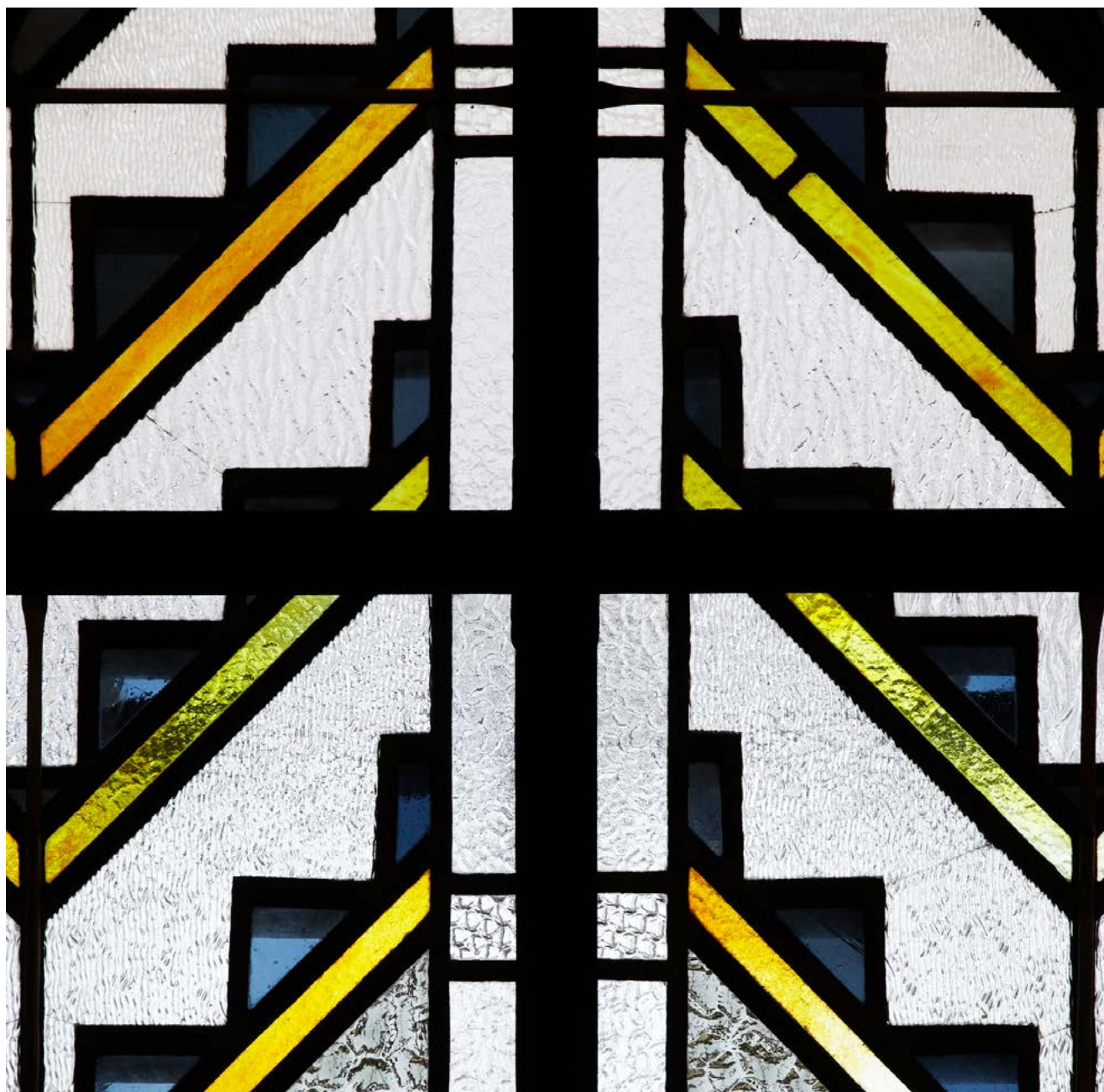
INDEPENDENT EVALUATION OFFICE

OIE EVALUATION OF THE BANCO DE ESPAÑA'S MACROPRUDENTIAL POLICY FRAMEWORK

Banco de España Independent Evaluation Office (OIE)

Expert Panel:

Claudio Borio (Bank for International Settlements); Elena Carletti (Universita' Bocconi); and Michael McMahon (University of Oxford)



CONTENTS

Foreword of the Governing Council	3
1 Executive Summary	6
2 Introduction	8
3 The macroprudential policy framework in Spain	10
3.1 Governance: the institutional set-up	10
3.2 The Financial Stability and Macroprudential Policy Department	13
3.3 The macroprudential toolkit for the banking sector	14
3.4 The Banco de España's analytical tools for the implementation of macroprudential policy	15
3.5 Communication of policy, analysis and research	16
4 What are others saying?	18
5 Challenges and recommendations	20
5.1. The output produced	20
Stress tests	20
Borrower-based measures	21
Non-bank financial intermediaries	22
5.2. How the output is communicated	22
Coordination with the Transparency and Communication Department	23
The Banco de España's publications and impact assessment	23
Communications with key stakeholders	24
5.3. How the output is produced	24
Planning topics: top-down versus bottom-up approach	24
Overall resources available	25
Composition of resources	26
Internal mobility	26
Cross-departmental collaboration	27
Annex A – The Banco de España's macroprudential toolkit for the banking sector	28
Annex B – Extended description of the analytical tools of the Financial Stability and Macroprudential Policy Department	29
References	32
Glossary	34

Foreword of the Governing Council

The Banco de España plays a fundamental role in promoting financial stability, ensuring that the Spanish banking system can absorb the impact of potential disruptions without negatively compromising financial intermediation and without causing additional harm to the economy. Since 2014, the Bank has been the authority responsible for designing and implementing macroprudential policy for the Spanish banking system and has the mandate and the necessary tools to apply an effective macroprudential policy in coordination with other national and European authorities.

In this context, the Governing Council requested the Independent Evaluation Office (IEO) to carry out in 2024 a critical review of the Banco de España's macroprudential policy decision-making framework and the identification of potential opportunities for improvement.¹

The evaluation report, presented to the Governing Council in February 2025, concluded that this framework is effective. The design and implementation of macroprudential policy is sound and aligned with international standards. It particularly highlighted the quality of the analysis led by the Financial Stability and Macroprudential Policy Department (DEFPM), as well as the proper identification of systemic risks and active coordination with other supervisory authorities.

However, the IEO also identified areas for improvement grouped into three blocks: the generation of results, their communication, and the means to produce them.

Regarding the first, it was proposed to strengthen the Bank's analytical capabilities through three lines of action: adapting the stress test scenarios used in the Forward Looking Exercise on Spanish Banks (FLESB) to better reflect the vulnerabilities of the Spanish banking system;² advancing the development of an analytical framework for borrower-based measures (BBM); and strengthening the analysis of the non-bank financial intermediaries (NBFI) sector.

In response, the Banco de España will launch various initiatives. A new methodology will be developed to design multiple scenarios in the FLESB tests, incorporating macroeconomic models that integrate geographical dimensions relevant to the Spanish banking system. Likewise, a robust framework for BBM will be advanced, improving credit granting metrics and evaluating their macroeconomic impact, in collaboration with other general directorates and drawing on international experiences.

¹ The evaluation was carried out with the collaboration of a panel of experts composed of Claudio Borio (Bank for International Settlements), Elena Carletti (Bocconi University), and Michael McMahon (University of Oxford). Interviews were held with staff from the Banco de España and representatives of international organizations (European Central Bank, European Systemic Risk Board, International Monetary Fund, etc.), and opinions were gathered from key actors in the Spanish banking sector and the national academic community. In addition, the analysis was complemented by a review of institutional documentation and other publications of the Banco de España.

² The "top-down" FLESB methodological framework, developed at the Banco de España, assesses the resilience capacity of Spanish banking institutions under adverse scenarios. It is applied to both systemically important institutions and less significant ones.

For the analysis of the NBFIs sector, a granular database of bilateral exposures between financial institutions and a stress testing tool for the financial system as a whole will be created. These actions will be developed with the involvement of the Macropprudential Authority Financial Stability Council (AMCESFI), of which the other two Spanish sectoral prudential supervisory authorities (CNMV and DGSFP) are members.³ In addition, an internal working group will be established to promote the analysis of the NBFIs sector, and the interconnections between banks and non-bank entities will be further explored using national and international databases.

In the area of communication, it is suggested to review the roles of the involved areas, so that economists focus on analysis and key messages, while the communication area is responsible for dissemination. It is also suggested to adopt a segmented audience approach, simplify the Financial Stability Report (FSR) and similar publications, and prepare a clear strategy to explain BBM to the public.

In response, the Banco de España is strengthening its institutional communication strategy through greater coordination between areas. This includes the early involvement of the communication team in the preparation of the FSR, its redesign with more accessible language, and the use of graphic material. In addition, specific strategies are being developed to communicate both the FSR and macroprudential measures, using new formats such as blogs, podcasts, and branch presentations. Coordination between the FSR and the Report on the Financial Situation of Households and Companies of the Bank will also be evaluated, analyzing its media impact and its contribution to institutional communication objectives (transparency, accountability, dissemination of knowledge, etc.).

Regarding the means to produce results, it is advised to strengthen the strategic orientation of the DEFPM by better leveraging discussions in the Banco de España's Financial Stability Committee (CEF) and with senior management. It is also proposed to promote internal mobility with appropriate incentives and clear expectations from the time of onboarding, as part of a cultural change led by senior management.

To this end, the Bank will establish regular meetings led by senior management to guide the DEFPM's work program, including BBM, with academic contributions and follow-up in the CEF. On the other hand, within the framework of the 2030 Strategic Plan, approved by the Governing Council on May 26, the Executive Commission approved an organizational restructuring that, among other aspects, incorporates a matrix model in which, alongside hierarchical dependencies, functional dependencies are added that will foster interrelation and allow for the full exploitation of identified synergies. Likewise, the 2030 Strategic Plan projects a major boost to mobility. As a result of the synergy identification process, the DEFPM now concentrates the analysis of financial intermediaries and the financial situation of households and non-financial

3 The National Securities Market Commission (CNMV) and the Directorate General of Insurance and Pension Funds (DGSFP) of the Ministry of Economy, Trade and Enterprise.

companies, expanding its resources and also ensuring proper interrelation with the Directorate General of Economics through the aforementioned matrix model.

The Governing Council has welcomed both the evaluation report and the action plan presented in response by the management of the Banco de España. The implementation of these measures will be supervised by the Council through the IEO's monitoring program, thus ensuring concrete progress in improving the Banco de España's macroprudential framework.

1 Executive Summary

Overall, the design and implementation of macroprudential policy by the Banco de España can be considered as effective.

In particular, the framework for identifying potential systemic risks is consistent with those in other leading institutions. The Banco de España has an appropriate range of macroprudential tools at its disposal to address the identified imbalances. The toolkit includes both instruments to be activated as a result of the assessment of the financial cycle, such as the countercyclical capital buffer, and those dedicated to addressing risks to the financial system of a structural nature, such as, for instance, the capital buffers for globally and other systemically important institutions. The decision-making mechanisms leading to the adoption of the measures and their communication appear effective.

Moreover, the analysis and research underpinning the work is based on state-of-the-art methodologies. The biannual cycle of the Financial Stability Report (FSR) allows for continuous monitoring of the state of financial stability and of the appropriateness of the macroprudential measures in place, in view of the evolution of macro-financial conditions.

Lastly, the coordination of macroprudential policies with other authorities with financial stability responsibilities is appropriate. The Banco de España plays an active role in the relevant domestic, European and international bodies.

At the same time, we identified some areas that deserve consideration for further improvement. We have split our recommendations into three sections covering: i) the output produced, ii) how the output is communicated, and iii) how the output is produced (processes and resources). Our 12 recommendations are listed in bullet points below, with further elaboration in the main body of the document.

We regard the Banco de España macroprudential function's main challenge as related to processes and resources. In particular, the challenge is to ensure the adequate level and composition of resourcing while overcoming a certain siloed culture. This would allow the Bank to build further on the successes achieved so far and to establish a more solid foundation for further progress.



The output produced:

- Tailor the scenarios used in the Banco de España's annual top-down stress tests more closely to the specific vulnerabilities of the Spanish economy.
- Continue the necessary preparatory work to be ready for the introduction of borrower-based measures (BBM).
- Strengthen the analysis of the non-bank financial intermediary (NBFIs) sector.

**How the output is communicated:**

- Leverage the restructured communication teams for more targeted communication of key messages.
- Focus the FSR on key issues and aim to target it broadly. Assess success using both quantitative and qualitative metrics.
- Prepare a didactic, clear and direct communication strategy for the BBM.

**How the output is produced:**

- Explore the provision of greater high-level guidance on the work programme objectives for the area.
- Expand capacity through an increase in qualified staff.
- Evaluate internal processes with a view to streamlining them as much as possible.
- Increase the department's Research Assistant resources to undertake more routine tasks and free up economists' time.
- Enhance internal mobility to build greater cross-fertilisation of perspectives.
- Explore the establishment of cross-departmental task forces to address specific cross-cutting financial stability issues.

2 Introduction

Promoting financial stability is one of the key policy tasks of the Banco de España. A stable financial system is able to absorb the impact of shocks and the materialisation of risks without financial intermediation being adversely affected and further damage to economic activity.

The great financial crisis highlighted some important lessons. One of these was that sound microprudential supervision, which safeguards the safety and soundness of financial institutions considered on a standalone basis, was not sufficient to preserve financial stability. A more system-wide approach was also needed.

This led to the introduction of complementary macroprudential policy frameworks. Such frameworks aim to equip authorities with the appropriate mandates, analytical tools and instruments to address systemic risks,⁴ which may arise from: severe macroeconomic shocks; macrofinancial imbalances that build over several years, including in the form of excessive credit growth, leverage and maturity mismatches; and spill-overs or contagion arising from interconnections and collective behaviours.⁵

In Spain, the Banco de España is responsible for the design and implementation of the macroprudential policy for the banking sector. In order to fulfil this task, it needs an array of policy tools to address the multidimensional nature of systemic risk. These include, among others, those that affect the capital requirements of credit institutions and those that restrict lending conditions to borrowers. The function of the tools is twofold: preventing the excessive build-up of risk and smoothening the financial cycle (time dimension) and making the financial sector more resilient at any given point in time (cross-sectional dimension).

Against this background, the Banco de España has asked for an evaluation of its macroprudential policy to assess the appropriateness of its framework and potential improvements.

As defined in its terms of reference, this evaluation covers:

- The framework for the early detection of systemic risks and the monitoring of the macroprudential measures adopted.
- The methodology to select and implement the tools.
- The resources, incentives and communication policy.
- The work programme to keep the area's analytical tools and research up to date.

⁴ According to Article 3(10) of the Capital Requirements Directive (CRD), systemic risk is the “risk of disruption in the financial system with the potential to have serious negative consequences for the financial system and real economy”.

⁵ Examples include the COVID-19 pandemic or the Russian invasion of Ukraine (macroeconomic shocks); excessive growth in lending during the first decade of the 2000s leading to a significant build-up of risks, which significantly affected the financial system when they materialised (financial imbalances); and the collapse of Lehman Brothers in 2008, which led to a loss of confidence in the banking sector globally resulting in a severe liquidity crisis (contagion effect).

The members of the Expert Panel were Claudio Borio (Bank for International Settlements), Elena Carletti (Bocconi University) and Michael McMahon (University of Oxford).

The assessment, conducted from April-December 2024, involved more than 30 interviews with Banco de España staff, domestic and international institutions, and academics.⁶ It also involved reviewing internal documentation.

We, the Independent Evaluation Office, want to express our gratitude to the Banco de España staff for their enormous help. We are also grateful to the experts from external institutions for their valuable time, inputs and insights. The report naturally reflects the independent view of the Panel, which is fully responsible for its content.

The structure of the report is as follows. To set the stage, Chapter 3 provides a brief overview of the macroprudential policy framework. Chapter 4 reports on the views of external stakeholders. Chapter 5 discusses our recommendations.

(-) The views expressed in the report are those of the authors and not necessarily those of any institutions to which they are affiliated.

⁶ The panel interviewed senior management and staff from the Banco de España; representatives from the Association of Spanish Banks (AEB), the European Central Bank, the European Systemic Risk Board, the European Commission and the International Monetary Fund, as well as major banks such as BBVA and Santander as well as academics from the Universidad Carlos III de Madrid and the Pompeu Fabra University (Barcelona, Spain).

3 The macroprudential policy framework in Spain

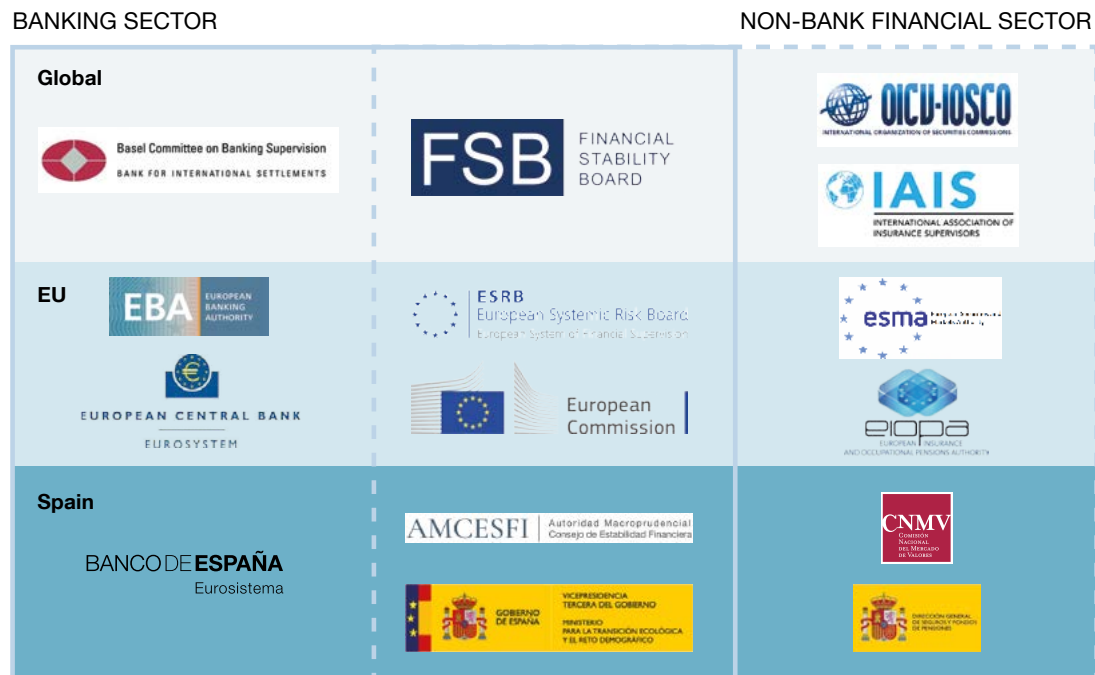
3.1 Governance: the institutional set-up

Financial stability has a multi-sectoral and international dimension that requires cooperation between different authorities at the global, European and national levels, as shown in Figure 1. Figure 2 shows the specific bodies involved in the stability of the banking sector in Spain, for which the Banco de España is responsible.

Global and European Level

At the **global level**, the Banco de España participates in macroprudential discussions at the Basel Committee on Banking Supervision (BCBS) – the standards-setting body for prudential regulation of banks, including macroprudential policy concerning the Countercyclical capital buffer (CCyB) and the Global Systemically Important Bank (G-SIB) framework. The Banco de España is also involved in the macroprudential decisions of the Financial Stability Board (FSB) – the body that, most notably, endorses the annual lists of G-SIBs prepared by the European Central Bank (ECB).

Figure 1
Main actors involved in macroprudential surveillance



SOURCE: Banco de España

At the **European level**, financial stability and macroprudential policy activities at the Banco de España are closely coordinated with the Eurosystem,⁷ especially with the ECB and the European Systemic Risk Board (ESRB):

- Under the Single Supervisory Mechanism (SSM), the Banco de España and the ECB share macroprudential responsibilities in Spain. The Banco de España engages in discussions with the ECB on macroprudential instruments, resulting in regular ex ante notifications of proposed measures. If there is disagreement, the ECB can tighten, but not loosen, policy provided the tool is regulated in European Union (EU) legislation. This top-up capacity applies to some macroprudential measures, notably to the CCyB and the systemic risk buffer (SyRB). A comprehensive list of measures under European and national legislation is provided in Annex A. The ECB's role ensures consistent application of these tools across the banking union.
- The ESRB, established in 2010, oversees macroprudential policy in the EU. It includes all EU central banks, national supervisory authorities and relevant EU institutions. It promotes discussions on systemic risk and mitigation strategies at EU level. The Banco de España notifies the ESRB of macroprudential measures in advance (intended measures) or ex post (adopted measures). The ESRB can issue recommendations and warnings to member countries to ensure effective measures and minimise cross-country spillovers.

National level

The Banco de España was designated in 2014 as the authority entrusted with drawing up and adopting macroprudential measures for the banking sector in Spain. There are two other sectoral prudential supervisory authorities: the National Securities Market Commission (CNMV) and the Directorate General of Insurance and Pension Funds (DGSFP) of the Ministry of Economy, Trade and Enterprise. To coordinate measures, the Spanish macroprudential authority (AMCESFI) was set up in 2019. Its members are senior representatives from the Ministry of Economy, Trade and Enterprise and the three sectoral supervisory authorities (the Banco de España, CNMV and DGSFP). The Banco de España's Governor and Deputy Governor represent the Bank. AMCESFI has the power to issue (non-binding) opinions, warnings and recommendations related to macroprudential analysis and policy.

As shown in Figure 2, three bodies play roles in macroprudential policy and financial stability within the Banco de España:

⁷ The Eurosystem, which comprises the ECB and the national central banks of the Member States whose currency is the euro, is the monetary authority of the euro area.

1. The [Executive Commission](#) is the body responsible for macroprudential policy decisions and works closely with the Financial Stability Committee (CEF) on macroprudential matters. It is composed of the Governor, who chairs it, the Deputy Governor and two members appointed by the Governing Council, at the proposal of the Governor, from among the Council members.⁸ The Executive Commission generally meets four times a month.
2. The [Governing Council](#), among other tasks, is involved in the approval of the Banco de España's FSR. Its members are the Governor (who chairs it), the Deputy Governor, the General Secretary of the Treasury and International Financing, the Vice-Chair of the CNMV and six members appointed for a six-year term (renewable once).⁹ The Governing Council generally meets twice a month.
3. The CEF identifies and assesses financial stability risks, develops macroprudential proposals to address them, and informs various fora and committees on the Banco de España's position.¹⁰ It is chaired by the Governor, and it includes the Deputy Governor (vice-chair), the seven Directors General and the Secretary General (members), together with the Director of the Financial Stability and Macroprudential Policy Department (FSMPD) (secretary). Other Banco de España staff and external participants may attend by invitation. It generally meets monthly and serves as a steering committee, guiding the evaluation of systemic risk, the design and application of macroprudential tools and the content of the Banco de España's financial stability publications and research.

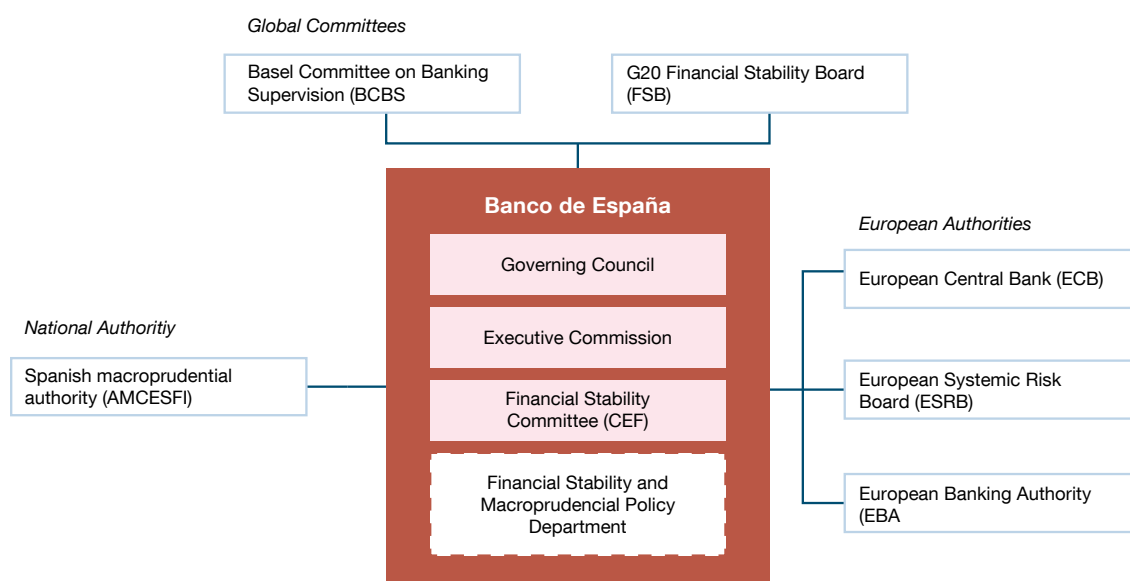
The Directorate General for Financial Stability, Regulation and Resolution (DGFSRR) submits macroprudential policy proposals to the Executive Commission for its approval, following preparatory discussions in the CEF.

⁸ The Directors General also attend the Commission meetings as non-voting participants. The General Secretary acts as non-voting Secretary to the Executive Commission

⁹ The Directors General and the staff representative also attend the Council meetings as non-voting participants. The General Secretary acts as non-voting Secretary to the Governing Council as well.

¹⁰ Banco de España Announcement 19/2020 of 30 March 2020 (internal).

Figure 2

Governance of the macroprudential policy in the banking sector in Spain: actors involved

SOURCE: Banco de España

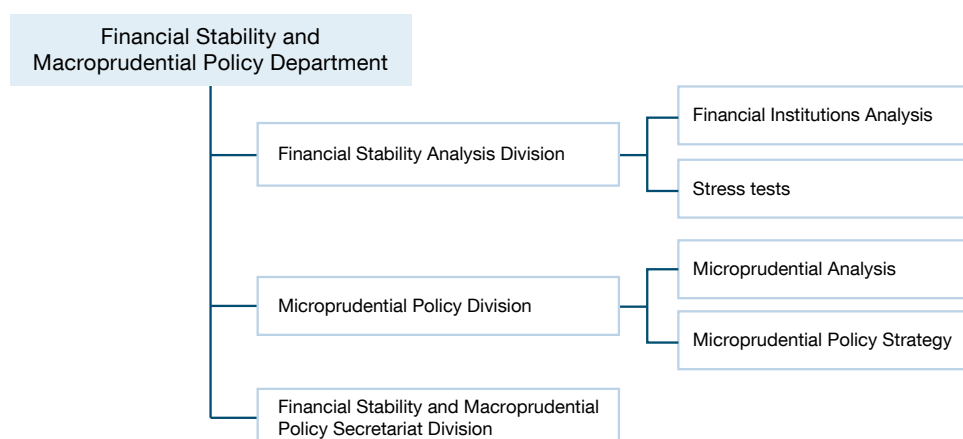
3.2 The Financial Stability and Macroprudential Policy Department

Following the example of other early adopters, such as the Bank of England and Sveriges Riksbank, the Banco de España was among the first central banks in Europe to formally set up a financial stability area. The Financial Stability Division was established in 2000 as a distinct business area within the (primarily regulatory) Financial Institutions Department of the existing Directorate General for Banking Regulation. The newly created Division was responsible for the publication of the Banco de España's [FSR and Financial Stability Review \(FSRRev\)](#). As the division grew, it became a fully-fledged Financial Stability Department in 2005, with a staff mostly composed of Master or PhD-level economists. The department's size, responsibilities and workload expanded steadily thereafter. In its first decade, the department developed an analytical and research-oriented focus. Regular Banco de España reports were complemented with research working papers and occasional papers, some of which were subsequently published in scholarly journals.

Following the great financial crisis, the department gained new responsibilities for macroprudential policy and stress testing. It was strengthened in 2015 with a new Stress Tests Unit, within the Financial Stability Analysis Division, responsible for undertaking annual top-down exercises for the Spanish banking sector. In 2017 a dedicated Macroprudential Policy Division was set up and the department's name changed to its current designation – the Financial Stability and Macroprudential Policy Department.

The department further expanded in 2019 to strengthen its analytical, coordination and secretariat functions. These functions mainly stemmed from the establishment of the CEF (internal) and AMCESFI (external). As of mid-2024, the FSMPD has three divisions and four units (Figure 3). A comprehensive overview of the Banco de España’s tasks and activities in this field can be found on a dedicated [website section on financial stability and macroprudential policy](#).

Figure 3
Organisation chart of FSMPD (as of the date of issuance of this report)



SOURCE: Banco de España

3.3 The macroprudential toolkit for the banking sector

To be effective, a macroprudential policy framework requires a toolkit. The Banco de España has extensive powers to propose, approve and implement various macroprudential requirements envisaged in European and Spanish legislation, as summarised in Annex A.

At **European level**, in 2014, EU legislation provided¹¹ a common legal framework and a set of macroprudential capital-related instruments for the banking sector. These include:

- The CCyB requirement, designed to counter procyclicality in the financial system (focusing on the time dimension).
- The additional capital buffer requirement for credit institutions identified as systemically important (targeting cross-sectional dimension).
- An SyRB requirement (potentially addressing both the above dimensions).

¹¹ CRD IV and the Capital Requirements Regulation (CRR) for the banking sector.

At **national level**, the Banco de España is empowered¹² with three additional tools:

- Limits and conditions on lending (borrower-based instruments to restrict credit to firms and households).
- A sectoral component of the CCyB.
- Limits on sectoral concentration.

Until May 2024, the Banco de España had only activated macroprudential tools that target the cross-sectional dimension of systemic risk – the buffers for Spanish Systemically Important Banks (SIBs). Since end-2015, the Banco de España has reviewed its lists of SIBs at global (G-SII) and national (O-SII) levels annually.¹³

In May 2024, having assessed that cyclical systemic risks were at an intermediate level,¹⁴ the Banco de España announced the gradual implementation of a positive CCyB rate in Q4 2024. In October 2024, the Bank formally approved a 0.5% CCyB rate for exposures in Spain starting from Q4 2024 (applicable from Q4 2025). It also signalled a potential increase to 1% by Q4 2025 (applicable from Q4 2026), depending on risk levels.

3.4 The Banco de España's analytical tools for the implementation of macroprudential policy

The FSMPD has developed a broad set of analytical tools, mostly empirical, for identifying financial stability risks and designing a response. These tools are the basis for cost-benefit analyses, for the identification and calibration of measures, and for the ex post analysis of their effectiveness. What follows illustrates the range of tools available (Annex B provides more comprehensive information).

The Forward Looking Exercise on Spanish Banks (FLESB) is a top-down methodological framework for stress testing to assess the resilience of Spanish banks in adverse scenarios. It is applied to both systemically significant and less significant banking institutions. The FLESB takes as key inputs macroeconomic scenarios characterised by a series of shocks and banking information (including granular data, such as those obtained from the credit registry of the Banco de España) available via regulatory and supervisory reporting.

Stress tests under the FLESB project the impact of macroeconomic scenarios on the balance sheet, profitability and, ultimately, the solvency of banking institutions over a three-year horizon. The evaluation of solvency is complemented with a liquidity stress test based on liquidity coverage ratio data. Stress tests under the FLESB are performed at least once a year and their aggregate results are published in the autumn edition of the FSR.

¹² Royal Decree-Law 22/2018 and Royal Decree 102/2019.

¹³ In the latest review, undertaken in 2023, the Banco de España designated four O-SIIs, of which one was also designated a G-SII, and set their corresponding buffers.

¹⁴ A 1% capital buffer is built progressively when cyclical systemic risks are at an intermediate level and released when these risks materialise. The CCyB can be increased if risks are elevated.

The scenarios and analysis are complemented and informed by the risk diagnosis obtained from a wide array of indicators. For instance, various simple statistical tools measure the risk linked to rapid and protracted credit growth (e.g. “credit gaps”). More sophisticated “at-risk” methodologies (applied to gross domestic product (GDP) growth and credit growth) provide evidence about the effects of macroprudential tools on the extremes of distributions of macroeconomic variables. Other empirical tools estimate the probability of major disruptions in the banking sector alongside the dynamics of bank capital, credit and GDP.¹⁵

3.5 Communication of policy, analysis and research

In recent years, central banks have been paying increasing attention to communicating all their policies. Macroprudential policy is no exception. Clear and consistent communication fosters transparency and can improve effectiveness by promoting awareness and understanding of the authorities’ goals, analysis and policy strategy. In a macroprudential context, communication has the following objectives:¹⁶

Notification of policy actions: policy actions must be communicated to the institutions and/or authorities to which they apply and may be relevant.

Enhancing market discipline and managing market participants’ expectations: improved risk awareness can encourage financial institutions to undertake self-corrective actions.

Fostering accountability: communication can facilitate public scrutiny.

The Bank has developed a communication strategy to help financial institutions, academia, and the public at large, to better understand the decisions adopted, not least the revised CCyB framework.¹⁷

In addition, the analytical tools used are regularly covered extensively in external communication, mainly in the FSR but also occasionally in other documents. The methodological details are usually published as part of the Bank’s Occasional Papers, Working Papers and Analytical Articles series or as articles in the FSRev or academic journals.

15 Systemic risk metrics (SRISK) gauge the potential capital deficits of banks probabilistically. The aggregate early-warning indicator, a CAMELS-based early warning system estimates the probability of financial distress in the banking sector as a function of the sector’s financial condition (crucially including solvency as a control variable) and different macroeconomic variables.

16 Extracted and adapted from [The ESRB handbook on operationalising macroprudential policy in the banking sector](#). (ESRB, 2015).

17 In May 2024, the Banco de España published a document on the revised CCyB for the general audience and an occasional paper by Estrada et al. (2024). The public was engaged through a press conference and academia and industry representatives through seminars and events, including the public appearance of the Banco de España’s Governor at IESE in Madrid.

The FSMPD, which is responsible for the bulk of the macroprudential work, naturally plays a prominent role in communication.

The department plays a key role in the FSR, a flagship publication released twice a year, that assesses the main risks and vulnerabilities of the Spanish financial system. The FSR covers the macro-financial environment, the state of the financial sector and systemic risk evaluations. It also includes special chapters on specific topics (e.g. cyber risk and crypto assets) and importantly, as mentioned in Section 3.4, presents the results of the annual top-down stress-testing exercise for Spanish credit institutions (in its autumn issue).

The FSMPD also contributes to the FSRev, a journal featuring articles on macroprudential analysis and policy, financial regulation and supervision, as well as other central banking topics. It includes peer-reviewed articles by Banco de España staff and external authors. It provides a platform for discussing emerging issues in financial stability and is published twice a year.

The FSMPD's research, supported by two well-recognised external academic advisors, has contributed to policy papers and high-profile scholarly journal publications.¹⁸ In addition, since 2017, the department has organised, jointly with the Centro de Estudios Monetarios y Financieros (CEMFI), a biennial [conference on financial stability](#).

¹⁸ Some examples of publications in top-ranked journals include Jimenez, Ongena, Peydró and Saurina (2012, 2014, 2017) in *Econometrica*, the *American Economic Review* and the *Journal of Political Economy*. Examples of other works in high-quality field journals include, among others, Mencía and Sentana (2018) in the *Journal of Business & Economic Statistics*, and Galán and Lamas (2023) in the *Journal of Money, Credit and Banking*.

4 What are others saying?

During our consultations, we met with representatives from various external bodies that engage with the Banco de España's financial stability work. These included:

International public institutions: the International Monetary Fund, ECB, ESRB and European Commission.

Private sector organisations: the Association of Spanish Banks (AEB) as well as major banks, such as Santander and BBVA.

Members of the academic community.

International public institutions emphasised that the Banco de España plays a very active and fruitful role in European-level discussions on financial stability. This has been particularly evident in its participation in the ESRB's Advisory Technical Committee, which was, until recently, chaired by the Banco de España's Governor.¹⁹ The Banco de España's expertise was uniformly well recognised. The Banco de España was regarded as "punching above its weight", given that the size of the financial stability department is smaller than those in the central banks of similarly sized economies. The analytical tools, and the macroprudential framework deployed, were described as "state-of-the-art" and well-suited to their tasks.

The communication by the Banco de España's financial stability function was viewed positively and considered above the average for European central banks. However, it was also noted that some institutions, such as the Central Bank of Ireland, the Banque de France and the Banca d'Italia, communicate more frequently.

The areas for possible improvement mentioned by our interlocutors related to aspects that go beyond the Banco de España's remit. These included questions about the unexploited potential of AMCESFI and its limited transparency (e.g. no public minutes) and data/information gaps related to the NBFIs sector.

The **banks** viewed the Banco de España as well-equipped for its analytical work and appreciated the open dialogue. During our meeting (20 September 2024), there were concerns regarding the lack of publication of responses to policy consultations. Subsequently, however, the Banco de España published a summary of the industry feedback to the CCyB draft measure together with an explanation of the extent to which it had been incorporated in the final decision ([posted on the Banco de España website on 1 October 2024](#)).

¹⁹ As of the date of issuance of this report, Pablo Hernández de Cos remains ATC Chair; his second three-year mandate concludes in June 2025.

The banks also highlighted areas for improvement that are not fully under the Banco de España's control. They noted the complexity of the supervisory structure in Europe, including beyond the banking sector and that they interact with AMCESFI only through its individual constituent bodies.

The **academics** to whom we spoke particularly complimented the high-quality of data available at the Banco de España, such as the comprehensive credit register information. Together with the possibility of approaching important policy questions, this has made engagement with the Banco de España a valuable research exercise. The academics said that such engagement with the academic research community had improved significantly in the last decade. They were hopeful that, as the FSMPD expands its research capabilities, further research collaboration would occur.

5 Challenges and recommendations

Overall, we assess the Banco de España's macroprudential framework policy to be effective, in terms of both design and implementation. Our own analysis concurs with the prevailing opinion among external observers, who hold the work of the Banco de España in high regard.

At the same time, given the challenges faced, we have identified a number of areas needing further attention. The objective is to build further on the successes achieved so far and establish a more solid foundation for future progress.

To organise the discussion, we have grouped the challenges and recommendations into three broad categories:

- The output produced.
- How the output is communicated.
- How the output is produced (processes and resources).

Under each category, we identify specific issues and the corresponding recommendations.



5.1. The output produced

The range and quality of the output produced is the area in which the Banco de España is performing most effectively. The recommendations below concern mainly some specific items and aspects that are bound to become more important in the future.

Stress tests

Issue 1.1: Stress tests are a useful tool to evaluate the resilience of Spain's banking system and a key input to determine the so-called Pillar 2 guidance capital requirement.²⁰ There are currently two separate stress testing exercises:

- The European Banking Authority (EBA), in cooperation with the ECB, ESRB and national supervisory authorities (including the Banco de España), conducts EU-wide stress tests every second year that cover the largest banks directly supervised by the ECB.
- In addition, as mentioned in Section 3.4, the Banco de España conducts annual top-down stress tests on all Spanish banks under the FLESB framework.

²⁰ These recommendations indicate the additional capital that a bank is expected to maintain on top of the binding capital requirements to absorb potential losses that could arise in severe adverse scenarios.

The main tools used in the EBA and the Banco de España stress testing exercises differ and the scenarios on which the stress tests are based may also be different.²¹ In those years in which the EBA conducts a stress test exercise, the Banco de España includes the common scenarios of the EBA tests into its own tests under the FLESB, which it then publishes in the autumn issue of the FSR. The Bank can build additional scenarios that are examined with a methodology developed in house²², representing significant added value.²³ While the Bank does use these valuable options, there is room for exploiting them further.

Recommendation 1.1:

- Tailor the scenarios used in the stress tests under the FLESB more closely to the specific vulnerabilities of the Spanish banks. For example, they should take into account more systematically the idiosyncratic features of the Spanish banking system, such as the high exposure to specific emerging market economies, including many Latin American countries and Türkiye, and to advanced economies other than Spain, such as the United States and the United Kingdom.¹

¹ Naturally, we agree with current plans to improve the methodology of the stress tests, e.g. modelling additional risk dimensions, such as liquidity and exchange rate risk, improving the analysis of the two-way feedback between the financial system and the real economy and incorporating that between banks and other financial intermediaries (see also below).

Borrower-based measures

Issue 1.2: As of the date of issuance of this report, BBMs are not yet in place in Spain.²⁴ BBMs, unlike capital-based measures, operate by constraining borrowers' balance sheets directly. Examples include limiting how much households can borrow in relation to the value of the property used as collateral (loan-to-value ratio) or to their income (loan-to-income ratio). The empirical evidence confirms that these measures are more effective than capital requirements in constraining the build-up of financial imbalances. This is especially the case for limits related to incomes/cashflows, which are less procyclical than collateral valuations (unless adjusted accordingly). Examining the pros and cons of alternative designs is critical, while the trickier political economy issues that these measures raise (see below) put a premium on the thoroughness and quality of the underlying analysis.

²¹ The tests use Banco de España's macroeconometric model to translate the menu of shocks constituting the adverse scenarios into macroeconomic impacts, and use the same parameters (probability of default, loss given default, etc.) to determine the associated expected losses of banks.

²² Such idiosyncratic alternative scenarios should, in any case, fulfil certain characteristics: they should be realistic diverse and incorporate a range of risk factors that is as broad as possible. Furthermore, they should have a mostly forward-looking nature to appropriately cover potential vulnerabilities. Lastly, they should consider the lessons from past crisis episodes insofar as they contribute to better capture vulnerabilities going forward.

²³ The availability of a top-down supervisory framework also adds value by allowing a complementary assessment of banking sector resilience and the calibration of macroprudential measures (e.g. the CCyB requirement).

²⁴ This evaluation does not assess the merit of incorporating BBMs in the macroprudential toolkit available to the Banco de España. The final decision on whether to include them or not is beyond the scope of this evaluation and should be taken by the relevant bodies of the Banco de España.

Recommendation 1.2:

- Continue the necessary preparatory work for the introduction of BBMs should their use become necessary. As for any other tool, this would include all the analysis required for ex ante calibration and ex post effectiveness assessment.
- As part of that preparation, consider examining the trade-off between discretionary adjustments and specific design features of the BBMs that can enhance the built-in stabilising properties of the tools.¹

¹ BBMs do not need to be actively adjusted in a discretionary fashion. Lower levels for the ratios or, in the case of collateral, less procyclically sensitive valuation methods can reduce the sensitivity of credit extension to changes in incomes/cashflows and asset prices. Less frequent adjustments alleviate the political economy constraints that encourage a certain "inaction bias". The analogy here is with the forms of dynamic provisioning pioneered by the Banco de España or stressed loss given defaults (LGDs) in the case of capital requirements. See, e.g., Borio, Furfine and Lowe (2001) and Borio (2011).

Non-bank financial intermediaries

Issue 1.3: NBFIs have been gaining ground within the financial system globally. They provide an alternative to bank financing but are also deeply interconnected with banks. The connections are either direct, through balance sheet linkages (e.g. funding each other, guarantees) and the provision of services (e.g. market-making), or indirect (e.g. common exposures to the same sectors, instruments). While the Spanish NBFIs sector is less developed than in some other countries, it has also grown in significance. Even though the Banco de España is not generally responsible for its regulation and supervision, it is (or can become) a prime source of analytical expertise on the sector, whose relevance for financial stability is bound to grow further.

Recommendation 1.3:

- Strengthen the analysis of the NBFIs sector and explore the possibility of enhancing further the mechanisms within AMCESFI to boost that analysis and to design policy responses (e.g. the resourcing of joint task forces, improving data-sharing protocols).

5.2. How the output is communicated

The Banco de España has acknowledged the importance of communication and has set up a bank-wide communication strategy. This has shifted the emphasis from merely disseminating publications to using tailored communication to target audiences and using feedback for fine-tuning purposes. The target audiences include: the regulated institutions, the media and wider public and the academic community. A key question is whether the target audiences are reached effectively, with clear and convincing messages crafted by fully exploiting the comparative advantage and input of the Bank's relevant business areas.

Coordination with the Transparency and Communication Department

Issue 2.1: Within the Banco de España, DGFSRR staff have typically performed most of the communication-related tasks. For instance, for the FSR this includes the preparation of the Director General's presentations and video interviews, as well as press releases. The Transparency and Communication Department's involvement has been mostly limited to purely technical aspects, such as setting-up the press conference. This assignment of responsibilities does not sufficiently exploit the comparative advantage of the two departments.

Recommendation 2.1

- Given the newly created structure for communication activities, seek to recalibrate the roles of the two business areas. The economists should mainly concentrate on developing the analytical substance and key messages, while the Transparency and Communication teams should focus on the specific communication materials.
- A layered approach targeting broader audiences could be considered.

The Banco de España's publications and impact assessment

Issue 2.2: The FSR contains a comprehensive, backward and forward-looking analysis of financial stability issues and policies. Its completeness and depth have been unanimously praised by the stakeholders we canvassed. However, the publication is quite lengthy and the language sometimes excessively complex for some of the target audiences. The Banco de España undertakes tailored presentations of this work to academia, analysts, banks and media. Communication with the wider public, as a non-expert audience, is mainly indirect through the media, except for the use of social networks (e.g. X, LinkedIn) and video content on the Banco de España website. Moreover, some of the topics covered in the FSR are also discussed in at least one other high-profile publications, raising questions about message consistency and salience.

Recommendation 2.2:

- Consider reducing the length of the FSR by focusing on key issues.
- Explore the possibility of simplifying the language without losing rigour. As with Recommendation 2.1, the Transparency and Communication Department would take the lead.
- The layered approach, as suggested in Recommendation 2.1, should be seen as a complement to, not a substitute for, shortening the FSR and simplifying the language.

- Re-examine its relationship with another overlapping flagship publication – the Report on the Financial Situation of Households and Firms produced by the Directorate General Economics.
- Monitor success of these changes by complementing current quantitative impact metrics (e.g. number of webpage hits, media coverage) with focus groups and surveys conducted immediately after a communication activity.

Communications with key stakeholders

Issue 2.3: The potential activation of the BBMs indicated in Issue 1.2 raises specific communication challenges, as they affect borrowers more directly and impact their access to credit. This would also require communicating more actively with households and the general public. While fresh memories of the 2008 Spanish housing bust may help, BBMs are likely to elicit stronger public resistance.

Recommendation 2.3:

- If such BBMs are eventually activated, ensure a targeted, didactic and clear communication strategy is prepared with a view to developing a convincing justification for their activation and explanation of their operation. It would be helpful to build on the experiences from other jurisdictions that have already adopted such measures.



5.3. How the output is produced

The Panel found that the most significant improvements related to how the output is produced. This concerns, in particular, resource constraints, the skill mix and limited cross-departmental mobility and interactions. Of course, feasible changes will need to consider the external constraints on staffing decisions stemming from institutional and legal impediments (e.g. the possible need to enact changes in collective bargaining agreements, labour laws and internal hiring rules). What follows provides only a general direction of travel.

Planning topics: top-down versus bottom-up approach

Issue 3.1: Views were mixed about the governance of the roadmap for future work. In general, the design and contents of the work programme submitted annually to the CEF were judged favourably, as was the discussion in that forum leading to the programme's adoption. However, there is a question of whether work priorities rely excessively on a bottom-up approach.

Recommendation 3.1:

- Explore whether, through discussion at the CEF level, there is scope to provide greater guidance on the high-level work programme objectives for the whole FSMPD. This could also help align the work that touches on macroprudential issues in other business units of the Bank, which is especially valuable in a context of tight resource constraints (see below).

Overall resources available

Issue 3.2: The size of staff, despite expansion, has not kept pace with the significant increase in the number and importance of the FSMPD's policy tasks. As an example, the findings of an internal Banco de España study illustrate the point. The study compares the size of the staff within the financial stability area to the total staff in the four largest central banks of the euro area (number of employees in full-time equivalents normalised by each country's key in the capital of the ECB). It finds that the Banco de España has far fewer staff than comparable central banks (i.e. the Deutsche Bundesbank, the Banque de France and the Banca d'Italia). This has resulted in a sub-optimal balance between regular and sometimes urgent tasks, including of an administrative/routine nature, and those of a longer-term nature, such as underlying analysis. Similarly, growing membership of international groups has made it challenging to maintain an active presence there.

It would be important to operate with some buffers or safety margins to set the current high-quality output on a more sustainable basis and improve it further. For example, such a buffer would also allow for work to deliver stress testing scenarios with new characteristics, such as the recent thematic stress tests on climate risks or on cyber resilience, which are otherwise difficult to do with current resourcing.

Recommendation 3.2:

- Add more qualified staff to the department so that its size reaches a level more in line with the demands and with that of other leading central banks. Senior management is best placed to assess the specific size, speed (consistent with absorption capacity), skill balance (see below) as well where the new staff should come from. For instance, part of the increase could take place by rebalancing the size across departments and/or transferring staff across them. Transfers would also help to address the current low mobility rate (see also below). If specific expertise is not available, the Banco de España could rely further on external consultants or PhD students for specific projects.

Issue 3.3: The adoption of macroprudential decisions triggers a process with a considerable administrative burden (initial elaboration and notification of the proposal, approval and implementation). For instance, while important and appropriate, the broad-based consultation with stakeholders linked to the adoption of new measures (e.g. the recent revision of the CCyB framework) can be quite time-consuming. Given the resource intensity and nature of the tasks involved, it is important that the overall process is as efficient as possible. Although some of the steps required are beyond the Banco de España's control, others are not.

Recommendation 3.3:

- Carry out an internal evaluation of the whole process leading to the adoption of macroprudential decisions, both internal and external, with a view to streamlining it as much as possible.

Composition of resources

Issue 3.4: Managers and more senior economists engage in tasks, including data curation, visualisation and analysis, that could be undertaken by junior staff, often called research assistants (RAs) in other institutions. However, the share of such staff within FSMPD staff is very low.

Recommendation 3.4:

- Increase the department's RA resources. Such an expansion requires a creative approach given the constraints set by current Spanish labour legislation, which only allows hiring RAs for up to one year – a sub-optimal period to become fully productive for core tasks.¹

¹ It was mentioned to us that the Science Law could provide possibilities to address this. As we were not aware of the details of this Law, we leave it for management to fully explore the opportunities in this respect.

Internal mobility

Issue 3.5: Despite some improvements, internal mobility in the Banco de España remains very low. Tenure length in the same job for a large proportion of employees is quite long and cross-departmental moves are comparatively rare. This is especially an issue in an area such as financial stability, where the relevant expertise cuts across macroeconomics, financial institutions and markets and where it is essential to combine analytics with sound institutional knowledge. Cross-fertilisation of perspectives is of the essence. While some can be achieved through joint task forces (see below), from a longer-term perspective there is no substitute to having staff work in different areas of the Bank. Greater mobility not only favours professional

development, it also enhances job satisfaction (as reflected in a Q1 2024 survey of Banco de España staff) and improves talent retention. It is critical to address a certain silo mentality.

Recommendation 3.5:

- Enhance systematically internal mobility by putting in place the appropriate set of incentives. This could take a variety of forms and would need to address the various constraints in place, taking into account starting conditions. It would include having mobility, not least within departments, as an important consideration in promotions and would require adjusting staff's expectations from the time they join the institution.¹ We recognise the difficulties involved in changing a long-established culture, but consider this a critical step for the long-term quality of the output produced and for job satisfaction. The tone would have to be set from the very top.

¹ An appropriately calibrated set of incentives could also be extended to programmes designed to promote external mobility (e.g. to international institutions or other central banks that perform a similar function). While such programmes are in place, we understand that the take-up is low because incentives are not aligned.

Cross-departmental collaboration

Issue 3.6: The silo mentality also limits the degree of collaboration across departments at a working level. For example, despite well-established procedures for the preparation of the FSR, such as the Editorial Committee or in other specific contexts,²⁵ strengthening the sense of joint purpose and common ownership is necessary to fully exploit potential synergies. More generally, unexploited cooperation possibilities also exist for the various activities and outputs of the FSMPD, especially with the Directorates General Economics, Banking Supervision and Operations, Markets and Payment Systems. Financial stability issues inevitably cut across them. While longer-term, greater mobility remains critical and further use of task forces, with representatives from the various departments and underpinned by an appropriate set of incentives, can play a key complementary role. In the near-term, it is also the quickest way of fostering a common language.

Recommendation 3.6:

- Explore setting up more systematically cross-departmental task forces at a working level to address specific cross-cutting financial stability issues. The output would feed into the preparation of policy decisions and flagship publications.

²⁵ Other examples include cooperation in the sub-committees of the CEF (e.g. on real estate analysis) or the top-down stress tests.

Annex A – The Banco de España’s macroprudential toolkit for the banking sector

Macroprudential tools available for the Banco de España to address systemic risks in the Spanish banking sector and envisaged in the European and Spanish legislations:

Table A.1
Macroprudential tools provided for in EU legislation (CRR/CRD)

Risk dimension	Tool	Legal basis	Description
Time	CCyB	CRD: Articles 130, 135-140	Additional capital buffer to enhance resilience against cyclical systemic risks and mitigate them.
Cross-sectional	Buffer for systemically important institutions (SIs)	CRD: Article 131	Additional capital buffers to internalise the externalities created by systemically important institutions, at both global (G-SIs) and national (O-SIs) levels.
Both	SyRB	CRD: Articles 133-134	Capital buffer to prevent and mitigate systemic risks not covered by the CCyB or G-SII/O-SII buffers.
Both	“Flexibility package”	CRR: Article 458	Stricter requirements for capital, conservation buffer, liquidity, large exposures, information and risk weightings.
Both	Higher risk weightings for real estate exposures (standardised approach)	CRR: Article 124	Tools for the real (residential and commercial) estate sector, aimed to increase risk-weighted asset density and thereby capital requirements.
Both	Higher LGDs for real estate exposures (IRB approach)	CRR: Article 164	

Table A.2
Macroprudential tools provided for only in Spanish legislation (Law 10/2014)

	Tool	Legal basis	Description
Both (mainly time)	CCyB applicable to exposures to a specific sector (sectoral CCyB (SCCyB))	Articles 43 to 49	Supplementary CCyB requirement applicable to any sector with a systemic dimension, consistently with the BCBS Guiding Principles of 2019.
Both (mainly time)	Limits on the conditions governing lending and other operations by credit institutions	Article 69 quater	BBMs. The impact of indebtedness on the financial position of agents may be gauged by, among other indicators, the collateral provided (loan-to-value), the share of their disposable income that borrowers can use to repay the debt (debt service-to-income), the level of debt as a percentage of income (debt-to-income) and the maturity of the loan.
Both	Limits on the concentration by credit institutions in a specific sector of economic activity (sectoral concentration limits)	Article 69 ter	SCLs, where concentration is defined in terms of the ratio of sectoral exposure relative to Common Equity Tier 1 capital. The sectors must have a systemic dimension (consistent with the SCCyB).

Annex B – Extended description of the analytical tools of the Financial Stability and Macprudential Policy Department

The Banco de España's tools for financial stability analysis and the calibration of macroprudential policy include the following:

- a. **The FLESB is a top-down methodological framework developed by the FSMPD for stress testing to assess the resilience, mainly in terms of solvency,**²⁶ of Spanish banking institutions in adverse macroeconomic scenarios over a three-year horizon. The tests are currently conducted at least once a year and the results feed into the macroprudential supervisory process and also the Supervisory Review and Evaluation Process of less significant institutions.²⁷ In addition, the tool is used to carry out specific analyses, monitoring exercises and the calibration of macroprudential tools.
- b. **Pass-through of interest rates.** The pass-through of changes in policy interest rates to changes in bank interest rates is closely monitored as part of the regular analysis and monitoring of financial stability risks.
- c. **Assessment of the vulnerability of firms and households.** Given the potential impact on credit demand and credit quality (via non-performing loans, i.e. the shares of Stage 2 and Stage 3 loans), the financial strength of firms and households is monitored with particular attention paid to intra-sector heterogeneity, for example, by sector of activity (firms) or income percentile (households). This analysis is carried out in conjunction with the Macro-financial Analysis and Monetary Policy Department.
- d. **Indicators to assess systemic risks levels in financial markets.** A systemic risk indicator (SRI) in financial markets is regularly monitored to detect signals of contemporaneous stress. The SRI adapts the methodology of Holló, Kremer and Lo Duca (2012) to Spain. In addition, a systemic risk indicator (SRISK) has been developed to assess the contributions of Spanish and EU banks to systemic risk (Broto, Fernández-Lafuerza and Melnychuk, 2022, who follow the methodology of Brownlees and Engle, 2017). Furthermore, these indicators are complemented with an analysis of the evolution of implied probabilities of default of European listed firms (see Box 3.1 in the Financial Stability Report. Spring 2021).
- e. **Indicators to assess the evolution of cyclical systemic risks.** The financial cycle is assessed through a dashboard of 16 indicators, complemented with quantitative and qualitative information (Banco de España, 2024), with particular attention paid to the credit-to-GDP gap and the output gap (Estrada et al. (2024).

²⁶ The framework also considers a simplified complementary liquidity exercise, but its core is the solvency module.

²⁷ For more information, see Box 2.2 Forward-looking assessment of the Spanish banking system's resilience.

- f. **Real estate market and house price imbalances.** Conditions in the real estate market are analysed. Specifically, real estate price imbalances are estimated through four indicators that seek to capture deviations in residential real estate prices from their long-term level.
- g. **Lending standards are monitored.** The analysis draws on granular quarterly information from the credit register and a very rich transaction-level database from the Spanish association of property registrars to obtain the distributions of loan-to-value, loan-to-income and loan service-to-income ratios, maturities and prevailing interest rates for new mortgages.
- h. **Supply and demand factors in the evolution of credit.** The Banco de España regularly estimates how supply and demand factors affect the annual growth of new credit to households and non-financial corporations (NFCs) through structural VAR models, which treat the evolution of these variables jointly together with lending-deposit spreads. The analysis is conducted by separately modelling lending to households and to NFCs. This exercise is complemented with an analysis of the Bank Lending Survey.
- i. **CAMELS-based early warning system (CREWS).** The Banco de España has developed an aggregate early-warning indicator of systemic risk in the banking sector. The indicator is derived from a logistic model of bank distress events conditional on the variables in the CAMELS rating (related to banks' capital adequacy, asset quality, management, earnings, liquidity and sensitivity) and complemented with macroeconomic aggregate variables (Galán, 2021).
- j. **At-risk models.** The Banco de España uses growth-at-risk and credit-at-risk models for both the cost-benefit analysis of macroprudential tools and the identification of macroprudential stance. These models use quantile regression analysis to predict the tail risk of a certain variable of interest rather than focusing on the conditional mean (Galán, 2020).
- k. **Monitoring developments in banks' capital ratio relative to an equilibrium level.** The Banco de España developed a time-series approach to estimate the equilibrium capital ratio for the Spanish banking system (with deviations from equilibrium triggering reversals to this level). Then, the sensitivity of GDP growth to movements in the gap between the capital ratio and its equilibrium level is estimated accounting for different phases of the financial cycle. For example, elevating capital requirements increases the equilibrium capital ratio and makes this gap more negative, potentially inducing less credit growth, which is then transmitted into lower GDP growth. See details in Estrada et al., (2024).
- l. **Dynamic stochastic general equilibrium models are a complementary theoretical methodology to study the CCyB's impact on the Spanish economy.**

The model is based on Abad, Martínez-Miera and Suarez (2024). Though more theoretical than the other, empirical, tools, this model provides a useful complement to them.

The FSMPD continually refines these methodologies and develops additional analytical tools. For instance, work is ongoing exploring the link between liquidity and solvency risks (through the realisation of latent losses in amortised cost securities following a liquidity shock) and their distribution across different institutions. Yet another strand seeks to better understand credit dynamics (sectoral specialisation) and credit quality. The medium-term research agenda includes the incorporation to the stress test of feedback effects between the real and the banking sector, and funding interconnections. Also, there are plans for the implementation of models for the interconnections of banks and NBFIs.

REFERENCES

- Abad, Jorge, David Martínez Miera and Javier Suarez. (2024). “A macroeconomic model of banks’ systemic risk taking.” Working Papers, *forthcoming*, Banco de España
- Adrian, Tobias, Nina Boyarchenko and Domenico Giannone. (2019). “Vulnerable Growth”. *American Economic Review*, Vol. 109, pp. 1263-1289. <https://doi.org/10.1257/aer.20161923>
- Borio, Claudio. (2011). “Implementing a macroprudential framework: blending boldness and realism”, *Capitalism and Society*.
- Borio, Claudio, Craig Furine and Philip Lowe. (2001): “Procyclicality of the financial system and financial stability: issues and policy options”, *BIS Papers*, no 1, March.
- Broto, Carmen, Luis Fernández Lafuerza and Mariya Melnychuk. (2022). “Do buffer requirements for European systemically important banks make them less systemic?”. Working Papers, 2243, Banco de España. <https://doi.org/10.53479/24876>
- Banco de España (2024). “[Revision of the framework for setting the countercyclical capital buffer in Spain](#)”. Briefing note.
- Brownlees, Christian and Robert Engle. (2017). “SRISK: a conditional capital shortfall measure of systemic risk”. *The Review of Financial Studies*, 30, pp. 48-79. <https://www.esrb.europa.eu/pub/pdf/wp/esrbwp37.en.pdf>
- Cuadrado, Pilar and Enrique Moral-Benito. (2016). “Potential growth of the Spanish economy”, *Occasional Papers*, 1603, Banco de España. https://repositorio.Banco_de_España.es/handle/123456789/6355
- ESRB. (2021). “A framework for assessing macroprudential stance”, Report of the Expert Group on Macroprudential Stance – Phase II (implementation), European Systemic Risk Board, December. https://www.esrb.europa.eu/pub/pdf/reports/esrb.report_of_the_Expert_Group_on_Macroprudential_Stance_Phase_II202112~e280322d28.en.pdf
- Estrada, Ángel, Carlos Pérez Montes, Jorge Abad, Carmen Broto, Esther Cáceres, Alejandro Ferrer, Jorge E. Galán, Gergely Ganics, Javier García Villasur, Samuel Hurtado, Nadia Lavín, Joël Marbet, Enric Martorell, David Martínez Miera, Ana Molina Iserte, Irene Pablos and Gabriel Pérez Quirós. (2024). “Analysis of cyclical systemic risks in Spain and of their mitigation through countercyclical bank capital requirements”. *Occasional Papers*, 2414, Banco de España. <https://doi.org/10.53479/36713>
- Galán, Jorge E. (2019). “Measuring Credit-to-GDP gaps: the Hodrick-Prescott filter revisited”. *Occasional Papers*, 1906, Banco de España. https://repositorio.Banco_de_España.es/handle/123456789/8807

- Galán, Jorge E. (2020). “The benefits are at the tail: Uncovering the impact of macroprudential policy on growth-at-risk”, *Journal of Financial Stability*, 100831. <https://doi.org/10.1016/j.jfs.2020.100831>
- Galán, Jorge E. (2021). “CREWS: a CAMELS-based early warning system of systemic risk in the banking sector”. Occasional Papers, 2132, Banco de España. <https://repositorio.bde.es/handle/123456789/19392>
- Galán, Jorge E. and Matías Lamas Rodríguez. (2023) “Beyond the LTV Ratio: Lending Standards, Regulatory Arbitrage, and Mortgage Default”, *Journal of Money, Credit and Banking*, 13041. <https://doi.org/10.1111/jmcb.13041>
- Holló, Dániel, Manfred Kremer and Marco Lo Duca. (2012). “CISS – A Composite Indicator of Systemic Stress in the Financial System”, Working Paper Series, 1426, Banco de España. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1426.pdf>
- Jiménez Zambrano, Gabriel, David Martínez Miera and José Luis Peydró. (2020). “Who truly bears (bank) taxes? Evidence from only shifting statutory incidence”. Working Paper, 2040, Banco de España. <https://repositorio.bde.es/handle/123456789/14492>
- Jiménez Zambrano, Gabriel, Luc Laeven, David Martínez Miera and José Luis Peydró. (2023). “Public guarantees and private banks’ incentives: evidence from the COVID-19 crisis”. Working Paper, 2318, Banco de España. <https://repositorio.bde.es/handle/123456789/30812>
- Jiménez Zambrano, Gabriel, Steven Ongena, José Luis Peydró, and Jesús Saurina. (2012), “Credit Supply and Monetary Policy: Identifying the Bank Balance-Sheet Channel with Loan Applications”, *American Economic Review* - 102 (5), pp. 1-30. <https://www.aeaweb.org/articles.php?doi=10.1257/aer.102.5.2301>
- Jiménez, Gabriel, Steven Ongena, José Luis Peydró, and Jesús Saurina. (2014), Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk?”, *Econometrica*, 82 (2), 463-505. <https://onlinelibrary.wiley.com/doi/10.3982/ECTA10104>
- Jiménez Zambrano, Gabriel, Steven Ongena, José Luis Peydró, and Jesús Saurina (2017) “Macroprudential Policy, Countercyclical Bank Capital Buffers, and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments”, *Journal of Political Economy*, 125(6), 2126-2177. <https://www.journals.uchicago.edu/doi/full/10.1086/694289>
- Lamas Rodríguez, Matías, Mari Luz Garcia Lorenzo, Manuel Medina Magro and Gabriel Perez Quiros. (2023). “Impact of climate risk materialization and ecological deterioration on house prices in Mar Menor, Spain”, *Scientific Reports*, Vol 13. <https://doi.org/10.1038/s41598-023-39022-8>
- Mencia, Javier and Enrique Sentana. (2017). “Volatility-Related Exchange Traded Assets: An Econometric Investigation”, *Journal of Business & Economic Statistics*, Vol 36 Issue 4, 599-614 <https://amstat.tandfonline.com/doi/full/10.1080/07350015.2016.1216852>

GLOSSARY

AEB	Association of Spanish Banks (Asociación Española de Banca)
AMCESFI	Spanish macroprudential authority (Autoridad Macroprudencial Consejo de Estabilidad Financiera)
AMCESFI FSTC	AMCESFI Financial Stability Technical Committee
BBM	Borrower-based measures
BCBS	Basel Committee on Banking Supervision
CCyB	Countercyclical capital buffer
CEF	Financial Stability Committee
CNMV	National Securities Market Commission (Comisión Nacional del Mercado de Valores)
CRD	Capital Requirements Directive
CREWS	CAMELS-based early warning system
CRR	Capital Requirements Regulation
DGFSRR	Directorate General Financial Stability, Regulation and Resolution
DGSFP	Directorate General of Insurance and Pension Funds (Dirección General de Seguros y Fondos de Pensiones)
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
FLESB	Forward Looking Exercise on Spanish Banks
FSB	Financial Stability Board
FSMPD	Financial Stability and Macroprudential Policy Department
FSR	Financial Stability Report
FSRev	Financial Stability Review
GDP	Gross domestic product
G-SIB	Global systemically important bank
G-SII	Global systemically important institution
LGD	Loss given default
NBFI	Non-bank financial intermediary
NFCs	Non-financial corporations
O-SII	Other systemically important institution
RA	Research assistant
SCCyB	Sectoral countercyclical capital buffer
SCL	Sectoral concentration limit
SIB	Systemically important bank
SRI	Systemic risk indicator
SyRB	Systemic risk buffer