The participation of the CNMV in macro-prudential policy

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Abbreviations

AIF	Alternative Investment Funds
AMCESFI	Macro-prudential Authority Financial Stability Council
ATC	Advisory Technical Committee
BME	Bolsa y Mercados Españoles
BMR	Benchmarks Regulation
Brexit	British exit
CCB	Countercyclical buffer
CDS	Credit Default Swap
CEMA	Committee for Economic and Markets Analysis
CER	Committee on Emerging Risks
CESFI	Financial Stability Committee
CESR	Committee of European Securities Regulators
CMG	Crisis Management Group
CNMV	Comisión Nacional del Mercado de Valores (Spain's National Securities Market Commission)
CPMI	Committee on Payments and Market Infrastructures
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
DTV	Debt to value
EBA	European Banking Authority
CCP	Central Counterparty
ECB	European Central Bank
Ecofin	Economic and Financial Affairs Council
EMIR	European Market Infrastructure Regulation
Eonia	Euro OverNight Index Average
ESMA	European Securities Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
Euribor	European Interbank Offered Rate
Eurostoxx 50	EURO STOXX 50 Index
FASB	Financial Accounting Standard Board
FinTech	Financial Technology
IMF	International Monetary Fund
FROB	Fund for Orderly Bank Restructuring
FSAP	Financial Sector Assessment Program
FTSE	Financial Times Stock Exchange
G20	Group of Twenty
GIEF	Internal Financial Stability Group
G-SII	Global Systemic Institutions
IASB	International Accounting Standards Board
Ibex	Spanish Stock Exchange Index
ICO	Initial Coin Offering
IIC	*Institución de inversión colectiva*
IOSCO	International Organization of Securities Commissions
CPI	Consumer Price Index
Libor	London Interbank Offered Rate
LMV	*Ley del Mercado de Valores* (Securities Market Act)
LTV	Loan to value
MiFID	Markets in Financial Instruments Directive
MiFIR	Markets in Financial Instruments Regulation
SSM	Single Supervisory Mechanism
NGFS	Network for Greening the Financial System
OFI	Other Financial Institutions
OTC	Over The Counter
PER	Price-to-earnings ratio
GDP	Gross Domestic Product
RegTech	Regulatory Technology

ReSG	Resolution Steering Group
IR	Internal Regulation
S&P 500	Standard & Poor's 500 Index
JEGS	Expert Group on Shadow Banking
SFT	Securities Financing Transactions
SFTR	Securities Financing Transactions Regulation
SGIIC	*Sociedad gestora de instituciones de inversión colectiva* (UCITS management company)
SRB	Systemic Risk Buffer
SupTech	Supervisory Technology
TLAC	Total Loss-Absorbing Capacity
Topix	Tokyo Stock Price Index
UCITS	Undertakings for Collective Investment in Transferable Securities

Executive summary

The aim of macro-prudential policy is to preserve the stability of the financial system as a whole by strengthening its resilience and decreasing the build-up of systemic risks. A stable financial system is one that shows robustness and efficiency and which facilitates the transfer of resources between entities, from savers to borrowers, thus ultimately guaranteeing a sustainable contribution of financial activity to economic growth.

Financial stability policies have traditionally focused on the banking system, paying particular attention to the size and solvency of entities on an individual level. However, the last financial crisis revealed that other agents and activities performed outside the banking business might be a source of systemic risk in certain circumstances. In this new, more holistic approach, other dimensions started to be considered in addition to the size of the participants, such as the interconnectedness among agents, substitute products and concentration, lack of transparency, the behaviour of economic agents and issues relating to asymmetric information and moral hazard.

As a result of the crisis, the G20 leaders agreed a series of reforms aimed at strengthening the global financial system. Two of these reforms are particularly noteworthy from the point of view of this report: one in order to make shadow banking[1] activities and entities (not only banking entities) more resilient and another that establishes the need to build an institutional and regulatory framework to detect and analyse systemic risks and to improve the oversight of the system and the use of appropriate instruments.

The design of an appropriate macro-prudential policy makes it necessary, on the one hand, to establish intermediate objectives linked to the ultimate objective of this policy and, on the other hand, to have the right tools available to authorities for achieving these intermediate objectives. The intermediate objectives are evaluated using multiple indicators of various types. In the field of banking, this conceptual framework is clear, with its intermediate objectives including limiting the growth of lending and borrowing, transforming maturities and issues relating to incentives and moral hazard. The most important tools of this type are countercyclical capital buffers, capital conservation buffers and systemically important institution buffers.

A great deal of progress has been made in the non-banking sector over recent years, particularly in work on analysing and designing indicators relating to risk identification. However, as in the case of the banking sector, there is also a great deal of room for improvement in tools of this type. With regard to this last point, a detailed analysis should be carried out of the tools that are currently available to authorities (in many cases originally micro-prudential tools, which are often given a macro-

1 See debate that took place regarding suitability of such name in the introduction of this report.

prudential application), their effectiveness and efficiency and, consequently, any need to modify them or establish new tools. Within the European framework, the European Systemic Risk Board (ESRB) was set up in 2010 to be responsible for macro-prudential oversight of the European Union's financial system and for preventing and mitigating systemic risk. Its activity covers the financial system as a whole: banks, insurance companies, asset management, market infrastructures and other financial institutions and markets, and it is able to issue warnings and recommendations when it deems this appropriate.

Like other supervisory authorities of securities markets and in accordance with the Securities Market Act, the CNMV did not originally have a specific legal mandate related to the oversight of systemic risk and the maintenance of financial stability, but it has been specifically assigned certain functions relating to this matter. Formally, the CNMV's functions and tasks relating to financial stability were included in its Internal Regulation in 2016. However, its first work had begun much earlier, in 2006, and focused on analysing the liquidity of collective investment schemes. These risk identification analyses have continued over recent years and include, for example, the design of stress indices, heat maps, contagion indicators and liquidity indicators. Similarly, the CNMV has progressively performed more in-depth work relating to the resolution of investment firms and market infrastructures.

More recently, Royal Decree-Law 22/2018, of 14 December, establishing macro-prudential tools, explicitly recognised the CNMV's role in macro-prudential policy and in maintaining financial stability. Accordingly, it provided the institution with additional tools, such as the ability to adopt measures aimed at strengthening the liquidity of collective investment schemes and undertakings and the possibility of establishing limitations on certain activities of its supervised entities that generate an excessive increase in the risk or borrowing of economic agents that might, in turn, affect financial stability. This legislation makes several references in this regard. For example, it indicates that the CNMV must have the instruments and tools necessary to contribute towards mitigating any shocks with a potentially systemic impact.

At an institutional level, the CNMV, together with the Bank of Spain, the Directorate-General for Insurance and Pension Funds and the Ministry of Economy, have participated in the Financial Stability Committee (CESFI), set up in 2006 to facilitate the sharing of information between these institutions in matters relating to financial stability. This committee worked intensively during the middle years of the crisis. After being inactive for a period, it resumed its tasks in the middle of 2018. One of its first objectives was the establishment of a macro-prudential authority in Spain in order to facilitate the coordination of macro-prudential policy at a national level and, in addition, to comply with the recommendations of the European Systemic Risk Board (ESRB) and the International Monetary Fund (IMF) in its latest review (2017) on the stability of the Spanish financial system (Financial Sector Assessment Program, FSAP).

The aforementioned Royal Decree-Law 22/2018 recognised the role of the CESFI as coordinator of macro-prudential policy while the Macro-prudential Authority Financial Stability Board (AMCESFI) was set up by royal decree. The creation of the AMCESFI, chaired by the Minister for Economy and Business and with members from the top levels of the Bank of Spain, the CNMV, the State Secretariat for Economy and Business Support and the Directorate-General for Insurance and Pension Funds, was approved on 1 March 2019 and, as of the preparation date of this report, has in fact already begun to operate with its first meeting held on 1 April 2019.

For the CNMV, transparency in relation to its work on financial stability is a priority. It regularly publishes several reports describing the main risks for financial markets, including the Financial Stability Note, which has been published since the first quarter of 2017 (it was previously for internal use). It also disseminates statistical series that represent the stress levels of different segments of the Spanish financial system. In addition, following publication of its report on the entities and activities that make up non-bank financial intermediation (NBFI) (previously referred to as "shadow banking") in Spain in April 2019, which quantified this sector and highlighted the most important risks, it will begin to publish a half-yearly NBFI monitor.

Now that the AMCESFI has been set up in Spain, the CNMV, like other securities regulators, must continue to conduct more in-depth analyses on the effectiveness and efficiency of the available macro-prudential tools in order to determine to what extent they are suitable or whether new tools are needed. It should be noted in this regard that the law provides for a high number of available tools. Many of these tools come from existing regulatory requirements although some may only be initiated by the supervised entities, although several tools that the CNMV may activate unilaterally (for example, suspension of investment fund redemptions) are so powerful that their simple availability may serve to make entities activate the former. In any event, work relating to the analysis of these tools is complex and must be carried out in coordination with national financial supervisors and also as part of the European Union, under the umbrella of the ESRB, with the willingness to address any new situations that may arise.

1 Introduction

The aim of macro-prudential policy is to preserve the stability of the financial system as a whole by strengthening its resilience and decreasing the build-up of systemic risks. In this regard, financial stability may be defined as a situation in which the accumulation of risks that may hinder the proper functioning of the financial system (provision of financial products and services) is prevented, thus ultimately guaranteeing a sustainable contribution of financial activity to economic growth.[2]

Traditional financial regulation has attempted to maintain financial stability using a micro-prudential and essentially bank-focused approach.[3] However, the financial crisis showed that this approach was not enough to guarantee the robustness of the entire financial system as certain conduct was noted that on an individual level did not generate excessive concern, but which ended up damaging the financial system and having an extremely negative impact on the real economy. It was also noted that the preservation of financial stability should not focus exclusively on the banking system as other agents and activities performed outside the banking business might be a source of systemic risk in certain circumstances.[4] This new approach started to consider that, in addition to the size of the entities, other dimensions were important, such as the interconnectedness among agents, the absence of substitute products and concentration, a lack of transparency, the behaviour of market participants and issues relating to asymmetric information and moral hazard.

As a result of the crisis, G20 leaders set up the Financial Stability Board (FSB), successor of the Financial Stability Forum (FSF), set up in April 1999, with the aim of identifying the measures necessary to promote, as far as possible, a more resilient financial system, coordinating the work of national financial authorities and international standard-setting bodies. Given the extent of the problems and the scale of the solutions proposed, developing and implementing the reforms has required a prolonged period of time. The reforms are based on four pillars: i) building more resilient financial institutions, ii) ending the problem related to the "too-big-to-fail" phenomenon, iii) making over-the-counter (OTC) markets more secure, and iv) transforming shadow banking into a robust, market-based financing system.

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2 The European Central Bank defines financial stability as a condition in which the financial system – which comprises financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances. This mitigates the likelihood of disruptions in the financial intermediation process that are systemic; that is, severe enough to trigger a material contraction of real economic activity.

3 This statement does not presuppose that there were no macro-prudential policies prior to the crisis. This is the case, for example, with the dynamic or countercyclical provisions developed and applied by the Bank of Spain in 2000 with the aim of moderating the effects of a very pronounced and prolonged credit expansion, both during the expansion stage and during the subsequent contraction stage, with the aim of preserving the stability of the financial system.

4 In fact, the mandates of most non-bank (securities and insurance) regulators and supervisors do not specifically address the preservation of financial stability.

The term "shadow banking" was coined as a result of the financial crisis to refer to those entities and activities related to financing carried out outside the banking system.[5] The negative connotation of this term given that any activity performed in the shadows seems, *a priori*, to be performed outside financial regulation and supervision meant that a progressively increasing number of voices demanded a new term for a set of activities and entities that are subject to stringent regulation and supervision, but outside the specific field of banking itself. This debate within the FSB led to a change in the name of these activities and entities, which will henceforth be known as non-bank financial intermediation. Irrespective of the controversy that this term may generate, the most important thing that has occurred in this field as a result of the crisis is the raising of awareness about the need to carry out more detailed monitoring of this sector with regard to the generation of systemic risks and financial stability. This raised awareness has been reflected in the preparation of various reports, including the annual report by the FSB and the half-yearly reports by the ESRB. The CNMV also plans to publish a periodic report on the most significant aspects in this area at the national level.[6]

Several years after the start of the international financial crisis, it can be stated that the main elements of the reform package and its implementation are under way and that there is agreement across the board that the reforms subsequent to the crisis have established the foundation for a more open and resilient global system. There has been a coordinated and determined effort by world leaders to strengthen financial regulation and supervision with the aim of reducing the probability of a future crisis and its impact on the economy. A broad and ambitious agenda has been guided by the principles of strengthening transparency and accountability, improving regulation, promoting integrity in financial markets and strengthening international cooperation.

However, important challenges remain relating to the need to complete global reforms and their implementation at a national level, as well as to ensure their long-term sustainability. These reforms include that of the non-bank financial sector.[7] In the case of asset management, it is essential to continue developing and improving stress tests that measure the capacity of entities, fundamentally investment funds, to withstand global liquidity shocks. In the area of central counterparties (CCPs), whose importance relating to systemic risk has increased significantly following introduction of the mandatory clearing of a large proportion of OTC derivatives, it is also necessary to make progress on improving their resilience and on implementing a consistent recovery and resolution framework worldwide, given the links with their participants at a global level.

The building of a legal and institutional framework in order to develop macro-prudential policies that address the risks of the financial system as a whole has also progressed over recent years, which has facilitated the consolidation of these policies in the banking sector. However, implementation of a general framework that

5 This definition has been refined over time and has led to a generally accepted description of shadow banking as credit intermediation involving entities and activities (fully or partially) outside the regular banking system. In addition, five economic functions are used to identify the entities to be included in this sector.

6 CNMV (2018). *Activities Plan*.

7 Table 1 in the following section details the reforms agreed by the G20, their objective and their current status.

will allow these policies to be applied in the non-bank sector remains at a less advanced stage of development.

Within the non-bank financial sector, the International Organisation of Securities Commissions (IOSCO), which groups together securities supervisors and regulators, also took a step forward in recognising the role financial markets and their participants may have in generating and, above all, spreading systemic risks. This raised awareness was reflected in the formulation of two new principles:[8] one relating to monitoring, mitigating and managing systemic risk (Principle 6) and another with the perimeter of regulation (Principle 7). This organisation also listed several factors that might (potentially) increase systemic risk. These include the design, distribution or behaviour under stress conditions of certain investment products, the activities performed by a regulated entity, market disruption or an impairment of the market's integrity. A key element for generating systemic risk lies in agents' loss of trust, which may be the result of a wide variety of causes (relating to investor protection standards, an unsuitable legal framework, insufficient disclosure requirements, inadequate resolution regimes, etc.).

All these challenges relating to improving the analysis and instruments associated with financial stability in the non-bank area take on even more importance if we consider the sharp growth in the volume of this sector's assets over recent years and the emergence of new agents, particularly related to the FinTech sector. This growth is the result of the limited availability of bank lending for several years, but it also reflects the emergence of new opportunities and borrowers' search for alternative sources. The emergence and use of new sources of financing – essentially market financing – is a positive factor as it limits to a certain extent the economy's dependence on financing from the banking sector and, therefore, the potentially harmful effects that bank crises have on the rest of the economic system. It also has an additional beneficial effect by introducing a certain level of market discipline, with high transparency levels, in financing. However, it also means that prudent regulatory analysis and the design of tools aimed at preserving stability from a holistic perspective become necessary.

This report aims to analyse the legal and institutional framework that currently marks out macro-prudential policy outside the banking sector, echoing the recommendations of leading international bodies with powers in this matter as well as the trends followed in the countries closest to us. It also describes the most significant risks that the non-bank financial sector may generate (or transmit). These risks are very diverse in nature and range from problems that might be generated by the excessive leverage of some agents to difficulties relating to mismatches between the maturity and liquidity of some assets, and including risks relating to technological innovation applied to finance (FinTech), the discontinuation of systemic benchmarks and channels of contagion between different participants. Finally, the report describes the way in which the CNMV tackles the monitoring of financial stability and the detection of systemic risks, the tools available to it to prevent them or, as the case may be, attempt to dissipate them and its coordination with other national and international financial supervisors.

8 And its inclusion in 2010 in its objectives and principles of securities regulation, which establish 38 principles of securities regulation based on three objectives of securities regulation: protecting investors, ensuring that markets are fair, efficient and transparent; and reducing systemic risk. See IOSCO (2010). *Objectives and Principles of Securities Regulation*.

2 Legal and institutional framework of macro-prudential policy

As discussed in the introduction to this report, the financial crisis revealed significant shortcomings in financial supervision, which was unable to anticipate such adverse macroeconomic developments or prevent the build-up of excessive risks within the financial system. Supervisory mechanisms prior to the crisis may have paid priority attention to entities and attached little importance to interconnectedness within the financial system and the developments of the macroeconomic environment in a broad sense. This section describes how the approach of the legal framework of macro-prudential policy has evolved, particularly, at an international level, the recommendations and reforms agreed by the G20 and the monitoring of their implementation and, at a European level, the approach promoted by the ESRB and the advisory activities performed by the European Commission. Noteworthy at a national level are the recommendations made to Spain in the context of the latest report under the Financial Sector Assessment Programme (FSAP) and, more recently, the creation of the macro-prudential authority and its start-up at the beginning of 2019.

2.1 Commitments made by the G20 and monitoring performed by the FSB

The need to ensure that global financial systems function properly led G20 leaders to make a series of commitments to strengthen financial regulation and oversight. These include building and implementing an institutional and regulatory framework for detecting and analysing systemic risks and enhancing system-wide monitoring and the use of macro-prudential instruments.

Table 1 sets out in two blocks the reform areas agreed by the G20 as a result of the crisis, which are aimed at strengthening the global financial system. Firstly, there is the priority reform areas, orientated towards four major objectives: i) building resilient financial institutions, ii) ending the risks associated with too-big-to-fail institutions, iii) making derivative markets safer and iv) transforming non-bank financial intermediation into resilient market-based finance. The need to build an institutional and regulatory framework for detecting and analysing systemic risks and improving oversight of the system and using appropriate tools form part of the block referred to as "other areas of reform", which also includes additional significant issues, such as the reform of the Credit Rating Agencies Regulation and improvements in accounting, auditing and transparency standards, among others.

With regard to the objective of strengthening the international framework for the control of systemic risk,[9] the G20 requested States to equip themselves with the necessary tools and capacities to identify, assess and limit the build-up of risks that

9 G20 Summit held in London in 2009.

affect the financial system as a whole. The G20 also stressed the need for national regulators to possess the powers for gathering information on all material financial institutions, markets and instruments in order to assess the potential for their failure or severe stress to contribute to systemic risk. This will be done in close coordination at an international level in order to achieve as much consistency as possible across jurisdictions.

Reforms agreed by the G20

TABLE 1

Reforms	Objective of the reform	Body responsible for monitoring	Current status[1]
Priority reform areas			
More resilient financial institutions	Basel III reform package and reform of clearing policies.	BCBS FSB	Adoption of core Basel III elements completed. Implementation of Basel III capital and liquidity standards in progress.
Ending too-big-to-fail	Reduction of moral hazard posed by systemically important financial institutions.	FSB	Total loss-absorbing capacity (TLAC) has been defined and its implementation is at a very advanced stage. Progress in bank recovery and resolution plans. Substantial work remains to be done to achieve effective resolution regimes for systemically important non-bank financial institutions.
Transforming shadow banking into resilient market-based finance	Addressing the failures that contributed to the global financial crisis and building safer, more sustainable sources of financing for the real economy.	FSB	Implementation of the agreed reforms is still at a relatively early stage.
Making derivatives markets safer	Comprehensive reform agenda to improve transparency in OTC derivative markets, mitigate systemic risk and protect against market abuse.	FSB	Good progress has been made with regard to implementation of international OTC derivatives market reforms.
Other reform areas			
Macro-prudential framework and policies	Building and implementing an institutional and regulatory framework for detecting and analysing systemic risks and enhancing system-wide monitoring of the use of macro-prudential instruments.	FSB	Institutional framework and use of very advanced tools, but additional work may be needed to ensure they are effective.
Benchmarks	Cases of abuse of interest rate benchmarks have undermined trust and financial stability. Reform of benchmarks to strengthen their governance, methodology and control.	IOSCO / FSB	Reform of benchmarks at a very advanced stage.
Rating agencies	Reduce dependence on credit ratings and enhance the supervision of credit rating agencies.	IOSCO/FSB	Reduction of dependence on rating agencies at a very advanced stage.
Enhancing accounting, auditing and disclosures	Reforming and aligning the accounting standards and disclosures of financial institutions.	IASB / FASB	Close to completion, although some key accounting standards remain to be revised.
Other market reforms	Hedge funds, commodities markets, framework for the global legal entity identifier, market integrity, deposit insurance and consumer protection.	IOSCO/FSB	Reforms completed or at an advanced stage.

Source: FSB and CNMV.

1 According to the information published in the FSB's progress reports (*Progress in implementation of G20 financial regulatory reforms. Summary progress report to the G20 as of June 2019; Implementation of G20/FSB financial reforms in other areas. Summary of key findings based on the 2018 FSB Implementation Monitoring Network (IMN) survey [March 2019]; Reforming major interest rate benchmarks. Progress report. [November 2018]*).

With regard to the use of macro-prudential tools, the G20 recommended using quantitative indicators or constraints on leverage and margins for supervisory purposes,[10] developing macro-prudential policy frameworks and tools to limit the build-up of risks in the financial sector[11] and that authorities should monitor substantial changes in asset prices and their implications for the macro-economy and the financial system.[12]

The latest FSB report on the status of the reforms of the second block[13] ("reforms in other areas") highlights that since the financial crisis, far-reaching changes have taken place in the institutional arrangements for macro-prudential policy in many FSB jurisdictions. However, as indicated by the findings of FSAPs and FSB country peer reviews, significant additional work may be needed to ensure that macro-prudential frameworks are effective. According to the FSB's monitoring, almost every jurisdiction reports that the recommendation on the use of tools has been completed. This is an area under constant review, and therefore changes and improvements in risk evaluation methodologies and approaches are taking place in many jurisdictions.

The 2017 FSB report on the status of the reforms in other areas reflected that implementation of the reforms relating to macro-prudential policy is ongoing in Spain. It highlighted that the Bank of Spain had developed an analytical framework that included a broad set of indicators with the aim of generating early warning signals on emerging vulnerabilities. In addition, in relation to the CNMV, the report highlighted the start of the publication of a quarterly Note on Financial Stability, which evaluates the level of stress in Spanish financial markets, analyses the evolution of the major categories of financial risk and identifies the factors most likely to impact those categories. The latest FSB report notes the creation in 2019 of AMCESFI, the macro-prudential authority in Spain. These developments are discussed in more detail in Section 4.6.

2.2 Recommendations of the European Systemic Risk Board

At a European Union level, it was decided in 2010 to establish the European Systemic Risk Board (ESRB) as part of the European System of Financial Supervision (ESFS) in response to the global financial crisis. The ESRB is responsible for macro-prudential oversight of the financial system of the European Union in order to prevent and mitigate systemic risk. The Board has a broad mandate that includes the banking sector, insurance companies, asset management, non-bank financial intermediation and financial market infrastructures. In order to fulfil its mandate, the ESRB analyses and assesses systemic risks in the European environment and, where appropriate, issues warnings and recommendations.

In line with the G20 mandates, the ESRB has issued two general recommendations relating to the institutional framework and the objectives and instruments of macro-prudential policy:

10 Recommendation 3.1 of the FSF (now FSB). See FSF (2009). *Report of the Financial Stability Forum on Addressing Procyclicality in the Financial System*.

11 G20 Summit held in Cannes in 2011.

12 G20 Summit held in Washington in 2008.

13 FSB (2019). *Implementation of G20/FSB financial reforms in other areas. Summary of key findings based on the 2017 FSB Implementation Monitoring Network (IMN) survey.*

— The recommendation on the macro-prudential mandate of national authorities (ESRB/2011/3),[14] which aims to create an effective macro-prudential policy in the European Union. For this purpose, Member States should designate one single institution or board that will be responsible for developing said policy at a national level and which will control the appropriate instruments to achieve its objective. This authority must be operationally independent from the national parliament. The ESRB recommended that Member States adopt these measures no later than 1 July 2013. This deadline was subsequently extended until 28 February 2014.[15]

— The recommendation on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1),[16] which defines the intermediate objectives of macro-prudential policy and provides an indicative list of the instruments that the Member States may assign to macro-prudential authorities in order to pursue both the ultimate objective and the intermediate objectives of said policy. It recommends that macro-prudential authorities should develop an overall strategy that links the ultimate and intermediate objectives with application of the appropriate instruments as well as their periodic assessment.

With an undefined frequency, the ESRB conducts evaluations and disseminates reports relating to progress and developments in macro-prudential policy in the European Union. In 2014, it published a first assessment of the level of compliance with recommendation ESRB/2011/3[17] in which it indicated that all Member States had adopted measures to implement it.[18] With regard to the models followed by the EU Member States to establish the macro-prudential authority, it should be noted that there is no single model. Some have opted to designate an institution with this task, generally the central bank, while others have established a board or committee made up of representatives from various institutions (see Table 2), the most recent case being that of Spain. Both options are provided for in Recommendation ESRB/2011/3, which, in any event, indicates that the central bank should play a leading role. Not every country has given the central bank the leading role indicated in the ESRB Recommendation and some countries have opted for a participation equal to that of other authorities within the board or committee. In other cases, the central bank is appointed as chairperson or secretary of the authority.

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14 *Recommendation of the European Systemic Risk Board of 22 December 2011 on the macro-prudential mandate of national authorities (ESRB/2011/3).* Available at: https://www.esrb.europa.eu/pub/pdf/recommendations/ESRB_2011_3.en.pdf?da108dbb14efccdf98f4544534e2ef4e

15 *Decision of the European Systemic Risk Board of 18 June 2014 on the extension of the deadline included in Recommendation ESRB/2011/3 of 22 December 2011 on the macro-prudential mandate of national authorities (ESRB/2014/3).* Available at: https://www.esrb.europa.eu/pub/pdf/recommendations/2014/140630_ESRB_Decision.en.pdf?7f828d24dbe47c526a512d600b1f2a07

16 *Recommendation of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1).* Available at: https://www.esrb.europa.eu/pub/pdf/recommendations/ESRB_2013_1.en.pdf?b3291f19e4a37b5bab77b657df7ec97d

17 *ESRB Recommendation on the macro-prudential mandate of national authorities (ESRB/2011/3). Follow-up Report – Overall assessment.* Available at: https://www.esrb.europa.eu/pub/pdf/recommendations/2014/ESRB_2014.en.pdf?e15de3fa6a8961ea4041d30b5c419c32

18 Including Norway, which participated in this exercise on a voluntary basis.

Institutional models of macro-prudential authority in the European Union[1] TABLE 2

	Model	State	Committee / Institution responsible for macro-prudential policy
Macro-prudential committee	Chaired by the central bank	Denmark	Systemic Risk Council
		Croatia	Financial Stability Council
		Italy	Committee for Macro-prudential Policies
		Netherlands	Financial Stability Committee
		Poland	Systemic Risk Council
		Romania	National Committee for Macro-prudential Oversight
		Slovenia	Financial Stability Council
	Chaired by the government	Austria	Financial Market Stability Council
		France	High Council for Financial Stability
		Germany	Financial Stability Committee
		Luxembourg	Systemic Risk Council
		Bulgaria	Financial Stability Advisory Council
		Spain	Macro-prudential Authority Financial Stability Council (AMCESFI)
Central bank		United Kingdom	Bank of England
		Belgium	National Bank of Belgium
		Czech Republic	Czech National Bank
		Estonia	Eesti Pank
		Greece	Bank of Greece
		Cyprus	Central Bank of Cyprus
		Ireland	Central Bank of Ireland
		Hungary	Magyar Nemzeti Bank
		Malta	Central Bank of Malta
		Latvia	Latvijas Banka
		Lithuania	Lietuvus Bankas
		Portugal	Bank of Portugal
		Slovakia	Národná Banka Slovenska
Others	Financial Supervisory Authority	Finland	Finanssivalvonta
		Sweden	Finansinspektionen
	Government	Norway	Government

Source: ESRB and CNMV.

1 The situation in Spain has changed with regard to the table above as Spain appears in the ESRB report as one of the jurisdictions with the model based on a committee chaired by the central bank, when this does not match the current reality.

Although the general result of the evaluation is positive, the ESRB proposed some improvements: i) adjusting the mandate of the central bank to the Recommendation when it does not play a leading role, ii) improving communication mechanisms to ensure greater transparency, iii) avoiding multiplicity of institutional frameworks inasmuch as they may imply differences in the macro-prudential policy stance and iv) granting, in accordance with the Recommendation, the macro-prudential authority the power to implement the instruments specified in the CRD IV.

The reports which have been published more recently acknowledged that most of the elements of the suggested framework existed and were fully operational in all Member States. However, reference is also made to the possibility of making further progress to the extent that the established frameworks focus on the banking sector and it is therefore necessary to extend the approach to supervision of risks arising from the non-bank system and from all types of financial infrastructures, including payment systems, deposit guarantee systems and systems for clearing through central counterparties (CCPs).

In its latest report, published in April 2019, the ESRB acknowledges, with regard to the level of compliance with the mandate of national authorities, that Spain now has an official authority - the AMCESFI - leaving Italy as the only State that has not created an authority, and that sectoral supervisors have been empowered with additional tools to prevent and mitigate systemic risks. These developments are discussed in more detail in Sections 4.4 and 4.5.

2.3 Financial System Stability Assessment by the International Monetary Fund

In October 2017, the International Monetary Fund (IMF) published its most recent financial system stability assessment[19] (FSAP report) on Spain. The report acknowledged the progress made since 2012 on the proposed reforms. In a context of high growth coupled with the accommodative monetary policy of the European Central Bank (ECB), the banking system had strengthened its solvency and advanced in reducing non-performing loans. However, the report made new recommendations to further strengthen the Spanish financial system, some of which affected the CNMV (see Table 3).

The recommendations that fell within the remit of the CNMV (and other financial supervisors) can be divided into two groups: i) recommendations to mitigate some risks to financial stability and ii) recommendations to strengthen prudential oversight. Noteworthy among the first group are, on the one hand, the need to foster development of market-based financing (as an alternative to financing from the banking sector) and, on the other hand, the need to improve analyses of intra-system connectedness (including cross-border linkages), with the aim of better identifying channels of contagion and the resilience of the system to shocks.

Noteworthy among the second group of measures is the recommendation to establish a "Systemic Risk Council" that would improve Spain's capacity to supervise this risk and coordinate macro-prudential policies. This recommendation was put into practice through the creation of the AMCESFI, whose Council is made up of the Minister for Economy and Business, the Governor and Deputy Governor of the Bank of Spain, the President and Vice-President of the CNMV, the Director-General for Insurance and Pension Funds and the State Secretary for Economy and Business Support. The different institutions represented share information and knowledge in order to assess the risks to financial stability and take any necessary decisions to preserve it.

The CNMV, in its response to the conclusions of this assessment, recognised the need to broaden the instruments and measures for analysing and monitoring systemic risk relating to capital markets. Although the sources of non-bank business financing in Spain are not yet, as a result of their size (see Section 4.1), a potential source of significant systemic risk, identifying channels of contagion and the early treatment of risk analyses are essential in order to be able to prevent and address, as the case may be, any crises that may emerge in the future.

19 IMF (2017). *Spain – Financial System Stability Assessment*. IMF Country Report No. 17/321. This assessment is part of the bilateral surveillance under Article IV of the IMF's Articles of Agreement.

General recommendations of the FSAP report that affect the CNMV TABLE 3

Recommendation 7. Foster development of market-based financing and supply of non-bank financial services for corporates and households (paragraph 25)
The Spanish authorities and the industry should actively consider expanding financial diversity and savings intermediation into insurance, pension, and asset management products. The domestic financial markets and non-bank financial institutions are less developed than banks and other European markets, depriving market participants from alternative mechanisms for risk-sharing and savings allocation that could provide buffers in times of a liquidity or a systemic stress.
Recommendation 8. Enhance capacity to monitor and analyse macro financial linkages, intra-system connectedness, and cross-border spillovers; close data gaps (paragraph 31)
Cross-sectoral and cross-border linkages should thus become part of regular systemic risk surveillance. Inter-agency and supervisory college collaboration should be enhanced to implement a more holistic approach to the monitoring of markets and financial intermediaries. Key data to be collected and/or be readily available for analysis include cross holding of assets among banks or among banks and non-banks, ownership structure of key financial assets, derivative exposures of financial institutions, and the overall size and risk of non-traditional banking activities within and outside banks to fully assess contagion effects.
Recommendation 10. Set up a "Systemic Risk Council" for inter-agency coordination on systemic risk factors, surveillance, and system-wide financial sector policies (paragraph 33)
Given the sectoral approach to financial sector oversight, it is critical that effective inter-agency mechanisms exist to share data and expertise, conduct surveillance, and take timely policy actions to safeguard domestic financial stability. In the case of Spain, cross-border risks would be an added systemic risk dimension. The SRC will provide a platform that brings together its core member agencies – Bank of Spain, the CNMV, the Directorate-General for Insurance and Pension Funds and the Directorate-General of the Treasury.
Recommendation 11. Expand the macro-prudential toolkit to include borrower-based tools (paragraph 39)
As the pre-crisis experience illustrated, monetary conditions that were appropriate for the euro area proved to be too expansionary for Spain, with strong credit growth fuelling bubbles in the real estate market. Hence, a legal basis for imposing limits on loan-to-value, debt service-to-income, and amortization periods, should be actively considered. To ensure they are efficiently implemented, these borrower-based tools for banking should be assigned to the Bank of Spain.
Recommendation 12. Increase supervisory focus on corporate governance practices across all credit institutions, and the non-bank sector (paragraphs 46, 51, 52)
Despite good progress since the last FSAP, more remains to be done to align some credit institutions' corporate governance to best practices (particularly, credit cooperatives) and other non-bank agents.

Source: IMF (2017). *Spain – Financial System Stability Assessment*. IMF Country Report No. 17/321.

2.4 Public consultation by the European Commission

In 2016, the European Commission carried out a public consultation[20] on the review of the macro-prudential policy framework in the European Union in order to enhance its effectiveness in view of the experience acquired since creation of the ESRB in 2010. The European Commission acknowledged that over this time the framework had gradually evolved towards a relatively fragmented system that had led to some weaknesses relating to overlaps between a large number of macro-prudential instruments available in European Union legislation, the inconsistent way in which these instruments are activated and the complex process for coordinating these measures.

20 European Commission (2016). *Consultation Document. Review of the EU Macro-Prudential Policy Framework.*

This public consultation was framed within the context of the Commission's Communication on the Capital Markets Union and the Five Presidents' Report on Completing Europe's Economic and Monetary Union, published in June 2015. This report acknowledged the need to pay attention to new risks (including those emerging from the non-bank financial sector) that affect the financial sector as a whole. For this purpose, it was proposed to strengthen the ESRB and maximise synergies with the ECB.

While the Capital Markets Union aims to ensure new sources of financing for companies from capital markets, it may mean that risks resulting from integrating bond and equity markets may be shared across borders, thus generating new threats to financial stability. It will therefore be necessary to increase and adapt the tools available for addressing systemic risks and to strengthen the supervisory system.

Through this consultation, the European Commission aimed to identify the elements necessary for a reform that would strike an appropriate balance between national flexibility and control at an EU level by streamlining the set of available tools, changing the activation procedures for these instruments, enhancing the function of the ESRB and clarifying the role of the Single Supervisory Mechanism (SSM). Noteworthy among the aspects of the consultation was the part relating to the implications resulting from the importance of market-based financing outside the banking sector, which is becoming increasingly important, and the European Commission's Capital Markets Union project, which aims to promote this alternative source of financing for the economy.

The responses received largely supported the need to address these emerging risks. Some of the authorities and regulators, as well as the entities from the banking sector that responded to this consultation, firmly supported extending the macro-prudential framework and the toolkit to non-bank entities. They notably pointed to the growing relevance of market-based finance as well as potential risks arising for example from insurance, securities markets and asset management sectors. They argued that systemic risks can either originate or spill over to these sectors, warranting a broadening of the toolkit. Other respondents indicated their preference for an intermediate step, with the need for *ex-ante* analyses to identify potential systemic risk sources from non-banks. They suggested monitoring the risks that arise from the interconnectedness, Too-Big-To-Fail and pro-cyclicality of non-banking institutions. Finally, a smaller number of respondents did not see the need to expand the framework or identify an optimal set of macro-prudential tools beyond banking at this stage as there is limited experience and still no consensus regarding the effectiveness of the current macro-prudential framework.

3 Elements of macro-prudential policy

As mentioned at the start of this report, the ultimate aim of macro-prudential policy is to protect the stability of the financial system as a whole by strengthening its resilience and decreasing the build-up of systemic risks. This is ultimately done in order to guarantee a stable relationship between the financial system and economic growth. Achieving this ultimate objective requires a series of intermediate objectives to be identified, which are periodically evaluated according to a series of relevant indicators. Finally, development of this policy is completed with the establishment of a set of instruments that the designated authorities may apply in accordance with the risk monitoring and analysis performed on the basis of the aforementioned indicators (see Figure 1).

The effectiveness of macro-prudential policy depends on the setting of a global strategy on the application of the corresponding instruments, the disclosure and accountability of said policy and coordination between institutions both at a national and a cross-border level. At a national level, it is important to note the sectoral supervision structure that currently exists and the need for coordination between the different agencies. Significant work at a European level is being carried out by the ESRB, which is responsible, *inter alia*, for studying the possible cross-border contagion of this policy and for promoting an appropriate coordination framework. To this end, national authorities, in addition to having internal coordination mechanisms, must notify the ESRB prior to applying the instruments at a national level if significant cross-border effects in other Member States or in the single market are expected.

Elements of macro-prudential policy and inter-agency coordination FIGURE 1

Source: ESRB and CNMV.

The high level of international integration of financial markets also requires a coordinated approach that will strengthen the effectiveness and efficiency of macro-prudential policies and limit arbitrage possibilities. This role is played by the FSB, which was set up ten years ago by the G20 with the aim of coordinating the reforms needed following the crisis. The FSB's work is currently focused on identifying and evaluating new vulnerabilities, such as the risks arising from the FinTech sector, climate change and inappropriate conduct in financial institutions.

In the field of securities markets, IOSCO has promoted initiatives aimed at greater involvement of securities market authorities in monitoring systemic risks. In this regard, it has been performing the analysis, monitoring and coordination of the work of national authorities and it is called to play a more active coordinating role in a context in which these authorities take on a more important function in the policy aimed at maintaining financial stability.

The following sub-sections describe the intermediate objectives, instruments and indicators for macro-prudential policy proposed by the ESRB, which are basically focused on the banking sector. Reference is also made to how these have been implemented by the Bank of Spain, which is the body responsible for applying the solvency instruments. As indicated in Section 4.4, a comprehensive policy of this type should also include the objectives, instruments and indicators that are appropriate for the non-bank financial sector.

3.1 Intermediate macro-prudential objectives and indicators

The ESRB, in its recommendations ESRB/2011/3 and ESRB/2013/1, establishes the ultimate objective of macro-prudential policy (see Section 2.2 above) and recommends that authorities should define intermediate objectives for the national financial system as a whole that will contribute towards achieving the ultimate objective. Among other objectives, the strategy must include at least the five that are indicated in Table A.1 of the Annex, relating to limiting excessive credit growth and leverage, with maturity mismatch and market illiquidity, with excessive risk concentration, with problems of misaligned incentives and moral hazard and with strengthening the resilience of financial infrastructures.[21] Nevertheless, authorities may define other intermediate objectives according to the underlying market failures and the specific structural characteristics of the country or the financial system that might pose a systemic risk.

In Spain, the authority responsible for applying the instruments provided for in bank solvency legislation is the Bank of Spain. Table 4 shows the indicators used by the Bank of Spain,[22] grouped around the intermediate objectives defined by the ESRB.[23] These objectives have been complemented by additional ones (for example, macroeconomic imbalances) considered necessary for the improved orientation of its macro-prudential policy and which take into account the particular conditions of the financial system and the economy in Spain. The indicators used provide information, on the one hand, on the risks of the banking sector as a whole and, on the other hand, on macroeconomic imbalances and the position of the economy and the banking sector within the macroeconomic and credit cycle. The former includes the evolution of credit and housing market indicators, evolution of bank assets and liabilities, and the exposure of the business to the exchange rate of the sovereign sector, among others. The indicators on macroeconomic imbalances reflect the reliance on external financing and fiscal imbalances. The evolution of these indicators will be the basis for deciding, as the case may be, the application, deactivation and calibration of the instruments available in order to preserve the financial stability of the system.

21 This table also describes the underlying market failures, the indicative macro-prudential instruments and the associated indicators.

22 Mencia, J. and Saurina, J. (2016). *Macro-prudential policy: objectives, instruments and indicators*. Bank of Spain, Occasional Papers, No. 1601.

23 Table A.1. in the Annex contains the list of instruments proposed by the ESRB.

These indicators, like the instruments and the objectives themselves, are subject to ongoing analysis and assessment based on their practical application, with the aim of ascertaining their appropriateness, effectiveness and efficiency, thereby making it possible to enhance and strengthen the strategy. As a result of this assessment and the changes noted in the financial system, the objectives will be adjusted where necessary and, in particular, when new risks to financial stability emerge that cannot be sufficiently covered under the existing framework.

Macro-prudential objectives and indicators used by the Bank of Spain TABLE 4

Intermediate objectives	Indicators
Credit growth and leverage	Credit: intensity, imbalances, leverage Housing market: prices, overvaluation Borrower debt-to-income ratio
Transformation of maturities and market illiquidity	Bank assets Bank liabilities Imbalances in banks' foreign currency exposure
Concentration	Reliance on bank lending in comparison with other sources Sectoral concentration Sovereign exposure Credit exposure in foreign currency
Incentives and moral hazard	Risks at the tail of the distribution Systemic stress
Macroeconomic imbalances	External dependence Fiscal imbalances
Materialised risks	Real economy NPLs and dependence on central bank

Source: Bank of Spain.

3.2 Macro-prudential policy instruments

Instruments should be identified and selected based on an assessment of their effectiveness for achieving the ultimate and intermediate objectives and on their efficiency, which is understood as the ability of the instrument to achieve its objectives at the lowest cost. The analysis of the effectiveness and efficiency of the instruments that may be used is not simple as, although the banking macro-prudential policy is at a fairly advanced stage of development, experience in the use of most of the instruments in the European Union is relatively limited and the risks for financial stability may differ between different countries given the diverse characteristics of their financial systems and economic cycles.

In regulatory terms, the availability of macro-prudential policy instruments is essentially framed within European insolvency legislation. This legislation, known as CRD[24] and CRR,[25] sets out a series of macro-prudential instruments that basically

24 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (known as CRD IV). This directive has been transposed into Spanish legislation by Law 10/2014 of 26 June and Royal Decree 84/2015 of 13 February.

25 Regulation (EU) No. 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No. 648/2012. The regulation is directly applicable and therefore does not require transposition.

affect credit institutions and refer to overall capital levels, liquidity requirements and limits to large exposures and to leverage. It also sets out capital requirements for specific sectors or to address specific vulnerabilities in different parts of the balance sheets of credit institutions.

Table 5 shows the instruments that authorities may apply, the legislation from which they derive, whether they are mandatory or optional and a brief description of their content. Most of the instruments set out in solvency legislation are applied voluntarily by the authorities. However, the countercyclical capital buffer (CCB) and the capital buffer for global systemically important institutions (G-SIIs) are mandatory. The former are required of entities during periods of expansion to absorb potential losses in the subsequent periods of recession and to limit, in turn, excessive exposure to risk in the expansive stage. The latter are required of entities as a result of their importance in systemic terms. Other voluntary instruments include the capital buffer for domestic systemically important institutions, the systemic risk buffer and other measures that may be applied, for example in relation to the evolution of the real estate sector or, in general, those which are more flexible and may take the form of greater requirements for capital, liquidity, large risks, etc.

Macro-prudential policy instruments set out in solvency legislation (CRR/CRD IV)[1] TABLE 5

Instrument	Regulation	Mandatory / optional	Description
Countercyclical capital buffer (CCB)	Articles 130, 135-140 of CRD IV	Mandatory	Additional buffer required in periods of expansion in order to curb improper accumulations of risk and absorb losses in periods of recession
Capital conservation buffer	Article 129 of CRD IV	Mandatory	It is mandatory for all banks as from 1 January 2016, but its level may be increased on the basis of Article 458 of the CRR
Buffer for systemically important institutions (G-SII)	Article 131 of CRD IV	Mandatory	Additional capital buffer required of global systemically important institutions
Buffer for other systemically important institutions (O-SII)	Article 131 of CRD IV	Optional	Additional capital buffer that may be required of domestic systemically important institutions
Macro-prudential use of Pillar 2	Articles 103 and 105 of CRD IV	Optional	Application of supervisory measures to institutions with a similar risk profile and possible liquidity add-on
Systemic risk profile (SRB)	Articles 133 and 134 of CRD IV	Optional	Additional buffer for systemic risk not addressed in the CRR
Pillar 1 measures adjusted to the real estate sector	Articles 124 and 164 of the CRR	Optional	Higher weightings, stricter criteria in the granting of credit and higher losses due to default, applied to exposures to the real estate sector
Flexible measures	Article 458 of the CRR	Optional	Includes a possible increase in the requirement on capital, liquidity, large risk, information and weightings

Source: European Commission and CNMV.

1 CRD (Capital Requirements Directive), CRR (Capital Requirements Regulation).

At the end of 2018, Royal Decree-Law 22/2018, of 14 December, increased the number of macro-prudential tools available to the Bank of Spain. The Bank of Spain is authorised, *inter alia*, to increase the capital requirements on a specific portfolio of exposures in order to limit credit institutions' exposures to specific economic sectors and in order to establish limits and conditions on credit institutions for granting loans and for purchasing fixed-income and derivative instruments. The Bank of Spain may therefore set limits on the debt service to income ratio or the loan-to-value ratio, amongst other measures, as well as on the maximum period for repaying loans. Including these instruments in Spanish law was one of the IMF's recommendations following the results of the recent FSAP in Spain.

More recently, approval in June 2019 of what is referred to as the "banking package"[26] has introduced certain improvements in the set of macro-prudential tools for improving their flexibility and scope in order to ensure that authorities have sufficient means to address systemic risk.

These improvements include the possibility for authorities to increase the weightings of exposures to the mortgage market in the event that the limits set by current legislation do not properly reflect the risk. It also establishes a specific leverage buffer for global systemically important institutions and introduces a review, every five years, of the appropriateness and sufficiency of macro-prudential tools to address any new systemic risks that may emerge.

26 Which addresses the amendment of the legislation on capital and liquidity requirements (Regulation (EU) No. 575/2013 and Directive 2013/36/EU) and on bank resolution (Directive 2014/59/EU and Regulation 806/2014).

4 The role of the CNMV in macro-prudential policy

4.1 European context

Growth in the financial sector over recent years has mainly taken place in the non-bank sector, which includes: the insurance sector (insurance companies and pension funds); investment funds; other financial institutions (OFIs); and financial market infrastructures, particularly CCPs. This growth has largely been the result of the crisis that has mainly affected the banking sector and which has restricted its possibilities as a source of financing for the economy. Entities involved in the non-bank sector, as well as the activities that they carry on, may cause (like those performed in the banking sector) market failures and imbalances in themselves and may, in many cases, also transmit failures originating in other parts of the financial system due to their interconnectedness.

Within the European Union, achieving a financial system that is more balanced in its sources of financing, which involves promoting financing through financial markets, as set out in the Capital Markets Union project, will be positive for the area's economic growth and its resilience in times of recession. However, performance of these activities may lead to significant risks from a financial stability point of view. It is therefore necessary to extend the process for identifying, monitoring, preventing and, as the case may be, mitigating systemic risks.

In July 2016, the ESRB published a strategic document[27] that revealed the need to develop a macro-prudential approach in the non-bank sector of the financial system and, for this purpose, it proposed a series of tasks in the short to medium term and other tasks in the medium to long term that affected both the ESRB and the Member States (see Table 6). The tasks in the medium to long term included developing a strategy for macro-prudential policy beyond banking that targets risks across the whole financial system with a consistent set of instruments that is adapted to the different types of risks according to the activities, entities and infrastructures from which they derive. In the shorter term, the paper proposed using the information already available and that has started to be received under the new regulations, examining the consistency of the available tools in the different Member States and implementing them, contributing towards developing new tools, evaluating the impact of the new regulations and giving a macro-prudential perspective to all legislative reviews in progress.

27 ESRB (2016). *Macro-prudential Policy beyond Banking: An ESRB Strategy Paper*.

Tasks for the ESRB and its members in relation to the development of macro-prudential policy beyond banking TABLE 6

In the medium to long term	To develop a strategy for macro-prudential policy beyond banking that targets risks across the whole financial system with a consistent set of instruments that is adapted to the different types of risks according to the activities, entities and infrastructures from which they derive.
	To develop a framework that links the required level of resilience of specific parts of the financial system, such as market-based finance, to their contribution to the systemic risk facing the financial system as a whole.
	To address risks of excessive credit growth at the level of end-borrowers, independently of whether or not the type of credit comes from the banking sector.
	To regulate financial entities and activities in line with the intensity of systemic risk that they may generate.
In the short to medium term	To use new data that will become available under existing legislation beyond banking, such as those for alternative investment funds (from the Alternative Investment Fund Managers Directive or AIFMD), insurers (from Solvency II), derivatives markets (from the European Market Infrastructure Regulation or EMIR) and for securities financing (from the Securities Financing Transactions Regulation, or SFTR, in the course of 2018), to monitor market trends and risks to financial stability.
	To operationalise macro-prudential instruments for which a legal basis has already been created, as is the case for the leverage requirements of alternative investment funds.
	To contribute to the development of new macro-prudential instruments, such as instruments that address liquidity mismatches at investment funds and the procyclicality of initial margins or haircuts, especially in securities financing transactions and derivatives.
	To contribute to the development of the wider financial stability toolkit, such as top-down stress tests for asset managers and funds, financial market infrastructures including central counterparties (CCPs), insurers and pension funds, and recovery and resolution frameworks for CCPs and insurers.
	To investigate the potential for increasing the consistency of available macro-prudential instruments across sectors, e.g. definitions of leverage, taking into account differences and interdependencies between sectors.
	To monitor the impact of ongoing legislative reforms, e.g. MiFID II and MiFIR, on the financial system.
	To provide ESRB input to ongoing legislative reviews so as to ensure the macro-prudential perspective is included in all relevant regulation in the EU.

Source: ESRB (2016). *Macro-prudential Policy beyond Banking: An ESRB Strategy Paper.*

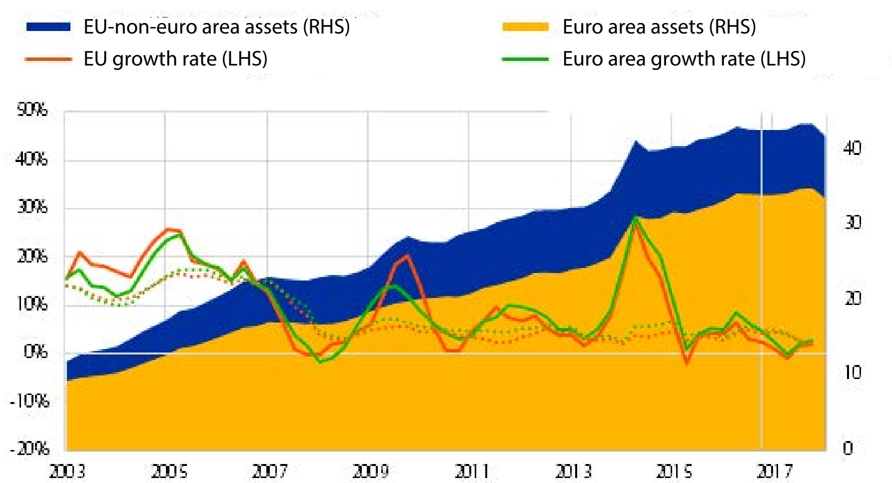
Market-based finance has grown significantly over recent years, both in Spain and in the European Union in general, while the assets of banking institutions have fallen. This increase has been the result of a variety of factors. Firstly, the global financial crisis led to a sharp contraction in lending, which was more severe in Europe and meant that companies sought out other financing alternatives. The tightening of capital requirements in the aftermath of the crisis accentuated this process by making the granting of credit more expensive, which led to companies shifting their financing towards different sources. Larger companies issued substantial amounts of shares (while retaining profits) and debt, the latter benefiting greatly from very low interest rates.

While companies began to finance themselves in more diversified ways that were less dependent on bank credit, from the point of view of investors, the context of such low interest rates encouraged them to invest in certain financial market instruments in the search for yield or, at least, the expectation of obtaining yield by taking on a little more risk.

In Europe, it is likely that some of these trends will be reversed in the coming years (for example, those resulting from the low level of interest rates). However, a structural change can be noted, which, in the case of Europe, will further benefit from the project related to the Capital Markets Union, which explicitly aims to increase the weight of markets in financing the real economy.

In the European Union as a whole and according to figures published by the ESRB,[28] the assets of entities included under the broad definition of NBFI[29] amounted to 42.3 trillion euros at the end of 2017, compared with a figure of close to 25 trillion euros at the start of the financial crisis (see Figure 2). Approximately one third of this amount corresponds to the assets of investment funds. As shown in Figure 2, on more than one occasion in recent years, the rate of growth of shadow banking assets has stood at well over 10%.

Size of shadow banking in the European Union and in the euro area[1, 2, 3] FIGURE 2



Source: ESRB (2018). *EU Shadow Banking Monitor*.

1 Information on investment funds and other financial institutions (growth rates and levels in trillions of euros).

2 ECB calculation. The continuous lines indicate annual growth rates based on changes in outstanding amounts. The dotted lines indicate annual growth rates based on transactions – i.e. excluding the impact of FX or other revaluations and statistical reclassifications.

3 The assets of the European Union banking sector amounted to 43.5 trillion euros at the end of 2018.

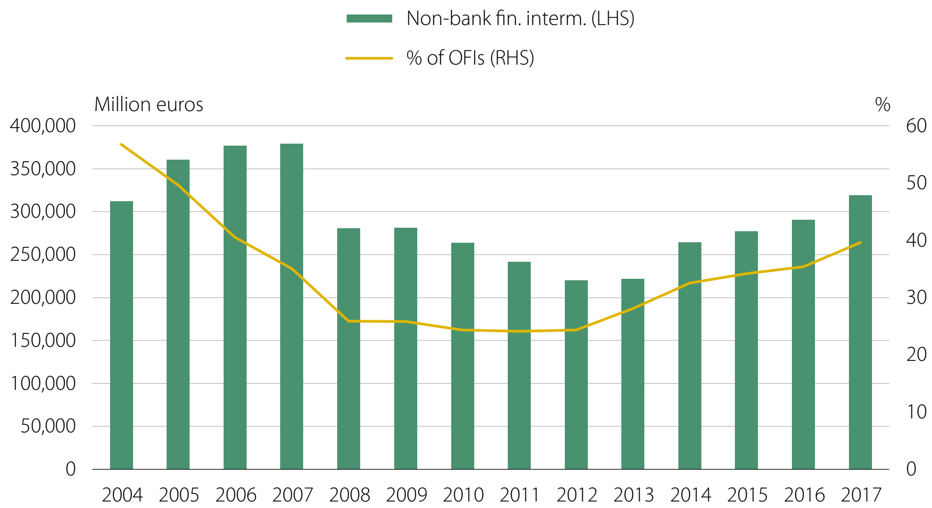
In Spain, the non-bank financial sector has evolved in a similar manner, but has not yet reached a systemic size. NBFI assets in Spain at the end of 2017 (without eliminating consolidation into banking groups) amounted to 531.92 billion euros, 1.9% up on 2016. After eliminating the portion that is consolidated into banks, the figure stands at 319.08 billion euros, accounting for 6.8% of the Spanish financial system and 39.6% of the OFI subsector. As shown in Figure 3, the size of these assets fell following the onset of the crisis as a result of the high level of redemptions in investment funds and, to a lesser extent, the deceleration of the outstanding balance of

28 ESRB (2018). *EU Shadow Banking Monitor*.

29 This is a broad measure that includes all financial sector assets except those of banks, insurance companies, pension funds and CCPs. It would, therefore, be comparable with the broad measure of the FSB. This classification sets a perimeter within which the trends and risks associated with the engagement of financial entities in credit intermediation, liquidity and maturity transformation, leverage, and interconnectedness with the banking system can be identified.

asset-backed securities.[30] This trend was reversed in 2013 as a result of a new expansive stage in the collective investment industry, driven by the increase in investors' incomes and the search for alternatives with expectations of more attractive returns.

Size of shadow banking in Spain FIGURE 3



Source: CNMV.

4.2 Development of the methodology to identify, monitor and manage systemic risks beyond banking

Over recent years, securities regulators have made progress on adapting the approaches of prudential regulators, which are not always directly applicable to securities markets. In driving this adaptation, IOSCO has played a key role by adjusting its mission and objectives by including, following the crisis, two new principles on the identification and management of systemic risk and the definition of the regulatory perimeter in its Objectives and Principles of Securities Regulation.[31] It has also developed methodological guidelines for their implementation, analysing the tools that securities regulators may use to study some of the main potential systemic risks that emerge from securities markets.

Institutions' efforts were initially focused on analysing and identifying risks in their respective fields of interest. Due to the complexity of securities markets, which involve a wide range of intermediaries with different business models, behaviours, products, investors, geographical areas, stages of financial development and macroeconomic context, there is currently no one single method for identifying trends, vulnerabilities and risks in securities markets. In addition, these markets are also conditioned by idiosyncratic behaviour which, in certain circumstances, might undermine the trust of market agents and, consequently, have an impact on financial stability.

30 This figure forms part of the report on NBFI in Spain recently published in the *CNMV Bulletin* for the first quarter of 2019.

31 IOSCO (2010). *Objectives and Principles of Securities Regulation*.

IOSCO put forward the first methodological proposals[32] for identifying and measuring systemic risk in securities markets (including the build-up of risks in entities, market infrastructures, products and activities). In 2011, it published a document analysing the main potential systemic risks arising from stock markets, proposing some monitoring indicators and tools for their mitigation.[33] In addition, IOSCO published a report[34] in 2014 on the methods, approaches and tools that this body and securities regulators had developed and implemented to identify and assess new risks, which demonstrated the diversity of the methods developed. Since 2013, IOSCO has also published its Securities Markets Risk Outlook with the aim of identifying and assessing potential risks for the financial system resulting from activities in securities markets that might pose a threat to the financial system as a whole. This report is prepared by the Committee on Emerging Risks (CER).

In a European context, ESMA,[35] which also has the task of safeguarding financial stability, has performed a process of identifying and assessing the trends, potential risks and vulnerabilities that arise across asset classes, sectors and Member States. Among other activities, ESMA has developed various analytical tools (risk indicators and stress tests) and issues several publications, including a half-yearly report on trends, risks and vulnerabilities, which is complemented by the publication of a heat map assessing the main categories of risks related to securities markets (market, credit, liquidity, contagion, operational and systemic) and the sources of these risks (e.g. geopolitical risks).

4.3 Systemic risks that may originate in the non-bank financial sector

The last crisis brought to light significant risks to financial stability arising from, transmitted through or related to the activities of various non-bank entities. The most important are as follows:

— Some non-bank financial institutions played a similar role to banks in creating and transmitting systemic risk through high leverage levels, the use of complex instruments to manage their risks and the transfer of such risks to other more vulnerable sectors.

— Some activities did not have a sufficient level of transparency, which hindered proper risk assessment. This was also exacerbated, in some cases, by prudential supervision that did not appropriately discourage excessive risk-taking, which in many cases was transferred to other market segments.

— Deficiencies were noted in the governance of companies, particularly financial institutions, which led to an excessive build-up of risks. In addition, the

32 Bijkerk, W., Tendulkar, R., Uddin, S. and Worner, S. (2012). *Systemic Risk Identification in Securities Markets.* IOSCO, Staff Working Paper 2012/1. These authors make a methodological proposal that includes indicators of risk stemming from technology and socio-economic trends at a political and regulatory macro level, as well as micro indicators signalling risks emanating from securities markets themselves that might have systemic implications.

33 IOSCO (2011). *Mitigating Systemic Risk: A Role for Securities Regulators*. Discussion Paper.

34 IOSCO (2014). *Risk Identification and Assessment and Methodologies for Securities Regulators*.

35 ESMA (European Securities and Markets Authority) is the European agency that brings together European securities supervisors (formerly, CESR).

management of conflicts of interest became increasingly complex. This situation is particularly latent in financial conglomerates.

— The lack of regulation of some important market agents, such as credit rating agencies, led to undesirable situations and ineffective management of their conflicts of interest with third parties. Other less regulated aspects, such as the most important interest-rate benchmarks, were also subject to practices that highlighted their vulnerability, with the consequent impact on financial stability.

— The risks inherent to non-organised (OTC) markets, which are characterised by their limited transparency and by the absence, in many cases, of solid market infrastructures in the trading and settlement of the products bought and sold on said markets, contributed to the undermining of trust amongst counterparties and the evaporation of liquidity in many segments of the financial markets.

— These liquidity problems, together with the widespread loss of market agents' trust, favoured contagion between different markets (interbank, some derivatives, securitisations, private fixed income, public debt, etc.), which temporarily reduced their capacity for proper price discovery. This ultimately prevented investors from undoing their positions without incurring high losses.

— Lastly, the pro-cyclical behaviour of market participants and the markets themselves may not have been properly taken into account either in regulation or in oversight, which accentuated some of the aforementioned situations.

Some of these sources of risk are similar to those considered in the intermediate objectives within the framework of existing macro-prudential policy, which is eminently bank orientated. These sources of risk would include, for example, those relating to excessive growth of credit and leverage, mismatches of maturities and the illiquidity of some financial products, direct and indirect risk concentrations, misaligned incentives for reducing moral hazard and insufficient resilience of financial infrastructures. Other sources of risk are also present in this framework, such as those relating to interconnectedness and the risk of contagion, which play an important role in the activity of financial markets and, in addition, the possible interruption, discontinuity or transition of benchmarks.

Some analysts suggest that systemic risk has a two-fold dimension: structural and cyclical. The structural dimension will be determined by the increasing level of interconnectedness of the financial system, which facilitates the distribution of risk as a whole and its transfer across sectors. This distribution of risk may lead to negative consequences for the real economy. The cyclical dimension will be related to the trend of agents to take on excessive risks in expansive stages and to be extremely risk averse in recessive stages. Both dimensions are relevant for identifying systemic risk factors and the corresponding instruments, although it is difficult to clearly distinguish between the two as they are highly interrelated.

Table 7 describes the main intermediate objectives that can be considered from the point of view of macro-prudential policy beyond banking (directly related to risk generation), together with the indicators for evaluating them and the instruments available. This section discusses some of the sources of risk in more depth, while the following section reports on the instruments.

Non-bank sector objectives, market failures, instruments and indicators

TABLE 7

Objectives	Failures	Instruments	Indicators
Excessive growth in credit and leverage	Increase in corporate borrowing	Micro and macro limits to borrowing and leverage	Trends in corporate and household debt
			Measures of the financial cycle
	Increase in market for guaranteed loans and leveraged transactions	Use of margins and haircuts	Credit gap in banks and other intermediaries
			Total leverage of investment funds (UCITs and alternative funds)
Maturity mismatches and market illiquidity	Investment in illiquid assets	Limits to liquidity and liquid assets.	Liquidity mismatches in investment funds
		Suspension of redemptions	Stress tests of investment funds, markets (trading) and infrastructures (clearing and settlement)
Misaligned incentives to reduce moral hazard and the resilience of the financial infrastructure	Entities and infrastructure that are too big and connected to fail	Resolution and recovery of infrastructures and other entities (CCPs, depositories, managers...)	Systemic nature of non-bank financial infrastructures (size, interconnectedness, level of substitution and complexity)
		Investment guarantee systems	
Interconnectedness and concentration	High level of interconnectedness as channel of contagion	Concentration limits	Network and interconnectedness indicators
			Contagion measures
	Excessive concentration	Diversification requirements	Criticality analysis per participant in the trading, clearing and settlement and registry segments
Technological innovation	New operational risks	Adjustment of the regulatory perimeter	Evolution and growth of the FinTech sector, change in entities' business models and sources of financing
	Non-traditional suppliers		
	Increased interconnectedness and risk of contagion		
Conduct and behaviour of market participants	Uncertainty and misconduct on the part of participants (misselling/misbuying)	Incentives	Level of market confidence
		Financial education	Acquisition of financial products that are inappropriate according to the risk profile
	Irrational behaviour and emotional and cognitive biases	Communication	Misconduct by intermediaries
		Restrictions on short selling	
Interruption, discontinuity or transformation of systemic markets or indicators	Disappearance and transition of critical benchmarks	Contingency plan	Analysis of criticality and representativeness
		Transition and communication plan	
		Contract continuity	Level of risk planning and management
		Measures on mandatory contributions and administration	

Source: FSB, IOSCO, ESRB and CNMV.

4.3.1 Excessive growth in credit and leverage

Excessive credit growth has been identified as a key factor in financial crises. Bank credit is generally much more procyclical than financing from capital markets, which shows greater stability irrespective of the position of the economy. Although excess credit or leverage has normally been associated with banks, it may also originate outside the banking system, for example through secured loans, such as securities financing transactions (SFT).

Banks and other non-bank entities may also generate excessive leverage synthetically by using derivatives. For example, entities that provide investment services may trade on their own account with their clients by providing them with financing to trade in securities that serve as collateral in the loan. These operations are generally collateralised through repos. The valuation haircut of the repo that guarantees the transaction limits the leverage available to end-borrowers. If the intermediary perceives that the risk of the security increases, the haircuts increase, which reduces the capacity of using and reusing the collateral. In such cases, the end-borrowers may be required to liquidate positions. This leads to falls in prices and accentuates perceptions of risk, which, in turn, leads to a further increase in the haircut of the collateral.

Guarantees have been playing an increasingly important role in the financial system since the crisis. In fact, the volume of the secured loan market was ten times higher than that of the unsecured loan market in 2015.[36] Collateral is a structural part of SFTs[37] and is becoming an increasingly important characteristic in OTC derivative markets. This reflects the recent structural changes in the manner in which these markets operate, which leads to initiatives such as the promotion of mandatory central clearing of standardised OTC derivatives. Market participants use collateral for risk management purposes as it limits counterparty risk. However, it might also amplify liquidity risk and market risk through forced sales in a stress scenario. The resulting spread of risk could potentially be of a systemic nature and non-bank financial institutions might be part of the risk transmission mechanism, also bearing in mind that they are not able to make use of central bank liquidity.

With regard to haircuts, it should be noted that they are instruments used in market transactions, so they are subject to regulatory arbitrage and could prove to be more effective with coordinated action between authorities, at least at an EU level.[38] In this regard, in October 2017[39] the European Commission, in its latest report on the progress of international initiatives to mitigate the risks associated with SFTs, acknowledged that there are no regulatory requirements at an EU level as regards

36 ECB (2015). *Money Market Survey*. 2015

37 These transactions allow market participants to access secured financing. Securities financing transactions involve a temporary exchange of cash for securities or of securities for other securities, such as securities lending or repo agreements.

38 Following the same line, ESMA in its report issued in 2016 (*Report on Securities Financing Transactions and Leverage in the EU. Report Prepared under the Mandate in Article 29(3) SFTR. October 2016)* recommended that the introduction of macro-prudential instruments, including counter-cyclical ones, should be agreed at an international level first, and then only be introduced after a careful assessment that the measures already introduced (such as capital requirement and bilateral margins) are not sufficient to limit the leverage in the system.

39 Report from the Commission to the European Parliament and the Council under Article 29(3) of Regulation (EU) 2015/2365 of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No. 648/2012.

numerical haircuts floors for SFTs and that although these haircuts may contribute to restricting leverage, further analyses on their procyclical effects are needed.

In the context of CCPs, the EMIR[40] acknowledges the use these infrastructures make of margins and haircuts may also have procyclical effects and it therefore establishes prevention and control measures that infrastructures must use.[41] However, these measures are not necessarily applied consistently across all CCPs. It is therefore appropriate, on the one hand, to have a high level of transparency in the criteria for applying these requirements and, on the other hand, for supervisory authorities to have sufficient tools to fulfil their tasks. In this context, in January 2018 ESMA published[42] guidelines that aim to clarify and promote uniform and consistent application of these tools and to improve the level of transparency. This would facilitate the authorities' oversight of the effectiveness of the tools of CCPs, their procyclical effects and their ability to anticipate significant changes by participants.

The ESRB has also commented on the macro-prudential use of margins and haircuts and published a report describing how this use may affect both leverage and procyclicality.[43] The report acknowledges a series of challenges when implementing the suggested tools and proposes further empirical and conceptual analysis that will allow a future revision of existing regulations in order to consider the use of margins and haircuts as macro-prudential policy instruments. The scope for work in this area remains broad, as the indicators pointing to the build-up of excessive leverage and the thresholds that might trigger activation of the tools have not yet been identified. There is limited knowledge about the effectiveness of these tools and possible unintended side effects.

4.3.2 Maturity mismatches and market illiquidity

Investment funds may also experience maturity and liquidity mismatches between assets and liabilities and contribute to them. The asset management industry has grown significantly over recent years, which has aroused a great deal of interest in analysing the risks that its activities may pose to financial stability. Its importance in relation to certain asset classes means that a crisis in the fund sector may increase the risks for issuers, investors and financial institutions, and ultimately generate systemic risk.

One of the main focuses of attention on these funds lies in the possible mismatch of liquidity between assets and liabilities as most investment funds offer investors daily liquidity (redemptions), while, at the same time, they may invest a significant part of their resources in assets with a lower level of liquidity. In the event that a fund has to deal with large-scale redemptions, it might not be able to sell assets quickly enough without suffering large discounts. Forced sales by investment funds might affect other agents and trigger downward price spirals in the market.

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40 Regulation (EU) 648/2012 of the European Parliament and of the Council, of 4 July 2012, on OTC derivatives, central counterparties and trade repositories.

41 Article 41 of the EMIR requires CCPs to regularly monitor and, if necessary, revise the level of their margins to reflect current market conditions taking into account any potentially procyclical effects of such revisions. In implementation of said provision, Article 28 of Commission Delegated Regulation 153/2013 of 19 December 2012 identifies a series of micro-prudential tools that CCPs may use for this purpose.

42 ESMA (2018). *ESMA Consultation Paper on Draft Guidelines on Anti-Procyclicality Margin Measures for Central Counterparties.*

43 ESRB (2017). *The Macro-prudential Use of Margins and Haircuts.*

Legislation provides for some measures to prevent, as far as possible, funds suffering difficulties at times of significant redemptions. In particular, legislation establishes that most investment funds are required to maintain certain minimum liquidity ratios and it also provides for other mechanisms, such as temporary suspensions of redemptions. In addition, legislation explicitly establishes that fund managers need to monitor both the composition and the risk of the portfolios in compliance with their duties in relation to clients and unit-holders. Furthermore, fund managers must perform stress tests[44] relating to market risk and credit risk, as well as liquidity stress tests. The aim is to assess the resilience of investment funds, at an individual or sector level, to severe redemption shocks. From a micro-prudential perspective, supervisors may use the results of stress tests to assess the resilience of a particular fund. From a financial stability perspective, if funds as a whole are not resilient, redemption shocks might generate a large selling pressure that markets would be unable to absorb without difficulties, which would lead to forced sales and downward price spirals.

4.3.3 Misaligned incentives to reduce moral hazard

Most financial market infrastructures are systemically important, making them "too-big-to-fail". Particularly important are CCPs, certain payment systems and some trading venues, such as stock markets, due to their central role in the functioning of financial markets. It is therefore extremely important to ensure that these infrastructures carry on their activity with appropriate incentives and prevent, as far as possible, the generation of systemic risks.

Over recent years, CCPs have become a priority in the regulatory agenda in order to ensure their safety and soundness. Regulators are fully aware of the need to ensure the resilience of these entities and to have appropriate tools and measures to guarantee, where necessary, the continuity of critical clearing services and to ensure that CCPs may be resolved in an orderly manner while minimising risks to financial stability and a negative effect on taxpayers.

The importance of CCPs in preserving financial stability became even more apparent following the crisis and the G20 mandate for the central clearing of standardised OTC derivatives. This decision also increased the risk associated with these infrastructures, which, due to their global nature and the abundant interconnections that they incorporate, are now considered as systemically important institutions by the authorities.

The mandatory use of central clearing of OTC derivatives partly aims to mitigate the credit risk thus far disseminated in the financial system, which, following the financial crisis, proved to be inappropriate in terms of financial stability. However, the concentration of risk in central counterparties requires appropriate management by the CCPs, as in periods of high stress, the failure of one of these infrastructures might contribute towards exacerbating financial instability. The systemic importance of central counterparties may lead to situations of excessive market power and moral hazard that need to be analysed with caution.

44 The regulation does not provide clear guidance on how to conduct these tests. The FSB has therefore encouraged fund managers and regulators to develop stress tests and to provide guidance on liquidity risk assessment and management.

In addition to financial market infrastructures, it is worth highlighting the importance in systemic risk terms of asset managers, which has risen over recent years as a result of their increased concentration. According to FSB estimates, there are 10 major institutions that control 28% of the assets under management, while the 10 largest banks in the world concentrate 22% of bank assets. In order to address the potential risks resulting from the activities of these entities, the FSB and IOSCO are working on a framework to identify non-bank systemically important institutions.

4.3.4 Direct and indirect interconnectedness and concentrations

Direct or indirect interconnectedness between agents, activities and different sectors of the financial system acts as a transmitter and, sometimes, amplifier of some behaviours and risks that might undermine the stability of the system. The level of concentration of exposures and their cross-border nature may magnify these contagion mechanisms. They should therefore be incorporated, as far as possible, in the analysis and monitoring of systemic risk.

The interconnectedness between entities may be evaluated on the basis of the composition of their portfolios through the use of a network analysis methodology. This methodology, which allows various layers to be established, may also be applied to the interconnections between financial markets. Other interconnectedness mechanisms arise, for example, from the (growing) use of collateralised transactions, which create a series of direct and indirect links among financial market participants that are not always easily identifiable.

The channels of contagion are strengthened as a result of changes in asset prices. Many financial institutions measure their assets and liabilities at market value and therefore shocks in these prices may be instantly transmitted through the non-bank system and trigger negative second-round effects. A final element that sometimes plays an important role in contagion mechanisms is a loss of trust among agents. The consequences of this element are difficult to predict, but it played an important role in the most recent global financial crisis. A widespread loss of agents' trust arising in a specific entity or sector may lead to the perception of risk spreading to other market participants, with negative consequences in all of them.

Central counterparties are also interconnected with other market participants, such as banks and their clients. They are also indirectly connected with each other through common members as well as due to the existence of a small number of participants that provide critical services to central counterparties. In addition, there are the interoperability arrangements between different central counterparties, whereby clearing members of one CCP centrally settle transactions performed with another CCP, without the need to be a member of the latter. This all makes central clearing highly interconnected, whereby it becomes a channel through which shocks may quickly spread among CCPs and towards their participants and suppliers.

4.3.5 Technological innovation

In June 2017, the FSB published a report on the implications of technology-enabled innovation in financial services (FinTech). The FSB has also analysed the development of artificial intelligence and repercussions for financial stability. It is a fact that the use of artificial intelligence and machine learning technology, whose use is more widespread than that of other FinTech innovations (such as blockchain technology or smart contracts), is changing the provision of some financial services. This is the case of Initial Coin Offerings (ICOs),[45] which some have attempted to use as a new way of obtaining financing for business products or investment based on blockchain technology. However, the difficulties of their regulatory position, among other factors, have generally hindered significant use of this possibility.

The FSB analysis describes both the potential benefits of these technological developments and the risks that they may generate for financial stability. These risks need to be assessed as the available information increases. The benefits that they may provide at least partially result from the decentralisation caused by a greater presence of non-financial entities in the sector. This may encourage efficiency in the provision of financial services, transparency, competition, the resilience of the system and, ultimately, greater inclusiveness. The digital transformation of participants in the financial system is also reflected on the side of regulators and supervisors, which have already started to apply or accept the use of advanced technological solutions (called regtech and suptech) in the exercise of their powers.

On the risk side, it should be noted that, although there are currently no obvious risks to financial stability posed by emerging innovations in the FinTech sector, given their relatively small size in relation to the financial system, experience shows that these risks may emerge quickly if not properly identified and controlled. In this context, the FSB has identified certain areas that merit the attention of the authorities and international coordination given the common aspects and global dimension of many FinTech activities. These areas include the management of operational risk resulting from the use and concentration of services in non-traditional external providers (in areas such as cloud computing and data services), the mitigation of cyber risks (through contingency plans and cybersecurity systems) and the monitoring of macro-financial risks that might appear as a result of greater connection and the risk of contagion.[46] In this regard, the FSB indicates the possible emergence of new types of interconnection and new participants with systemic importance that might fall outside the regulatory perimeter.

4.3.6 Conduct of market participants

The behaviour of market participants may lead to the emergence and build-up of systemically important risks. The weaknesses of entities' corporate governance structures, insufficient transparency levels and inappropriate management of conflicts of interest may lead to inappropriate treatment of clients, such as the sale of financial products or services that do not match their knowledge and risk profile. This may lead to a transfer of risks to vulnerable sectors and segments of the population. The impact of these practices (misselling) can be accentuated by investors' lack of financial knowledge, which leads them to make an incomplete or biased assessment of their financial decisions (misbuying).

In addition, securities markets are also conditioned by the behaviour of their participants, which are often not rational, but rather show some type of cognitive or

45 This system offers investors all types of cryptoassets represented by a token and payment is normally made by using cryptocurrencies such as bitcoin or ether.

46 Resulting, for example, from a possible increase in concentration of business financing through crowdfunding platforms.

emotional bias. Predicting these biases and assessing their consequences is very difficult. However, there are numerous examples in financial markets in which their presence has led to moments of uncertainty, increased contagion or has encouraged asset price bubbles. Therefore, to the extent that the presence of these biases may be significant from a financial stability point of view, the design of macro-prudential policies adapted to securities markets must add to traditional economic theory information from psychology about investment (and disinvestment) decision-making, which is known as behavioural finance.[47, 48]

4.3.7 Discontinuity and transition of systemic benchmarks

The main interest rate benchmarks used in the world perform a crucial economic function in the pricing of numerous financial instruments and contracts,[49] as well as in the implementation and monitoring of the transmission of monetary policy.

The current reform of benchmarks was triggered by the past cases of manipulation of interbank indices, which highlighted their vulnerability and the adverse effects that these situations may have on financial stability. The reduction in transactions and volumes in the underlying markets that they represent questions their sustainability in their current format over the medium and long term. This makes it necessary to conduct a transition towards enhanced benchmarks that are more representative of the economic reality that they aim to measure, as well as towards alternative benchmarks that will lower excessive concentration in the current ones.[50]

This transition towards structurally different benchmarks will be complex and difficult and will be conditioned, *inter alia*, by excessively short deadlines, the existence of uncertainty about the availability of appropriate benchmarks for the different current uses and of a time curve supported by a sufficiently deep and liquid market and by the likely difficulties in renegotiating contracts and in their continuity. The risks and challenges are significant and must be managed proactively in order to prevent the interruption or discontinuity of the benchmarks or an incomplete transition that would lead to serious systemic disturbance for markets and their participants, including final users, as well as for the financing of the economy and financial stability.

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47 Behavioural finance is based on prospect theory, developed in 1979 by the psychologists Daniel Kahneman and Amos Tversky. According to this theory, in uncertain environments, individuals make decisions that deviate from the basic principles of probability and economic rationality. These types of decisions are known as "heuristic shortcuts". Daniel Kahneman was awarded the Nobel Prize in Economics in 2002 for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty.

48 For further information, see the article by Cadenas, M.E. (2018). "From *Homo economicus* to *Homo humanus*: Brief introduction to behavioural economics". *CNMV Bulletin*, Quarter I.

49 The amount of contracts based on these benchmarks is estimated to be over 250 trillion euros in the case of the Libor, 180 trillion euros in the case of the Euribor and over 5 trillion euros in the case of the Eonia. These contracts cover wholesale and retail products, such as corporate loans, debt instruments, derivatives, retail loan contacts, such as mortgages, and other instruments.

50 For this reason, the G20 and the FSB have promoted reforms, which in the European Union gave rise to Regulation (EU) 2016/1011, with the aim of evolving towards improved benchmarks that are less susceptible to manipulation and more representative of the economic reality that they aim to measure, as well as towards alternative risk-free benchmarks that will reduce excessive concentration in the current ones.

4.4 Instruments and indicators for the non-bank sector

In its strategic report on macro-prudential policy beyond banking, the ESRB proposes a series of tools whose activation requires a cost-benefit analysis that examines the impact of policies on short-term and longer-term developments in the economy and the financial system. In this regard, it recommends the application of policies both at the level of lenders, i.e., intermediary entities, and at the level of borrowers. Tools aimed at lenders or intermediaries are generally implemented through an entity-based regulation, while those aimed at borrowers are usually implemented through activity-based regulation.

The instruments aimed at lenders include the following:

— **Restrictions on the leverage of investment funds.** Investment funds can become leveraged by the use of lending or the use of derivatives. European legislation set limits to borrowing by funds, which are stricter in the case of UCITS. In these funds, the directive establishes that they may only temporarily borrow up to 10% of the value of the fund and, in the case of the use of derivatives, they must guarantee that the overall risk associated with these instruments does not exceed the total net value of their portfolio. For their part, alternative investment funds (AIFs) have no leverage limits, but they must report on their maximum leverage target. In Spain, however, funds of hedge funds have a direct borrowing limit of five times their net assets. In addition, those whose investment policy allows the granting of loans may not borrow (Article 73 of Royal Decree-Law 1082/2012). Supervisors can intervene by setting specific limits on the leverage of these funds when risks to financial stability are noted.[51]

— **Margin and haircut** requirements may limit procyclicality and the build-up of leverage through security financing transactions and derivatives. Setting margins and haircuts in a conservative and counter-cyclical manner may help to contain the build-up of leverage as well as reduce the impact of margin calls during stress events. These types of measures require a broad regulatory scope and must be applied to all economically equivalent transactions, including transactions that are cleared both centrally and bilaterally so as to avoid substitution effects.

  As mentioned in a previous section, current European legislation on derivatives and SFTs (EMIR and SFTR) does not provide for the macro-prudential use of margins and haircuts by authorities. At an institutional level, it should be remembered that ESMA has submitted to public consultation guidelines that aim to clarify and promote uniform and consistent application of these tools and that the ESRB has published two reports analysing how such tools might work from a macro-prudential point of view.

— Instruments to address **liquidity mismatches** in asset management. Liquidity requirements can reduce liquidity mismatches and enhance the resilience of funds to redemption pressures. Current regulation of investment funds, both

51 The ESRB acknowledges that the current leverage limits for investment funds in the European Union may not be effective from a macro-prudential point of view as the Value at Risk (VaR)-type limits applicable to certain UCITS are not a measure of leverage and generally have procyclical effects.

UCITs and AIFs, in the European Union requires funds to maintain redemption policies that are consistent with the liquidity profile of the investment strategy and to conduct regular stress tests under normal and exceptional liquidity conditions. UCITS must also comply with detailed rules on minimum investment in liquid assets.

In a scenario of high uncertainty and market turbulence that might generate a significant increase in investor redemptions, investment firms that hold a high proportion of less liquid assets in their portfolio may be more vulnerable. In this context, stress tests are a necessary tool for authorities to be able to assess the risks and calibrate the introduction of the appropriate liquidity management instruments, for example use of the power to suspend redemptions (provided for in Article 46 of the AIFD and Article 84 of the UCITS Directive.

On this point, it is important to highlight the recent publication of Royal Decree-Law 22/2018, of 14 December, establishing macro-prudential tools, which grants the CNMV the power to adopt measures to strengthen the liquidity of collective investment schemes for reasons of financial stability or in order to ensure fair treatment between investors.

— **Restrictions on large exposures** for systemically important institutions and recovery and resolution plans are measures that mitigate the risk of the collapse of systemic infrastructures and limit contagion through high exposures.

— Restrictions on **short selling** also contribute towards preventing downward spirals and contagion effects. The EU's Short Selling Regulation of 2012 defines the framework for ESMA and national competent authorities to intervene in exceptional situations with the aim of reducing risks to financial stability resulting from short selling. The regulation and the related delegated act define the criteria and factors that must be taken into account to determine when such adverse events or developments take place and whether threats emerge. However, the ESRB indicates that these considerations may be revised to optimise use of these instruments while minimising the unintended consequences for market liquidity and price discovery.

— Parallel to what has been described in the banking field, in the non-banking sector misaligned incentives relating to **moral hazard**, i.e., those which lead to excessive risk-taking due to expectations of a bailout due to the perceived system relevance of an individual institution have been detected. Reducing these incentives requires: i) determining the systemic nature of institutions through indicators of size, interconnectedness, substitutability and complexity; ii) strengthening the resilience of these institutions, while counterbalancing the negative effects of an implicit government guarantee; and iii) having credible arrangements for orderly wind-down and resolution of institutions. Other measures such as asking market participants to "keep skin in the game", or relating to management remuneration, could be applied.

An adequate recovery and resolution regime for systemically important financial institutions requires the entity itself to draw up its recovery and resolution plan and for authorities to have early intervention powers to allow them to seek to prevent the failure of a bank should recovery actions taken by the latter prove insufficient. It also requires that the resolution powers enable them to assume control of a failing bank if preventive measures taken by the bank or the authorities have failed. The objective of an effective resolution regime is to make feasible the resolution of financial institutions without severe systemic disruption and without exposing taxpayers to loss, while protecting vital economic functions through mechanisms which make it possible for shareholders and unsecured and uninsured creditors to absorb losses in a manner that respects the hierarchy of claims in liquidation.

This regime limits the moral hazard in systemically important institutions and the implicit subsidy they may enjoy and mitigates the direct or indirect contagion effect of the failure of a given institution. This context led to initiatives such as the recommendations issued by the FSB in 2011 and 2014 on the key attributes of effective resolution regimes for financial institutions such as banks, insurance companies and market infrastructures.[52] At a European level, at the end of 2016 the European Commission submitted a legislative proposal consistent with the guidelines and recommendations of the FSB that establishes a framework for the recovery and resolution of these infrastructures in order to be able to address their resolution and avoid a bailout by taxpayers or the clients of the CCPs being affected to a large extent.[53]

The proposed borrower-based instruments refer to:

— **Limits for end-borrowers.** These should target all sources of credit, regardless of the provider. Limits to the amount lent depending on the value of the collateral or the asset acquired with the loan (LTV), or on the borrower's income or ability to pay (debt to income, DTI), as well as limits to maximum repayment periods, function in a similar manner to haircuts for SFTs.

— Promoting the public's **financial literacy** has become a challenge for governments and regulators due to its importance for maintaining financial stability and its contribution to economic growth and social well-being. The CNMV is at the forefront, together with the Bank of Spain, in promoting financial education. The Financial Education Plan published in 2008 (and successively broadened and extended) recognises the improvement in the public's financial literacy as an instrument for favouring stability and trust in the financial system and economic growth.

— In the area of monitoring technological innovation and the possible risks that may result from excessive growth and, particularly, the appearance of non-traditional activities and agents, it is essential to analyse and adapt the **regulatory regimes** in a quick and flexible manner so as to avoid the proliferation of financial services providers outside the regulatory and supervisory perimeter.

— In the context of the reform and transition of **benchmarks**, the importance of both participants and markets, infrastructures and authorities themselves

52 FSB (2011) / (2014). *Key Attributes of Effective Resolution Regimes for Financial Institutions*. In the area of recovery, the 2014 CPMI-IOSCO *Report on Recovery of Financial Market Infrastructures* also contributed towards identifying measures that might improve the capacity of a CCP to recover in the event of threat to its viability so that it can continue to provide critical services and to reduce systemic risk during a period of extreme financial instability.

53 *Proposal for a Regulation of the European Parliament and of the Council on a framework for the recovery and resolution of central counterparties and amending Regulations (EU) No. 1095/2010, (EU) No. 648/2012, and (EU) 2015/2365*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016PC0856

designing contingency plans should be highlighted. These plans should include a communication plan that allows all participants and end-users access to appropriate information and understanding of the situation. The robustness of contracts, a key element for ensuring their continuity, must be supported by adequate back-up clauses, without ruling out possible regulatory intervention. This is essential for ensuring the orderly functioning of the financial system and preventing disruptive effects both for institutions and for markets and consumers.

Finally, the ESRB stresses the importance of **stress testing** in the non-bank financial system to analyse its resilience in stress scenarios.

In this regard, since 2016, ESMA has been performing, within the scope of the European Union, stress exercises on the resilience of CCPs to adverse market developments. The experience in this field is enriched by the experience of banks, on which the European Banking Authority (EBA), in coordination with the ECB and national supervisory authorities, has been performing these tests since 2011.

Stress tests by market participants are supplemented by tests performed by regulators at sector and cross-border levels. In particular, testing for investment funds and financial market infrastructures (including markets and trading platforms, CCPs and CSDs) must be performed in a global manner considering the channels of transmission and contagion of imbalances between sectors. In designing the scenarios, it important to bear in mind, as far as possible, the idiosyncratic component affecting the behaviour of market participants and, in particular, their trust. The loss of trust may be a channel for contagion and for amplifying risks at times of uncertainty, as has historically been the case during bank crises.

Due to its special characteristics, the importance of climate change as a source of systemic risk should be highlighted.[54] Authorities are increasingly aware of the importance of taking these risks into account in the preservation of financial stability, of overseeing the channels of transmission of climate-related risks and of making progress in the availability of comparable and consistent information on exposures and risks taken on by financial and non-financial companies.[55] It is also necessary

54 Climate risk has a two-fold component: the physical risk associated with climate and geological events and changes in the balance of ecosystems and transition risks linked to the shift towards a low-carbon economy in response to climate change. The former involve physical damage to companies' assets, disruptions in the supply chain or an increase in the expenses necessary to deal with them, while the latter are associated with priorities in regulatory policies and measures in the fight against climate change. These policies may eventually affect companies either because they have an impact on their particular economic activity or because they affect assets in which they have invested. Furthermore, it is necessary to add the undervaluation of risks in new green financial products, which might lead to price bubbles.

55 The sustainable finance project promoted by the European Commission (inspired by the United Nations 2030 Agenda for Sustainable Development and the Paris Agreement of December 2015 to reduce carbon issues by 40%) is based on three pillars: creating a unified taxonomy to identify the economic activities that contribute to mitigating climate change, setting guidelines for companies for disclosing the impact of their businesses on the climate and the consequences of climate change on their businesses and the creation of a new category of low-carbon Indices that will facilitate and promote the selection of sustainable financial products by investors.

to design stress scenarios[56] that allow an evaluation of the possible effects of climate change in the financial industry, including market infrastructures.[57]

Like other securities regulators, the CNMV is paying increasing attention to systemic risk and strengthening and supplementing its traditional market discipline and transparency-based approach. In line with the FSB and ESRB recommendations, one of the CNMV's strategic areas is to promote the analysis and monitoring of financial stability in matters relating to capital markets, as set out in the CNMV's Strategy for 2017-2018 and the 2019 Activities Plan, which, among other objectives, sets out the preparation of this report on the CNMV's role in designing macro-prudential policy.

4.5 Legal and institutional framework of the CNMV's activities

Like other supervisory authorities of securities markets and as mentioned above, the CNMV has not historically had a specific legal mandate related to the monitoring of systemic risk and the maintenance of financial stability, but it has been assigned certain explicit functions relating to this matter. Particularly important is Royal Decree-Law 22/2018, of 14 December, explicitly recognising the CNMV's role in the monitoring of systemic risk and maintenance of financial stability and, accordingly, the institution is provided with extra tools, in addition to those that it already had, that will allow it to respond quickly and effectively to risks to financial stability. In particular, the Royal Decree-Law grants the CNMV:

— The ability to take measures to strengthen the liquidity of collective investment schemes and venture capital undertakings for reasons of financial stability in order to guarantee fair treatment between investors.

— The possibility of introducing limits and conditions for the activity of its supervised entities, with the aim of preventing excessive borrowing by the private sector that might affect financial stability.

— Use of these tools is subject to prior notification to the macro-prudential authority seven days in advance, except for urgent reasons. Since the creation of the AMCESFI, these notifications will be carried out in or through this authority.

The powers already assigned to the CNMV included the following:

— The function, together with the Bank of Spain, of overseeing the proper functioning of market infrastructures with the aim of preserving the stability of the financial system as a whole, as provided for in Article 255 of the Securities Market Act. This provision was introduced by Law 11/2015, of 18 June, on the recovery and resolution of credit institutions and investment firms.

56 At a European level, the ESRB is taking important steps towards developing a framework for monitoring climate-related risks and it has recommended that authorities consider developing climate stress test methodologies.

57 The informal group of central banks and supervisors known as NGFS (Network for Greening the Financial System) has recently published recommendations on the development of measurement and stress scenario methodologies that consider climate risks, the development of taxonomies, information on consequences and the incorporation of climate-related risks to prudential frameworks.

— With regard to alternative investment funds, the legislation establishes the obligation to share information with the ESRB on the possible systemic consequences of the activities of AIF managers regulated in Directive 2011/61/EU. This obligation involves the need to monitor the activity of these managers, both individually and collectively, to identify possible consequences for financial stability (Article 71 *sexies* of Law 35/2003 on collective investment schemes, which transposes Directive 2009/65/EU and Directive 2011/61/EU to Spanish law).

— In addition, the CNMV must also assess the level of contribution to leverage with which these entities may incur in the generation of systemic risk. The CNMV must notify about any source of counterparty risk with systemically important effects for a credit institution or other entity from other Member States to their competent authority.

— The legislation also establishes the use of macro-prudential tools for purposes that may be considered macro-prudential policy related to the leverage of these schemes. For this purpose, it grants the CNMV (Article 71 *septies*(3) of Law 35/2003) the ability to decide to set limits to the level of leverage that CIS management companies may use or other management restrictions with regard to the vehicles that they manage, with the aim of limiting the impact of leverage in the generation of systemic risk in the financial system or the risk of market disruption. The CNMV must report these decisions to ESMA, the ESRB and to the competent home authorities of the CIS through the established procedures for supervisory cooperation.

— Article 190 *bis*(1) of the Securities Market Act establishes that investment firms must at all times comply with the combined requirement for the capital buffers[58] necessary to comply with the obligation to have a capital conservation buffer, plus other buffers, in the legally established terms.[59] In addition, Articles 256 *et seq.* of the Securities Market Act grant the CNMV certain supervisory powers relating to investment firms which are not deemed small or medium-sized and which are, in the opinion of the CNMV, a threat to the stability of the Spanish financial system.

— Article 269 of the Securities Market Act requires the CNMV to warn the Minister for Economy and Competitiveness, the other affected national or foreign supervisory authorities, the EBA and the ESRB when an emergency situation arises. In particular, this obligation must be fulfilled in cases where there is an adverse development in financial markets which might undermine liquidity in the market and the stability of the financial system of any Member State of the European Union in which investment firms have been authorised belonging to a group subject to supervision by the CNMV on a consolidated basis or in which significant branches of a Spanish investment firm are established.

58 Total common equity Tier 1 capital as defined in Article 26 of Regulation (EU) No. 575/2013 of the European Parliament and of the Council of 26 June 2013.

59 According to the former Article 196 of the Securities Market Act, the CNMV had the same powers for setting and using the macro-prudential instruments provided for in solvency legislation that the Bank of Spain has over banks. With this latest reform, these powers are set out in the royal decree that implements the current Article 190 *bis*(1) of the Securities Market Act. Specifically, Article 15 of Royal Decree 1464/2018, of 21 December, has introduced a new Article 15 *bis* in Royal Decree 217/2008, of 15 February, on the legal regime of investment firms that sets out these powers.

— Regulation (EU) No. 236/2012 of the European Parliament and of the Council of 14 March 2012 on short selling grants powers to the CNMV to adopt certain measures which, although originally micro-prudential in nature, may also be used for macro-prudential purposes, in particular when the measure is aimed at all listed companies in the sector or companies with specific characteristics.

— Regulation (EU) No. 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse also contains some measures of this type, such as deferral of publication of certain information by credit institutions when this might have a negative impact on the stability of the financial system.

The CNMV started to work on analysing and monitoring systemic risk in 2006, focusing its work on analysing and monitoring risk relating to the development of the real estate sector and to possible liquidity mismatches in collective investment schemes. Together with the Bank of Spain, the Directorate-General for Insurance and Pension Funds and the Ministry of Economy, it participated in the Financial Stability Committee (CESFI), chaired by the State Secretary for Economy and created in 2006, following the recommendation from ECOFIN, by means of a cooperation agreement to facilitate inter-agency coordination. Its main functions were: i) facilitating the sharing of information between the four institutions in matters relating to financial stability, ii) improving risk prevention mechanisms, including developing contingency plans, and iii) performing crisis simulation exercises and stress testing in order to coordinate the management of a financial crisis with a potentially systemic impact.

The CNMV also created an internal interdepartmental financial stability group (GIEF) in order to promote different analysis and monitoring initiatives and facilitate their coordination. Both the high-level committee and the internal group of the CNMV have been very active since their creation, particularly during the most severe years of the economic and financial crisis.

The CNMV formalised its functions and tasks relating to financial stability in 2016, when these were included in the institution's Internal Regulation.[60] The CNMV thus aligned itself with other European supervisors and with IOSCO recommendations, which has included this as one of the main tasks for security supervisors since 2011. In particular, Article 30(4)(q) of the Internal Regulation establishes that the Strategic Policy and International Affairs Directorate-General is responsible for analysing and tracking financial stability and macro-prudential policy in matters relating to the capital markets, and coordinating actions and participation in work groups to which the CNMV is assigned or in which it is interested. Article 31(3) establishes that the Research and Statistics Department shall exercise these functions without prejudice to the work that a unit reporting directly to the Director-General may perform in relation to internal coordination, analysis, reports and proposals in the field of the functions of resolution and benchmarks attributed to the CNMV by law.

With regard to the resolution functions attributed to the CNMV, it is worth noting that the aim is to cover the recovery and resolution functions already regulated that affect investment firms and, at the same time, anticipate the likely impact on the CNMV of international and European initiatives on the resolution of market

60 CNMV Board Resolution, of 20 April 2016, amending the CNMV's Internal Regulation.

infrastructures which, in the case of central counterparties due to their systemic nature, are closely related to financial stability (Article 30(4)(p) of the CNMV's Internal Regulation).

The CNMV has recently created an internal committee whose main mission is to ensure proper coordination in identifying and analysing trends and in responding to any systemic risks that might be generated in securities markets. This committee should also support the CNMV representatives in the AMCESFI.

The institutional framework in which the aforementioned measures and actions are materialised is completed with the creation of the Macro-prudential Authority Financial Stability Board (AMCESFI), which finally took place on 1 March 2019. This initiative fulfils both the recommendation made by the IMF in the FSAP report on Spain in 2017 (see Section 2.3) on the creation of a Systemic Risk Council, and the recommendations made by the ESRB in 2011 (Recommendation ESRB/2011/3) (see Section 2.2).

This authority is made up of a council, a technical committee and the subcommittees that the council decides to create. The former is the body responsible for taking the decisions relating to the powers and functions attributed to the authority, while the latter is a support body for the former. Both the council and the technical committee comprise representatives of the Bank of Spain, the CNMV and the Ministry of Economy and Business.

The powers of this new authority include issuing warnings about all aspects relating to systemic risk and financial stability and submitting recommendations to the sectoral financial supervisors (Bank of Spain, CNMV and the Directorate-General for Insurance and Pension Funds) which the latter must comply with or explain why they consider compliance unnecessary. In addition, the sectoral supervisors must notify the AMCESFI in advance of their intention to activate, recalibrate or deactivate any of their macro-prudential tools. Upon receipt of this notification, the AMCESFI will issue its opinion on the matter.

It should be pointed out that, at the time of publication of this report, the institutional framework of this authority is fully operational as the different bodies have been established and have held meetings and the secretariat has begun its functions.

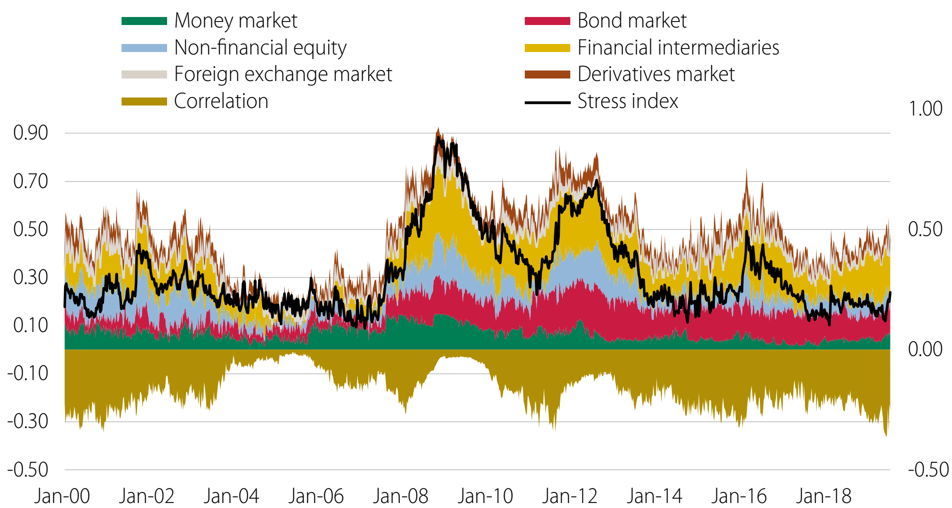
4.6 Analysis and monitoring of systemic risks by the CNMV. Use of indicators

The CNMV performs a series of actions related to analysing and monitoring systemic risks in the areas under its remit. This analysis considers factors such as the size of the supervised entities (which is generally small), the nature of the markets and their role as possible transmitters or amplifiers of risks and the conduct of market participants.

The analysis work is based on collecting internal data, mainly from supervisory tasks, and external data, such as the use of commercial databases, and on generating risk indicators in different areas: on the financial system in general (market stress indices or heat maps) and on sectors supervised by the CNMV – mainly, the investment fund industry, financial intermediaries and securities markets themselves.

The stress index provides a real-time measurement of systemic risk in the Spanish financial system in the range of zero to one. For this purpose, stress is evaluated in six segments of the financial system (equity, fixed income, financial intermediaries, the money market, derivatives, and the Forex markets) which are then aggregated to obtain a single figure. The stress for each segment is evaluated by means of cumulative distribution functions and the subsequent aggregation takes into account the correlation between segments, in such a way that the index places greater emphasis on stress situations in which correlations are very high. In general terms, the stress variables chosen for each segment (three for each one) correspond to volatilities, risk premiums, liquidity indicators, and sudden loss of value. These variables provide a fairly accurate representation of the characteristics of stress in the markets

Spanish financial markets stress index FIGURE 4



Source: CNMV.

Econometric estimates indicate that index values below 0.27 correspond to periods of low stress in the financial system, while scores between 0.27 and 0.49 correspond to periods of medium stress, and values above 0.49 indicate periods of high stress.[61] Since 2017, the CNMV has published weekly on its website the aggregate stress indicator and the segment indicators with historical information dating back to January 1999. In addition, it publishes a quarterly Financial Stability Note that contains a detailed and thorough analysis of the different sources of risk that affect or are generated in the Spanish financial system, including political, macroeconomic and market risks and those relating to financial institutions.

The stress index is useful for monitoring the risks that might threaten the system, to the extent that it draws attention to those of its components that are subject to high levels of uncertainty or tension and the possibility that these might be transmitted

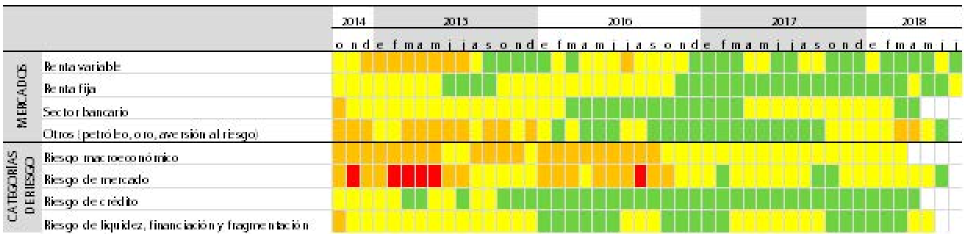
61 The methodology for this indicator follows the one proposed in Holló, D., Kremer, M. and Lo Duca, M. (2012). *CISS – A composite indicator of systemic stress in the financial system.* ECB, Working Paper No. 1.426 for a similar indicator in the euro area. For further details on recent movements in this index and its components, see the CNMV's statistical series (market stress indices), available at http://www.cnmv.es/portal/Menu/Publicaciones-Estadisticas-Investigacion.aspx. For further information on the methodology of this index, see Cambón, M.I. and Estévez, L. (2016) "A Spanish Financial Market Stress Index (FMSI)". *Spanish Review of Financial Economics,* vol. 14, No. 1, pp. 23-41 or CNMV Working Paper No. 60 (http://www.cnmv.es/portal/Publicaciones/monografias.aspx).

to other components of the system (which is measured by the correlation). In short, the stress index indicates those elements to which greater attention should be paid at each moment due to their potential for transmitting negative impacts to the rest of the financial sector and the economy in general.

Heat maps make it easy to visualise the evolution of the different risk categories based on monthly information of the most important indicators in the Spanish financial system over recent years. These maps allow an assessment of the system's vulnerabilities by including up to 43 indicators on domestic securities markets, the banking sector and certain macroeconomic variables. The position of each indicator is referenced in relation to its recent history or predetermined limits, with this position associated with a particular colour. When an indicator changes from green to a warmer colour (orange or red), it does not necessarily mean the existence of risk; rather it indicates a movement towards an extreme value (very high or very low) in the period or range of values used as a reference. If an indicator remains at extreme values for a prolonged period, it may suggest the need for a more detailed analysis, that is to say, it may be interpreted as an alarm signal.

The most comprehensive heat map includes 44 indicators[62] and allows the CNMV to perform an analysis of vulnerabilities for each segment of the financial markets (equity, fixed income, banking sector, etc.) or for different risk categories (macro, market, liquidity, credit, etc.), as illustrated in the figures below.[63] They show that the most significant risks recently are related to liquidity risk, particularly in fixed-income assets. Macroeconomic risks, basically resulting from the high unemployment rate and a more ambitious adjustment of fiscal indicators, are also significant.

Heat map: summary by market and risk category FIGURE 5



Source: CNMV.

Noteworthy in the area of investment funds are, for example, the analyses relating to the liquidity of these funds' portfolios, the risk appetite shown by investors and the stress tests performed. The analysis of the liquidity of the fixed-income portfolio of investment firms has been particular important since the start of the global crisis in 2008. Since then, the CNMV has quantified the proportion of less liquid private debt assets. For this purpose, the CNMV uses the information on the funds' portfolio that it periodically receives and the prices from Bloomberg (to the extent that these give an indication of those less liquid fixed-income assets) and the credit rating of the fixed-income assets in the portfolios. As shown in Figure 7, the proportion

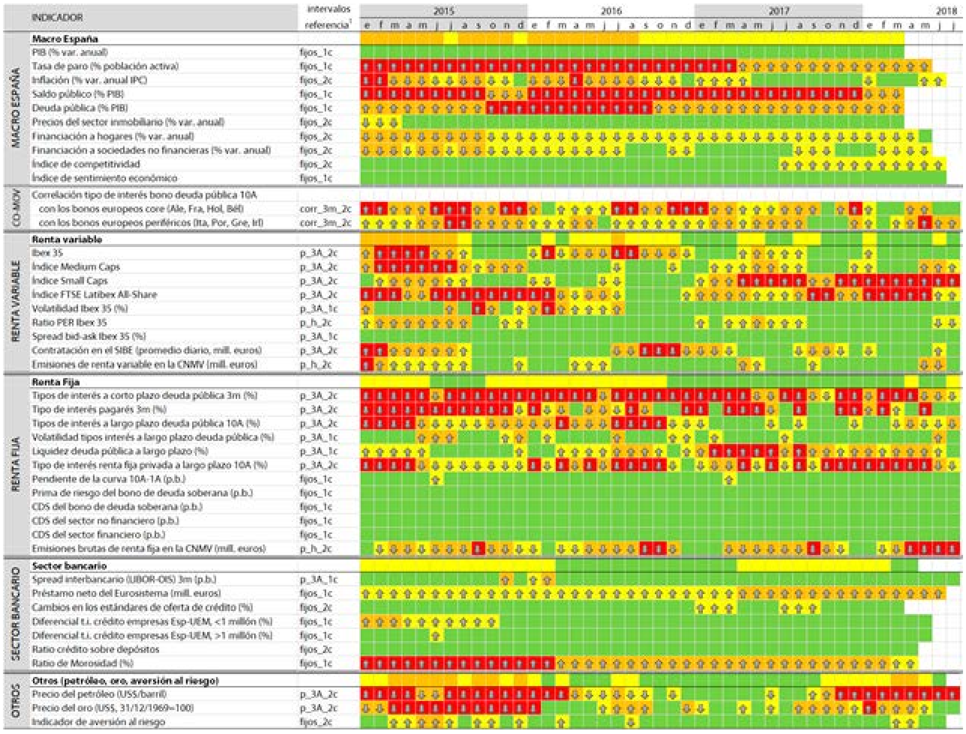
62 Five of them calculated by the CNMV.

63 More detailed information on the methodology and the analysis of these maps can be found in the article Identification of vulnerabilities in the Spanish financial system: an application of heat maps, published in the *CNMV Bulletin* for the first quarter of 2015.

of less liquid assets[64] in the funds' portfolio has fallen significantly over recent years, which reveals the effort made by managers to address liquidity risk.

Heat map: breakdown by risk category

FIGURE 6

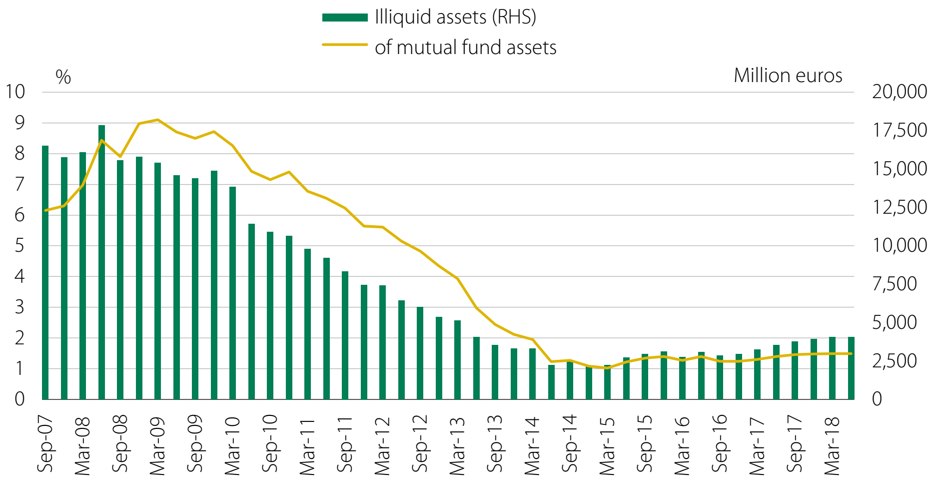


Source: CNMV, Thomson Datastream and Bloomberg.

1 Reference intervals could be: i) fixed: predetermined numerical thresholds, one (1t) or two-tailed (2t); ii) corr_3m: 3 months windows correlation coefficient; iii) p_3Y: percentile is obtained from 3 past years distribution, one (1t) or two-tailed (2t); or iv) p_h: percentiles obtained from historical distribution.

Analysis of the liquidity of the fixed-income portfolio of investment firms (volume of low liquid assets and proportion in relation to total assets)

FIGURE 7

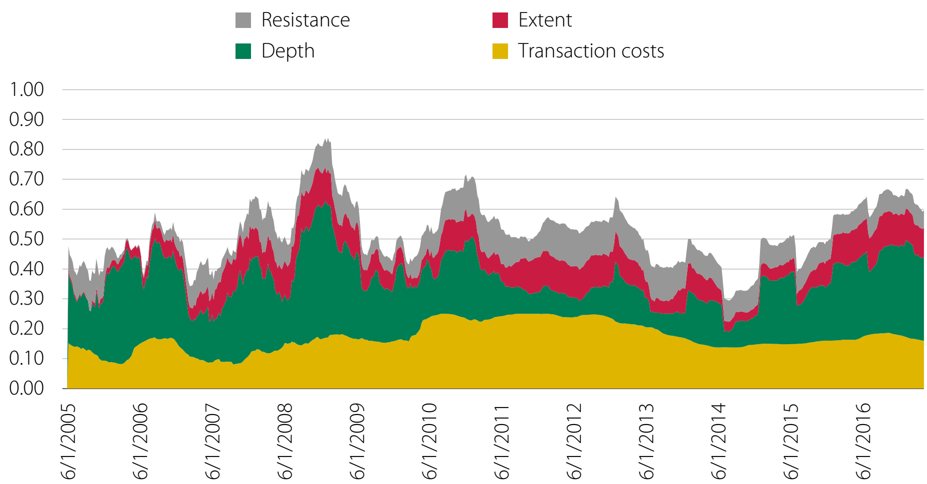


Source: CNMV.

64 In the area of private fixed-income assets, liquid assets are those with a maturity of under one year or for which there are firm quotations offered by Bloomberg contributors. Other private fixed-income assets are therefore deemed to be illiquid.

Despite this improvement, the fact that liquidity conditions in debt markets may be somewhat worse than the situation prior to the crisis (see Figure 8) for various reasons[65] means that analysing this risk remains extremely important. The aim, above all, is to assess to what extent these funds can cope with a scenario of high market uncertainty resulting from a significant increase in redemption requests. In this regard, communication between the CNMV and the management companies to ensure proper liquidity risk management has been ongoing over recent years, particularly with those which have a high exposure to illiquid assets.

Liquidity indicator of Spanish debt FIGURE 8

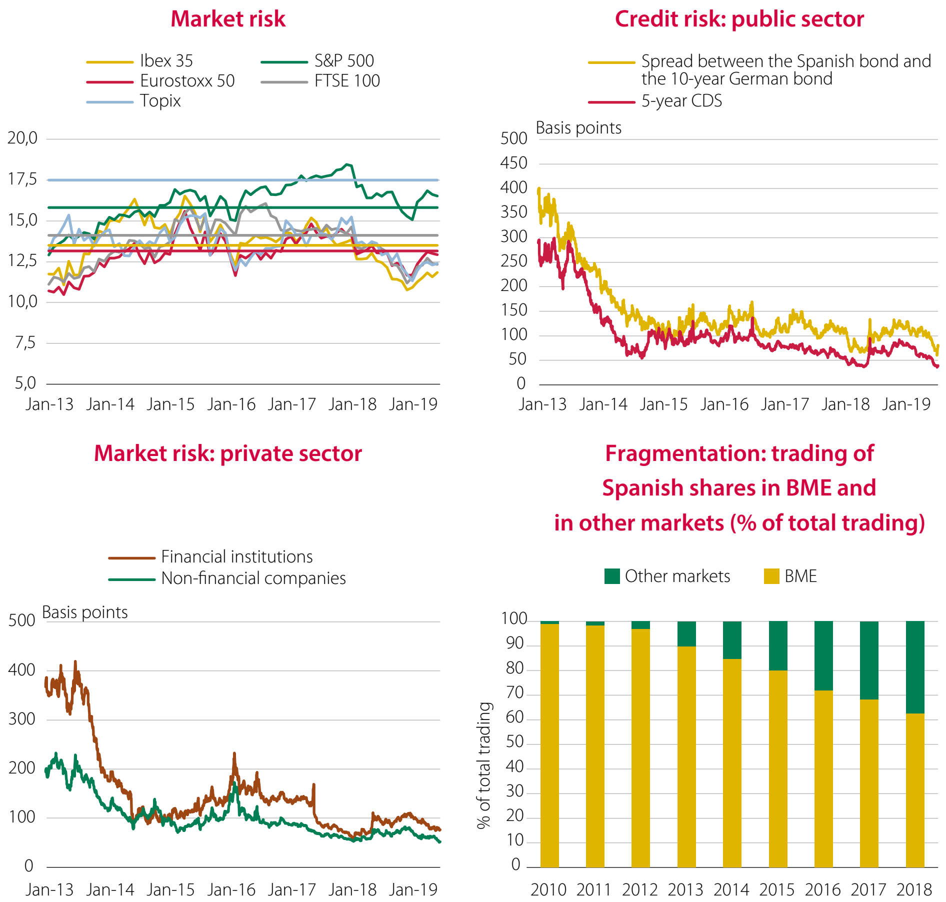


Source: CNMV, Thomson Datastream and Bloomberg.

Indicators that attempt to assess market, credit and fragmentation risks are common in financial markets. In the case of market risk, price-to-earnings (P/E) ratios are usually the main benchmarks, while credit risk is usually assessed using various risk premiums, either through interest-rate spreads or through information on CDS, both with regard to the public and the (financial and non-financial) private sector. Analysing market fragmentation involves several aspects: firstly, the cost of similar financial alternatives in different euro area countries is observed. The most typical case is the interest rate applied to bank loans in different jurisdictions. Secondly, and focused more on the assessment of financial markets, an analysis is made of the proportion of the issues and trading of fixed income and equity of Spanish issuers is carried out outside the original markets. Some of these indicators are shown in the panels in Figure 9.

65 In Cambón, M.I., Cano, J.L. and González, J. (2017). *Measuring liquidity of Spanish debt.* CNMV Working Paper No. 66 evaluates the liquidity conditions of Spanish debt between 2005 and 2016 and attributes the worsening liquidity of these assets to several elements, including the new banking regulations following the crisis and the ECB's asset purchase programmes.

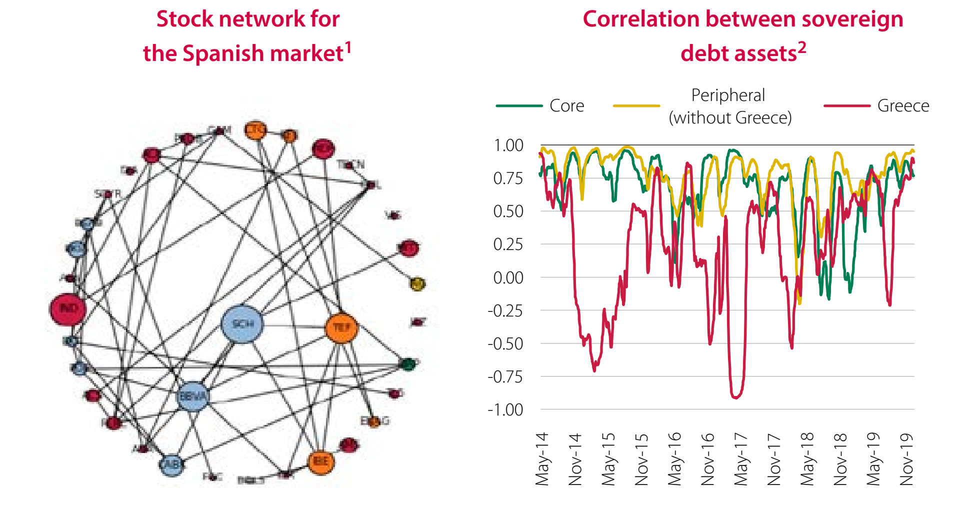
Market, credit and fragmentation risk FIGURE 9



Source: CNMV, Thomson Datastream and Thomson Reuters.

The analysis of contagion risk is particularly important in the context of financial markets as these are not usually the source of the risks but they do transmit them with a certain intensity, which may be very significant in terms of financial stability. The CNMV has developed different metrics to assess contagion between different types of assets. Noteworthy among the first, framed within the period of the European sovereign debt crisis, was the development of credit risk contagion indicators, particularly associated with public debt. Network indicators have also been prepared in relation to the Spanish equity market, which revealed the central role of the banking sector and utilities (a characteristic shared by some comparable countries). Finally, the CNMV has developed indicators that measure the correlation between similar assets from various economies (for example the ten-year sovereign bond) or between assets of different types (fixed income and equity) in the same jurisdiction. Both types of correlations make it possible to assess what type of contagion occurs (between asset classes, markets or jurisdictions), particularly at times of turbulence.

Contagion risk FIGURE 10



Source: CNMV.

1 For further details about this analysis, see Peralta, G. (2015). *Network-based Measures as Leading Indicators of Market Instability: The case of the Spanish Stock Market*. CNMV, Working Paper No. 59.

2 The correlation of the yield on the ten-year Spanish sovereign bond with the core European countries (Germany, France, Holland and Belgium) and the peripheral countries (Italy, Ireland, Portugal and Greece) is presented.

The CNMV's *2019 Activity Plan* includes improving the analysis of interconnectedness in the Spanish financial system, which will include building connectivity indices and sub-indices and possibly developing indicators, as well as carrying out an analysis of the effects on systemic risk (and, therefore, on financial stability) of different stress scenarios in investment funds.

Parallel to the identification of vulnerabilities related to the most important categories of financial risk (market, credit, liquidity and contagion risk), the analyses relating to financial stability also include identifying the sources of risk which, at each moment, may be of interest. With regard to the sources of risk, recent editions of the Financial Stability Note have addressed, for example, the consequences that might result from the current context of such low interest rates and the likely shift (subsequently not confirmed or, at least, deferred *sine die*) in monetary policy for the different market agents. The Financial Stability Notes also discussed uncertainties of a political nature, such as the events resulting from the conflict in Catalonia, Brexit, the risks associated with a possible trade war or the lack of ambition in fiscal consolidation in Italy. Finally, they addressed the developments in securities markets themselves, such as the emergence of cryptocurrencies or the growth in asset management, always from the perspective of systemic risk generation or transmission.

4.7 Transparency and publication of analyses and indicators by the CNMV

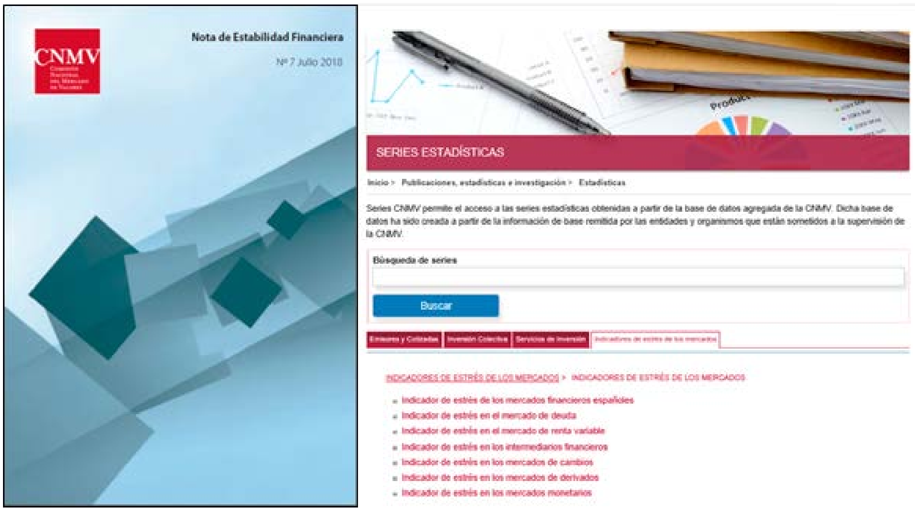
In line with the recommendations of the ESRB, the CNMV maintains a high level of transparency in its actions related to analysing systemic risk and financial stability through several types of publications that report on its work in this field.

Since 2008, the *CNMV Bulletin* includes, every six months, a report on "Securities markets and their agents: situation and outlook",[66] which describes the Spanish and international macroeconomic and financial environment and identifies the most significant risks that affect markets and the agents that participate in them.

The *Financial Stability Note*,[67] which began to be published in 2017 (previously for internal use), is published quarterly. It reports on the most recent evolution of the stress indicators and heat maps, and provides a detailed analysis of the evolution of different risk categories (credit, market, liquidity and contagion) and the most important sources of risk (context of low interest rates, political risk, risks resulting from the banking sector, FinTech, etc.).

Publications relating to the analysis of systemic risk and financial stability FIGURE 11

Financial Stability Note | **Statistical series: stress indicators**



Source: CNMV.

The Working Papers[68] series provides in-depth coverage of specific topics of interest within the scope of financial stability. The recent publications of this series have addressed issues relating to network-based measures, contagion indicators, analysis of high quality debt, fixed-income liquidity indicators, the characterisation of funds that suffer redemptions at times of stress,[69] etc.

The most significant project in this regard, recently published in the *CNMV Bulletin* for the first quarter of 2019, is the analysis of the entities that fall within the scope of non-bank financial intermediation in Spain. This document describes and quantifies the activities and entities that fall under this classification (see Figure 3), breaking them down into five economic functions as defined by the FSB.[70] The analysis also describes the most significant risks noted in the main types of institutions

66 http://www.cnmv.es/portal/Publicaciones/Mercados.aspx
67 http://www.cnmv.es/portal/Publicaciones/PublicacionesGN.aspx?id=51
68 http://www.cnmv.es/portal/Publicaciones/monografias.aspx
69 Coming soon.
70 Economic function 1 is defined as the management of collective investment vehicles with features that make them susceptible to runs; function 2, as loan provision that is dependent on short-term funding (for example, specialised lending institutions); function 3 is intermediation of market activities that is dependent on short-term funding or secured funding of client assets (in Spain, broker-dealers); function

relating to their credit intermediation activity, maturity transformation, liquidity, leverage and interconnectedness with the banking system. The results of this analysis (see Table 8) show that securitisations have the highest risk allocations in most of the aforementioned areas (credit intermediation, liquidity transformation and leverage) and, in addition, they are the ones that are most connected to the banking sector. Specialised lending institutions record a very high score in credit intermediation and liquidity transformation and a high score in leverage. Investment funds are also important with regard to credit intermediation (particularly those that invest in debt securities), as are broker-dealers, although the latter obtain the highest score in regard to maturity transformation.

The document explains the intuitions and figures behind these scores, which, furthermore, will be updated every six months (in the *NBFI in Spain Monitor*, the first edition of which is planned for the autumn of this year) with the aim of knowing how the risks in the sector are developing and how they are distributed among entities.

Risks associated with non-bank financial intermediation TABLE 8

	Investment funds			Specialised lending institutions	Broker-dealers	SFVs: securitisation
	Money market	Fixed income	Mixed			
Credit risk	●	●	●	●	●	●
Maturity transformation	○	●	○	○	●	●
Liquidity risk	●	●	●	●	○	●
Leverage	○	○	○	●	●	●
Interconnectedness with the banking system	○	○	○	○	○	●
Relative importance[1] (%)	1,3	13,0	28,7	10,8	0,7	38,9

Source: CNMV.

1 The weighting of each one of the entities presented in the table do not add up to 100% as mutual guarantee companies and some types of funds (SICAVs and hedge funds) that also belong to NBFI are not represented.

4.8 Use of tools

As described in Chapter 3 of this report, the design of an appropriate macro-prudential policy must be based on an ultimate objective to be reached and the definition of a series of intermediate objectives and of instruments or tools established in order to achieve them. The instruments must be effective and efficient. Table A.1 in the Annex includes the ESRB's proposal for this general approach, whose intermediate objectives are to i) mitigate and prevent excessive credit growth and leverage, ii) mitigate and prevent excessive maturity mismatch and market illiquidity, iii) limit direct and indirect exposure concentrations, iv) limit the systemic impact

4 covers entities that perform facilitation of credit creation; and function 5 is defined as securitisation-based credit intermediation and funding of financial entities.

of misaligned incentives with a view to reducing moral hazard and v) strengthen the resilience of financial infrastructures. The table also describes a series of indicators for evaluating the intermediate objectives and provides a list of macro-prudential instruments, which include capital reserves, restrictions to large exposures, leverage ratios and resolution and recovery regimes. Table 7, in Section 4.3, contains an application of this general table to the non-bank sector.

In the field of securities supervisors, designing an appropriate macro-prudential policy is complex, given the variety of institutions and activities under the supervision of the authorities that may potentially generate or transmit risks for the system. In general, the CNMV has a set of tools that have arisen in the context of its micro-prudential supervision that may, in some cases, be used for macro-prudential purposes to the extent that they might help to contain the possible development of more aggregate disturbances or the impact of idiosyncratic risks arising in entities of greater importance.

The tools that have attracted the greatest interest and for which more information is available are those which aim to reduce the risks arising from the activity of investment funds, particularly from a liquidity mismatch between the fund's assets and redemption terms and conditions for fund units, particularly at exceptional times. The importance of risks related to asset management activities led, for example, to the FSB publishing in January 2017 a set of recommendations to address structural vulnerabilities in asset management,[71] with special emphasis on managing their liquidity. In fact, nine of the 14 recommendations relate specifically to matching fund investment assets and terms and conditions for redemption, which in a high number of schemes may be carried out on a daily basis. From among these recommendations, it is worth highlighting those in which regulators must advise and guide managers when using liquidity management tools in extraordinary circumstances.

Table 9 contains an extensive and non-exhaustive list of macro-prudential tools belonging to the non-bank area, which shows which of them are provided for in Spanish legislation, which may be activated by supervised entities, which must be authorised by the CNMV and which may be adopted at the initiative of the CNMV. The highest number of tools affects investment funds, but the tools existing in relation to market infrastructures, investment firms and critical benchmarks are also described.

In the area of investment funds, most of the tools aim to address maturity mismatches and illiquidity, and particularly include redemption fees, redemption in kind, side pockets, redemption gates, suspension of redemptions, liquidity ratios and restrictions on redemptions. Some of these tools, such as redemptions in kind, side pockets or suspensions of redemptions, must be authorised by the CNMV before they are implemented by managers. It should be noted that the CNMV may implement, at its own initiative, side pockets, the suspension of redemptions in exceptional circumstances and certain specific limits to the leverage of alternative funds. In the area of investment funds, there are also limits to the concentration of assets, to the use of derivatives and stress testing. Over recent years, the CNMV has authorised the temporary suspension of the redemptions of some funds (several of which were real estate funds) at the request of the management company.

71 FSB (2017). *Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities.*

Particularly noteworthy in the area of investment firms are the solvency requirements, that are comparable to those of credit institutions, in accordance with European solvency regulations (CRD IV and CRR). In addition, the CNMV has powers, shared with the Fund for Orderly Bank Restructuring (Spanish acronym: FROB), in relation to the recovery and resolution of investment firms.

Market infrastructures must also meet certain capital requirements. These include CCPs, whose systemic importance has grown substantially as a result of the central clearing of standardised OTC derivatives provided for in the legislation of the EU and of other industrialised countries. With regard to the European Commission's draft regulation on CCP recovery and resolution, which follows FSB standards, the CNMV has begun an analysis of the resolvability, and created a Crisis Management Group (CMG),[72] of the Spanish CCP, which has been classified as a systemic institution in more than one jurisdiction by the FSB. This analysis will be completed by drafting a resolution plan as a preparatory measure in accordance with the international standards issued by the FSB and current draft European legislation

The CNMV may also impose restrictions on short trading in certain financial instruments, as regulated in Article 20 of Regulation (EU) No. 236/2012.[73] This decision was taken in the context of the sovereign debt crisis, in 2011 and 2012, on the grounds of the spiral of mistrust and volatility that occurred in Spanish markets at the times of greatest uncertainty during that crisis. Although these measures had a slight adverse impact on market liquidity, they significantly reduced volatility levels. More recently, in 2017, this tool was used to avoid an episode of contagion of mistrust between listed banks that might have negatively affected the stability of the financial system.

In the area of market infrastructures, margins and haircuts can be noted as tools for macro-prudential use, limiting procyclicality and the accumulation of leverage through securities financing transactions and derivatives. The macro-prudential use of these tools has already been analysed by the European Systemic Risk Board (ESRB), but at this time it is infrastructures and not supervisors that decide on their implementation. Finally, the CNMV is a member of the College of Supervisors of the Euribor and Eonia reference rates, as well as the LIBOR Supervisory College, established under the recent European legislation on benchmarks. Due to their systemic nature, the aforementioned reference rates have been subject to a regulation that provides for the adoption of measures to ensure their continuity so that their interruption or disappearance will not generate a threat to financial stability. These reference rates are particularly important in Spanish and European financial markets, particularly in derivative markets, where they are used as a reference rate in a large number of contracts. Furthermore, the importance of the Euribor in Spain is even greater due to its widespread use in mortgage loans.

72 In accordance with FSB standards, CMGs are composed of the same authorities that make up the college of supervisors and by the resolution authorities of the CCP and those of the most significant clearing members. Their aim is to improve resolution preparation and facilitate its management and coordination at a cross-border level.

73 Regulation (EU) No. 236/2012 of the European Parliament and of the Council of 14 March 2012 on short selling and certain aspects of credit default swaps.

Analysis of macro-prudential tools from the point of view of the CNMV

TABLE 9

Sector/entity/ activity	Instrument	Intermediate objective	Availability in current legislation: Available in Spanish legislation	Need for authorisation by the CNMV	Possibility of adoption by the CNMV	Comments
Collective investment schemes	Redemption fee	Maturity and liquidity mismatches	Yes	No	No	Their implementation grants unit-holders the right of withdrawal.
	Redemption gate	Maturity and liquidity mismatches	Yes	No	No	For alternative and real estate funds.
	Redemption in kind	Maturity and liquidity mismatches	Yes	Yes	No	Cannot be used under normal circumstances.
	Side pockets	Maturity and liquidity mismatches	Yes	Yes	Yes	Cannot be used under normal circumstances. Not available for real estate funds.
	Suspension of redemptions	Maturity and liquidity mismatches	Yes	Yes	Yes	Cannot be used under normal circumstances. Real estate funds can suspend redemptions for up to two years. For the rest, there are no limits.
	Anti-dilution levy	Maturity and liquidity mismatches	No			
	Swing pricing	Maturity and liquidity mismatches	No	Yes	No	It is not expressly set out in the legislation, but the CNMV allows managers to adopt this tool if it is established in their procedures.
	Restrictions on redemptions	Maturity and liquidity mismatches	Yes	No	No	
	Limits to asset concentration	Excessive concentration of risks in certain assets or sectors	Yes			Regulatory requirement.
	Limits to the use of derivatives	Excessive leverage	Yes			Regulatory requirement.
	Limits to leverage	Excessive leverage	Yes		Partial	Regulatory requirement in UCITS. The CNMV may set specific limits on alternative funds (hedge funds and venture capital funds).
	Liquidity ratio	Maturity and liquidity mismatches	Yes			Regulatory requirement.
	Strengthening liquidity	Maturity and liquidity mismatches	Yes		Yes	For reasons of financial stability, and on a temporary basis, the CNMV may require that an entity or a set of entities increases the percentage of investments in particularly liquid assets (this tool may be applied to open-ended CIS, closed-ended CIS and capital risk undertakings).
	Limits and conditions for the activity of these entities in order to prevent excessive borrowing by the private sector	Excessive leverage	Yes		Yes	Measure applicable to all entities supervised by the CNMV.

Sector/entity/ activity	Instrument	Intermediate objective	Availability in current legislation: Available in Spanish legislation	Need for authorisation by the CNMV	Possibility of adoption by the CNMV	Comments
Market infrastructures	Restrictions on short selling	Avoid illiquidity spirals and contagion effect	Yes	Yes	Yes	The Short Selling Regulation defines the framework for ESMA and national competent authorities to intervene in exceptional situations with the aim of reducing risks to financial stability resulting from short selling.
	Margins and haircuts	Excessive leverage	Yes	No	No	Current European legislation on derivatives and SFTs (EMIR and SFTR) does not provide for the macro-prudential use of margins and haircuts by authorities. Decided by the infrastructures themselves.
	Recovery measures	Moral hazard and strengthening the resilience of infrastructures	Yes	Yes	No	
	Resolution measures	Moral hazard and strengthening the resilience of infrastructures	No	No	No	Pending European regulation and the designation of resolution authorities. Pending creation of the CMG[1] and analysis of CCP resolvability. Under current legislation, may be activated using non-binding measures (recommendations).
Investment firms	Capital requirements	Excessive leverage	Yes			Regulatory requirement.
	Resolution measures	Moral hazard and strengthening the resilience of entities	Yes			
	Limits and conditions for the activity of these entities in order to prevent excessive borrowing by the private sector	Excessive leverage	Yes		Yes	Measure applicable to all entities supervised by the CNMV.
Critical benchmarks	Contingency planning	Manipulation and impossibility of calculation	Yes	No	No	BMR requires contingency plans from entities that use benchmarks (only supervised entities) and not from others, such as issuers. The authority does not authorise and does not have the capacity to require specific plans for the transition.

Source: CNMV.

Looking ahead, and as part of their usual tasks, both the CNMV and other European securities regulators must analyse the effectiveness of the available instruments for achieving their intended objectives, without forgetting the need to avoid generating unintended consequences. The evidence gathered thus far is limited, but the number of instruments that regulators can initiate in the context of the European Union (see Table 9) seems sufficient in view of the analyses of potential risks conducted. However, it is always possible to consider whether it is appropriate for regulators to have powers to impose or modify those tools that they deem appropriate and to introduce new tools, paying attention at all times to the relationship between the intended objectives and the costs potentially imposed on the industry, infrastructures or users.

For the time being, the most specific progress in macro-prudential policy beyond banking can be seen in the initiatives of the ESRB, which at the end of 2017 published a set of recommendations on liquidity and leverage risks in investment funds.[74] These recommendations are aimed at the need: i) to ensure that managers have appropriate liquidity management tools, ii) for liquidity risk management systems to be suitable, iii) for stress testing exercises to be consistent with regard to the fund, iv) to establish harmonised data reporting at a European level and v) to harmonise the use of the tool that allows supervisors to set specific limits on the leverage of alternative funds. ESMA's coordinating role in some recommendations is key.

With regard to the assessment of liquidity tools for funds, a preliminary discussion published in the ECB's *Macro-prudential Bulletin*[75] assesses five tools, three of which are pre-emptive (*ex-ante*) and two palliative (*ex-post*), from the point of view of their effectiveness for limiting systemic risk and their efficiency, in the sense that they are simple in their implementation, their impact is proportional to the risk and their unintended consequences are contained. The assessment suggests that the suspension of redemptions, one of the two *ex-post* tools and the only one that may generally be implemented by regulators, constitutes a valuable crisis management instrument. It also indicates that the tool relating to redemption restrictions (one of the three *ex-ante* tools) should be explored further with the aim of improving the resilience of funds. The other tools considered either do not effectively address all the areas of risk generated by this mismatch[76] or are more complex or not very proportional and, therefore, inefficient.

4.9 National and international cooperation and sharing of information

The CNMV cooperates with other national financial supervisors and other European and international institutions in identifying, measuring and preventing systemic risk.

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74 *Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds* (ESRB/2017/6).

75 ECB (2018). "Macro-prudential liquidity tools for investment funds – A preliminary discussion". *Macro-prudential Bulletin*, No. 6. Available at: https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu201810_03.en.html#toc1

76 The three aspects assessed in this analysis relate to fire sales and, in an associated manner, price falls and negative liquidity spirals with direct effects for the holders of units in investment funds (mainly banks, insurance companies and pension funds) and with the possibility of the interruption of the credit intermediation process between entities (if funds sell debt assets on a massive scale).

At a European level, the CNMV participates in ESMA's Committee for Economic and Markets Analysis (CEMA), which performs its work in the area of early detection of trends, potential risks and vulnerabilities that might affect ESMA's objectives of investor protection, orderly functioning of financial markets and financial stability in the European Union. In addition to cooperating in the recurring tasks of this committee, the CNMV has participated in a working group to assess the liquidity conditions of debt in Europe between 2012 and 2016, the results of which have not yet been made public.

In addition, the CNMV acts as a non-voting member on the General Board of the ESRB. It also assists in the Advisory Technical Committee (ATC) and is represented in two expert groups that analyse the leverage and liquidity of investment funds and the evolution of shadow banking.

At an international level, the CNMV participates in IOSCO's Committee on Emerging Risks (CER), a platform that was set up in 2011 so that experts belonging to securities regulators might share and discuss emerging risks and the most important developments in financial markets and, in parallel, develop and assess appropriate tools for such regulators to be able to implement IOSCO Principles 6 and 7. The CNMV has helped to draft the annual Risk Outlook reports and it has participated in several specific working groups linked to this committee in order to assess topics of interest, such as cybersecurity, regtech and liquidity in debt markets at times of stress.

At an international level, the CNMV also cooperates with the FSB through the Standing Committee on Standards Implementation (SCSI). It also participates in various working groups, such as the Shadow Banking Experts Group (SBEG) and the group working on the resolution of financial market infrastructures that reports to the FSB Resolution Steering Group (ReSG).

5 Conclusions

The financial crisis that erupted ten years ago highlighted the need to improve and enhance the monitoring and analysis of financial stability and systemic risks, revealing that the traditional prudential banking approach was not sufficient. This new perspective has become increasingly relevant in view of the ongoing growth of financial activities performed outside the banking channel, the digital transformation and greater inter-sectoral and cross-border interconnection, which are factors that make developing a global macro-prudential policy strategy a priority.

The improvement in analyses related to financial stability and, in parallel, the development of a holistic macro-prudential policy strategy are tasks that are driven by the G20 world leaders and on which multiple international and European bodies and authorities have been working intensely over recent years. At an international level, it is worth highlighting the work of the FSB and of IOSCO, while at a European level, significant work is being carried out by the European supervisory authorities (banking, securities and insurance) and, particularly, by the European Systemic Risk Board, which was set up in 2010 as the body responsible for macro-prudential oversight of the European Union's financial system and for preventing and mitigating systemic risk.

In Spain, the supervisory authorities have followed international recommendations and, like those in other countries, have strengthened, improved and systematised their work in this area. At the time of publication of this report, the Macro-prudential Authority Financial Stability Board (AMCESFI) had already been set up and started operating, following the recommendations of the ESRB and the IMF in its latest financial sector assessment programme report on Spain (FSAP).

The functions of this new authority include issuing warnings about all aspects relating to systemic risk and financial stability and submitting recommendations to the sectoral financial supervisors (Bank of Spain, CNMV and the Directorate-General for Insurance and Pension Funds) which the latter must comply with or explain why they consider compliance unnecessary. In addition, the sectoral supervisors must notify the AMCESFI in advance of their intention to activate, recalibrate or deactivate any of their macro-prudential tools. Upon receipt of this notification, the AMCESFI will issue its opinion on the matter.

In addition, the ability of sectoral supervisors to use certain tools that were not previously available has been strengthened. The CNMV has been granted the power to take measures to strengthen the liquidity of collective investment schemes and the ability to limit or condition the activity of supervised entities in order to prevent excessive borrowing by the private sector that might affect financial stability.

The CNMV has made significant progress over recent years in work relating to analysing and monitoring the systemic risks that might affect its areas of competence. These analyses will continue to be completed and improved by designing new indicators, such as those relating to the interconnections of the financial system, and by performing sectoral stress testing on investment funds and market infrastructures (trading venues, central counterparties and central securities depositories).

Cooperation between national and international authorities is essential for identifying and assessing as effectively as possible the systemic risks that the financial system faces, or may face in the future, as well as to eliminate or mitigate said risks by providing the system with response mechanisms that will make it more resilient. The recent creation of the AMCESFI will give a very significant boost to this coordination at a national level.

Annex

Macro-prudential policy objectives, market failures, macro-prudential instruments and indicators proposed by the ESRB

TABLE A.1

Ultimate objective	To contribute to safeguarding the financial system as a whole, by strengthening the resilience of the financial system and decreasing the build-up of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth.

Intermediate objectives	Underlying market failures	Indicative macro-prudential instruments	Indicators
I Mitigate and prevent excessive credit growth and leverage	Credit crunch externalities: a sudden tightening of the conditions required to obtain a loan, resulting in a reduction in the availability of credit to the non-financial sector	Countercyclical capital buffer	Credit-to-GDP gap
	Endogenous risk-taking: incentives that during a boom generate excessive risk-taking and, in the case of banks, a deterioration of lending standards. Explanations for this include signalling competence, market pressures to boost returns, or strategic interaction between institutions	Sectoral capital requirements (including intra-financial system)	Sectoral credit-to-GDP gaps
	Risk illusion: collective underestimation of risk related to short-term memory and the infrequency of financial crises	Macro-prudential leverage ratio	Mortgage volumes
	Bank runs: the withdrawal of wholesale or retail funding in case of actual or perceived insolvency	Loan-to-value requirements (LTV)	Real estate prices
	Interconnectedness externalities: contagious consequences of uncertainty about events at an institution or within a market	Loan-to-income/debt (service)-to-income requirements (LTI)	Leverage ratio

Intermediate objectives	Underlying market failures	Indicative macro-prudential instruments	Indicators
II Mitigate and prevent excessive maturity mismatch and market illiquidity	Fire sales externalities: arise from the forced sale of assets due to excessive asset and liability mismatches. This may lead to a liquidity spiral whereby falling asset prices induce further sales, deleveraging and spillovers to financial institutions with similar asset classes	Macro-prudential adjustment to liquidity ratio (e.g. liquidity coverage ratio)	Data on banks' balance sheets
		Macro-prudential restrictions on funding sources (e.g. net stable funding ratio)	Economic indicators and market (equity, CDS) data
	Bank runs	Macro-prudential unweighted limit to less stable funding (e.g. loan-to-deposit ratio)	Interbank volumes and rates
			Use of ECB facilities
	Market illiquidity: the drying-up of interbank or capital markets resulting from a general loss of confidence or very pessimistic expectations	Margin and haircut requirements	Use and availability of collateral
			Bank runs
III Limit direct and indirect exposure concentrations	Interconnectedness externalities	Large exposure restrictions	Exposures to counterparties, groups or sectors
	Fire sales externalities: (here) arise from the forced sale of assets at a dislocated price given the distribution of exposures within the financial system	CCP clearing requirement	
IV Limit the systemic impact of misaligned incentives with a view to reducing moral hazard	Moral hazard and 'too big to fail': excessive risk-taking due to expectations of a bailout due to the perceived system relevance of an individual institution	SIFI capital surcharges	Systemic nature (size, interconnectedness, substitutability and complexity)
		Recovery and resolution regimes	Indicators of overall risk of systemic banks and non-banks
V Strengthen the resilience of financial infrastructure	Interconnectedness externalities	Margin and haircut requirements on CCP clearing	Market liquidity
	Fire sales externalities	Deposit guarantee schemes	Loss of the cross-border level playing field
	Risk illusion	Increased disclosure	Decline in banks' voluntary capital
	Incomplete contracts: compensation structures that provide incentives for risky behaviour	Structural systemic risk buffer	Leakages to the shadow banking system

Source: ESRB and CNMV.

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